APPENDIX G

AMERICAN INTERPLEX
CORPORATION
LABORATORIES

SEP 29 1987

3400 Asher Avenue
Little Rock, Arkansas 72204
(501) 664-5060

B & F Engineering, Inc. (C-25)
928 Airport Road
Hot Springs, AR 71913-4697

September 28, 1987

ATTN: Mr. Bill Humphries

Control No. 12181

Description of Sample: Five (5) soil samples received on 8/12/87;
Re: Thomason Lumber Company

Results:

Sample Identification	PCP ppm	Naphthalene ppm	Acenapthalene ppm	Fluoranthrene ppm
HA-1, 0-1 ft., Wood Treatment Process Area, 8/10/87, 2:00 p.m.	75	<0.5	<0.5	18
HA-1, 1-2 ft., Wood Treatment Process Area, 8/11/87, 8:00 a.m.	3.9	<0.5	<0.5	10
HA-1, 2-3 ft., Wood Treatment Process Area, 8/11/87, 10:00 a.m.	6.2	<0.5	<0.5	3.4
HA-5, 0-1 ft., Resources Recovery Area, 8/11/87, 11:00 a.m.	3.9	<0.5	<0.5	3.6
HA-5, 1-2 ft., Resources Recovery Area, 8/11/87, 1:00 p.m.	2.6	<0.5	<0.5	4.0

Method: EPA 3550, 8100, 8040

Remarks: Results are presented on a dry weight basis.

AMERICAN INTERPLEX CORPORATION

By Lydia Morton
Lydia Morton, Lab Director

☐ Chemistry — Metallurgy — Microbiology
☐ Member: leading scientific societies

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3400 Asher Avenue
Little Rock, Arkansas 72204
(501) 664-5060

B & F Engineering, Inc. (C-25)
928 Airport Road
Hot Springs, AR 71913-4697

September 29, 1987

ATTN: Mr. Bill Humphries

Control No. 12531

Description of Sample: Six (6) soil samples received on 9/04/87;
Re: Thomason Lumber Company

Results:

	EP-Toxicity			
Sample Identification	PCP ppm	Naphthalene ppm	Acenapthalene ppm	Fluoranthrene ppm
HA-3, 0-1 ft., Process Area, 9/3/87, 7:30 am	3.0	<0.014	<0.014	<0.014
HA-3, 1-2 ft., Process Area, 9/3/87, 8:45 am	2.1	<0.014	<0.014	<0.014
HA-3, 2-3 ft., Process Area, 9/3/87, 9:30 am	0.026	<0.02	<0.02	<0.02
HA-5, 0-1 ft., Resources Rec. Area, 9/3/87, 2:15 pm	0.021	<0.012	<0.012	0.018
HA-5, 1-2 ft., 9/3/87	1.8	<0.012	<0.012	0.033
HA-4, 0-1 ft., Process Area, 9/4/87, 8:00 am	1.3	<0.012	<0.012	0.022

Method: EPA Test Methods for Evaluating Solid Waste, SW-846; EPA 8040, 8100

AMERICAN INTERPLEX CORPORATION

By Lydia Morton
Lydia Morton, Lab Director

☐ Chemistry — Metallurgy — Microbiology
☐ Member: leading scientific societies

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LABORATORIES

3400 Asher Avenue
Little Rock, Arkansas 72204
(501) 664-5060

B & F Engineering, Inc. (C-25)
928 Airport Road
Hot Springs, AR 71913-4697

November 10, 1987

ATTN: Mr. Jerry Overton

Control No. 13066

Description of Sample: One hundred ten (110) soil samples received on 10/14/87; Re: Thomason Lumber Company, Broken Bow, OK; 7-2397-0101

Results:

SEE ATTACHED DATA SHEETS

Method: EPA 3550, 8010, 8040

Remarks: Results are reported on a dry weight basis.

cc: Mr. Earl Hayes, President
Thomason Lumber & Timber Company
Post Office Drawer 278
Broken Bow, OK 74738

AMERICAN INTERPLEX CORPORATION

By Lydia Morton
Lydia Morton, Lab Director

☐ Chemistry — Metallurgy — Microbiology
☐ Member: leading scientific societies

November 24, 1987

SAMPLE KEY

Mr. Jerry Overton
B & F Engineering, Inc.
Hot Springs, Arkansas

American Interplex Corporation
Control No. 13000

Sample No. 1: Composite of SP 2.1, 0-1', 10/8/87, 9:20 a.m. and SP 2.1, 1'-2', 10/8/87, 9:27 a.m.

Sample No. 2: Composite of SP 2.1, 2'-3', 10/8/87, 9:28 a.m. and SP 2.1, 3'-4', 10/8/87, 9:35 a.m.

Sample No. 3: Composite of SP 2.1, 4'-5', 10/8/87, 9:38 a.m. and SP 2.1, 5'-6', 10/8/87, 9:43 a.m.

Sample No. 4: Composite of SP 2.1, 6'-7', 10/8/87, 9:51 a.m. and SP 2.1, 7'-8', 10/8/87, 9:53 a.m.

Sample No. 5: Composite of SP 2.1, 8'-9', 10/8/87, 10:00 a.m. and SP 2.1, 9'-10', 10/8/87, 10:21 a.m.

Sample No. 6: Composite of SP 2.1, 10'-11', 10/8/87, 10:40 a.m. and SP 2.1, 11'-12', 10/8/87, 10:45 a.m.

Sample No. 7: Composite of SP 2.1, 12'-13', 10/8/87, 10:46 a.m. and SP 2.1, 13'-14', 10/8/87, 10:55 a.m.

Sample No. 8: Composite of SP 2.1, 14'-15', 10/8/87, 11:01 a.m. and SP 2.1, 15'-16', 10/8/87, 11:13 a.m.

Sample No. 9: Composite of SP 2.1, 16'-17', 10/8/87, 11:19 a.m. and SP 2.1, 17'-18', 10/8/87, 11:27 a.m.

Sample No. 10: Composite of SP 2.1, 18'-19', 10/8/87, 12:50 p.m. and SP 2.1, 19'-20', 10/8/87, 1:01 p.m.

Sample No. 11: Composite of SP 2.1, 20'-21', 10/8/87, 1:05 p.m. and SP 2.1, 21'-22', 10/8/87, 1:26 p.m.

Sample No. 12: Composite of SP 2.1, 22'-23', 10/8/87, 1:32 p.m. and SP 2.1, 23'-24', 10/8/87, 1:40 p.m.

Sample No. 13: Composite of SP 2.1, 24'-25', 10/8/87, 2:04 p.m. and SP 2.1, 25'-26', 10/8/87, 2:15 p.m.

Sample No. 14: Composite of SP 2.1, 26'-27', 10/8/87, 2:25 p.m. and SP 2.1, 27'-28', 10/8/87, 2:32 p.m.

Sample No. 15: Composite of SP 2.1, 28'-29', 10/8/87, 3:10 p.m. and SP 2.1, 29'-30', 10/8/87, 3:16 p.m.

November 24, 1987

Mr. Jerry Overton
B & F Engineering, Inc.
Hot Springs, Arkansas

DATA SHEET

American Interplex Corporation
Control No. 13000

Sample Number	EP-TOXICITY PCP ppm	Acenaphthalene ppm	Naphthalene ppm	Fluoranthene ppm
#1	0.26	<0.005	<0.005	<0.005
#2	0.91	<0.005	<0.005	<0.005
#3	0.092	<0.005	<0.005	<0.005
#4	0.14	0.0098	<0.005	<0.005
#5	1.6	0.034	<0.005	0.016
#6	0.037	0.043	0.0091	<0.005
#7	0.051	<0.005	<0.005	<0.005
#8	0.0085	<0.005	<0.005	<0.005
#9	0.0051	<0.005	<0.005	<0.005
#10	0.029	<0.005	<0.005	<0.005
#11	<0.001	<0.005	<0.005	<0.005
#12	<0.001	<0.005	<0.005	<0.005
#13	<0.001	<0.005	<0.005	<0.005
#14	0.076	0.0098	<0.005	<0.005
#15	0.0042	<0.005	<0.005	<0.005

Note: See attached for Sample Key.

JAN 11 1988

AMERICAN INTERPLEX CORPORATION
3400 Asher Avenue
Little Rock, AR 72204
(501) 664-5060

B & F Engineering Company (C-25)
928 Airport Road
Hot Springs, AR 71913

January 6, 1988

ATTN: Mr. Jerry Overton

Control No. 13267

Description of Sample: Thirty-six (36) Soil samples received on 10/29/87. Reference Thomason Lumber Company, Broken Bow, OK. No. 7-2397-0101

Results:

Station No.	Station Location	Date	Time	PCP, ppm	Naphthalene, ppm	Acenaphthalene, ppm	Fluoranthene, ppm	Moisture, %
PA-7	0'-1'	10/28/87	7:45 am	0.76	<1	<1	3.3	4.86
PA-7	1'-2'	10/28/87	7:50 am	<0.05	<0.1	<0.1	<0.1	17.8
PA-8	0-1	10/26/87	2:20 pm	53,47	<1, <1	<1, <1	26,25	7.13
PA-8	1-2	10/26/87	2:28 pm	<0.05	<0.1	<0.1	<0.1	13.7
PA-9	0-1	10/26/87	3:30 pm	62	<1	<1	76	7.61
PA-9	1-2	10/26/87	3:05 pm	<0.05	<0.1	<0.1	0.15	7.97
PA-9	2-3	10/26/87	3:08 pm	<0.05	<0.1	<0.1	<0.1	11.6
PA-10	0-1	10/26/87	3:33 pm	53	<1	<1	79	8.44
PA-10	1-2	10/26/87	3:37 pm	2.2,3.2	<1, <1	<1, <1	18,29	9.94
PA-6	0'-1'	10/27/87	12:08 pm	0.20,0.18	<0.1	<0.1	0.60	11.1
PA-6	1'-2'	10/27/87	12:13 pm	<0.05	<0.1	<0.1	<0.1	5.48
PA-13	0'-1'	10/28/87	8:45 am	42	<1	<1	51	11.0
PA-13	1'-2'	10/28/87	8:48 am	<0.05	<1	<1	4.7	16.2
PA-13	2'-3'	10/28/87	8:53 am	<0.05	<1	<1	1.8	10.2
PA-11	0'-1'	10/27/87	9:18 am	4.8	<1	<1	20	9.37
PA-11	1'-2'	10/27/87	9:25 am	0.43	<1	<1	4.8	10.6
PA-11	2'-3'	10/27/87	9:30 am	<0.05	<1	<1	3.0	8.62
PA-11	3'-4'	10/27/87	9:37 am	<0.05	<1	<1	1.8	9.99
PA-12	0'-1'	10/27/87	10:12 am	64	<1	<1	180	4.18
PA-12	1'-2'	10/27/87	10:32 am	0.068	<1	<1	4.0	6.62
PA-12	2'-3'	10/27/87	10:38 am	<0.05	<1	<1	4.7	14.1
PA-12	3'-4'	10/27/87	10:45 am	<0.05	<1	<1	1.6	7.87
	Spike Recovery 1			99.2% @0.25 ppm	84.9% @0.5 ppm	91.6% @0.5 ppm	89.1% @0.5 ppm	
	Spike Recovery 2			106% @0.25 ppm	86.3% @0.5 ppm	93.4% @0.5 ppm	90.8% @0.5 ppm	

Method: EPA 3550, 8040, 8010

Remarks: Results are based on a dry weight basis. All other samples not analyzed as requested.
cc: Mr. Earl Hayes
Thomason Lumber Company

AMERICAN INTERPLEX CORPORATION

By Lydia Norton

Lydia Norton, Lab Director

JAN 1

B & F Engineering Company
January 5, 1988

Control NO. 13114
(Page 2 of 2 Pages)

Station No.	Station Location	Date	Time	PCP, ppm	Naphthalene, ppm	Acenaphthalene, ppm	Fluoranthene, ppm	Moisture, %
BG-3	0'-1'	10/15/87	12:38 pm	1.7	1.6	0.94	1.0	1.85
BG-3	1'-2'	10/15/87	12:44 pm	0.16	<0.1	<0.1	0.22	4.08
BG-3	2'-3'	10/15/87	1:50 pm	<0.05	<0.1	<0.1	0.16	5.57
BG-3	3'-4'	10/15/87	1:55 pm	<0.05	<0.1	<0.1	0.22	7.45
BG-3	4'-5'	10/15/87	1:58 pm	<0.05	<0.1	<0.1	0.14	8.32
BG-3	5'-6'	10/15/87	2:02 pm	<0.05	<0.1	<0.1	0.14	7.48
BG-4	0'-1'	10/15/87	2:15 pm	1.3	<0.1	<0.1	0.85	1.34
BG-4	1'-2'	10/15/87	2:17 pm	0.092	<0.1	<0.1	0.12	4.08
BG-4	2'-3'	10/15/87	2:22 pm	<0.05	<0.1	<0.1	0.13	10.3
BG-4	3'-4'	10/15/87	2:28 pm	0.054	<0.1	<0.1	<0.1	6.33
BG-5	0'-1'	10/16/87	7:45 am	0.060	<0.1	<0.1	<0.1	3.74
BG-5	1'-2'	10/16/87	7:52 am	0.064	<0.1	<0.1	<0.1	6.21
GB-5	2'-3'	10/16/87	7:56 am	<0.05	<0.1	<0.1	<0.1	17.4
GB-5	3'-4'	10/16/87	8:00 am	<0.05, <0.05	<0.1, <0.1	<0.1, <0.1	<0.1, <0.1	16.9
PA-3	0'-1'	10/16/87	8:53 am	38	<0.1	<0.1	1.7	7.98
PA-3	1'-2'	10/16/87	8:58 am	0.055	<0.1	<0.1	0.15	18.1
PA-3	2'-3'	10/16/87	9:03 am	<0.05	<0.1	<0.1	<0.1	18.6
	Spike Recovery			92.5% @0.25 ppm	86.5% @0.5 ppm	88.2% @0.5 ppm	87.7% @0.5 ppm	
				106% @0.25 ppm	91.3% @0.5 ppm	93.1% @0.5 ppm	91/8% @0.5 ppm	
				91.1% @0.25 ppm	86.3% @0.5 ppm	87.7% @0.5 ppm	88.8% @0.5 ppm	
				90.8% @0.25 ppm	82.2% @0.5 ppm	83.8% @0.5 ppm	84.6% @0.5 ppm	

Method: EPA 3550, 8040, 8010

Remarks: Results are based on a dry weight basis. All other samples not analyzed as requested.

cc: Mr. Earl Hayes
Thomason Lumber Company

AMERICAN INTERPLEX CORPORATION

By _____
Lydia Norton, Lab Director

JAN 11 1988

AMERICAN INTERPLEX CORPORATION
3400 Asher Avenue
Little Rock, AR 72204
(501) 664-5050

B & F Engineering Company (C-25)
928 Airport Road
Hot Springs, AR 71913

January 5, 1988

ATTN: Mr. Jerry Overton

Control No. 13114
(Page 1 of 2 Pages)

Description of Sample: Sixty-two (62) Soil samples received on 10/19/87. Reference Thomason Lumber Company, Broken Bow, OK. No. 7-2397-0101

Results:

Station No.	Station Location	Date	Time	PCP, ppm	Naphthalene, ppm	Acenaphthalene, ppm	Fluoranthene, ppm	Moisture, %
PA-1	0-1	10/13/87	1:37 pm	<0.05	<0.1	0.13	0.11	12.3
PA-1	1-2	10/13/87	1:40 pm	<0.05	<0.1	<0.1	<0.1	14.6
SP 1.1	20'-22'	10/13/87	9:51 am	0.15	<0.1	<0.1	<0.1	15.3
SP 1.1	22'-24'	10/13/87	9:58 am	0.57	<0.1	<0.1	1.9	19.0
SP 1.1	24'-26'	10/13/87	10:30 am	0.094	<0.1	<0.1	0.14	17.1
SP 1.1	26'-28'	10/13/87	10:36 am	3.0	<0.1	<0.1	0.53	17.4
SP 1.1	28'-30'	10/13/87	10:47 am	0.075	<0.1	<0.1	<0.1	17.0
SP 1.2	0-2	10/14/87	7:55 am	8.7	<0.1	<0.1	0.19	6.64
SP 1.2	2-4	10/14/87	8:00 am	50	1.1	<0.1	50	13.2
SP 1.2	4-6	10/14/87	8:05 am	26	0.61	<1	20	12.8
SP 1.2	6-8	10/14/87	8:08 am	5.1	<0.1	<0.1	3.2	11.8
SP 1.2	8-10	10/14/87	8:18 am	8.8	<0.1	<0.1	6.1	9.95
SP 1.2	10-12	10/14/87	8:22 am	7.6	<0.1	<0.1	5.1	10.5
SP 1.2	12-14	10/14/87	8:27 am	0.84	<0.1	<0.1	0.47	10.1
SP 1.2	14-16	10/14/87	8:40 am	46	2.7	<1	36	10.2
SP 1.2	16-18	10/14/87	8:43 am	15	0.64	<0.1	12	10.4
SP 1.2	18-20	10/14/87	9:04 am	4.4	<0.1	<0.1	5.4	10.4
SP 1.2	20-22	10/14/87	9:12 am	32	17	<1	35	11.7
SP 1.2	22-24	10/14/87	9:28 am	390	89	<1	370	11.7
SP 1.2	24-26	10/14/87	9:35 am	2.7	<0.1	<0.1	1.5	7.76
SP 1.2	26-28	10/14/87	10:04 am	5.5	<0.1	<0.1	14	9.22
SP 1.2	28-30	10/14/87	10:10 am	10	<1	<0.1	24	17.8

B & F Engineering
November 10, 1987

Control No. 13066
(Page 1 of 3 Pages)

Station No.	Station Location	Date	Time	Pentachlorophenol, ppm	Naphthalene, ppm	Acenaphthylene, ppm	Fluoranthene, ppm	Moisture %
PA-5	0'-2'	10/11/87	2:18 pm	<0.05	<0.1	<0.1	<0.1	13.5
PA-5	2'-4'	10/11/87	2:23 pm	<0.05	<0.1	<0.1	<0.1	12.7
PA-5	4'-6'	10/11/87	2:27 pm	<0.05	<0.1	<0.1	<0.1	10.4
PA-5	6'-8'	10/11/87	2:32 pm	<0.05	<0.1	<0.1	<0.1	11.4
PA-5	8'-10'	10/11/87	2:40 pm	0.31	<0.1	2.1	1.1	10.7
BG-2	0'-2'	10/12/87	8:12 am	<0.05	<0.1	<0.1	<0.1	7.09
BG-2	2'-4'	10/12/87	8:16 am	<0.05	<0.1	<0.1	<0.1	9.38
BG-2	4'-6'	10/12/87	8:23 am	<0.05	<0.1	<0.1	<0.1	12.1
BG-2	6'-8'	10/12/87	8:35 am	<0.05	<0.1	<0.1	<0.1	9.92
BG-2	8'-10'	10/12/87	8:46 am	<0.05	<0.1	<0.1	<0.1	7.46
BG-2	10'-12'	10/12/87	8:53 am	<0.05	<0.1	<0.1	<0.1	10.6
BG-2	12'-14'	10/12/87	9:07 am	<0.05	<0.1	<0.1	<0.1	10.5
BG-2	14-16	10/12/87	9:15 am	<0.05	<0.1	<0.1	<0.1	13.4
BG-2	16-18	10/12/87	10:00 am	<0.05	<0.1	<0.1	<0.1	12.2
BG-2	18'-20'	10/12/87	10:30 am	<0.05	<0.1	0.24	<0.1	11.8
BG-2	20'-22'	10/12/87	10:47 am	<0.05	0.40	<0.1	<0.1	11.6
BG-2	22'-24'	10/12/87	10:55 am	<0.05	<0.1	<0.1	<0.1	15.1
BG-2	24'-26'	10/12/87	11:00 am	<0.05	<0.1	<0.1	<0.1	9.80
BG-2	26'-28'	10/12/87	11:19 am	<0.05	<0.1	<0.1	<0.1	15.6
BG-2	28'-30'	10/12/87	11:27 am	<0.05	<0.1	<0.1	<0.1	13.0
PA-2	0'-1'	10/12/87	1:33 pm	<0.05	<0.1	<0.1	<0.1	16.1
PA-2	1'-2'	10/12/87	1:35 pm	<0.05	<0.1	<0.1	<0.1	14.3
PA-2	2'-3'	10/12/87	1:37 pm	0.15	<0.1	<0.1	0.35	12.2
PA-2	3'-4'	10/12/87	1:42 pm	0.21	<0.1	<0.1	<0.1	9.51
PA-2	4'-5'	10/12/87	1:51 pm	0.051	<0.1	<0.1	<0.1	6.84
PA-2	5'-6'	10/12/87	1:58 pm	<0.05	<0.1	<0.1	<0.1	5.17
PA-2	6'-7'	10/12/87	2:05 pm	<0.05	<0.1	<0.1	<0.1	5.57
PA-2	7'-8'	10/12/87	2:08 pm	<0.05	<0.1	<0.1	<0.1	4.86
PA-2	8'-9'	10/12/87	2:11 pm	0.83	<0.1	0.33	0.26	10.5
PA-2	9'-10'	10/12/87	2:13 pm	4.5	<0.1	0.33	0.24	12.5
SP 1.1	0-2	10/13/87	8:09 am	49	<1	14	5.6	5.02
SP 1.1	2-4	10/13/87	8:12 am	60	<1	28	24	9.05
SP 1.1	4-6	10/13/87	8:20 am	23	2.5	15	13	11.6
SP 1.1	6-8	10/13/87	8:24 am	53	3.5	23	19	13.2
SP 1.1	8-10	10/13/87	8:30 am	2.6	<0.1	1.4	1.3	11.9
SP 1.1	10-12	10/13/87	8:44 am	12	<1	5.0	4.6	9.01
SP 1.1	12-14	10/13/87	8:50 am	0.44	<0.1	0.28	0.19	9.65

B & F Engineering
November 10, 1987

Control No. 1306
(Page 2 of 3 Pag

Station No.	Station Location	Date	Time	Pentachlorophenol, ppm	Naphthalene, ppm	Acenaphthylene, ppm	Fluoranthene, ppm	Moist %
SP 1.1	14-16	10/13/87	9:05 am	0.10	<0.1	0.23	<0.1	11.0
SP 1.1	16-18	10/13/87	9:11 am	0.22	<0.1	0.26	<0.1	10.0
SP 1.1	18-20	10/13/87	9:14 am	12	<1	4.2	9.5	11.1
SP 2.2	0-1	10/09/87	7:54 am	60	<1	7.1	<1	8.50
SP 2.2	1-2	10/09/87	7:56 am	120	<1	18	6.9	5.98
SP 2.2	2-3	10/09/87	8:01 am	62	<10	120	440	8.59
SP 2.2	3-4	10/09/87	8:06 am	110	<1	23	20	3.34
SP 2.2	4-5	10/09/87	8:11 am	130	<10	180	170	14.1
SP 2.2	5-6	10/09/87	8:16 am	2.2	<1	17	32	14.5
SP 2.2	6-7	10/09/87	8:24 am	5.9	4.1	16	34	16.3
SP 2.2	7-8	10/09/87	8:28 am	170	<10	140	170	10.7
SP 2.2	8-9	10/09/87	8:33 am	130	<10	95	130	10.2
SP 2.2	9-10	10/09/87	8:40 am	1.5	<1	0.71	1.8	16.5
SP 2.2	10-11	10/09/87	8:53 am	1.9	<1	2.0	4.8	13.5
SP 2.2	11-12	10/09/87	9:00 am	3.9	<1	3.0	5.9	10.3
SP 2.2	12'-13'	10/09/87	9:08 am	0.11	<0.1	<0.1	<0.1	11.6
SP 2.2	13'-14'	10/09/87	9:11 am	8.6	<1	7.2	16	14.7
SP 2.2	14'-15'	10/09/87	9:24 am	1.8	<0.1	1.0	1.5	13.3
SP 2.2	15'-16'	10/09/87	9:28 am	0.43	<0.1	0.14	0.18	16.6
SP 2.2	16'-17'	10/09/87	9:31 am	0.18	<0.1	<0.1	<0.1	10.6
SP 2.2	17'-18'	10/09/87	9:44 am	0.55	<1	1.5	6.8	13.3
SP 2.2	18'-19'	10/09/87	9:50 am	0.23	<0.1	0.19	0.22	10.1
SP 2.2	19'-20'	10/09/87	10:02 am	1.1	<0.1	0.35	0.81	11.5
SP 2.2	20'-21'	10/09/87	10:08 am	<0.05	<0.1	<0.1	<0.1	10.6
SP 2.2	21'-22'	10/09/87	10:10 am	7.9	<1	1.9	7.3	11.6
SP 2.2	22'-23'	10/09/87	10:24 am	<0.05	<0.1	0.14	<0.1	12.8
SP 2.2	23'-24'	10/09/87	10:56 am	0.084	<0.1	0.16	0.18	12.3
SP 2.2	24'-25'	10/09/87	11:56 am	<0.05	<0.1	0.27	0.23	13.0
SP 2.2	25'-26'	10/09/87	12:05 pm	<0.05	<0.1	<0.1	<0.1	10.4
SP 2.2	26'-27'	10/09/87	12:12 pm	0.054	<0.1	0.17	0.27	11.8
SP 2.2	27'-28'	10/09/87	12:19 pm	<0.05	<0.1	0.22	0.21	12.7
SP 2.2	28'-29'	10/09/87	12:45 pm	<0.05	<0.1	0.21	0.18	10.4
SP 2.2	29'-30'	10/09/87	12:50 pm	<0.05	<0.1	0.14	0.15	11.5
PA-4	0'-1'	10/10/87	7:58 am	5.7	<1	0.34	1.2	4.48
PA-4	1'-2'	10/10/87	8:04 am	3.0	<0.1	<0.1	<0.1	4.62
PA-4	2'-3'	10/10/87	8:11 am	0.26	<0.1	0.14	<0.1	11.7
PA-4	3'-4'	10/10/87	8:16 am	0.38	<0.1	<0.1	<0.1	9.80

B & F Engineering
November 10, 1987

Control No. 13066
(Page 3 of 3 Pages

Station No.	Station Location	Date	Time	Pentachlorophenol, ppm	Naphthalene, ppm	Acenaphthylene, ppm	Fluoranthene, ppm	Moisture %
PA-4	4'-5'	10/10/87	8:23 am	7.6	<0.1	<0.1	<0.1	6.53
PA-4	5'-6'	10/10/87	8:31 am	6.8	<0.1	0.93	<0.1	9.51
PA-4	6'-7'	10/10/87	8:41 am	6.8	<0.1	<0.1	0.11	10.7
PA-4	7'-8'	10/10/87	8:52 am	0.56	<0.1	<0.1	<0.1	10.3
PA-4	8'-9'	10/10/87	8:58 am	0.98	<0.1	<0.1	<0.1	10.3
PA-4	9'-10'	10/10/87	9:01 am	0.86	<0.1	<0.1	<0.1	10.1
SP-Z.3	0'-2'	10/10/87	9:47 am	3.3	<1	1.3	3.0	27.8
SP-Z.3	2'-4'	10/10/87	9:54 am	55	<1	16	130	44.5
SP-Z.3	4'-6'	10/10/87	9:58 am	7.4	0.16	6.1	37	26.6
SP-Z.3	6'-8'	10/10/87	10:03 am	<0.05	<0.1	0.17	1.5	14.1
SP-Z.3	8'-10'	10/10/87	10:12 am	<0.05	<0.1	<0.1	0.25	12.7
SP-Z.3	10'-12'	10/10/87	10:13 am	<0.05	<0.1	<0.1	0.33	12.1
SP-Z.3	12'-14'	10/10/87	10:26 am	0.22	<0.1	0.11	<0.1	13.8
SP-Z.3	14'-16'	10/10/87	10:33 am	<0.05	<0.1	<0.1	<0.1	12.9
SP-Z.3	16'-18'	10/10/87	10:40 am	<0.05	<0.1	<0.1	0.21	11.2
SP-Z.3	18'-20'	10/10/87	11:50 am	<0.05	<0.1	<0.1	0.26	10.3
SP-Z.3	20'-22'	10/10/87	11:58 am	<0.05	<0.1	<0.1	0.28	12.6
SP-Z.3	22'-24'	10/10/87	12:08 pm	<0.05	<0.1	<0.1	<0.1	11.4
SP-Z.3	24'-26'	10/10/87	12:17 pm	<0.05	<0.1	<0.1	<0.1	11.6
SP-Z.3	26'-28'	10/10/87	12:25 pm	<0.05	<0.1	<0.1	<0.1	10.9
SP-Z.3	28'-30'	10/10/87	12:40 pm	<0.05	<0.1	<0.1	<0.1	10.4
BG-1	0'-2'	10/11/87	8:25 am	<0.05	<0.1	<0.1	<0.1	11.1
BG-1	2'-4'	10/11/87	8:29 am	<0.05	<0.1	<0.1	<0.1	11.4
BG-1	4'-6'	10/11/87	8:33 am	<0.05	<0.1	<0.1	<0.1	11.0
BG-1	6'-8'	10/11/87	8:39 am	<0.05	<0.1	<0.1	<0.1	9.53
BG-1	8'-10'	10/11/87	8:45 am	<0.05	<0.1	<0.1	<0.1	12.5
BG-1	10'-12'	10/11/87	8:52 am	<0.05	<0.1	<0.1	<0.1	10.2
BG-1	12'-14'	10/11/87	9:13 am	<0.05	<0.1	<0.1	<0.1	15.1
BG-1	14'-16'	10/11/87	9:23 am	<0.05	<0.1	<0.1	<0.1	17.0
BG-1	16'-18'	10/11/87	9:32 am	<0.05	<0.1	<0.1	<0.1	14.7
BG-1	18'-20'	10/11/87	9:43 am	<0.05	<0.1	0.11	<0.1	12.5
BG-1	20'-22'	10/11/87	10:20 am	<0.05	<0.1	<0.1	<0.1	16.9
BG-1	22'-24'	10/11/87	10:30 am	<0.05	<0.1	0.12	<0.1	15.5
BG-1	24'-26'	10/11/87	10:42 am	<0.05	<0.1	<0.1	<0.1	14.0
BG-1	26'-28'	10/11/87	11:09 am	<0.05	<0.1	<0.1	<0.1	17.0
BG-1	28'-30'	10/11/87	11:15 am	<0.05	<0.1	<0.1	<0.1	15.8

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March 1, 1988

Ms. Christina Scully
EPA
1445 Ross Avenue
Dallas, Texas 75202

Dear Ms. Scully:

Please find attached the Preliminary Site Investigation for Thomason Lumber & Timber Company, Broken Bow, Oklahoma. This document includes the results of initial borings, soils analyses, a well survey, area outcrop geology and recommendations for piezometer installation and monitoring.

Please review this document at your earliest. If you have any questions please contact me.

Thanking you for your kind consideration, I hope to hear from you soon.

Cordially,

B & F ENGINEERING, INC.

Dr. Jerry V. Overton,
Hydrogeologist

JVO/bs

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MAR 04 1988
HAZARDOUS WASTE
COMPLIANCE BRANCH

PRELIMINARY SITE INVESTIGATION
THOMASON LUMBER AND TIMBER COMPANY
BROKEN BOW, OKLAHOMA

PREPARED BY:

B & F ENGINEERING, INC.
928 AIRPORT ROAD
HOT SPRINGS, ARKANSAS 71913
PHONE NO. 501-767-2366

FEBRUARY 12, 1988

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1. INTRODUCTION

1.1 Executive Summary

Thomason Lumber and Timber Company (Thomason) operates a wood treating plant at Broken Bow, Oklahoma. Past operations at the site have resulted in the generation and storage of hazardous wastes at the facility. As part of a consent agreement with the United States Environmental Protection Agency to close inactivated hazardous waste management facilities at the plant, Thomason has agreed to prepare a hydrogeologic characterization of the site and region. The initial steps in this characterization was the advancement of four boreholes through the surficial Antlers Formation and the upper 10 feet of the DeQueen Limestone beneath the site and the extraction and analysis of soil samples from borings across the affected site. Proposed locations of piezometers and their screen intervals were then to be submitted to the EPA for approval prior to their installation. This document presents results of the initial stage of the investigation and the resulting piezometric proposals.

1.2 Site Location

Thomason Lumber and Timber Company owns and operates a wood treating plant southeast of the community of Broken Bow, in McCurtain County, Oklahoma. More specifically, the plant is located south of U.S. Highway 70 and east of Silvey Road, and occupies portions of the west half of the northeast quarter of Section 19, Township 6 South and Range 25 East. Figure 1.1 presents the location of the plant in relation to the

southeastern Oklahoma region and Figure 1.2 presents the location of the plant in relation to the Broken Bow community.

1.3 Site Regulatory History

On December 16, 1980, representatives of EPA inspected the Thomason site under authority granted by the Resource Conservation and Recovery Act of 1976 (RCRA). During that inspection, potential hazardous waste sites were evaluated, and K001 wastes, as described by 40 CFR Part 261, were found. These wastes are defined to be bottom sediment sludges from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol (PCP).

The previous owners of Thomason notified EPA of hazardous waste activity at the facility on March 9, 1981, pursuant to Section 3010(a) of RCRA. This notification identified Thomason as a generator and treator, storer or disposer of the following listed hazardous wastes:

- pentachlorophenol (PCP) (F027)
- Bottom sludge from the treatment of waste water from wood preserving processes that use creosote and/or pentachlorophenol (PCP) (K001).

In March, 1985 the present owners of Thomason entered into a consent agreement with the Oklahoma Water Resources Board (OWRB) to close the inactive surface impoundments at the Broken Bow facility. That agreement directed Thomason to remove the material from the two decommissioned surface impoundments and transport it to a permitted disposal facility. The order also directed Thomason to fill and close the ponds. OWRB notified the

Oklahoma State Department of Health (OSDH) in March, 1985 of the consent agreement with Thomason, and of the subsequent closure plan. OSDH did not intervene at that time as the agency of jurisdiction, and Thomason implemented the plan. United States Pollution Control, Inc. (USPCI) was contacted about receiving the wastes at the Lone Mountain disposal facility, and they indicated that the waste would be acceptable. Based on that information, Thomason removed and stockpiled the material from the pond bottoms, subsequent to transport for disposal. Thomason then backfilled the ponds with clay material and revegetated the area.

Although USPCI initially indicated to Thomason that the stockpiled waste would be accepted for disposal at their Lone Mountain Facility, problems at that facility resulted in their delay and, finally, their refusal to file a disposal plan for Thomason's stockpiled material. As a result, Thomason was unable to transport the stockpiled waste for disposal.

On September 4, 1985, OSDH conducted an inspection of the Thomason facility. The inspector indicated to Thomason that the surface ponds had contained designated hazardous waste, and were therefore considered to be Treatment/Disposal/Storage (T/D/S) facilities. As a result, the closure of those ponds should have been regulated by OSDH, and Thomason had unknowingly violated appropriate regulations by closing the ponds without their approval.

In an effort to assure that the plant was in regulatory compliance, Thomason corresponded with OSDH requesting a meeting to clarify regulatory responsibilities and requirements. Based on that request, a joint meeting was held among OSDH, OWRB and Thomason at McAlester, Oklahoma in October, 1985. At that meeting, OSDH indicated that they were the lead agency regulating the pond closures, and that they would issue a warning letter to Thomason stating what was necessary to bring that plant into regulatory compliance. Thomason received correspondence on February 13, 1986, which provided a 30 day period in which to address the listed citations.

On January 7, 1986, the United States Environmental Protection Agency (EPA) performed an inspection of the Thomason site. At that time EPA indicated that they had assumed jurisdiction for the Thomason facility, and were now the lead regulatory agency. This inspection was followed by a compliance order from EPA on February 24, 1986, addressing essentially the same concerns as the OSDH letter.

Because it was not clear who was acting as lead agency, and what schedules were effective for compliance, Thomason requested a joint meeting with EPA and OSDH to clarify these points. That meeting was held on or about March 10, 1986, and ended in the agreement that Thomason should request a settlement conference to address these concerns. Thomason requested that conference in correspondence on March 24, 1986.

The settlement conference was held on August 1, 1986. At that conference it was determined that the EPA compliance order, as revised by negotiation, would be the effective order. OSDH agreed to accept that order. EPA would act as lead agency, but that OSDH would have the ability of review and approval via comments to EPA.

Subsequent to that meeting, various aspects of the compliance order were negotiated. Final agreement was reached and signed on December 24, 1986 and received by Thomason on January 5, 1987.

1.4 Purpose of Document

This document reports the findings of four deep borings and soil sample analyses from the Thomason site. In addition, this document proposes the locations and screened intervals for piezometers to be installed at the Thomason site under the supervision of B&F Engineering, Inc. (B&F).

2. INITIAL SITE ANALYSIS

2.1 Aerial Photography and Mapping

Detailed topographic maps based on aerial photography were completed prior to the initiation of field work. Aerial photography was provided by R. D. Johnson Aerial Mapping Company of Little Rock, Arkansas. Maps prepared were initially at the 1" = 100' scale with topographic contour intervals of two feet. This map has since been reproduced by the Autocad System by B&F Engineering allowing for greater flexibility in scales and subsection reproduction.

2.2 Decontamination System

Prior to the initiation of field activities that potentially require equipment exposures to hazardous materials that might still be present at the site, a decontamination facility was constructed by Thomason. This facility was constructed to specifications established in the **SITE GEOHYDROLOGIC INVESTIGATION PLAN**, dated February 4, 1987. This facility was used to decontaminate all equipment during the initial phase of site characterization.

2.3 Reconnaissance and Outcrop Logging

A reconnaissance of the Thomason property and surrounding area was undertaken by a B&F Engineering Field Representative. This reconnaissance consisted of a geologic and hydrogeologic evaluation of the site and surrounding area. All visible outcrops of the lithology within a one mile radius of the facility were logged. These logs are presented in Appendix A of

this report. Figure 2.1 locates each of the outcrops presented in Appendix A.

2.4 Well Survey

A B&F Engineering Field Representative conducted a well survey for all identifiable water supply and production wells within a one mile radius of the facility. Driller's logs and well permit records for these wells were not available from the Oklahoma Water Resources Board (OWRB), probbably due to the age of those wells located. No recently excavated wells were found to have been developed within the well survey zone. Appendix B presents the results of this survey and Figure 2.2 depicts the location of all wells identified by this survey.

2.5 Test Pits

Six test pits were excavated at the Thomason facility. Logs of these test pits were taken by a B&F Field Representative. These logs are presented in Appendix C of this report. The location of each test pit is shown on Figure 2.3. After each test pit was logged the pit was backfilled with excavated materials. All equipment used in test pit excavation was decontaminated in the decontamination system described in Section 2.2 between excavations and upon completion of test pit excavations.

2.6 Initial Boreholes

Four boreholes were advanced by wash rotary techniques to characterize the geologic and hydrogeologic conditions of the Antlers Formation. Figure 2.3 depicts the location of these boreholes. Each borehole was advanced until limestone and

clays characteristic of the DeQueen Limestone was penetrated. These boreholes ranged in depth from 73 feet (B-4) to 128 feet (B-2). Each borehole was logged by a B&F Field Representative. The logs for these boreholes are presented in Appendix D of this report.

Two conceptual cross-sections were constructed from the logs obtained during the drilling operation. Figure 2.5 depicts the specific boreholes and transit used for each cross-section. Figures 2.6 and 2.7 present the two conceptual cross-sections.

Approximately 24 hours after the completion of each borehole a water level measurement was taken to determine the level to which the water in each borehole had recovered. These levels are as follows:

- B-1 42 feet below the surface (449.5 M.S.L.)
- B-2 44 feet below the surface (448.73 M.S.L.)
- B-3 50 feet below the surface (441.4 M.S.L.)
- B-4 20 feet below the surface (438.5 M.S.L.)

These water levels are also depicted on Figures 2.6 and 2.7 as the conceptual water table. Since wash rotary was utilized in the drilling operation, it is not likely that the water levels had fully equilibrated at the time measurements were taken. Consequently, it is probable that these levels are high. It was, however, imperative that the boreholes be plugged as soon as possible to reduce the potential of contamination from surface sources. Each borehole was plugged with a bentonite/cement slurry as soon as 24 hour water level measurements were attained.

Two observations may be readily made from the information presented on Figures 2.6 and 2.7. First, the general lithology of interbedded sandstones and clays within the Antlers Sandstone and the clays and limestones of the DeQueen Limestone formations are dipping to the south-southwest. Secondly, the local water table is dipping to the northeast in the areas depicted by the four boreholes discussed above. This corresponds well with the vicinity conceptual potentiometric surface as shown in Figure 2.8 of this report.

A major concern at this site is whether potential surface contaminants can migrate to the upper most aquifer beneath the site. In order to determine the permeability characteristics of clays through which the potential contaminants would be required to migrate samples were extracted from cores in the uppermost thick clay unit, below the surface cover of clayey gravel (see Figures 2.6 and 2.7), for physical laboratory analysis. The results of this analysis are presented in Appendix E of this report.

Four samples, one from each borehole, were tested. The resulting permeabilities range from 3.6E-7 to 5.6E-9 cm/sec. Plastic Index in every case was well above desired limits of 10, as was the percent passing the number 200 seive. The results of this investigation suggest that a substantial clay barrier does exist between the surface and the uppermost aquifer. It is not likely that potential surface contaminants will penetrate this clay barrier and reach the uppermost aquifer at this site.

All equipment used in the initial borings was decontaminated in the decontamination system described in Section 2.2.

2.7 Soil Sampling and Analysis

The EPA consent agreement required Thomason to determine the type and amount, if any, of hazardous waste and hazardous waste constituents present in the soil emanating from the decommissioned surface impoundments, waste pile area, process and evaporation recovery areas. A total of 24 borings were advanced with depths ranging from 3 feet where auger refusal was shallow to 30 feet beneath the closed surface impoundments. Figure 2.9 presents the location of each boring. Each of these borings was logged by a field representative from B&F Engineering. Logs of these borings are presented in Appendix F of this report.

Samples for laboratory analysis were extracted from these borings at one or two foot intervals; one foot in the shallow borings adjacent to the process and evaporation recovery areas and every two feet beneath the closed surface impoundments and waste piles. These samples were analyzed for EP Toxicity for the following constituents:

- PCP
- Acenapthalene
- Napthalene
- Fluoranthene

The results of these analyses are presented in Appendix G of this report.

Care was taken to thoroughly decontaminate all equipment, including the drilling equipment, after each borehole was completed in order not to cross-contaminate between boreholes. The equipment was decontaminated in the decontamination system described in Section 2.2. Each borehole was immediately backfilled with a bentonite/cement slurry and all water and soil extracted from each borehole, not including samples to be analyzed, were collected and stored in DOT approved drums along with all disposable equipment. These materials will be properly disposed.

2.8 Initial Uppermost Aquifer Determination

Much of the Antlers Sandstone Formation represented at the site is composed of sandstone units. Each of these sandstone units is, in turn, separated by usually thin clay beds. The exception to this is found near the base of the Antlers Sandstone where a rather thick clay bed is present. As may be seen from the borehole logs, this clay unit is uniformly dry within each borehole. The top of this clay bed, then, is interpreted to represent the base of the uppermost aquifer at this site. Based on this interpretation, and assuming the sandstone unit within which the conceptual water table is denoted on Figures 2.6 and 2.7 represents the maximum water level of the aquifer, the aquifer ranges in maximum thickness from nine feet at B-4 where the sandstones are thinnest to 49 feet at B-1 where the sandstones are thickest. Each of the other two boreholes reflect aquifer thicknesses of greater than 20 feet.

3. INITIAL PIEZOMETERS

3.1 Location

A total of six piezometer nests (P-1 through P-6) will be installed, using wash rotary techniques, at the facility. All fluids and cuttings brought to the surface will be containerized for proper disposal. These six nests will consist of one up gradient and five down gradient locations. The up gradient nest will be situated in such a manner as to determine ground water directions and vertical gradients in the aquifer. The down gradient nests will be situated to determine vertical and horizontal ground water flow paths away from any potentially contaminated sites. Figure 3.1 presents the proposed locations of the five piezometer nests.

Each piezometer nest will consist of two piezometers except the site located near the backfilled B-4 borehole north of the closed impoundments (P-6). At this location a single piezometer will be established due to the rather thin aquifer; a maximum nine feet thickness at the B-4 borehole as described in Section 2.8. Piezometer nests P-2 and P-3 are additionally designed for aquifer testing as will be discussed in Section 4.0 of this document.

During piezometer installation, well depths, screened intervals, materials and other construction details will be selected and logged by a B&F Field Representative. This information will be recorded on a standardized form. An example of this form is presented in Figure 3.2.

3.2 Screen Locations

Each piezometer nest (P-1 through P-5) will consist of two piezometers each screened at different levels of the aquifer. The shallowest screened piezometer will be screened in the upper ten feet of the aquifer as it is depicted on Figures 2.6 and 2.7. The deepest screened piezometer of the nest will be screened over the lower eight feet of the aquifer, as it is depicted on Figures 2.6 and 2.7, with the final two feet of the screen penetrating into the underlying clay formation. This will assure that the total depth of the aquifer is reached.

The sixth piezometer location (P-6) will consist of a single piezometer screened over the lower eight feet of the aquifer and also penetrating two feet into the underlying clay formation to assure that total depth of the aquifer has been reached. This piezometer is located near the backfilled B-4 borehole (see Figure 3.1).

3.3 Piezometer Design

The piezometers will be constructed of commercially manufactured, two or four inch, inside threaded, schedule 40 polyvinylchloride (PVC) casing and screen. Each screen will be ten feet in length. Solid casing will be used from the top of the screen to a minimum of two feet above the ground surface. One piezometer nest (P-2) will be constructed of four inch PVC to accommodate a pump for aquifer testing purposes. Each of the remaining nests will be constructed of two inch PVC. All casing and screen will be decontaminated by steam cleaning prior to installation. The bottom of the piezometer will be capped with a sump cup to

collect any fine grained sediment which might enter the well. Figure 3.3 presents typical details for the proposed piezometers.

3.4 Piezometer Filter Pack and Annular Sealant

The piezometer filter packs will be constructed of well rounded, clean quartz sand. This material will be sized based on the results of the initial borings and with additional information provided at the time of well advancement based on the grain size of cuttings brought to the surface from the borehole at the depth of screening. The sand will be placed using a tremie pipe to a distance of one foot above the top of the screen.

Bentonite pellets and bentonite/cement slurry grout will be used to seal the open annular space above the filter pack in each piezometer. The distribution of the annular sealants in the proposed piezometers is shown in Figure 3.3. The bottom part of the annular seal will consist of two feet of certified sodium bentonite pellets above the filter pack. The bentonite pellet seal will be installed by dropping the pellets directly down the borehole, and tamping them down to prevent bridging.

The remaining annular space will be sealed to within 3 feet of the surface with a bentonite/cement slurry grout. Expanding cement will be used to fill the annular space to the surface and to construct a surface pad. The expanding cement and bentonite/cement slurry grout will be prepared using clean water from the Broken Bow city water system and placed in the borehole, using a tremie pipe. A four inch apron of expanding concrete extending a minimum of three feet from the outer edge of the

casing will be placed above the annular seal. The piezometer casing will be provided with a flanged cap to prevent the entrance of foreign material. A one-quarter inch vent hole will be placed in the casing to provide an avenue for the escape of gas. In areas subject to vehicular traffic, concrete or steel bumper guards will be placed around the well to prevent external damage by trucks or other vehicles colliding with the exposed casing.

3.5 Well Intake Design

The width of the screen intakes for the proposed piezometers will be less than the diameter of 90% of the individual grains in the filter pack material, as suggested by Driscoll (1986). This should assure sufficient groundwater flow to each piezometer, minimize the passage of formation materials into the piezometer, and assure sufficient structural integrity to prevent the collapse of the intake structure.

3.6 Piezometer Development

The proposed piezometers will be developed by hand bailing until the water is clear and free of sediment as determined by a B&F field representative. Water removed from the piezometers will be discharged into DOT approved drums placed beside each piezometer. As necessary, water will be pumped from each piezometer drum into drums mounted on the back of a pickup truck, and transported to the Separator/Evaporator, where the water will be disposed.

Teflon bailers will be used to bail the piezometers. Each bailer will be decontaminated prior to each use.

3.7 Water Level Monitoring

Water levels in the piezometers will be measured using an electric wire line. These measurements will be taken by a B&F Field Representative weekly for eight weeks. Measurements will be recorded on a standard form. An example of the form is presented in Figure 3.4. Prior to the initial water level measurements the elevations of the casing tops will be surveyed by a registered surveyor, tying that information into permanently established geologic benchmarks.

The wire line electrode and the sections of the cable that are inserted into the casing will be thoroughly decontaminated after every water level measurement to assure that cross-contamination between piezometers does not occur.

4. AQUIFER TESTING

B&F Field Representatives will perform two 48 to 72 hour aquifer tests as needed using the installed piezometer system to determine horizontal and vertical permeabilities. The first test will be performed by pumping the shallowest four inch diameter piezometer at P-2, and monitoring changes in the shallow piezometer at P-3 and in the associated deep four inch diameter piezometer at P-2 (see Figure 3.1). The second test will be conducted by pumping the deep four inch diameter piezometer at P-2 and monitoring changes in the deep piezometer at P-3 and the shallow four inch diameter piezometer at P-2 (see Figure 3.1). The data from these tests will be reduced using standard hydrogeologic procedures and appropriate computer software packages, depending on the conditions that are encountered at the site.

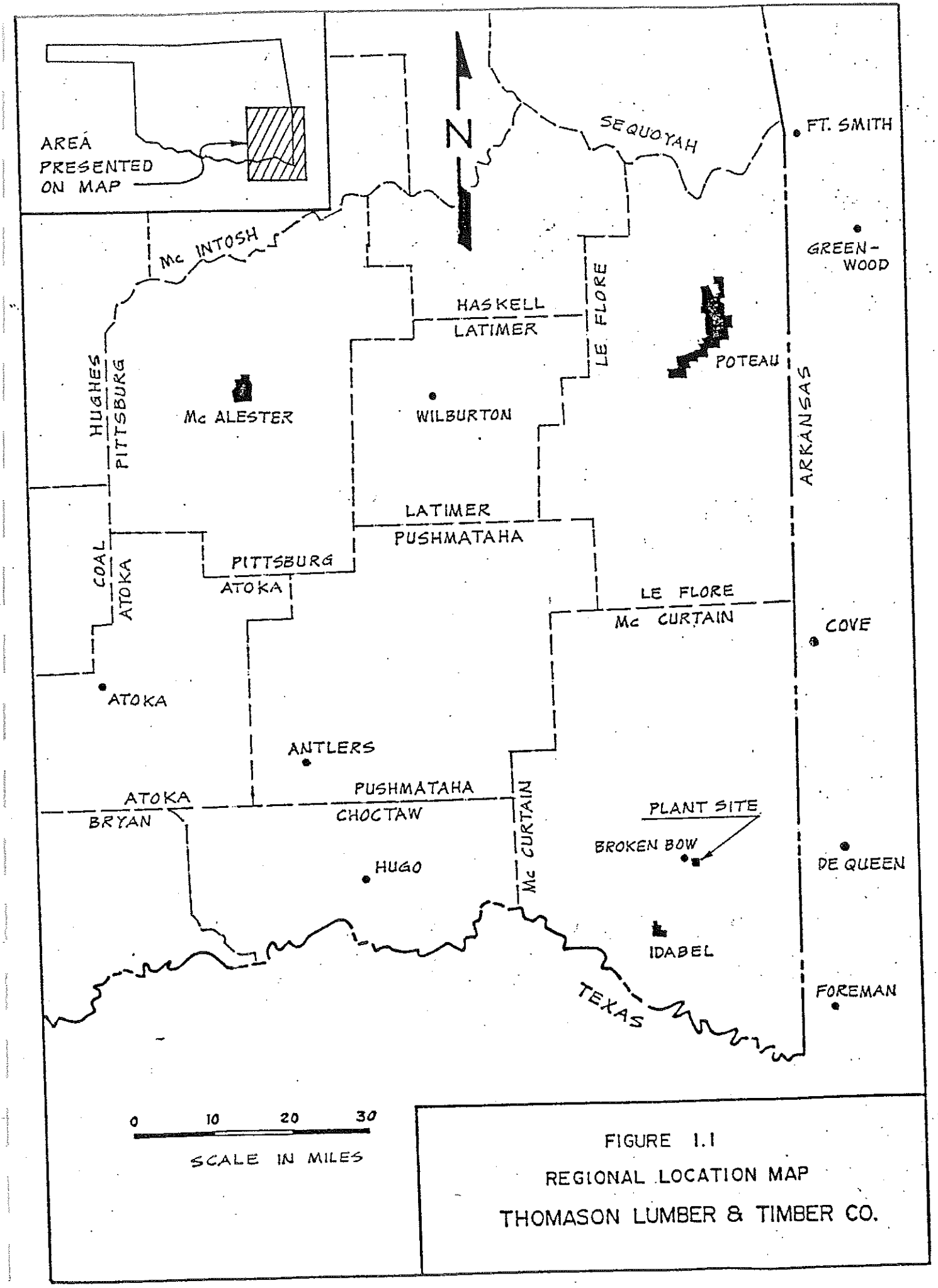
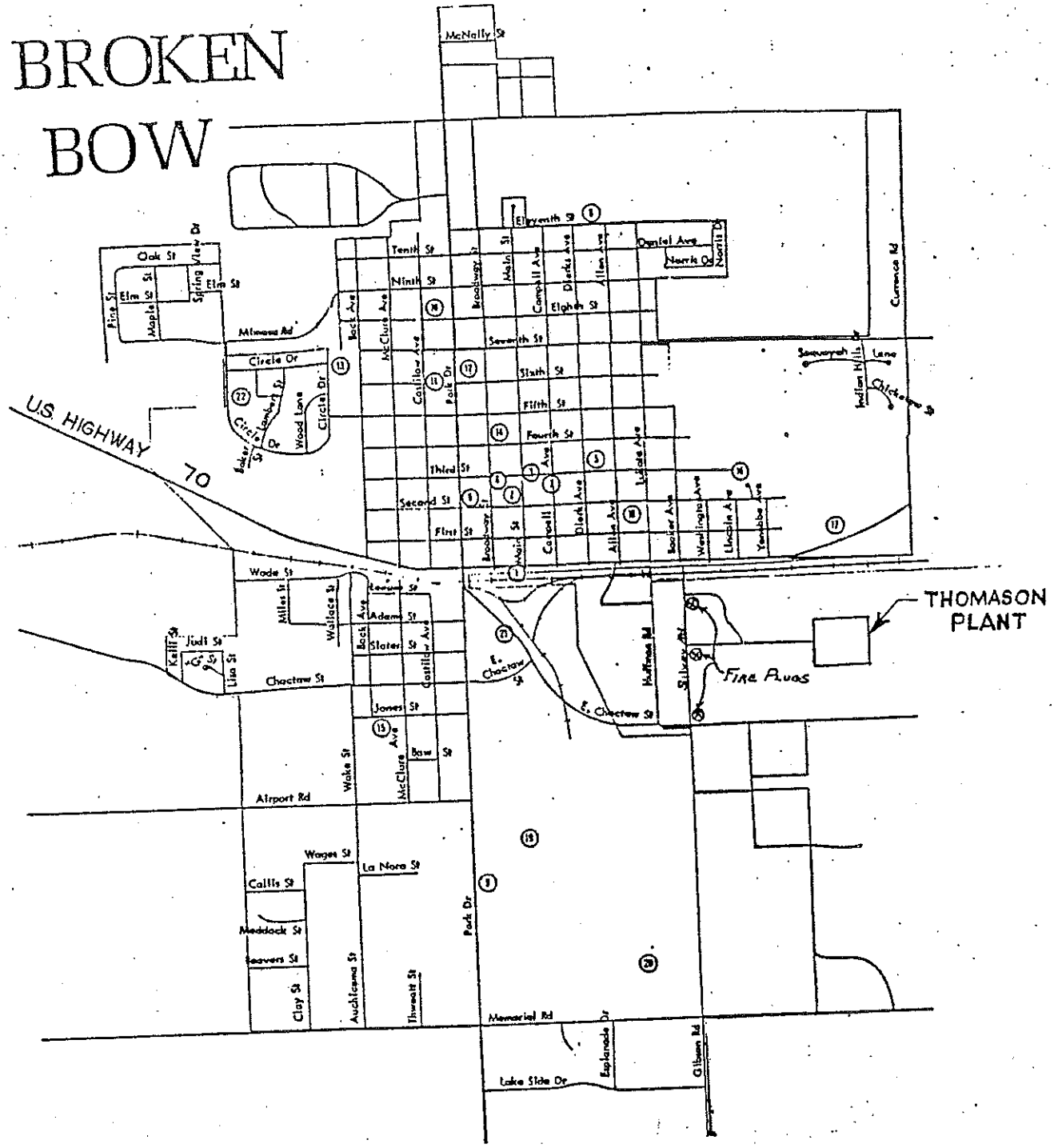


FIGURE 1.1

REGIONAL LOCATION MAP

THOMASON LUMBER & TIMBER CO.



Surv.			B&F ENGINEERING, INC. 928 AIRPORT RD., HOT SPRINGS, ARK. 71913 • 767-2366
Dwn.	SHM	2/87	FIGURE 1.2 PLANT VICINITY THOMASON LUMBER & TIMBER CO. BROKEN BOW OKLAHOMA
Ck.	WEH	2/87	
Approved:			

DWG. NO. 7-2397-0101
SCALE: N.T.S.
DATE: FEB. 1987
BK. NO.

Hall 8053

Figure 3.2

HOLE NO.

DRILLING LOG

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

SHEET 1 OF SHEETS

1. PROJECT

2. DATE HOLE — STARTED — COMPLETED

3. JOB NUMBER — HOLE NO.

4. PURPOSE OF HOLE (monitoring well, test boring, etc.)

5. DRILLING AGENCY

6. TYPE DRILL RIG

7. NAMES OF DRILLER AND CREW

8. SIZE AND TYPE OF SAMPLER AND/OR BIT(S)

9. LOCATION (coordinates or station)

10. LOCATION SKETCH (reference to design baseline and/or monuments)

11. DATUM FOR ELEVATION SHOWN (TBM or MSL)

12. WATER LEVEL ELEVATION — DURING DRILLING — AFTER _____ HRS — date, time, elev

13. ELEVATION TOP OF HOLE

14. DIRECTION OF HOLE — ☐ VERTICAL ☐ INCLINED _____° FROM VERTICAL — BEARING, ref. to magnetic north

15. THICKNESS OF OVERBURDEN

16. DEPTH DRILLED INTO ROCK

17. TOTAL DEPTH OF HOLE

18. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED

19. TOTAL NO. CORE BOXES

20. TOTAL CORE RECOVERY FOR BORING

21. SOIL SAMPLING (if applicable)

☐ Blows per foot Number required to drive 1 3/8" splitspoon with 140 lb. hammer falling 30".

☐ Soils FIELD classified in accordance with the Unified Soil Classification System

☐ Soils LAB classified

22. SAMPLES SENT TO LAB FOR TESTING

23. SPECIAL FIELD TEST CONDUCTED (list with brief summary of results)

24. LOGGED BY

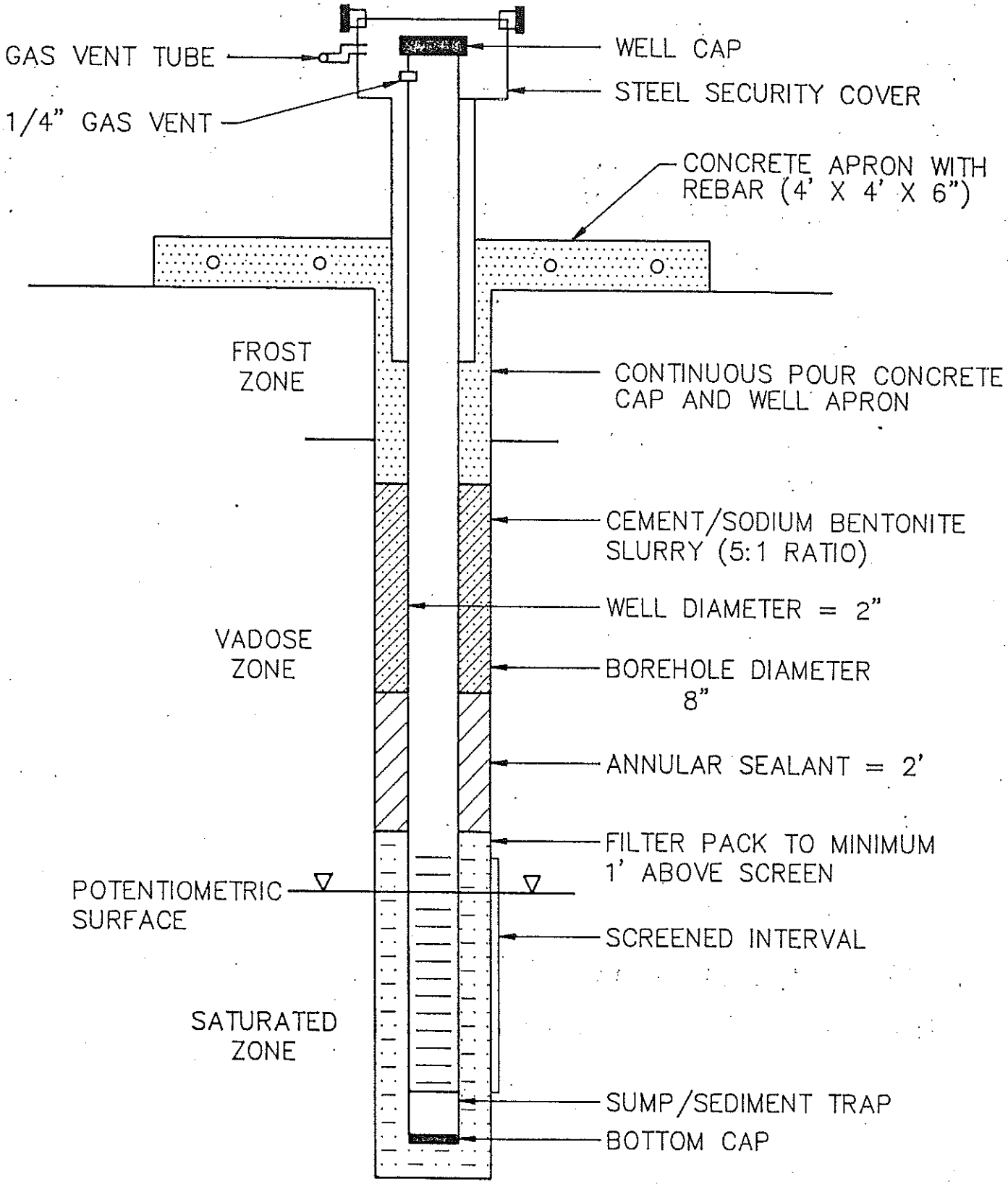
25. DRILL LOG CHECKED BY

HOLE NO.

Figure 3.2

DRILLING LOG (Cont. sheet)	B&F ENGINEERING, INC. 928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366	HOLE NO.
PROJECT	ELEVATION TOP OF HOLE	SHEET OF SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)



TYPICAL PIEZOMETER
FIGURE 3.3

WELL INFORAMTION									LIGHT PHASE LEVEL		WATER LEVEL		HEAVY PHASE LEVEL		THICKNESS		
WELL LOCATION	INSTALLATION DATE	GROUND SURFACE ELEVATION (FT.MSL)	REFERENCE POINT ELEVATION (FT.MSL)	TOTAL DEPTH FROM REF.PT. (FEET)	STICKUP (FEET)	DEPTH FROM GROUND SURFACE (FEET)	DATE	MEASURED BY	DEPTH FROM REFERENCE POINT (FEET)	LIGHT PHASE SURFACE ELEVATION (FT.MSL)	DEPTH FROM REFERENCE POINT (FEET)	WATER SURFACE ELEVATION (FT.MSL)	DEPTH FROM REFERENCE POINT (FEET)	HEAVY PHASE SURFACE ELEVATION (FT.MSL)	LIGHT PHASE	WATER	HEAVY PHASE

JOB NAME

JOB NUMBER

B&F ENGINEERING, INC.

Figure 3.4

APPENDIX A

OUTCROP LOG:

#1

SHALLOW ROAD CUT

ELEV. (Ft.)	STRATUM DEPTH (Ft.)	VISUAL SOIL DESCRIPTION	REMARKS
400'	0-8"	Weathered shale w/gravel as soil	Br., gravel = predominantly silica, to 1.5" diam., well rounded.
	8"-2'	Shale, w/S.S. nodules to 1" diameter	Friable, Rd.
	Covered		

NOTES:

Water level as noted

Water level at time of excavation

q_p Hand Penetrometer Test (TSF)

T.V. Torvane Test (TSF)

F.D. Field Density Test (Ft.)

Method of Excavation:

OUTCROP NUMBER: 1

DATE LOGGED: 8/5/87 JVO

JOB NUMBER: 7-2397-0101

OUTCROP LOG
#2
SHALLOW ROAD CUT

ELEV. (Ft.)	STRATUM DEPTH (Ft.)	VISUAL SOIL DESCRIPTION	REMARKS
475'	0-1'	Weathered shale w/gravel as soil	Dk Br. to gray w/1.5" diam. silica gravel
	1'-3'	Gravel w/clay	Rd., gravel is predominantly silica to 1.5", well rounded
	Covered		

NOTES:

Water level as noted

Water level at time of excavation

q_p Hand Penetrometer Test (TSF)

T.V. Torvane Test (TSF)

F.D. Field Density Test (Ft.)

Method of Excavation:

OUTCROP NUMBER: 2

DATE LOGGED: 8/5/87 JVO

JOB NUMBER: 7-2397-0101

OUTCROP LOG:

#3

SHALLOW ROAD CUT

ELEV. (Ft.)	STRATUM DEPTH (Ft.)	VISUAL SOIL DESCRIPTION	REMARKS
445'	0-4"	Weathered shale w/gravel as soil	Dk. Br. to gray
	4"-2'	Shale w/small S.S. nodules	Rd. Friable
	Covered		

NOTES:

Water level as noted

Water level at time of excavation

q_p Hand Penetrometer Test (TSF)

T.V. Torvane Test (TSF)

F.D. Field Density Test (Ft.)

Method of Excavation:

OUTCROP NUMBER: 3

DATE LOGGED: 8/5/87 JVO

JOB NUMBER: 7-2397-0101

OUTCROP LOG
#4

ELEV. (Ft.)	STRATUM DEPTH (Ft.)	VISUAL SOIL DESCRIPTION	REMARKS
452'	0-6"	Gravel w/clay	Gravel is well rounded predominantly silica to 2" diam.
	6"-3'	S.S. - V. weathered	Very friable, V. fine grained, blue to Rd., massive
	Covered		

NOTES:

Water level as noted

Water level at time of excavation

q_p Hand Penetrometer Test (TSF)

T.V. Torvane Test (TSF)

F.D. Field Density Test (Ft.)

Method of Excavation:

OUTCROP NUMBER: 4

DATE LOGGED: 8/5/87 JVO

JOB NUMBER: 7-2397-0101

OUTCROP LOG:
#5
(EROSION CUT PARALLEL TO R.R. TRACK)

ELEV. (Ft.)	STRATUM DEPTH (Ft.)	VISUAL SOIL DESCRIPTION	REMARKS
440'	0-6"	Weathered shale/sandstone as soil	Weathered shale & S.S. soil - Br. to gray
	6"-5'	S.S. - V. weathered	V. fine Gr., tan to Blue/gray, friable, fractured on 4-5" joints @ N°. 7 E°
	5'-5'6"	Shale -	Bl./gray, friable
	5'6"-7'	S.S. - V. weathered	V. fine grained, tan to blue/gray V. friable
	Covered		

NOTES:

Water level as noted

Water level at time of excavation

q_p Hand Penetrometer Test (TSF)

T.V. Torvane Test (TSF)

F.D. Field Density Test (Ft.)

Method of Excavation:

OUTCROP NUMBER: 5

DATE LOGGED: 8/5/87 JVO

JOB NUMBER: 7-2397-0101

OUTCROP LOG
#6
HWY. ROAD CUT

ELEV. (Ft.)	STRATUM DEPTH (Ft.)	VISUAL SOIL DESCRIPTION	REMARKS
440'	0-6'	Weathered sdy. sh. w/gravel	Rd - tan, gravel composed of S.S. & silica nodules up to 1" diam.
	6'-8'	Massive S.S. (weathered)	V. friable, V. fine Gr., orange to white
	8'-10'	Sdy. shale (S.S. is highly weathered w/interbedded shale)	S.S. = white Sh. = Rd.
	10'-10'6"	S.S. (weathered)	Rd./white, V. fine Gr., V.friable
	10'6"-13'	Shale	Rd., w/white S.S. streaks & nodules
	13'-15'	Shale/clay w/gravel	Rd., gravel = S.S. & silica w/ clay to 1.5" diam.
	15'-15'8"	S.S. (weathered)	Rd. w/white streaks, V. fine Gr., V. friable
	Covered		

NOTES:

Water level as noted

Water level at time of excavation

q_p Hand Penetrometer Test (TSF)

T.V. Torvane Test (TSF)

F.D. Field Density Test (Ft.)

Method of Excavation:

OUTCROP NUMBER: 6

DATE LOGGED: 8/5/87 JVO

JOB NUMBER: 7-2397-0101

OUTCROP LOG:
#7
CREEK BOTTOM

ELEV. (Ft.)	STRATUM DEPTH (Ft.)	VISUAL SOIL DESCRIPTION	REMARKS
385'	0-10"	Exposed L.S. in creek bottom Good, exposed fracture pattern N 47° W S 40° W N 54° W S 35° W N 45° W S 55° W N 50° W S 60° W N 40° W N 55° W N 50° W	Fossiliferous

NOTES:

Water level as noted

Water level at time of excavation

q_p Hand Penetrometer Test (TSF)

T.V. Torvane Test (TSF)

F.D. Field Density Test (Ft.)

Method of Excavation:

OUTCROP NUMBER: 7

DATE LOGGED: 8/5/87 JVO

JOB NUMBER: 7-2397-0101

OUTCROP LOG
#8
R.d. CUT ACROSS Rd. FROM THOMASON
MAIN OFFICE ENTRANCE

ELEV. (Ft.)	STRATUM DEPTH (Ft.)	VISUAL SOIL DESCRIPTION	REMARKS
500'	0-4'	Sdy/silty sh. to clay	Near surface becomes soil Zone (Clay), tan to orange below, gray above.
	4'-7'6"	Weathered S.S. w/3 layers of sh. each approx. 1/2" thick (Horizontal Layers)	S.S. - orange, friable no x-bedding. Sh. - Rd., Friable.
	7'6"-8'	Shale w/S.S. lenses (V. thin)	Stiff, blue (Reduction)
	8'-10'	S.S. (Weathered)	Orange, friable, V. fine Gr.
	10'-12'	Shale	V. hard, Bl/Rd.
	Covered		

NOTES:

Water level as noted

Water level at time of excavation

q_p Hand Penetrometer Test (TSF)

T.V. Torvane Test (TSF)

F.D. Field Density Test (Ft.)

Method of Excavation:

OUTCROP NUMBER: 8

DATE LOGGED: 8/5/87 JVO

JOB NUMBER: 7-2397-0101

OUTCROP LOG

#9

Rd. CUT ON HWY. (SAME SIDE AS THOMASON)

APPROX. 100 yd. WEST OF THOMASON MAIN OFFICE

ELEV. (Ft.)	STRATUM DEPTH (Ft.)	VISUAL SOIL DESCRIPTION	REMARKS
490'	0'-8'	Sdy. Sh. w/gravel	Rd. to gray, silica & S.S. gravel w/sh. & clay
	8'-18'	S.S.	Yellow/orange, V. fine Gr., significant cross bedding friable. (Lower 3' V. dk. Rd. color)

NOTES:

Water level as noted

Water level at time of excavation

q_p Hand Penetrometer Test (TSF)

T.V. Torvane Test (TSF)

F.D. Field Density Test (Ft.)

Method of Excavation:

OUTCROP NUMBER: 9

DATE LOGGED: 8/5/87 JVO

JOB NUMBER: 7-2397-0101

OUTCROP LOG
#10
S.W. CORNER OF RESOURCE
RECOVERY AREA

ELEV. (Ft.)	STRATUM DEPTH (Ft.)	VISUAL SOIL DESCRIPTION	REMARKS
480'	0-5'	Gravel w/gray to Rd. weathered shale	Gray to Rd., grave = high silica content, well rounded, to 1.5" diam.
	5'-8'	Shale (Weathered)	Rd. to tan, friable
	Covered		

NOTES:

Water level as noted

Water level at time of excavation

q_p Hand Penetrometer Test (TSF)

T.V. Torvane Test (TSF)

F.D. Field Density Test (Ft.)

Method of Excavation:

OUTCROP NUMBER: 10

DATE LOGGED: 8/5/87 IVO

JOB NUMBER: 7-2397-0101

OUTCROP LOG:
#11
SOUTH EAST SIDE OF RESOURCE RECOVERY AREA

ELEV. (Ft.)	STRATUM DEPTH (Ft.)	VISUAL SOIL DESCRIPTION	REMARKS
490'	0'-6'	Interbedded sh./S.S.	Rd., Predominantly shale
	6'-9'	S.S. - (Weathered)	V. Fine Gr., Rd. w/white streaks, V. friable
	9'-10'	Shale	Rd, friable
	10'-10'6"	S.S.	Rd., w/white streaks, V. fine Gr., friable
	Covered		

NOTES:

Water level as noted

Water level at time of excavation

q_p Hand Penetrometer Test (TSF)

T.V. Torvane Test (TSF)

F.D. Field Density Test (Ft.)

Method of Excavation:

OUTCROP NUMBER: 11

DATE LOGGED: 8/5/87 JVO

JOB NUMBER: 7-2397-0101

OUTCROP LOG:
#12
NORTH OF SAWDUST PILE

ELEV. (Ft.)	STRATUM DEPTH (Ft.)	VISUAL SOIL DESCRIPTION	REMARKS
	0-1.5'	Weathered shale w/gravel	Some S.S. nodules (Rd.), gray to ashen
	1.5'-3'	Shale	Rd., friable
	Covered		

NOTES:

Water level as noted

Water level at time of excavation

q_p Hand Penetrometer Test (TSF)

T.V. Torvane Test (TSF)

F.D. Field Density Test (Ft.)

Method of Excavation:

OUTCROP NUMBER: 12

DATE LOGGED: 8/5/87 JVO

JOB NUMBER: 7-2397-0101

APPENDIX B

THOMASON LUMBER COMPANY
BROKEN BOW, OKLAHOMA
AREA WELL SURVEY

WELL NUMBER	SURFACE ELEVATION(1)	WELL D.T.W.(2)	WATER LEVEL ELEVATION	COMMENTS
1	410	11	399	Dug well
2	405			Creek-below NPDES outflow
3	465			Dug well-filled w/trash
4	458			Dug well-filled w/trash
5	454	11.3	442.7	
6	469	21.3	447.7	
7	455	8.2	446.8	
8	445	4.7	440.3	
9	448	17.1	430.9	
10	440	40	400	W.L. provided by owner
11	390	14.1	375.9	
12	380	7.7	372.3	Approximately 10 ft. from channel
13	440	0	440	Seep
14	415	0	415	Dry creek bed

(1) Surface elevation taken from topographic map 1:24,000 scale.

(2) Measured with an electric wire line.

APPENDIX C

TEST PIT RECORD

ELEV. (Ft.)	STRATUM DEPTH (Ft.)	VISUAL SOIL DESCRIPTION	REMARKS
		Gravel, clayey, red, dry	Limonite at 2.5'
	2.5	Conglomerate with sandstone matrix, red to tan, very weathered, dry Gravel granule to 4" diameter average diameter 1" quartz Sandstone, fine to medium, clayey	
	8.0		Total Depth 8.0'
			SIZE OF TEST PIT: 3' x 8'
			ORIENTATION OF TEST PIT: East to West

NOTES:

Water level as noted

Water level at time of excavation

q_p Hand Penetrometer Test (TSF)

T.V. Torvane Test (TSF)

F.D. Field Density Test (Ft.)

Method of Excavation:

TEST PIT NUMBER: 1

DATE EXCAVATED: 9/14/87

JOB NUMBER: 7-2397-0101

TEST PIT RECORD

ELEV. (Ft.)	STRATUM DEPTH (Ft.)	VISUAL SOIL DESCRIPTION	REMARKS
		Gravel, clayey, red, very compacted, dry	
	2.0	Conglomerate with sandstone matrix, red on weathered surfaces, tan on unweathered surfaces, dry. Gravel granule to 4" dia., 1" average diameter. Sandstone, fine to medium, clayey	
	6.5		Total Depth 6.5'
			SIZE OF TEST PIT: 3' x 8'
			ORIENTATION OF TEST PIT: East to West

NOTES:

Water level as noted

Water level at time of excavation

q_p Hand Penetrometer Test (TSF)

T.V. Torvane Test (TSF)

F.D. Field Density Test (Ft.)

Method of Excavation:

TEST PIT NUMBER: 2

DATE EXCAVATED: 9/14/87

JOB NUMBER: 7-2397-0101

TEST PIT RECORD

ELEV. (Ft.)	STRATUM DEPTH (Ft.)	VISUAL SOIL DESCRIPTION	REMARKS
	1.0	Gravel, clayey, red, very compacted, dry	
	7.5	Conglomerate with sandstone matrix, red on weathered surfaces, tan on unweathered surfaces, dry Gravel granule to 4" dia., 1" average diameter. Sandstone, fine to medium, clayey	Total Depth 7.5'
			SIZE OF TEST PIT: 3' x 8'
			ORIENTATION OF TEST PIT: North to South

NOTES:

Water level as noted

Water level at time of excavation

q_p Hand Penetrometer Test (TSF)

T.V. Torvane Test (TSF)

F.D. Field Density Test (Ft.)

Method of Excavation:

TEST PIT NUMBER: 3

DATE EXCAVATED: 9/14/87

JOB NUMBER: 7-2397-0101

TEST PIT RECORD

ELEV. (Ft.)	STRATUM DEPTH (Ft.)	VISUAL SOIL DESCRIPTION	REMARKS
		Gravel, clayey, red, dry compacted	
	2	Conglomerate with sandstone matrix, red on weathered surfaces, tan on unweathered surfaces Gravel granule to 4" dia., 1" average diameter Sandstone, fine to medium, clayey	
	6		Total Depth 6'
			SIZE OF TEST PIT: 3' x 8'
			ORIENTATION OF TEST PIT: North to South

NOTES:

Water level as noted

Water level at time of excavation

q_p Hand Penetrometer Test (TSF)

T.V. Torvane Test (TSF)

F.D. Field Density Test (Ft.)

Method of Excavation:

TEST PIT NUMBER: 4

DATE EXCAVATED: 9/14/87

JOB NUMBER: 7-2397-0101

TEST PIT RECORD

ELEV. (Ft.)	STRATUM DEPTH (Ft.)	VISUAL SOIL DESCRIPTION	REMARKS
		Gravel, clayey, red, dry	
	2.0	Clay, fine-medium sandy, red, dry	
	3.0	Sandstone, fine to medium, clayey very weathered, dry	
	4.0	Conglomerate with sandstone matrix, red on weathered surfaces, gray on unweathered surfaces, dry gravel granule to 4" diameter, average diameter 1" Sandstone fine to medium, clayey	
	7.5		Total Depth 7.5'
			SIZE OF TEST PIT: 3' x 8'
			ORIENTATION OF TEST PIT: North to South

NOTES:

Water level as noted

Water level at time of excavation

q_p Hand Penetrometer Test (TSF)

T.V. Torvane Test (TSF)

F.D. Field Density Test (Ft.)

Method of Excavation:

TEST PIT NUMBER: 5

DATE EXCAVATED: 9/14/87

JOB NUMBER: 7-2397-0101

TEST PIT RECORD

ELEV. (Ft.)	STRATUM DEPTH (Ft.)	VISUAL SOIL DESCRIPTION	REMARKS
		Gravel, clayey, red, dry gravel ranges from granual size up to 4" diameter, average diameter 1"	
	3.5	Gravel, clayey, limonite cemented, very hard, yellowish tan to red, dry	
	4.5	Clay, silty, sandy, occasional gravel, red in upper part, becoming gray and red mottled with depth, very stiff, dry	
	7.5		Total Depth 7.5'
			SIZE OF TEST PIT: 3' x 8'
			ORIENTATION OF TEST PIT: East to West

NOTES:

Water level as noted

Water level at time of excavation

q_p Hand Penetrometer Test (TSF)

T.V. Torvane Test (TSF)

F.D. Field Density Test (Ft.)

Method of Excavation:

TEST PIT NUMBER: 6

DATE EXCAVATED: 9/14/87

JOB NUMBER: 7-2397-0101

APPENDIX D

RILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

B - 1
HOLE NO.

JECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 1 OF 7 SHEETS

V.	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
		Gravel, clayey, red gravel 1/4" to 1" average diameter		CORE 1 0 TO 1.5'		Push 1: 0 to 1.5'
	1					
						Augered to 2'
	2			CORE 2 2' to 3.5'		Push 2: 2' to 3.5'
	3					
						Augered to 4'
	4			JAR 1 4' to 5.5'		Push 3: 4' to 5.5'
	5					
						Augered to 6'
	6			JAR 2 6' to 7.5'		Drive 1: 6' to 7.5' Auger cutting indicated sand, clayey, gray 7.5' to 8'
		Wood fragments 6' to 7.5'				
	7					
						Augered to 8'
	8	Clay, gravelly, stiff		CORE 3 8' to 9.5'		Push 4: 8' to 9.5'
	9					
		Clay, silty, gravelly, gray on unweathered surfaces, red on weathered surfaces, weathered material approximately 85% of core, core stiff, slightly moist				Augered to 10'
	10			CORE 4 10' to 12.5'		Push 5: 10' to 12.5'
	11					
	12					
						Augered to 12'
	13	At 13' to 14.5' weathered material approximately 50%		CORE 5 JAR 3 13' to 14.5'		Push 6: 13' to 14.5'
	14					
		Clay, silty, sandy, gray, iron stain mottler, stiff -				Augered to 15'
	15			Core 6 JAR 4 15' to 16.6'		Push 7: 15' to 16.5'
	16					
						Augered to 17'
	17			JAR 5 17' to 18'		Drive 2. 17' to 18'
	18	Sandstone, fine to medium, silty, iron stains				

DRILLING LOG (Cont. sheet)	B&F ENGINEERING, INC. 928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366	B - 1 HOLE NO.
PROJECT THOMASON LUMBER COMPANY	ELEVATION TOP OF HOLE	SHEET 2 OF 7 SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
		Clay, sandy, silty, iron stains stiff, slightly moist on interior		BOX 1 18' to 28'		Pull #1: 18' to 23' Ran 5 Rec. 100%
	19					
	20					
	21					
	22					
	23					Pull #2: 23' to 28' Ran 5 Rec. 100%
	24					
	25					
	26					
	27					
	28			BOX 2 28' to 38'		Pull #3: 28' to 33' Ran 5 Rec. 100%
	29	Sandstone, fine to medium, silty, clayey, tan, gray silty clay stringers along bedding planes				
	30					
	31					
	32					
	33					Pull #4: 33' to 38' Ran 5 Rec. 95%
	34					
	35					
	36					

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

B - 1
HOLE NO.

PROJECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 3 OF 7 SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
	37					
	38	Sandstone, fine to medium, very clayey, tan and red, iron stains and manganese stains		BOX 3 38' to 48'		Pull #5: 38' to 43' Ran 5 Rec. 100%
	39					
	40					
	41					
	42					
	43	Clay, sandy, silty, tan				Pull #6: 43' to 48' Ran 5 Rec.
	44	Sandstone, fine to medium, tan				
	45					
	46					
	47	Clay, silty, sandy, tannigh, gray with iron stains				
	48			BOX 4 48' to 58'		Pull #7. 48' to 53' Ran 5 Rec. 25%
	49	Sandstone, fine to medium, tan iron stains 53' to 54.5'				
	50					
	51					
	52					
	53					Pull #8: 53' to 58' Ran 5 Rec. 75%
	54					

RILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

B - 1
HOLE NO.

ECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 4 OF 7 SHEETS

%	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
	55	Clay, silty, gray, iron stains				
	56	Sandstone, fine to medium, tan, iron stains				
	57					
	58	Sandstone, clayey, silty, gray, iron stain mottling approximately 25%		BOX 5 58' to 68'		Pull #9: 58' to 63' Ran 5 Rec. 100%
	59					
	60					
	61					
	62					
	63					Pull #10: 63' to 68' Ran 5 Rec. 80%
	64					
	65					
	66					
	67					
	68	Sandstone, fine, silty, gray to tan, clay stringers along bedding planes at ¼" to ½" intervals		BOX 6 68' to 78'		Pull #11: 68' to 73' Ran 5 Rec. 75%
	69					
	70					
	71					
	72					

RILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

B - 1
HOLE NO.

ECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 5 OF 7 SHEETS

DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
73					Pull #12: 73' to 78' Ran 5 Rec. 95%
74	Sandstone, very fine to fine, clayey, silty, gray				
75					
76					
77					
78	Clay, silty, fine sandy, dark gray, interior of core slightly damp		BOX 7 78' to 88'		Pull #13: 78' to 83' Ran 5 Rec. 95%
79					
80					
81					
82					
83					Pull #14: 83' to 88' Ran 5 Rec. 100%
84					
85					
86					
87					
88			BOX 8 88' to 98'		Pull #15: 88' to 93' Ran 5 Rec. 35%
89	Sandstone, fine, silty, gray				
90					

RILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

B - 1
HOLE NO.

CT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 6 OF 7 SHEETS

V.	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
	91					
	92					
	93	Clay, fine, silty, gray, thin sand stringers along bedding planes				Pull #16: 93' to 98' Ran 5 Rec. 85%
	94					
		Sandstone, fine silty, gray				
	95					
	96	Sandstone, fine, silty, clayey thin clay stringers along bedding planes				
	97					
	98			BOX 9 98' to 108'		Pull #17: 98' to 103' Ran 5 Rec. 90%
	99					
	100					
		Sandstone, fine, silty, gray				
	101	Sandstone, fine silty, clayey thin clay stringers along bedding planes				
	102					
	103					Pull #18: 103' to 108' Ran 5 Rec. 60%
	104					
	105					
	106					
	107					
	108					

RILLING LOG (Cont. sheet)

B&r ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

B - 1
HOLE NO.

CT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 7 OF 7 SHEETS

Y.	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
		Clay, marly, gray, black, carbonized wood		BOX 10 108' to 118'		Pull #19: 108' to 113' Ran 5 Rec. 90%
	109	Sandstone, fine, silty, clayey, gray, carbonized wood fragments				
	110	Clay, marly, gray, carbonized wood				
	111					
	112	Limestone, clayey, gray, carbonized wood				
	113					Pull #20: 113' to 118' Ran 5 Rec. 90%
	114					
	115					
	116					
	117	Clay, silty, fine sandy, greenish gray				
	118					

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

B - 2
HOLE NO.

PROJECT: THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE:

SHEET 1 OF 8 SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
		Gravel, clayey, red		JAR 1 0' to 1.5'		Drive 1: 0'-1.5'
	1					
						Augered to 2'
	2			JAR 2 2' to 3.5'		Drive 2: 2'-3.5'
	3					
						Augered to 4'
	4			JAR 3 4' to 5.5'		Drive 3: 4'-5.5'
	5					
						Augered to 6'
	6			JAR 4 6' to 7.5'		Drive 4: 6'-7.5'
	7					
						Augered to 8'
	8			JAR 5 8' to 9.5'		Drive 5: 8'-9.5'
	9					
		Clay, silty, sandy, gravelly, auger cuttings showed some yellow brown clay at 13', clay very dry				Augered to 10'
	10			JAR 6 10' to 11.5'		Drive 6: 10'-11.5'
	11					
						Augered to 12'
	12			JAR 7 12' to 13.5'		Drive 7: 12'-13.5'
	13					
		Clay, silty, sandy, yellow-brown				Augered to 14'
	14			JAR 8 14' to 15.5'		Drive 8: 14'-15.5'
	15					
		Clay, silty, gray with yellow iron stains				Augered to 16'
	16			CORE 1 & 2 16' to 17.5'		Push 1: 16'-17.5'
	17					
	18					Fishtailed to 18'

DRILLING LOG (Cont. sheet)	B&F ENGINEERING, INC. 928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366	B - 2 HOLE NO.
PROJECT THOMASON LUMBER COMPANY	ELEVATION TOP OF HOLE	SHEET 2 OF 8 SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
	19, 20, 21, 22			BOX 1 18' to 28'		Pull #1: 18'-23' Ran 5 Rec. 100%
	23, 24, 25, 26, 27	Clay, silty, sandy, gray, iron stain mottling				Pull #2: 23'-28' Ran 5 Rec. 100%
	28, 29, 30, 31, 32			BOX 2 28' to 38'		Pull #3: 28'-33' Ran 5 Rec. 100%
	33, 34, 35, 36	Sandstone, fine, silty, clayey, iron stained, 5" limonite at 32.5' manganese stains 33' to 38' thin layer of carbonized wood at 37.5'				Pull #4: 33'-38' Ran 5 Rec. 90%

DRILLING LOG (Cont sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

B - 2
HOLE NO.

PROJECT THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 3 OF 8 SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
	37					
	38	Sandstone, fine, silty, clayey, tan		BOX 3 38' to 48'		Pull #5: 38'-43' Ran 5 Rec. 70%
	39					
	40	Clay, silty to fine sandy, gray iron stains				
	41					
	42					
	43	Sandstone, fine to medium, tan				Pull #6: 43'-48' Ran 5 Rec. 40%
	44					
	45					
	46					
	47					
	48			BOX 4 48' to 58'		Pull #7: 48'-53' Ran 5 Rec. 70%
	49					
	50	Clay, silty, dark gray				
	51	Sandstone, fine, silty, clayey, gray, iron stains				1/4" limonite at 51.5'
	52	Clay, silty, grayish-brown				Iron stains along bedding 52.5' to 53'
		Sandstone, fine, silty, claysy				
	53	Clay, very fine to fine, silty, dark gray carbonized organic matter 55' to 55.5'				Pull #8: 53'-58' Ran 5 Rec. 60%
	54					

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

HOLE NO. B - 2

PROJECT: THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 4 OF 8 SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
	55					
	56	Sandstone, fine to medium, silty, clay stringers along bedding planes, large chunks of carbonized wood 57.5' to 58'				
	57					
	58	Clay, silty, gray, carbonized wood 1/4" thick throughout		BOX 5 58' to 68'		Pull #9: 58'-63' Ran 5 Rec. 30%
	59	Sandstone fine, silty, gray carbonized wood fragments				
	60					
	61					
	62					
	63	Clay, silty, gray, stiff				
	64	Sandstone, fine, silty, very clayey, stiff, light gray				Pull #10: 63'-68' Ran 5 Rec. 80%
	65					
	66					
	67					
	68	Clay & sandstone, interbedded, Clay - silty, gray Sandstone - fine, silty, tan		BOX 5 68' to		Pull #11: 68'-73' Ran 5 Rec. 60%
	69					
	70	Sandstone, fine, silty, tan, clay stringers along bedding planes				
	71					
	72					

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

HOLE NO. B - 2

PROJECT: THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 5 OF 8 SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
	73					
	74	Clay, silty, sandy, gray, interbedded with thin sandstone along bedding planes at 6" intervals				Pull #12: 73'-78' Ran 5 Rec. 85%
	75					
	76					
	77					
	78			Box 7 78' to 88'		Pull #13: 78'-83' Ran 5 Rec. 95%
	79					
	80					
	81					
	82					
	83					Pull #14: 83' to 88' Ran 5 Rec. 45%
	84					
	85	Sandstone, fine, silty, tan, gray clay stringers along bedding planes				
	86					
	87					
	88			Box 8 88' to 98'		Pull #15: 88'-93' Ran 5 Rec. 45%
	89					
	90					

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

B - 2
HOLE NO.

PROJECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 6 OF 8 SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
	91					
	92					
	93	Clay, silty, gray, ¼" to ½" carbonized wood				
		Sandstone, fine, silty, clayey, stiff, gray				Pull #16: 93'-98' Ran 5 Rec. 80%
	94					
	95					
	96					
	97					
	98	Sandstone, fine, silty, clay stringers along bedding planes,		BOX 9 98' to 108'		Pull #17: 98'-103' Ran 5 Rec. 40%
	99	½" to 1" thick, carbonized wood, 6" carbonized wood 103' to 103.5' ¼"-1" diameter pyrite nodules				
	100					
	101					
	102					
	103					Pull #18: 103'-108' Ran 5 Rec. 100%
	104					
	105					
	106					
	107					
	108					

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

B - 2
HOLE NO.

PROJECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 7 OF 8 SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
	109			BOX 10 108' to 119'		Pull #19: 108'-113' Ran 5 Rec. 100%
	110					
	111	Limestone, marly, carbonized wood gray				
	112	Sandstone, fine, silty, gray carbonized wood along bedding planes, 1" to 4" carbonized wood at 119'				
	113					Pull #20: 113'-119' Ran 6 Rec. 100%
	114					
	115					
	116					
	117					
	118					
	119			BOX 11 119' to 128'		Pull #21: 119'-124' Ran 5 Rec. 100%
	120	Clay, silty, green, very stiff				
	121					
	122					
	123					
		Limestone, marly, green, hard				
	124	Clay, brown, hard, stiff Clay only slightly moist on interior				Pull #22: 124'-128' Ran 4 Rec. 100%
	125					
	126					

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

HOLE NO. B - 2

PROJECT THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 8 OF 8 SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
		Clay, green, hard, stiff, only slightly moist on interior				
	127					
	128					

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

HOLE NO. B-3

PROJECT Thomason Lumber Co.

ELEVATION TOP OF HOLE

SHEET 1 OF 6 SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
	1	Gravel, clayey, brown to red		Jar 1 0-1.5'		Drive 1: 0 to 1.5'
	2					Augered to 2'
				Jar 2 2-3.5'		Drive 2: 2' to 3.5'
	4					Augered to 4'
				Jar 3 4-5.5'		Drive 3: 4' - 5.5'
	5					
	6	Clay, sandy, gray, iron stains mottling, plastic, some gravel 8-9.5'				Augered to 6'
				Jar 4 core 1		push 1: 6' to 7.5'
	7					
	8					Augered to 8'
				core 2		Push 2: 8' to 9.5'
	9					
	10	Sandy, very fine to medium, silty minor amounts of clay, red, iron stained				Augered to 10'
				Jar 5		Push 3: 10' to 11.5'
	11					
	12	Clay, very fine-fine sandy, silty, gray, iron stain mottling stiff				Augered to 12'
				Core 3		Push 4" 12' to 13.5'
	13					
	14					Augered to 14'
				Core 4		Push 5: 14' to 15.5'
	15					
	16	Sandstone, fine-medium, clayey, grayish-tan, iron stains				Augered to 16'
				Jar 6		Push 6: 16' to 17.5'
	17					
	18	see page 2				fishtailed to 18'

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

HOLE NO. B-3

PROJECT: Thomason Lumber Co.

ELEVATION TOP OF HOLE

SHEET 2 OF 6 SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
	19	Sandstone, fine, silty, very clayey, grayish-tan, iron stains		Jar 7		Push 7: 18'-19.5'
	20					Fishtailed to 20'
	21			Core 5		Push 8: 20'-21.5'
	22	Clay, silty, sandy, tannish red iron stains				Fishtailed to 22'
	23			Box 1 22-32'		Pull #1: 22'-27' Ran 5' Rec. 100%
	24					
	25	clay, silty, sandy, gray, iron stains				
	26					
	27	Sandstone, fine, silty, clayey, iron and manganese stains				Pull #2: 27'-32' Ran 5' Rec. 90%
	28	Clay, sandy, gray, iron and iron and manganese stains				
	29					
	30	Sandstone, fine to medium, clayey, tan				
	31					
	32					
	33	Sandstone, clayey, silty, tan iron and manganese stains		Box 2 32-42'		Pull #3: 32'-37' Ran 5' Rec 25%
	34					
	35					
	36					

RILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

B - 3
HOLE NO.

ROJECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 3 OF 6 SHEETS

EV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
	37	Clay, silty, sandy, gray, iron stains				Pull #4: 37'-42' Ran 5 Rec. 100%
	38					
	39					
	40	Sandstone, fine to medium, clayey, gray, iron & manganese stains				
	41					
	42	Clay, silty, sandy, gray, iron stains		BOX 3 42' to 52'		Pull #5: 42'-47' Ran 5 Rec. 80%
	43	Clay, dark gray, stiff				
	44	Clay, silty, gray, stiff				
	45	Sandstone, very fine to medium, silty, clayey, iron stains along bedding planes, limonite at 47'				
	46					
	47	Sandstone, fine, silty, clayey gray, iron stains, wood replaced by limonite				Pull #6: 47'-52' Ran 5 Rec. 25%
	48					
	49					
	50					
	51					
	52	Sandstone, fine to medium, silty Clayey, gray, iron stains		BOX 4 52' to 62'		Pull #7: 52'-57' Ran 5 Rec. 90%
	53					
	54					

RILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

B - 3
HOLE NO.

PROJECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 4 OF 6 SHEETS

EV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
		Clay, silty, sandy, gray, stiff				
	55					
	56	Sandstone, fine to medium, silty, clayey, gray, iron stains				
	57	Clay, silty, sandy, gray, stiff				Pull #8: 57'-62' Ran 5 Rec. 100%
	58					
	59	Sandstone, fine, silty, gray, iron stains and limonite along bedding planes				
	60					
	61					
	62			BOX 5 62' to 72'		Pull #9: 62'-67' Ran 5 Rec. 70%
	63	Minor amounts of clay 62'-67'				
	64					
	65					
	66					
	67	Clay, silty, sandy, gray, stiff thin stringers of fine sand				Pull #10: 67'-72' Ran 5 Rec. 90% Interior of Core Dry
	68	Clay, silty, sandy, dark gray, carbonaceous matter				
	69					
	70					
	71					
	72					

RILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

B - 3
HOLE NO.

PROJECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 5 OF 6 SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
				Box 6 72' to 82'		Pull #11: 72'-77' Ran 5 Rec. 90%
	73	Sandstone, fine, silty, clayey, gray				
	74					
	75					
	76	Clay, silty, sandy, dark gray, sand laminations along bedding planes				Interior of Core Dry
	77	Sandstone, fine, silty, tan, hard				Pull#12: 77'-82' Ran 5 Rec. 50%
	78					
	79					
	80					
	81					
		Clay, same as 75.5' to 77'				
	82	Sandstone, fine, silty, tan to gray, occasional clay stringers, hard		BOX 7 82' to 87'		Pull #13: 82'-87' Ran 5 Rec. 50%
	83					
	84					
	85					
	86					
	87	Sand, very fine, silty, gray		JAR 8 87' to 92'		Pull #14: 87'-92' Ran 5 Rec. 0% Observations based on cuttings
	88					
	89					
	90					

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

B - 3
HOLE NO.

SHEET 6 OF 6 SHEETS

PROJECT: THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
	91					
	92	Sand, very fine, silty, gray		X		Pull #15: 92'-98' Ran 6 Rec. 60% 92'-94' Interval bored on cuttings
	93					
	94	Limestone, silty, sandy, marly, gray		Box 7 94' to 98'		
	95					
	96					
	97					
		Clay, silty, gray, stiff				
	98	Clay, silty, sandy, marly, limestone pebbles 98'-99'				Pull #16: 98'-103' Ran 5 Rec. 100%
	99					
	100	Organic remains, pyrite moduler ¼" diameter				
	101					
	102					
	103					

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
923 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

B - 4
HOLE NO.

PROJECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 1 OF 4 SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
	1	Clay, silty, sandy, gravelly, tannish red		JAR 1 0'-1.5'		Drive 1: 0'-1.5' Rec. 25%
	2	Sand, fine to medium, silty, clayey, gravelly, tannish red, iron stained				Augered to 2'
	3			CORE 1		Drive 2: 2'-3.5' Rec. 75%
	4	Clay, silty, sandy, gravelly, gray on unweathered surfaces, red on weathered surfaces				Augered to 4'
	5			JAR 2 CORE 2		Push 1: 4'-5.5' Rec. 75%
	6					Augered to 6'
	7			JAR 3 CORE 3		Push 2: 6'-7.5' Rec. 75%
	8					Augered to 8'
	9			JAR 4 CORE 4		Push 3: 8'-9.5' Rec. 60%
	10					Augered to 10'
	11			CORE 5		Push 4: 10'-11.5' Rec. 30%
	12	Clay, silty, sandy, gray, iron stains				Augered to 12'
	13			JAR 5		Drive 2: 12'-13.5' Rec. 25%
	14	Sandstone, fine to medium, gray to tan				Augered to 14'
	15			BOX 1 14' to 23'		Pull #1: 14'-18' Ran 4 Rec. 50%
	16					
	17					
	18	Caly, silty, sandy, gray				

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

HOLE NO. B - 4

PROJECT THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 2 OF 4 SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
	19	Clay, silty, white, iron stained				Pull #2: 18'-23' Ran 5 Rec. 60%
	20					
	21	Sand, fine to medium, silty, gray on unweathered surfaces iron stained tan to red on weathered surfaces, becomes sandstone lost 4"				
	22					
	23	Clay, silty, sandy, gray, iron stained, occasional 1" to 2" sand stringers		BOX 2 23' to 33'		Pull #3: 23'-28' Ran 5 Rec. 100%
	24					
	25					
	26					
	27	Sandstone, medium, silty, clayey tan				
	28	Clay, silty, dark gray, stiff, occasional 1/8" to ¼" sand stringers				Pull #4. 28'-33' Ran 5 Rec. 100%
	29					
	30					
	31					
	32					
	33			BOX 3 33' to 43'		Pull #5: 33'-38' Ran 5 Rec. 90%
	34	Sand stringers 1" to 2" at 33' to 38'				
	35					
	36					

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

B - 4
HOLE NO.

PROJECT: THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 3 OF 4 SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
	37					
	38					
	39	Sandstone, fine to medium, silty, tan				Pull #6: 38'-43' Ran 5 Rec. 80%
	40					
	41	Clay, silty, dark gray, stiff, occasional 1/8" to ¼" sand stringers				
	42					
	43	Sandstone, fine to medium, silty tan		BOX 4 43' to 53'		Pull #7: 43'-48' Ran 5 Rec. 6%
	44					
	45					
	46					
	47					
	48					Pull #8: 48'-53' Ran 5 Rec. 20%
	49					
	50					
	51					
	52	Clay, silty, sandy, gray, carbonized wood 1" thick				
	53			BOX 5 53' to 63'		Pull #9: 53'-58' Ran 5 Rec. 75%
	54					

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
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HOLE NO. B - 4

PROJECT: THOMASON LUMBER COPANY

ELEVATION TOP OF HOLE

SHEET 4 OF 4 SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
	55, 56, 57					
	58	Limestone, gray				Pull #10: 58'-63' Ran 5 Rec. 100%
	59, 60, 61, 62	Sandstone, fine, silty, clayey, marly, gray				
	63, 64			BOX 6 63' to 73'		Pull #11: 63'-68' Ran 5 Rec. 100%
		Limestone, clayey, marly, gray				
	65, 66	Sandstone, fine, silty, clayey, marly, gray				
	67	Caly, silty, green stiff				
	68, 69, 70, 71, 72, 73	Limestone, shaley, grayish-brown, hard				Pull #12: 68'-73' Ran 5 Rec. 100% NOTE SCALE CHANGE AT 71'

APPENDIX E

JAN 25 1988

Grubbs, Garner & Hoskyn, Inc.
Consulting Engineers
10501 Stagecoach Road
P.O. Box 5239
Little Rock, AR 72215
501-455-2536

January 22, 1988
LR87-253

B & F Engineering, Inc.
928 Airport Road
Hot Springs, AR 71913

Attention: Mr. Jerry Overton

Subject: Laboratory Test Results
Thomason Lumber
Broken Bow, Oklahoma

Gentlemen:

As requested, laboratory tests were performed on the selected samples of the four (4) borings from the above referenced project. The laboratory test results are tabulated on the attached Plate 1.

If there are any questions regarding the information submitted, please contact us.

Very truly yours,

GRUBBS, GARNER & HOSKYN, INC.

Mark W. Barton, P.E.

MWB/js

Copies Submitted: B & F Engineering, Inc. (3)
Attn: Mr. Jerry Overton

SUMMARY OF CLASSIFICATION TESTS

PROJECT: Thomason Lumber SITE: Broken Bow, Oklahoma Job No. 87-253

HOLE NO.	SAMPLE DEPTH, FT.	WATER CONTENT PERCENT (NATURAL)	L.L.	P.L.	P.I.	MECHANICAL ANALYSIS PERCENT FINER 3 IN.	3/4 IN.	3/8 IN	NO. 4	NO. 10	NO. 40	NO. 200	PERMEABILITY k_v cm / SEC	G_s = SPECIFIC GRAVITY	UNIFI SOIL CLA
B-1	S-11 15-15.5	14.6	36	16	20			100	99.9	99.2	98.3	80.5	1.5×10^{-7}	2.66	CL
B-2	Core 28-31	16.7	44	19	25					100	99.9	87.7	7.5×10^{-9}	2.73	CL
B-3	S-8 12-13.5	14.1	37	17	20		100	99.1	99.1	99.0	98.8	88.3	3.6×10^{-7}	2.69	CL
B-4	Core 28-33	15.3	37	13	24				100	99.9	99.9	95.5	5.6×10^{-9}	2.69	CL

PLATE 1