

Annex 3 : Monitoring Output

MONITORING OUTPUT

(Cross Section)

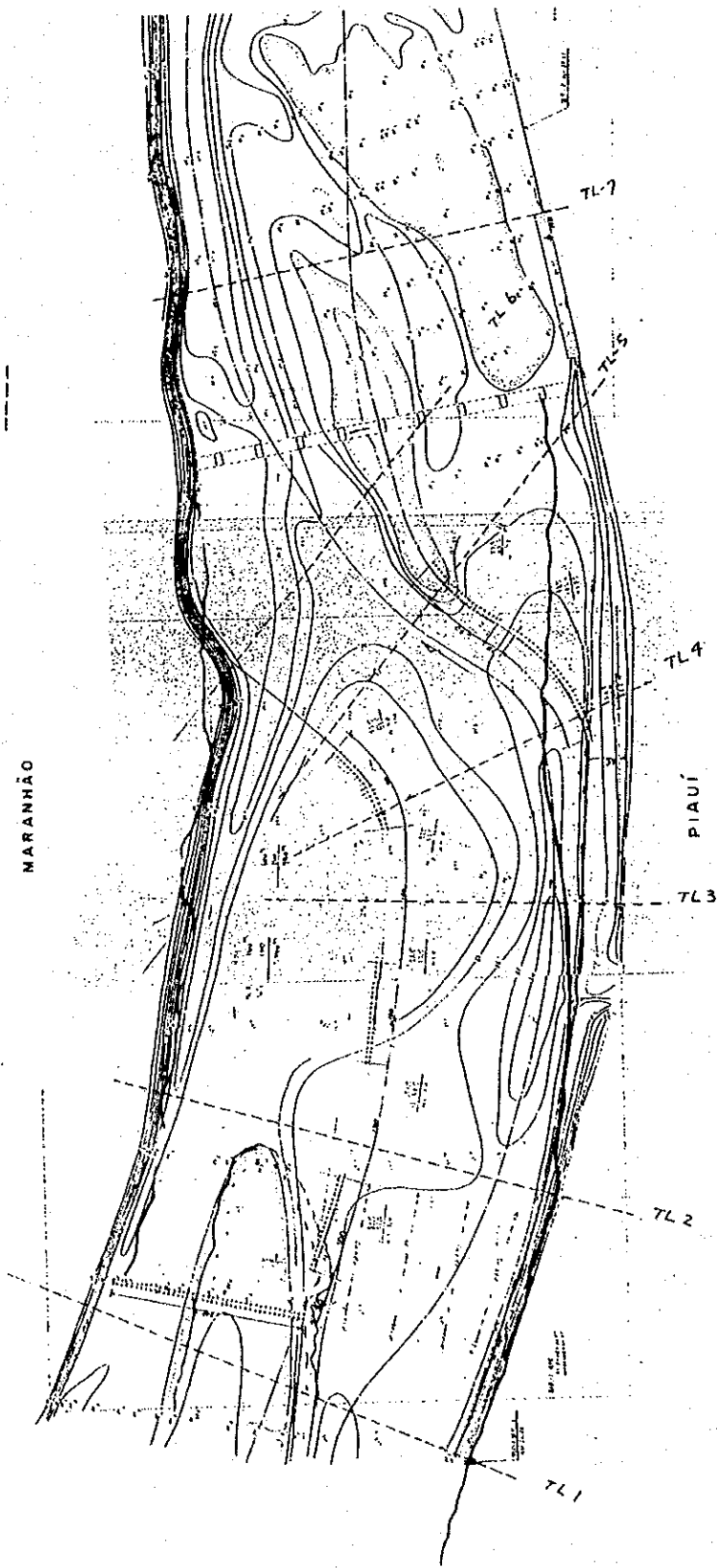
Teresina Site

TERESINA - PI.
ESC. 1:5000

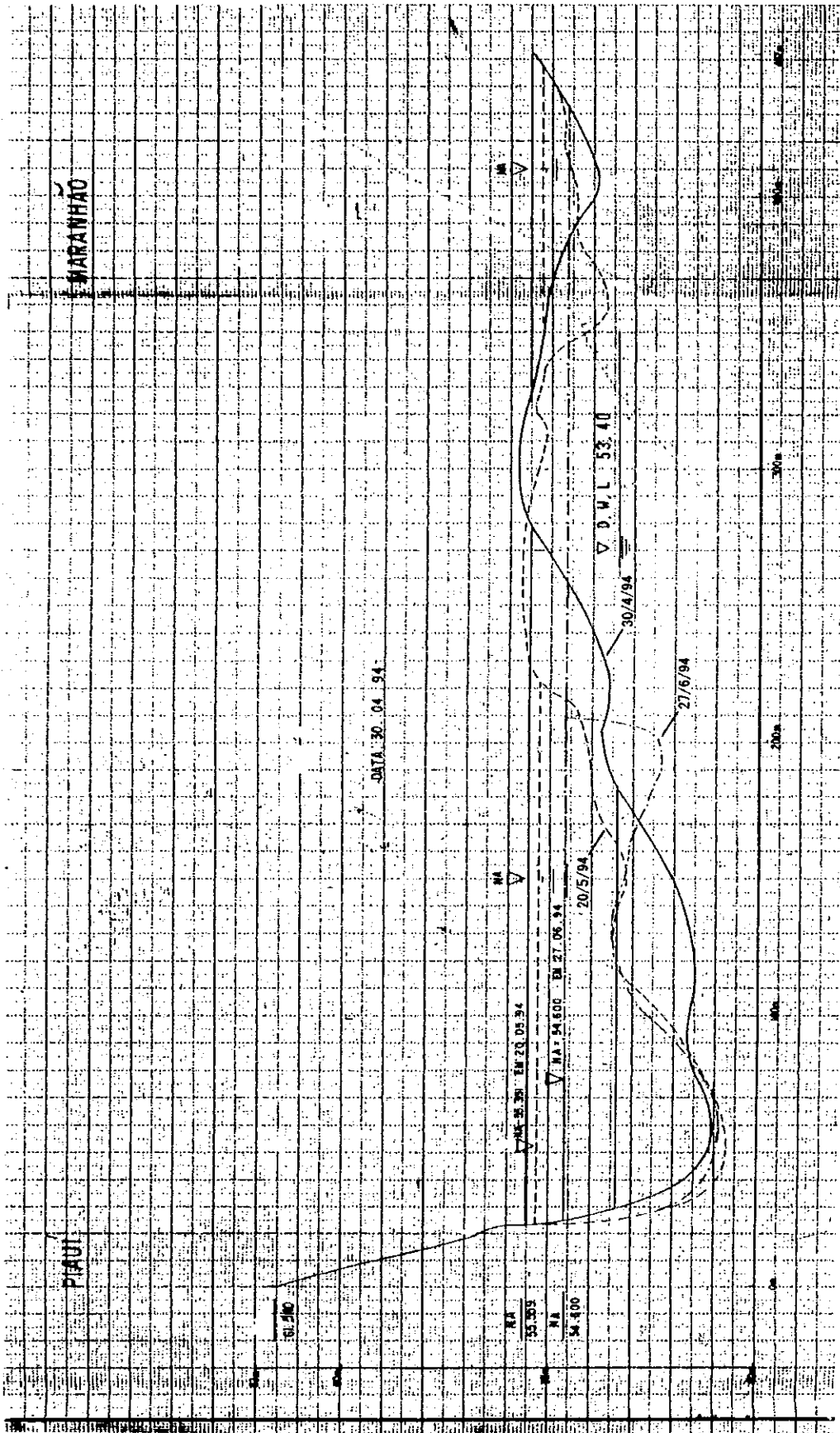
ESTACA (SPUR DIKE)

MARANHÃO

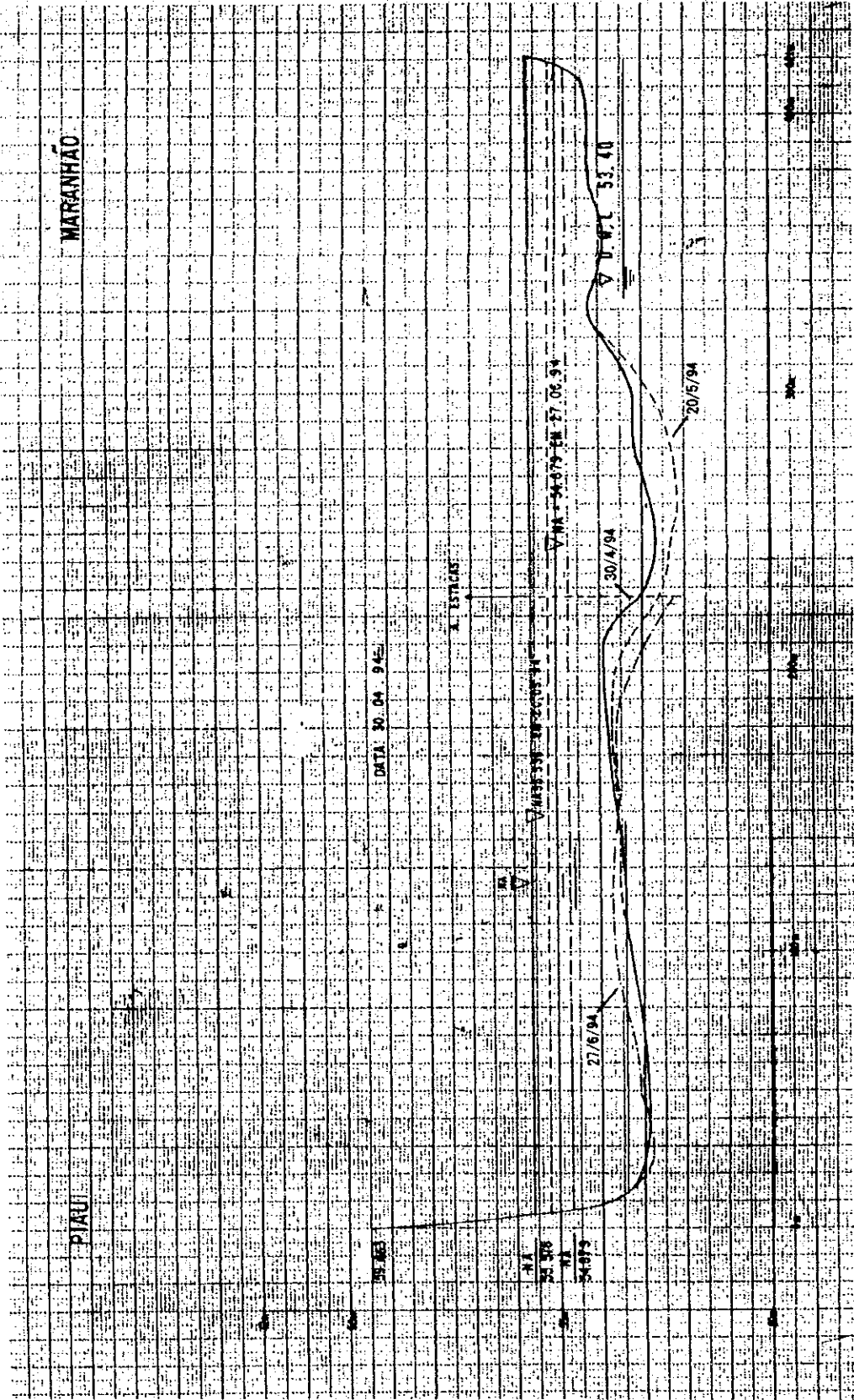
PIAUI



T L 1



TL 2



LEGENDA

TERESINA

PIAUÍ

53, 63 CAMPANHA

53 CAMPANHA

63 CAMPANHA

74 CAMPANHA

74

MIRANHAO

DATA: 30.04.94

MA

7182-45.276 EM 20.03.94

7182-94.809 EM 27.06.94

7182-94.809 EM 27.06.94

27/6/94

30/4/94

20/5/94

V.D.W.L. 53.40

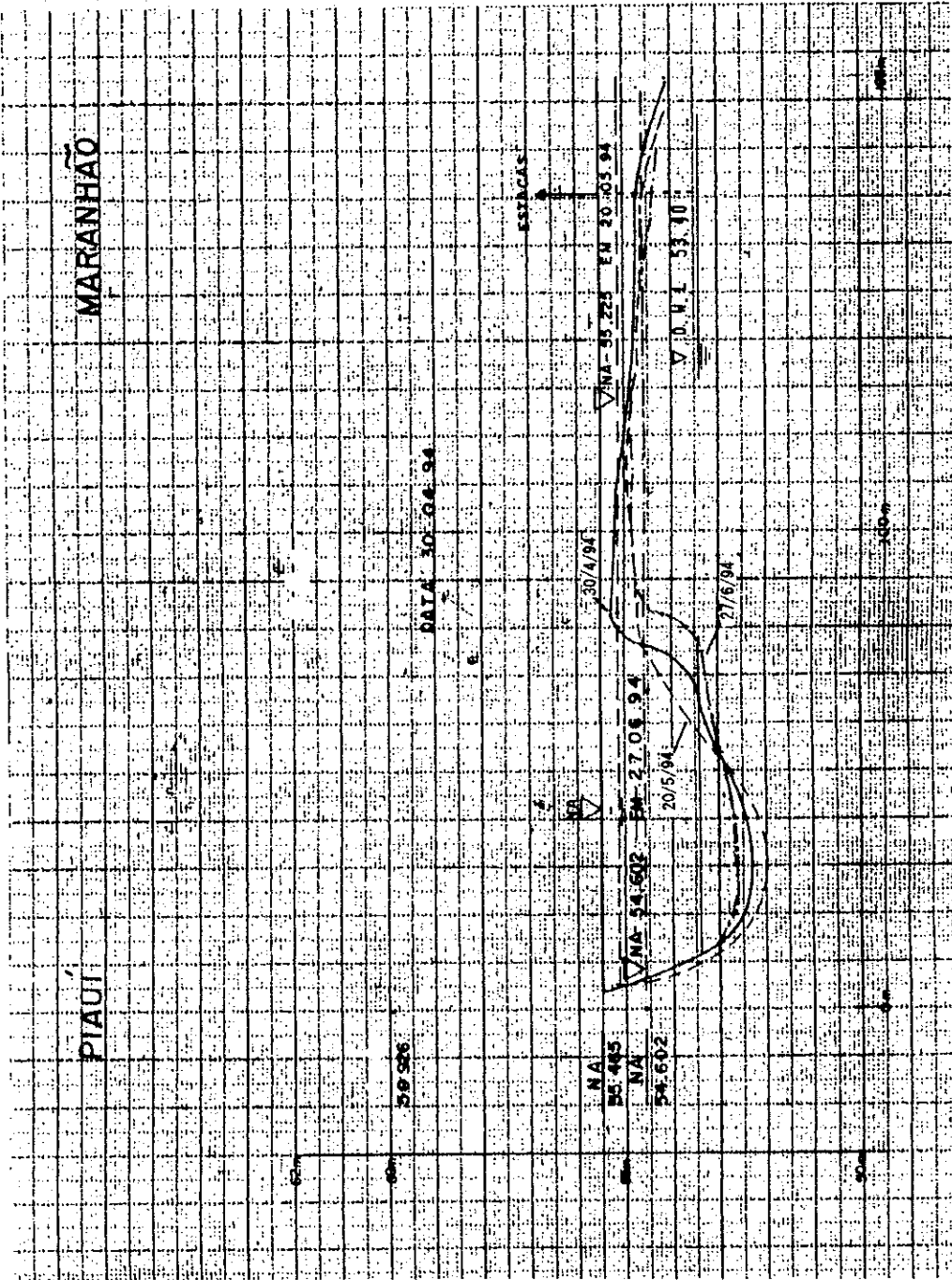
100m

300m

500m

600m

T L 4



T L 5

PIAUÍ

MARANHÃO

49.882

DATA 30/04/94

45.318

20/5/94

30/4/94

AL. ENTRAS

AL. SAÍDAS

M

M



TL7

PIAUI

IMBARIANHAO

DATA 27.04.94

50.064

MA

55.107

MA

54.494

VIA SERV. R. 20.614

VIA R. 54.494 EM 27.04.94

30/4/94

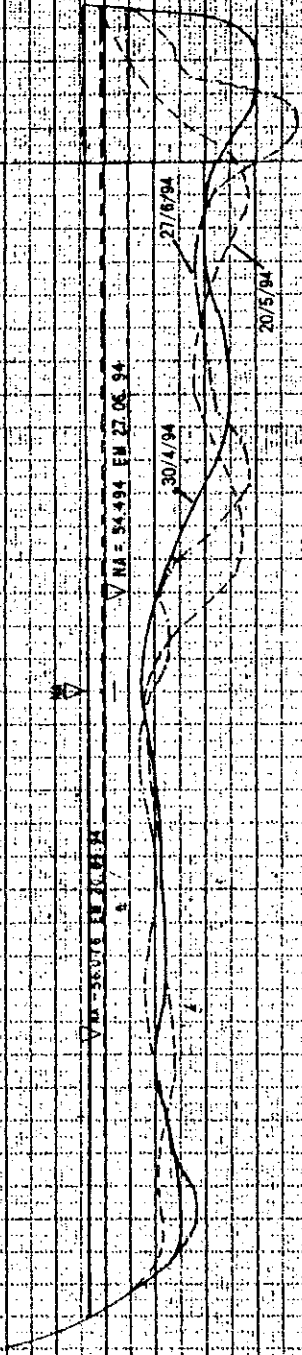
27/6/94

20/5/94

55m

50m

50m



MONITORING OUTPUT

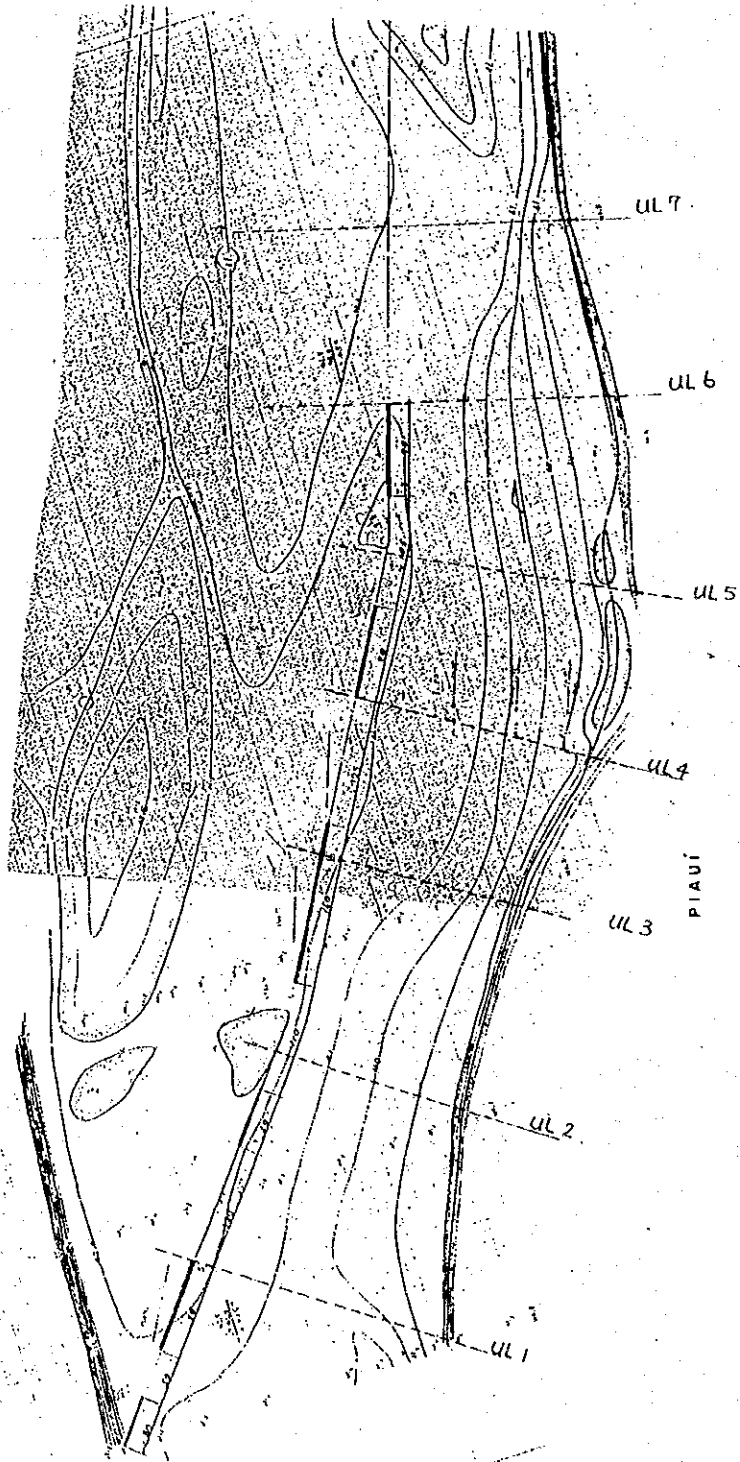
(Cross Section)

Uniao Site

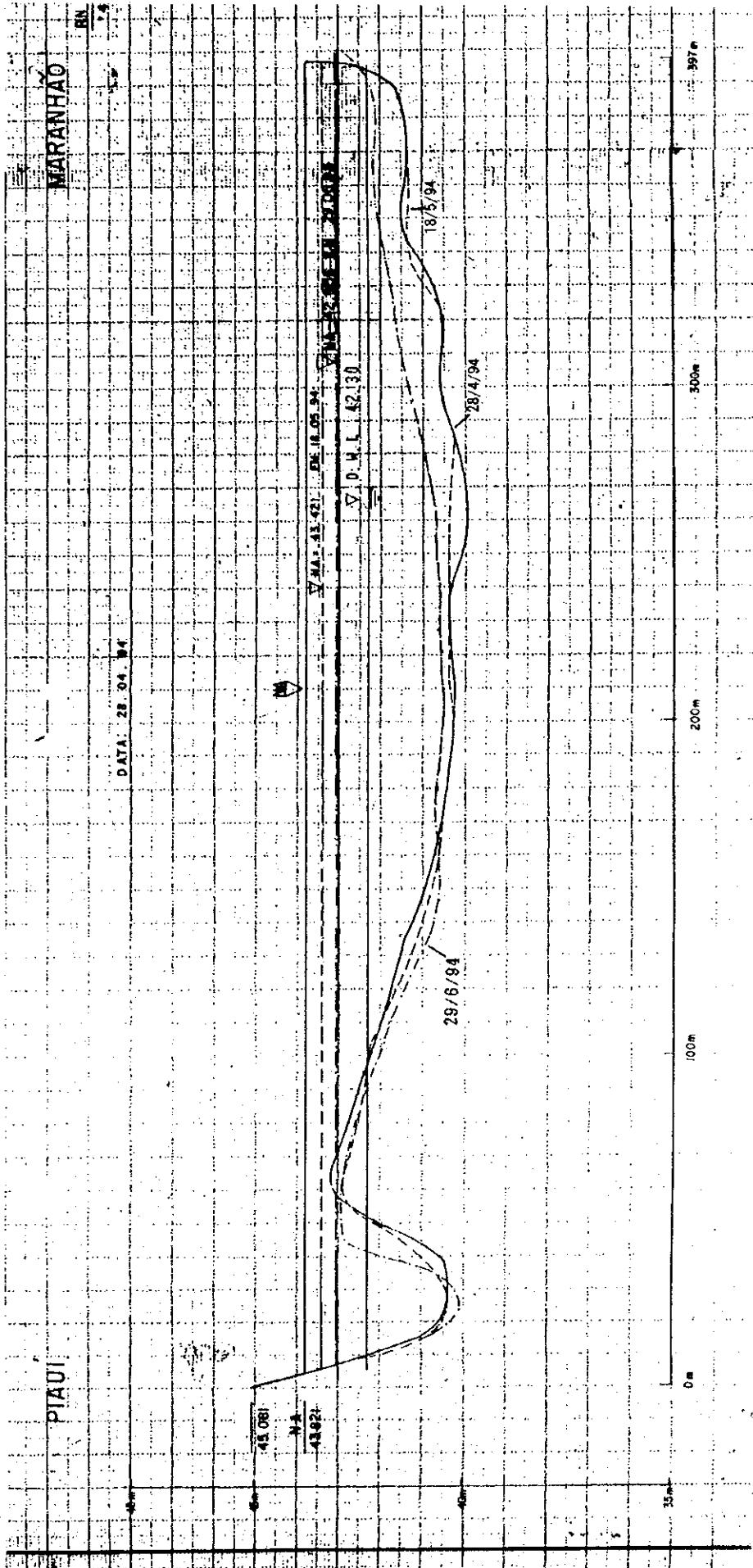
UNIÃO - PI.
ESC. 1:5000

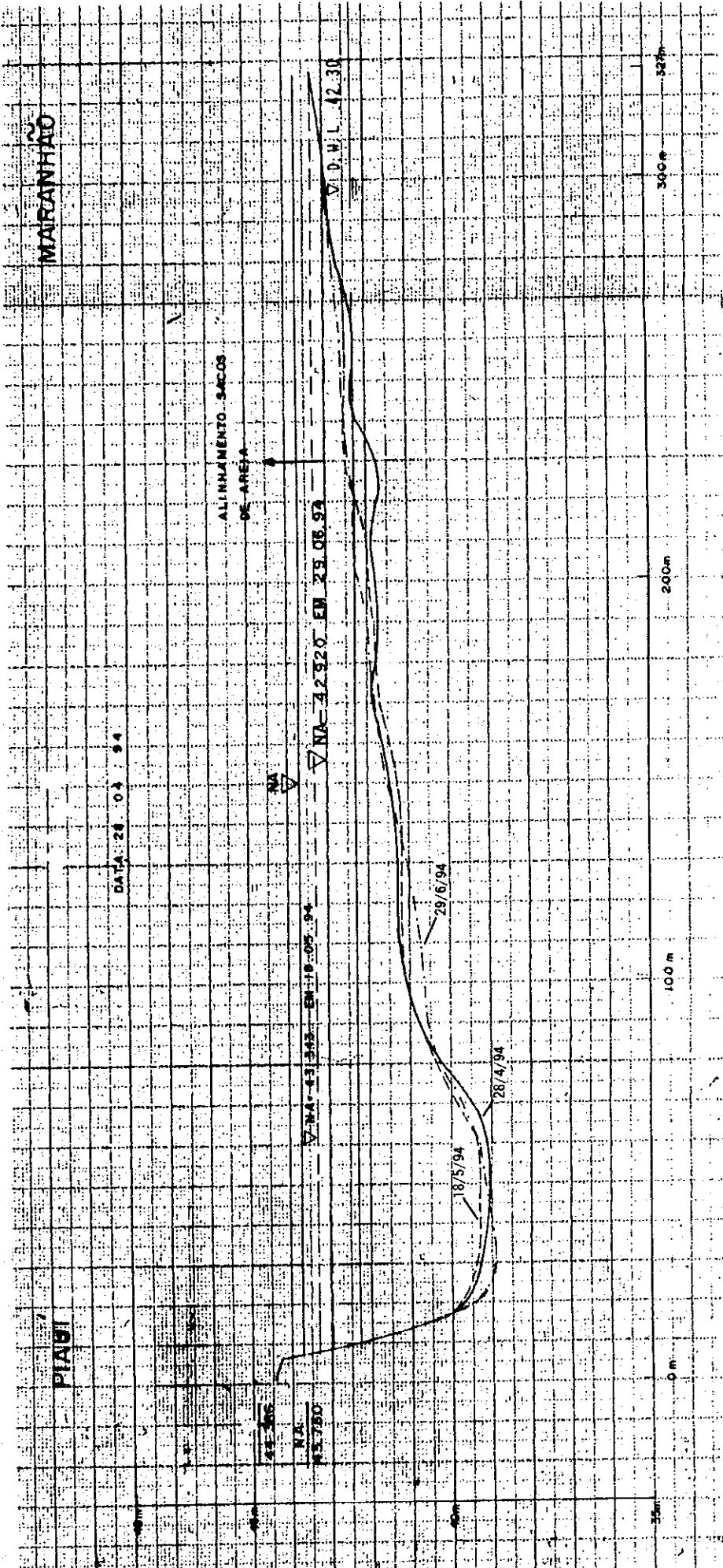
SACO DE AREIA

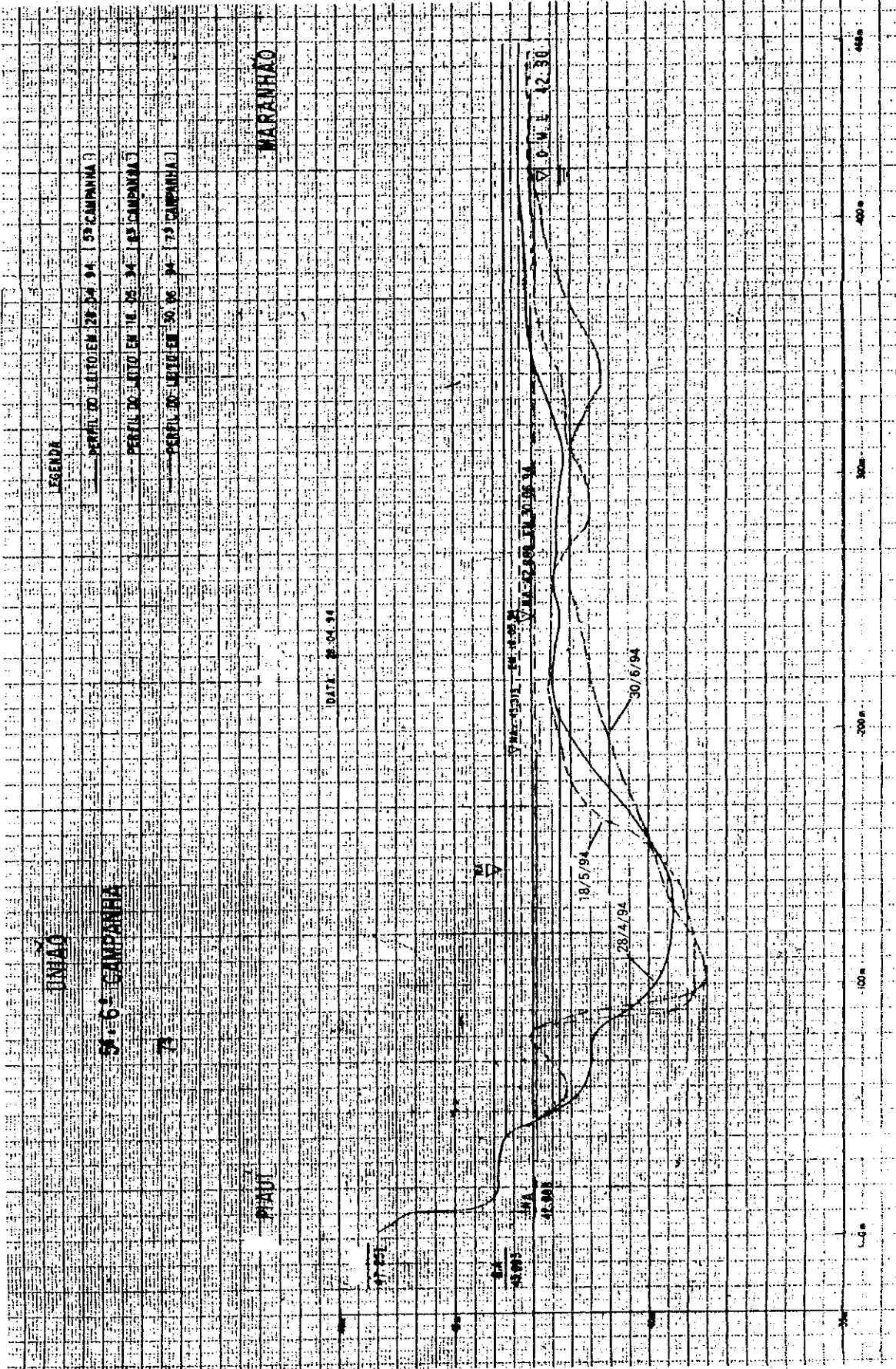
MARANHÃO



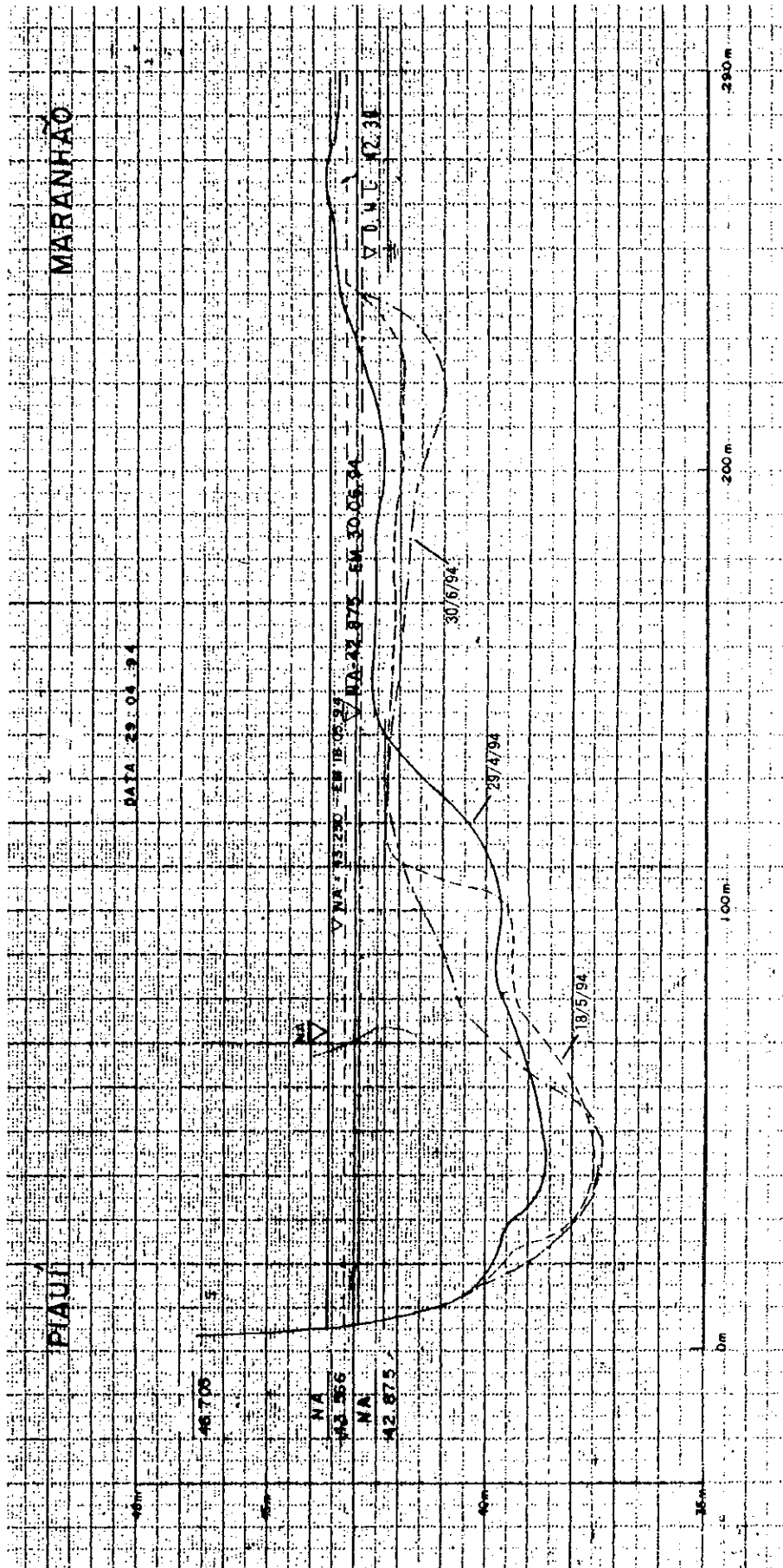
ULI



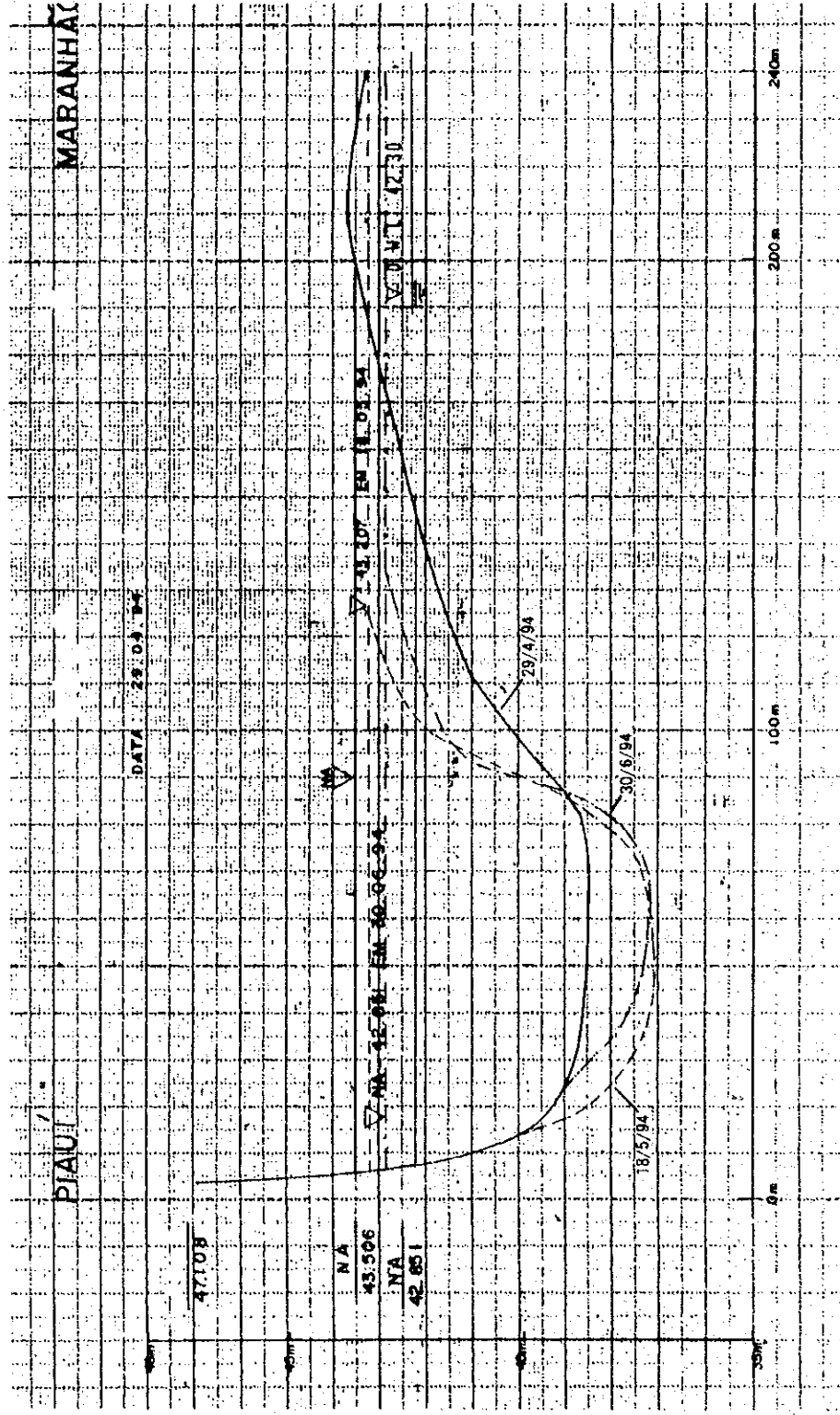




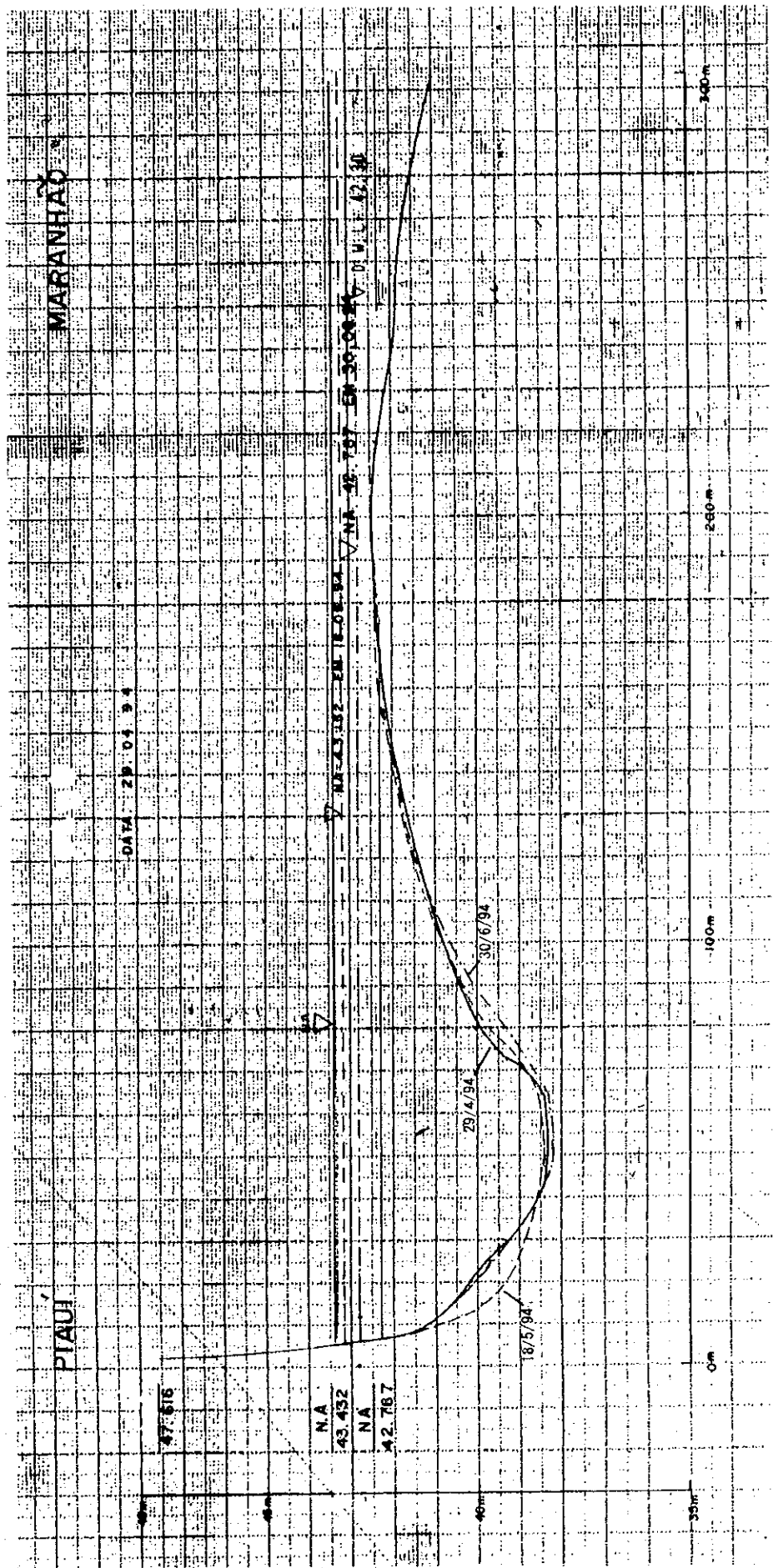
UL 5



UL 6



UL7



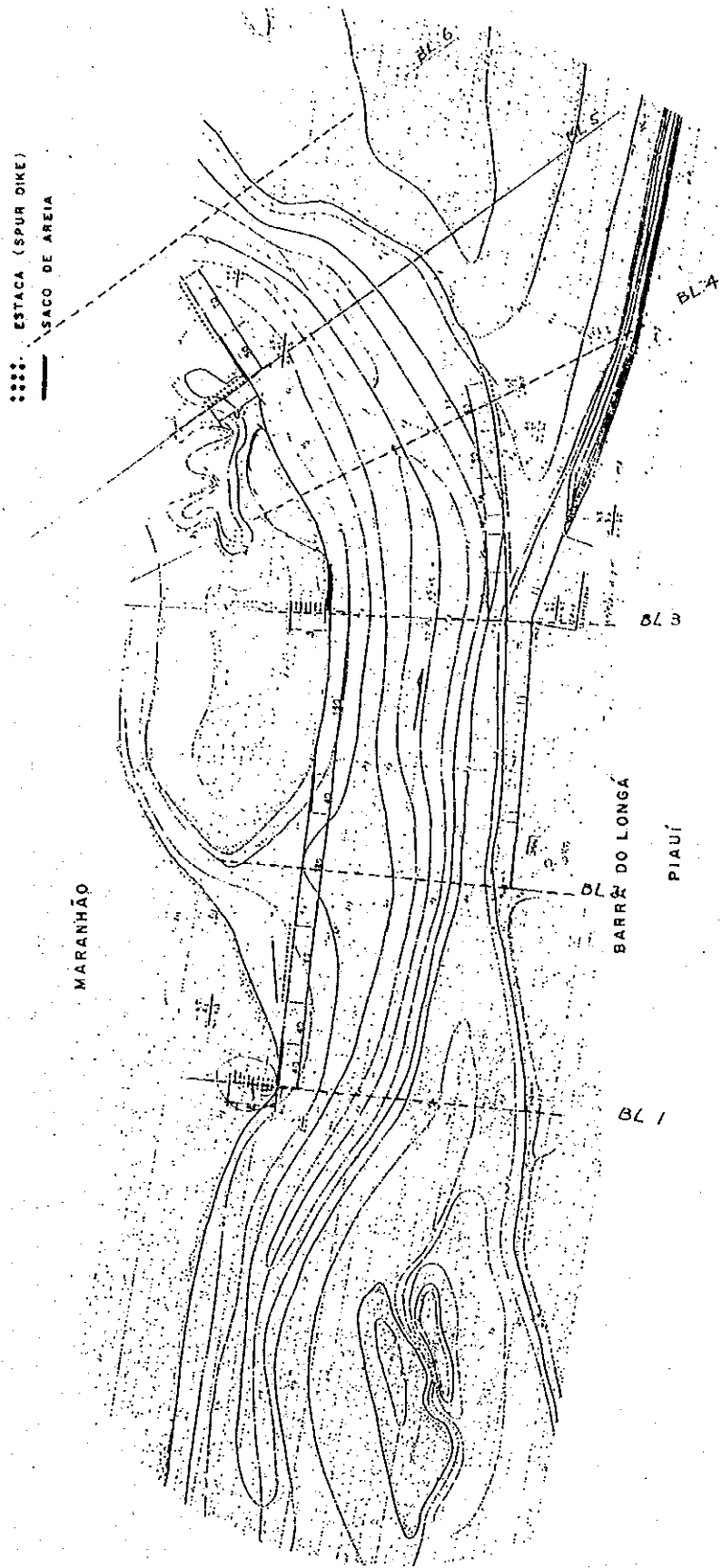
MONITORING OUTPUT

(Cross Section)

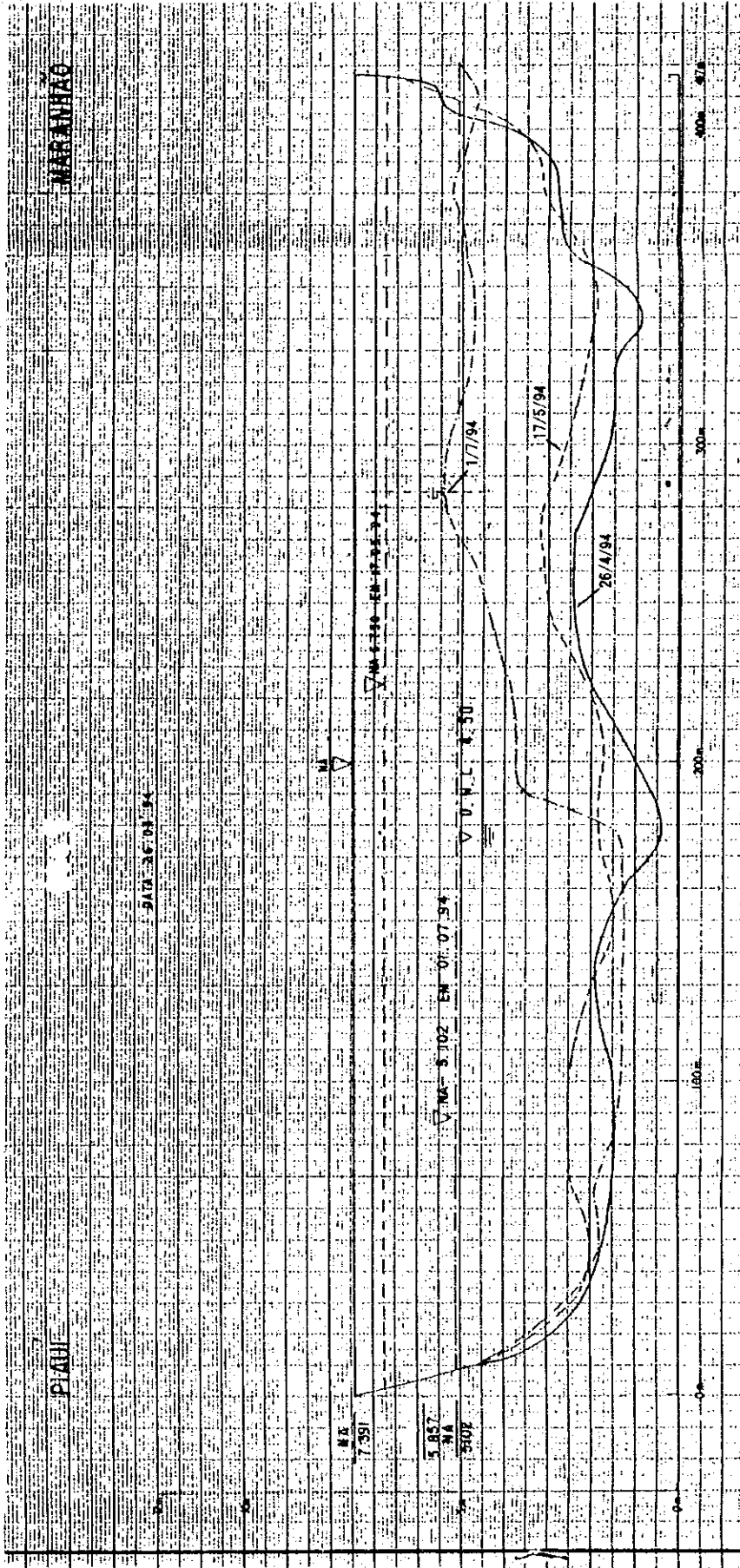
Buriti dos Lopes Site

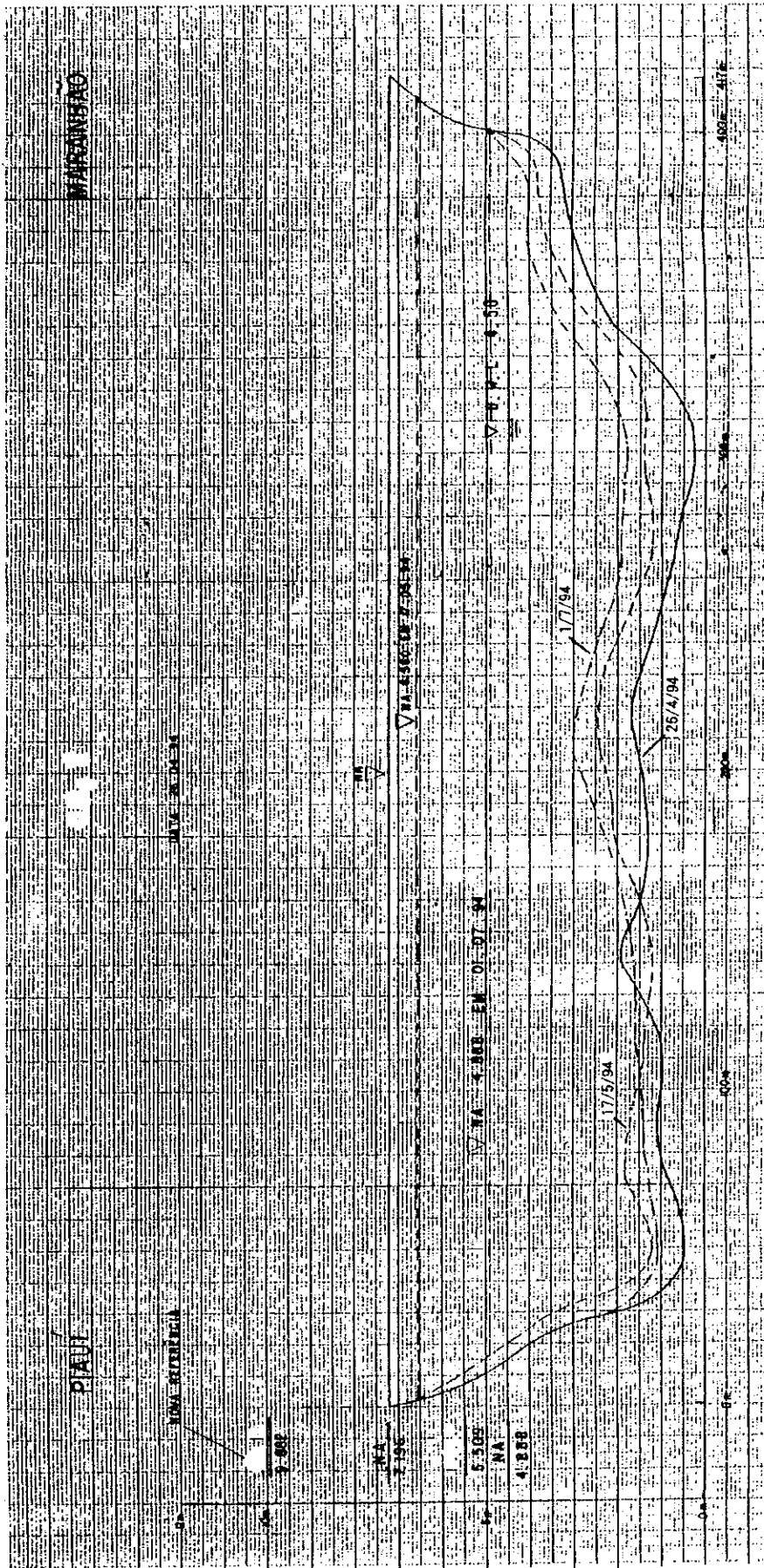
BURITI DOS LOPES - PI.

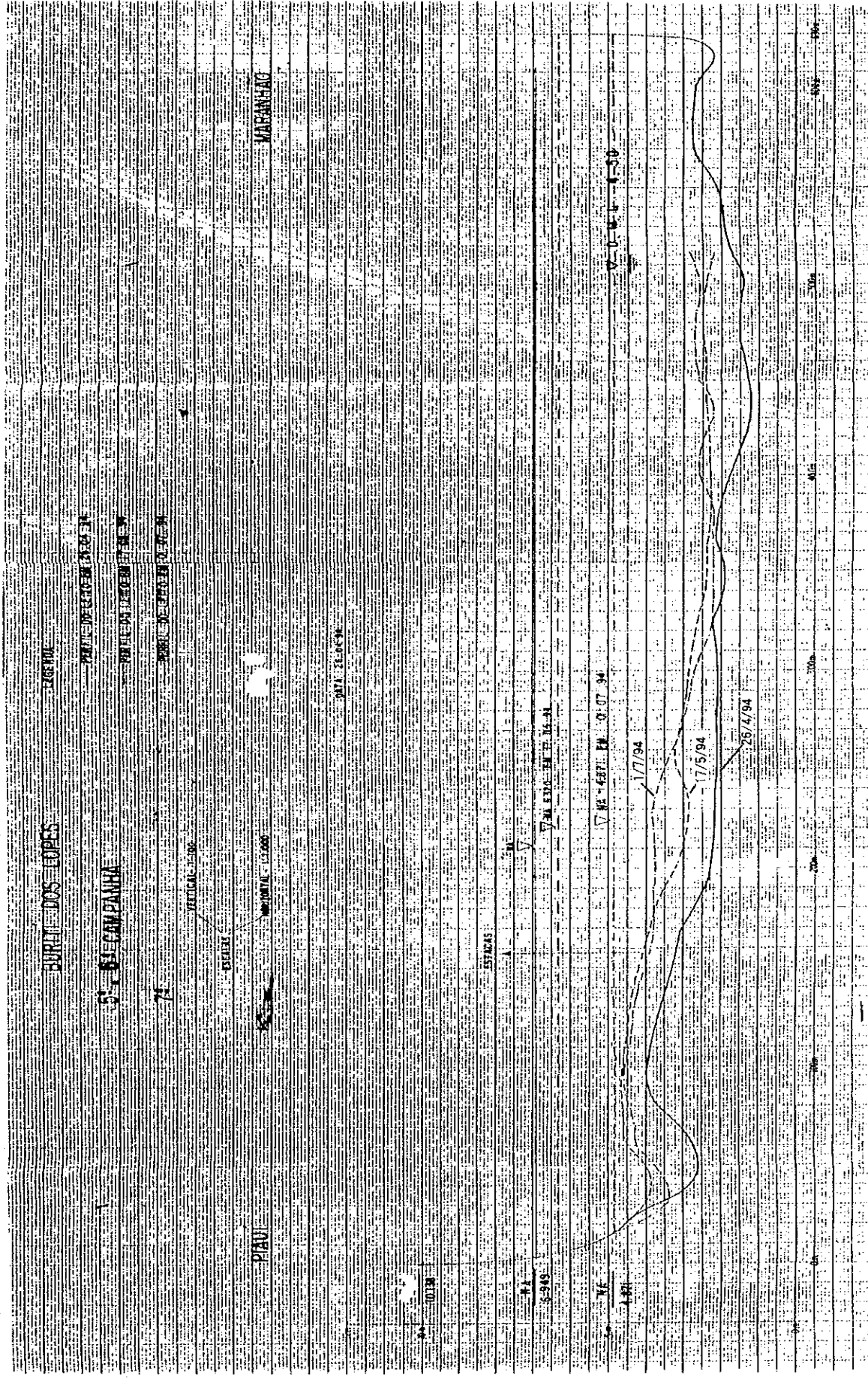
ESC. 1:5000

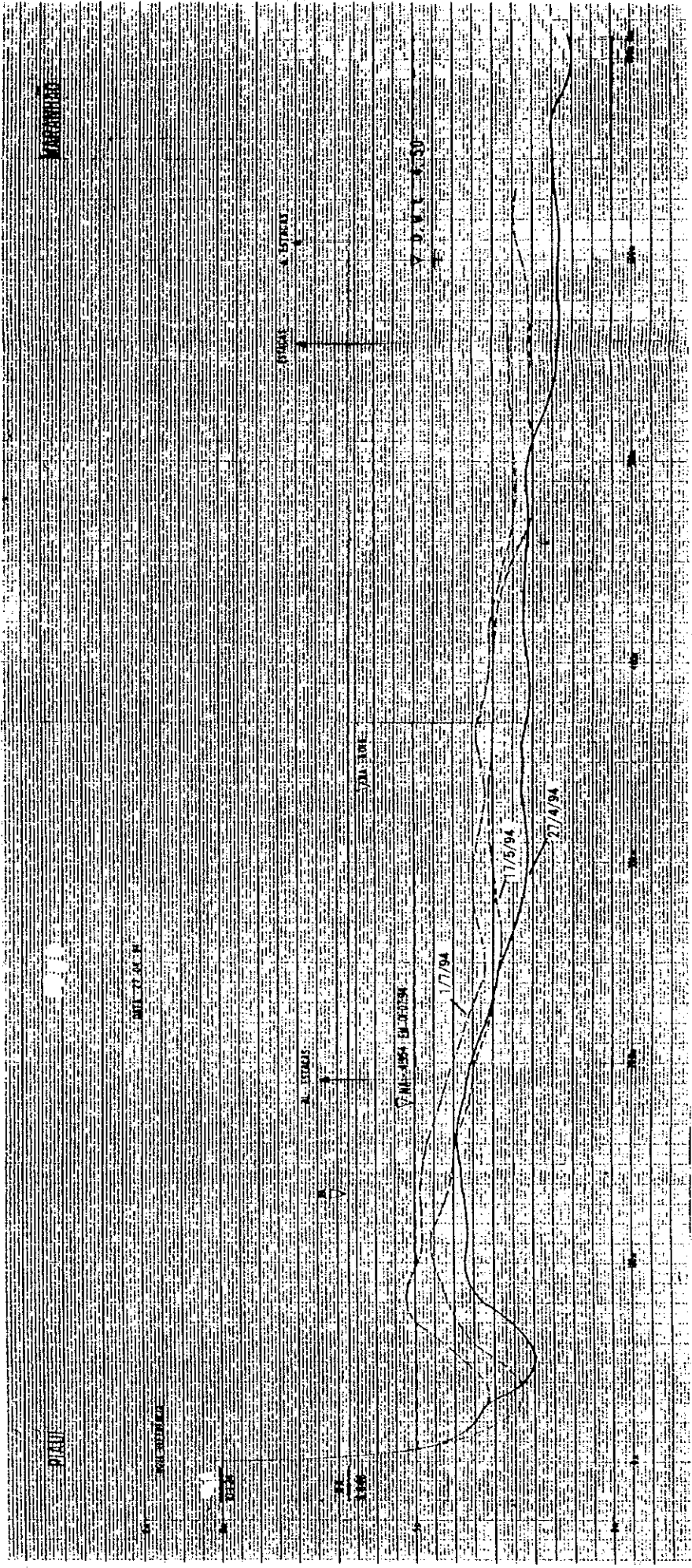


BL 1

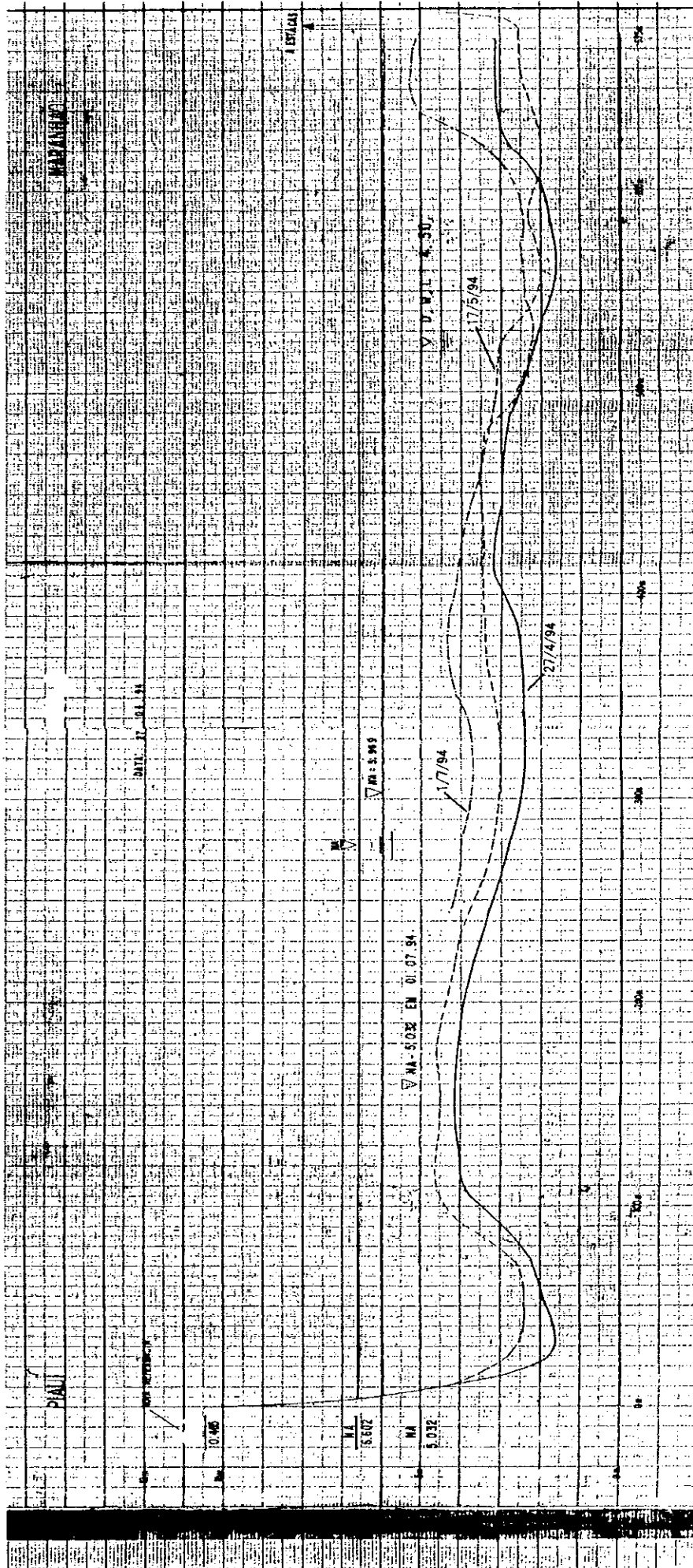








B L 6



Telesina

(Current Measurement)

Teresina

23/2/94

TL-1	NO.	NA20	NA100	NA200	m3/s
	1	1.244	0.998	0.998	
	2	0.988	0.834	0.998	
	3	1.184	0.998	1.214	
	4	0.580			
	5	0.430			
	6	0.834	0.889		
	7	0.951	0.814		
	8	1.214	0.998	0.998	
	9	1.214	0.998	0.998	
	10	1.214	1.207	1.353	
		Max	Min	Average	
		1.353	0.430	1.006	

TL-2	1	0.889	0.909	0.930	
	2	0.909	0.909	0.889	
	3	0.951	0.951	0.930	
	4	0.974	0.974	0.998	
	5	0.974	0.974	0.951	
	6	0.951	0.951	0.930	
	7	0.889	0.930	0.930	
	8	0.998	0.998	0.909	
	9	1.244	1.244	0.943	
		Max	Min	Average	
		1.244	0.889	0.964	

TL-3	1	0.998	1.244	1.214	
	2	1.244	1.132	0.951	
	3	0.974	0.951	0.834	
	4	0.951	0.889	0.889	
	5	0.974	0.930	0.930	
	6	1.214	1.214	1.214	
	7	0.889	0.930	0.930	
	8	0.404	0.405	0.410	
	9	0.743	0.743		
	10	0.814			
		Max	Min	Average	
		1.244	0.404	0.926	

TL-4	1	0.698	0.670	0.588	
	2	0.974	0.951		
	3	0.951	0.951	0.951	
	4	0.777	0.818	0.818	
	5	0.870	0.909	0.889	
	6	0.693	0.670	0.633	
		Max	Min	Average	
		0.974	0.588	0.812	

Teresina

24/2/94

TL-5	NO.	NA20	NA100	NA200	m3/s
	1				
	2	0.561	0.506	0.503	
	3	0.814	0.951	0.930	
	4	0.998	1.013	0.979	
	5	0.909	0.909	0.889	
	6	0.889	0.930	0.889	
	7	0.712			
	8	0.743			
	9				
	10	0.889	0.814	0.814	
		Max	Min	Average	
		1.013	0.503	0.832	

PONTOS				
	1	0.834	0.814	0.818
	2	0.814	0.795	0.777
	3	0.852	0.834	0.852
	4	0.795	0.777	0.802
	5	0.834	0.818	0.818
	6	0.974	1.018	0.818

Teresina

15/3/94

TL-1	NO.	NA20	NA100	NA200	m3/s
		1	1.326	1.229	1.252
		2	1.158	1.472	1.276
		3	1.540	1.381	1.214
		4	1.186	1.540	1.472
		5	0.870	1.024	1.018
		6	1.252	1.353	1.300
		7	1.090	1.158	1.186
		8	0.452	0.490	0.510
		9	0.503		
		10	0.760	0.408	
		1	0.633	0.952	
		2	1.103	0.949	1.018
P1		3	1.132	1.158	0.998
P2		4	1.132	1.132	1.039
		5	0.452		
		Max	Min	Average	
			1.540	0.408	1.065
TL-2		1	1.103	1.196	1.158
		2	1.084	1.158	1.196
		3	1.158	1.196	1.196
		4	1.196	1.196	1.196
		5	1.061	1.196	1.103
		6	1.103	1.196	1.132
		7	0.465	0.503	0.483
		8	1.214	1.132	1.132
		9	1.132	1.103	1.039
		10	0.909	0.979	0.834
		1			
		2			
		3			
P7		4	0.951	0.930	0.930
		Max	Min	Average	
			1.214	0.465	1.058

Teresina

15/3/94

TL-3

				m ³ /s
1	0.974	1.108	1.084	
2	0.974	1.132	1.084	
3	0.930	1.084	1.084	
4	1.214	1.214	1.214	
5	1.158	1.108	1.061	
6	1.084	1.084	0.930	
7	0.760	1.214		
8	1.132	1.061	0.930	
9	1.132	1.196	1.132	
10	0.951	0.951	0.951	
1	0.909	0.951	0.951	
2	0.909	0.951	0.951	
3	0.951	0.974	0.951	
4	0.834	0.834	0.818	
5				

P5

6	1.084	1.084	1.061
7			

P6

8	1.084	1.326	1.326
Max		Min	Average
	1.214	0.760	1.022

Teresina

16/3/94

TL-5	NO.	NA20	NA100	NA200	m3/s
		1.132	1.039	1.061	
		1.196	1.214	1.196	
		1.084	1.276	1.214	
		1.326	1.353	1.326	
		1.229	1.353	1.300	
		1.061	1.353	1.196	
		1.353	1.158	1.084	
	10	1.214	1.158	1.132	
	1	0.960	0.979	1.018	
	2	0.727	0.743		
	3	0.727	0.760		
	4	1.196	1.108	1.061	
	5				
P3					
	6	1.214	1.196	1.158	
		Max	Min	Average	
		1.353	0.727	1.126	

Teresina

20/5/94

TL-1	NO.	NA20	NA100	NA200	m3/s
	1	1.381	1.410	1.353	
	2	1.214	1.158	1.186	
	3	1.186	1.186		
	4	1.186	1.186		
	5	0.712	0.712	0.712	
	6	0.712	0.712	0.727	
	7	0.777	0.777		
		Max	Min	Average	
		1.410	0.712	1.016	

TL-2	1	0.777	0.777	0.777	
	2	0.795	0.795		
	3	0.909	0.909		
	4	0.795	0.795		
	5	0.974	0.947	0.974	
	6	0.951	0.951	0.951	
		Max	Min	Average	
		0.974	0.777	0.872	

TL-4	1	0.951	0.951	0.930	
	2	0.951	0.930	0.930	
	3	0.760			
	4				
	5	0.777			
		Max	Min	Average	
		0.951	0.760	0.898	

TL-5	1	0.834	0.834		
	2	0.795	0.834		
	3	0.834	0.795		
	4	0.974	0.974	0.974	
	5	0.574			
	6				
	7	0.760	0.795		
		Max	Min	Average	
		0.974	0.574	0.831	

PONTOS	1	0.974	0.974	0.951	
	2	0.974	0.951		
	3	0.506			
	4	0.777	0.795		
	5	0.974	0.951	0.951	
	6	0.998	0.998	0.974	
	7	0.814	0.814	0.795	

Teresina

27/6/94

TL-1	NO.	NA20	NA100	NA200	B.L.(m)	m3/s
	1	1.951	1.794	1.578	4.150	
	2	2.195	1.818	1.547	2.400	
	3	1.568	1.145		1.500	
	4				1.000	
	5	1.756	1.111		1.450	
	6	1.583	1.282	1.111	2.100	
		Max	Min	Average		
		2.195	1.111	1.572		

TL-2	1	1.428	1.707		1.800	
	2	1.547	1.354		1.450	
	3	1.500	0.909		1.350	
	4	1.219	1.000		1.300	
	5	1.250	1.190		1.450	
	6	1.500	1.395	1.086	2.250	
	7				1.000	
	8				1.000	
		Max	Min	Average		
		1.707	0.909	1.314		

TL-4	1	1.395	1.250		1.600	
	2	1.341	1.250		1.600	
	3	1.304	0.869		1.200	
		Max	Min	Average		
		1.395	0.869	1.235		

BANCO	1				1.000	
	2				1.000	
	3				1.000	
	4	1.463	0.636		1.350	
	5	1.428	1.111		1.450	
	6	1.000	1.363		1.200	
		Max	Min	Average		
		1.463	0.636	1.167		

Uniao

(Current Measurement)

Uniao

18/5/94

UL-1	NO.	NA20	NA100	NA200	m3/s
	1	0.795	0.795	0.814	
	2	1.951	0.951	0.727	
	3	0.930	0.930	0.743	
		Max	Min	Average	
		1.951	0.727	0.960	
UL-3	1	0.814	0.814	0.930	
	2	0.795	0.760	0.777	
	3	0.814	0.814		
		Max	Min	Average	
		0.930	0.760	0.815	
UL-4	1	0.561	0.611	0.611	
	2	0.611			
	3	0.561			
	4	0.561			
		Max	Min	Average	
		0.611	0.561	0.586	
UL-5	1	0.743	0.757	0.818	
	2	0.727	0.818	0.834	
	3				
	4	0.930	0.818		
		Max	Min	Average	
		0.930	0.727	0.806	

Uniao

29/6/94

UL-1	NO.	NA20	NA100	NA200	B.L.(m)	m3/s
	1				0.960	
	2					
	3					
	4				1.000	
	5	1.053	0.795		1.650	
	6	1.200	1.282	0.943	2.500	
	7	1.463	1.389	1.154	2.650	
	8	1.429	1.184	0.918	2.300	
	9	0.937	0.814		1.350	
	10				1.000	
		Max	Min	Average		
		1.463	0.795	1.120		

UL-3	1	1.363	1.500	1.463		
	2	1.935	1.764	1.429	3.700	
	3	1.842	1.765	1.463	3.250	
	4	1.579	1.454	1.429	2.150	
	5	1.870	1.354		1.750	
	6	1.621	0.909		1.150	
	7	1.486	1.190		1.150	
	8	1.442			0.700	
	9				1.000	
		Max	Min	Average		
		1.935	0.909	1.519		

Uniao

30/6/94

UL-5	NO.	NA20	NA100	NA200	B.L.(m)	m3/s
	1	2.174	1.667	1.282	3.400	
	2	2.174	2.083	2.000	5.800	
	3				5.400	
	4	1.923	1.623	1.622	2.700	
	5	1.774	1.515		1.800	
	6	1.515			0.850	
	7				0.400	
	8	0.714			0.620	
	9	0.893			0.840	
	10	1.000	0.857		1.150	
	11	1.000	0.795		1.400	
	12	1.380	1.111		1.700	
	13	1.296			1.100	
		Max	Min	Average		
		2.174	0.714	1.448		
PONT	P1	1.364	1.316		1.400	

Buriti dos Lopes

(Current Measurement)

Buriti dos Lopes 2/3/94

BL-1	NO.	NA20	NA100	NA200	m3/s
	1	1.084			
	2	0.760	1.084		
	3	1.158	1.158	0.852	
	4	0.786	0.795	0.889	
	5	0.670	0.795		
	6	0.633	0.670		
	7	0.483	0.760	0.722	
	8	0.611	0.622	0.712	
	9	0.730	0.852	0.760	
	10	0.622	0.611		
	Max		Min	Average	
		1.158	0.483	0.784	

BL-2	1	0.404	0.405		
	2	1.084	1.103	0.870	
	3	0.951	1.061	0.889	
	4	0.974	1.132	0.998	
	5	0.930	0.979	0.889	
	6	0.852	0.909	0.909	
	7	0.819	0.909	0.889	
	8	0.889	0.870	0.870	
	9	0.777	0.802	0.795	
	10	0.930	0.852	0.795	
	Max		Min	Average	
		1.132	0.404	0.881	

PONTOS	1	0.712	0.802	0.834	
--------	---	-------	-------	-------	--

BL-3	1	0.899	0.777	0.611	
	2	0.802	0.889	0.814	
	3	0.795	0.905	0.870	
	4	0.979	0.930	0.930	
	5	0.909	0.943	0.979	
	6	0.802	0.889	0.834	
	7	0.909	0.889	0.834	
	8	0.802	0.786	0.786	
	9	0.743	0.760	0.760	
	10	0.870	0.889	0.870	
	1	0.909	0.889		
	2	0.590	0.684		
	3	0.414			
	4				
	5				
	6				
	7				

P2	8	0.795	0.743		
	Max		Min	Average	
		0.979	0.414	0.827	

Buriti dos Lopes 3/3/94

BL-5	NO.	NA20	NA100	NA200	m3/s
	1	0.802	0.870	0.795	
	2	0.760	0.727		
	3	0.727	0.712		
	4	0.889	0.834		
	5				
	6	0.889	0.712		
	7	0.777	0.760		
	8	1.909	0.909		
	9	0.760	0.743		
	10	0.574			
	1	0.693	0.561	0.536	
	2	1.061	0.814	0.743	
	3	0.777	0.834	0.870	
		Max	Min	Average	
		1.909	0.536	0.816	

Buriti dos Lopes 24/3/94

BL-1	NO.	NA20	NA100	NA200	m3/s
	1	0.951	1.276		
	2	1.276	1.186		
	3	1.158	1.186	1.108	
	4	1.061	1.000	1.108	
	5	0.645	1.039	0.503	
	6	0.889	0.743	0.760	
	7		0.889		
	8				
P1	9	0.889	0.909	0.889	
		Max	Min	Average	
		1.276	0.503	0.987	
BL-2	1	0.951	1.186	1.158	
	2	1.016	1.108	0.909	
	3	0.951	0.930	1.084	
	4	0.743	0.698	0.658	
	5	0.698	0.795	0.698	
		Max	Min	Average	
		1.186	0.658	0.906	
BL-3	1	1.132	1.103	1.103	
	2	1.196	1.214	1.158	
	3	1.276	1.252	1.196	
	4	1.196	1.132	1.084	
	5	1.196	1.158	1.039	
	6	1.158	1.061	1.108	
	7	1.039	1.186	0.998	
	8				
	9	0.889	0.889	0.870	
		Max	Min	Average	
		1.276	0.870	1.110	
BL-5	1	0.795	0.834	0.795	
	2	0.712	0.777	0.760	
	3	0.698	0.574	0.536	
	4	0.727	0.760	0.525	
	5	1.013	0.974	0.561	
	6	0.974	0.974	0.974	
	7	1.039	0.951	0.951	
	8	0.951	0.795	0.795	
	9	0.951	0.760	0.727	
	10	0.760	0.795	0.645	
		Max	Min	Average	
		1.039	0.525	0.803	

Buriti dos Lopes 17/5/94

BL-i	NO.	NA20	NA100	NA200	m3/s
	1	0.760	0.760	0.760	
	2	0.795	0.795	0.795	
	3	0.795	0.795	0.795	
	Max		Min	Average	
		0.795	0.760	0.783	

BL-2	1	0.795	0.814	0.795	
	2	0.795	0.795	0.795	
	3	0.795	0.795	0.795	
	4	0.777	0.760	0.760	
	5	0.795	0.760	0.795	
	6	0.727	0.814	0.743	
	7	0.795	0.795	0.795	
	8	0.814	0.795		
	Max		Min	Average	
		0.814	0.727	0.787	

BL-3	1	0.777	0.777	0.760	
	2	0.795	0.795	0.795	
	3	0.909	0.909	0.889	
	4	0.930	0.930	0.909	
	5	0.777	0.795	0.777	
	6	0.760	0.760	0.743	
	7	0.795	0.777	0.795	
	8	0.712	0.712	0.727	
	Max		Min	Average	
		0.930	0.712	0.804	

BL-4	1	0.814	0.814	0.795	
	2	0.795	0.795		
	3	0.814	0.841		
	4	0.777	0.777	0.795	
	5	0.951	0.951	0.930	
	6	0.795	0.795	0.814	
	7	0.795	0.795	0.777	
	8	0.777	0.777	0.760	
	Max		Min	Average	
		0.951	0.760	0.815	

PONTOS	1	0.814	0.795	0.795	
	2	0.795	0.777	0.777	

Buriti dos Lopes 1/7/94

BL-1	NO.	NA20	NA100	NA200	B.L.(m)	m3/s
	1				2.350	
	2					
	3	1.552	1.481	1.250	3.150	
	4	1.346	1.346	1.316	3.650	
	5					
	6	1.667	1.389	1.429	3.700	
	7					
	8	1.250	0.222		1.800	
	9					
	10				1.000	
		Max	Min	Average		
		1.667	0.222	1.295		
BL-2	1	1.029	0.716	0.158	3.400	
	2					
	3	1.571	1.667	1.389	3.000	
	4					
	5	1.471	1.538	0.972	3.200	
	6					
	7	0.682	0.263	0.520	2.850	
	8					
	9				0.850	
		Max	Min	Average		
		1.667	0.158	0.998		
BL-3	1					
	2	1.316	1.143		1.850	
	3					
	4					
	5	1.290	1.364		2.050	
	6	1.129	1.346	1.136	2.550	
	7					
	8	0.946	0.833	0.875	2.750	
	9					
	10	0.500	0.357		1.150	
		Max	Min	Average		
		1.364	0.357	1.020		

Buriti dos Lopes 29/6/94

BL-4	NO.	NA20	NA100	NA200	B.L.(m)	m3/s
	1	0.500				
	2					
	3					
	4	0.909			0.850	
	5					
	6	0.937	0.795		1.100	
	7					
	8	1.053	0.909		1.200	
	9	1.094	1.081	1.053	2.250	
	10					
	11	0.790	0.870		1.900	
	12	0.556				
		Max	Min	Average		
		1.094	0.500	0.879		

BL-5						
	1				1.000	
	2				1.000	
	3				1.000	
	4				1.000	
	5	0.758	0.714		1.100	
	6	1.000	0.833		1.600	
	7					
	8	1.290	1.190	0.926	2.100	
	9	1.250	1.250	0.854	2.550	
	10	0.972	0.937	0.714	2.000	
	11	0.781			1.000	
		Max	Min	Average		
		1.290	0.714	0.962		

P1	P1	0.833	0.750	1.400
	P2	0.046		0.850

Annex 4 : Flow Regime (Float Tracking Survey)

(Teresina Site)

TERESINA - PI.

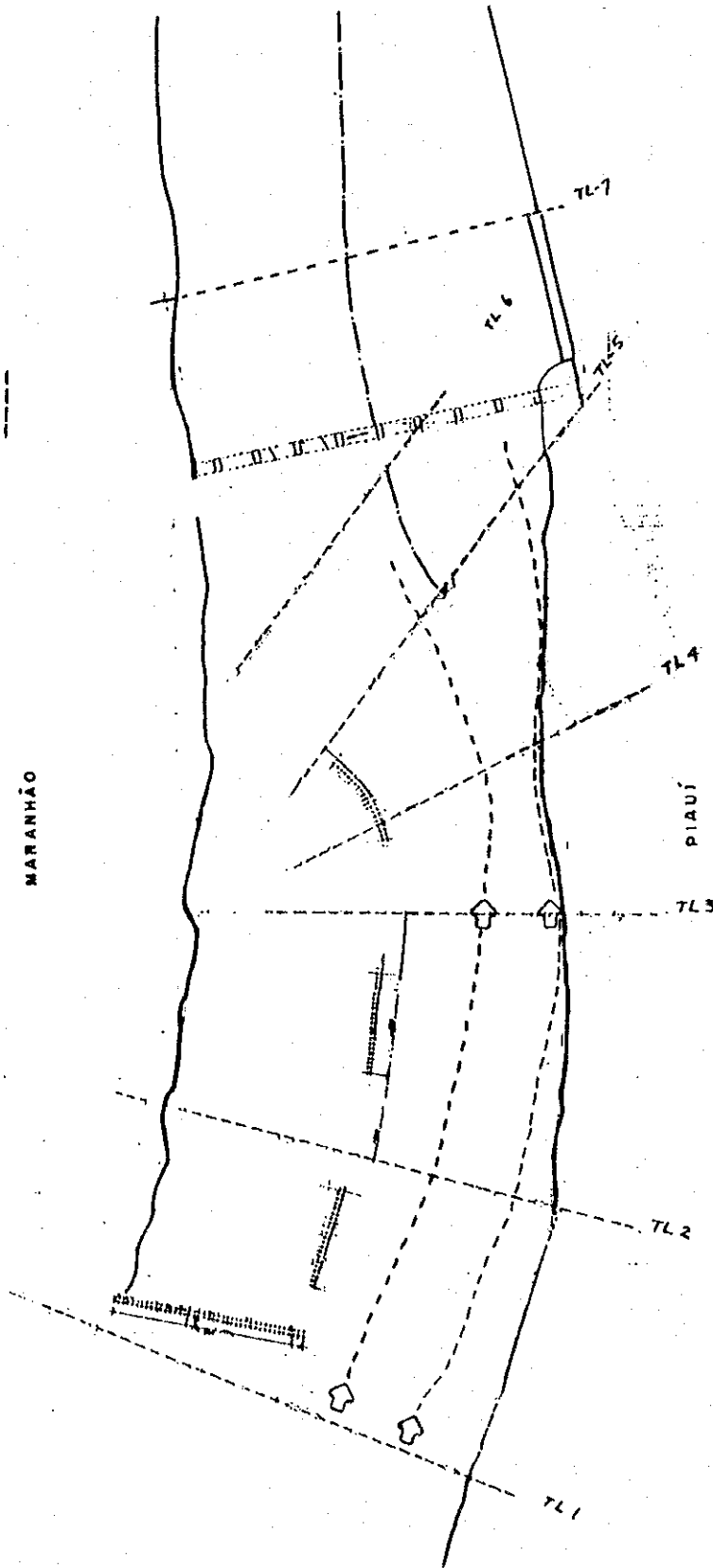
ESC. 1:5000

23/02/94

ESTACA (SPUR DIKE)

MARANHÃO

PIAUI



TERESINA - PI.

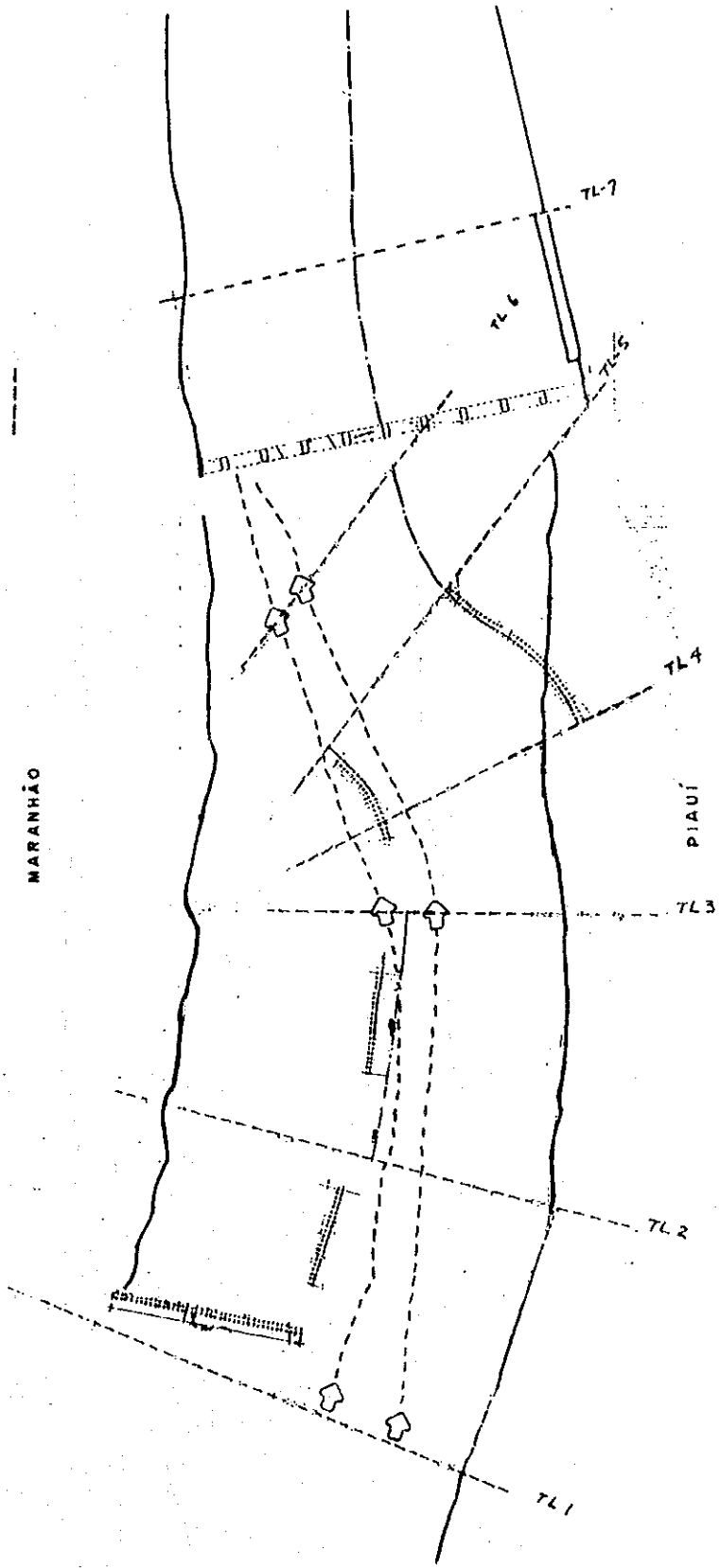
ESC. 1:5000

15/03/94

ESTACA (SPUR DIKE)

MARANHÃO

PIAUI

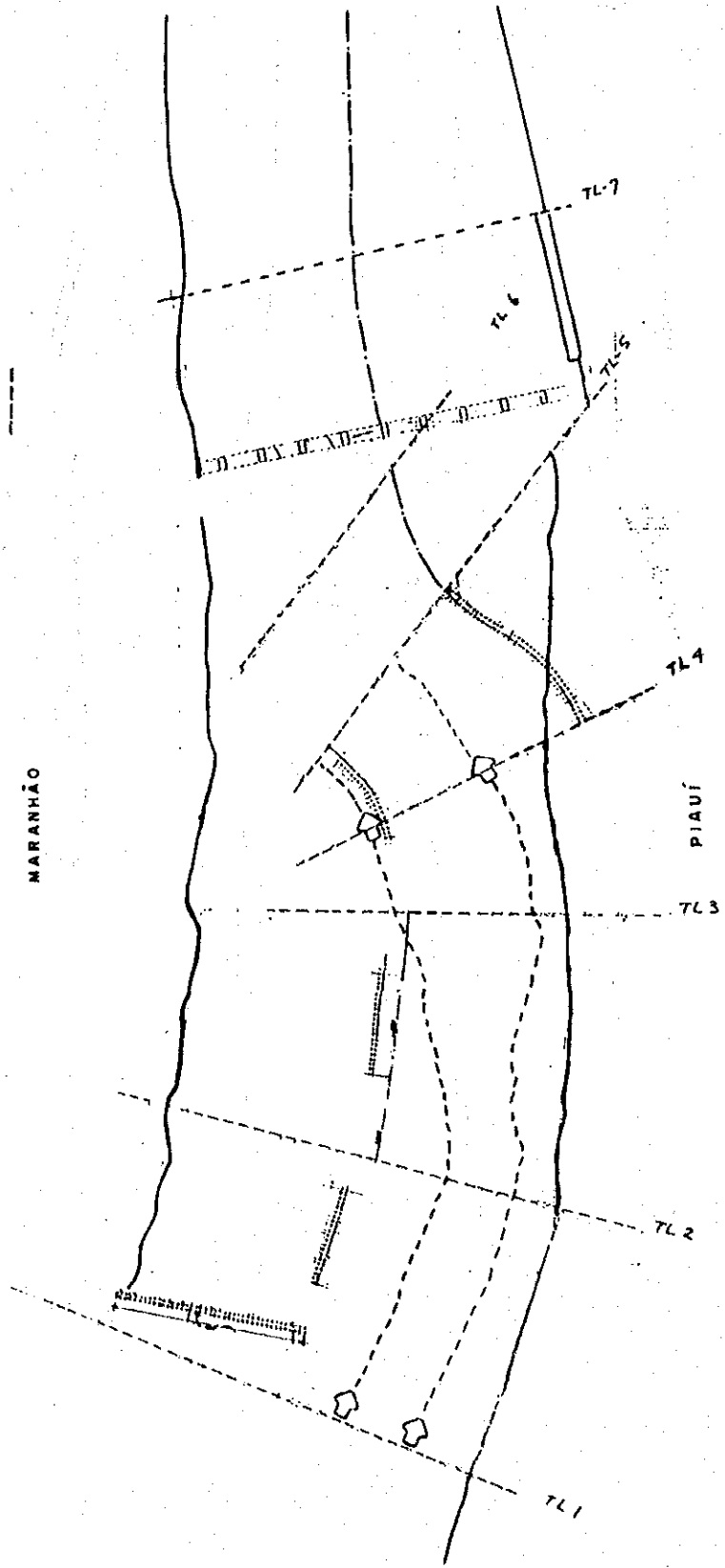


TERESINA - PI.

ESC. 1:5000

30/04/94

ESTACA (SPUR DIKE)



TERESINA - PI.

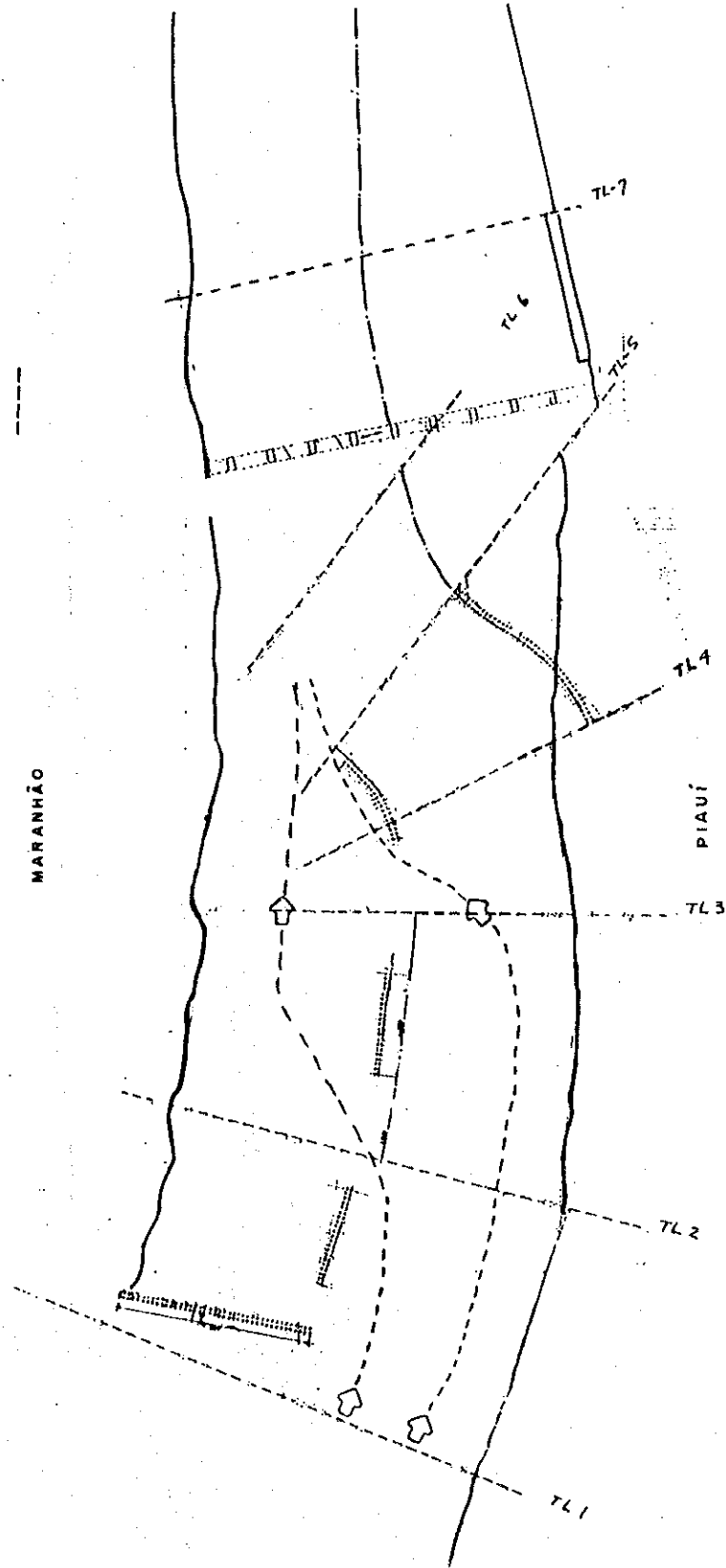
ESC. 1:5000

20/05/94

==== ESTACA (SPUR DIKE)

MARANHÃO

PIAUI

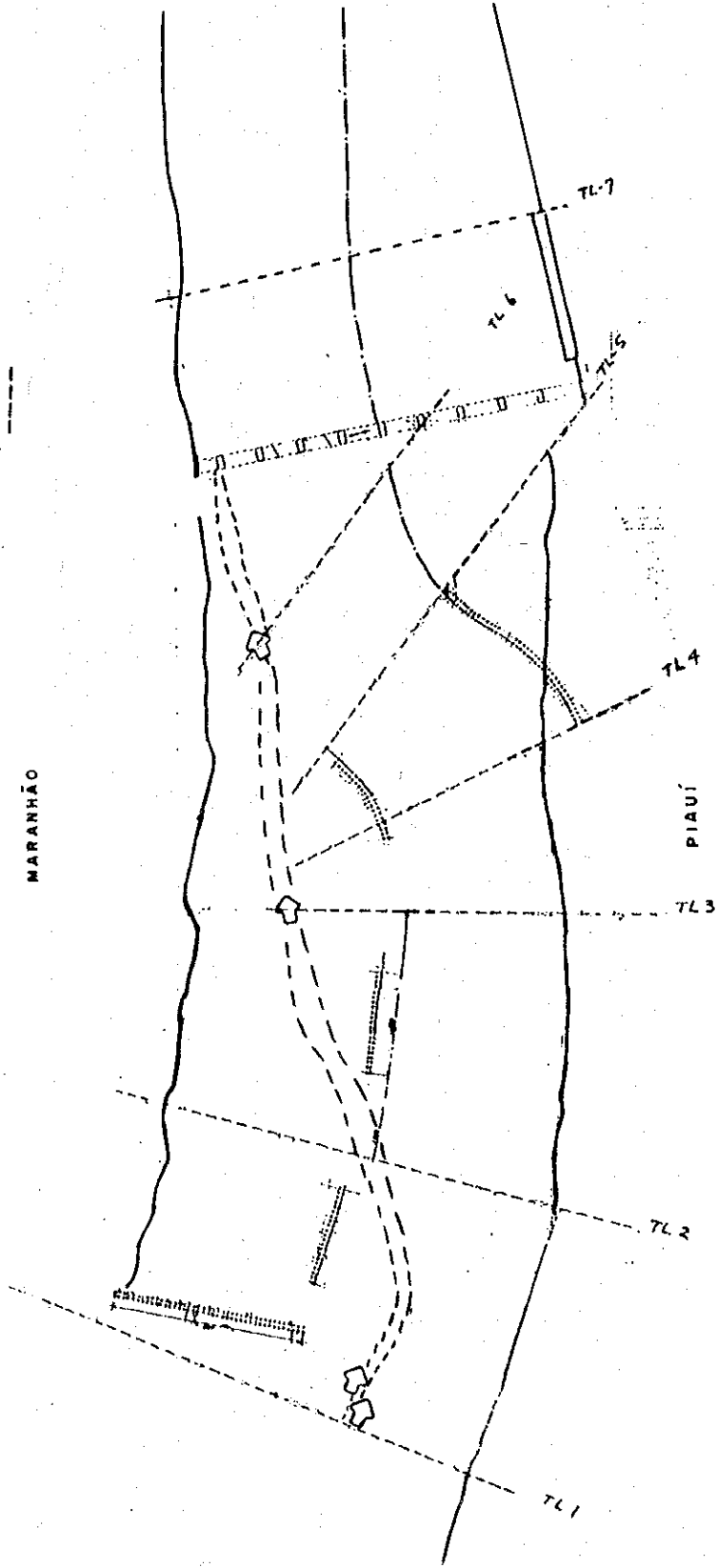


TERESINA - PI.

ESC. 1:5000

27/06/94

ESTACA (SPUR DIKE)



(Uniao Site)

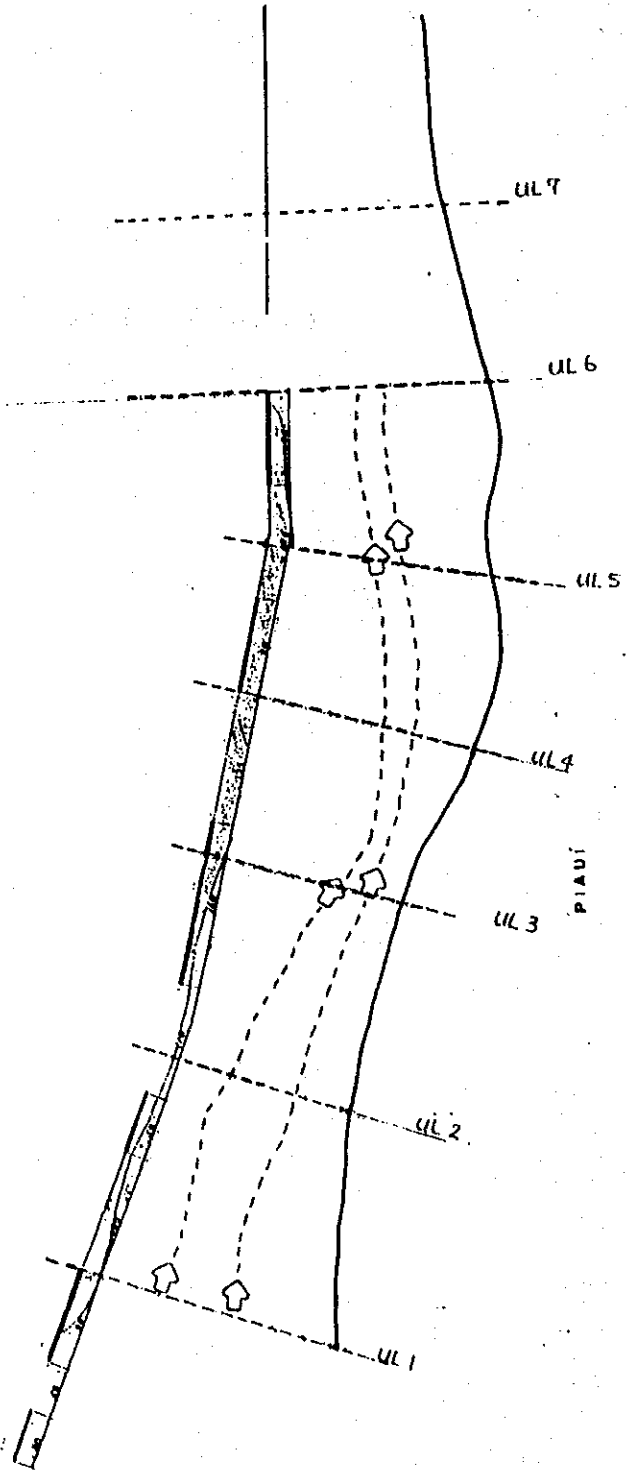
UNIÃO - PI.

Esc. 1:5000

25/02/94

SACO DE AREIA

MARANHÃO



UNIÃO - PI.

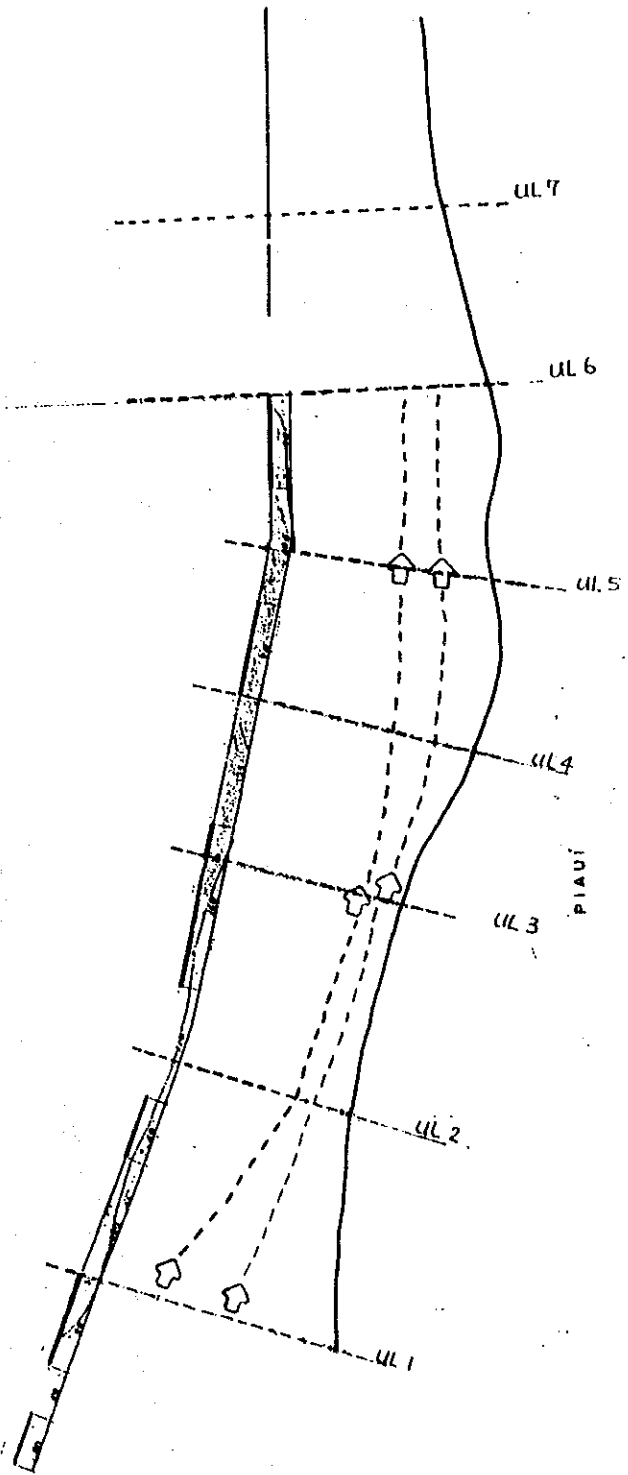
ESC. 1:5000

14/03/94

SACO DE AREIA

MARANHÃO

PIAUDI



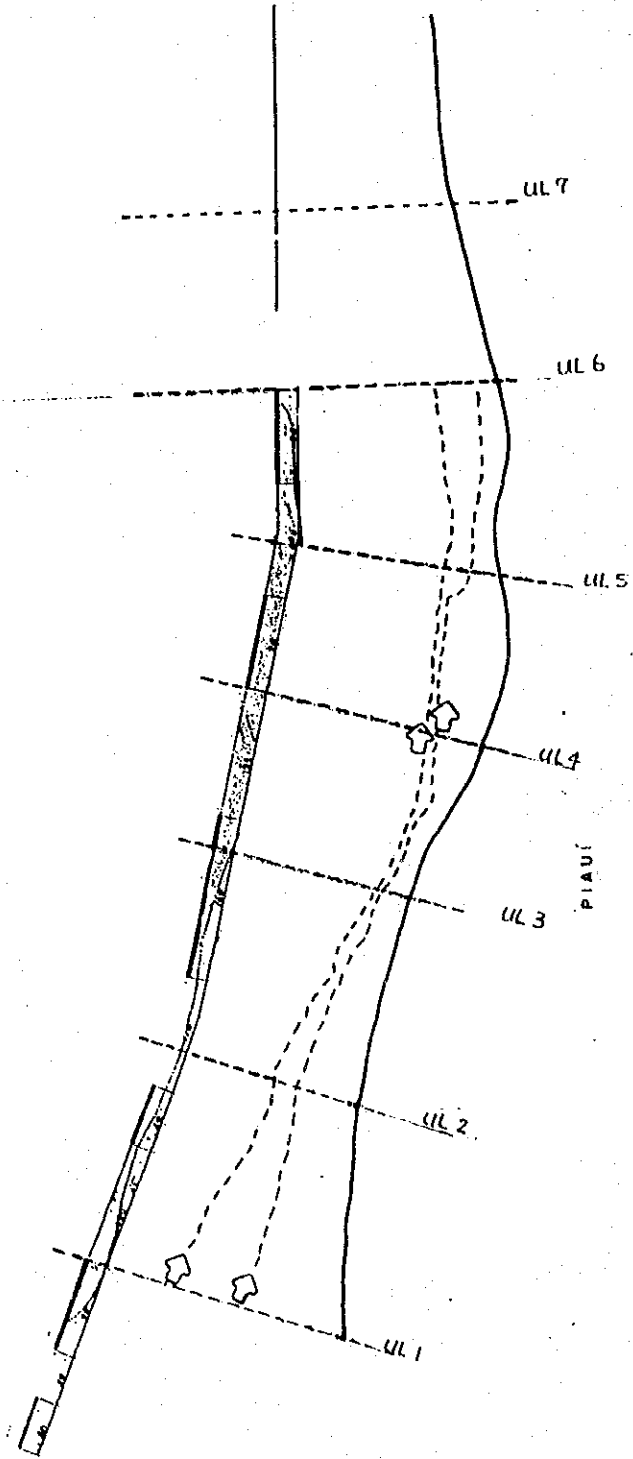
UNIÃO - PI.

ESC. 1:5000

29/04/94

SACO DE AREIA

MARANHÃO



UNIÃO - PI.

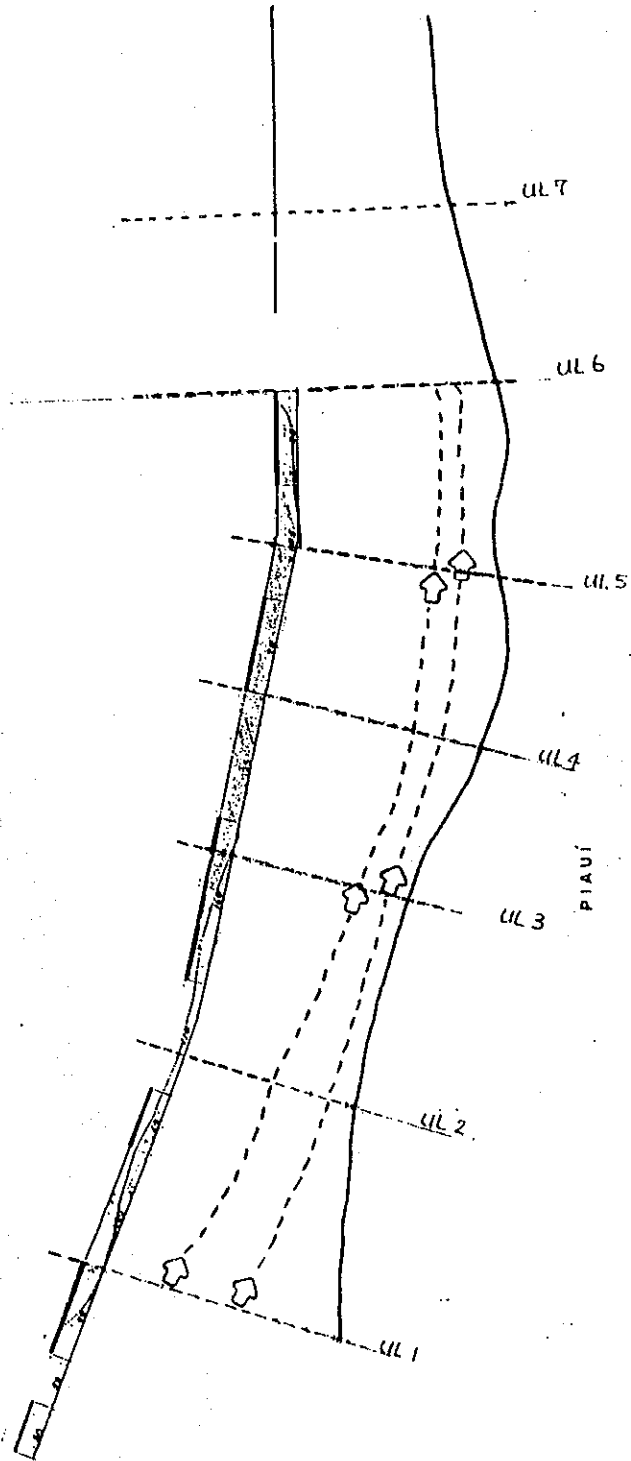
ESC. 1:5000

18/05/94

SACO DE ARZIA

MARANHÃO

PIAUI



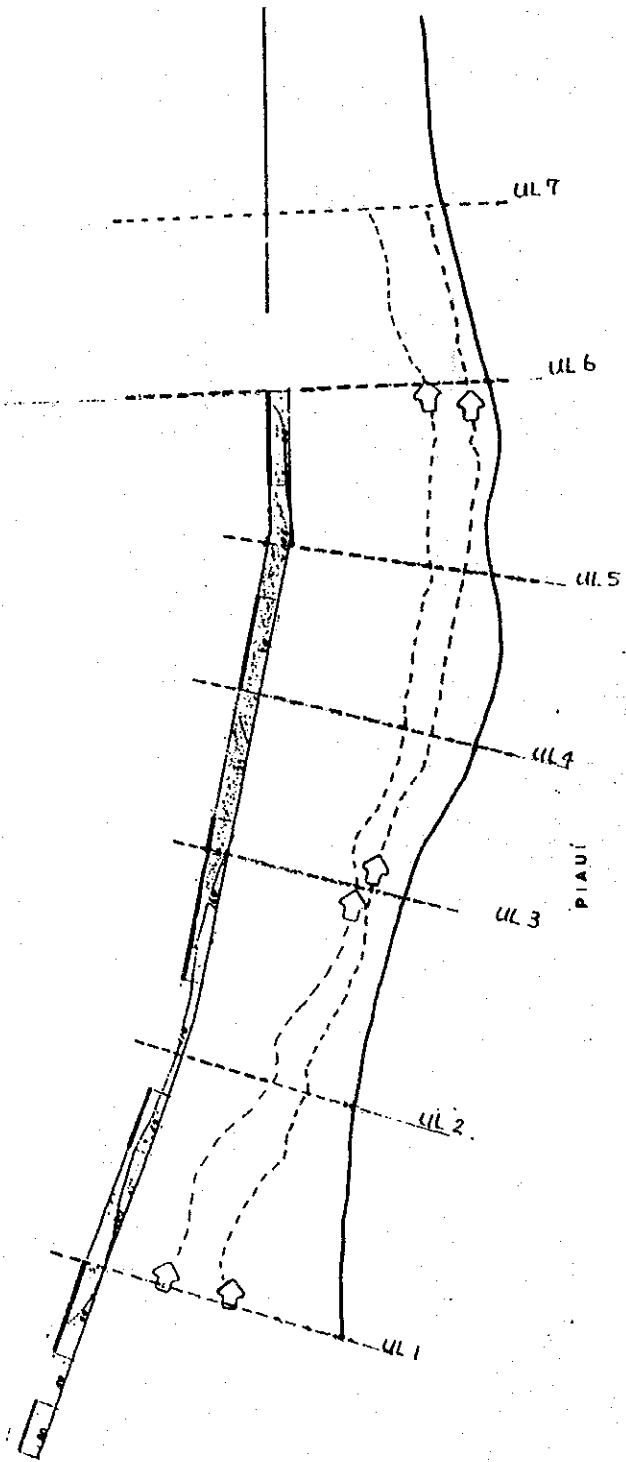
UNIÃO - PI.

ESC. 1:5000

29/06/94

SACO DE AREIA

MARANHÃO

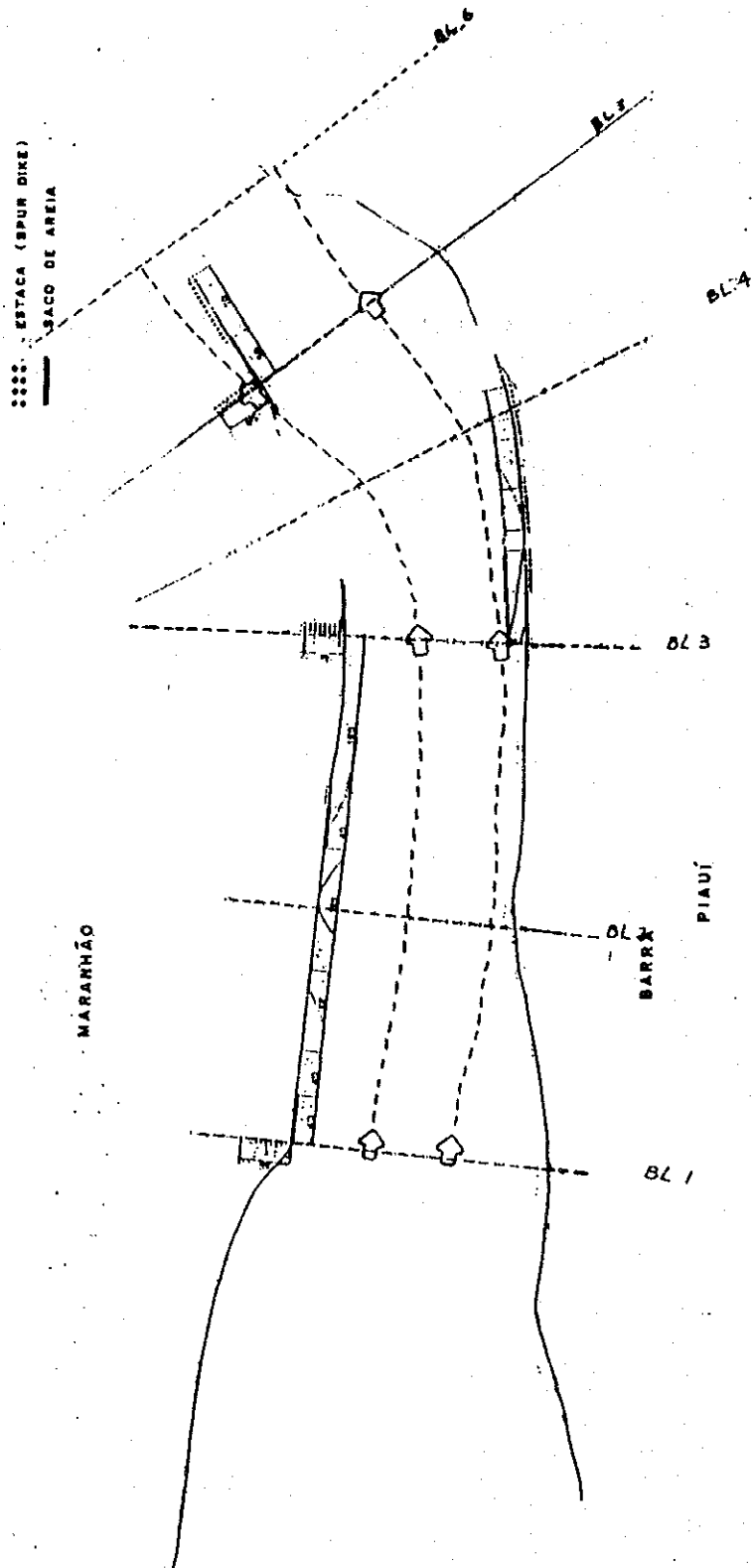


(Buriti dos Lopes Site)

BURITI DOS LOPES - PI.

Esc. 1:5000

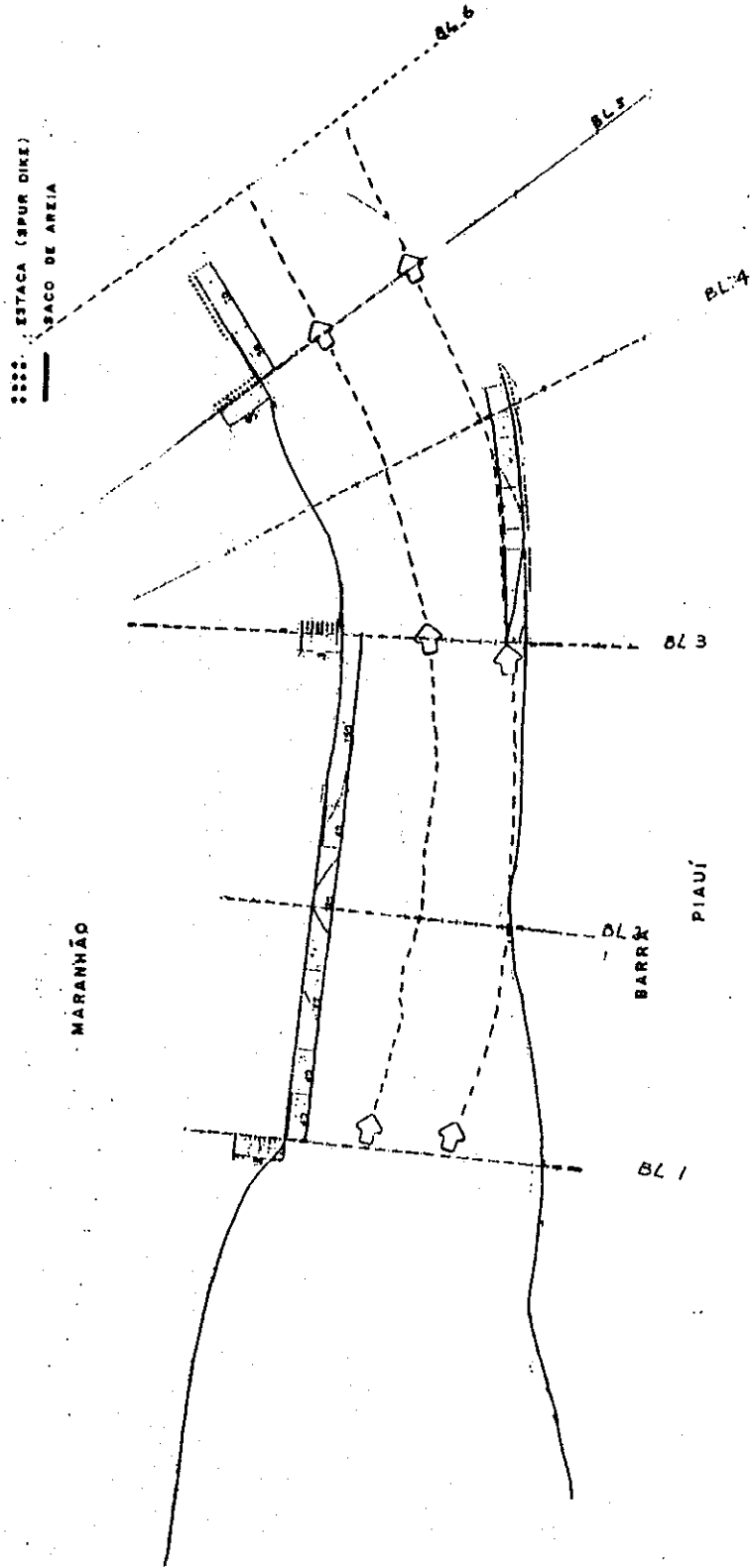
02/03/94



BURITI DOS LOPES - PI.

ESC. 1:5000

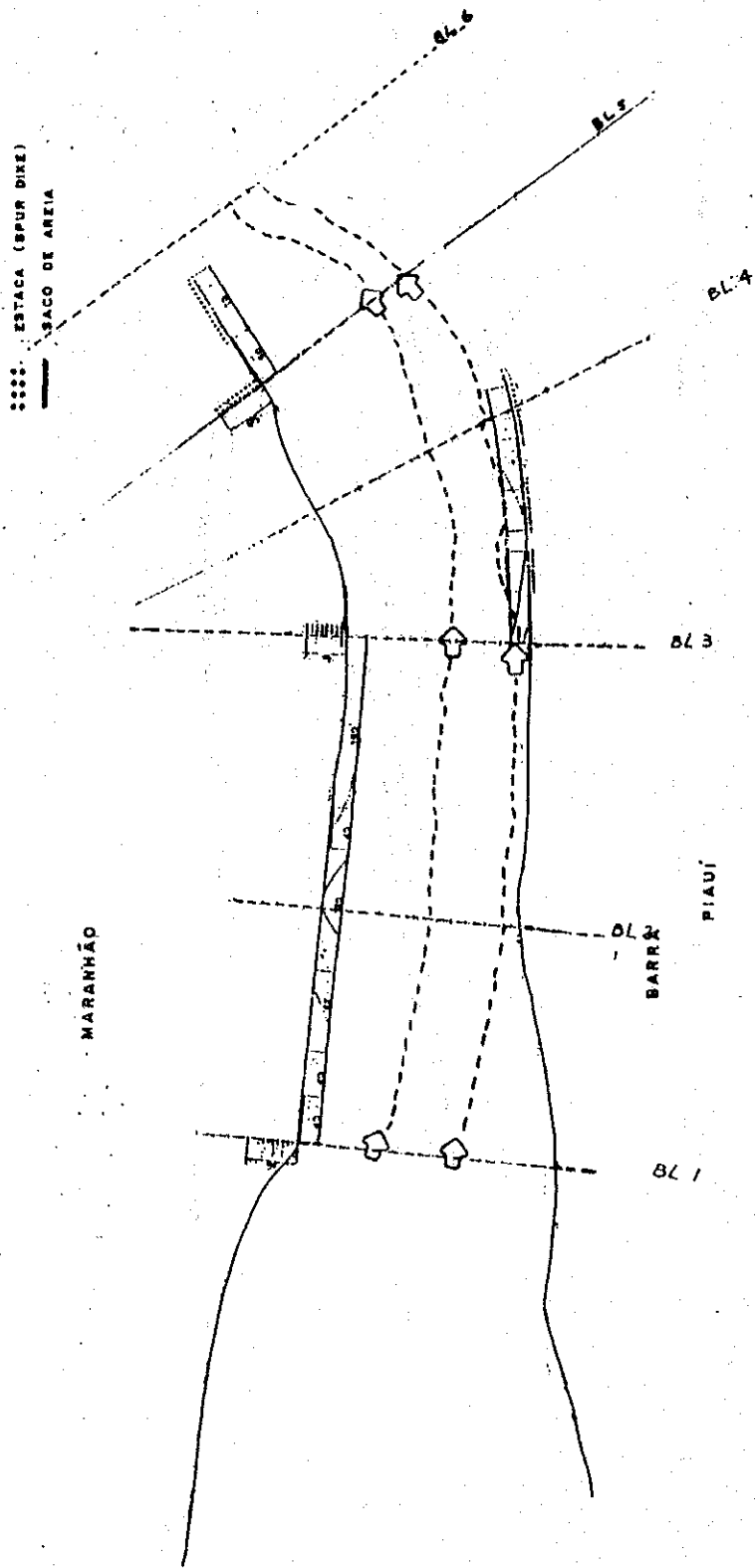
24/03/94



BURITI DOS LOPES - PI.

ESC. 1:5000

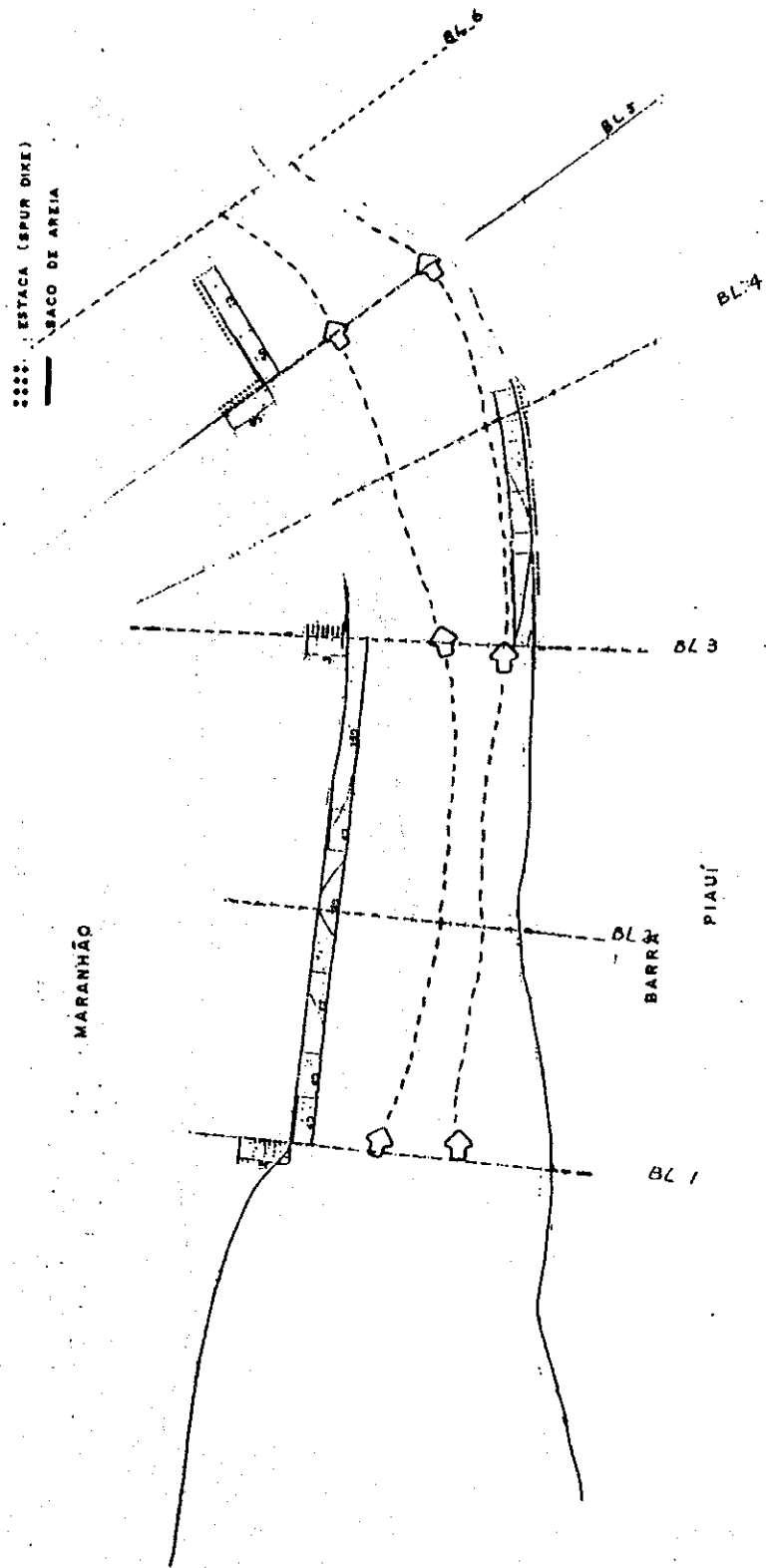
27/04/94



BURITI DOS LOPES - PI.

ESC. 1:5000

17/05/94



BURITI DOS LOPES - PI.

ESC. 1:5000

01/07/94

