

3R - 79

REPORTS

DATE:

1992-97

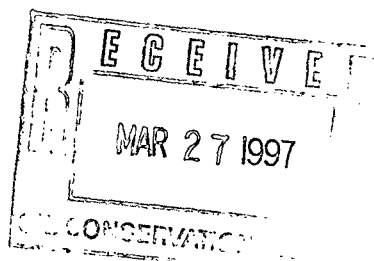
BURLINGTON RESOURCES

SAN JUAN DIVISION

March 25, 1997

Certified - Z 382 118 235

William C. Olson
Hydrogeologist, Environmental Bureau
New Mexico Oil Conservation Division
2040 Pacheco
Santa Fe, New Mexico 87505



**Re: January 1997 Groundwater Sampling Report
Thomas #1**

Dear Mr. Olson:

Following is a summary of analytical results from the January 1997 sampling episode at the Thomas #1 well site. Burlington Resources assumed operation of the well from Mobil through a property transaction in late 1992.

Episode	Well #	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Xylenes (ug/l)	Water Elevation (feet MSL)
1/8/97	MW-1	<1.0	1.2	<1.0	<1.0	5,372.14
	MW-2	400	2.3	78	400	5,371.53
	MW-3	<1.0	150	22	77	5,371.42
	MW-4	<1.0	1.3	3.7	35	5,371.27
	MW-5	<1.0	1.1	<1.0	<1.0	5,370.65

Attached is a copy of the sampling report. The next sampling date at the Thomas #1 well location is set for July 9, 1997.

Sincerely,

A handwritten signature in cursive script, appearing to read "Craig A. Bock".

Craig A. Bock
Environmental Representative

Attached: Report For Semi-Annual Groundwater Sampling (January 1997)

cc: Denny Foust - NMOCD Aztec (w/ attachment, one copy)
File: Thomas #1: Correspondence (w/ attachment)

BURLINGTON RESOURCES

SAN JUAN DIVISION

November 19, 1996

Certified - P 358 636 591

William C. Olson
Hydrogeologist, Environmental Bureau
New Mexico Oil Conservation Division
2040 Pacheco
Santa Fe, New Mexico 87505

RECEIVED
DEC 02 1996

Environmental Bureau
Oil Conservation Division

**Re: Groundwater Sampling Report
Thomas #1**

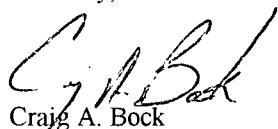
Dear Mr. Olson:

Following is a summary of analytical results from the two 1996 semi-annual groundwater sampling episodes for the Thomas #1 well site. Burlington Resources assumed operation of the well from Mobil through a property transaction in late 1992.

Episode	Well #	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Xylenes (ug/l)	Water Elevation (feet MSL)
1/10/96	MW-1	ND	ND	ND	ND	5,372.04
	MW-2	390	ND	64	395	5,371.40
	MW-3	ND	1200	88	470	5,371.29
	MW-4	ND	ND	3.6	15.4	5,371.15
	MW-5	ND	ND	ND	ND	5,370.54
7/15/96	MW-1	<0.10	0.10	<0.10	<0.20	5,371.76
	MW-2	150	<5.0	22	110	5,371.23
	MW-3	<1.0	57	8	33	5,371.11
	MW-4	<1.0	0.10	<0.10	0.2	5,370.98
	MW-5	<0.10	<0.10	<0.10	<0.20	5,370.47

Attached are two copies of each report. The next sampling date at the Thomas #1 well location is set for January 8, 1997.

Sincerely,



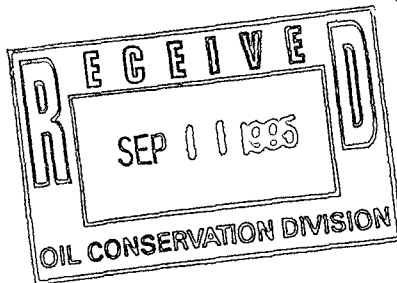
Craig A. Bock
Environmental Representative

Attached: (2) Report For Semi-Annual Groundwater Sampling (January 1996, August 1996)

cc: Denny Foust - NMOCD Aztec (w/ attachment, one copy)
Scott Pope - Philip Environmental (w/o attachment)
File: Thomas #1: Correspondence (w/o attachment)

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MERIDIAN OIL



September 7, 1995

Certified - P895 114 290

William C. Olson
Hydrogeologist, Environmental Bureau
New Mexico Oil Conservation Division
P.O. Box 2088
State Land Office Building
Santa Fe, New Mexico 87504

Re: Thomas #1 Well Site Remediation

Dear Mr. Olson:

Following is a summary of analytical results from the July 10 through 11, 1995 ground water sampling episode at the Thomas #1 well site. Meridian assumed operation of the well from Mobil via a property transaction during the second half of 1992.

Well #	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Xylene (ug/l)	Water Elevation (feet MSL)
MW-1	1.9	ND	2.2	ND	5372.05
MW-2	400	ND	47	324	5371.23
MW-3	ND	620	61	273	5371.21
MW-4	ND	ND	ND	1.3	5370.38
MW-5	13	6.1	3.7	9.0	5370.38

Attached is one copy of the report received from the ground water sampling episode. The next sampling date at the Thomas #1 well location is set for January 10, 1996.

If any additional information or clarification is needed, I can be contacted at 326-9537.

Sincerely,

A handwritten signature in cursive script, appearing to read "Craig A. Bock".

Craig A. Bock
Environmental Representative

Attached: Report of semi-annual groundwater sampling

cc: Denny Foust - NMOCD Aztec (w/o attachment)
File: Thomas #1: Correspondence (w/o attachment)

s:\craig\projman\formltr\notices\thams95b.doc

'95 FEB 10 AM 8 52

February 9, 1995

Certified - P 895 114 135

William C. Olson
Hydrogeologist, Environmental Bureau
New Mexico Oil Conservation Division
P.O. Box 2088
State Land Office Building
Santa Fe, New Mexico 87504

Re: Thomas #1 Well Site Remediation

Dear Mr. Olson:

Following is a summary of analytical results from the January 4, 1995 ground water sampling episode at the Thomas #1 well site. Meridian assumed operation of the well from Mobil via a property transaction during the second half of 1992.

Well #	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Xylene (ug/l)	Water Elevation (feet MSL)
MW-1	< 0.3	< 0.3	< 0.3	< 0.9	5,371.72
MW-2	448	8.3	48.0	340	5,371.02
MW-3	122	2,700	155	1,322	5,371.01
MW-4	< 0.3	< 0.3	< 0.3	0.5	5,370.80
MW-5	< 0.3	< 0.3	< 0.3	< 0.9	5,370.31

Attached are two copies of the report received from the January 4, 1995 ground water sampling episode. The next sampling date at the Thomas #1 well location is set for July 12, 1995.

If any additional information or clarification is needed, I can be contacted at 326-9537.

Sincerely,



Craig A. Bock
Associate Environmental Representative

Attached: (2) Report of semi-annual groundwater sampling

cc: Denny Foust - NMOCD Aztec (w/ attachment, one copy)
Matt McEneny - MOI (w/o attachment)
File: Thomas #1: Correspondence (w/o attachment)

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MERIDIAN OIL

NEW MEXICO OIL CONSERVATION DIVISION
NEW MEXICO
SIDE 12 PA 8 52

December 16, 1994

Certified - P 895 114 346

William C. Olson
Hydrogeologist, Environmental Bureau
New Mexico Oil Conservation Division
P.O. Box 2088
State Land Office Building
Santa Fe, New Mexico 87504

Re: Thomas #1 Well Site Remediation

Dear Mr. Olson:

Following is a summary of analytical results from the October 20, 1994 ground water sampling episode at the Thomas #1 well site. Meridian assumed operation of the well from Mobil via a property transaction during the second half of 1992. Please find attached the corresponding laboratory reports.

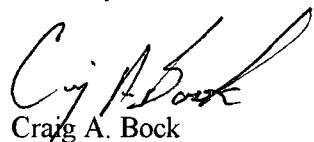
Well #	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Xylene (ug/l)	Water Elevation (feet MSL)
MW-1	< 0.3	< 0.3	< 0.3	< 0.9	5,371.95
MW-2	556	< 0.3	79.4	569	5,371.26
MW-3	521	10,900	455	4,040	5,371.26
MW-4	< 0.3	< 0.3	< 0.3	< 0.9	5,371.04
MW-5	< 0.3	< 0.3	< 0.3	< 0.9	5,370.55

Attached are two copies of the report received from the October 20, 1994 ground water sampling episode.

Sampling events following the October event will be performed on the first Wednesday of January and the second Wednesday of July each year until the results show that no further monitoring is needed. This correspondence will serve as notification of all future sampling events. Your department will be given proper notice if scheduling changes occur.

If any additional information or clarification is needed, please contact me at 326-9537.

Sincerely,



Craig A. Bock
Associate Environmental Representative

cc: Denny Foust, NMOCD Aztec

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MERIDIAN OIL

OIL CONSERVATION DIVISION
RECEIVED

'93 JUN 21 AM 10 02

June 15, 1993

Certified Mail - P 794 519 626

William C. Olson
Hydrogeologist, Environmental Bureau
New Mexico Oil Conservation Division
Post Office Box 2088
State Land Office Building
Santa Fe, New Mexico 87504

RE: Thomas #1 Well Site Remediation

Dear Mr. Olson:

Following is a summary of analytical results pursuant to a May 13, 1993 sampling episode at the Thomas #1 well site. Meridian assumed operation of the well from Mobil via a property transaction during the second half of 1993. Please find attached the corresponding laboratory reports.

Well	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Xylene (ug/l)	TPH (mg/l)	H2O Elevation (ft)
MW - 1	ND	ND	ND	ND	.36	3.31
MW-2	860	420	130	2540	23.1	3.68
MW-3	ND	7800	780	7100	60	2.12
MW-4	ND	ND	ND	ND	.21	2.19
MW-5	9.7	ND	ND	ND	.69	3.51

Notes:

- BTEX Analytical Method - 8020
- TPH Analytical Method - 418.1
- Xylene Represents Total Xylene (P - & M - Xylene and O - Xylene)
- ND - Not Detected

Additional sampling and testing will occur in approximately six months. We will notify you of the exact date and time one week prior to sampling.

Please contact me if you desire any additional information.

Sincerely,



M.J. McEneny
Regional Safety and Environmental Manager

Attachments

xc: Ken Johnson
Thomas # 1 Facility File

MJM/vka:thomas1.doc

Assaigai Analytical Labs
7300 Jefferson NE
Albuquerque, NM 87109

Attn: MARLEAH M. MARTIN
Phone: (505) 345-8964

MERIDIAN OIL
3535 EAST 30TH STREET
FARMINGTON, NM 87402
Attn: MIKE FRAMPTON
Order #: 93-05-100
Date: 05/28/93 09:11
Work ID: THOMAS
Date Received: 05/14/93
Date Completed: 05/28/93

Purchase Order: OPEN ACCOUNT
Invoice Number:
Client Code: MER01

SAMPLE IDENTIFICATION

Sample Number	Sample Description	Sample Number	Sample Description
01	MW-1	04	MW-4
02	MW-2	05	MW-5
03	MW-3	06	TRIP BLANK

ND = None Detected D_F = Dilution Factor NT = Not Tested
B = Analyte was present in the blank J = Estimated value
E = Estimated Value, Concentration exceeds calibration range
MULTIPLY THE LIMIT BY THE DILUTION FACTOR.

Marleah M. Martin
Certified By
Marleah Martin



Received: 05/14/93

REPORT

Work Order # 93-05-100

Results by Sample

SAMPLE ID ME-1

FRACTION 01B TEST CODE WBTX NAME BTEX (4 compound) only/water
 Date & Time Collected 05/13/93 10:00:00 Category WATER

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Benzene	ND	1.0	1.0	05/19/93
Toluene	ND	1.0	1.0	05/19/93
Ethylbenzene	ND	1.0	1.0	05/19/93
P- α m-xylene	ND	1.0	1.0	05/19/93
O-xylene	ND	1.0	1.0	05/19/93

Notes and Definitions for this Report:

EXTRACTED _____
 ANALYST NO
 FILE ID 018
 UNITS ug/L
 BATCH_ID WGCVOA-52
 COMMENTS N/A



Received: 05/14/93

Results by Sample

Work Order # 93-05-100

3711 Admiral, Suite C • El Paso, Texas 79925

SAMPLE ID MM-1

FRACTION 01A TEST CODE WTRPH NAME Total petroleum HCs/water
Date & Time Collected 05/13/93 10:00:00 Category WATER

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Total Petroleum HCs	0.36	0.10	1.0	05/27/93

Notes and Definitions for this Report:

EXTRACTED 05/26/93
ANALYST DH
UNITS mg/L
BATCH_ID WTRPH-023
COMMENTS



Received: 05/14/93

REPORT

Work Order # 93-05-100

3711 Admiral, Suite C • El Paso, Texas 79925

Results by Sample

SAMPLE ID MM-2

FRACTION 02B TEST CODE WBTX NAME BTEX(4 compound) only/water
Date & Time Collected 05/13/93 07:56:00 Category WATER

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Benzene	860	1.0	50	05/20/93
Toluene	420	1.0	50	05/20/93
Ethylbenzene	130	1.0	50	05/20/93
P-xm-xylene	2000	1.0	50	05/20/93
O-xylene	540	1.0	50	05/20/93

Notes and Definitions for this Report:

EXTRACTED _____
ANALYST NO
FILE ID 010
UNITS ug/L
BATCH ID WGCVOA-53
COMMENTS _____
N/A



Received: 05/14/93

Results by Sample

Work Order # 93-05-100

3711 Admiral, Suite C • El Paso, Texas 79925

SAMPLE ID MM-2

FRACTION 02A TEST CODE WTRPH NAME Total petroleum HCs/water

Date & Time Collected 05/13/93 07:56:00 Category WATER

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Total Petroleum HCs	23.1	0.10	10	05/27/93

Notes and Definitions for this Report:

EXTRACTED 05/26/93

ANALYST DH

UNITS mg/L

BATCH_ID WTRPH-023

COMMENTS



Received: 05/14/93

Results by Sample

Work Order # 93-05-100

3711 Admiral, Suite C • El Paso, Texas 79925

SAMPLE ID MM-3

FRACTION 03B TEST CODE MBTEX NAME BTEX (4 compound) only/water
 Date & Time Collected 05/13/93 08:20:00 Category WATER

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Benzene	ND	1.0	200	05/20/93
Toluene	7800	1.0	200	05/20/93
Ethylbenzene	780	1.0	200	05/20/93
P- & m-xylene	5400	1.0	200	05/20/93
O-xylene	1700	1.0	200	05/20/93

Notes and Definitions for this Report:

EXTRACTED _____
 ANALYST NO
 FILE ID 011
 UNITS ug/L
 BATCH_ID WGCVOA-53
 COMMENTS _____
 N/A



Received: 05/14/93

Results by Sample

REPORT

Work Order # 93-05-100

3711 Admiral, Suite C • El Paso, Texas 79925

SAMPLE ID MM-3

FRACTION 03A TEST CODE WTRPH NAME Total petroleum HCs/water
Date & Time Collected 05/13/93 08:20:00 Category WATER

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Total Petroleum HCs	60	0.10	25	05/27/93

Notes and Definitions for this Report:

EXTRACTED 05/26/93
ANALYST DH
UNITS mg/L
BATCH_ID WTRPH-023
COMMENTS



Received: 05/14/93

REPORT

Work Order # 93-05-100

3711 Admiral, Suite C • El Paso, Texas 79925

Results by Sample

SAMPLE ID MM-4

FRACTION 04B

TEST CODE WBTX

NAME BTX(4 compound) only/water

Date & Time Collected 05/13/93 08:45:00

Category WATER

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Benzene	ND	1.0	1.0	05/19/93
Toluene	ND	1.0	1.0	05/19/93
Ethylbenzene	ND	1.0	1.0	05/19/93
P-xm-xylene	ND	1.0	1.0	05/19/93
O-xylene	ND	1.0	1.0	05/19/93

Notes and Definitions for this Report:

EXTRACTED

ANALYST NO

FILE ID 014

UNITS ug/L

BATCH ID WGCVOA-52

COMMENTS N/A



Received: 05/14/93

Results by Sample

Work Order # 93-05-100

3711 Admiral, Suite C • El Paso, Texas 79925

SAMPLE ID MM-4

FRACTION 04A

TEST CODE WTRPH

NAME Total petroleum HCs/water

Date & Time Collected 05/13/93 08:45:00

Category WATER

PARAMETER

RESULT

LIMIT

D_F

DATE_ANAL

Total Petroleum HCs

0.21

0.10

1.0

05/27/93

Notes and Definitions for this Report:

EXTRACTED

05/26/93

ANALYST DH

UNITS

mg/L

BATCH_ID

WTRPH-023

COMMENTS



Received: 05/14/93

REPORT

Work Order # 93-05-100

3711 Admiral, Suite C • El Paso, Texas 79925

Results by Sample

SAMPLE ID MM-5

FRACTION 05B TEST CODE MBTEX NAME BTEX (4 compound) only/water
Date & Time Collected 05/13/93 09:20:00 Category WATER

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Benzene	9.7	1.0	1.0	05/19/93
Toluene	ND	1.0	1.0	05/19/93
Ethylbenzene	ND	1.0	1.0	05/19/93
P-xm-xylene	ND	1.0	1.0	05/19/93
O-xylene	ND	1.0	1.0	05/19/93

Notes and Definitions for this Report:

EXTRACTED _____
ANALYST NO
FILE ID 021
UNITS ug/L
BATCH_ID WGCVOA-52
COMMENTS _____
N/A



Received: 05/14/93

REPORT

Work Order # 93-05-100

3711 Admiral, Suite C • El Paso, Texas 79925

Results by Sample

SAMPLE ID MM-5

FRACTION 05A

TEST CODE WTRPH

NAME Total petroleum HCs/water

Date & Time Collected 05/13/93 09:20:00

Category WATER

PARAMETER

RESULT

LIMIT

D_F

DATE_ANAL

Total Petroleum HCs

0.69

0.10

1.0

05/27/93

Notes and Definitions for this Report:

EXTRACTED

05/26/93

ANALYST

DH

UNITS

mg/L

BATCH_ID

WTRPH-023

COMMENTS



Received: 05/14/93

Results by Sample

REPORT

Work Order # 93-05-100

3711 Admiral, Suite C • El Paso, Texas 79925

SAMPLE ID TRIP BLANK

FRACTION 06A TEST CODE WBTX NAME BTEX (4 compound) only/water
 Date & Time Collected not specified Category WATER

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Benzene	ND	1.0	1.0	05/19/93
Toluene	ND	1.0	1.0	05/19/93
Ethylbenzene	ND	1.0	1.0	05/19/93
P-6m-xylene	ND	1.0	1.0	05/19/93
O-xylene	ND	1.0	1.0	05/19/93

Notes and Definitions for this Report:

EXTRACTED _____
 ANALYST NO _____
 FILE ID 012 _____
 UNITS ug/L _____
 BATCH_ID WGCVOA-52 _____
 COMMENTS _____
 N/A





Chain of Custody Record

Lab job no: 5100 Date 5/14/93

Page 1 of 1

7300 JEFFERSON, N.E.
ALBUQUERQUE, NEW MEXICO 87109
(505) 345-8964
3711 ADMINISTRATIVE C
EL PASO, TEXAS 79925
(915) 593-6000

MELOUADES ALANIS
6411 LOCAL UNO
CIUDAD JUAREZ, CHIHUAHUA MEXICO 32320

Client Mexican Oil
Address P.O. Box 4285
City/State/Zip Torrey, NM 87449
Project Name/Number Thomas
Contact/Purchase Order/Quote 14-621
Telephone No. 326 9841
Fax No. 326 9725
Project Manager/Contact Mike Thompson
Samplers: (Signature) Alan E. Miller
Chris A. Miller

Sample Number	Field Sample Number/Location	Date	Time	Sample Type	Type/Size of Container	Preservation Temp.	Chemical	No. of Containers	Remarks
1A 1K	MW-1	5/13/93	11:00	H2O	1 liter Amber glass	4°C		✓	TRPH BETX
2A 2B	MW-2	"	0756	"	"	"		✓	
3A 3B	MW-3	"	0820	"	"	"		✓	
4A 4B	MW-4	"	0845	"	"	"		✓	
5A 5B	MW-5	"	0920	"	"	"		✓	
6A 6B	Trip blank	"		H2O	two 100 ml			✓	

Requested by: Signature <u>Alan E. Miller</u> Printed <u>Alan E. Miller</u> Company <u>Miller-Wheeler</u> Reason <u>Antidotal Reanalysis</u>	Date <u>5/13/93</u>	Received by: Signature <u>Mike Thompson</u> Printed <u>Mike Thompson</u> Company <u>Mexican Oil</u> Reason <u>hold + Rpt to shipper</u>	Retransmitted by: Signature <u>Mike Thompson</u> Printed <u>Mike Thompson</u> Company <u>Mexican Oil</u> Reason <u>Ship to Lab</u>	Date <u>5/13/93</u>	Received by: Signature _____ Printed _____ Company _____ Reason _____
Method of Shipment: <u>UPS</u>		Comments: _____		After analysis, samples are to be:	
Special Instructions: <u>Quarantined</u>		_____		<input type="checkbox"/> Disposed of (additional fee) <input type="checkbox"/> Stored (30 days max) <input type="checkbox"/> Stored over 30 days (additional fee) <input type="checkbox"/> Returned to customer	

COURIER

Mobil Exploration & Producing U.S. Inc.

OIL CONSERVATION DIVISION
RECEIVED

P.O. BOX 633
MIDLAND, TEXAS 79702-0633

'92 OCT 26 AM 9 06

October 23, 1992

Mr. William C. Olson
New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

GROUNDWATER ANALYSES
MOBIL THOMAS #1 WELLSITE
L-30-29N-11W
SAN JUAN COUNTY, NEW MEXICO

Dear Mr. Olson,

H+GCL conducted groundwater sampling of five monitor wells surrounding the Thomas #1 well site on September 2, 1992. This sampling was the first semi-annual event intended to monitor progress of the passive vapor venting system installed in July of this year by H+GCL. Water samples were collected for the monitor wells and analyzed for BTEX (Volatile Aromatic Hydrocarbons), Total Dissolved Solids (TSD), and Nitrates at Inter-Mountain Laboratories in Farmington. The locations of the five monitor wells are shown on the attached map. The results of this recent sampling event are presented in Table 1. They should be compared to the initial sampling results reported in November, 1991 (Table 2), prior to installation of the venting system.

Samples were obtained by Louis J. Mazzullo, CPG, according to H+GCL's standard operating procedures, and under strict chain-of-custody. A new and packaged 1-inch disposable polyethylene bailer was designated for each well to prevent cross-contamination between wells during sampling. A total of more than three casing volumes of water was first withdrawn from each well and the pH, conductivity, and temperature periodically measured until these parameters stabilized. Groundwater samples were then collected. A duplicate sample was taken from well MW-2, and a trip blank was also analyzed for the lot. All samples were collected within a few hours of one another and taken immediately to the laboratory cool and intact.

The results of sample analyses from this recent event show several significant features:

- (1) BTEX in monitor wells MW-1, MW-4, and MW-5 were not detected, nor were they present in the original pre-remediation analyses. These wells are the furthest from or up gradient from the spill source.



(2) Wells MW-2 and MW-3 continue to show hydrocarbon fractions above WQCC standards. However, the concentrations are far below those found in the initial (pre-reclamation) sampling.

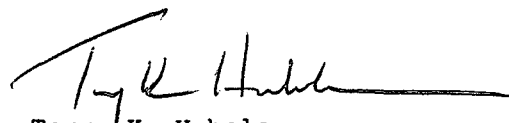
(3) The two sample analyses for well MW-2 did not duplicate and were significantly different.

The overall downward trend for BTEX values in wells MW-2 and MW-3 could be explained in several ways. First, it may reflect better than expected effectiveness of natural bio-remediation once the source of contamination was cut off by excavation. Second, improvement in BTEX contamination may indicate that the vapor venting system is very effectively remediating the groundwater. Third, sample collection and/or analytical procedures are in error, and sample analyses do not reflect true groundwater chemistry.

Sample collection procedures followed by H+GCL were very rigid and followed strict protocol. BTEX samples were collected according to standard "zero-head-space" techniques. Samples were delivered to the laboratory firmly sealed and were placed on ice immediately upon collection. The analyses discrepancy between the first and duplicate samples from well MW-2 can not be explained hydrologically. The well was purged of more than 3 casing volumes and presumably equilibrated prior to sampling. No anomalous concentrations were detected in the trip blank. Analytical procedures on the samples may not have been as strict as possible. Samples were collected on September 2, but not analyzed until September 15-16. Although the water samples were properly preserved when collected, their holding time is 14 days. It is possible that analyses for wells MW-2 and MW-3 are not entirely accurate and samples may have lost some hydrocarbon fractions through volatilization due to excessive holding time at the lab.

The second semi-annual sampling event is scheduled for March, 1993. At that time H+GCL intends to utilize another laboratory for water analyses and will compare results to the prior two events. Duplicate samples may be take from both wells MW-2 and MW-3 at that time for greater quality assurance. We expect that the results of the next analyses event to be more conclusive as to the effectiveness of the remediation program at the Thomas #1 site.

Respectfully submitted,


Terry K. Hubele
Staff E&R Engineer
Midland North Asset Team

CC: Louis J. Mazzullo, H+GCL
Derin Warren, Meridian Oil



Table 1

Results of Groundwater Sample Analyses,
Thomas #1, September 1, 1992

	MW-1	MW-2	MW-2 Dup.	MW-3	MW-4	MW-5	Trip Blank
Benzene, ppb	ND	251	ND	ND	ND	ND	ND
Toluene, ppb	ND	64	8.8	8220	ND	ND	ND
Ethylbenzene, ppb	ND	23	ND	ND	ND	ND	ND
m,p-Xylene, ppb	ND	346	5.2	2880	ND	ND	ND
o-Xylene, ppb	ND	51	ND	750	ND	ND	ND
TDS, mg/L	2730	1420	1390	2650	2630	3120	
Nitrate, mg/L	<0.02	<0.02	<0.02	0.04	<0.02	<0.2	

Table 2

Groundwater Analyses,
Thomas #1, November 1, 1991

	MW-1	MW-2	MW-3	MW-4	MW-5	WQCC Stds.
Benzene, ppb	ND	800	1500	ND	ND	10
Toluene, ppb	ND	2800	30000	ND	ND	750
Ethylbenzene, ppb	ND	400	2000	ND	ND	750
Xylenes, ppb	ND	8100	36000	ND	ND	620

THOMAS #1 SITE

GROUNDWATER ELEVATION & GRADIENT MAP 8-31-91

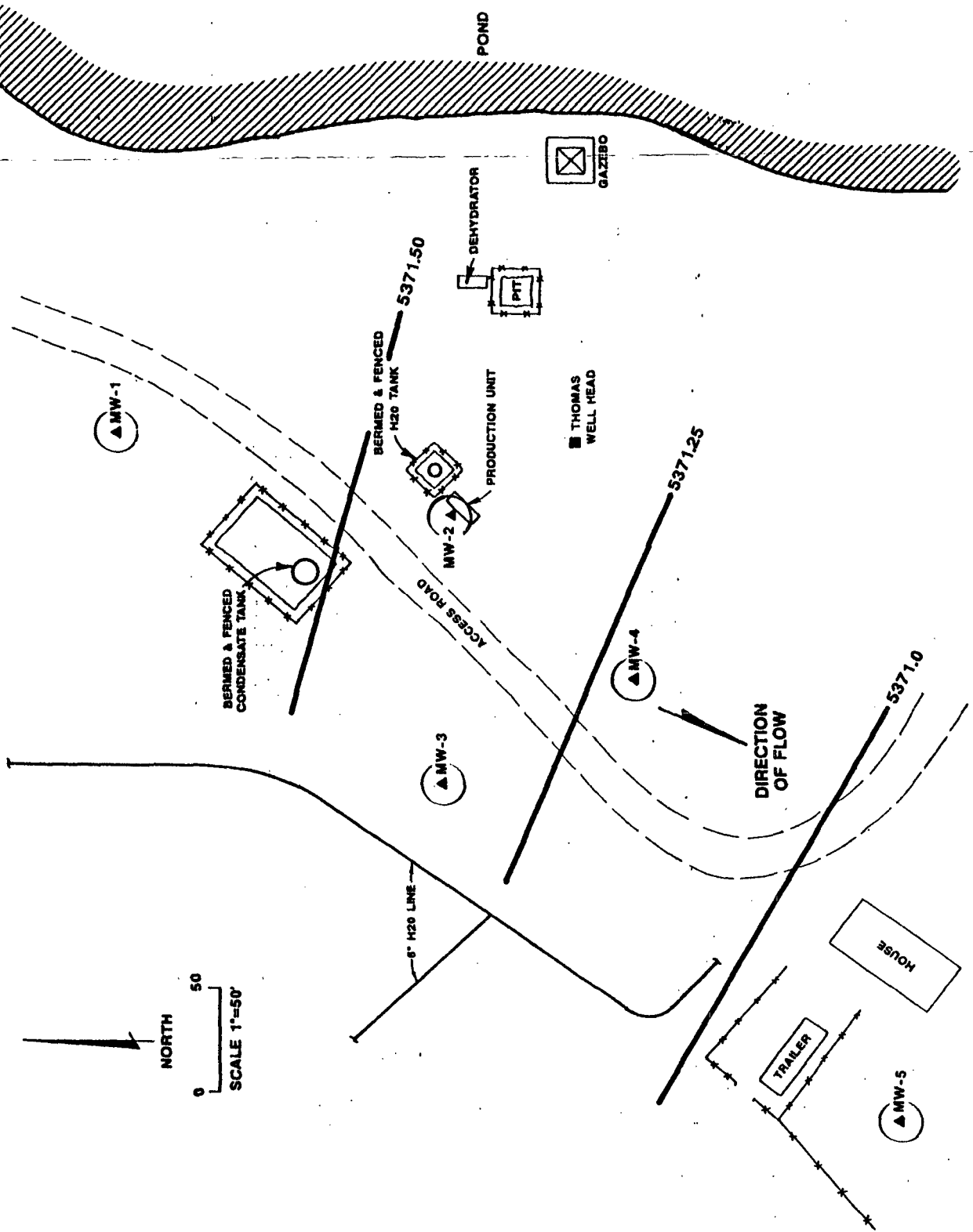
LEGEND

WATER LEVEL
ELEVATION CONTOURS

MONITOR WELL LOCATIONS



5371.25



'92 MAY 20 AM 8 50

May 18, 1992

Mr. William C. Olson
Hydrogeologist
Oil Conservation Division
Post Office Box 2088
State Land Office Building
Santa Fe, New Mexico 87504

RE: MOBIL THOMAS #1 RECLAMATION PROPOSAL

Dear Mr. Olson:

On November 26, 1991 Mobil Exploration and Producing (Mobil) submitted Thomas #1 Well Site Subsurface Investigation Report, San Juan County, New Mexico to the New Mexico Oil Conservation Division (NMOCD). This report identified areas with high concentrations of benzene, toluene, ethylbenzene and xylene in the subsurface. Mobil installed a fiberglass tank to store produced water and repaired a line leak at the condensate storage tank, thereby eliminating the source of the hydrocarbons. Because the hydrocarbons have impacted the soil and groundwater, the following remedy is proposed in accordance with Draft Guidelines for Surface Impoundment Closure, NMOCD, October, 1991.

Task 1: Initiate Remediation

The surface and subsurface soils designated in figure 1 (from 1992 Soil-Vapor Survey) will be excavated. This is within the area identified in the subsurface investigation report as having greater than 100 part per million (ppm) total benzene, toluene, ethylbenzene and xylene (BTEX) in the soil vapor. The soil will be segregated on-site according to three categories: highly contaminated soil, not highly contaminated soil with concentrations of ionizable constituents greater than 100 parts per million, and soil containing less than 100 ppm ionizable vapors. The concentrations of ionizable vapors will be determined by field techniques following Draft Guidelines for Surface Impoundment Closure, 1.I.A.2.a. Highly contaminated soil is defined in the Draft Guidelines for Surface Impoundment Closure 1.I.A.1.:

- **Highly Contaminated Soils**

"Highly contaminated soils are defined as soils which are stained or saturated with any type of petroleum product. These soils can be distinguished by observing the physical properties of the soil for observable free phase petroleum product, gross staining, and evidence of a very strong odor. These

Mr. William C. Olson
May 18, 1992
Page 2

physical properties are criteria which may be used to determine if the soil is highly contaminated."

The excavation will begin adjacent to the condensate storage tank where the line leak was identified. We expect to find highly-contaminated soil in this area. H⁺GCL will take care to excavate in a manner that will not compromise the piping or tanks. We will continue to remove highly-contaminated soil until field tests demonstrate that all has been removed.

After excavation, the highly contaminated soil will be transported off-site and remediated by others. The cavity created by this removal will be backfilled with clean soil and overlain by excavated soil that has been categorized as not highly contaminated. Therefore, some soil remaining on-site may contain greater than 100 parts per million total BTEX constituents. Mobil proposes to install a passive soil venting system to facilitate in-situ remediation of that soil. The system will be installed only in areas where field screening and the previous soil-vapor survey indicates that the soil contains greater than 100 ppm ionizable constituents.

One soil venting unit is planned in the area of the condensate tank and another in the area of the produced water tank (figure 2). The passive soil venting systems will consist of 4-inch diameter slotted PVC pipes laid horizontally in the excavation. Each of the horizontal pipes will be connected to vertical 4-inch PVC pipes that are attached to the condensate tank and the fence surrounding the water tank. Connected to the vertical pipes at a level immediately above the top of the tanks we propose a wind driven turbine that will draw the vapors out of the soil and vent them to the surface, inducing subsurface circulation of air (figure 3).

After the pipe for the soil venting system has been emplaced, H⁺GCL will backfill the excavation with a volume of uncontaminated soil equal to the volume of removed contaminated soil. This will be mixed with a small amount of fertilizer and placed in the cavity to stimulate biologic activity in the unsaturated zone. H⁺GCL will complete the backfilling with uncontaminated sediments, followed by top soil to complete surface restoration. Natural processes of dilution, biodegradation and volatilization, assisted by the soil venting systems, will restore groundwater over the next several years without an active groundwater remediation system.

Task 2: Monitoring

Existing monitor wells will be sampled and analyzed on a semi-annual basis for a period two years starting immediately after installation of the remedial system. This sampling is required to ensure that the documented contamination is remediated by natural processes. Samples will be collected and analyzed for BTEX constituents using EPA Method 602. All samples will be collected in accordance with accepted industry standards.

Mr. William C. Olson
May 18, 1992
Page 3

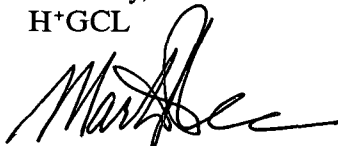
Contemporaneous with ground water sampling, H⁺GCL will sample the vapor from the passive venting system and analyze it in the field for total ionizable compounds.

Sampling results will be transmitted to the NMOCD in the form of a data report along with copies of the laboratory reports and field notes.

In summary, excavation will remove the source of the hydrocarbons at this site. After this source is removed, the concentration of hydrocarbons in the groundwater will decrease and allow our proposed remedial strategy of venting and natural biodegradation, a proven technology, to remediate the soil and groundwater.

Following your approval of this plan, we will begin field activities within 60 days. If you have any questions regarding this proposed reclamation plan, please call me at (505) 842-0001.

Sincerely,
H⁺GCL



Martin J. Nee
Project Hydrogeologist

MJN/llb/0569/OCD.PRO

Enclosures

cc: Mr. Terry Hubele, Mobil

Figure 1
Potential Area To Be Excavated

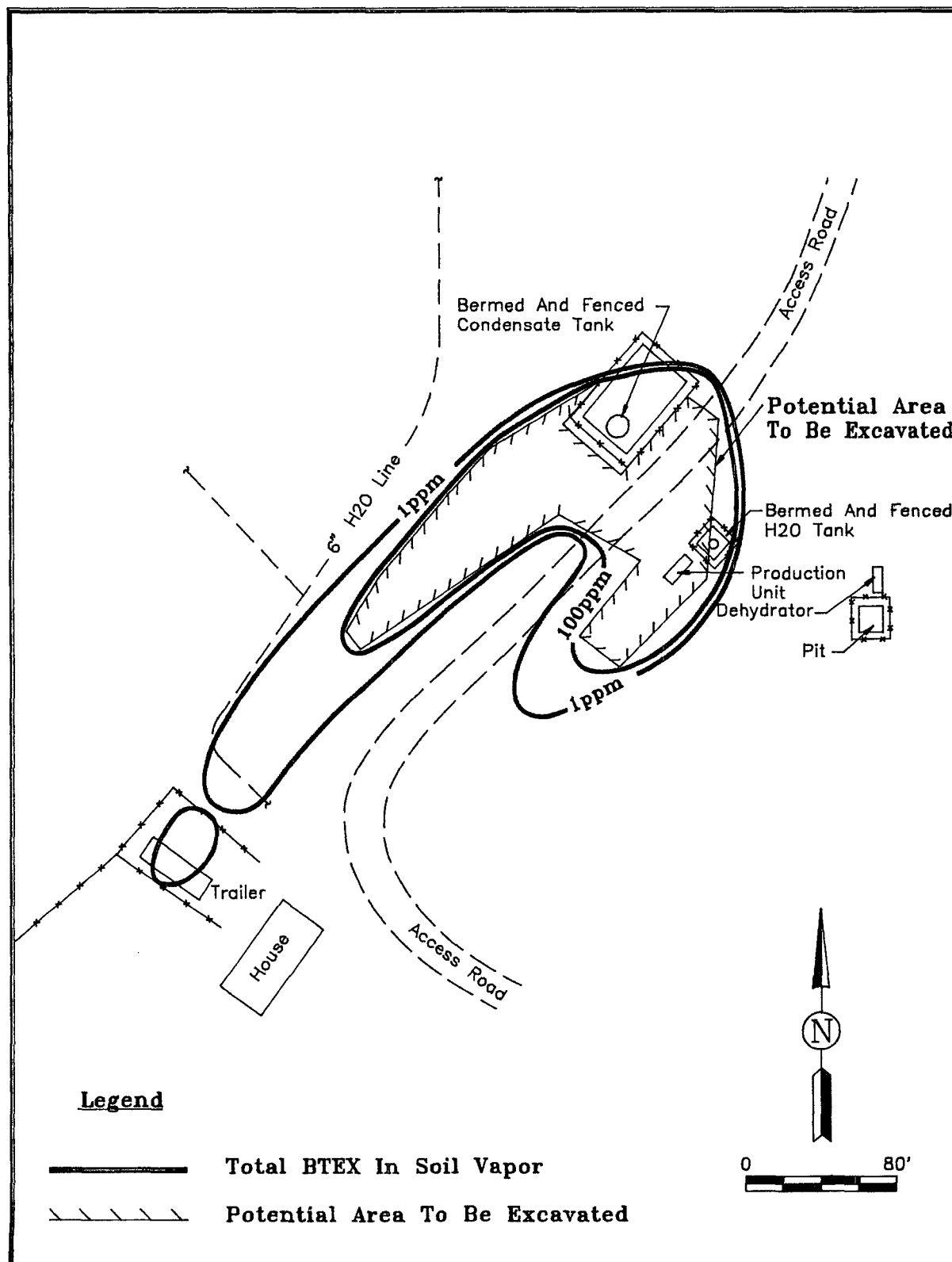


Figure 2

Location Of PVC Pipes For Soil Venting

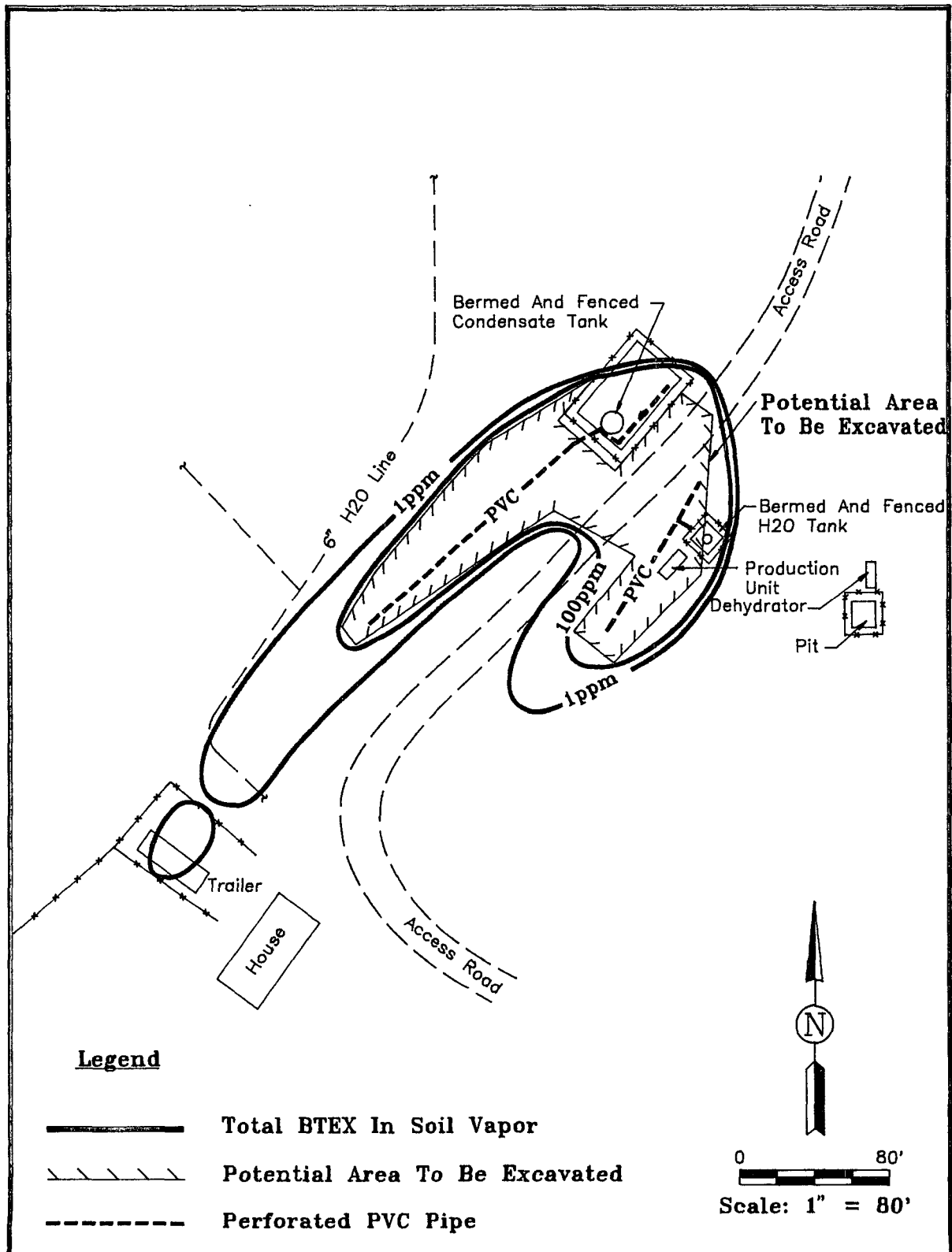
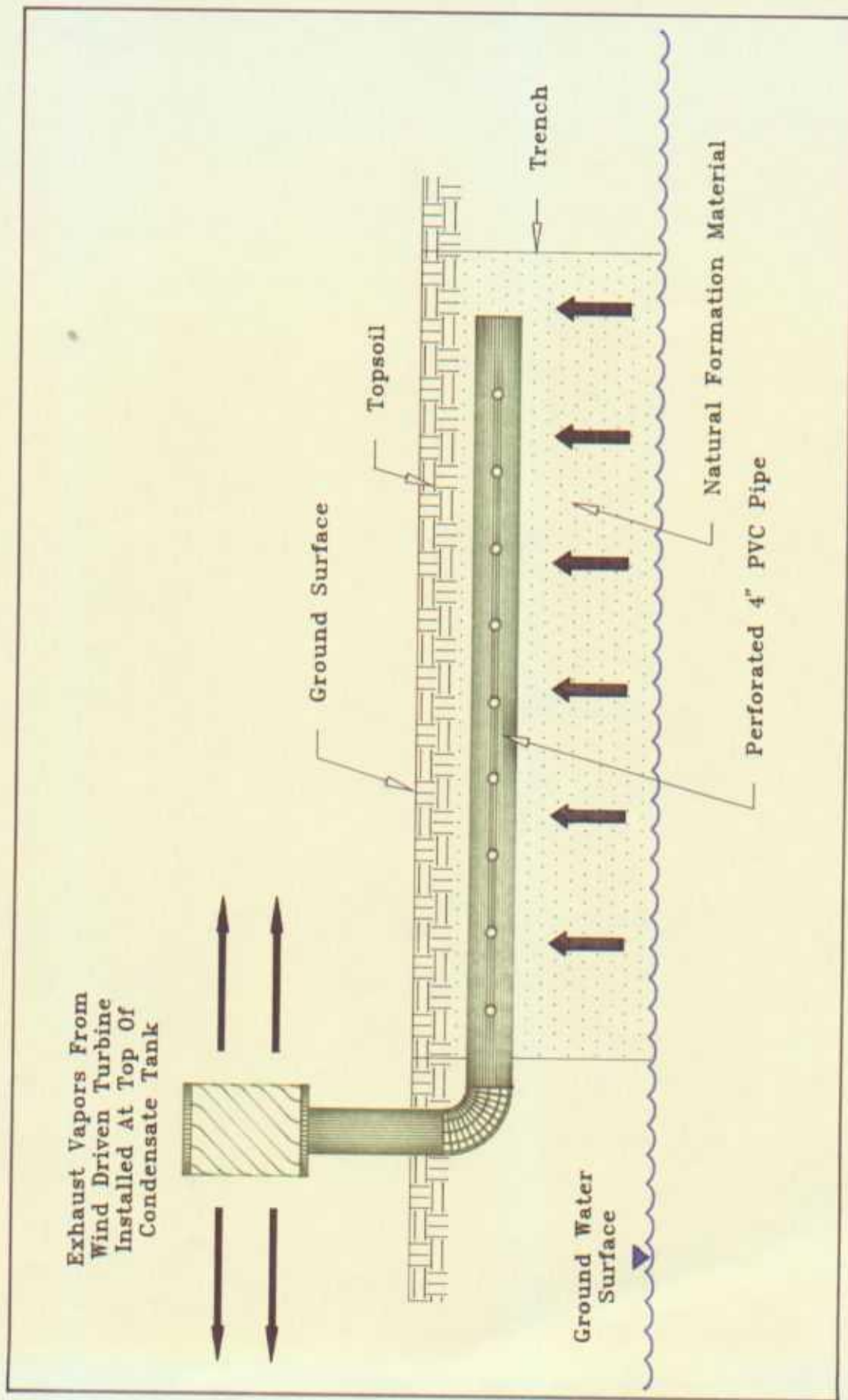
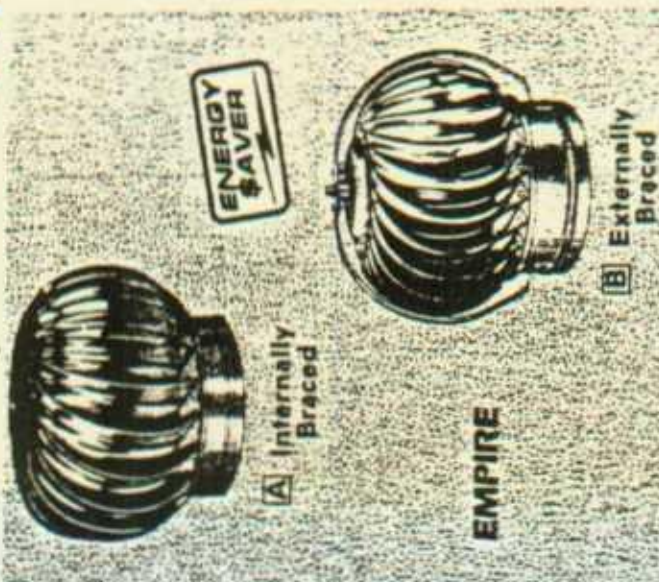


Figure 3
Passive Soil Venting System



4 TO 24" TURBINE VENTILATORS



[A] Internally braced turbine requires no additional external supports. Low profile design hugs the roofline. Hard chrome plated Dupont Delrin bearing system starts easier, and spins longer and faster in the slightest breeze.

Constructed of 24 ga galvanized steel. Neck is 12" in diameter. Wispercool brand (321B12).

No. 4C689, Shpg. wt. 6.7 lbs. List \$38.75. Each.....\$23.31

[B] Externally braced turbine for strength

and perfect alignment. Engineered for quiet, reliable air circulation in attics, crawl spaces and other enclosed areas.

Bronze oil-impregnated top bearing. 4, 6, and 8" vents have thrust-type bottom pivot bearing with hardened steel ball riding in a hardened steel seat. 12" and larger vents use bottom thrust-type ball bearing.

Galvanized steel construction. Aluminum bracing on 4 to 14" units. Aluminum painted steel bracing on 16 to 24" units, Empire brand.

Neck Diameter	CFM 4 Mi. Wind	Stock No.	List	Each	Shpg. Wt.
4"	126	4C016	\$35.65	\$21.68	4.8
6	147	2C528	36.70	22.31	6.4
8	255	2C529	40.00	24.30	7.6
10	425	2C530	48.70	29.59	10.2
12	631	2C531	47.60	29.73	14.0
14	700	2C532	84.45	51.34	20.0
16	950	2C533	123.85	75.26	30.0
18	1200	2C534	151.10	91.84	37.0
20	1700	2C802	193.05	117.33	46.0
24	2350	2C803	262.00	159.23	60.5