

# Alabama

LAND & MINERAL CORP.

February 28, 1996

Mr. J. Michael Harrison, P.E.  
Alabama Surface Mining Commission  
P.O. Box 2390  
Jasper, Alabama 35502-2390

RE: Area 6 Mine  
P-3699

Dear Mike:

I hereby certify that Basin 007, located in the SW/SW of Section 35, Township 19 South, Range 6 West, Jefferson County, Alabama, was constructed in accordance with the approved A.S.M.C. design plans and meets all applicable minimum design criteria as per my field inspection.

Sincerely,  
Alabama Land and Mineral Corp.



Charles A. Anderson, P.E.  
Alabama Registration No. 19679





February 28, 1996

Mr. J. Michael Harrison, P.E.  
Alabama Surface Mining Commission  
P.O. Box 2390  
Jasper, Alabama 35502-2390

RE: Area 6 Mine  
P-3699

Dear Mike:

I hereby certify that Basin 007A, located in the SW/SW of Section 35, Township 19 South, Range 6 West; and the NW/NW of Section 2, Township 20 South, Range 6 West, all in Jefferson County, Alabama, was constructed in accordance with the approved A.S.M.C. design plans and meets all applicable minimum design criteria as per my field inspection.

Sincerely,  
Alabama Land and Mineral Corp.

A handwritten signature in cursive script that reads "Charles A. Anderson".

Charles A. Anderson, P.E.  
Alabama Registration No. 19679





**STATE OF ALABAMA**  
**SURFACE MINING COMMISSION**

P. O. BOX 2390 - JASPER, ALABAMA 35502-2390  
(205) 221-4130

August 4, 1994

Alabama Land & Mineral Corporation  
P. O. Box 68  
Adger, AL 35006

ATTENTION: MR. LESLIE STEPHENS

**RE: P-3699/Revision #3**  
**Area 6 Mine**

Dear Sir:

Please accept this letter as notification that the detailed design plans submitted for proposed series sedimentation ponds 007 and 007A are hereby approved.

If there are any questions, please do not hesitate to call.

Sincerely,

J. Michael Harrison  
P.E.

/kb

cc: I & E  
File

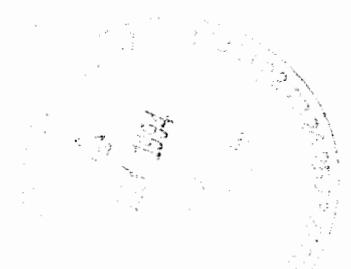
**HYDROLOGICAL STUDY FOR**  
**ALABAMA LAND AND MINERAL CORP.**

**AREA 6 MINE**  
**P-3699**  
**JEFFERSON COUNTY, ALABAMA**  
**AND**  
**TUSCALOOSA COUNTY, ALABAMA**

**BY**  
**ALABAMA LAND AND MINERAL CORP.**

**P.O. BOX 68**  
**ADGER, ALABAMA 35006**

**May 2, 1994**



**ALABAMA LAND AND MINERAL CORP.**

P.O. BOX 68  
ADGER, ALABAMA 35006  
(205) 477-5731

May 2, 1994

Mr. Michael Harrison, P.E.  
Alabama Surface Mining Commission  
P.O. Box 2390  
Jasper, Alabama 35502-2390

RE: Alabama Land and Mineral Corp.  
Area 6 Mine  
P-3699

Dear Michael:

I, hereby certify the attached detailed design plans for Basins 007P and 007A Series for the above referenced mine are in accordance with the regulations of the Alabama Surface Mining Commission as adopted by Act 81-435 of December 18, 1981 and amended by Rulemaking Number 83-3 effective January 1, 1984 and are true and correct to the best of my knowledge and belief.

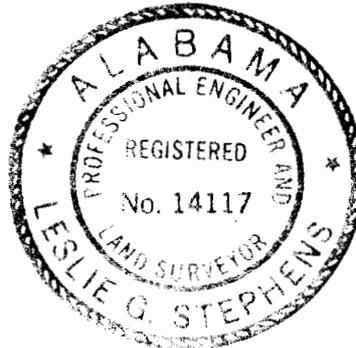
If you need any additional information, please do not hesitate to contact me.

Sincerely,  
Alabama Land and Mineral Corp.

*Leslie G. Stephens*

Leslie G. Stephens, P.E.  
AL Reg. No. 14117

enc. \



## POND CONSTRUCTION CRITERIA

The embankment for sediment basins (temporary and permanent) shall be designed and built using the following as minimum criteria:

1. The top of the dam shall be no less than 12 feet wide.
2. See design sheet for maximum and minimum embankment slopes.
3. The foundation and abutments for the impounding structure shall be designed to be stable under all conditions of construction and operation of the impoundment, with a minimum static safety factor of 1.5 for the normal pool with steady seepage saturation conditions, and a seismic safety factor of at least 1.2.
4. The dam shall be constructed with a cutoff trench based upon prudent engineering practices for the site. The cutoff shall be located on the dam centerline and be of sufficient depth to extend into a relatively impervious material from which the core of the dam shall also be constructed.
5. The embankment foundation area shall be cleared of all organic matter, all surfaces sloped to no steeper than 1v:1h, and the entire foundation surface scarified.
6. The entire embankment and cutoff trench shall be compacted to 95 percent density, based on standard proctor as outlined in ASTM.
7. The material placed in the embankment shall be free of sod, roots, stones over 6 inches in diameter, and other objectionable materials. The fill material shall be placed and spread over the entire fill area, starting at the lowest point of the foundation, in layers not to exceed 12 inches in thickness. Construction of the fill shall be undertaken only at such times that the moisture content of the fill material will permit satisfactory compaction in accordance with paragraph 5.
8. The primary decant system when consisting of a pipe shall be installed according to Class C pipe installation for embankment bedding.

## POND CONSTRUCTION CRITERIA (Continued)

9. The primary decant system shall be equipped with a device, or constructed, such as to ensure that subsurface withdrawal, is accomplished to prevent discharge of floating solids. If a channel is used as the primary decant a skimmer shall be installed to prevent floating solids from discharging.
10. A splash pad or riprap may be required under the discharge of the primary decant system where necessary to ensure that the discharge does not erode the embankment.
11. The combination primary and secondary decant system shall be designed to safely carry the expected peak flow from a 25 year - 6 hour storm. When designing spillways that are in the drainage course of a public water supply, then 50 year - 24 hour storm data will be used. The entire emergency overflow spillway channel will be a stabilized channel and will be stabilized upon completion of construction using prudent engineering measures. These measures may consist of concrete, durable rock riprap, or the spillway being constructed in consolidated non-erodible material or a combination of any or all of the above as per the enclosed detailed design plans.
12. Sediment basins using a single spillway system shall be an open channel of non-erodible construction consisting of concrete, durable rock riprap or its being constructed in consolidated non-erodible material.
13. The settled embankment for temporary impoundments shall be a minimum of 1.0 feet above the maximum water elevation for the runoff from a 25 year - 6 hour, or a 10 year - 24 hour precipitation event (whichever has the greatest runoff). The settled embankment for permanent impoundments shall be a minimum of 1.0 foot above the maximum water elevation for the runoff from a 50 year - 6 hour, or a 10 year - 24 hour precipitation event (whichever has the greatest runoff.)
14. If basins are built in series, then the combined decant system for each shall be designed to accommodate the entire contributing drainage area.

## POND CONSTRUCTION CRITERIA

(Continued)

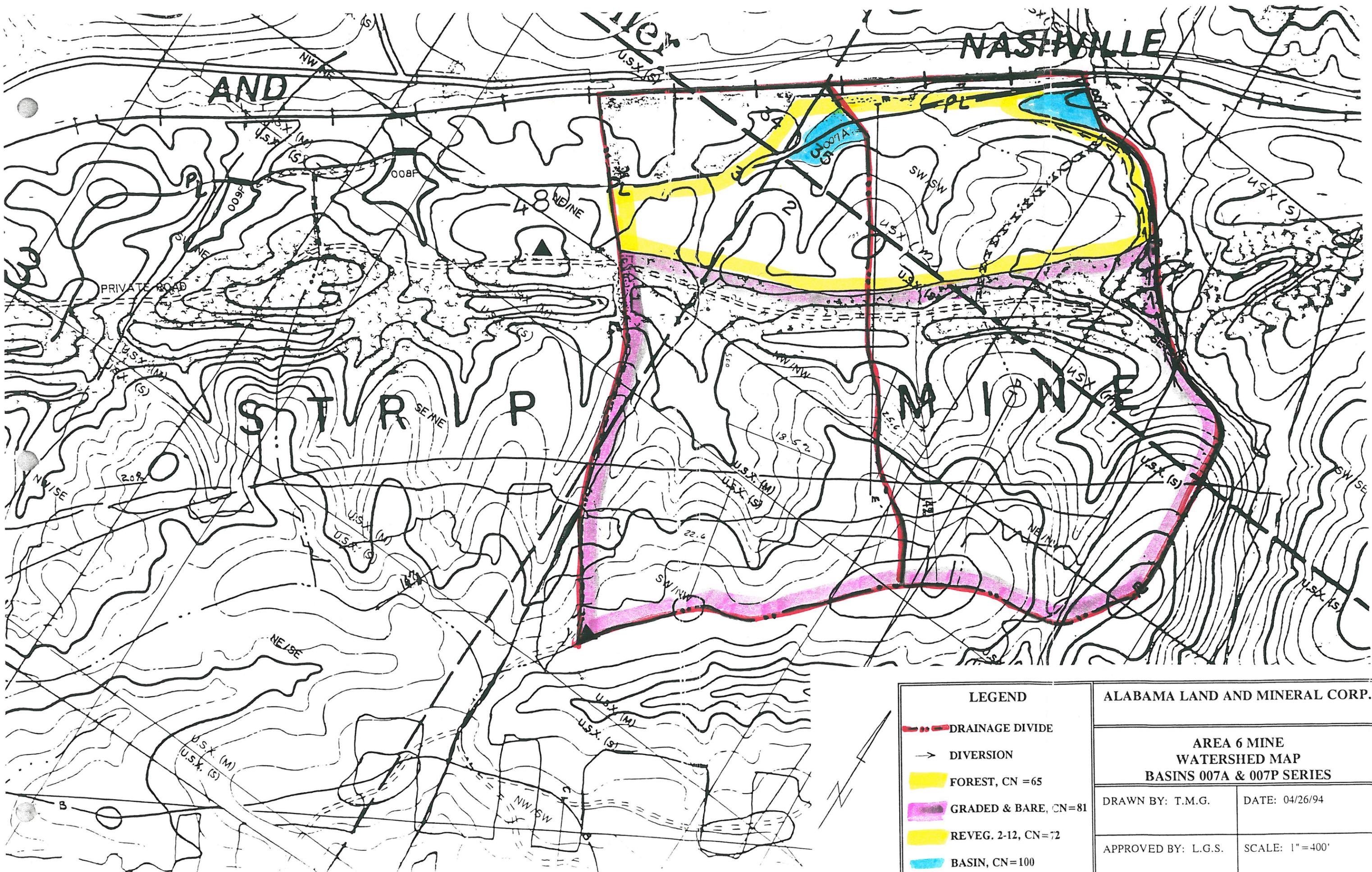
15. The dam and all disturbed areas shall be seeded with both perennial and annual grasses in order to ensure erosion is minimized. Hay bales or riprap may be placed at the toe of the dam immediately upon completion of construction.
16. The constructed height of the dam shall be increased a minimum of 5 percent over the design height to allow for settlement, unless it has been demonstrated to the Regulatory Authority that the material used and the design will ensure against all settlement.
17. Final graded slopes of the entire permanent water impoundment area shall not exceed 2.5h:1.0v to provide for adequate safety and access for proposed water users.
18. Prior to Phase II bond release, additional data concerning water quality, water quantity, depth, size, configuration, postmining land use, etc., for each proposed permanent water impoundment, shall be submitted to the Regulatory Authority for permanent water impoundment approval.
19. All sediment basins will be inspected for stability, erosion, etc. two (2) times a month until removal of the structure or release of the reclamation bond.
20. The embankment and spillway will be maintained by repairing any damage such as erosion, slope failure or spillway damage until removal of the structure or release of the performance bond.
21. All ponds shall be examined quarterly for structural weakness, instability, erosion, or other hazardous conditions and maintenance performed as necessary. Formal inspections shall be made on an annual basis, including any reports or modifications, in accordance with 880-X-10C\20[1(j)] of the Alabama Surface Mining Commission Regulations.
22. Sediment will be removed from each pond when the accumulated sediment reaches the sediment storage volume as shown on the detailed design sheet.

## POND CONSTRUCTION CRITERIA

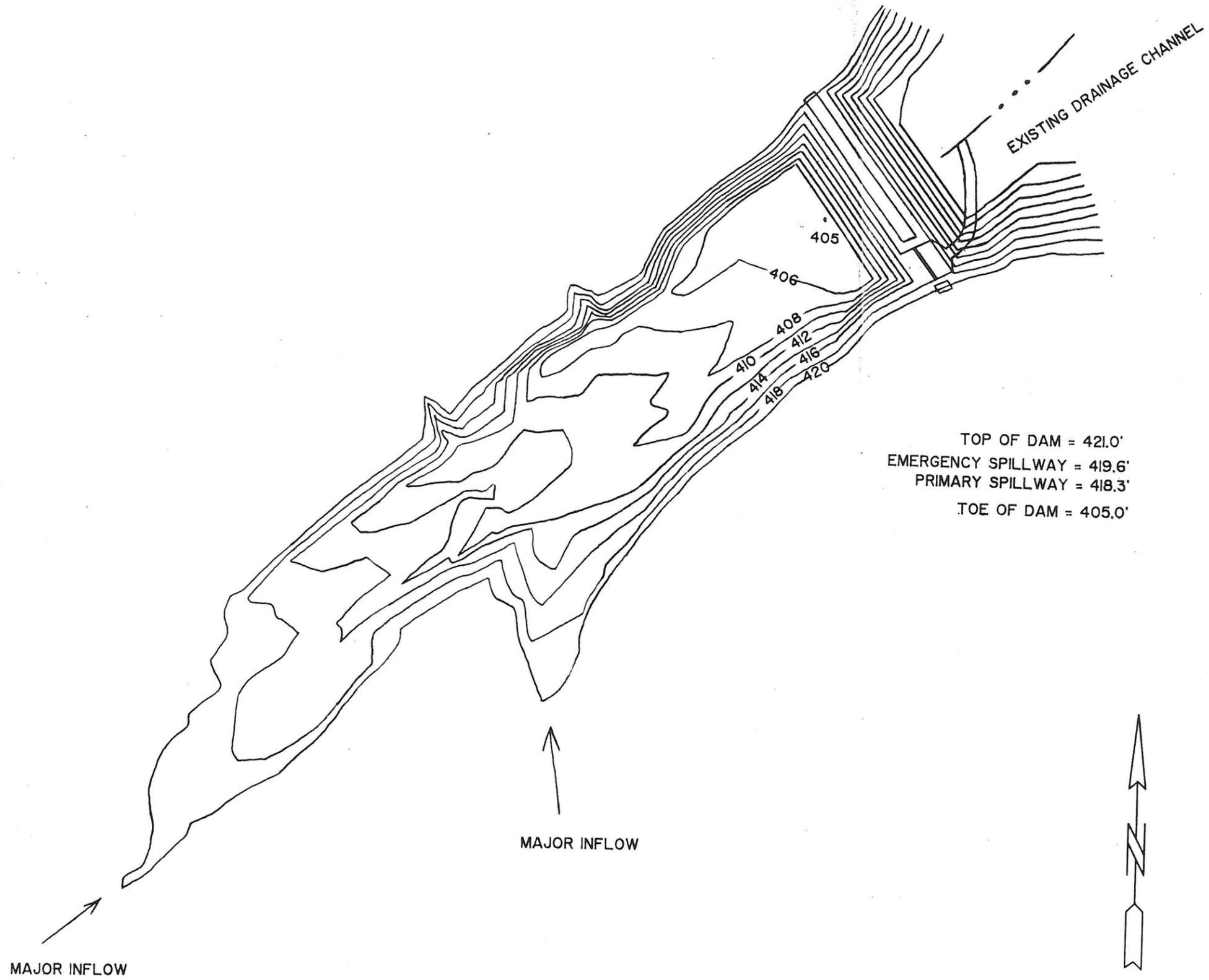
(Continued)

23. Upon completion of mining, successful reclamation and effluent standards being met, each sediment basin not remaining as a permanent water impoundment will be dewatered in an environmentally safe manner (such as siphoning, pumping, etc.) and reclaimed to approximate original contours by the following procedure:

A permanent diversion channel (designed for a 10 year - 24 hour precipitation event) shall be cut along the outer edge of the basin to re-route drainage around the basin and back through the stabilized spillway to allow reclamation of the sediment basin. The diversion channel shall be designed and grassed as per enclosed information. (See permanent diversion for basin disposal). Upon completion of the diversion channel the back slope of the dam shall be graded to a minimum of 3h:1v slope. The dewatered sediment basin area shall be seeded with some combination of the following: Fescue, bermuda, rye grass, canary grass and willows. After seeding the area shall be mulched. Any additional sediment or embankment material not used to meet original contour, if non-toxic, shall be spread in thin layers within the permit area and vegetated as stated in the approved reclamation plan. All toxic material encountered in the basin disposal shall be buried and covered with 4 feet of non-toxic material and vegetated as stated in the approved reclamation plan.
24. A qualified registered professional engineer or other qualified professional specialist, under the direction of the professional engineer shall conduct regular inspections during construction and upon completion shall inspect each basin for certification purposes.
25. Point source discharge embankments shall be constructed and abutments keyed into desirable material if at all possible. In the event that undesirable material is encountered, additional design and construction criteria shall be submitted prior to certification.
26. If a basin is to be constructed in spoil, the basin area will be compacted until the spoil material is broken down sufficiently to minimize infiltration. When this step is complete it will be inspected by qualified personnel to determine if the porosity has been reduced enough to insure water stability. If the spoil material is inadequate due to permeability then the basin area will be lined with clay material to minimize infiltration and provide water stability.



<b>LEGEND</b>		<b>ALABAMA LAND AND MINERAL CORP.</b>	
	DRAINAGE DIVIDE	<b>AREA 6 MINE WATERSHED MAP BASINS 007A &amp; 007P SERIES</b>	
	DIVERSION		
	FOREST, CN = 65	DRAWN BY: T.M.G.	DATE: 04/26/94
	GRADED & BARE, CN=81	APPROVED BY: L.G.S.	SCALE: 1"=400'
	REVEG. 2-12, CN=72		
	BASIN, CN=100		



TOP OF DAM = 421.0'  
 EMERGENCY SPILLWAY = 419.6'  
 PRIMARY SPILLWAY = 418.3'  
 TOE OF DAM = 405.0'

ALABAMA LAND AND MINERAL CORP.  
 AREA 6 MINE  
 BASIN 007P  
 PLAN VIEW  
 SCALE: 1"=100'  
 DATE: 04/25/94

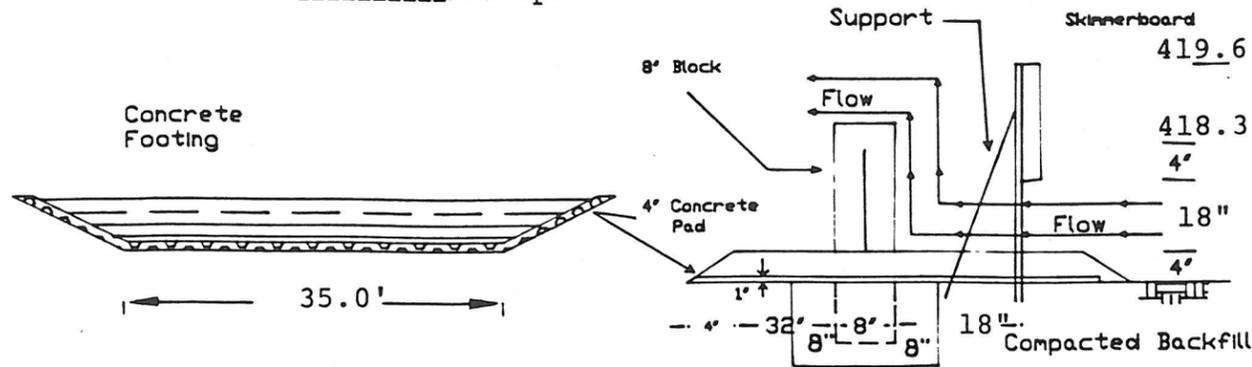
### Skimmerboard Detailed Design

Skimmerboard Elev. 419.6'  
 8" Block Elev. 418.3'  
 Q Out 199.24 cfs  
 V Out 3.50 fps

2 - 2" x 10" Pressure Treated  
 Support Mounts of 2" Angle Iron on 3' Centers

### Notes:

- The sediment shall be removed from the basin when the accumulated sediment reaches the sediment storage volume.
- Sediment control structures are required on pond inlets.
- Outer slopes of embankment shall be grassed.
- Fill material shall be placed in 12" lifts and compacted to 95% of standard proctor.
- The surface beneath the embankment shall be stripped of undesirable material.
- Upon completion of mining, reclamation and maintenance of water quality standards the pond will be de-watered and reclaimed.
- See the attached pond construction criteria.
- See the attached drawings and specifications for diversions.
- Elevations are based on assumed datum.

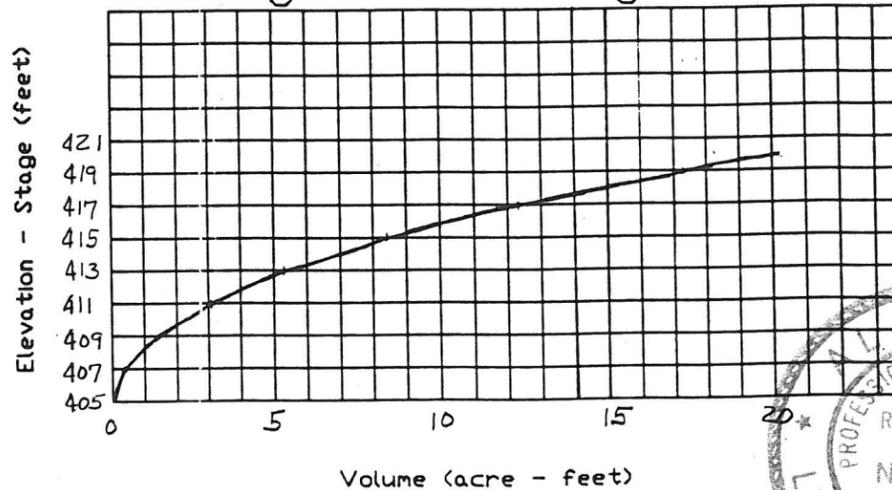


Footing to be centered beneath 8" blocks  
 Minimum width: 2.0 feet  
 Minimum depth: 1.5 feet (unless solid rock encountered)

### Storage Computation

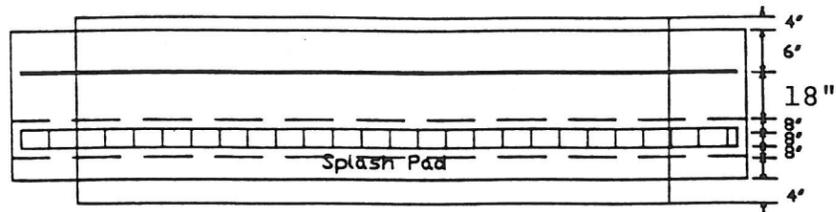
Elevation (feet)	Area (acres)	Ave. Area (acres)	Interval (feet)	Storage (ac-ft)	Acc. Storage (ac.-ft.)
405	0				0
406	0.29				0.10
408	0.53				0.90
410	0.78				2.21
412	1.16				4.14
414	1.54				6.83
416	1.90				10.26
418	2.47				14.61
420	3.06				20.13

### Stage vs. Storage Curve



### Key Basin Parameters

Drainage Area 160.70 Acres  
 Disturbed Area 80.90 Acres  
 Sediment Storage 8.00 Ac. Ft.  
 Detention Storage 7.38 Ac. Ft.  
 Permanent Pool Capacity 15.38 Ac. Ft.  
 Total Basin Capacity 19.58 Ac. Ft.  
 Peak Inflow 258.24 C.F.S.  
 Peak Outflow 199.24 C.F.S.

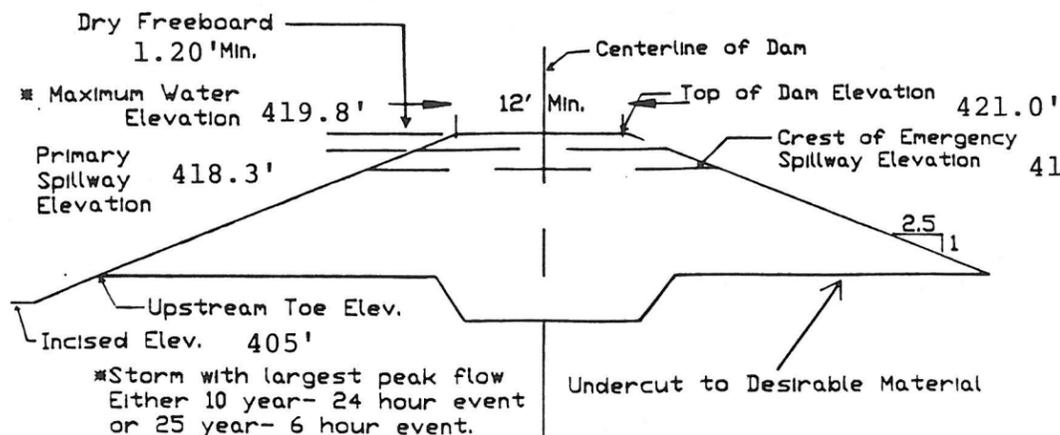


Plan View

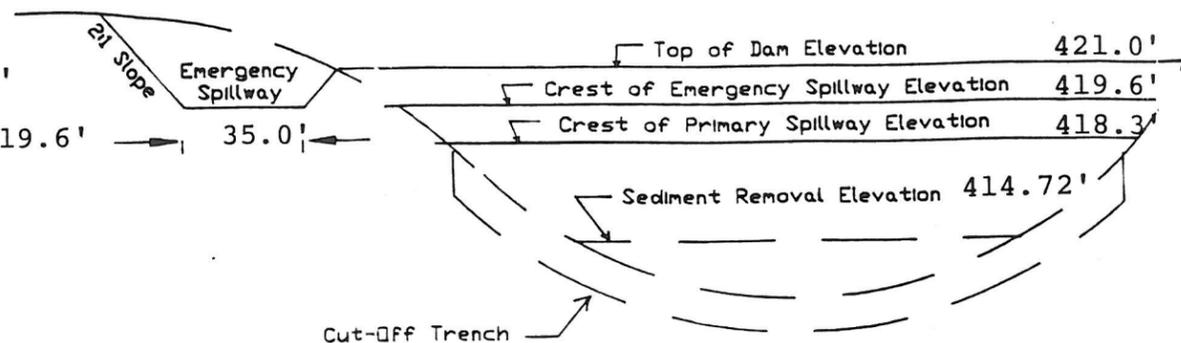
Spillway Gradient Shall Be Approximately 3%



*Leslie G. Stephens*  
 LESLIE G. STEPHENS, P.E. & L.S.  
 AL Registration # 14117



Typical Cross Section Along Primary Spillway

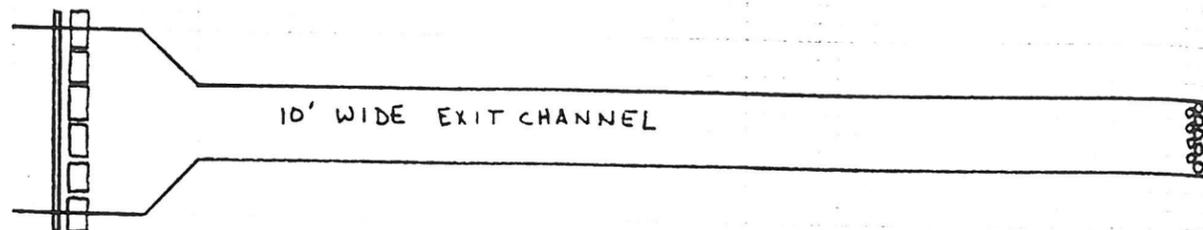


Typical Profile Looking Upstream

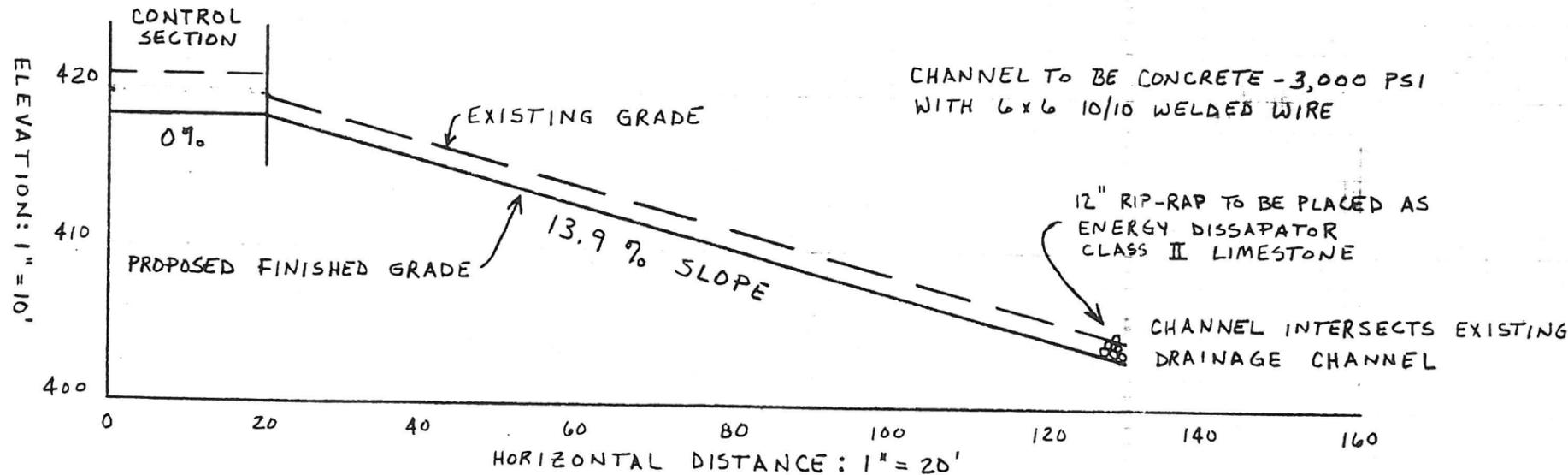
Alabama Land and Mineral Corp.	
Area 6 Mine P-3699 R-3 Basin 007P	
DRAWN BY: T.M.G.	5/09/94
APPROVED BY: L.G.S.	SCALE: NONE

PLAN VIEW SPILLWAY CHANNEL

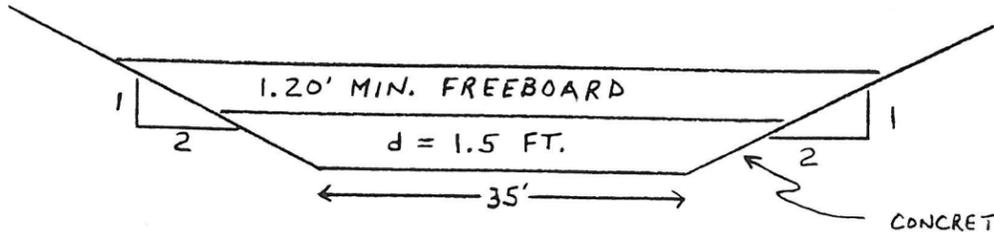
35' WIDE AT TOP OF BLOCKS



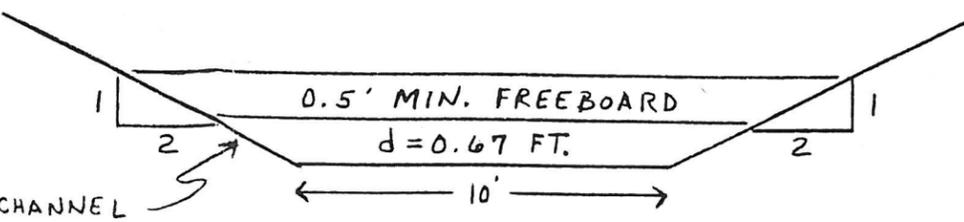
10' WIDE EXIT CHANNEL



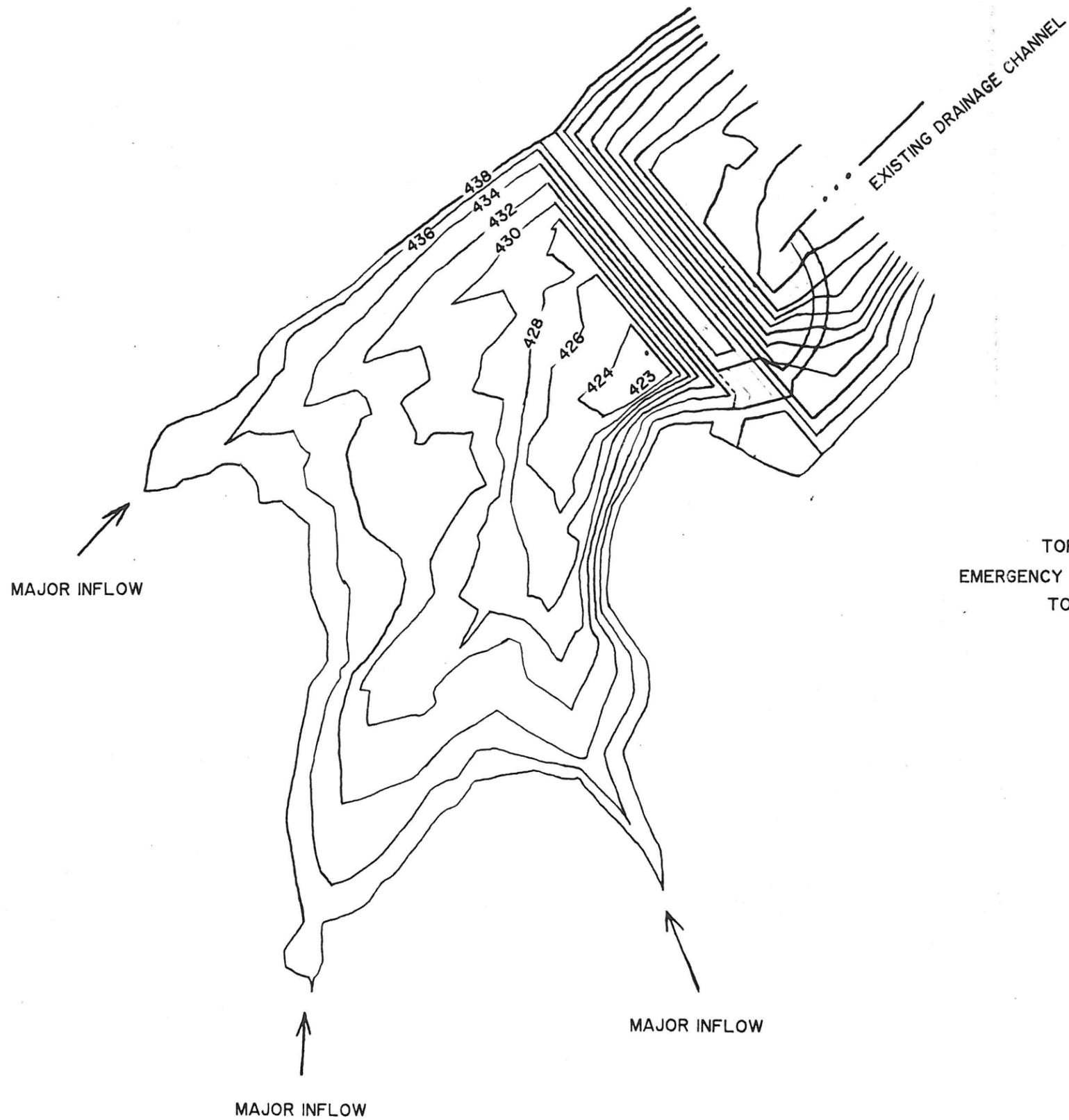
TYPICAL CONTROL SECTION CHANNEL CROSS SECTION (NOT TO SCALE)



TYPICAL EXIT CHANNEL CHANNEL CROSS SECTION (NOT TO SCALE)



ALABAMA LAND AND MINERAL CORP.  
 AREA 6 MINE  
 BASIN 007P  
 SPILLWAY PROFILE  
 DATE: 04/25/94

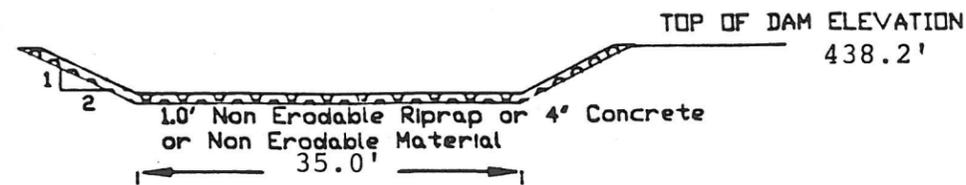


TOP OF DAM = 438.2'  
 EMERGENCY SPILLWAY = 435.7'  
 TOE OF DAM = 423.0'



ALABAMA LAND AND MINERAL CORP.  
 AREA 6 MINE  
 BASIN 007A  
 PLAN VIEW  
 SCALE: 1"=100'  
 DATE: 04/25/94

EMERGENCY SPILLWAY ELEV. 435.7'  
 Q Out 126.73 cfs  
 V Out 2.80 fps



NOTE: 35.0' WIDE AT TOP OF CONCRETE IN BOTTOM OF CHANNEL

Spillway Gradient Shall Be Approximately 3%

Notes:

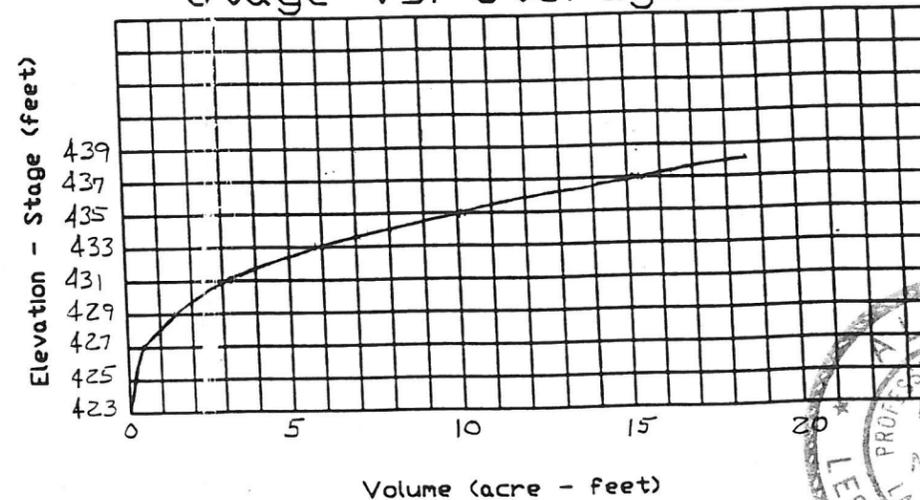
1. The sediment shall be removed from the basin when the accumulated sediment reaches the sediment storage volume.
2. Sediment control structures are required on pond inlets.
3. Outer slopes of embankment shall be grassed.
4. Fill material shall be placed in 12" lifts and compacted to 95% of standard proctor.
5. The surface beneath the embankment shall be stripped of undesirable material.
6. Upon completion of mining, reclamation and maintenance of water quality standards the pond will be de-watered and reclaimed.
7. See the attached pond construction criteria.
8. See the attached drawings and specifications for diversions.
9. Elevations are based on assumed datum.

ACC. STORAGE FROM SEDCAD RUN (PRISMODAL METHOD)

Storage Computation

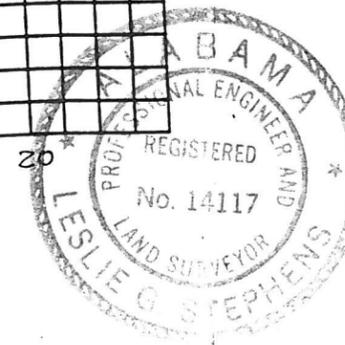
Elevation (feet)	Area (acres)	Acc. Storage (ac.-ft.)
423	0	0
424	0.06	0.02
426	0.23	0.30
428	0.48	0.99
430	0.78	2.24
432	1.36	4.36
434	2.10	7.79
436	2.69	12.56
438	3.28	18.52

Stage vs. Storage Curve

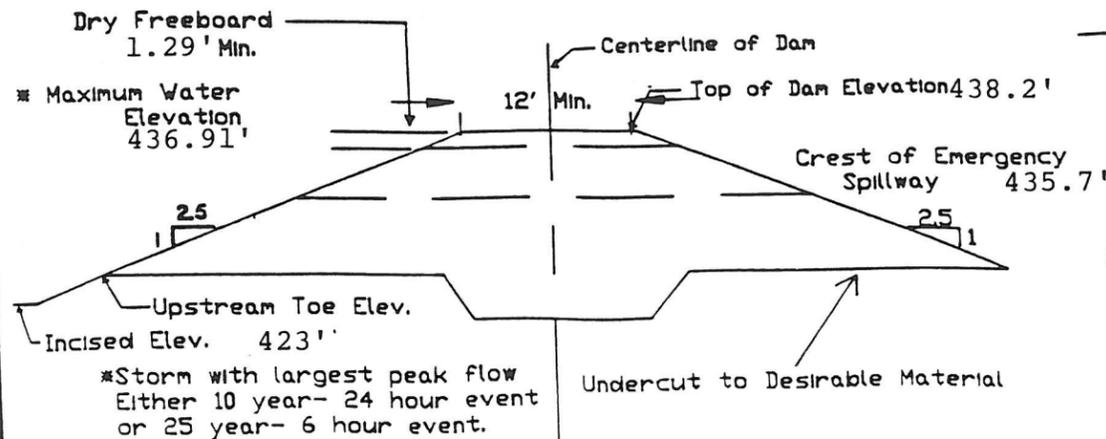


Key Basin Parameters

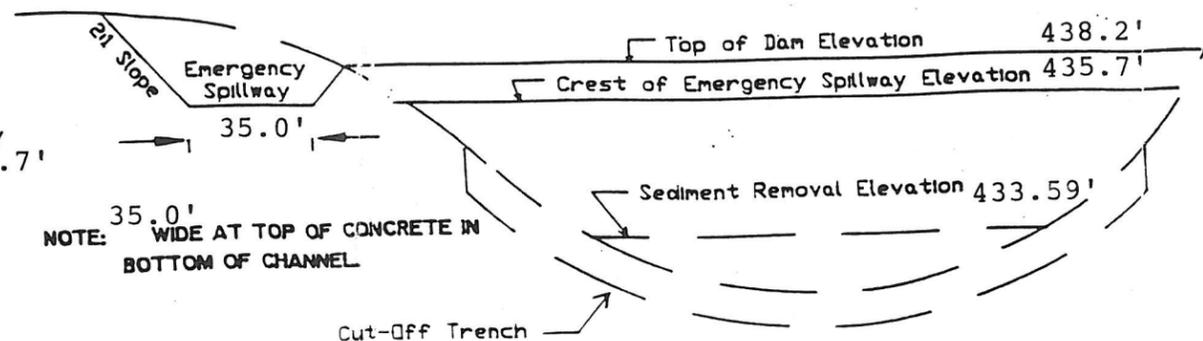
Drainage Area	77.80 Acres
Disturbed Area	70.00 Acres
Sediment Storage	7.00 Ac. Ft.
Detention Storage	4.82 Ac. Ft.
Permanent Pool Capacity	11.82 Ac. Ft.
Total Basin Capacity	15.17 Ac. Ft.
Peak Inflow	167.29 C.F.S.
Peak Outflow	126.73 C.F.S.



Leslie G. Stephens  
 LESLIE G. STEPHENS, P.E. & L.S.  
 AL Registration # 14117



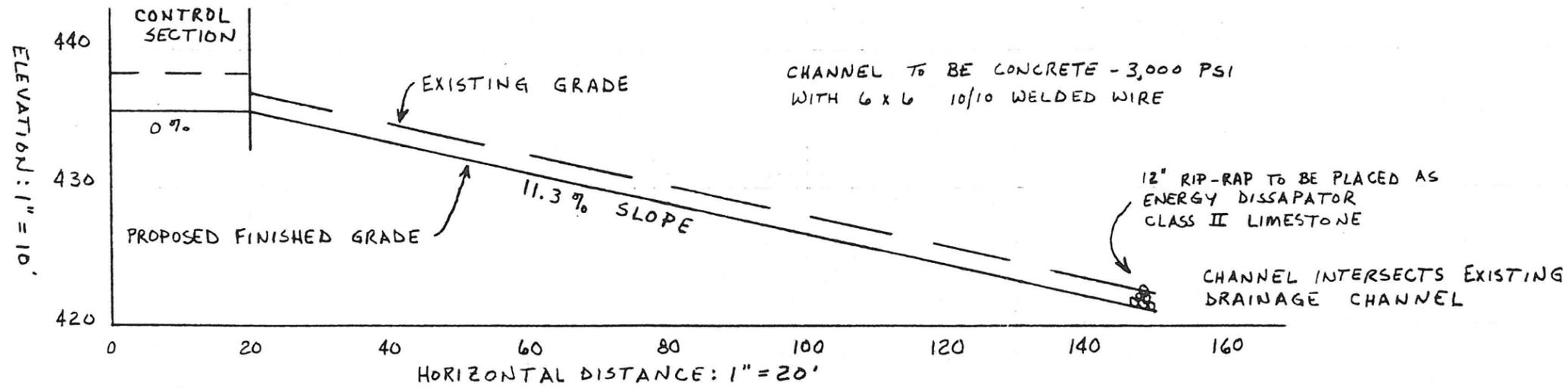
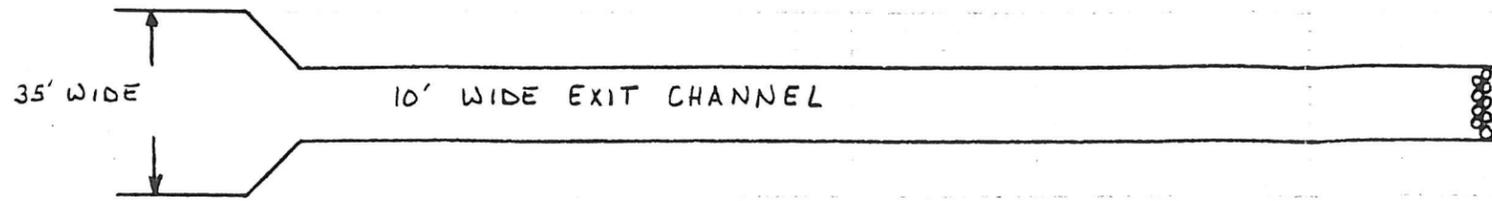
Typical Cross Section Along Primary Spillway



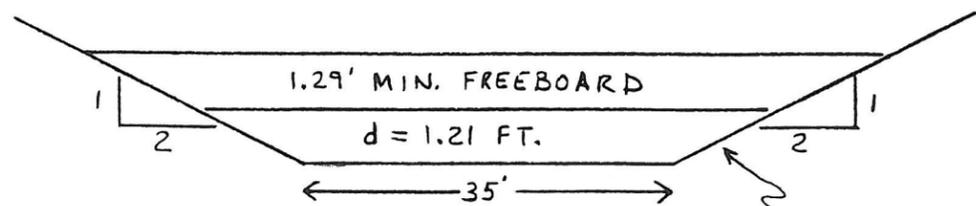
Typical Profile Looking upstream

Alabama Land and Mineral Co	
Area 6 Mine P-3699 R-3 Basin 007A	
DRAWN BY: T.M.G.	DATE: 5/09/94
APPROVED BY: L.G.S.	SCALE: NONE

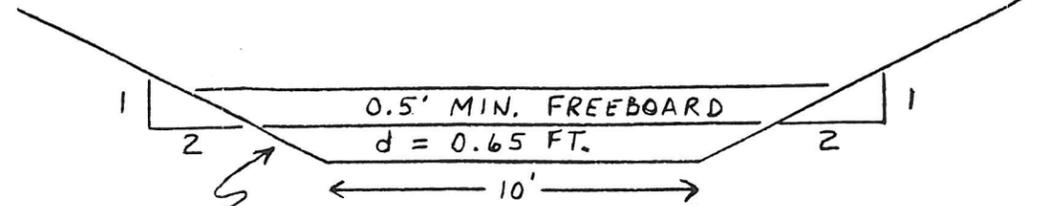
PLAN VIEW SPILLWAY CHANNEL



TYPICAL CONTROL SECTION CHANNEL CROSS SECTION (NOT TO SCALE)



TYPICAL EXIT CHANNEL CHANNEL CROSS SECTION (NOT TO SCALE)



CONCRETE LINED CHANNEL

ALABAMA LAND AND MINERAL CORP.  
 AREA 6 MINE  
 BASIN 007A  
 SPILLWAY PROFILE  
 DATE: 04/25/94

SEDCAD+ NONERODIBLE CHANNEL DESIGN

ALMC AREA 6 MINE P-3699 BASIN 007P EXIT

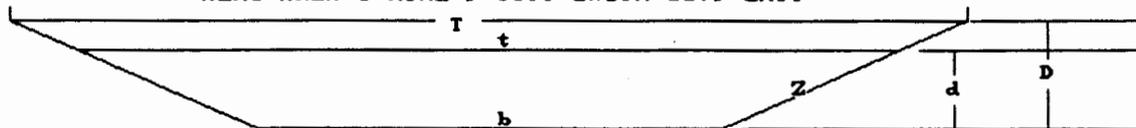
INPUT VALUES:

Shape	TRAPEZOIDAL	
Discharge	199.24 cfs	
Slope	13.90 %	
Sideslopes	2.00:1 (L)	2.00:1 (R)
Bottom Width	10.00 ft	
Manning's n	0.015	
Material	CONCRETE	
Freeboard	0.5 ft	

RESULTS:

Depth	0.67 ft
with Freeboard	1.17 ft
Top Width	12.70 ft
with Freeboard	14.70 ft
Velocity	26.01 fps
Cross Sectional Area	7.66 sq ft
Hydraulic Radius	0.59 ft
Froude Number	5.90

SEDCAD+ CHANNEL DESIGN  
ALMC AREA 6 MINE P-3699 BASIN 007P EXIT



MATERIAL: CONCRETE

Discharge	= 199.24 cfs	Depth (d)	= 8.67 (D = 1.17) ft
Bottom (b)	= 10.00 ft	Top width (t)	= 12.78 (T = 14.70) ft
Side slopes (Z)	= 2.0:1(L) 2.0:1(R)	Velocity	= 26.01 ffs
Bed Slope	= 13.90 %	Hydraulic Radius	= 8.59 ft
Manning's n	= 0.015	Froude number	= 5.90

SEDCAD+ NONERODIBLE CHANNEL DESIGN

ALMC AREA 6 MINE P-3699 BASIN 007A EXIT

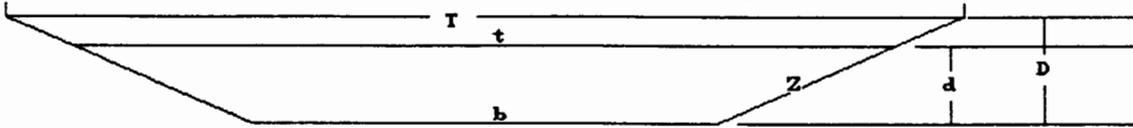
INPUT VALUES:

Shape	TRAPEZOIDAL	
Discharge	167.29 cfs	
Slope	11.30 %	
Sideslopes	2.00:1 (L)	2.00:1 (R)
Bottom Width	10.00 ft	
Manning's n	0.015	
Material	CONCRETE	
Freeboard	.5 ft	

RESULTS:

Depth	0.65 ft
with Freeboard	1.15 ft
Top Width	12.59 ft
with Freeboard	14.59 ft
Velocity	22.88 fps
Cross Sectional Area	7.31 sq ft
Hydraulic Radius	0.57 ft
Froude Number	5.29

SEDCAD+ CHANNEL DESIGN  
ALMC AREA 6 MINE P-3699 BASIN 007A EXIT



MATERIAL: CONCRETE

Discharge	= 167.29 cfs	Depth (d)	= 0.65 ft	Freeboard:	
Bottom (b)	= 10.00 ft	Top width (t)	= 12.59 ft	(D)	= 1.15 ft
Side slopes (Z)	= 2.0:1(L) 2.0:1(R)	Velocity	= 22.59 f/s	(T)	= 14.59 ft
Bed Slope	= 11.30 %	Hydraulic Radius	= 0.507 ft	(F)	=
Manning's n	= 0.015	Froude number	= 5.29	(S)	=

**ALABAMA LAND AND MINERAL CORP.  
AREA 6 MINE  
P-3699  
HYDROLOGY AND SEDIMENTOLOGY  
10 YR. - 24 HR. EVENT  
BASINS 007P & 007A SERIES**

CIVIL SOFTWARE DESIGN

SEDCAD+ Version 3

A.L.M.C. AREA 6 MINE P-3699 BASINS 007A AND 007P SERIES

by

Name: T.M.G.

Company Name: COSTAIN COAL INC.  
File Name: C:\SEDCAD3\AREA6\POND7

Date: 04-20-1994

Company Name: COSTAIN COAL INC.

Filename: C:\SEDCAD3\AREA6\POND7 User: T.M.G.

Date: 04-20-1994 Time: 12:02:17

A.L.M.C. AREA 6 MINE P-3699 BASINS 007A AND 007P SERIES

Storm: 6.00 inches, 10 year-24 hour, drn58

Hydrograph Convolution Interval: 0.1 hr

=====  
GENERAL INPUT TABLE  
=====

STORM #1:

User-Defined Distribution

Label: drn58

	Accumulated Time (hrs)	Accumulated Dimensionless Depth
1	0.0	0.000
2	0.5	0.010
3	1.0	0.020
4	1.5	0.030
5	2.0	0.040
6	2.5	0.050
7	3.0	0.060
8	3.5	0.070
9	4.0	0.080
10	4.5	0.090
11	5.0	0.100
12	5.5	0.115
13	6.0	0.130
14	6.5	0.140
15	7.0	0.150
16	7.5	0.170
17	8.0	0.180
18	8.5	0.200
19	9.0	0.220
20	9.5	0.240
21	10.0	0.260
22	10.5	0.290
23	11.0	0.320
24	11.5	0.370
25	12.0	0.500
26	12.5	0.630
27	13.0	0.680
28	13.5	0.710
29	14.0	0.740
30	14.5	0.760
31	15.0	0.780
32	15.5	0.800
33	16.0	0.820
34	16.5	0.830
35	17.0	0.850
36	17.5	0.860
37	18.0	0.870

38	18.5	0.885
39	19.0	0.900
40	19.5	0.910
41	20.0	0.920
42	20.5	0.930
43	21.0	0.940
44	21.5	0.950
45	22.0	0.960
46	22.5	0.970
47	23.0	0.980
48	23.5	0.990
49	24.0	1.000

\*\*\*\*\*

Specific Gravity: 2.50  
Submerged Bulk Specific Gravity: 1.25

Particle Size Distribution(s):

Size (mm)	FINER % Finer	COARSER % Finer
3.0000	78.00	69.00
2.0000	76.00	63.00
1.0000	75.00	54.00
0.5000	74.00	47.00
0.3000	73.00	44.00
0.2000	64.00	37.00
0.1000	44.00	23.00
0.0500	26.00	13.00
0.0300	14.00	7.00
0.0200	12.00	5.00
0.0100	8.00	2.00
0.0050	5.00	1.00
0.0030	3.00	0.50
0.0010	1.00	0.30
0.0001	0.00	0.00

Detailed Between Structure Routing:

J	B	S	To #	Seg. #	Land Flow Condition	Distance (ft)	Slope (%)	Velocity (fps)	Segment Time (hr)	Muskingum K (hr)	X
1	1	2	1	1	6	1150.11	1.39	1.77	0.18	0.180	0.254

Company Name: COSTAIN COAL INC.

Filename: C:\SEDCAD3\AREA6\POND7 User: T.M.G.

Date: 04-20-1994 Time: 12:02:17

A.L.M.C. AREA 6 MINE P-3699 BASINS 007A AND 007P SERIES

Storm: 6.00 inches, 10 year-24 hour, drn58

Hydrograph Convolution Interval: 0.1 hr

=====  
 SUBWATERSHED/STRUCTURE INPUT/OUTPUT TABLE  
 =====

-Hydrology-

JBS	SWS	Area (ac)	CN	UHS	Tc (hrs)	K (hrs)	X	Base- Flow (cfs)	Runoff Volume (ac-ft)	Peak Discharge (cfs)	
111	1	7.80	65	S	0.277	0.082	0.307	0.0	1.53	4.38	
111	2	51.50*	81	F	0.109	0.114	0.293	0.0	16.67	66.67	
111	3	16.50*	72	F	0.099	0.000	0.000	0.0	4.12	17.49	
111	4	2.00*	100	F	0.000	0.000	0.000	0.0	1.00	3.15	
					Type: Pond	Label: BASIN 007A					
111	Structure	77.80								23.31	
-----											
111	Total IN	77.80								23.31	90.28
111	Total OUT								23.31	84.60	
-----											
112	1	2.00	65	S	0.255	0.188	0.218	0.0	0.39	1.15	
112	2	53.60*	81	F	0.084	0.134	0.314	0.0	17.35	69.39	
112	3	24.80*	72	F	0.170	0.000	0.000	0.0	6.19	26.21	
112	4	2.50*	100	F	0.000	0.000	0.000	0.0	1.25	3.93	
					Type: Pond	Label: BASIN 007P					
112	Structure	82.90								48.49	
-----											
112	Total IN	160.70								48.49	174.94
112	Total OUT								48.49	162.03	
-----											
111 to 112 Routing						0.180	0.254				
=====											

=====  
 SUBWATERSHED/STRUCTURE INPUT/OUTPUT TABLE  
 =====

-Sedimentology-

SED: Sediment  
 SCp: Peak Sediment Concentration  
 SSp: Peak Settleable Concentration  
 24VW: Volume Weighted Average Settleable Concentration - Peak 24 hours  
 24AA: Arithmetic Average Settleable Concentration - Peak 24 hours

JBS	SWS	K	L (ft)	S (%)	CP	Tt (hrs)	PS #	SED (tons)	SCp (mg/l)	SSp (ml/l)	24VW (ml/l)	24AA (ml/l)
M	111	1	0.32	200.0	5.5	0.003	0.082	1	0.2			
M	111	2	0.24	70.0	15.0	0.900	0.114	2	2251.3			

M 111	3	0.28	70.0	14.0	0.050	0.000	2	28.2
M 111	4	0.00	70.0	0.0	0.000	0.000	1	0.0
							Type: Pond	Label: BASIN 007A

111 Structure 2277.6

111 Total IN	2277.6	133957	104.17	54.36	27.83
111 Total OUT	41.0	3040	0.12	0.05	0.02

M 112	1	0.32	200.0	5.7	0.003	0.188	1	0.1
M 112	2	0.24	70.0	14.9	0.900	0.134	2	2328.8
M 112	3	0.28	70.0	13.9	0.050	0.000	2	43.9
M 112	4	0.00	70.0	0.0	0.000	0.000	1	0.0
							Type: Pond	Label: BASIN 007P

112 Structure 2411.2

112 Total IN	2411.2	84774	64.80	27.65	14.47
112 Total OUT	103.3	3844	0.52	0.22	0.09

111 to 112 Routing 0.180

Company Name: COSTAIN COAL INC.

Filename: C:\SEDCAD3\AREA6\POND7 User: T.M.G.

Date: 04-20-1994 Time: 12:02:17

A.L.M.C. AREA 6 MINE P-3699 BASINS 007A AND 007P SERIES

Storm: 6.00 inches, 10 year-24 hour, drn58

Hydrograph Convolution Interval: 0.1 hr

=====

DETAILED SUBWATERSHED INPUT/OUTPUT TABLE

=====

J	B	S	SWS	Seg. #	Land Flow Condition	Distance (ft)	Slope (%)	Velocity (fps)	Segment Time (hr)	Time Conc. (hr)	Muskingum K (hr)	X
1	1	1	1	-a	1	400.00	2.50	0.40	0.28	0.277		
1	1	1	1	-1	6	800.42	3.25	2.70	0.08		0.082	0.307
1	1	1	2	-a	5	300.00	20.00	4.47	0.02			
				-b	6	1500.00	9.33	4.58	0.09	0.109		
1	1	1	2	-1	6	1000.34	2.60	2.42	0.11		0.114	0.293
1	1	1	3	-a	3	300.00	13.33	2.56	0.03			
				-b	6	700.00	3.71	2.89	0.07	0.099		
1	1	2	1	-a	1	300.00	1.67	0.33	0.26	0.255		
1	1	2	1	-1	6	900.03	0.78	1.32	0.19		0.188	0.218
1	1	2	2	-a	5	475.00	12.63	3.55	0.04			
				-b	6	950.00	13.68	5.55	0.05	0.084		
1	1	2	2	-1	6	1400.97	3.71	2.89	0.13		0.134	0.314
1	1	2	3	-a	3	300.00	20.00	3.13	0.03			
				-b	6	1100.00	2.00	2.12	0.14	0.170		

Company Name: COSTAIN COAL INC.

Filename: C:\SEDCAD3\AREA6\POND7 User: T.M.G.

Date: 04-20-1994 Time: 12:02:17

A.L.M.C. AREA 6 MINE P-3699 BASINS 007A AND 007P SERIES

Storm: 6.00 inches, 10 year-24 hour, drn58

Hydrograph Convolution Interval: 0.1 hr

=====  
 POND INPUT/OUTPUT TABLE  
 =====

J1, B1, S1  
 BASIN 007A

Drainage Area from J1, B1, S1, SWS(s)1-4: 77.8 acres  
 Total Contributing Drainage Area: 77.8 acres

DISCHARGE OPTIONS:

Emergency  
 Spillway

Riser Diameter (in)	----
Riser Height (ft)	----
Barrel Diameter (in)	----
Barrel Length (ft)	----
Barrel Slope (%)	----
Manning's n of Pipe	----
Spillway Elevation	----
Lowest Elevation of Holes	----
# of Holes/Elevation	----
Entrance Loss Coefficient	----
Tailwater Depth (ft)	----
Notch Angle (degrees)	----
Weir Width (ft)	----
Siphon Crest Elevation	----
Siphon Tube Diameter (in)	----
Siphon Tube Length (ft)	----
Manning's n of Siphon	----
Siphon Inlet Elevation	----
Siphon Outlet Elevation	----
Emergency Spillway Elevation	435.7
Crest Length (ft)	10.0
Z:1 (Left and Right)	2 2
Bottom Width (ft)	35.0

POND RESULTS:

Sediment Storage* (ac-ft)	Permanent Pool (ac-ft)	Dead Space (%)	Sediment Algorithm
7.00	4.82	20.00	CSTRS

\*Sediment Capacity based on User Input

	Runoff Volume (ac-ft)	Peak Discharge (cfs)	Peak Sediment Concentration (tons)	Peak Sediment Concentration (mg/l)	Peak Settleable Concentration (ml/l)	24VW (ml/l)	24AA (ml/l)
IN	23.31	90.28	2277.6	133957	104.17	54.36	27.83
OUT	23.31	84.60	41.0	3040	0.12	0.05	0.02

Peak Elevation	Trap Efficiency (%)	Hydrograph Detention Time (hrs)
436.7	98.20	0.54

\*\*\*\*\*

J1, B1, S2  
BASIN 007P

Drainage Area from J1, B1, S2, SWS(s)1-4: 82.9 acres  
Total Contributing Drainage Area: 160.7 acres

DISCHARGE OPTIONS:

	Broad Crested Weir	Emergency Spillway
Riser Diameter (in)	----	----
Riser Height (ft)	----	----
Barrel Diameter (in)	----	----
Barrel Length (ft)	----	----
Barrel Slope (%)	----	----
Manning's n of Pipe	----	----
Spillway Elevation	418.3	----
Lowest Elevation of Holes	----	----
# of Holes/Elevation	----	----
Entrance Loss Coefficient	----	----
Tailwater Depth (ft)	----	----
Notch Angle (degrees)	----	----
Weir Width (ft)	35.0	----
Siphon Crest Elevation	----	----
Siphon Tube Diameter (in)	----	----
Siphon Tube Length (ft)	----	----
Manning's n of Siphon	----	----
Siphon Inlet Elevation	----	----
Siphon Outlet Elevation	----	----
Emergency Spillway Elevation	----	419.6
Crest Length (ft)	----	10.0
Z:1 (Left and Right)	-- --	2 2
Bottom Width (ft)	----	40.2

POND RESULTS:

Sediment Storage* (ac-ft)	Permanent Pool (ac-ft)	Dead Space (%)	Sediment Algorithm
8.00	7.38	20.00	CSTRS

\*Sediment Capacity based on User Input

	Runoff Volume (ac-ft)	Peak Discharge (cfs)	Sediment (tons)	Peak Sediment Concentration (mg/l)	Peak Settleable Concentration (ml/l)	24VW (ml/l)	24AA (ml/l)
IN	48.49	174.94	2411.2	84774	64.80	27.65	14.47
OUT	48.49	162.03	103.3	3844	0.52	0.22	0.09

Peak Elevation	Trap Efficiency (%)	Hydrograph Detention Time (hrs)
419.6	95.72	0.33

\*\*\*\*\*

Company Name: COSTAIN COAL INC.  
 Filename: C:\SEDCAD3\AREA6\POND7 User: T.M.G.  
 Date: 04-20-1994 Time: 12:02:17  
 A.L.M.C. AREA 6 MINE P-3699 BASINS 007A AND 007P SERIES  
 Storm: 6.00 inches, 10 year-24 hour, drn58  
 Hydrograph Convolution Interval: 0.1 hr

=====  
 ELEVATION-DISCHARGE TABLE  
 =====

J1, B1, S1  
 BASIN 007A

Drainage Area from J1, B1, S1, SWS(s)1-4: 77.8 acres  
 Total Contributing Drainage Area: 77.8 acres

Elevation	Emergency Spillway (cfs)	Total Discharge (cfs)
433.59	0.0	0.0
434.00	0.0	0.0
435.00	0.0	0.0
435.70	0.0	0.0
436.00	16.5	16.5
436.29	32.3	32.3
436.39	37.8	37.8
436.49	50.1	50.1
436.59	63.6	63.6
436.69	78.2	78.2
437.00	147.1	147.1
437.19	167.4	167.4
437.69	279.2	279.2
438.00	382.7	382.7

\*\*\*\*\*

J1, B1, S2  
 BASIN 007P

Drainage Area from J1, B1, S2, SWS(s)1-4: 82.9 acres  
 Total Contributing Drainage Area: 160.7 acres

Elevation	Broad Crested Weir (cfs)	Emergency Spillway (cfs)	Total Discharge (cfs)
414.72	0.0	0.0	0.0
415.00	0.0	0.0	0.0
416.00	0.0	0.0	0.0
417.00	0.0	0.0	0.0
418.00	0.0	0.0	0.0
418.30	0.0	0.0	0.0
419.00	63.3	0.0	63.3
419.60	160.1	0.0	160.1

420.00

239.5

0.0

239.5

\*\*\*\*\*

Company Name: COSTAIN COAL INC.  
 Filename: C:\SEDCAD3\AREA6\POND7 User: T.M.G.  
 Date: 04-20-1994 Time: 12:02:17  
 A.L.M.C. AREA 6 MINE P-3699 BASINS 007A AND 007P SERIES  
 Storm: 6.00 inches, 10 year-24 hour, drn58  
 Hydrograph Convolution Interval: 0.1 hr

=====  
 ELEVATION-AREA-CAPACITY-DISCHARGE TABLE  
 =====

J1, B1, S1  
 BASIN 007A

Drainage Area from J1, B1, S1, SWS(s)1-4: 77.8 acres  
 Total Contributing Drainage Area: 77.8 acres

SW#1: Emergency Spillway

Elev	Stage (ft)	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	
423.00	0.00	0.00	0.00		
433.00	10.00	1.71	5.92		
433.59	0.00	1.94	7.00	0.00	Top of Sediment Storage (0 Stage)
434.00	0.41	2.10	0.84	0.00	
435.00	1.41	2.38	3.08	0.00	
435.70	2.11	2.60	4.82	0.00	Stage of SW#1
436.00	2.41	2.69	5.61	16.54	
436.29	2.70	2.77	6.39	32.26	
436.39	2.80	2.80	6.67	37.78	
436.49	2.90	2.83	6.95	50.10	
436.59	3.00	2.86	7.23	63.60	
436.69	3.10	2.88	7.52	78.21	
436.71	3.13	2.88	7.61	84.60	Peak Stage
437.00	3.41	2.97	8.44	147.13	
437.19	3.60	3.03	9.00	167.44	
437.69	4.10	3.18	10.55	279.17	
438.00	4.41	3.28	11.57	382.71	

\*\*\*\*\*

J1, B1, S2  
 BASIN 007P

Drainage Area from J1, B1, S2, SWS(s)1-4: 82.9 acres  
 Total Contributing Drainage Area: 160.7 acres

SW#1: Broad Crested Weir  
 SW#2: Emergency Spillway

Elev	Stage (ft)	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	
405.00	0.00	0.00	0.00		
414.00	9.00	1.54	6.89		
414.72	0.00	1.66	8.00	0.00	Top of Sediment Storage (0 Stage)
415.00	0.28	1.71	0.47	0.00	

416.00	1.28	1.90	2.28	0.00	
417.00	2.28	2.17	4.31	0.00	
418.00	3.28	2.47	6.63	0.00	
418.30	3.58	2.55	7.38	0.00	Stage of SW#1
419.00	4.28	2.76	9.24	63.28	
419.60	4.88	2.94	10.95	160.15	Stage of SW#2
419.61	4.89	2.94	10.98	162.03	Peak Stage
420.00	5.28	3.06	12.15	239.48	

\*\*\*\*\*

**ALABAMA LAND AND MINERAL CORP.  
AREA 6 MINE  
P-3699  
HYDROLOGY AND SEDIMENTOLOGY  
25 YR. - 6 HR. EVENT  
BASINS 007P & 007A SERIES**

CIVIL SOFTWARE DESIGN

SEDCAD+ Version 3

A.L.M.C. AREA 6 MINE P-3699 BASINS 007A AND 007P SERIES

by

Name: T.M.G.

Company Name: COSTAIN COAL INC.  
File Name: C:\SEDCAD3\AREA6\POND7

Date: 04-20-1994

Company Name: COSTAIN COAL INC.

Filename: C:\SEDCAD3\AREA6\POND7 User: T.M.G.

Date: 04-20-1994 Time: 12:02:52

A.L.M.C. AREA 6 MINE P-3699 BASINS 007A AND 007P SERIES

Storm: 4.80 inches, 25 year- 6 hour, SCS 6 Hour

Hydrograph Convolution Interval: 0.1 hr

=====

SUBWATERSHED/STRUCTURE INPUT/OUTPUT TABLE

=====

-Hydrology-

JBS	SWS	Area (ac)	CN	UHS	Tc (hrs)	K (hrs)	X	Base- Flow (cfs)	Runoff Volume (ac-ft)	Peak Discharge (cfs)	
111	1	7.80	65	S	0.277	0.082	0.307	0.0	0.99	4.24	
111	2	51.50*	81	F	0.109	0.114	0.293	0.0	12.06	136.33	
111	3	16.50*	72	F	0.099	0.000	0.000	0.0	2.81	32.71	
111	4	2.00*	100	F	0.000	0.000	0.000	0.0	0.80	7.18	
					Type: Pond	Label: BASIN 007A					
111	Structure	77.80								16.66	
-----											
111	Total IN	77.80								16.66	167.29
111	Total OUT								16.66	126.73	
=====											
112	1	2.00	65	S	0.255	0.188	0.218	0.0	0.25	1.14	
112	2	53.60*	81	F	0.084	0.134	0.314	0.0	12.55	141.89	
112	3	24.80*	72	F	0.170	0.000	0.000	0.0	4.23	43.67	
112	4	2.50*	100	F	0.000	0.000	0.000	0.0	1.00	8.98	
					Type: Pond	Label: BASIN 007P					
112	Structure	82.90								34.69	
-----											
112	Total IN	160.70								34.69	258.24
112	Total OUT								34.69	199.24	
=====											
111 to 112 Routing						0.180	0.254				
=====											

=====

SUBWATERSHED/STRUCTURE INPUT/OUTPUT TABLE

=====

-Sedimentology-

SED: Sediment  
 SCp: Peak Sediment Concentration  
 SSp: Peak Settleable Concentration  
 24VW: Volume Weighted Average Settleable Concentration - Peak 24 hours  
 24AA: Arithmetic Average Settleable Concentration - Peak 24 hours

JBS	SWS	K	L (ft)	S (%)	CP	Tt (hrs)	PS #	SED (tons)	SCp (mg/l)	SSp (ml/l)	24VW (ml/l)	24AA (ml/l)
M 111	1	0.32	200.0	5.5	0.003	0.082	1	0.2				
M 111	2	0.24	70.0	15.0	0.900	0.114	2	2803.1				

M 111	3	0.28	70.0	14.0	0.050	0.000	2	32.3
M 111	4	0.00	70.0	0.0	0.000	0.000	1	0.0
							Type: Pond	Label: BASIN 007A

111 Structure 2833.0

111 Total IN	2833.0	221717	172.42	94.02	13.29
111 Total OUT	64.9	5341	0.68	0.37	0.08

M 112	1	0.32	200.0	5.7	0.003	0.188	1	0.0
M 112	2	0.24	70.0	14.9	0.900	0.134	2	2899.6
M 112	3	0.28	70.0	13.9	0.050	0.000	2	47.2
M 112	4	0.00	70.0	0.0	0.000	0.000	1	0.0

Type: Pond Label: BASIN 007P

112 Structure 3008.5

112 Total IN	3008.5	154032	117.44	47.68	7.53
112 Total OUT	161.0	7150	1.73	0.84	0.18

111 to 112 Routing 0.180

Company Name: COSTAIN COAL INC.

Filename: C:\SEDCAD3\AREA6\POND7 User: T.M.G.

Date: 04-20-1994 Time: 12:02:52

A.L.M.C. AREA 6 MINE P-3699 BASINS 007A AND 007P SERIES

Storm: 4.80 inches, 25 year- 6 hour, SCS 6 Hour

Hydrograph Convolution Interval: 0.1 hr

=====

DETAILED SUBWATERSHED INPUT/OUTPUT TABLE

=====

J	B	S	SWS	Seg. #	Land Flow Condition	Distance (ft)	Slope (%)	Velocity (fps)	Segment Time (hr)	Time Conc. (hr)	Muskingum K (hr)	X
1	1	1	1	-a	1	400.00	2.50	0.40	0.28	0.277		
1	1	1	1	-1	6	800.42	3.25	2.70	0.08		0.082	0.307
1	1	1	2	-a	5	300.00	20.00	4.47	0.02			
				-b	6	1500.00	9.33	4.58	0.09	0.109		
1	1	1	2	-1	6	1000.34	2.60	2.42	0.11		0.114	0.293
1	1	1	3	-a	3	300.00	13.33	2.56	0.03			
				-b	6	700.00	3.71	2.89	0.07	0.099		
1	1	2	1	-a	1	300.00	1.67	0.33	0.26	0.255		
1	1	2	1	-1	6	900.03	0.78	1.32	0.19		0.188	0.218
1	1	2	2	-a	5	475.00	12.63	3.55	0.04			
				-b	6	950.00	13.68	5.55	0.05	0.084		
1	1	2	2	-1	6	1400.97	3.71	2.89	0.13		0.134	0.314
1	1	2	3	-a	3	300.00	20.00	3.13	0.03			
				-b	6	1100.00	2.00	2.12	0.14	0.170		

Company Name: COSTAIN COAL INC.  
 Filename: C:\SEDCAD3\AREA6\POND7 User: T.M.G.  
 Date: 04-20-1994 Time: 12:02:52

A.L.M.C. AREA 6 MINE P-3699 BASINS 007A AND 007P SERIES  
 Storm: 4.80 inches, 25 year- 6 hour, SCS 6 Hour  
 Hydrograph Convolution Interval: 0.1 hr

=====  
 POND INPUT/OUTPUT TABLE  
 =====

J1, B1, S1  
 BASIN 007A

Drainage Area from J1, B1, S1, SWS(s)1-4: 77.8 acres  
 Total Contributing Drainage Area: 77.8 acres

DISCHARGE OPTIONS:

Emergency  
 Spillway

=====  
 Riser Diameter (in) -----  
 Riser Height (ft) -----  
 Barrel Diameter (in) -----  
 Barrel Length (ft) -----  
 Barrel Slope (%) -----  
 Manning's n of Pipe -----  
 Spillway Elevation -----  
  
 Lowest Elevation of Holes -----  
 # of Holes/Elevation -----  
  
 Entrance Loss Coefficient -----  
 Tailwater Depth (ft) -----  
  
 Notch Angle (degrees) -----  
 Weir Width (ft) -----  
  
 Siphon Crest Elevation -----  
 Siphon Tube Diameter (in) -----  
 Siphon Tube Length (ft) -----  
 Manning's n of Siphon -----  
 Siphon Inlet Elevation -----  
 Siphon Outlet Elevation -----  
  
 Emergency Spillway Elevation 435.7  
 Crest Length (ft) 10.0  
 Z:1 (Left and Right) 2 2  
 Bottom Width (ft) 35.0

POND RESULTS:

Sediment Storage* (ac-ft)	Permanent Pool (ac-ft)	Dead Space (%)	Sediment Algorithm
7.00	4.82	20.00	CSTRS

\*Sediment Capacity based on User Input

	Runoff Volume (ac-ft)	Peak Discharge (cfs)	Sediment (tons)	Peak Sediment Concentration (mg/l)	Peak Settleable Concentration (ml/l)	24VW (ml/l)	24AA (ml/l)
IN	16.66	167.29	2833.0	221717	172.42	94.02	13.29
OUT	16.66	126.73	64.9	5341	0.68	0.37	0.08

Peak Elevation	Trap Efficiency (%)	Hydrograph Detention Time (hrs)
436.9	97.71	0.50

\*\*\*\*\*

J1, B1, S2  
BASIN 007P

Drainage Area from J1, B1, S2, SWS(s)1-4: 82.9 acres  
Total Contributing Drainage Area: 160.7 acres

DISCHARGE OPTIONS:

	Broad Crested Weir	Emergency Spillway
Riser Diameter (in)	----	----
Riser Height (ft)	----	----
Barrel Diameter (in)	----	----
Barrel Length (ft)	----	----
Barrel Slope (%)	----	----
Manning's n of Pipe	----	----
Spillway Elevation	418.3	----
Lowest Elevation of Holes	----	----
# of Holes/Elevation	----	----
Entrance Loss Coefficient	----	----
Tailwater Depth (ft)	----	----
Notch Angle (degrees)	----	----
Weir Width (ft)	35.0	----
Siphon Crest Elevation	----	----
Siphon Tube Diameter (in)	----	----
Siphon Tube Length (ft)	----	----
Manning's n of Siphon	----	----
Siphon Inlet Elevation	----	----
Siphon Outlet Elevation	----	----
Emergency Spillway Elevation	----	419.6
Crest Length (ft)	----	10.0
Z:1 (Left and Right)	-- --	2 2
Bottom Width (ft)	----	40.2

POND RESULTS:

Sediment Storage* (ac-ft)	Permanent Pool (ac-ft)	Dead Space (%)	Sediment Algorithm
8.00	7.38	20.00	CSTRS

\*Sediment Capacity based on User Input

	Runoff Volume (ac-ft)	Peak Discharge (cfs)	Sediment (tons)	Peak Sediment Concentration (mg/l)	Peak Settleable Concentration (ml/l)	24VW (ml/l)	24AA (ml/l)
IN	34.69	258.24	3008.5	154032	117.44	47.68	7.53
OUT	34.69	199.24	161.0	7150	1.73	0.84	0.18

Peak Elevation	Trap Efficiency (%)	Hydrograph Detention Time (hrs)
419.8	94.65	0.31

\*\*\*\*\*

Company Name: COSTAIN COAL INC.  
 Filename: C:\SEDCAD3\AREA6\POND7 User: T.M.G.  
 Date: 04-20-1994 Time: 12:02:52  
 A.L.M.C. AREA 6 MINE P-3699 BASINS 007A AND 007P SERIES  
 Storm: 4.80 inches, 25 year- 6 hour, SCS 6 Hour  
 Hydrograph Convolution Interval: 0.1 hr

=====  
 ELEVATION-DISCHARGE TABLE  
 =====

J1, B1, S1  
 BASIN 007A

Drainage Area from J1, B1, S1, SWS(s)1-4: 77.8 acres  
 Total Contributing Drainage Area: 77.8 acres

Elevation	Emergency Spillway (cfs)	Total Discharge (cfs)
433.59	0.0	0.0
434.00	0.0	0.0
435.00	0.0	0.0
435.70	0.0	0.0
436.00	16.5	16.5
436.29	32.3	32.3
436.39	37.8	37.8
436.49	50.1	50.1
436.59	63.6	63.6
436.69	78.2	78.2
437.00	147.1	147.1
437.19	167.4	167.4
437.69	279.2	279.2
438.00	382.7	382.7

\*\*\*\*\*

J1, B1, S2  
 BASIN 007P

Drainage Area from J1, B1, S2, SWS(s)1-4: 82.9 acres  
 Total Contributing Drainage Area: 160.7 acres

Elevation	Broad Crested Weir (cfs)	Emergency Spillway (cfs)	Total Discharge (cfs)
414.72	0.0	0.0	0.0
415.00	0.0	0.0	0.0
416.00	0.0	0.0	0.0
417.00	0.0	0.0	0.0
418.00	0.0	0.0	0.0
418.30	0.0	0.0	0.0
419.00	63.3	0.0	63.3
419.60	160.1	0.0	160.1

420.00

239.5

0.0

239.5

\*\*\*\*\*

**SOIL CLASSIFICATION**

Company Name: COSTAIN COAL INC.  
 Filename: C:\SEDCAD3\AREA6\POND7 User: T.M.G.  
 Date: 04-20-1994 Time: 12:02:52  
 A.L.M.C. AREA 6 MINE P-3699 BASINS 007A AND 007P SERIES  
 Storm: 4.80 inches, 25 year- 6 hour, SCS 6 Hour  
 Hydrograph Convolution Interval: 0.1 hr

=====  
 ELEVATION-AREA-CAPACITY-DISCHARGE TABLE  
 =====

J1, B1, S1  
 BASIN 007A

Drainage Area from J1, B1, S1, SWS(s)1-4: 77.8 acres  
 Total Contributing Drainage Area: 77.8 acres

SW#1: Emergency Spillway

Elev	Stage (ft)	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	
423.00	0.00	0.00	0.00		
433.00	10.00	1.71	5.92		
433.59	0.00	1.94	7.00	0.00	Top of Sediment Storage (0 Stage)
434.00	0.41	2.10	0.84	0.00	
435.00	1.41	2.38	3.08	0.00	
435.70	2.11	2.60	4.82	0.00	Stage of SW#1
436.00	2.41	2.69	5.61	16.54	
436.29	2.70	2.77	6.39	32.26	
436.39	2.80	2.80	6.67	37.78	
436.49	2.90	2.83	6.95	50.10	
436.59	3.00	2.86	7.23	63.60	
436.69	3.10	2.88	7.52	78.21	
436.91	3.32	2.88	8.17	126.73	Peak Stage
437.00	3.41	2.97	8.44	147.13	
437.19	3.60	3.03	9.00	167.44	
437.69	4.10	3.18	10.55	279.17	
438.00	4.41	3.28	11.57	382.71	

J1, B1, S2  
 BASIN 007P

Drainage Area from J1, B1, S2, SWS(s)1-4: 82.9 acres  
 Total Contributing Drainage Area: 160.7 acres

SW#1: Broad Crested Weir  
 SW#2: Emergency Spillway

Elev	Stage (ft)	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	
405.00	0.00	0.00	0.00		
414.00	9.00	1.54	6.89		
414.72	0.00	1.66	8.00	0.00	Top of Sediment Storage (0 Stage)
415.00	0.28	1.71	0.47	0.00	

416.00	1.28	1.90	2.28	0.00	
417.00	2.28	2.17	4.31	0.00	
418.00	3.28	2.47	6.63	0.00	
418.30	3.58	2.55	7.38	0.00	Stage of SW#1
419.00	4.28	2.76	9.24	63.28	
419.60	4.88	2.94	10.95	160.15	Stage of SW#2
419.80	5.08	2.94	11.54	199.24	Peak Stage
420.00	5.28	3.06	12.15	239.48	

\*\*\*\*\*

## STABILITY ANALYSIS DATA

### METHODOLOGY

The static and dynamic loading stability analyses were performed using the Simplified Bishop Method. The computer program used was the REAME Slope Stability Program as developed by Dr. Yang H. Huang, P.E. of the University of Kentucky.

### SOIL CLASSIFICATION UNITS

The soil types (soil classifications) to be used in the construction of the embankment structure (ML and CL) and the soil types (soil classification) of the material between the proposed embankment and stiff base (CL and CL-ML) for sediment basins 007P and 007A Series were sampled and analyzed by Perc Engineering Co., Inc. The soil properties used in the stability analysis (ML, CL, and CL-ML) type soils, was taken from U.S. Department of the Interior Bureau of Reclamation Design of Small Dams.\*

### SOIL PROPERTIES

	<u>UNIFIED CLASS</u>	<u>COHESION (PSF)</u>	<u>ANGLE OF INT. FRICTION</u>	<u>DESIGN DENSITY</u>
BASIN 007P				
Dam Material	ML	100.80	30.54	123.04
Foundation	CL	180.00	30.54	135.96
BASIN 007A				
Dam Material	CL	180.00	30.54	135.96
Foundation	CL-ML	230.40	26.56	128.18

\* United States Department of Interior Bureau of Reclamation Design of Small Dams page 137.

**STABILITY ANALYSIS DATA**  
(Continued)

DESIGN DATA

- (1) Design Density = 95% of the Standard Proctor maximum density
  - (2) Embankment top width = 12.0' minimum
  - (3) Freeboard = 10% of structure (from top of embankment to normal pool level)
  - (4) Safety factors for embankments with 2.5H:1V slopes for Basin 011P and 3.0H:1V slopes for Basins 011A and 011B, front and back
  - (5) Sediment Basin 007P design height = \* 16.0 feet  
Sediment Basin 007A design height = \* 15.2 feet
- \* Vertical distance measured from top of the embankment to toe of the upstream slope.
- (6) DMIN = 0.00

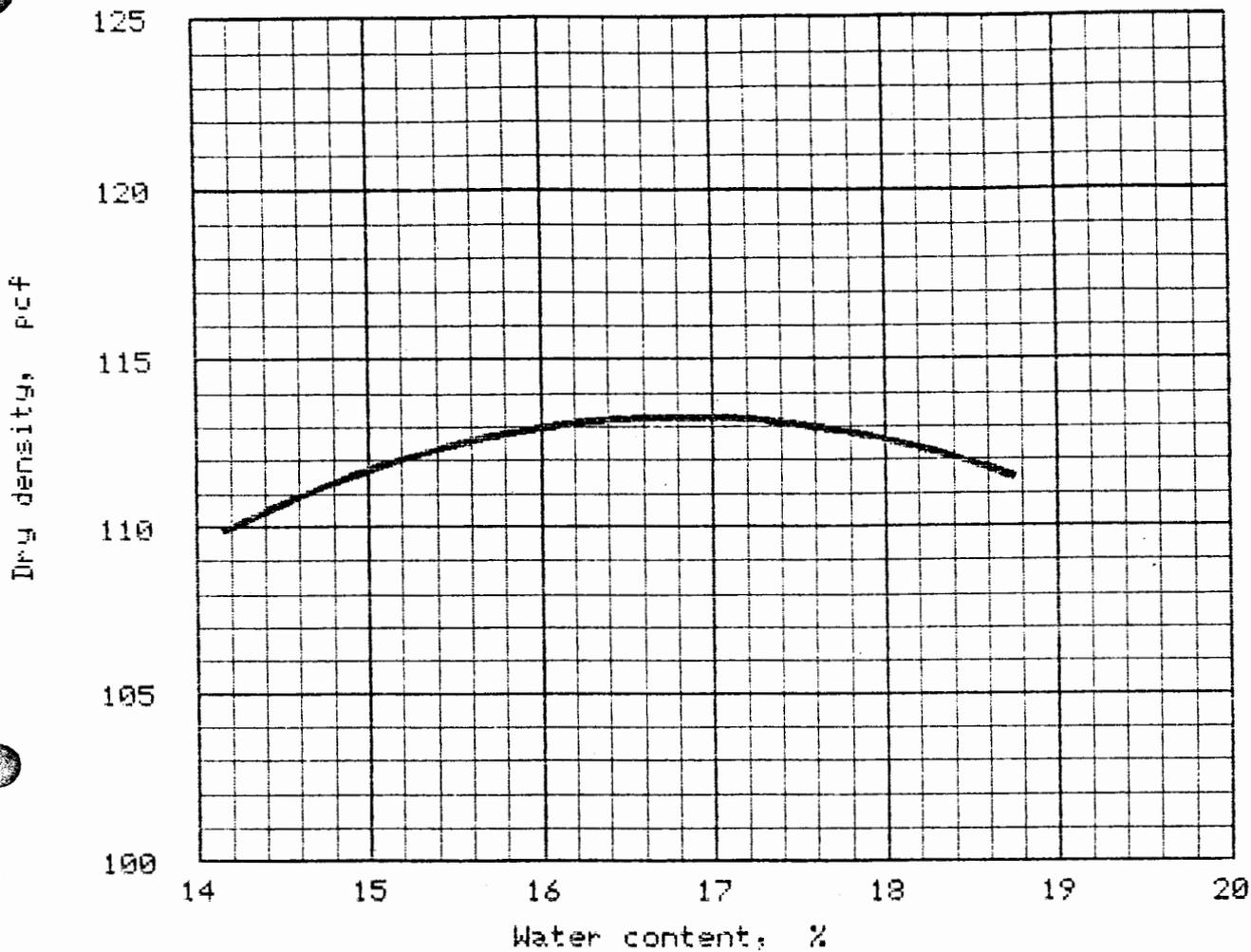
SAFETY FACTORS

BASIN NUMBER	STATIC SAFETY FACTOR	SEISMIC SAFETY FACTOR
007P	1.739	1.516
007A	1.920	1.677

FOUNDATIONS AND ABUTMENTS

The foundation and abutments area will be inspected for visible structural deficiencies after clearing and grubbing, and if found they will be treated using sound engineering practices.

# PROCTOR TEST REPORT



"Standard" Proctor, ASTM D 698, Method C

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in	% < No. 20
	USCS	AASHTO						

### TEST RESULTS

Optimum moisture = 16.8 %  
 Maximum dry density = 113.3 pcf

### MATERIAL DESCRIPTION

TAN CLAY W/ SHALE

Project No.:  
 Project: ALABAMA LAND & MINERAL  
 Location: AREA - 6

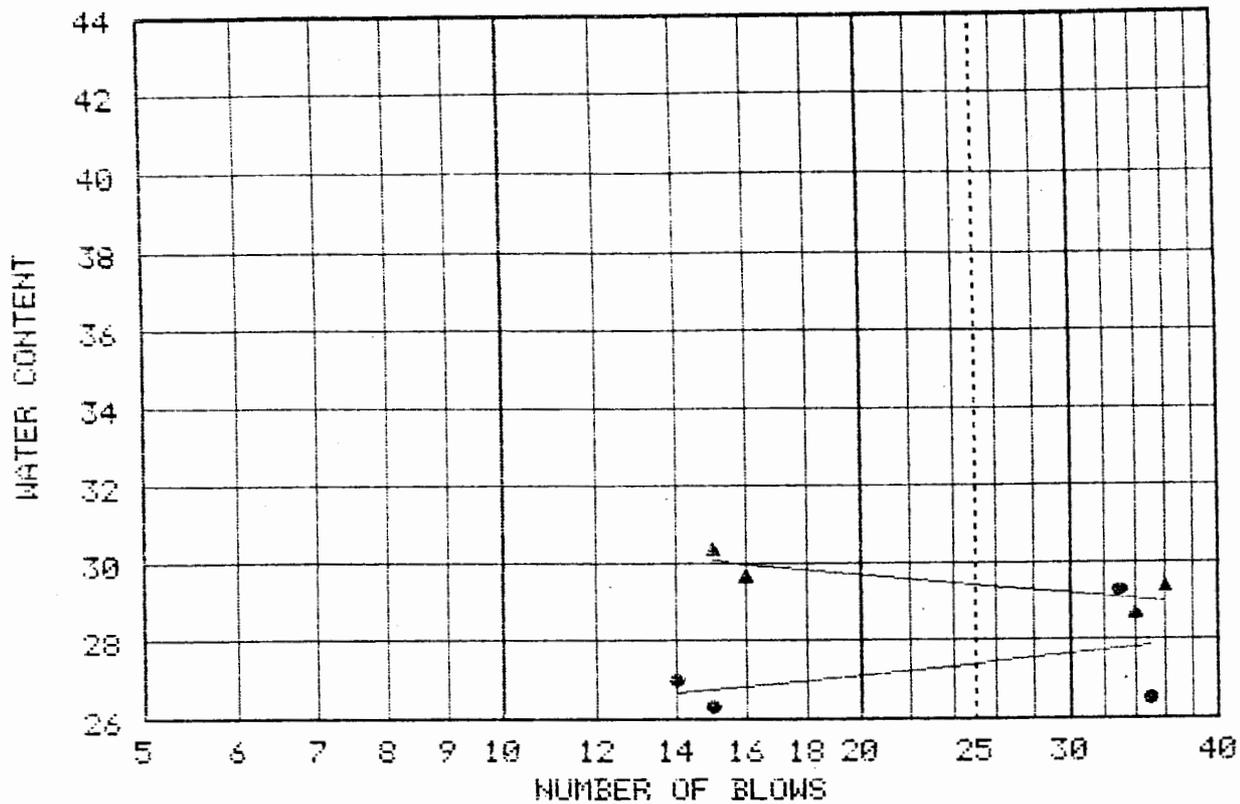
Remarks:  
 BASIN - 007P  
 DAM MATERIAL

Date: 4-27-1994

PROCTOR TEST REPORT  
**PERC ENGINEERING CO., INC.**

Figure No. \_\_\_\_\_

# LIQUID AND PLASTIC LIMITS TEST REPORT



Location + Description	LL	PL	PI	-200	ASTM D 2487-90
● Basin 007P FOUNDATION MATERIAL	27.4	20.4	7	76.40	CL, Lean clay with sand
▲ Basin 007P Dam Material	29.5	24.8	4.7	59.78	ML, Sandy silt with gravel

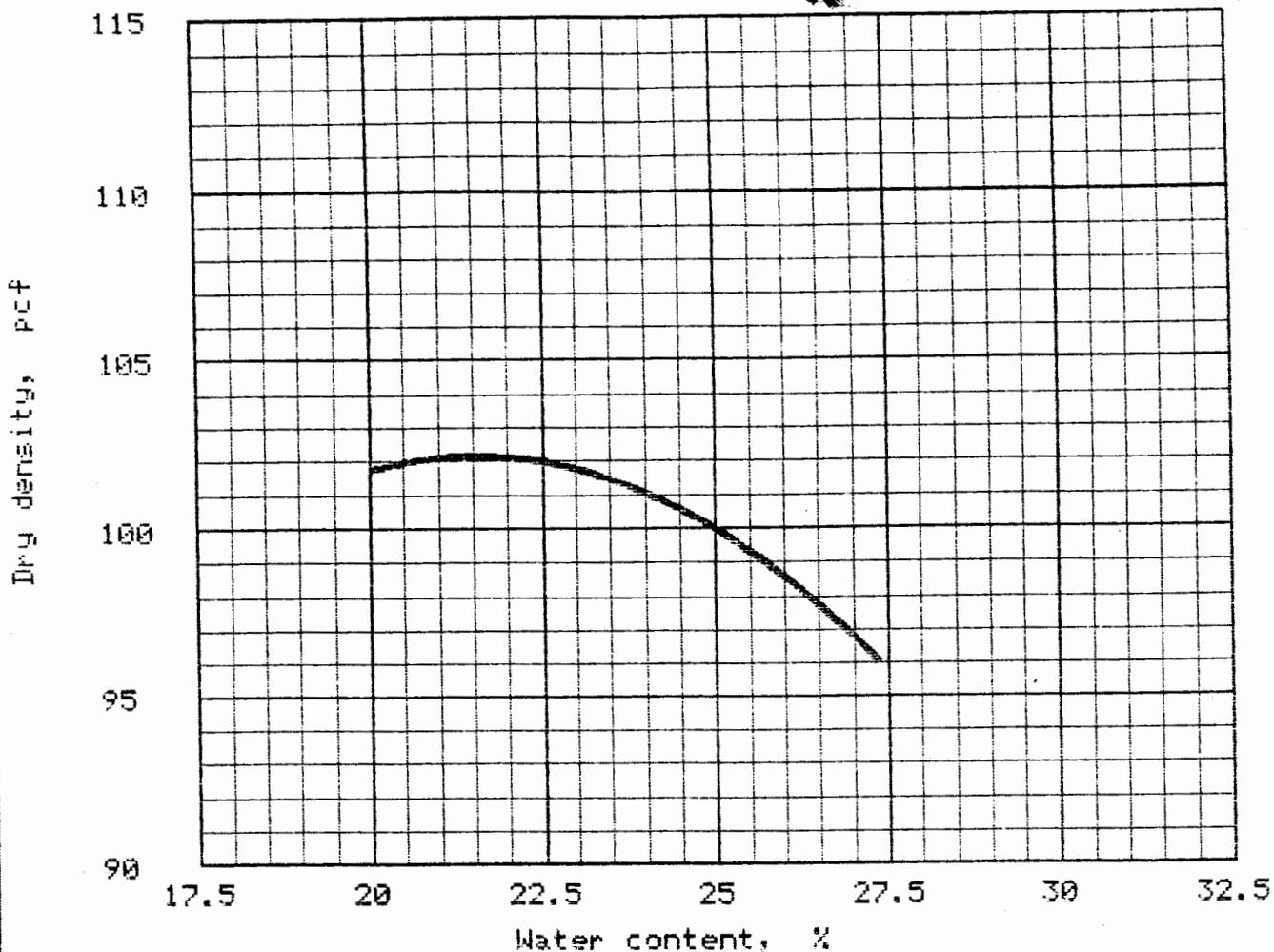
Project No.:  
 Project: BASIN 007P  
 Client: Alabama Land & Mineral  
 Location: AREA - 6  
 Date: 4-19-94

Remarks:  
 DAM & FOUNDATION  
 MATERIAL

LIQUID AND PLASTIC LIMITS TEST REPORT  
 PERC ENGINEERING CO., INC.

Fig. No. \_\_\_\_\_

# PROCTOR TEST REPORT

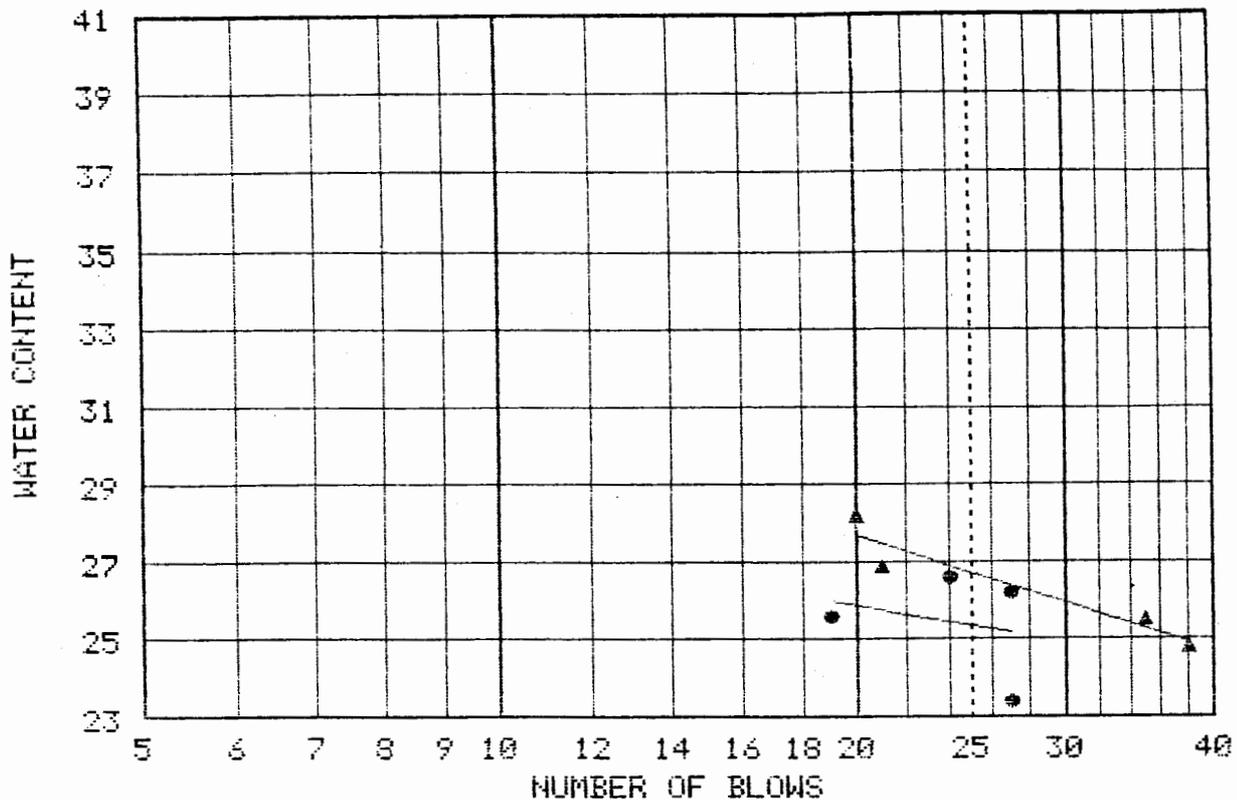


"Standard" Proctor, ASTM D 698, Method A

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No. 4	% < No. 20
	USCS	AASHTO						

TEST RESULTS	MATERIAL DESCRIPTION
Optimum moisture = 21.5 % Maximum dry density = 102.2 pcf	Red Sandy Clay
Project No.: Project: ALABAMA LAND & MINERAL Location: AREA - 6  Date: 4-27-1994	Remarks: BASIN - 007A DAM MATERIAL
PROCTOR TEST REPORT PERC ENGINEERING CO., INC.	Figure No. _____

# LIQUID AND PLASTIC LIMITS TEST REPORT



Location + Description	LL	PL	PI	-200	ASTM D 2487-90
● Basin 007A Foundation Material	25.4	20.0	5.4	53.99	CL-ML, Sandy silty clay
▲ Basin 007A Dam Material	26.7	18.9	7.8	64.35	CL, Sandy lean clay

Project No.:  
 Project: BASIN 007A  
 Client: Alabama Land & Mineral  
 Location: AREA - 6  
 Date: 4-19-94

Remarks:  
 DAM & FOUNDATION  
 MATERIAL

**ALABAMA LAND AND MINERAL CORP.  
AREA 6 MINE  
P-3699  
STABILITY ANALYSIS  
BASIN 007P**

09:35:33 05-02-94 Execution of \*\*\* REAME \*\*\*  
 A version of the UNIVERSITY of KENTUCKY computer model  
 by Dr. Yang H. Huang  
 Adapted by M.B. ENGINEERING PROGRAMS INC.  
 P.O. Box 1453  
 Paintsville, Ky. 41240

Version 3.02 dated 10-12-1985.  
 Prepared for : Walker Service Company  
 P. O. Box 309 - Plant Street  
 Oakman, Alabama 35579

\*\*\*\*\*  
 \* A.L.M.C. AREA 6 MINE P-3699 BASIN 007P STATIC \*  
 \*\*\*\*\*

NUMBER OF BOUNDARY LINES= 4  
 NUMBER OF POINTS ON BOUNDARY LINES ARE: 2 2 3 7  
 ON BOUNDARY LINE NO. 1, POINT NO. AND COORDINATES ARE:

1 .000 7.500  
 2 500.000 .000

ON BOUNDARY LINE NO. 2, POINT NO. AND COORDINATES ARE:

1 200.000 6.500  
 2 295.584 5.066

ON BOUNDARY LINE NO. 3, POINT NO. AND COORDINATES ARE:

1 .000 9.500  
 2 200.000 6.500  
 3 233.250 19.800

ON BOUNDARY LINE NO. 4, POINT NO. AND COORDINATES ARE:

1 .000 19.800  
 2 233.250 19.800  
 3 240.000 22.500  
 4 252.000 22.500  
 5 284.902 9.339  
 6 295.584 5.066  
 7 500.000 2.000

LINE NO. AND SLOPE OF EACH SEGMENT ARE:

1 -.015  
 2 -.015  
 3 -.015 .400  
 4 .000 .400 .000 -.400 -.400 -.015

NO. OF RADIUS CONTROL ZONES=1 PLOT OR NO PLOT=1 NO. OF SEEPAGE CASES=1  
 TOTAL NO. OF LINES AT BOTTOM OF RADIUS CONTROL ZONES ARE: 1

FOR RAD. CONT. ZONE NO. 1 RADIUS DECREMENT= .000  
 NO. OF CIRCLES= 5 ID NO. FOR FIRST CIRCLE= 1

LINE NO.= 1 BEGIN PT. NO.= 1 END PT. NO.= 2  
 SOIL NO. COHESION F. ANGLE UNIT WT.  
 1 180.000 30.540 135.960  
 2 100.800 30.540 123.040  
 3 .000 .000 62.400

SEISMIC COEFFICIENT= .000 MIN. DEPTH OF TALLEST SLICE= .000  
 UNIT WEIGHT OF WATER= 62.400

THE FACTORS OF SAFETY ARE DETERMINED BY THE SIMPLIFIED BISHOP METHOD

NSPG = 1 NSRCH = 0 # OF SLICES = 10 NO. OF ADD. RADII= 2

NO. OF POINTS ON WATER TABLE FOR EACH CASE= 6

UNDER SEEPAGE CONDITION 1, POINT NO. AND COORDINATES OF WATER TABLE ARE:

1	.000	19.800
2	233.250	19.800
3	254.089	15.822
4	284.902	9.339
5	295.584	5.066
6	500.000	2.000

POINT1=( 253.000, 44.000)

POINT2=( 253.000, 24.000)

POINT3=( 297.000, 24.000)

NJ= 2 NI= 2

AUTOMATIC SEARCH WILL FOLLOW AFTER GRID WITH

XINC= 10.000 AND YINC= 10.000

AT POINT ( 253.000, 44.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

40.290	5.829
36.537	5.769
32.784	6.091
29.030	6.538
25.277	7.585

39.039	5.778
37.788	5.669
35.286	5.871
34.035	5.952

LOWEST FACTOR OF SAFETY= 5.669 AND OCCURS AT RADIUS = 37.788

AT POINT ( 253.000, 34.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

30.292	5.917
26.542	5.623
22.792	5.557
19.043	5.848
15.293	6.908

25.292	5.589
24.042	5.536
21.542	5.612
20.293	5.655

LOWEST FACTOR OF SAFETY= 5.536 AND OCCURS AT RADIUS = 24.042

AT POINT ( 253.000, 24.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

20.293	6.308
16.587	5.871
12.881	6.142
9.176	6.901
5.470	7.181

19.057	6.141
--------	-------

17.822	5.926
15.352	5.968
14.117	6.094

LOWEST FACTOR OF SAFETY= 5.871 AND OCCURS AT RADIUS = 16.587

AT POINT ( 275.000, 44.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

40.620	1.979
38.197	1.870
35.774	2.013
33.351	2.318
30.928	3.032

39.813	1.960
39.005	1.922
37.389	1.906
36.582	1.954

LOWEST FACTOR OF SAFETY= 1.870 AND OCCURS AT RADIUS = 38.197

AT POINT ( 275.000, 34.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

30.622	1.980
28.341	1.861
26.061	2.024
23.780	2.387
21.500	3.199

29.861	1.955
29.101	1.922
27.581	1.901
26.821	1.957

LOWEST FACTOR OF SAFETY= 1.861 AND OCCURS AT RADIUS = 28.341

AT POINT ( 275.000, 24.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

20.623	2.234
18.485	2.104
16.348	2.274
14.210	2.631
12.072	3.520

19.910	2.216
19.198	2.188
17.773	2.150
17.060	2.204

LOWEST FACTOR OF SAFETY= 2.104 AND OCCURS AT RADIUS = 18.485

AT POINT ( 297.000, 44.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

40.950	2.776
40.095	2.889
39.240	2.947
38.385	2.946
37.530	4.938

38.955	2.443
--------	-------

38.670	2.658
38.100	3.351
37.815	3.946

LOWEST FACTOR OF SAFETY= 2.443 AND OCCURS AT RADIUS = 38.955

AT POINT ( 297.000, 34.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

30.952	3.249
30.239	3.436
29.527	3.685
28.815	3.194
28.103	5.483

29.290	3.745
29.052	3.650
28.577	3.651
28.340	4.338

LOWEST FACTOR OF SAFETY= 3.194 AND OCCURS AT RADIUS = 28.815

AT POINT ( 297.000, 24.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

20.953	4.172
20.383	4.520
19.814	5.057
19.244	5.960
18.675	6.551

LOWEST FACTOR OF SAFETY= 4.172 AND OCCURS AT RADIUS = 20.953

FOR PIEZOMETRIC LINE NO. 1

AT POINT ( 275.000, 34.000), RADIUS 28.341  
THE MINIMUM FACTOR OF SAFETY IS 1.861

AT POINT ( 275.000, 34.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

30.622	1.980
28.341	1.861
26.061	2.024
23.780	2.387
21.500	3.199

29.861	1.955
29.101	1.922
27.581	1.901
26.821	1.957

LOWEST FACTOR OF SAFETY= 1.861 AND OCCURS AT RADIUS = 28.341

AT POINT ( 285.000, 34.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

30.772	1.899
29.204	1.897
27.636	1.954
26.069	2.381
24.501	3.682

30.249	1.904
29.726	1.906
28.681	1.806
28.159	1.875

LOWEST FACTOR OF SAFETY= 1.806 AND OCCURS AT RADIUS = 28.681

AT POINT ( 295.000, 34.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

30.922	2.724
30.067	2.801
29.212	2.809
28.357	2.891
27.502	4.827

LOWEST FACTOR OF SAFETY= 2.724 AND OCCURS AT RADIUS = 30.922

AT POINT ( 285.000, 44.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

40.770	1.816
39.060	1.802
37.350	1.903
35.639	2.335
33.929	3.548
40.200	1.814
39.630	1.818
38.490	1.754
37.920	1.819

LOWEST FACTOR OF SAFETY= 1.754 AND OCCURS AT RADIUS = 38.490

AT POINT ( 285.000, 54.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

50.769	1.823
48.916	1.762
47.063	1.881
45.210	2.310
43.356	3.372
50.152	1.806
49.534	1.795
48.298	1.743
47.681	1.802

LOWEST FACTOR OF SAFETY= 1.743 AND OCCURS AT RADIUS = 48.298

AT POINT ( 285.000, 64.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

60.768	1.881
58.772	1.755
56.776	1.930
54.780	2.304
52.784	3.227
60.103	1.859
59.437	1.841
58.107	1.799
57.441	1.858

LOWEST FACTOR OF SAFETY= 1.755 AND OCCURS AT RADIUS = 58.772

AT POINT ( 295.000, 54.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

50.919	2.257
49.779	2.271
48.638	2.082
47.498	2.638
46.357	4.269

49.399	2.247
49.019	2.137
48.258	2.223
47.878	2.399

LOWEST FACTOR OF SAFETY= 2.082 AND OCCURS AT RADIUS = 48.638

AT POINT ( 275.000, 54.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

50.619	2.056
48.053	1.955
45.487	2.122
42.921	2.435
40.355	2.945

49.764	2.037
48.909	1.998
47.198	1.994
46.343	2.051

LOWEST FACTOR OF SAFETY= 1.955 AND OCCURS AT RADIUS = 48.053

AT POINT ( 287.500, 54.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

50.807	1.849
49.132	1.793
47.457	1.904
45.782	2.354
44.107	3.553

50.248	1.833
49.690	1.817
48.573	1.739
48.015	1.810

LOWEST FACTOR OF SAFETY= 1.739 AND OCCURS AT RADIUS = 48.573

AT POINT ( 290.000, 54.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

50.844	1.919
49.347	1.868
47.851	1.942
46.354	2.414
44.857	3.764

50.345	1.914
49.846	1.899
48.848	1.764
48.350	1.844

LOWEST FACTOR OF SAFETY= 1.764 AND OCCURS AT RADIUS = 48.848

POINT ( 287.500, 56.500) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

53.307	1.851
51.596	1.788
49.885	1.895
48.174	2.345
46.463	3.507

52.736	1.833
52.166	1.815
51.025	1.740
50.455	1.807

LOWEST FACTOR OF SAFETY= 1.740 AND OCCURS AT RADIUS = 51.025

AT POINT ( 287.500, 51.500) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

48.307	1.850
46.668	1.804
45.028	1.908
43.389	2.359
41.750	3.601

47.761	1.837
47.214	1.822
46.121	1.744
45.575	1.817

LOWEST FACTOR OF SAFETY= 1.744 AND OCCURS AT RADIUS = 46.121

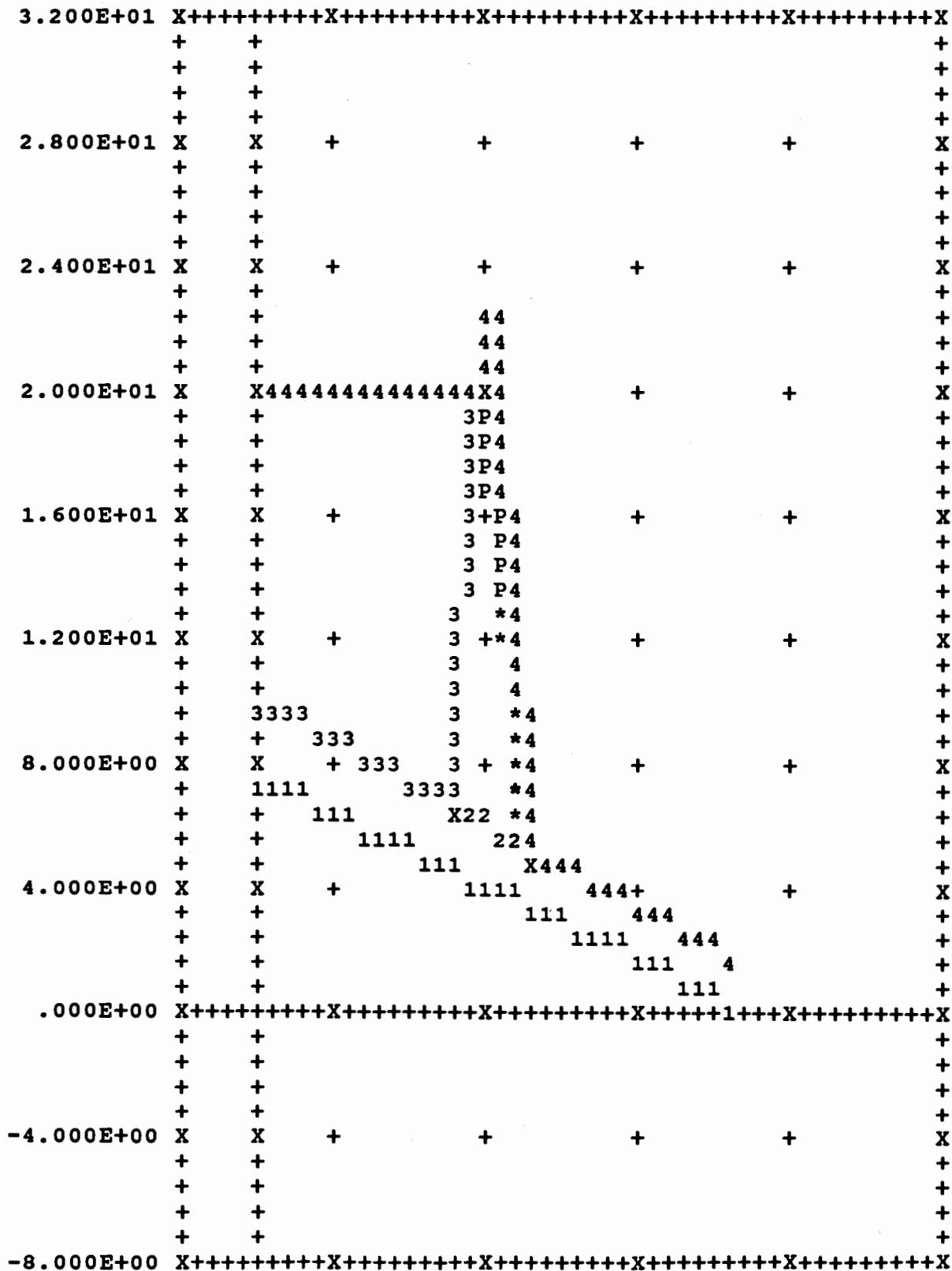
FOR PIEZOMETRIC LINE NO. 1

AT POINT ( 287.500, 54.000), RADIUS 48.573  
THE MINIMUM FACTOR OF SAFETY IS 1.739

CROSS SECTION IN DISTORTED SCALE

NUMERALS INDICATE BOUNDARY LINE NO. IF THERE ARE MORE THAN 10 BOUND. LINES, ALPHABETS WILL THEN BE USED. P INDICATES PIEZOMETRIC LINE. IF A PORTION OF PIEZOMETRIC LINE COINCIDES WITH THE GROUND OR ANOTHER BOUNDARY LINE, ONLY THE GROUND OR BOUNDARY LINE WILL BE SHOWN. X INDICATES INTERSECTION OF TWO BOUNDARY LINES. \* INDICATES FAILURE SURFACE.

THE MINIMUM FACTOR OF SAFETY IS 1.739



-8.00E+01 8.00E+01 2.40E+02 4.00E+02 5.60E+02 7.20E+02  
....RUN COMPLETE....

09:36:58 05-02-94 Execution of \*\*\* REAME \*\*\*  
version of the UNIVERSITY of KENTUCKY computer model  
by Dr. Yang H. Huang

Adapted by M.B. ENGINEERING PROGRAMS INC.  
P.O. Box 1453  
Paintsville, Ky. 41240

Version 3.02 dated 10-12-1985.

Prepared for : Walker Service Company  
P. O. Box 309 - Plant Street  
Oakman, Alabama 35579

\*\*\*\*\*  
\* A.L.M.C. AREA 6 MINE P-3699 BASIN 007P DYNAMIC \*

\*\*\*\*\*  
NUMBER OF BOUNDARY LINES= 4  
NUMBER OF POINTS ON BOUNDARY LINES ARE: 2 2 3 7  
ON BOUNDARY LINE NO. 1, POINT NO. AND COORDINATES ARE:

1 .000 7.500  
2 500.000 .000

ON BOUNDARY LINE NO. 2, POINT NO. AND COORDINATES ARE:

1 200.000 6.500  
2 295.584 5.066

ON BOUNDARY LINE NO. 3, POINT NO. AND COORDINATES ARE:

1 .000 9.500  
2 200.000 6.500  
3 233.250 19.800

ON BOUNDARY LINE NO. 4, POINT NO. AND COORDINATES ARE:

1 .000 19.800  
2 233.250 19.800  
3 240.000 22.500  
4 252.000 22.500  
5 284.902 9.339  
6 295.584 5.066  
7 500.000 2.000

LINE NO. AND SLOPE OF EACH SEGMENT ARE:

1 -.015  
2 -.015  
3 -.015 .400  
4 .000 .400 .000 -.400 -.400 -.015

NO. OF RADIUS CONTROL ZONES=1 PLOT OR NO PLOT=1 NO. OF SEEPAGE CASES=1  
TOTAL NO. OF LINES AT BOTTOM OF RADIUS CONTROL ZONES ARE: 1

FOR RAD. CONT. ZONE NO. 1 RADIUS DECREMENT= .000  
NO. OF CIRCLES= 5 ID NO. FOR FIRST CIRCLE= 1

LINE NO.= 1 BEGIN PT. NO.= 1 END PT. NO.= 2  
SOIL NO. COHESION F. ANGLE UNIT WT.  
1 180.000 30.540 135.960  
2 100.800 30.540 123.040  
3 .000 .000 62.400

SEISMIC COEFFICIENT= .050 MIN. DEPTH OF TALLEST SLICE= .000  
UNIT WEIGHT OF WATER= 62.400

THE FACTORS OF SAFETY ARE DETERMINED BY THE SIMPLIFIED BISHOP METHOD

NSPG = 1 NSRCH = 0 # OF SLICES = 10 NO. OF ADD. RADII= 2

NO. OF POINTS ON WATER TABLE FOR EACH CASE= 6

UNDER SEEPAGE CONDITION 1, POINT NO. AND COORDINATES OF WATER TABLE ARE:

1	.000	19.800
2	233.250	19.800
3	254.089	15.822
4	284.902	9.339
5	295.584	5.066
6	500.000	2.000

POINT1=( 253.000, 44.000)

POINT2=( 253.000, 24.000)

POINT3=( 297.000, 24.000)

NJ= 2 NI= 2

AUTOMATIC SEARCH WILL FOLLOW AFTER GRID WITH

XINC= 10.000 AND YINC= 10.000

AT POINT ( 253.000, 44.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

40.290	3.972
36.537	3.962
32.784	4.248
29.030	4.706
25.277	5.539

39.039	3.950
37.788	3.883
35.286	4.045
34.035	4.127

LOWEST FACTOR OF SAFETY= 3.883 AND OCCURS AT RADIUS = 37.788

AT POINT ( 253.000, 34.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

30.292	4.213
26.542	4.080
22.792	4.152
19.043	4.475
15.293	5.259

29.042	4.160
27.792	4.047
25.292	4.092
24.042	4.099

LOWEST FACTOR OF SAFETY= 4.047 AND OCCURS AT RADIUS = 27.792

AT POINT ( 253.000, 24.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

20.293	4.865
16.587	4.663
12.881	4.955
9.176	5.597
5.470	5.892

19.057	4.788
17.822	4.663
15.352	4.761
14.117	4.877

LOWEST FACTOR OF SAFETY= 4.663 AND OCCURS AT RADIUS = 16.587

AT POINT ( 275.000, 44.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

40.620	1.704
38.197	1.616
35.774	1.749
33.351	2.030
30.928	2.669
39.813	1.690
39.005	1.660
37.389	1.650
36.582	1.694

LOWEST FACTOR OF SAFETY= 1.616 AND OCCURS AT RADIUS = 38.197

AT POINT ( 275.000, 34.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

30.622	1.726
28.341	1.627
26.061	1.774
23.780	2.097
21.500	2.818
29.861	1.707
29.101	1.680
27.581	1.663
26.821	1.713

LOWEST FACTOR OF SAFETY= 1.627 AND OCCURS AT RADIUS = 28.341

AT POINT ( 275.000, 24.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

20.623	1.964
18.485	1.849
16.348	1.998
14.210	2.314
12.072	3.103
19.910	1.949
19.198	1.924
17.773	1.889
17.060	1.936

LOWEST FACTOR OF SAFETY= 1.849 AND OCCURS AT RADIUS = 18.485

AT POINT ( 297.000, 44.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

40.950	2.384
40.095	2.507
39.240	2.589
38.385	2.592
37.530	4.363

LOWEST FACTOR OF SAFETY= 2.384 AND OCCURS AT RADIUS = 40.950

AT POINT ( 297.000, 34.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

30.952	2.769
30.239	2.958
29.527	3.217
28.815	2.812
28.103	4.847

29.290	3.286
29.052	3.219
28.577	3.219
28.340	3.829

LOWEST FACTOR OF SAFETY= 2.769 AND OCCURS AT RADIUS = 30.952

AT POINT ( 297.000, 24.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

20.953	3.496
20.383	3.821
19.814	4.332
19.244	5.209
18.675	5.797

LOWEST FACTOR OF SAFETY= 3.496 AND OCCURS AT RADIUS = 20.953

FOR PIEZOMETRIC LINE NO. 1

AT POINT ( 275.000, 44.000), RADIUS 38.197  
THE MINIMUM FACTOR OF SAFETY IS 1.616

AT POINT ( 275.000, 44.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

40.620	1.704
38.197	1.616
35.774	1.749
33.351	2.030
30.928	2.669

39.813	1.690
39.005	1.660
37.389	1.650
36.582	1.694

LOWEST FACTOR OF SAFETY= 1.616 AND OCCURS AT RADIUS = 38.197

AT POINT ( 285.000, 44.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

40.770	1.587
39.060	1.577
37.350	1.665
35.639	2.049
33.929	3.128

40.200	1.587
39.630	1.591
38.490	1.532

37.920 1.590

LOWEST FACTOR OF SAFETY= 1.532 AND OCCURS AT RADIUS = 38.490

AT POINT ( 295.000, 44.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

40.920	2.111
39.923	2.171
38.925	1.877
37.927	2.410
36.930	3.978

39.590	2.182
39.258	2.154
38.593	2.010
38.260	2.180

LOWEST FACTOR OF SAFETY= 1.877 AND OCCURS AT RADIUS = 38.925

AT POINT ( 285.000, 54.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

50.769	1.584
48.916	1.535
47.063	1.643
45.210	2.027
43.356	2.971

50.152	1.570
49.534	1.563
48.298	1.518
47.681	1.572

LOWEST FACTOR OF SAFETY= 1.518 AND OCCURS AT RADIUS = 48.298

AT POINT ( 285.000, 64.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

60.768	1.620
58.772	1.516
56.776	1.677
54.780	2.016
52.784	2.842

60.103	1.605
59.437	1.591
58.107	1.557
57.441	1.611

LOWEST FACTOR OF SAFETY= 1.516 AND OCCURS AT RADIUS = 58.772

AT POINT ( 285.000, 74.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

70.767	1.676
68.628	1.570
66.489	1.744
64.350	2.088
62.211	2.715

70.054	1.655
69.341	1.633
67.915	1.620

67.202 1.676

LOWEST FACTOR OF SAFETY= 1.570 AND OCCURS AT RADIUS = 68.628

AT POINT ( 295.000, 64.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

60.918	1.849
59.635	1.850
58.352	1.781
57.068	2.254
55.785	3.593
59.207	1.816
58.779	1.688
57.924	1.899
57.496	2.054

LOWEST FACTOR OF SAFETY= 1.688 AND OCCURS AT RADIUS = 58.779

AT POINT ( 275.000, 64.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

60.618	1.810
57.909	1.742
55.200	1.917
52.492	2.251
49.783	2.689
59.715	1.798
58.812	1.761
57.006	1.785
56.103	1.841

LOWEST FACTOR OF SAFETY= 1.742 AND OCCURS AT RADIUS = 57.909

AT POINT ( 287.500, 64.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

60.806	1.631
58.988	1.558
57.170	1.661
55.352	2.031
53.534	2.980
60.200	1.614
59.594	1.590
58.382	1.535
57.776	1.589

LOWEST FACTOR OF SAFETY= 1.535 AND OCCURS AT RADIUS = 58.382

AT POINT ( 282.500, 64.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

60.731	1.638
58.556	1.551
56.382	1.711
54.208	2.040
52.034	2.702
60.006	1.625
59.281	1.610
57.832	1.596

57.107 1.647

LOWEST FACTOR OF SAFETY= 1.551 AND OCCURS AT RADIUS = 58.556

AT POINT ( 285.000, 66.500) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

63.268	1.632
61.236	1.529
59.204	1.692
57.173	2.027
55.141	2.801

62.591	1.615
61.913	1.599
60.559	1.571
59.882	1.625

LOWEST FACTOR OF SAFETY= 1.529 AND OCCURS AT RADIUS = 61.236

AT POINT ( 285.000, 61.500) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

58.268	1.610
56.308	1.530
54.348	1.663
52.387	2.010
50.427	2.872

57.615	1.595
56.962	1.583
55.655	1.545
55.001	1.597

LOWEST FACTOR OF SAFETY= 1.530 AND OCCURS AT RADIUS = 56.308

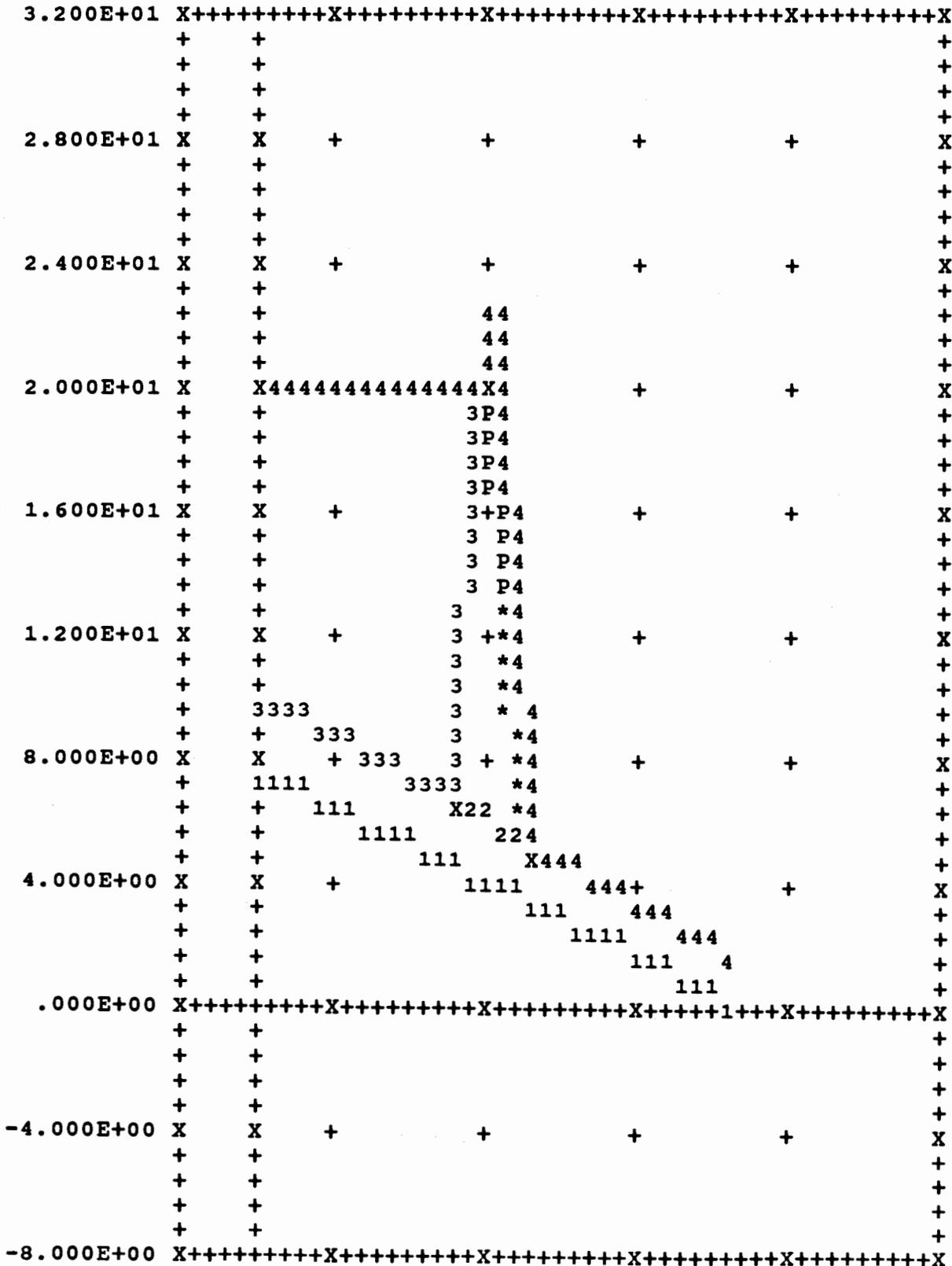
FOR PIEZOMETRIC LINE NO. 1

AT POINT ( 285.000, 64.000), RADIUS 58.772  
THE MINIMUM FACTOR OF SAFETY IS 1.516

CROSS SECTION IN DISTORTED SCALE

NUMERALS INDICATE BOUNDARY LINE NO. IF THERE ARE MORE THAN 10 BOUND. LINES, ALPHABETS WILL THEN BE USED. P INDICATES PIEZOMETRIC LINE. IF A PORTION OF PIEZOMETRIC LINE COINCIDES WITH THE GROUND OR ANOTHER BOUNDARY LINE, ONLY THE GROUND OR BOUNDARY LINE WILL BE SHOWN. X INDICATES INTERSECTION OF TWO BOUNDARY LINES. \* INDICATES FAILURE SURFACE.

THE MINIMUM FACTOR OF SAFETY IS 1.516



-8.00E+01 8.00E+01 2.40E+02 4.00E+02 5.60E+02 7.20E+02

....RUN COMPLETE....

**ALABAMA LAND AND MINERAL CORP.  
AREA 6 MINE  
P-3699  
STABILITY ANALYSIS  
BASIN 007A**

09:47:51 05-02-94 Execution of \*\*\* REAME \*\*\*  
Version of the UNIVERSITY of KENTUCKY computer model

by Dr. Yang H. Huang  
Adapted by M.B. ENGINEERING PROGRAMS INC.  
P.O. Box 1453  
Paintsville, Ky. 41240

Version 3.02 dated 10-12-1985.

Prepared for : Walker Service Company  
P. O. Box 309 - Plant Street  
Oakman, Alabama 35579

\*\*\*\*\*  
\* A.L.M.C. AREA 6 MINE P-3699 BASIN 007A STATIC \*  
\*\*\*\*\*

NUMBER OF BOUNDARY LINES= 4  
NUMBER OF POINTS ON BOUNDARY LINES ARE: 2 2 3 7  
ON BOUNDARY LINE NO. 1, POINT NO. AND COORDINATES ARE:

1 .000 13.000  
2 500.000 .000

ON BOUNDARY LINE NO. 2, POINT NO. AND COORDINATES ARE:

1 200.000 9.800  
2 294.118 7.353

ON BOUNDARY LINE NO. 3, POINT NO. AND COORDINATES ARE:

1 .000 15.000  
2 200.000 9.800  
3 231.750 22.500

ON BOUNDARY LINE NO. 4, POINT NO. AND COORDINATES ARE:

1 .000 22.500  
2 231.750 22.500  
3 238.000 25.000  
4 250.000 25.000  
5 283.136 11.746  
6 294.118 7.353  
7 500.000 2.000

LINE NO. AND SLOPE OF EACH SEGMENT ARE:

1 -.026  
2 -.026  
3 -.026 .400  
4 .000 .400 .000 -.400 -.400 -.026

NO. OF RADIUS CONTROL ZONES=1 PLOT OR NO PLOT=1 NO. OF SEEPAGE CASES=1  
TOTAL NO. OF LINES AT BOTTOM OF RADIUS CONTROL ZONES ARE: 1

FOR RAD. CONT. ZONE NO. 1 RADIUS DECREMENT= .000  
NO. OF CIRCLES= 5 ID NO. FOR FIRST CIRCLE= 1

LINE NO.= 1 BEGIN PT. NO.= 1 END PT. NO.= 2  
SOIL NO. COHESION F. ANGLE UNIT WT.  
1 230.400 26.560 128.180  
2 180.000 30.540 135.960  
3 .000 .000 62.400

SEISMIC COEFFICIENT= .000 MIN. DEPTH OF TALLEST SLICE= .000  
UNIT WEIGHT OF WATER= 62.400

THE FACTORS OF SAFETY ARE DETERMINED BY THE SIMPLIFIED BISHOP METHOD

NSPG = 1 NSRCH = 0 # OF SLICES = 10 NO. OF ADD. RADII= 2

NO. OF POINTS ON WATER TABLE FOR EACH CASE= 6

UNDER SEEPAGE CONDITION 1, POINT NO. AND COORDINATES OF WATER TABLE ARE:

1	.000	22.500
2	231.750	22.500
3	252.681	18.410
4	283.136	11.746
5	294.118	7.353
6	500.000	2.000

POINT1=( 251.000, 46.000)

POINT2=( 251.000, 26.000)

POINT3=( 295.000, 26.000)

NJ= 2 NI= 2

AUTOMATIC SEARCH WILL FOLLOW AFTER GRID WITH

XINC= 10.000 AND YINC= 10.000

AT POINT ( 251.000, 46.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

39.513	5.959
35.815	6.537
32.117	6.876
28.419	7.443
24.722	9.410

LOWEST FACTOR OF SAFETY= 5.959 AND OCCURS AT RADIUS = 39.513

AT POINT ( 251.000, 36.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

29.516	6.043
25.822	6.330
22.128	6.265
18.434	6.703
14.739	8.557
24.591	6.294
23.359	6.244
20.896	6.333
19.665	6.421

LOWEST FACTOR OF SAFETY= 6.043 AND OCCURS AT RADIUS = 29.516

AT POINT ( 251.000, 26.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

19.519	6.503
15.875	6.715
12.232	7.140
8.588	8.169
4.944	9.141

LOWEST FACTOR OF SAFETY= 6.503 AND OCCURS AT RADIUS = 19.519

AT POINT ( 273.000, 46.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

40.084	2.072
--------	-------

37.676	2.195
35.267	2.380
32.858	2.791
30.449	3.940

LOWEST FACTOR OF SAFETY= 2.072 AND OCCURS AT RADIUS = 40.084

AT POINT ( 273.000, 36.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

30.088	2.085
27.821	2.215
25.555	2.439
23.288	2.932
21.022	4.191

LOWEST FACTOR OF SAFETY= 2.085 AND OCCURS AT RADIUS = 30.088

AT POINT ( 273.000, 26.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

20.091	2.377
17.967	2.554
15.843	2.792
13.719	3.294
11.594	4.662

LOWEST FACTOR OF SAFETY= 2.377 AND OCCURS AT RADIUS = 20.091

AT POINT ( 295.000, 46.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

40.656	2.974
39.767	3.242
38.878	3.537
37.989	4.107
37.099	7.158

LOWEST FACTOR OF SAFETY= 2.974 AND OCCURS AT RADIUS = 40.656

AT POINT ( 295.000, 36.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

30.660	3.436
29.913	3.783
29.166	4.285
28.419	4.578
27.672	8.121

LOWEST FACTOR OF SAFETY= 3.436 AND OCCURS AT RADIUS = 30.660

AT POINT ( 295.000, 26.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

20.663	4.279
20.059	4.778
19.454	5.559
18.850	6.829
18.245	9.752

LOWEST FACTOR OF SAFETY= 4.279 AND OCCURS AT RADIUS = 20.663

AT POINT ( 273.000, 46.000), RADIUS 40.084  
THE MINIMUM FACTOR OF SAFETY IS 2.072

AT POINT ( 273.000, 46.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

40.084	2.072
37.676	2.195
35.267	2.380
32.858	2.791
30.449	3.940

LOWEST FACTOR OF SAFETY= 2.072 AND OCCURS AT RADIUS = 40.084

AT POINT ( 283.000, 46.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

40.344	1.937
38.626	2.110
36.908	2.380
35.190	2.990
33.472	4.771

LOWEST FACTOR OF SAFETY= 1.937 AND OCCURS AT RADIUS = 40.344

AT POINT ( 293.000, 46.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

40.604	2.626
39.577	2.824
38.550	2.868
37.522	3.767
36.495	6.461

LOWEST FACTOR OF SAFETY= 2.626 AND OCCURS AT RADIUS = 40.604

AT POINT ( 283.000, 56.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

50.341	1.931
48.480	2.055
46.620	2.303
44.759	2.898
42.899	4.495

LOWEST FACTOR OF SAFETY= 1.931 AND OCCURS AT RADIUS = 50.341

AT POINT ( 283.000, 66.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

60.338	1.984
58.335	2.088
56.332	2.322
54.329	2.830
52.326	4.267

LOWEST FACTOR OF SAFETY= 1.984 AND OCCURS AT RADIUS = 60.338

AT POINT ( 293.000, 56.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

50.601	2.435
49.431	2.598
48.261	2.710
47.092	3.532

45.922 5.975

LOWEST FACTOR OF SAFETY= 2.435 AND OCCURS AT RADIUS = 50.601

AT POINT ( 273.000, 56.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

50.081	2.139
47.530	2.278
44.979	2.485
42.427	2.888
39.876	3.766

LOWEST FACTOR OF SAFETY= 2.139 AND OCCURS AT RADIUS = 50.081

AT POINT ( 285.500, 56.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

50.406	1.969
48.718	2.085
47.030	2.366
45.343	2.996
43.655	4.780

LOWEST FACTOR OF SAFETY= 1.969 AND OCCURS AT RADIUS = 50.406

AT POINT ( 280.500, 56.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

50.276	1.941
48.243	2.063
46.210	2.289
44.176	2.816
42.143	4.261

LOWEST FACTOR OF SAFETY= 1.941 AND OCCURS AT RADIUS = 50.276

AT POINT ( 283.000, 58.500) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

52.840	1.942
50.944	2.057
49.048	2.297
47.152	2.876
45.256	4.434

LOWEST FACTOR OF SAFETY= 1.942 AND OCCURS AT RADIUS = 52.840

AT POINT ( 283.000, 53.500) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

47.842	1.921
46.017	2.060
44.192	2.317
42.367	2.918
40.542	4.560

LOWEST FACTOR OF SAFETY= 1.921 AND OCCURS AT RADIUS = 47.842

AT POINT ( 283.000, 51.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

45.343	1.920
43.553	2.071
41.764	2.339
39.975	2.940

38.185 4.627

LOWEST FACTOR OF SAFETY= 1.920 AND OCCURS AT RADIUS = 45.343

AT POINT ( 283.000, 48.500) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

42.844	1.926
41.090	2.087
39.336	2.358
37.582	2.964
35.829	4.698

LOWEST FACTOR OF SAFETY= 1.926 AND OCCURS AT RADIUS = 42.844

AT POINT ( 285.500, 51.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

45.408	1.983
43.791	2.121
42.174	2.403
40.558	3.045
38.941	4.925

LOWEST FACTOR OF SAFETY= 1.983 AND OCCURS AT RADIUS = 45.408

AT POINT ( 280.500, 51.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

45.278	1.922
43.316	2.052
41.354	2.296
39.392	2.866
37.430	4.376

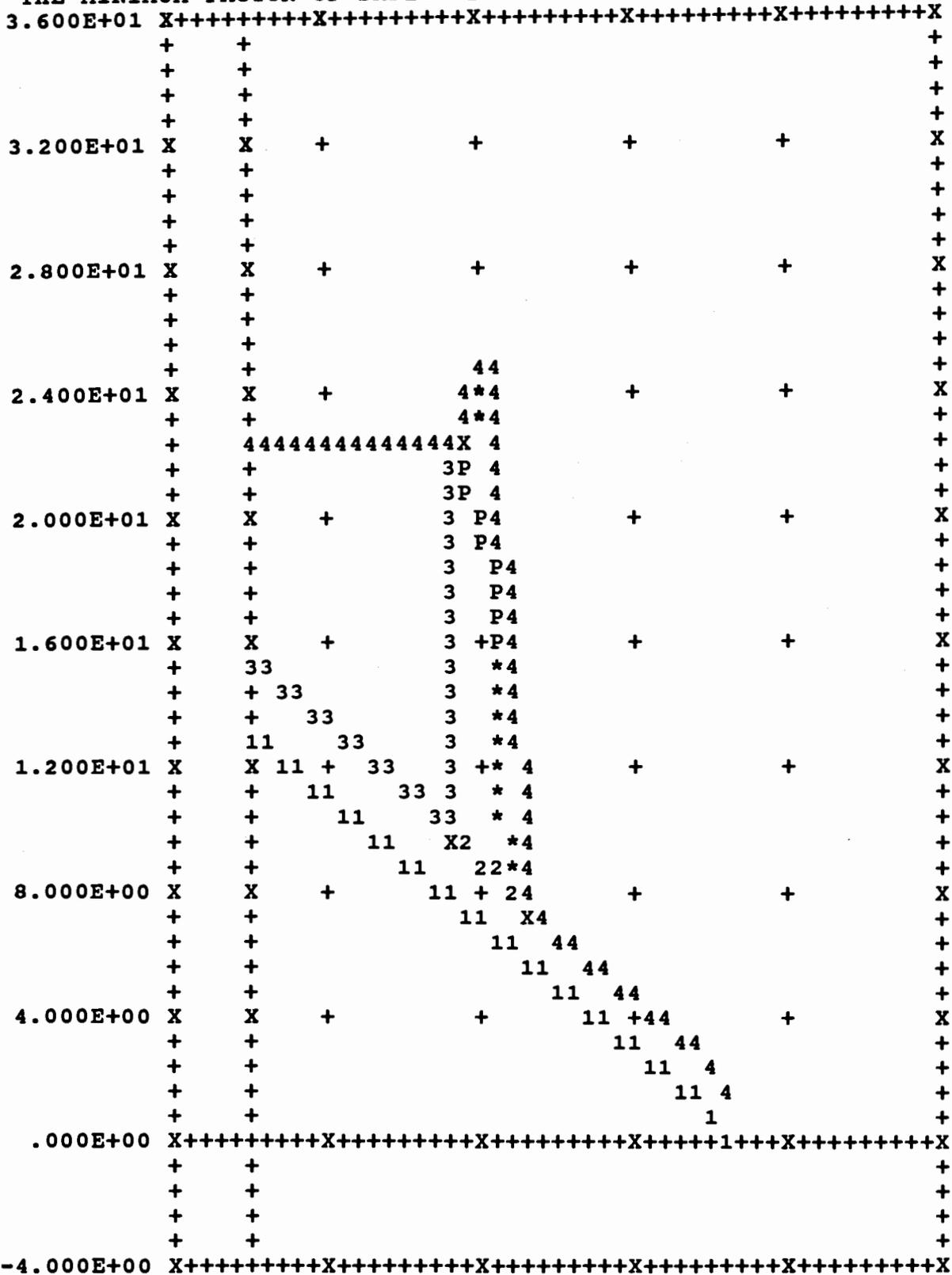
LOWEST FACTOR OF SAFETY= 1.922 AND OCCURS AT RADIUS = 45.278

FOR PIEZOMETRIC LINE NO. 1

AT POINT ( 283.000, 51.000), RADIUS 45.343  
THE MINIMUM FACTOR OF SAFETY IS 1.920

CROSS SECTION IN DISTORTED SCALE  
 NUMERALS INDICATE BOUNDARY LINE NO. IF THERE ARE MORE THAN 10  
 BOUND. LINES, ALPHABETS WILL THEN BE USED. P INDICATES  
 PIEZOMETRIC LINE. IF A PORTION OF PIEZOMETRIC LINE COINCIDES WITH  
 THE GROUND OR ANOTHER BOUNDARY LINE, ONLY THE GROUND OR BOUNDARY  
 LINE WILL BE SHOWN. X INDICATES INTERSECTION OF TWO BOUNDARY  
 LINES. \* INDICATES FAILURE SURFACE.

THE MINIMUM FACTOR OF SAFETY IS 1.920



-8.00E+01 8.00E+01 2.40E+02 4.00E+02 5.60E+02 7.20E+02

....RUN COMPLETE....

09:49:43 05-02-94 Execution of \*\*\* REAME \*\*\*  
 Version of the UNIVERSITY of KENTUCKY computer model  
 by Dr. Yang H. Huang  
 Adapted by M.B. ENGINEERING PROGRAMS INC.  
 P.O. Box 1453  
 Paintsville, Ky. 41240  
 Version 3.02 dated 10-12-1985.  
 Prepared for : Walker Service Company  
 P. O. Box 309 - Plant Street  
 Oakman, Alabama 35579

\*\*\*\*\*  
 \* A.L.M.C. AREA 6 MINE P-3699 BASIN 007A DYNAMIC \*  
 \*\*\*\*\*

NUMBER OF BOUNDARY LINES= 4  
 NUMBER OF POINTS ON BOUNDARY LINES ARE: 2 2 3 7  
 ON BOUNDARY LINE NO. 1, POINT NO. AND COORDINATES ARE:

1 .000 13.000  
 2 500.000 .000

ON BOUNDARY LINE NO. 2, POINT NO. AND COORDINATES ARE:

1 200.000 9.800  
 2 294.118 7.353

ON BOUNDARY LINE NO. 3, POINT NO. AND COORDINATES ARE:

1 .000 15.000  
 2 200.000 9.800  
 3 231.750 22.500

ON BOUNDARY LINE NO. 4, POINT NO. AND COORDINATES ARE:

1 .000 22.500  
 2 231.750 22.500  
 3 238.000 25.000  
 4 250.000 25.000  
 5 283.136 11.746  
 6 294.118 7.353  
 7 500.000 2.000

LINE NO. AND SLOPE OF EACH SEGMENT ARE:

1 -.026  
 2 -.026  
 3 -.026 .400  
 4 .000 .400 .000 -.400 -.400 -.026

NO. OF RADIUS CONTROL ZONES=1 PLOT OR NO PLOT=1 NO. OF SEEPAGE CASES=1  
 TOTAL NO. OF LINES AT BOTTOM OF RADIUS CONTROL ZONES ARE: 1

FOR RAD. CONT. ZONE NO. 1 RADIUS DECREMENT=.000  
 NO. OF CIRCLES= 5 ID NO. FOR FIRST CIRCLE= 1

LINE NO.= 1 BEGIN PT. NO.= 1 END PT. NO.= 2  
 SOIL NO. COHESION F. ANGLE UNIT WT.  
 1 230.400 26.560 128.180  
 2 180.000 30.540 135.960  
 3 .000 .000 62.400

SEISMIC COEFFICIENT=.050 MIN. DEPTH OF TALLEST SLICE=.000  
 UNIT WEIGHT OF WATER= 62.400

THE FACTORS OF SAFETY ARE DETERMINED BY THE SIMPLIFIED BISHOP METHOD

NSPG = 1 NSRCH = 0 # OF SLICES = 10 NO. OF ADD. RADII= 2

NO. OF POINTS ON WATER TABLE FOR EACH CASE= 6

UNDER SEEPAGE CONDITION 1, POINT NO. AND COORDINATES OF WATER TABLE ARE:

1	.000	22.500
2	231.750	22.500
3	252.681	18.410
4	283.136	11.746
5	294.118	7.353
6	500.000	2.000

POINT1=( 251.000, 46.000)

POINT2=( 251.000, 26.000)

POINT3=( 295.000, 26.000)

NJ= 2 NI= 2

AUTOMATIC SEARCH WILL FOLLOW AFTER GRID WITH

XINC= 10.000 AND YINC= 10.000

AT POINT ( 251.000, 46.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

39.513	4.081
35.815	4.509
32.117	4.822
28.419	5.381
24.722	6.887

LOWEST FACTOR OF SAFETY= 4.081 AND OCCURS AT RADIUS = 39.513

AT POINT ( 251.000, 36.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

29.516	4.336
25.822	4.621
22.128	4.706
18.434	5.148
14.739	6.534

LOWEST FACTOR OF SAFETY= 4.336 AND OCCURS AT RADIUS = 29.516

AT POINT ( 251.000, 26.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

19.519	5.070
15.875	5.362
12.232	5.780
8.588	6.657
4.944	7.560

LOWEST FACTOR OF SAFETY= 5.070 AND OCCURS AT RADIUS = 19.519

AT POINT ( 273.000, 46.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

40.084	1.788
37.676	1.902
35.267	2.074
32.858	2.450
30.449	3.476

LOWEST FACTOR OF SAFETY= 1.788 AND OCCURS AT RADIUS = 40.084

AT POINT ( 273.000, 36.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

30.088	1.822
27.821	1.940
25.555	2.143
23.288	2.581
21.022	3.699

LOWEST FACTOR OF SAFETY= 1.822 AND OCCURS AT RADIUS = 30.088

AT POINT ( 273.000, 26.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

20.091	2.095
17.967	2.249
15.843	2.458
13.719	2.903
11.594	4.118

LOWEST FACTOR OF SAFETY= 2.095 AND OCCURS AT RADIUS = 20.091

AT POINT ( 295.000, 46.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

40.656	2.581
39.767	2.835
38.878	3.117
37.989	3.624
37.099	6.336

LOWEST FACTOR OF SAFETY= 2.581 AND OCCURS AT RADIUS = 40.656

AT POINT ( 295.000, 36.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

30.660	2.968
29.913	3.292
29.166	3.765
28.419	4.042
27.672	7.192

LOWEST FACTOR OF SAFETY= 2.968 AND OCCURS AT RADIUS = 30.660

AT POINT ( 295.000, 26.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

20.663	3.662
20.059	4.117
19.454	4.837
18.850	6.025
18.245	8.642

LOWEST FACTOR OF SAFETY= 3.662 AND OCCURS AT RADIUS = 20.663

FOR PIEZOMETRIC LINE NO. 1

AT POINT ( 273.000, 46.000), RADIUS 40.084  
THE MINIMUM FACTOR OF SAFETY IS 1.788

AT POINT ( 273.000, 46.000) UNDER SEEPAGE 1,

THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

40.084	1.788
37.676	1.902
35.267	2.074
32.858	2.450
30.449	3.476

LOWEST FACTOR OF SAFETY= 1.788 AND OCCURS AT RADIUS = 40.084

AT POINT ( 283.000, 46.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

40.344	1.698
38.626	1.850
36.908	2.089
35.190	2.631
33.472	4.214

LOWEST FACTOR OF SAFETY= 1.698 AND OCCURS AT RADIUS = 40.344

AT POINT ( 293.000, 46.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

40.604	2.291
39.577	2.478
38.550	2.522
37.522	3.322
36.495	5.717

LOWEST FACTOR OF SAFETY= 2.291 AND OCCURS AT RADIUS = 40.604

AT POINT ( 283.000, 56.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

50.341	1.682
48.480	1.795
46.620	2.018
44.759	2.550
42.899	3.970

LOWEST FACTOR OF SAFETY= 1.682 AND OCCURS AT RADIUS = 50.341

AT POINT ( 283.000, 66.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

60.338	1.715
58.335	1.809
56.332	2.023
54.329	2.483
52.326	3.766

LOWEST FACTOR OF SAFETY= 1.715 AND OCCURS AT RADIUS = 60.338

AT POINT ( 293.000, 56.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

50.601	2.125
49.431	2.281
48.261	2.382
47.092	3.113
45.922	5.285

LOWEST FACTOR OF SAFETY= 2.125 AND OCCURS AT RADIUS = 50.601

AT POINT ( 273.000, 56.000) UNDER SEEPAGE 1,

THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

50.081	1.820
47.530	1.950
44.979	2.141
42.427	2.511
39.876	3.310

LOWEST FACTOR OF SAFETY= 1.820 AND OCCURS AT RADIUS = 50.081

AT POINT ( 285.500, 56.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

50.406	1.721
48.718	1.825
47.030	2.076
45.343	2.636
43.655	4.222

LOWEST FACTOR OF SAFETY= 1.721 AND OCCURS AT RADIUS = 50.406

AT POINT ( 280.500, 56.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

50.276	1.683
48.243	1.795
46.210	2.001
44.176	2.475
42.143	3.762

LOWEST FACTOR OF SAFETY= 1.683 AND OCCURS AT RADIUS = 50.276

AT POINT ( 283.000, 58.500) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

52.840	1.689
50.944	1.793
49.048	2.011
47.152	2.530
45.256	3.915

LOWEST FACTOR OF SAFETY= 1.689 AND OCCURS AT RADIUS = 52.840

AT POINT ( 283.000, 53.500) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

47.842	1.677
46.017	1.802
44.192	2.033
42.367	2.568
40.542	4.027

LOWEST FACTOR OF SAFETY= 1.677 AND OCCURS AT RADIUS = 47.842

AT POINT ( 283.000, 51.000) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

45.343	1.679
43.553	1.813
41.764	2.053
39.975	2.587
38.185	4.087

LOWEST FACTOR OF SAFETY= 1.679 AND OCCURS AT RADIUS = 45.343

AT POINT ( 285.500, 53.500) UNDER SEEPAGE 1,

THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

47.907	1.727
46.255	1.840
44.602	2.092
42.950	2.657
41.298	4.289

LOWEST FACTOR OF SAFETY= 1.727 AND OCCURS AT RADIUS = 47.907

AT POINT ( 280.500, 53.500) UNDER SEEPAGE 1,  
THE RADIUS AND THE CORRESPONDING FACTOR OF SAFETY ARE:

47.777	1.678
45.779	1.788
43.782	2.004
41.784	2.503
39.786	3.811

LOWEST FACTOR OF SAFETY= 1.678 AND OCCURS AT RADIUS = 47.777

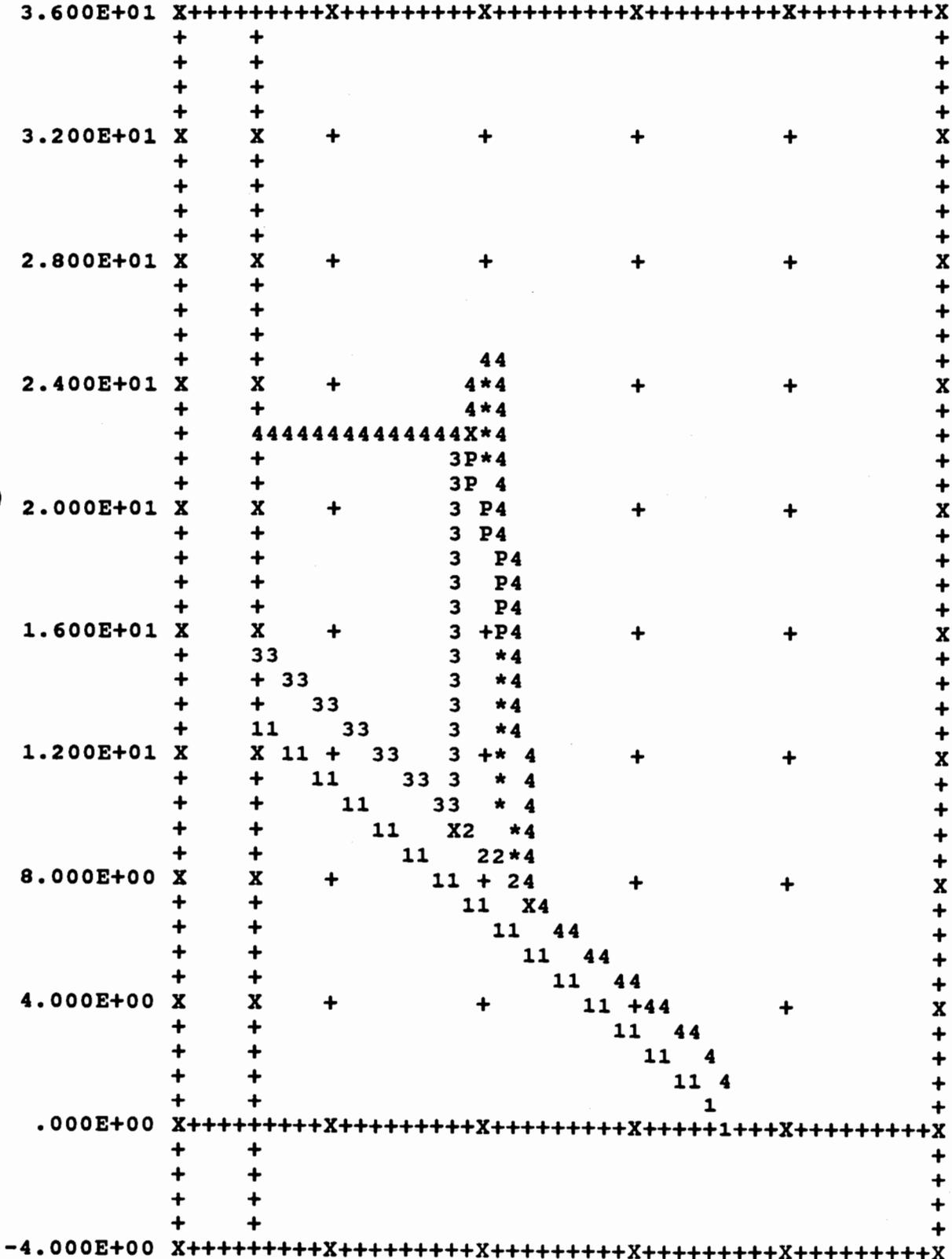
FOR PIEZOMETRIC LINE NO. 1

AT POINT ( 283.000, 53.500), RADIUS 47.842  
THE MINIMUM FACTOR OF SAFETY IS 1.677

CROSS SECTION IN DISTORTED SCALE

NUMERALS INDICATE BOUNDARY LINE NO. IF THERE ARE MORE THAN 10 BOUND. LINES, ALPHABETS WILL THEN BE USED. P INDICATES PIEZOMETRIC LINE. IF A PORTION OF PIEZOMETRIC LINE COINCIDES WITH THE GROUND OR ANOTHER BOUNDARY LINE, ONLY THE GROUND OR BOUNDARY LINE WILL BE SHOWN. X INDICATES INTERSECTION OF TWO BOUNDARY LINES. \* INDICATES FAILURE SURFACE.

THE MINIMUM FACTOR OF SAFETY IS 1.677



-8.00E+01 8.00E+01 2.40E+02 4.00E+02 5.60E+02 7.20E+02  
....RUN COMPLETE....