

LEMPUNG

SRI NANTI

YEAR: 1978

DATE	SEPTEMBER				OCTOBER				NOVEMBER				DECEMBER			
	6.00	12.00	18.00	MEAN	6.00	12.00	18.00	MEAN	6.00	12.00	18.00	MEAN	6.00	12.00	18.00	MEAN
1									1.11	1.13	1.14	1.12	2.44	2.43	2.42	2.43
2									1.18	1.20	1.24	1.21	2.38	2.37	2.37	2.37
3									1.29	1.32	1.34	1.32	2.34	2.31	2.30	2.32
4									1.38	1.40	1.42	1.40	2.30	2.29	2.28	2.29
5									1.46	1.48	1.50	1.48	2.28	2.27	2.26	2.27
6									1.54	1.56	1.57	1.56	2.24	2.23	2.23	2.23
7									1.60	1.61	1.62	1.61	2.20	2.18	2.17	2.18
8									1.64	1.65	1.68	1.66	2.21	2.20	2.19	2.20
9									1.70	1.70	1.71	1.70	2.26	2.25	2.25	2.25
10									1.75	1.76	1.76	1.76	2.22	2.20	2.20	2.21
11									1.76	1.76	1.76	1.76	2.16	2.15	2.14	2.15
12									1.77	1.78	1.78	1.78	2.12	2.11	2.10	2.11
13									1.79	1.80	1.82	1.80	2.08	2.07	2.07	2.07
14									1.88	1.89	1.89	1.89	2.08	2.07	2.07	2.07
15									1.90	1.93	1.93	1.92	2.08	2.09	2.09	2.09
16									1.96	1.98	1.99	1.98	2.10	2.10	2.11	2.10
17									2.04	2.07	2.09	2.07	2.11	2.12	2.12	2.12
18									2.15	2.17	2.20	2.17	2.12	2.12	2.12	2.12
19									2.24	2.27	2.29	2.27	2.13	2.13	2.13	2.13
20									2.37	2.39	2.40	2.39	2.13	2.12	2.12	2.12
21									2.44	2.46	2.47	2.46	2.11	2.11	2.10	2.11
22									2.55	2.54	2.55	2.55	2.18	2.18	2.18	2.18
23									2.56	2.57	2.58	2.57	2.18	2.18	2.18	2.18
24					0.55	0.55	0.55	0.55	2.59	2.59	2.59	2.59	2.18	2.19	2.19	2.19
25					0.54	0.57	0.57	0.56	2.63	2.63	2.63	2.63	2.20	2.20	2.20	2.20
26					0.57	0.58	0.59	0.58	2.63	2.63	2.62	2.63	2.21	2.21	2.22	2.21
27					0.60	0.61	0.63	0.61	2.60	2.60	2.60	2.60	2.23	2.24	2.25	2.24
28					0.76	0.80	0.84	0.80	2.58	2.58	2.58	2.58	2.26	2.28	2.28	2.27
29					0.89	0.91	0.93	0.91	2.56	2.56	2.56	2.56	2.31	2.32	2.33	2.32
30					0.97	1.00	1.05	1.01	2.54	2.53	2.52	2.53	2.34	2.35	2.35	2.35
31					1.07	1.08	1.09	1.08					2.35	2.35	2.36	2.35

# WATER LEVEL

RIVER: LEMPUNG

LOCATION: SRINANTI

YEAR: 1979

DATE	JANUARY				FEBRUARY				MARCH				APRIL			
	6.00	12.00	18.00	MEAN	6.00	12.00	18.00	MEAN	6.00	12.00	18.00	MEAN	6.00	12.00	18.00	MEAN
1	2.35	2.35	2.34	2.35	1.63	1.63	1.64	1.63	1.28	1.27	1.26	1.27	1.81	1.83	1.84	1.83
2	2.32	2.31	2.30	2.31	1.64	1.63	1.63	1.63	1.28	1.27	1.26	1.27	1.87	1.88	1.87	1.88
3	2.30	2.29	2.29	2.29	1.63	1.63	1.62	1.63	1.25	1.26	1.24	1.25	1.91	1.92	1.93	1.92
4	2.22	2.27	2.26	2.27	1.62	1.62	1.62	1.62	1.25	1.25	1.24	1.25	1.95	1.96	1.96	1.96
5	2.23	2.22	2.21	2.22	1.62	1.62	1.61	1.62	1.23	1.23	1.22	1.23	1.98	1.99	2.00	1.99
6	2.18	2.16	2.15	2.16	1.61	1.61	1.60	1.61	1.22	1.22	1.21	1.22	2.00	2.00	2.00	2.00
7	2.12	2.10	2.08	2.10	1.62	1.62	1.62	1.62	1.21	1.21	1.20	1.21	2.01	2.01	2.01	2.01
8	2.05	2.02	2.01	2.03	1.65	1.65	1.65	1.65	1.19	1.18	1.18	1.18	2.02	2.02	2.02	2.02
9	1.95	1.96	1.94	1.96	1.65	1.65	1.65	1.65	1.16	1.15	1.14	1.15	2.03	2.03	2.03	2.03
10	1.91	1.89	1.88	1.89	1.65	1.66	1.67	1.66	1.13	1.12	1.11	1.12	2.03	2.03	2.03	2.03
11	1.85	1.84	1.83	1.84	1.67	1.67	1.67	1.67	1.10	1.08	1.08	1.09	2.02	2.01	2.00	2.01
12	1.80	1.80	1.79	1.80	1.68	1.68	1.68	1.68	1.07	1.06	1.05	1.06	2.00	1.99	1.98	1.99
13	1.77	1.76	1.75	1.76	1.68	1.68	1.69	1.68	1.00	1.01	1.00	1.00	1.97	1.95	1.93	1.95
14	1.75	1.74	1.74	1.74	1.71	1.72	1.73	1.72	1.00	1.00	1.00	1.00	1.89	1.88	1.86	1.88
15	1.74	1.73	1.73	1.73	1.74	1.74	1.75	1.74	1.00	1.00	1.00	1.00	1.83	1.81	1.80	1.81
16	1.73	1.73	1.72	1.73	1.76	1.77	1.77	1.77	1.02	1.00	1.00	1.01	1.76	1.74	1.74	1.75
17	1.72	1.72	1.72	1.72	1.79	1.79	1.79	1.79	1.06	1.02	1.04	1.04	1.71	1.68	1.67	1.69
18	1.71	1.71	1.71	1.71	1.81	1.81	1.82	1.81	1.10	1.07	1.09	1.09	1.70	1.69	1.68	1.69
19	1.70	1.70	1.69	1.70	1.82	1.82	1.82	1.82	1.12	1.10	1.19	1.14	1.66	1.64	1.64	1.65
20	1.68	1.67	1.66	1.67	1.81	1.81	1.80	1.81	1.14	1.12	1.12	1.13	1.61	1.60	1.59	1.60
21	1.65	1.64	1.63	1.64	1.80	1.79	1.78	1.79	1.14	1.14	1.14	1.14	1.57	1.56	1.55	1.56
22	1.62	1.61	1.61	1.61	1.77	1.75	1.74	1.75	1.18	1.14	1.15	1.16	1.54	1.53	1.52	1.53
23	1.59	1.58	1.57	1.58	1.72	1.70	1.70	1.71	1.26	1.19	1.19	1.21	1.51	1.51	1.50	1.51
24	1.55	1.57	1.58	1.57	1.70	1.69	1.68	1.69	1.37	1.27	1.28	1.31	1.49	1.49	1.48	1.49
25	1.56	1.55	1.53	1.55	1.65	1.63	1.62	1.63	1.43	1.39	1.40	1.41	1.48	1.47	1.47	1.48
26	1.56	1.55	1.55	1.55	1.59	1.58	1.56	1.58	1.48	1.45	1.45	1.46	1.46	1.46	1.45	1.46
27	1.55	1.55	1.55	1.55	1.52	1.51	1.50	1.51	1.56	1.50	1.52	1.53	1.44	1.44	1.45	1.44
28	1.57	1.58	1.58	1.58	1.47	1.45	1.44	1.45	1.63	1.58	1.60	1.60	1.45	1.44	1.44	1.44
29	1.59	1.60	1.60	1.60					1.71	1.65	1.67	1.67	1.44	1.44	1.43	1.44
30	1.61	1.61	1.62	1.61					1.77	1.72	1.74	1.74	1.44	1.44	1.44	1.44
31	1.63	1.63	1.63	1.63					1.77	1.73	1.78	1.76				

LEMPUNG  
SRINANTI

YEAR: 1979

DATE	MAY				JUNE				JULY				AUGUST			
	6.00	12.00	18.00	MEAN	6.00	12.00	18.00	MEAN	6.00	12.00	18.00	MEAN	6.00	12.00	18.00	MEAN
1	1.45	1.45	1.45	1.45	0.98	0.98	0.97	0.98	0.63	0.63	0.62	0.63	0.35	0.35	0.34	0.35
2	1.46	1.47	1.47	1.47	0.99	0.99	0.98	0.99	0.60	0.59	0.58	0.59	0.37	0.45	0.47	0.44
3	1.50	1.50	1.51	1.50	0.98	0.98	0.99	0.98	0.56	0.55	0.54	0.55	0.50	0.50	0.51	0.50
4	1.51	1.51	1.51	1.51	1.01	1.03	1.04	1.03	0.52	0.51	0.50	0.51	0.54	0.55	0.55	0.55
5	1.51	1.51	1.50	1.51	1.06	1.07	1.08	1.07	0.50	0.50	0.50	0.50	0.56	0.57	0.57	0.57
6	1.50	1.49	1.49	1.49	1.09	1.09	1.11	1.10	0.49	0.49	0.49	0.49	0.56	0.55	0.55	0.55
7	1.50	1.50	1.50	1.50	1.11	1.12	1.12	1.12	0.57	0.52	0.52	0.52	0.52	0.55	0.51	0.55
8	1.49	1.48	1.47	1.48	1.13	1.14	1.14	1.14	0.54	0.55	0.56	0.55	0.47	0.47	0.48	0.47
9	1.47	1.46	1.45	1.46	1.16	1.16	1.17	1.16	0.60	0.63	0.65	0.63	0.47	0.47	0.46	0.47
10	1.44	1.43	1.41	1.43	1.18	1.18	1.17	1.18	0.67	0.71	0.73	0.71	0.45	0.44	0.43	0.44
11	1.40	1.39	1.38	1.39	1.19	1.19	1.19	1.19	0.77	0.77	0.80	0.79	0.41	0.41	0.40	0.41
12	1.36	1.35	1.34	1.35	1.19	1.19	1.18	1.19	0.84	0.86	0.86	0.85	0.36	0.36	0.35	0.36
13	1.31	1.29	1.28	1.29	1.18	1.17	1.17	1.17	0.89	0.90	0.90	0.90	0.31	0.31	0.32	0.31
14	1.27	1.25	1.25	1.26	1.16	1.15	1.14	1.15	0.91	0.91	0.90	0.91	0.33	0.32	0.31	0.32
15	1.24	1.23	1.22	1.23	1.12	1.11	1.11	1.11	0.88	0.87	0.87	0.87	0.29	0.28	0.26	0.28
16	1.20	1.20	1.20	1.20	1.09	1.08	1.07	1.08	0.85	0.85	0.84	0.85	0.23	0.22	0.22	0.22
17	1.18	1.17	1.16	1.17	1.04	1.03	1.02	1.03	0.89	0.82	0.81	0.84	0.20	0.20	0.19	0.20
18	1.14	1.14	1.13	1.14	0.97	0.98	0.96	0.98	0.90	0.90	0.90	0.90	0.17	0.17	0.16	0.17
19	1.12	1.12	1.11	1.12	0.93	0.92	0.91	0.92	0.79	0.79	0.78	0.79	0.15	0.15	0.16	0.15
20	1.10	1.10	1.09	1.10	0.88	0.87	0.84	0.86	0.77	0.76	0.75	0.76	0.16	0.16	0.16	0.16
21	1.08	1.08	1.08	1.08	0.82	0.80	0.79	0.80	0.74	0.73	0.72	0.73	0.14	0.14	0.14	0.14
22	1.12	1.12	1.12	1.12	0.77	0.76	0.75	0.76	0.69	0.68	0.67	0.68	0.16	0.16	0.18	0.17
23	1.12	1.12	1.12	1.12	0.71	0.70	0.68	0.70	0.64	0.63	0.62	0.63	0.18	0.18	0.18	0.18
24	1.12	1.12	1.12	1.12	0.65	0.63	0.62	0.63	0.58	0.57	0.55	0.57	0.18	0.18	0.18	0.18
25	1.11	1.11	1.12	1.11	0.60	0.59	0.58	0.59	0.52	0.52	0.52	0.52	0.18	0.17	0.17	0.17
26	1.12	1.11	1.10	1.11	0.59	0.58	0.58	0.58	0.50	0.50	0.49	0.50	0.19	0.20	0.21	0.20
27	1.09	1.09	1.08	1.09	0.57	0.57	0.60	0.57	0.48	0.47	0.45	0.47	0.22	0.23	0.24	0.23
28	1.06	1.06	1.05	1.06	0.61	0.66	0.60	0.62	0.44	0.43	0.42	0.43	0.23	0.23	0.22	0.23
29	1.04	1.04	1.04	1.04	0.59	0.58	0.57	0.58	0.40	0.38	0.37	0.38	0.21	0.21	0.20	0.21
30	1.02	1.04	1.02	1.03	0.56	0.57	0.57	0.57	0.36	0.37	0.37	0.37	0.17	0.17	0.18	0.17
31	1.00	1.00	0.99	1.00					0.38	0.37	0.37	0.37	0.17	0.17	0.18	0.17

LEMPUNG  
SRINANTI

YEAR: 1979

DATE	SEPTEMBER				OCTOBER				NOVEMBER				DECEMBER			
	6.00	12.00	18.00	MEAN	6.00	12.00	18.00	MEAN	6.00	12.00	18.00	MEAN	6.00	12.00	18.00	MEAN
1	0.18	0.17	0.17	0.17												
2	0.15	0.17	0.20	0.17												
3	0.24	0.24	0.24	0.24												
4	0.24	0.25	0.26	0.25												
5	0.34	0.37	0.40	0.37												
6	0.43	0.44	0.44	0.44												
7	0.42	0.42	0.41	0.42												
8	0.40	0.39	0.38	0.39												
9	0.37	0.37	0.37	0.37												
10	0.35	0.35	0.34	0.35												
11	0.32	0.31	0.30	0.31												
12	0.29	0.28	0.27	0.28												
13	0.28	0.31	0.35	0.31												
14	0.38	0.39	0.40	0.39												
15	0.41	0.41	0.42	0.41												
16	0.40	0.32	0.38	0.37												
17	0.34	0.30	0.32	0.32												
18	0.30	0.31	0.30	0.30												
19	0.30	0.31	0.31	0.31												
20	0.31	0.30	0.30	0.30												
21	0.30	0.30	0.31	0.30												
22	0.32	0.33	0.34	0.33												
23	0.37	0.40	0.41	0.39												
24	0.46	0.49	0.51	0.49												
25	0.54	0.55	0.56	0.55												
26	0.57	0.58	0.58	0.58												
27	0.59	0.63	0.65	0.62												
28	0.67	0.67	0.71	0.69												
29	0.75	0.76	0.79	0.77												
30	0.82	0.84	0.86	0.84												
31																

# WATER LEVEL

RIVER: LEMPUING

YEAR: 1979

LOCATION: SRI NANTI

0	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1	2.35	1.63	1.27	1.83	1.45	0.98	0.63	0.35	0.17	0.95	1.36	1.21
2	2.31	1.63	1.27	1.88	1.47	0.99	0.59	0.44	0.17	1.09	1.35	1.19
3	2.29	1.63	1.25	1.92	1.50	0.98	0.55	0.50	0.24	1.15	1.34	1.18
4	2.27	1.62	1.25	1.96	1.51	1.03	0.51	0.55	0.25	1.22	1.36	1.20
5	2.22	1.62	1.23	1.99	1.51	1.07	0.50	0.57	0.37	1.31	1.38	1.20
6	2.16	1.61	1.22	2.00	1.49	1.10	0.49	0.55	0.44	1.42	1.38	1.23
7	2.10	1.62	1.21	2.01	1.50	1.12	0.52	0.55	0.42	1.50	1.39	1.48
8	2.03	1.65	1.18	2.02	1.48	1.14	0.55	0.49	0.39	1.56	1.40	1.64
9	1.96	1.65	1.15	2.03	1.46	1.16	0.63	0.47	0.37	1.58	1.41	1.77
10	1.89	1.66	1.12	2.03	1.43	1.18	0.71	0.44	0.35	1.58	1.40	1.88
11	1.84	1.66	1.09	2.01	1.39	1.19	0.79	0.41	0.31	1.56	1.43	1.98
12	1.80	1.68	1.06	1.99	1.35	1.19	0.85	0.36	0.28	1.53	1.44	2.06
13	1.76	1.68	1.06	1.95	1.29	1.17	0.90	0.31	0.31	1.50	1.45	2.12
14	1.74	1.72	1.00	1.88	1.26	1.15	0.91	0.32	0.30	1.48	1.47	2.16
15	1.73	1.74	1.00	1.81	1.23	1.11	0.87	0.28	0.41	1.48	1.47	2.19
16	1.73	1.77	1.01	1.75	1.20	1.08	0.85	0.22	0.37	1.47	1.47	2.21
17	1.72	1.79	1.04	1.69	1.17	1.03	0.84	0.20	0.32	1.47	1.46	2.23
18	1.71	1.81	1.07	1.69	1.14	0.98	0.80	0.17	0.30	1.45	1.44	2.24
19	1.70	1.82	1.14	1.65	1.12	0.92	0.79	0.15	0.31	1.44	1.44	2.23
20	1.67	1.81	1.13	1.60	1.10	0.86	0.76	0.16	0.30	1.42	1.42	2.20
21	1.64	1.79	1.14	1.56	1.08	0.80	0.73	0.14	0.30	1.39	1.41	2.16
22	1.61	1.75	1.16	1.53	1.12	0.76	0.68	0.17	0.33	1.36	1.38	2.16
23	1.58	1.71	1.21	1.51	1.12	0.70	0.63	0.18	0.39	1.33	1.36	2.18
24	1.57	1.69	1.31	1.49	1.12	0.63	0.57	0.18	0.49	1.31	1.35	2.19
25	1.55	1.63	1.41	1.48	1.11	0.59	0.52	0.17	0.55	1.30	1.33	2.20
26	1.55	1.58	1.46	1.46	1.11	0.58	0.50	0.20	0.58	1.29	1.32	2.21
27	1.55	1.51	1.53	1.44	1.09	0.59	0.47	0.23	0.62	1.32	1.29	2.22
28	1.58	1.45	1.60	1.44	1.06	0.62	0.43	0.23	0.69	1.34	1.26	2.22
29	1.60		1.64	1.44	1.04	0.58	0.38	0.21	0.77	1.35	1.24	2.22
30	1.61		1.74	1.44	1.03	0.57	0.37	0.19	0.84	1.35	1.23	2.23
31	1.63		1.76		1.00		0.37	0.17		1.36		2.25

WATER LEVEL

RIVER: LEMPUNG

YEAR: 1980

LOCATION: SRI NANTI

D	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1	2.25	1.31	1.44	1.83	1.70	0.88	0.68	0.78	0.89	0.80	2.47	1.81
2	2.25	1.24	1.42	1.85	1.65	0.86	0.65	0.78	0.96	0.76	2.56	1.82
3	2.23	1.18	1.40	1.85	1.61	0.88	0.62	0.74	1.01	0.71	2.59	1.85
4	2.19	1.12	1.37	1.85	1.58	0.89	0.57	0.78	1.07	0.65	2.59	1.89
5	2.15	1.06	1.37	1.83	1.56	0.92	0.54	0.79	1.10	0.64	2.59	1.93
6	2.12	1.03	1.37	1.83	1.54	0.93	0.53	0.80	1.12	0.64	2.55	1.96
7	2.06	1.01	1.34	1.86	1.50	0.93	0.53	0.82	1.19	0.61	2.49	2.02
8	2.01	0.97	1.35	1.86	1.48	0.96	0.55	0.83	1.24	0.58	2.43	2.13
9	1.96	0.94	1.37	1.87	1.44	0.97	0.66	0.83	1.32	0.58	2.35	2.19
10	1.95	0.91	1.39	1.92	1.41	0.98	0.76	0.87	1.38	0.58	2.30	2.27
11	1.96	0.90	1.41	1.93	1.38	1.01	0.79	0.93	1.42	0.59	2.24	2.36
12	1.93	0.88	1.44	1.96	1.34	1.04	0.79	0.99	1.46	0.64	2.18	2.42
13	1.93	0.88	1.46	1.95	1.28	1.06	0.80	1.03	1.48	0.67	2.12	2.48
14	1.94	0.89	1.46	1.95	1.25	1.06	0.80	1.07	1.48	0.66	2.09	2.52
15	1.95	0.90	1.46	1.93	1.22	1.10	0.88	1.09	1.46	0.70	2.08	2.54
16	1.98	0.89	1.44	1.93	1.18	1.13	0.95	1.10	1.45	0.70	2.05	2.54
17	2.00	0.90	1.43	1.91	1.13	1.16	1.01	1.09	1.39	0.73	2.02	2.54
18	2.02	0.91	1.43	1.89	1.07	1.17	1.05	1.08	1.35	0.79	2.00	2.55
19	2.04	0.94	1.43	1.88	1.01	1.14	1.09	1.06	1.29	0.81	1.98	2.57
20	2.04	0.99	1.42	1.89	0.99	1.11	1.10	1.06	1.22	0.87	1.95	2.59
21	2.03	1.02	1.41	1.87	0.95	1.04	1.08	1.04	1.18	0.91	1.92	2.59
22	1.97	1.04	1.43	1.85	0.91	0.99	1.05	1.02	1.17	1.01	1.90	2.59
23	1.95	1.00	1.45	1.85	0.89	0.92	1.02	0.99	1.13	1.09	1.88	2.64
24	1.89	1.13	1.53	1.85	0.86	0.91	1.02	0.96	1.11	1.20	1.85	2.72
25	1.82	1.22	1.61	1.85	0.82	0.84	1.02	0.91	1.07	1.30	1.84	2.71
26	1.74	1.26	1.66	1.87	0.81	0.81	1.00	0.86	1.03	1.47	1.86	2.71
27	1.66	1.27	1.72	1.86	0.80	0.77	0.98	0.83	0.97	1.64	1.83	2.68
28	1.59	1.32	1.76	1.85	0.79	0.75	0.94	0.82	0.94	1.85	1.77	2.69
29	1.51	1.38	1.79	1.82	0.80	0.74	0.90	0.85	0.89	2.07	1.78	2.67
30	1.44	/	1.81	1.79	0.81	0.73	0.85	0.86	0.86	2.25	1.80	2.65
31	1.38	/	1.82	/	0.82	/	0.79	0.86	/	2.36	/	2.62

# WATER LEVEL

RIVER: Насок

YEAR: 1979

LOCATION: САНЯ БУМ

D	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1	5.05	4.63	2.12	5.23	2.49	1.69	0.85	0.72	0.67	2.47	2.88	2.46
2	4.68	4.44	2.12	5.32	2.31	1.65	0.88	0.69	0.62	2.67	2.92	2.37
3	4.47	4.61	2.17	5.37	2.27	1.55	1.11	0.65	0.59	2.80	3.02	2.45
4	4.38	4.53	2.24	5.28	2.66	1.45	1.22	0.64	0.55	2.80	3.15	1.78
5	4.36	4.27	2.23	5.44	3.18	1.46	1.18	0.61	0.54	2.67	3.38	1.72
6	4.48	3.91	2.16	5.45	3.08	1.44	1.15	0.62	0.55	3.14	3.63	1.75
7	4.86	3.48	1.99	5.31	2.94	1.85	1.14	0.64	0.58	3.09	3.83	1.87
8	5.19	4.23	2.05	5.15	2.72	2.25	1.13	0.64	0.62	3.87	3.86	1.88
9	5.69	5.25	2.11	5.04	2.65	2.59	1.06	0.65	0.69	3.83	4.11	1.91
10	5.90	5.63	2.10	5.20	2.43	2.74	0.98	0.74	0.72	3.62	5.92	2.62
11	5.95	5.73	2.10	5.00	2.33	2.75	1.03	0.94	0.79	3.59	3.54	2.45
12	6.05	5.70	2.14	4.65	2.41	2.73	1.06	0.99	0.78	3.87	3.16	2.74
13	5.98	5.62	1.90	4.41	2.45	2.63	1.09	0.93	0.78	4.24	3.06	5.04
14	5.74	5.39	1.71	4.32	2.48	2.41	1.05	0.86	0.81	4.42	3.34	5.91
15	5.50	5.07	1.58	4.22	2.43	2.18	1.05	0.75	0.79	4.35	3.55	5.91
16	5.28	4.77	1.46	4.10	2.26	1.92	1.11	0.69	0.71	4.09	4.13	5.82
17	5.04	4.40	1.59	3.74	2.01	1.72	1.11	0.63	0.68	3.56	4.13	5.90
18	4.58	3.92	1.78	3.25	1.78	1.65	1.11	0.60	0.69	2.81	4.03	5.79
19	4.02	3.65	1.89	2.78	2.05	1.54	1.16	0.56	0.65	2.20	3.91	5.68
20	3.67	3.70	2.09	2.45	2.26	1.40	1.20	0.53	0.60	1.91	3.75	5.52
21	3.28	3.75	2.26	2.58	2.32	1.36	1.21	0.51	0.56	1.84	3.53	5.28
22	3.08	3.81	2.82	2.48	2.43	1.36	1.12	0.50	0.52	2.39	3.02	5.18
23	3.16	3.71	3.29	2.66	2.40	1.27	1.17	0.52	0.51	2.73	2.66	5.50
24		3.41	3.44	2.58	2.26	1.17	1.25	0.57	0.58	3.32	2.39	5.61
25		3.14	3.48	2.54	2.10	1.09	1.24	0.57	0.57	3.38	2.35	5.61
26		2.94	3.81	2.52	2.05	1.02	1.20	0.55	0.88	3.44	2.27	5.78
27		2.74	3.85	2.58	2.10	0.98	1.10	0.54	1.17	3.45	2.25	5.80
28		2.46	4.14	2.64	1.94	0.97	0.98	0.68	1.52	3.38	2.27	6.24
29			4.25	2.61	1.75	0.95	0.86	0.74	2.05	3.18	2.44	6.60
30	4.66		4.58		1.65	0.89	0.77	0.73	2.36	3.05	2.66	6.73
31	4.60		5.07		1.65		0.74	0.71		2.88		5.77



# WATER LEVEL

RIVER: MACAK

YEAR: 1980.

LOCATION: CAHAYA BUMI

D	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1		3.20	4.62	4.87	3.86	1.42	1.45	1.98	2.02	2.00	5.81	4.23
2		2.64	4.45	5.00	3.80	1.45	1.36	1.87	1.66	2.25	6.21	4.75
3		2.43	4.28	5.02	3.71	1.46	1.29	1.85	1.31	2.43	7.20	4.99
4		2.18	3.99	4.94	3.64	1.48	1.76	1.66	1.26	2.34	7.16	4.94
5		2.01	3.65	4.82	3.53	1.44	2.19	1.52	1.32	2.16	6.86	4.89
6		1.94	3.29	4.62	3.29	1.47	2.29	1.37	1.36	2.00	6.62	4.74
7		1.99	2.93	4.41	2.93	1.51	2.15	1.37	1.58	1.97	6.46	4.61
8		1.90	3.68	4.19	2.53	1.47	1.98	1.31	1.74	1.95	6.32	4.39
9		1.94	2.67	3.91	2.29	2.10	1.75	1.26	2.14	1.89	6.10	4.46
10		1.77	2.72	3.67	2.21	2.11	1.58	1.23	2.73	1.84	5.80	4.63
11		1.76	2.61	3.58	2.16	2.10	1.46	1.21	4.03	1.78	3.40	4.95
12		1.77	2.43	3.63	2.46	2.14	1.51	1.21	4.64	1.66	4.92	5.38
13		1.88	2.55	3.49	2.72	2.28	1.55	1.28	4.65	1.56	4.39	5.97
14		1.80	2.52	3.31	2.88	2.50	1.46	1.70	4.66	1.43	4.13	6.23
15		1.69	2.97	3.24	2.93	2.62	1.44	1.72	4.57	1.75	3.80	6.35
16		1.71	2.80	3.77	2.82	2.73	1.54	1.79	4.28	1.99	4.43	4.32
17		2.13	2.76	4.21	2.62	2.90	1.96	1.82	4.01	2.09	3.29	6.23
18		2.11	2.87	4.36	2.47	3.09	2.76	1.82	3.73	2.12	3.17	6.10
19		2.08	2.76	4.25	2.29	2.82	3.85	2.05	3.45	2.06	3.19	6.02
20		1.96	2.55	4.34	2.05	2.53	4.14	2.22	3.01	1.06	3.10	6.26
21		1.81	2.32	4.24	1.82	2.09	4.22	2.33	2.71	2.25	3.57	6.67
22		1.72	2.20	3.99	1.65	2.26	4.16	2.62	2.49	2.29	4.26	6.75
23		1.75	2.23	4.32	1.57	2.10	3.88	2.68	2.33	2.57	3.92	6.88
24		2.21	2.09	4.26	1.44	1.94	3.50	2.60	2.22	2.53	3.77	6.89
25		2.60	2.36	4.24	1.37	1.92	3.14	2.32	2.02	2.31	3.65	6.66
26		2.27	2.92	4.86	1.32	1.88	2.85	2.02	1.79	2.10	3.63	6.42
27	5.20	2.62	3.58	4.22	1.28	1.74	2.71	1.92	2.30	2.22	3.50	6.32
28	5.08	4.69	4.25	4.69	1.28	1.60	2.60	1.80	1.80	3.02	3.45	6.30
29	4.86	4.73	4.42	4.44	1.36	1.53	2.72	1.66	1.64	3.36	3.59	6.25
30	4.48		4.81	4.13	1.38	1.45	2.64	1.55	1.92	3.49	3.87	6.14
31	3.91		4.84				2.35	1.36		3.08		5.98



# WATER LEVEL

YEAR: 1981

MACAK  
LOCATION: CAHAYA BUMI

D	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1	5.76	5.27	4.76	4.46								
2	5.53	5.26	5.02	4.89								
3	5.23	5.70	4.94	4.61								
4	5.16	4.19	4.65	4.66								
5	5.02	4.45	4.22	4.66								
6	4.85	4.18	3.76	4.69								
7	4.64	3.81	4.39	4.83								
8	4.64	3.48	4.31	4.89								
9	4.88	3.21	4.28	4.91								
10	4.98	3.09	4.23	5.46								
11	5.11	3.25	4.76	5.23								
12	5.24	3.61	5.14	5.28								
13	5.12	4.11	5.10	4.99								
14	4.78	5.26	5.02	4.93								
15	4.37	5.44	4.89	5.19								
16	3.96	5.18	4.79	5.56								
17	3.59	4.78	4.70	5.97								
18	3.33	4.56	5.03	6.10								
19	3.22	4.75	5.58	6.02								
20	3.41	5.27	5.84	6.13								
21	3.61	5.25	6.07	5.88								
22	3.55	4.73	6.26	5.67								
23	3.44	4.45	6.13	5.38								
24	3.38	3.98	5.87	5.13								
25	3.38	3.82	5.62	5.11								
26	3.38	4.02	5.41	5.42								
27	3.46	4.61	5.09	5.48								
28	3.54	4.73	4.91	5.47								
29	3.55		4.91	5.25								
30	3.54		4.69	5.15								
31	3.50		4.19									

# WATER LEVEL

RIVER: BELITANG

YEAR: 1979

LOCATION: CAHAYA BUMI

D	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1	4.60	4.01	1.99	5.03	2.25	1.60	0.99	1.06	0.92	2.20	2.62	1.93
2	4.04	3.81	1.90	5.08	2.06	1.58	1.04	1.01	0.89	2.31	2.65	1.88
3	3.80	3.98	2.04	5.12	2.03	1.51	1.09	0.96	0.84	2.50	2.75	1.80
4	3.79	3.90	2.11	5.06	2.36	1.43	1.48	1.03	0.82	2.60	3.10	1.67
5	3.83	3.64	2.04	5.23	2.95	1.41	1.46	1.07	0.82	2.08	2.26	1.61
6	3.86	3.08	1.94	5.22	2.87	1.37	1.45	1.09	0.83	2.94	3.50	1.64
7	4.26	2.85	1.85	5.09	2.71	1.72	1.45	1.10	0.85	2.87	2.80	1.76
8	4.64	2.10	1.79	4.93	2.55	2.38	1.44	1.11	0.90	2.65	3.80	1.78
9	5.14	4.62	1.85	4.82	2.44	2.70	1.36	1.12	0.96	3.57	3.90	1.81
10	5.05	5.00	1.84	4.96	2.31	2.76	1.26	1.13	1.00	3.38	3.70	2.52
11	5.40	5.18	1.84	4.74	2.19	2.74	1.20	1.17	1.06	3.33	4.01	2.24
12	5.49	5.12	1.87	4.38	2.24	2.76	1.19	1.20	1.04	3.61	2.96	3.14
13	5.43	5.05	1.87	4.16	2.32	2.67	1.20	1.15	1.05	3.99	2.90	4.93
14	5.19	4.83	1.83	4.09	2.37	2.45	1.23	1.05	1.05	4.23	3.17	5.74
15	4.95	4.54	1.70	4.00	2.32	2.24	1.23	0.99	1.05	4.23	3.32	5.69
16	4.75	4.23	1.58	3.89	2.01	1.96	1.22	0.95	0.95	3.91	2.84	5.65
17	4.44	3.86	1.71	3.53	1.75	1.76	1.29	0.90	0.93	3.25	2.82	5.67
18	3.98	3.49	1.90	3.25	1.71	1.61	1.33	0.87	0.90	2.52	2.70	5.63
19	3.47	3.17	2.01	2.89	1.90	1.44	1.42	0.87	0.90	2.08	3.60	5.46
20	3.02	3.24	2.21	2.27	2.02	1.36	1.49	0.85	0.88	1.80	2.40	5.30
21	2.67	2.32	2.25	2.07	2.07	1.33	1.51	0.84	0.84	1.78	2.20	5.05
22	2.47	3.38	2.91	2.38	2.22	1.26	1.47	0.83	0.82	2.18	2.80	4.90
23	2.55	3.24	3.38	2.61	2.20	1.20	1.47	0.85	0.79	2.80	2.50	5.26
24		3.04	3.54	2.51	2.07	1.13	1.49	0.86	0.81	3.08	2.19	5.36
25		2.77	3.58	2.44	1.91	1.14	1.51	0.85	0.85	3.17	2.14	5.35
26		2.54	3.91	2.40	1.85	1.12	1.52	0.83	0.85	3.25	2.01	5.52
27		2.34	3.90	2.46	1.89	1.09	1.37	0.85	0.88	3.25	1.97	5.53
28		2.15	3.97	2.51	1.74	1.06	1.25	0.85	1.01	3.17	1.81	6.03
29			4.14	2.54	1.63	1.07	1.16	0.95	2.01	3.00	1.65	6.41
30	4.25		4.68	2.44	1.58	1.00	1.11	0.96	2.27	2.83	1.84	6.56
31	4.19		4.98		1.61		1.11	0.94		2.63		6.60

WATER LEVEL

RIVER: BELITANG

YEAR: 1980

LOCATION: CAHAYA BUMI

D	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1		2.41	4.44	4.66	2.55	1.38	1.25	1.98	1.29	1.94	5.46	4.08
2		2.28	4.24	4.80	2.52	1.28	1.18	1.88	1.25	2.13	5.92	4.60
3		2.38	4.06	4.84	2.39	1.30	1.18	1.85	2.97	2.12	7.04	4.85
4		1.91	3.74	4.72	2.32	1.29	1.71	1.68	2.95	1.98	7.03	4.76
5		1.85	3.41	4.58	2.22	1.29	1.88	1.52	2.96	1.77	6.66	4.69
6	6.30	1.69	3.06	4.09	2.99	1.46	1.27	1.42	1.10	1.67	6.42	4.58
7	4.89	1.62	2.79	4.19	2.69	1.28	1.91	1.37	1.53	1.68	6.27	4.32
8	4.61	1.56	2.55	3.97	2.43	1.38	1.64	1.21	1.82	1.63	6.11	4.12
9	4.40	1.46	2.44	3.63	2.20	1.44	1.35	1.27	2.06	1.57	5.88	4.28
10	4.40	1.74	2.48	3.45	2.16	1.33	1.08	1.20	4.44	1.57	5.55	4.42
11	4.41	1.63	2.47	3.37	2.09	1.73	1.37	1.21	4.65	1.59	5.10	4.76
12	4.37	1.65	2.31	3.38	2.02	1.91	1.48	1.40	4.66	1.49	4.63	5.24
13	4.70	1.71	2.34	3.24	2.49	2.58	1.66	1.28	4.67	1.38	4.12	5.84
14	4.79	1.61	2.75	3.06	2.42	2.53	1.43	1.34	4.55	1.36	2.25	5.85
15	4.79	1.53	2.07	3.00	2.40	2.63	1.44	1.72	4.37	1.73	7.12	6.16
16	4.91	1.58	2.53	3.62	2.47	2.78	1.38	1.78	4.01	1.79	3.20	6.11
17	5.40	1.63	2.45	4.07	2.33	2.81	1.66	1.82	3.73	1.86	3.09	5.99
18	6.30	1.94	2.36	4.00	2.18	2.73	3.86	1.81	2.45	2.01	2.98	5.86
19	6.82	1.92	2.47	4.18	2.52	2.68	4.13	2.04	3.15	2.09	2.98	5.81
20	6.92	1.71	2.08	4.14	1.82	2.32	4.21	2.22	2.80	2.03	2.92	6.13
21	6.70	1.73	2.17	4.05	1.62	2.03	4.11	2.31	2.49	2.10	3.36	6.56
22	6.34	1.94	2.07	3.83	1.47	1.91	4.83	2.29	2.21	2.04	4.02	6.65
23	5.59	1.66	2.07	3.89	1.39	1.88	3.31	2.32	2.01	2.35	3.69	6.79
24	5.55	2.10	1.98	4.63	1.35	1.83	3.94	2.39	1.90	2.30	3.56	6.76
25	5.25	2.33	2.18	4.64	1.32	1.83	2.71	2.32	1.76	2.09	3.49	6.51
26	5.04	3.12	2.78	4.64	1.59	1.82	2.54	1.00	1.59	1.92	3.47	6.24
27	4.93	3.23	2.41	4.59	1.25	1.85	2.41	1.92	1.78	2.06	3.34	6.15
28	4.80	4.49	4.08	4.46	1.28	1.82	2.52	1.79	1.63	2.77	3.28	6.11
29	4.55	4.64	4.24	4.20	1.29	1.66	2.56	1.66	1.56	3.10	3.41	6.15
30	4.16		4.61	3.82	1.27	1.40	2.38	1.54	1.81	3.15	3.69	5.95
31	3.55		4.66				2.16	1.36		4.63		5.78

# WATER LEVEL

RIVER: BELITANG

YEAR: 1981

LOCATION: CAHAYA BUMI

D	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1	5.59	3.14	4.59	4.21								
2	5.37	3.12	4.98	4.27								
3	5.17	3.59	4.70	4.39								
4	4.95	4.02	4.38	4.48								
5	4.78	4.11	3.38	4.44								
6	4.64	3.87	3.40	4.43								
7	4.42	3.55	4.12	4.50								
8	4.41	3.72	4.02	4.60								
9	4.62	2.95	2.99	4.67								
10	4.72	2.84	2.94	5.21								
11	4.85	3.06	4.50	5.28								
12	4.87	3.30	4.92	4.87								
13	4.81	4.46	4.90	4.71								
14	4.48	4.92	4.92	4.66								
15	4.11	2.54	4.54	4.57								
16	3.68	4.69	4.47	5.54								
17	3.34	4.29	4.42	5.96								
18	3.09	4.15	4.83	5.98								
19	3.77	4.41	5.42	6.12								
20	3.09	5.60	5.66	5.94								
21	3.51	4.65	5.46	5.76								
22	3.42	4.22	6.15	5.59								
23	3.28	4.01	5.98	5.25								
24	3.22	3.75	5.71	4.95								
25	3.23	3.64	5.42	5.31								
26	2.24	3.75	5.19	5.12								
27	3.00	4.22	4.84	5.22								
28	3.26	4.47	4.65	5.22								
29	3.06		4.63	5.10								
30	3.22		4.00	4.84								
31	3.27		4.04									

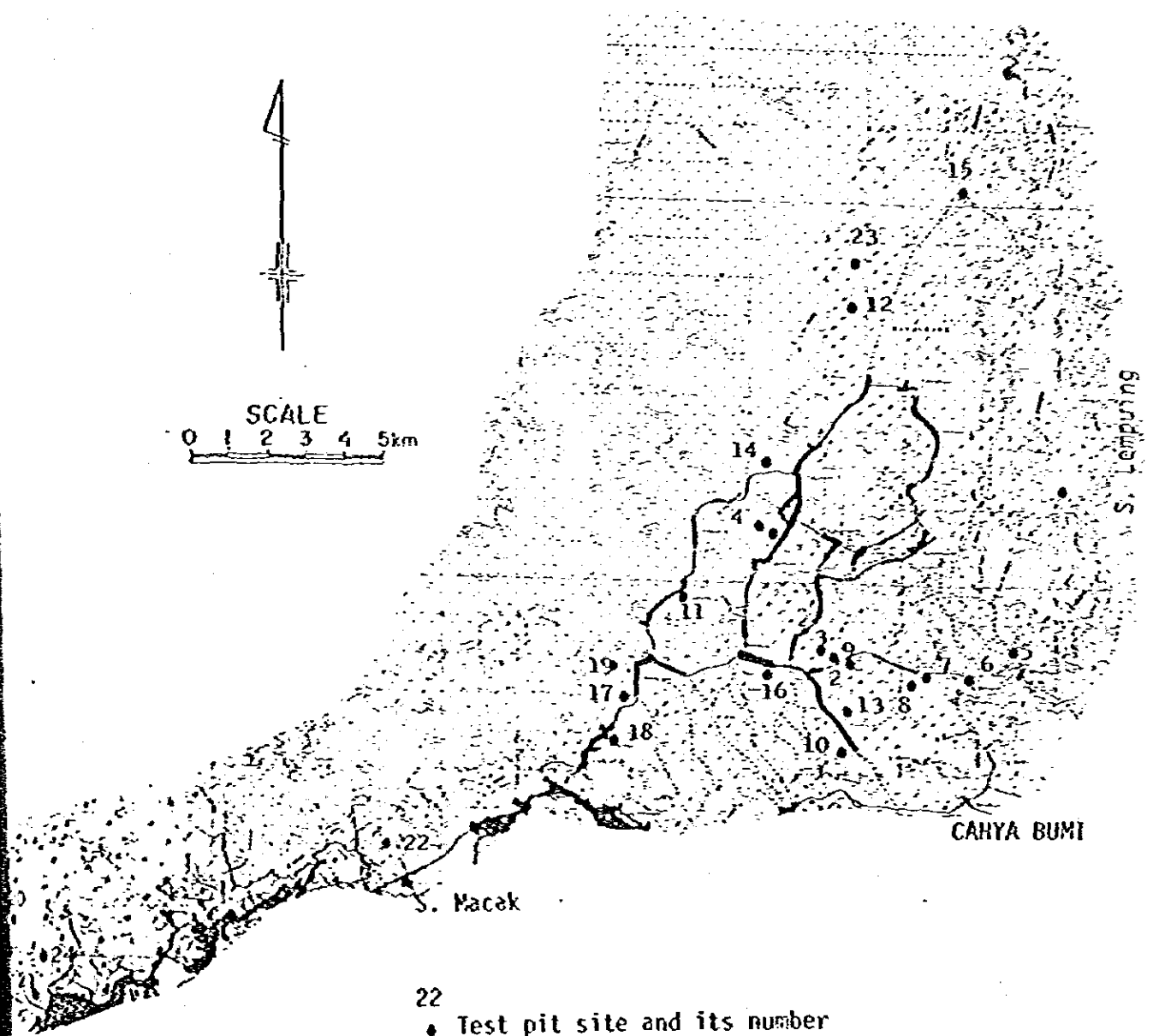


III. SOIL



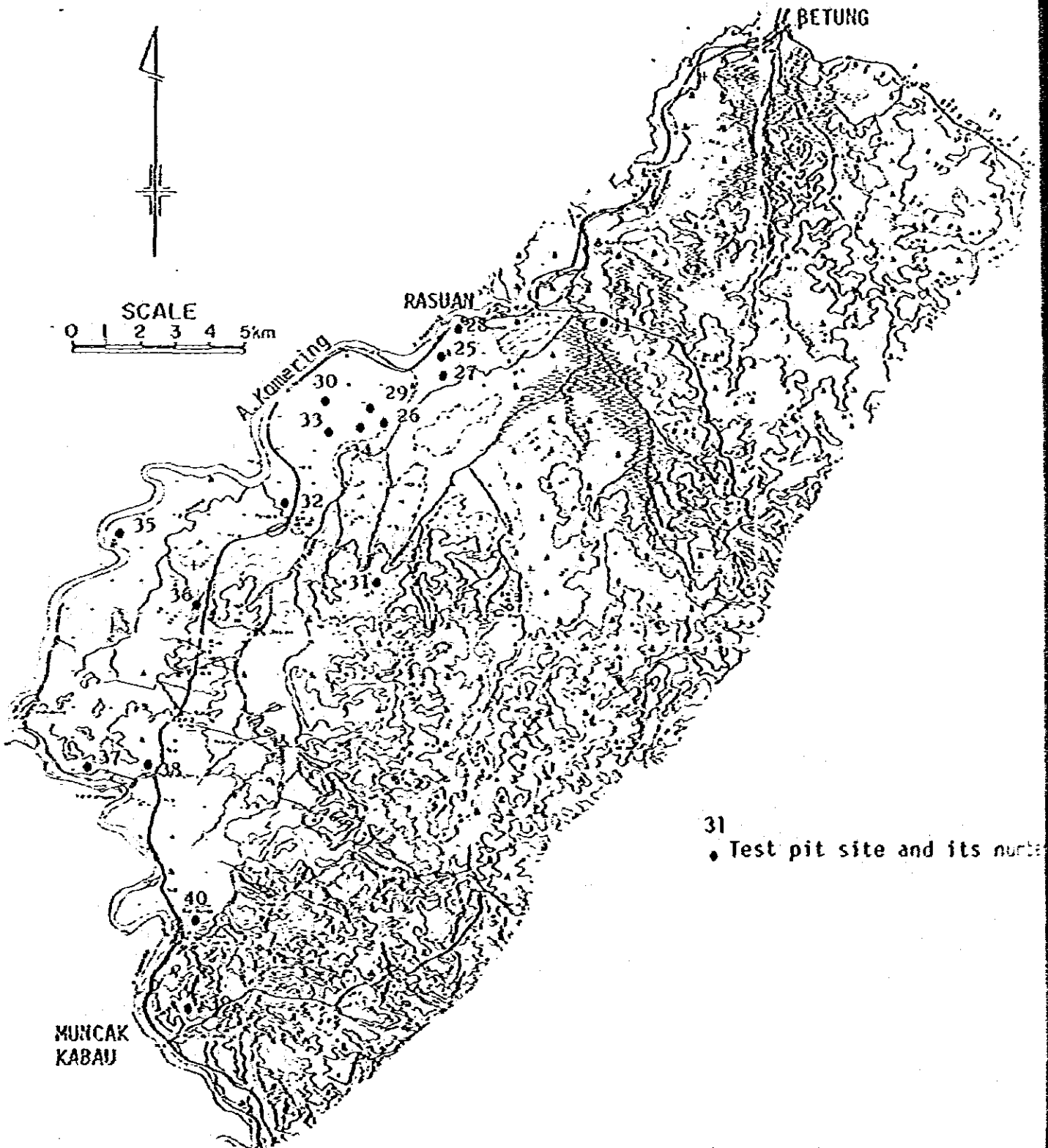


LOCATION OF TEST PIT SITE IN THE LEMPUING AREA



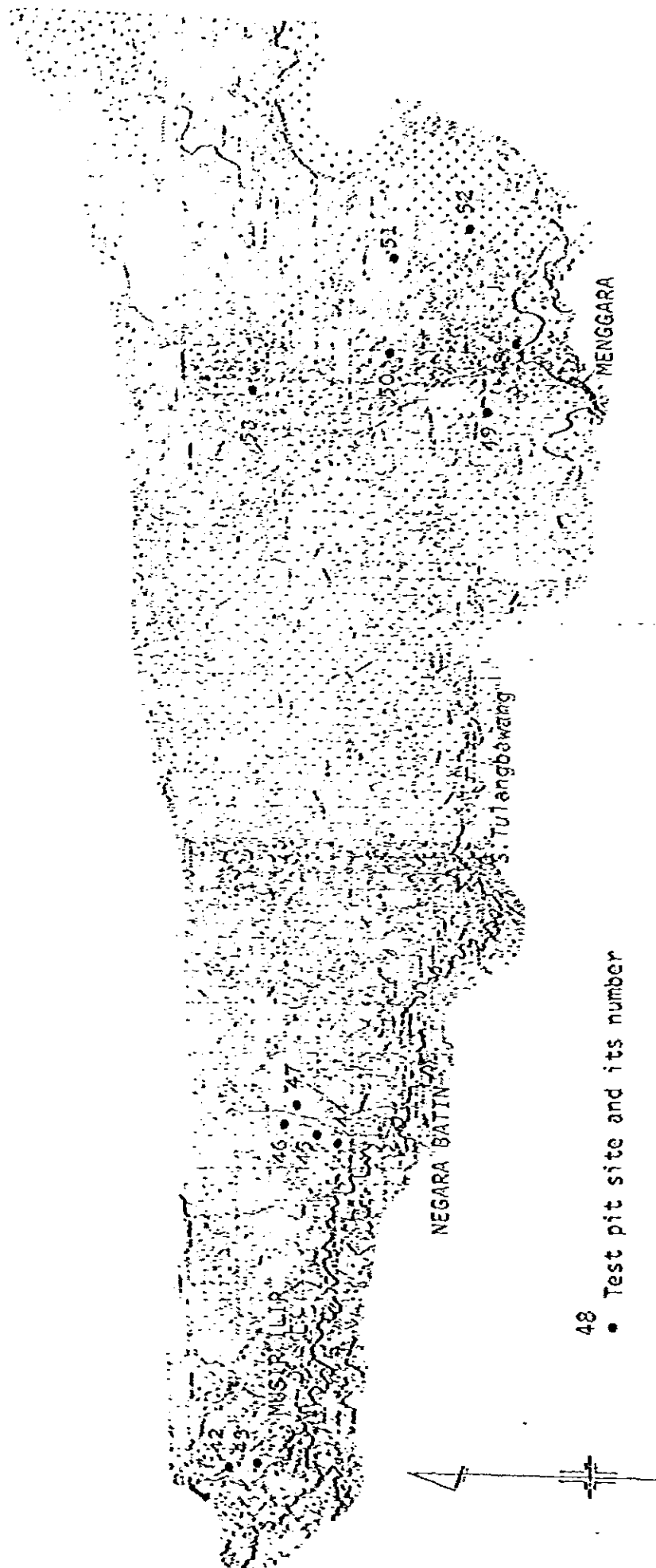
22  
• Test pit site and its number

LOCATION OF TEST PIT SITE IN  
THE MUNCAK KABAU AREA



31  
• Test pit site and its nuclei

LOCATION OF TEST PIT SITE IN THE TULANGBAWANG AREA



48 • Test pit site and its number

SCALE  
0 2 4 6 8 10km

## SOIL DESCRIPTION

Profile Number	No.1
Soil Classification	Brown Hydromorphic Soils
Date of Examination	August 4, 1981
Location	Bumi Agung, Lampung
Land Form	Natural levee
Slope	Flat
Vegetation or Land Use	Alang alang
Drainage Condition	Good external and poor internal drainage (groundwater table is 0.8 m below land surface)

### Profile Description

A1	0 - 26 cm	Dark brown (10 YR 3/3) wet; loam; weak subangular blocky; slightly sticky and non plastic (wet), slightly hard (dry); fine to medium roots; abrupt smooth boundary; pH 4.7 (H <sub>2</sub> O) <sup>1/</sup>
B1	26 - 72 cm	Dull yellowish brown (10 YR 5/3) wet; sandy loam; structureless massive; few fine diffuse yellowish brown (10 YR 5/8) mottles; slightly sticky and non plastic (wet), slightly hard (dry); abrupt wavy boundary; pH 5.1 (H <sub>2</sub> O)
C	72 - 100 cm+	Grayish yellow (2.5 Y 6/2) wet; loamy sand; structureless massive; few fine diffuse yellowish brown (10 YR 5/8) mottles; non sticky and non plastic (wet), slightly hard (dry); pH 5.2 (H <sub>2</sub> O)

<sup>1/</sup> pH value of each horizon is the measurement result of 1:2.5 (H<sub>2</sub>O) dried soil suspension by the glass electrode method.

## SOIL DESCRIPTION

Profile Number                    No.2  
Soil Classification                Grayish Yellow Brown Alluvial Soils  
Date of Examination                August 4, 1981  
Location                            Cahaya Maju, Lempying  
Land Form                            Natural levee  
Vegetation or Land Use             Alang alang  
Drainage Condition                 Good external and internal drainage  
    (groundwater table is 0.8 m below land surface)

### Profile Description

A1        0 - 17 cm     Dark brown (10 YR 3/3) wet; sandy clay loam; moderate, fine to medium subangular blocky; slightly sticky and slightly plastic (wet), hard (dry); very few fine roots; abrupt smooth boundary; pH 4.9 (H<sub>2</sub>O)

B11       17 - 47 cm    Brown (10 YR 4/4) wet; silty loam; structureless massive; slightly sticky and slightly plastic (wet), hard (dry); abrupt smooth boundary; pH 4.9 (H<sub>2</sub>O)

B12       47 - 70 cm     Grayish yellow brown (10 YR 6/2) wet; sandy loam; structureless massive; few medium prominent yellowish brown (10 YR 5/8) mottles; non sticky and non plastic (wet), hard (dry); abrupt smooth boundary; pH 5.0 (H<sub>2</sub>O)

Cg        70 - 100 cm+    Dull yellow (2.5 Y 6/3) wet; loamy sand; structureless massive; few medium prominent yellowish brown (10 YR 5/8) mottles; non sticky and non plastic (wet), hard (dry); pH 5.2 (H<sub>2</sub>O)

## SOIL DESCRIPTION

Profile Number                      No.3  
Soil Classification                  Low Humic Gley Soils  
Date of Examination                  August 4, 1981  
Location                              Cahaya Maju, Lempuing  
Land Form                              Alluvial plain  
Vegetation or Land Use              Paddy field  
Drainage Condition                  Good external drainage and poor internal drainage

### Profile Description

Al1p 0 - 18 cm              Brown (10 YR 4/4) wet; loam; structureless massive; sticky and plastic (wet); fine roots of rice plant; abrupt smooth boundary; pH 4.8 (H<sub>2</sub>O)

Al2pg 18 - 22 cm              Greenish gray (7.5 GY 5/1) wet; silt loam; structureless massive; few fine prominent bright brown (7.5 YR 5/8) mottles; sticky and plastic (wet); abrupt smooth boundary; pH 5.5 (H<sub>2</sub>O)

C1g 22 - 120 cm              Light gray (5 Y 7/2) wet; silty loam; structureless massive; few fine prominent bright brown (7.5 YR 5/8) mottles; slightly sticky and non plastic (wet); clay skin; clear smooth boundary; pH 5.3 (H<sub>2</sub>O)

C2g 120 - 150 cm+              Grayish olive (5 Y 6/2) wet; clay; structureless massive; few fine prominent bright brown (7.5 YR 5/8) mottles; sticky and very plastic (wet)

## SOIL DESCRIPTION

Profile Number	No.4
Soil Classification	Low Humic Gley Soils
Date of Examination	August 4, 1981
Location	Bumi Agung, Lempuing
Land Form	Alluvial plain
Vegetation or Land Use	Paddy field
Drainage Condition	Poor drained (groundwater table is around land surface)

### Profile Description

Apg	0 - 12 cm	Grayish yellow brown (10 YR 6/2) wet; silty clay; structureless massive; few fine faint yellowish brown (10 YR 5/8) mottles; few fine roots; sticky and plastic; abrupt smooth boundary
C1g	12 - 38 cm	Olive gray (2.5 GY 5/1) wet; silt loam; structureless massive; few fine diffuse yellowish brown (10 YR 5/8); slightly sticky and slightly plastic (wet); clear smooth boundary
C2g	38 - 60 cm+	Olive gray (2.5 GY 5/1) wet, loamy clay; structureless massive; sticky and plastic (wet)



## SOIL DESCRIPTION

Profile Number                    No.5  
Soil Classification                Yellowish Brown Podzolic Soils  
Date of Examination                August 5, 1981  
Location                            Tebing Suluh, Lempuing  
Land Form                            Peneplain  
Vegetation or Land Use             Forest  
Drainage Condition                 Good external and internal drainage

### Profile Description

A1     0 - 12 cm     Dark brown (10 YR 3/4) wet; sandy clay loam; moderate medium subangular blocky; slightly sticky and slightly plastic (wet); common fine roots; abrupt smooth boundary; pH 4.7 (H<sub>2</sub>O)

B11    12 - 33 cm    Yellowish brown (10 YR 5/6) wet; clay loam; structureless massive; slightly sticky and slightly plastic (wet); clear smooth boundary; pH 4.6 (H<sub>2</sub>O)

B12    33 - 84 cm     Dull yellowish brown (10 YR 5/4) wet; clay; structureless massive; slightly sticky and slightly plastic (wet); abrupt smooth boundary; pH 4.7 (H<sub>2</sub>O)

Cg     84 - 100 cm+    Brownish gray (7.5 YR 6/1) wet; clay; moderate medium subangular blocky; common medium faint yellow orange (10 YR 7/8) mottles; sticky and plastic (wet); pH 4.7 (H<sub>2</sub>O)

## SOIL DESCRIPTION

Profile Number                      No.6  
Soil Classification                  Grayish Yellow Brown Alluvial Soils  
Date of Examination                August 5, 1981  
Location                              Tebing Suluh, Lempuing  
Land Form                             River terrace  
Slope                                  Plat  
Vegetation or Land Use              Alang alang  
Drainage Condition                  Well drained

### Profile Description

A1      0 - 15 cm      Grayish yellow brown (10 YR 5/2) wet; silt loam; structureless massive; few fine roots; slightly sticky and slightly plastic (wet)  
B2      15 - 60 cm     Grayish yellow brown (10 YR 6/2) wet; silty clay; structureless massive; few fine to medium roots; non sticky and slightly plastic (wet)  
Cg      60 - 100 cm+     Light gray (2.5 Y 7/1) wet; silty clay; structureless massive; very few fine faint yellowish brown (10 YR 5.5) mottles; sticky and plastic (wet)

## SOIL DESCRIPTION

Profile Number                    No.7  
Soil Classification                Grayish Yellow Brown Alluvial Soils  
Date of Examination                August 5, 1981  
Location                            Tebing Suluh, Lempuing  
Land Form                            Natural levee  
Slope                                Plat  
Vegetation or Land Use             Alang alang  
Drainage Condition                 Imperfectly drained

### Profile Description

Al	0 - 18 cm	Brown (10 YR 4/4) wet; silt loam; weak fine subangular blocky; slightly sticky and plastic (wet); abrupt smooth boundary
B1	18 - 45 cm	Grayish yellow brown (10 YR 6/2) wet; silt loam; slightly sticky and slightly plastic (wet); abrupt smooth boundary
B2g	45 - 75 cm	Olive yellow (7.5 Y 6/3) wet; loamy clay; structureless massive; very few medium faint bright yellowish brown (10 YR 6/8) mottles; sticky and plastic (wet); abrupt smooth boundary
Cg	75 - 110 cm+	Grayish yellow (2.5 Y 7/2) wet; coarse sandy clay; structureless massive; common medium faint bright brown (7.5 YR 5/8) mottles; sticky and non plastic (wet)

## SOIL DESCRIPTION

Profile Number                      No.8  
Soil Classification                  Humic Gley Soils  
Date of Examination                August 5, 1981  
Location                              Tebing Suluh, Lempuing  
Land Form                             Alluvial plain  
Slope                                  Flat  
Vegetation or Land Use              Paddy field  
Drainage Condition                  Poor drained  
    (groundwater table is 0.5 m below land surface)

### Profile Description

Apg      0 - 20 cm      Gray (5 Y 5/1) wet; sandy loam; structureless massive; many medium faint yellow orange (7.5 YR 7/8) mottles; slightly sticky and non plastic (wet); abrupt smooth boundary

Clg      20 - 50 cm      Gray (2.5 GY 6/1) wet; sandy clay; structureless massive; few medium diffuse yellowish brown (10 YR 5/8) mottles; slightly sticky and non plastic (wet); abrupt smooth boundary

C2g      50 - 100 cm+      Gray (2.5 GY 6/1) wet; course sandy clay; structureless massive; slightly sticky and slightly plastic (wet)

## SOIL DESCRIPTION

Profile Number	No.9
Soil Classification	Grayish Yellow Brown Alluvial Soils
Date of Examination	August 5, 1981
Location	Cahaya Maju, Lempuing
Land Form	Natural levee
Slope	Flat
Vegetation or Land Use	Alang alang
Drainage Condition	Well drained (groundwater table is 0.55 m below land surface)

### Profile Description

Al	0 - 25 cm	Dull yellowish brown (10 YR 5/4) wet; silty clay; very weak fine subangular blocky; slightly sticky and plastic (wet); few fine roots; abrupt smooth boundary
IC	25 - 55 cm	Dull yellow orange (10 YR 6/3) wet; loamy clay; structureless massive; sticky and plastic (wet); abrupt smooth boundary
IIC	55 - 100 cm+	Grayish yellow brown (10 YR 6/2) wet; sandy clay; structureless massive; very few fine diffuse (7.5 YR 5/8) mottles; non sticky and non plastic (wet)

## SOIL DESCRIPTION

Profile Number                    No.10 .  
Soil Classification                Yellowish Brown Podzolic Soils  
Date of Examination                August 7, 1981  
Location                            Cahaya Maju, Lempuing  
Land Form                            Peneplain  
Slope                                Flat  
Vegetation or Land Use            Alang alang  
Drainage Condition                 Good external drainage and poor internal drainage

### Profile Description

A1        0 - 9 cm        Brown (10 YR 4/4) wet; clay; moderate medium subangular blocky; sticky and plastic (wet); common fine roots; few charcoal from burning; clear smooth boundary; pH 4.2 (H<sub>2</sub>O)

B11       9 - 71 cm        Brown (10 YR 4/6) wet; clay; moderate medium subangular blocky; very sticky and very plastic (wet); few charcoal from burning; few gray mottles; gradual smooth boundary; pH 4.4 (H<sub>2</sub>O)

B12       71 - 100 cm±       Yellowish brown (10 YR 5/6) wet; clay; strong fine subangular blocky; few fine faint bright brown (7.5 YR 5/8) mottles and dark brown (7.5 YR 3/4) soft manganese nodules; continuous clay coating on peds; pH 4.3 (H<sub>2</sub>O)

## SOIL DESCRIPTION

Profile Number                    No.11  
Soil Classification                Reddish Brown Podzolic Soils  
Date of Examination                August 7, 1981  
Location                            Tulung Harapan, Lempuing  
Land Form                            Peneplain  
Slope                                2°  
Vegetation or Land Use            Upland field  
Drainage Condition                Good external and internal drainage

### Profile Description

A1	0 - 16 cm	Brown (7. YR 4/6) wet; silt loam; fine granular; sticky and non plastic (wet); common medium roots of grasses; frequent small hard reddish ironstone nodules; abrupt smooth boundary
Ab	16 - 22 cm	Dark brown (10 YR 3/4) wet; silt loam; fine granular; sticky and plastic (wet); few charcoal from burning; few small hard reddish ironstone nodules; abrupt smooth boundary
B2t	22 - 100 cm+	Bright reddish brown (5 YR 5/8) wet; silty clay; fine granular; sticky and plastic (wet); few medium hard reddish ironstone nodules



## SOIL DESCRIPTION

Profile Number                    No.12  
Soil Classification                Low Humic Gley Soils  
Date of Examination                August 7, 1981  
Location                            Tugu Muiyo, Lempuing  
Land Form                           Alluvial plain  
Slope                                Flat  
Vegetation or Land Use             Paddy field  
Drainage Condition                 Imperfectly drained  
                                      (groundwater table is 0.5 m below land surface)

### Profile Description

Apg    0 - 13 cm            Gray (5 Y 6/1) and olive gray (2.5 Y 6/1) wet; silty clay loam; structureless massive; very sticky and very plastic (wet); common fine roots of rice plant; abrupt smooth boundary; pH 4.6 (H<sub>2</sub>O)

B2tg    13 - 70 cm±        Olive gray (2.5 Y 6/1) wet; silty clay; structureless massive; very sticky and very plastic (wet); continuous clay coating on pegs; common, medium faint yellowish brown (10 YR 5/8) mottles; pH 4.7 (H<sub>2</sub>O)

## SOIL DESCRIPTION

Profile Number                    No.13

Soil Classification                Low Humic Gley Soils

Date of Examination                August 7, 1981

Location                            Cahaya Maju, Lempuing

Land Form                            Natural levee,

Slope                                Flat

Vegetation or Land Use            Alang alang

Drainage Condition                Imperfectly drained  
(groundwater table is 0.65 m below land surface)

### Profile Description

Al	0 - 13 cm	Dark grayish yellow (2.5 Y 4/2) wet; clay; very weak fine subangular blocky; few fine roots; sticky and slightly plastic (wet); abrupt smooth boundary
Clg	13 - 45 cm	Grayish yellow (2.5 Y 6/1) wet; clay; structureless massive; common fine faint yellowish brown (10 YR 5/8) mottles; very sticky and plastic (wet); clear smooth boundary
C2g	45 - 100 cm+	Gray (5 Y 5/1) wet; clay; structureless massive; many fine diffuse yellowish brown (10 YR 5/8) and reddish brown (2.5 YR 4/8) mottles; very sticky and plastic (wet)

## SOIL DESCRIPTION

Profile Number                    No. 14  
Soil Classification                Grayish Yellow Brown Alluvial Soils  
Date of Examination                August 7, 1981  
Location                            Lebuk Kunir, Lempuing  
Land Form                            Natural levee  
Slope                                Flat  
Vegetation or Land Use             Alang alang  
Drainage Condition                 Well drained  
    (groundwater table is 1.1 m below land surface)

### Profile Description

A1	0 - 18 cm	Grayish yellow brown (10 YR 5/2) wet; silt clay; weak fine subangular blocky; slightly sticky and slightly plastic (wet); abrupt smooth boundary
B11	18 - 63 cm	Grayish yellow brown (10 YR 6/2) wet; silt clay; structureless massive; slightly sticky and slightly plastic (wet); abrupt smooth boundary
B12	63 - 91 cm	Grayish yellow brown (10 YR 5/8) wet; loamy clay; structureless massive; few fine diffuse yellowish brown (10 YR 5/8) mottles; sticky and very plastic (wet); gradual smooth boundary
Cg	91 - 120 cm+	Gray (5 Y 6/1) wet; fine sandy clay; structureless massive; sticky and slightly plastic (wet)

## SOIL DESCRIPTION

Profile Number                    No.15  
 Soil Classification                Grayish Yellow Brown Alluvial Soils  
 Date of Examination                August 7, 1981  
 Location                            Tugu Mulyo, Lempuing  
 Land Form                            Natural levee  
 Slope                                Flat  
 Vegetation or Land Use              Upland field (cassava)  
 Drainage Condition                  Well drained  
     (groundwater table is 0.85 m below land surface)

### Profile Description

A1	0 - 15 cm	Brown (10 YR 4/4) wet; silt clay; weak fine subangular blocky; few, fine to medium roots; slightly sticky and slightly plastic (wet); abrupt smooth boundary
B11	15 - 48 cm	Dull yellow (2.5 Y 6/3) wet; silty clay; structureless massive; slightly sticky and slightly plastic (wet); clear smooth boundary
B12	48 - 94 cm	Grayish yellow brown (10 YR 6/2) wet; silty clay; structureless massive; common medium faint yellowish brown (10 YR 5/8) mottles; slightly sticky and slightly plastic (wet); clear smooth boundary
C1	below 94 cm	Light yellow (2.5 Y 7/3) wet; silt loam; structureless massive; non sticky and non plastic (wet)

## SOIL DESCRIPTION

Profile Number                    No.16  
Soil Classification                Brown Hydromorphic Soils  
Date of Examination                August 8, 1981  
Location                            Bumi Agung, Lempuing  
Land Form                            Alluvial plain  
Slope                                Flat  
Vegetation or Land Use             Paddy field planted by soybean  
Drainage Condition                 Well drained  
                                      (groundwater table is 1.0 m below land surface)

### Profile Description

Allp    0 - 9 cm            Grayish yellow brown (10 YR 4/2) moist; loam; structureless massive; slightly sticky and slightly plastic (wet); few fine roots; few charcoal derived from rice straw; abrupt smooth boundary; pH 4.6 (H<sub>2</sub>O)

Al2pg   9 - 40 cm        Grayish yellow brown (10 YR 5/2) moist; silt loam; structureless massive; common fine diffuse bright brown (7.5 YR 5/8) mottles; sticky and slightly plastic (wet); clear smooth boundary; pH 5.0 (H<sub>2</sub>O)

Clg     40 - 55 cm        Grayish yellow (2.5 Y 6/2) moist; silt loam; weak medium blocky; sticky and slightly plastic (wet); gradual smooth boundary; pH 5.1 (H<sub>2</sub>O)

C2g     55 - 100 cm        Grayish yellow (2.5 Y 6/2) moist; clay loam; moderate medium blocky; common coarse diffuse bright brown (7.5 YR 5/8) mottles; continuous clay cutan; stick and plastic (wet); pH 5.0 (H<sub>2</sub>O)

## SOIL DESCRIPTION

Profile Number	No.17
Soil Classification	Reddish Brown Podzolic Soils
Date of Examination	August 8, 1981
Location	Karang Anyar, Lempuing
Land Form	Penneplain
Slope	Gently sloping
Vegetation or Land Use	Alang alang
Drainage Condition	Well drained

### Profile Description

A1	0 - 9 cm	Dark brown (10 YR 3/4) wet; coarse sandy loam; structureless massive; slightly sticky and non plastic (wet); clear smooth boundary; pH 4.0 (H <sub>2</sub> O)
B21t	9 - 25 cm	Reddish brown (5 YR 4/8) wet; clay; structureless massive; sticky and plastic (wet); frequent small hard reddish iron stone nodules; gradual smooth boundary; pH 4.7 (H <sub>2</sub> O)
B22t	25 - 100 cm+	Reddish brown (5 YR 4/8) wet; clay; structureless massive; sticky and plastic (wet)

## SOIL DESCRIPTION

Profile Number	No.18
Soil Classification	Low Humic Gley Soils
Date of Examination	August 8, 1981
Location	Karang Anyar, Lempuing
Land Form	Alluvial plain
Slope	Flat
Vegetation or Land Use	Paddy
Drainage Condition	Imperfectly drained (groundwater table 0.6 m below land surface)

### Profile Description

Allp 0 - 8 cm	Dull yellowish brown (10 YR 4/3) wet; loam; structureless massive; sticky and plastic (wet); few fine roots of rice plant; few charcoal derived from rice straw; clear smooth boundary; pH 4.7 (H <sub>2</sub> O)
Al2pg 8 - 15 cm	Gray (7.5 Y 5/1) wet; loam; structureless massive; common fine diffuse yellowish brown (10 YR 5/8) mottles; sticky and plastic (wet); abrupt smooth boundary; pH 4.8 (H <sub>2</sub> O)
ICg 15 - 34 cm	Grayish yellow (2.5 Y 6/2) wet; sandy loam; structureless massive; slightly sticky and slightly plastic (wet); abrupt smooth boundary; pH 5.0 (H <sub>2</sub> O)
IICg 34 - 70 cm+	Dull yellow (2.5 Y 6/3) wet; coarse sand; structureless massive; common coarse faint dark brown (7.5 YR 3/3) mottles; non sticky and non plastic (wet); pH 5.2 (H <sub>2</sub> O)



## SOIL DESCRIPTION

Profile Number                    No.19  
Soil Classification                Humic Gley Soils  
Date of Examination                August 8, 1981  
Location                            Karang Anyar, Lempuing  
Land Form                            Alluvial plain  
Slope                                Flat  
Vegetation or Land Use            Paddy field  
Drainage Condition                Poor drained  
    (groundwater table is 0.2 m below land surface)

### Profile Description

Ap      0 - 15 cm      Grayish yellow brown (10 YR 5/2) wet; loamy clay;  
    structureless massive; sticky and plastic (wet);  
    few fine roots of rice plant; abrupt smooth boundary

ICg     15 - 42 cm      Gray (10 Y 6/1) wet; loamy clay; structureless  
    massive; very few fine diffuse yellowish brown  
    (10 YR 5/8) mottles; sticky and plastic (wet);  
    abrupt smooth boundary

IICg    42 - 80 cm+      Greenish gray (7.5 GY 6/1) wet; coarse sand of  
    quartz; structureless massive; non sticky and non  
    plastic (wet)

## SOIL DESCRIPTION

Profile Number	No.20
Soil Classification	Reddish Brown Podzolic Soils
Date of Examination	August 14, 1981
Location	Marga Dadi, Lempuing
Land Form	Penepplain
Slope	2°
Vegetation or Land Use	Alang alang
Drainage Condition	Well drained

### Profile Description

A1	0 - 13 cm	Brown (10 YR 4/4) wet; sandy clay loam; fine granular; sticky and plastic (wet), slightly hard (dry); few fine roots; clear wavy boundary
B1	13 - 29 cm	Bright brown (7.5 YR 5/8) wet; clay loam; structureless massive; sticky and plastic (wet), hard (dry); abrupt smooth boundary
B2t	29 - 112 cm	Bright reddish brown (5 YR 5/8) wet; clay; frequent quartz gravel; structureless massive; sticky and plastic (wet), extremely hard (dry); frequent medium hard ironstone nodules; patchy, thin clay cutans on some ped faces and in root channels; abrupt smooth boundary
C	112 - 130 cm	Dull yellow orange (10 YR 6/4) wet; clay; structureless massive; many coarse diffuse bright brown (7.5 YR 5/8) mottles; sticky and plastic (wet), extremely hard (dry); continuous, thin clay cutans

## SOIL DESCRIPTION

Profile Number	No.21
Soil Classification	Low Humic Gley Soils
Date of Examination	August 14, 1981
Location	Cahaya Negeri, Lempuing
Land Form	Alluvial plain
Slope	Flat
Vegetation or Land Use	Paddy field
Drainage Condition	Imperfectly drained (groundwater table is 1.0 m below land surface)

### Profile Description

Allp	0 - 8 cm	Dull yellowish brown (10 YR 4/3) wet; silty clay; structureless massive; few fine faint bright brown (7.5 YR 5/8) mottles; sticky and plastic (wet); few fine roots; abrupt smooth boundary; pH 4.2 (H <sub>2</sub> O)
Al2pg	8 - 20 cm	Dark olive gray (2.5 GY 4/1) wet; silty clay; structureless massive; few fine diffuse bright brown (7.5 YR 5/8) mottles; sticky and plastic (wet); few fine roots; abrupt smooth boundary; pH 4.2 (H <sub>2</sub> O)
Clg	20 - 36 cm	Gray (7.5 Y 6/1) wet; silty clay; structureless massive; many fine prominent reddish brown (2.5 YR 4/6) mottles, very sticky and very plastic (wet); abrupt smooth boundary; pH 4.2 (H <sub>2</sub> O)
C2tg	36 - 59 cm	Light greenish gray (10 GY 7/1) wet; silty clay; structureless massive; yellowish brown (10 YR 5/8) mottles; very sticky and very plastic (wet); continuous, thin clay skin on ped faces; abrupt smooth boundary; pH 4.5 (H <sub>2</sub> O)
Cg	59 - 100 cm+	Light gray (2.5 Y 7/1) wet; clay; structureless massive; few medium diffuse bright brown (7.5 YR 5/8) mottles; very sticky and very plastic; pH 4.4 (H <sub>2</sub> O)

## SOIL DESCRIPTION

Profile Number                    No.22  
Soil Classification                Reddish Brown Podzolic Soils  
Date of Examination                August 14, 1981  
Location                            Karang Melati, Lempuing  
Land Form                            Peneplain  
Slope                                Flat  
Vegetation or Land Use            Alang alang  
Drainage Condition                 Well drained

### Profile Description

A1	0 - 15 cm	Brown (10 YR 4/4) wet; clay loam; weakly fine sub-angular blocky; sticky and plastic (wet), hard (dry); common fine roots of grasses; abrupt smooth boundary; pH 4.5 (H <sub>2</sub> O)
B2t	15 - 54 cm	Reddish Brown (5 YR 4/8) wet; clay; strong fine subangular blocky; very sticky and very plastic (wet), very hard (dry); continuous thin clay skin on some peds and in root channels; clear smooth boundary; pH 4.1 (H <sub>2</sub> O)
C1	54 - 100 cm±	Dull yellow orange (10 YR 7/2) wet; clay; structureless massive; many medium prominent reddish brown (2.5 YR 4/8) mottles; very sticky and very plastic (wet), very hard (dry); pH 4.1 (H <sub>2</sub> O)

## SOIL DESCRIPTION

Profile Number                    No.23

Soil Classification                Brown Hydromorphic Soils

Date of Examination                August 15, 1981

Location                            Lubuk Seberuk, Lempuing

Land Form                           Alluvial plain

Slope                                Flat

Vegetation or Land Use            Paddy

Drainage Condition                Well drained  
(groundwater table is 0.5 m below land surface)

### Profile Description

Ap      0 - 16 cm      Grayish yellow brown (10 YR 4/2) wet; clay loam; structureless massive; slightly sticky and plastic (wet); common charcoal derived from rice straw; abrupt smooth boundary; pH (H<sub>2</sub>O)

B2tg    16 - 50 cm+      Grayish yellow brown (10 YR 6/2) wet; silty clay loam; structureless massive; common medium diffuse yellowish brown (10 YR 5/8) mottles; very sticky and very plastic (wet); continuous thin clay cutans on peds; pH 4.4 (H<sub>2</sub>O)

## SOIL DESCRIPTION

Profile Number	No. 24
Soil Classification	Yellowish Brown Podzolic Soils
Date of Examination	August 19, 1981
Location	Marga Dadi, Lempuing
Land Form	Penepplain
Slope	1°
Vegetation or Land Use	Alang alang
Drainage Condition	Well drained

### Profile Description

A1	0 - 18 cm	Dull yellowish brown (10 YR 4/3) wet; coarse sandy loam; structureless massive; few fine roots; slightly sticky and slightly plastic (wet); clear smooth boundary
B2t	18 - 74 cm	Yellowish brown (10 YR 5/6) wet; silty clay; structureless massive; sticky and plastic (wet); continuous thin clay cutan on some peds; abrupt smooth boundary
B3	74 - 110 cm	Light yellow (2.5 Y 7/3) wet; silt loam; structureless massive; many fine faint bright brown (7.5 YR 5/6) mottles; frequent medium hard ironstone nodules; sticky and plastic (wet)

## SOIL DESCRIPTION

Profile Number	No.25
Soil Classification	Brown Hydromorphic Soils
Date of Examination	July 26, 1981
Location	Rasuan, Muncak Kabau
Land Form	Natural levee
Slope	Flat
Vegetation or Land Use	Plantation of perennials (banana, coconut)
Drainage Condition	Moderately well drained (groundwater table is 1.0 m below land surface)

### Profile Description

A1	0 - 11 cm	Dark brown (10 YR 3/3) wet; loam; moderate fine subangular blocky; slightly sticky and slightly plastic (wet), slightly hard (dry); common fine roots; abrupt smooth boundary; pH 4.5 (H <sub>2</sub> O)
B11	11 - 54 cm	Brown (10 YR 4/6) wet; loam; structureless massive; slightly sticky and slightly plastic (wet), soft (dry); abrupt smooth boundary; pH 4.9 (H <sub>2</sub> O)
B12	54 - 84 cm	Brown (7.5 YR 4/6) wet; loam; structureless massive; few medium faint brownish gray (10 YR 6/1) mottles; non sticky and non plastic (wet), soft (dry); abrupt smooth boundary; pH 5.1 (H <sub>2</sub> O)
IIC1	84 - 100 cm+	Grayish yellow brown (10 YR 4/2) wet; loamy sand; structureless massive; non sticky and non plastic (wet), soft (dry); pH (H <sub>2</sub> O)

## SOIL DESCRIPTION

Profile Number	No. 26
Soil Classification	Yellowish Brown Podzolic Soils
Date of Examination	July 26, 1981
Location	Gunung Terang, Muncak Kabau
Land Form	Penepplain
Slope	Flat
Vegetation or Land Use	Shrub
Drainage Condition	Well drained

### Profile Description

A1	0 - 15 cm	Dark brown (10 YR 3/4) wet; clay loam; weak fine subangular blocky; sticky and plastic (wet), hard (dry); very few medium roots; abrupt smooth boundary
B1	15 - 32 cm	Brown (10 YR 4/6) wet; clay; weak fine subangular blocky; sticky and plastic (wet), hard (dry); gradual smooth boundary
B2	32 - 64 cm	Yellowish brown (10 YR 5/8) wet; clay loam; structureless massive; sticky and plastic (wet), very hard (dry); abrupt smooth boundary
B3	64 - 89 cm	Dull yellow orange (10 YR 7/2) wet; clay; moderate medium subangular blocky; many medium diffuse orange (7.5 YR 6/8) mottles; sticky and plastic (wet), very hard (dry); abrupt smooth boundary
C1	89 - 139 cm±	Light gray (2.5 Y 7/1) wet; clay; weak medium subangular blocky; many medium prominent orange (7.5 YR 6/8) mottles; sticky and plastic (wet), very hard (dry)



## SOIL DESCRIPTION

Profile Number No.27  
Soil Classification Humic Gley Soils  
Date of Examination July 26, 1981  
Location Rasuan, Muncka Kabau  
Land Form Depression  
Slope Flat  
Vegetation or Land Use Paddy field  
Drainage Condition Very poor drained  
(groundwater table is 0.1 m below land surface)

### Profile Description

Allp 0 - 2 cm Brown (10 YR 4/4) wet; loamy clay; structureless massive; sticky and slightly plastic (wet); common medium roots; abrupt smooth boundary; pH 3.7 (H<sub>2</sub>O)

Al2pg 2 - 30 cm Gray (10 Y 4/1) wet; loamy clay; structureless massive; common fine prominent yellowish brown (10 YR 5/8); sticky and slightly plastic (wet); clear smooth boundary; pH 4.0 (H<sub>2</sub>O)

Cg 30 - 70 cm± Gray (10 Y 4/1) wet; loamy clay; structureless massive; common fine prominent yellowish brown (10 YR 5/8); non sticky and non plastic (wet); pH 4.2 (H<sub>2</sub>O)

## SOIL DESCRIPTION

Profile Number No. 28  
Soil Classification Brown Hydromorphic Soils  
Date of Examination July 26, 1981  
Location Pasuan, Muncak Kabau  
Land Form Natural levee  
Slope Plat  
Vegetation or Land Use Plantation of perennials  
Drainage Condition Well drained

### Profile Description

A1 0 - 9 cm Dark brown (7.5 YR 3/4) wet; clay loam; structureless massive; sticky and plastic (wet); abrupt smooth boundary

B11 9 - 43 cm Brown (7.5 YR 4/6) wet; silt loam; structureless massive; few fine diffuse gray (5 Y 5/1) mottles; slightly sticky and slightly plastic (wet); clear smooth boundary

B12 43 - 90 cm Brown (7.5 YR 4/6) wet; silt; structureless massive; common medium diffuse gray (5 Y 5/1) mottles; slightly sticky and slightly plastic (wet); abrupt smooth boundary

C 90 - 120 cm+ Light gray (5 Y 7/2) wet; clay; structureless massive; very sticky and very plastic (wet)

## SOIL DESCRIPTION

Profile Number                    No.29  
Soil Classification                Low Humic Gley Soils  
Date of Examination                July 26, 1981  
Location                            Gunung Terang, Muncak Kabau  
Land Form                            Flat valley  
Slope                                Flat  
Vegetation or Land Use             Paddy field  
Drainage Condition                 Poor drained  
                                      (groundwater table is 0.2 m below land surface)

### Profile Description

Apg    0 - 10 cm            Brownish gray (10 YR 5/1) wet; loamy clay; structureless massive; common fine prominent brown (10 YR 4/6) mottles; few fine roots of paddy; sticky and plastic (wet); abrupt smooth boundary

Clg    10 - 53 cm            Brownish gray (10 YR 5/1) wet; clay; structureless massive; common medium diffuse bright brown (7.5 YR 5/8) mottles; very sticky and very plastic (wet); clear smooth boundary

C2g    53 - 100 cm            Gray (5 Y 5/1) wet; clay; structureless massive; few coarse faint bright brown (7.5 YR 5/8) mottles; very sticky and very plastic (wet)

### SOIL DESCRIPTION

Profile Number No. 30  
Soil Classification Low Humic Gley Soils  
Date of Examination July 28, 1981  
Location Mendayun, Nuncak Kabau  
Land Form Alluvial plain  
Slope Flat  
Vegetation or Land Use Paddy field  
Drainage Condition Poor drained  
(groundwater table is 0.3 m below land surface)

#### Profile Description

Ap 0 - 9 cm Brown (10 YR 4/6) wet; loam; structureless massive; sticky and plastic (wet), hard (dry); few fine roots; abrupt smooth boundary

AB<sub>2</sub> 9 - 15 cm Brownish gray (10 YR 4/1) wet; clay loam; structureless massive; few fine diffuse bright reddish brown (10 YR 5/8) mottles; slightly sticky and slightly plastic (wet), hard (dry); abrupt smooth boundary

B<sub>g</sub> 15 - 66 cm Brownish gray (10 YR 6/1) wet; loam; structureless massive; few fine prominent bright yellowish brown (10 YR 6/8) mottles; slightly sticky and slightly plastic (wet), soft (dry); abrupt smooth boundary

C<sub>g</sub> 66 - 80 cm+ Brownish gray (10 YR 6/1) wet; loamy coarse sand; structureless massive; non sticky and non plastic (wet), soft (dry)

## SOIL DESCRIPTION

Profile Number	No. 31
Soil Classification	Yellowish Brown Podzolic Soils
Date of Examination	July 28, 1981
Location	Kotanegara, Muncak Kabau
Land Form	Penepplain
Slope	3 - 40°
Vegetation or Land Use	Alang alang
Drainage Condition	Well drained

### Profile Description

A1	0 - 21 cm	Brown (10 YR 4/4) wet; coarse sandy loam; structureless massive; few fine roots; slightly sticky and plastic (wet), hard (dry); clear smooth boundary; pH 3.9 (H <sub>2</sub> O)
B2t	21 - 62 cm	Yellowish brown (10 YR 5/8) wet; clay; structureless massive; sticky and plastic (wet), hard (dry); abrupt smooth boundary; pH 4.2 (H <sub>2</sub> O)
B3	62 - 100 cm±	Light yellow (7.5 Y 7/3) wet; silt loam; structureless massive; many fine diffuse bright brown (7.5 YR 5/8) mottles; frequent medium hard ironstone nodules; very sticky and very plastic (wet); hard (dry); pH 4.3 (H <sub>2</sub> O)

## SOIL DESCRIPTION

Profile Number No.32  
Soil Classification Low Humic Gley Soils  
Date of Examination July 28, 1981  
Location Pandanagung, Mucak Kabau  
Land Form Alluvial Plain  
Slope Flat  
Vegetation or Land Use Paddy field  
Drainage Condition Poor drained  
(groundwater table is 0.15 m below land surface)

### Profile Description

A1p 0 - 11 cm Grayish yellow brown (10 YR 4/2) wet; loam; structureless massive; few fine faint bright brown (7.5 YR 5/6) mottles; common fine roots of rice plant; slightly sticky and slightly plastic (wet); gradual smooth boundary

A12pg 11 - 20 cm Olive gray (5 GY 5/1) and grayish yellow brown (10 YR 5/2) wet; clay loam; structureless massive; few fine faint bright brown (7.5 YR 5/8) mottles; sticky and plastic

## SOIL DESCRIPTION

Profile Number                    No.33  
Soil Classification                Brown Podzolic Soils  
Date of Examination                July 28, 1981  
Location                            Mendayun, Muncak Kabau  
Land Form                            Feneplain  
Slope                                Flat  
Vegetation or Land Use            Alang alang  
Drainage Condition                 Well drained

### Profile Description

A1	0 - 23 cm	Brown (10 YR 4/4) wet; clay loam; very weak fine subangular blocky; sticky and plastic (wet); few fine roots of grasses; abrupt smooth boundary
B2t	23 - 37 cm	Bright brown (7.5 YR 5/6) wet; loamy clay; structureless massive; few coarse prominent red (10 R 4/8) mottles; sticky and plastic (wet); abrupt smooth boundary
B3	37 - 106 cm	Bright reddish brown (5 YR 5/8) wet; clay; structureless massive; very sticky and very plastic (wet); clear smooth boundary
C	106 - 130 cm+	Brownish gray (7.5 YR 6/1) wet; silt loam; structureless massive; common medium prominent dark red (10 R 5/6) mottles; very sticky and very plastic (wet)

## SOIL DESCRIPTION

Profile Number	No. 34
Soil Classification	Low Humic Gley Soils
Date of Examination	July 28, 1981
Location	Kotanegara, Muncak Kabau
Land Form	Flat valley
Slope	Flat
Vegetation or Land Use	Paddy field
Drainage Condition	Very poor drained

### Profile Description

Ap	0 - 15 cm	Bright yellowish brown (10 YR 6/6) wet; loamy clay; structureless massive; sticky and plastic (wet); few fine to medium roots; abrupt smooth boundary
B21g	15 - 50 cm	Grayish olive (5 Y 5/2) wet; loamy clay; structureless massive; few fine faint yellowish brown (10 YR 5/8) mottles; very sticky and very plastic (wet); abrupt smooth boundary
B22g	50 - 100 cm	Light gray (10 Y 7/1) wet; common fine diffuse yellowish brown (10 YR 5/8) mottles; very sticky and very plastic (wet)



## SOIL DESCRIPTION

Profile Number	No.35
Soil Classification	Brown Hydromorphic Soils
Date of Examination	July 29, 1981
Location	Cinta Negara, Muncak Kabou
Land Form	Natural levee
Slope	Flat
Vegetation or Land Use	Perennial crop (coconut)
Drainage Condition	Well drained

### Profile Description

A1	0 - 22 cm	Brownish black (10 YR 2/2) wet; silt loam; structureless massive; few fine roots; sticky and plastic (wet), hard (dry); clear smooth boundary; pH 5.4 (H <sub>2</sub> O)
B2tg	22 - 69 cm	Gray (7.5 Y 5/1) wet; silty clay loam; structureless massive; many medium faint dark red (10 R 3/6) mottles and reddish brown (5 YR 4/6) mottles; very sticky and very plastic (wet), very hard (dry); gradual smooth boundary; pH 6.5 (H <sub>2</sub> O)
B3	69 - 89 cm	Brown (10 YR 4/4) wet; clay loam; structureless massive; sticky and plastic (wet), very hard (dry); abrupt smooth boundary; pH 5.9 (H <sub>2</sub> O)
C	89 - 100 cm+	Yellowish brown (10 YR 5/6) wet; loam; structureless massive; non sticky and non plastic (wet), very hard (dry); pH 5.6 (H <sub>2</sub> O)

## SOIL DESCRIPTION

Profile Number	No.36
Soil Classification	Brown Podzolic Soils
Date of Examination	July 29, 1981
Location	Cinta Negara, Muncak Kabau
Land Form	Penepplain
Slope	Gently sloping
Vegetation or Land Use	Forest
Drainage Condition	Well drained

### Profile Description

A1	0 - 24 cm	Dark brown (10 YR 3/3) wet; sandy loam; weak fine subangular blocky; few medium roots; frequent coarse quartz sand; sticky and plastic (wet), soft (dry); abrupt smooth boundary; pH 4.2 (H <sub>2</sub> O)
B21	24 - 51 cm	Yellowish brown (10 YR 5/6) wet; sandy loam; structureless massive; continuous thin clay cutans on some peds; very sticky and very plastic (wet), slightly hard (dry); frequent coarse quartz sand; gradual smooth boundary; pH 4.0 (H <sub>2</sub> O)
B22	51 - 82 cm	Yellowish brown (10 YR 5/6) wet; sandy loam; structureless massive; few fine diffuse dark red (10 YR 3/6) mottles; very sticky and very plastic (wet), slightly hard (dry); frequent coarse quartz sand; dark red semihard ironstone nodules at bottom of horizon; gradual smooth boundary; pH 4.3 (H <sub>2</sub> O)
C	82 - 100 cm+	Bright brown (2.5 YR 5/8) wet; silt loam; structureless massive; common medium prominent dark red (10 YR 3/6) mottles; very sticky and plastic (wet), slightly hard (dry); pH 4.6 (H <sub>2</sub> O)

## SOIL DESCRIPTION

Profile Number	No.37
Soil Classification	Brown Alluvial Soils
Date of Examination	July 29, 1981
Location	Riang Bandung, Muncak Kabau
Land Form	Natural levee
Slope	Flat
Vegetation or Land Use	Plantation of perennials
Drainage Condition	Poor drained

### Profile Description

Ap	0 - 17 cm	Dark brown (10 YR 3/4) wet; silt loam; weak fine subangular blocky; slightly sticky and slightly plastic (wet), hard (dry); few medium roots; gradual smooth boundary; pH 4.8 (H <sub>2</sub> O)
B2	17 - 56 cm	Brown (10 YR 4/4) wet; silt loam; moderate fine subangular blocky; slightly sticky and slightly plastic (wet), very hard (dry); gradual smooth boundary; pH 5.2 (H <sub>2</sub> O)
C	56 - 190 cm+	Grayish olive (7.5 Y 6/2) wet; silt; structureless massive; sticky and plastic (wet), hard (dry); continuous clay cutans on some peds; pH 5.3 (H <sub>2</sub> O)

## SOIL DESCRIPTION

Profile Number No. 38  
Soil Classification Brown Hydromorphic Soils  
Date of Examination July 29, 1981  
Location Riang Bandung, Muncak Kabau  
Land Form Natural levee  
Slope Flat  
Vegetation or Land Use Plantation of perennials  
Drainage Condition Well drained

### Profile Description

A1	0 - 12 cm	Dark brown (10 YR 3/4) wet; clay loam; weak fine subangular blocky; slightly sticky and plastic (wet); abrupt smooth boundary
AB	12 - 27 cm	Dull yellowish brown (10 YR 5/4) wet; silty clay; structureless massive; non sticky and non plastic (wet); clear smooth boundary
B	27 - 57 cm	Light gray (5 Y 7/2) wet; silt loam; structureless massive; non sticky and non plastic (wet); clear smooth boundary
C	57 - 100 cm+	Light gray (5 Y 7/1) wet; silt; structureless massive; non sticky and non plastic (wet)

## SOIL DESCRIPTION

Profile Number	No.39
Soil Classification	Brown Hydromorphic Soils
Date of Examination	August 19, 1981
Location	Muncak Kabau
Land Form	Inland valley
Slope	Flat
Vegetation or Land Use	Paddy field
Drainage Condition	Poor Drained (groundwater table is 0.1 m below land surface)

### Profile Description

Ap	0 - 12 cm	Brownish black (10 YR 3/2) wet; clay; structureless massive; few fine diffuse yellowish brown (10 YR 5/8) mottles; slightly sticky and slightly plastic (wet); abrupt smooth boundary
Bg	12 - 36 cm	Grayish yellow brown (10 YR 5/2) wet; silt clay; structureless massive; common fine diffuse bright brown (7.5 YR 5/8) mottles; sticky and plastic (wet); gradual smooth boundary
Cg	36 - 50 cm±	Light brownish gray (7.5 YR 7/1) wet; clay; structureless massive; common medium faint bright brown (7.5 YR 5/8) mottles; sticky and plastic (wet)

## SOIL DESCRIPTION

Profile Number No.40  
Soil Classification Low Humic Gley Soils  
Date of Examination August 19, 1981  
Location Sribunga  
Land Form Alluvial plain  
Slope Flat  
Vegetation or Land Use Paddy field  
Drainage Condition Imperfectly Drained  
(groundwater table is 0.5 m below land surface)

### Profile Description

Apg 0 - 9 cm Yellowish gray (2.5 Y 6/1) wet; silty clay; few fine diffuse bright brown (7.5 YR 5/8) mottles; sticky and plastic; abrupt smooth boundary; pH 4.2 (H<sub>2</sub>O)

C1g 9 - 25 cm Gray (10 Y 5/1) wet; silt clay; structureless massive; common medium prominent reddish brown (2.5 YR 4/8) mottles; continuous thin clay cutan on some peds; very sticky and very plastic (wet); gradual smooth boundary; pH 4.8 (H<sub>2</sub>O)

C2g 25 - 70 cm+ Gray (10 Y 6/1) wet; silt clay; structureless massive; few fine faint yellowish brown (10 YR 5/8) mottles; very sticky and very plastic (wet); pH 5.3 (H<sub>2</sub>O)

## SOIL DESCRIPTION

Profile Number                      No.41  
Soil Classification                  Organic Soils  
Date of Examination                August 18, 1981  
Location                              Rasuan, Muncak Kabau  
Land Form                             Alluvial Plain (depression)  
Slope                                 Flat  
Vegetation or Land Use              Swampy land  
Drainage Condition                  Poor drained

### Profile Description

01	35 - 16 cm	Very dark brown (10 YR 2/2) wet; silty clay loam; very loose (moist), soft (dry); many fine roots; abrupt smooth boundary
02	16 - 0 cm	Brownish black (7.5 YR 2/2) wet; silty clay loam; very loose (moist), slightly hard (dry); clear smooth boundary
0C	0 - 25 cm	Very dark grayish brown (10 YR 3/2) wet; clay; very loose (moist), hard (dry); clear smooth boundary
C	25 - 50 cm±	Light olive brown (2.5 Y 5/4) and pale brown (10 YR 6/3) wet; clay; very loose (moist), hard (dry)

## SOIL DESCRIPTION

Profile Number No.42  
Soil Classification Brown Hydromorphic Soils  
Date of Examination July 25, 1981  
Location Mesir Ilir, Tulangbawang  
Land Form Peneplain  
Slope 1°  
Vegetation or Land Use Forest  
Drainage Condition Well drained

### Profile Description

A1 0 - 16 cm Dark brown (10 YR 3/3) wet; sandy loam; weak fine subangular; few fine roots; slightly sticky and slightly plastic (wet) slightly hard (dry); abrupt smooth boundary; pH 4.6 (H<sub>2</sub>O)

B2t 16 - 45 cm Grayish yellow brown (10 YR 6/2) wet; sandy clay loam; weak fine subangular blocky; very few medium prominent bright yellowish brown (10 YR 6/8) mottles; few fine roots; sticky and plastic (wet) hard (dry); abrupt smooth boundary; pH 4.1 (H<sub>2</sub>O)

Cg 45 - 100 cm+ Light gray (2.5 Y 7/1) wet; clay; moderate medium subangular blocky; very few fine faint bright yellowish brown (10 YR 6/8) mottles; very sticky and very plastic (wet) hard (dry); pH 4.9 (H<sub>2</sub>O)



## SOIL DESCRIPTION

Profile Number: No. 43  
Soil Classification: Yellowish Brown Podzolic Soils  
Date of Examination: July 25, 1981  
Location: Mesir Ilir, Tulangbawang  
Land Form: Peneplain  
Slope: 2 - 4°  
Vegetation or Land Use: Alang alang  
Drainage Condition: Well drained

### Profile Description

A1 0 - 10 cm Dark brown (10 YR 3/4) wet; sandy clay loam; weak fine subangular blocky; few fine roots; slightly sticky and slightly plastic (wet) slightly hard (dry); abrupt smooth boundary; pH 4.2 (H<sub>2</sub>O)

B21 10 - 29 cm Yellowish brown (10 YR 5/8) wet; sandy clay loam; structureless massive; frequent coarse sand; slightly sticky and slightly plastic (wet) slightly hard (dry); abrupt smooth boundary; pH 4.1 (H<sub>2</sub>O)

B22t 29 - 52 cm Dull yellow orange (10 YR 7/3) wet; sandy clay; structureless massive; common coarse faint bright brown (7.5 YR 5/8) mottles; slightly sticky and slightly plastic (wet) very hard (dry); abrupt smooth boundary; pH 4.0 (H<sub>2</sub>O)

C1 52 - 100 cm+ Light gray (2.5 Y 8/1) wet; clay; structureless massive; many medium prominent reddish brown (2.5 YR 4/8) mottles; sticky and plastic (wet) very hard (dry); pH 4.1 (H<sub>2</sub>O)

## SOIL DESCRIPTION

Profile Number	No.44
Soil Classification	Yellowish Brown Podzolic Soils
Date of Examination	August 12, 1981
Location	Negara Batin, Tulangbawang
Land Form	Penepplain
Slope	Gently sloping
Vegetation or Land Use	Alang alang
Drainage Condition	Well drained

### Profile Description

A1	0 - 14 cm	Dark brown (10 YR 3/3) wet; sandy clay loam; strong medium subangular blocky; fine medium roots of grasses; slightly sticky and slightly plastic (wet); clear wavy boundary; pH 4.6 (H <sub>2</sub> O)
B21t	14 - 37 cm	Yellowish brown (10 YR 5/6) wet; clay; structureless massive; very few fine faint red (10 R 4/8) mottles; slightly sticky and slightly plastic; abrupt smooth boundary; pH 4.4 (H <sub>2</sub> O)
B22tg	37 - 69 cm	Grayish olive (7.5 Y 6/2) wet; clay; structureless massive; many medium diffuse red (10 R 4/8) mottles; very sticky and very plastic; frequent medium hard red ironstone nodules; clear wavy boundary; pH 4.5 (H <sub>2</sub> O)
Cg	69 - 100 cm	Light gray (2.5 Y 7/1) wet; clay; structureless massive; common coarse prominent red (10 R 4/8) mottles; very sticky and very plastic; pH 4.6 (H <sub>2</sub> O)

## SOIL DESCRIPTION

Profile Number                    No.45  
Soil Classification                Brown Podzolic Soils  
Date of Examination                August 12, 1981  
Location                            Negara Batin, Tulangbawang  
Land Form                            Peneplain  
Slope                                Gently sloping  
Vegetation or Land Use              Forest  
Drainage Condition                  Well drained

### Profile Description

A1	0 - 12 cm	Brownish black (10 YR 3/2) wet; sandy clay loam; structureless massive; few medium roots; slightly sticky and slightly plastic (wet); clear smooth boundary; pH 5.1 (H <sub>2</sub> O)
B21	12 - 46 cm	Brown (10 YR 4/6) wet; sandy clay loam; structureless massive; frequent medium hard dark red ironstone nodules; slightly sticky and slightly plastic (wet); clear smooth boundary; pH 4.5 (H <sub>2</sub> O)
B22t	46 - 76 cm	Bright brown (7.5 YR 5/8) wet; sandy clay; structureless massive; common coarse prominent dark red (7.5 R 3/6) mottles; sticky and very plastic (wet); frequent medium slightly hard dark red ironstone nodules; clear smooth boundary; pH 4.5 (H <sub>2</sub> O)
C1	76 - 100 cm	Light yellow (2.5 Y 7/4) wet; clay; structureless massive; many coarse prominent dark red (7.5 R 3/6) mottles; very sticky and very plastic (wet)

## SOIL DESCRIPTION

Profile Number	No.46
Soil Classification	Brown Podzolic Soils
Date of Examination	August 12, 1981
Location	Negara Batin, Tulangbawang
Land Form	Penneplain
Slope	2 - 4°
Vegetation or Land Use	Alang alang
Drainage Condition	Well drained

### Profile Description

A1	0 - 17 cm	Brownish black (10 YR 3/2) wet; sandy loam; weak fine subangular blocky; few medium roots; slightly sticky and slightly plastic (wet); abrupt smooth boundary; pH 5.0 (H <sub>2</sub> O)
B21	17 - 46 cm	Brown (10 YR 4/4) wet; sandy clay loam; structureless massive; frequent medium semi-hard ironstone nodules; slightly sticky and non plastic (wet); clear smooth boundary; pH 4.2 (H <sub>2</sub> O)
B22tg	34 - 65 cm	Bright brown (7.5 YR 5/6) wet; sandy clay; structureless massive; frequent medium hard dark red ironstone nodules; sticky and plastic (wet); gradual smooth boundary; pH 4.3 (H <sub>2</sub> O)
Cg	65 - 100 cm+	Light yellow (5 Y 7/4) wet; clay; structureless massive; many coarse prominent dark red (7.5 Y 3/6) mottles; very sticky and very plastic (wet); pH 4.2 (H <sub>2</sub> O)

## SOIL DESCRIPTION

Profile Number                    No.47  
Soil Classification                Brown Podzolic Soils  
Date of Examination                August 12, 1981  
Location                            Negara Batin, Tulangbawang  
Land Form                            Peneplain  
Slope                                Flat  
Vegetation or Land Use             Alang alang  
Drainage Condition                 Well drained

### Profile Description

A1	0 - 15 cm	Brownish black (10 YR 3/2) wet; coarse sandy clay; weak fine subangular blocky; slightly sticky and non plastic (wet); abrupt smooth boundary
B21	15 - 39 cm	Brown (10 YR 4/4) wet; silty clay; structureless massive; few fine faint red (10 R 4/8) mottles; sticky and plastic (wet); abrupt smooth boundary
B22t	39 - 62 cm	Bright brown (7.5 YR 5/8) wet; clay; structureless massive; common medium diffuse red (10 R 4/8) mottles; very sticky and very plastic (wet); abrupt smooth boundary
C	62 - 110 cm+	Light yellow (5 Y 7/3) wet; clay; structureless massive; common coarse prominent red (10 R 4/8) mottles; very sticky and very plastic (wet)

## SOIL DESCRIPTION

Profile Number No.48  
Soil Classification Gray Hydromorphic Soils  
Date of Examination August 23, 1981  
Location Cukat Nyenyek, Tulangbawang  
Land Form Depression  
Slope Flat  
Vegetation or Land Use Grass land  
Drainage Condition Imperfectly drained  
(groundwater table is 0.85 below  
land surface)

### Profile Description

A1 0 - 12 cm Grayish yellow brown (10 YR 4/2) wet; silt loam; moderate medium subangular blocky; slightly sticky and slightly plastic (wet) extremely hard (dry); abrupt smooth boundary; pH 3.8 (H<sub>2</sub>O)

ICg 12 - 55 cm Light gray (10 Y 6/2) wet; silt loam; structureless massive; many fine prominent bright reddish brown (5 YR 5/8) mottles; sticky and plastic (wet); gradual smooth boundary; pH 3.8 (H<sub>2</sub>O)

IICg 55 - 100 cm+ Gray (7.5 Y 6/1) wet; clay; structureless massive; common fine prominent bright brown 7.5 YR 5/8) mottles; sticky and plastic (wet); pH 4.0 (H<sub>2</sub>O)

## SOIL DESCRIPTION

Profile Number                    No.49  
Soil Classification                Brown Podzolic Soils  
Date of Examination                August 23, 1981  
Location                            Cakat Nyenyek, Tulangbawang  
Land Form                            Peneplain  
Slope                                Gently sloping  
Vegetation or Land Use              Forest  
Drainage Condition                  Well drained

### Profile Description

A1	0 - 26 cm	Brownish black (10 YR 2/3) wet, dull yellowish brown (10 YR 4/3) dry; loam; weak fine subangular blocky; sticky and plastic (wet); few medium roots, gradual smooth boundary; pH 3.8 (H <sub>2</sub> O)
B2	26 - 150 cm±	Bright brown (7.5 YR 5/8) wet; clay loam; structureless massive; sticky and plastic (wet); pH 4.6 (H <sub>2</sub> O)

## SOIL DESCRIPTION

Profile Number	No.50
Soil Classification	Orange Podzolic Soils
Date of Examination	August 23, 1981
Location.	Pancakarsa Purnajaya, Tulangbawang
Land Form	Peneplain
Slope	Gently sloping
Vegetation or Land Use	Forest
Drainage Condition	Well drained

Profile Description	
A1	0 - 24 cm Brownish black (10 YR 3/2) wet; loam; weak fine subangular blocky; slightly sticky and slightly plastic (wet); abrupt smooth boundary; pH 4.4 (H <sub>2</sub> O)
B21	24 - 60 cm Orange (7.5 YR 6/8) wet; loam; structureless massive; slightly gravelly; frequent hard red ironstone nodules; slightly sticky and slightly plastic (wet); abrupt smooth boundary; pH 4.3 (H <sub>2</sub> O)
B22	60 - 80 cm Orange (7.5 YR 6/8) wet; loam; structureless massive; slightly gravelly; few medium faint dark red (10 R 3/6) mottles; slightly sticky and slightly plastic (wet); gradual smooth boundary; pH 4.3 (H <sub>2</sub> O)
C1	80 - 140 cm Pale yellow (2.5 Y 8/3) wet; loam; structureless massive; few coarse faint red (10 R 4/8) mottles; slightly sticky and slightly plastic (wet); pH 4.3 (H <sub>2</sub> O)



## SOIL DESCRIPTION

Profile Number                    No.51  
Soil Classification                Orange Podzolic Soils  
Date of Examination                August 24, 1981  
Location                            Pancakarsa Purnajaya, Tulangbawang  
Land Form                            Peneplain  
Slope                                Flat  
Vegetation or Land Use              Upland field (cassava)  
Drainage Condition                 Very well drained

### Profile Description

Ap	0 - 21 cm	Brownish black (10 YR 3/2) wet, dull yellowish brown (10 YR 4/2) dry; loam; weak subangular blocky; sticky and plastic; few medium roots; clear smooth boundary
B11	21 - 64 cm	Orange (7.5 YR 6/8) wet; clay loam; structureless massive; slightly gravelly; frequent hard red ironstone nodules; sticky and plastic (wet); abrupt smooth boundary
B12	64 - 90 cm	Orange (7.5 YR 6/6) wet; loam; structureless massive; slightly gravelly; few medium faint dark red (10 R 3/4) mottles; sticky and plastic

## SOIL DESCRIPTION

Profile Number No.52  
Soil Classification Organic Soils  
Date of Examination August 24, 1981  
Location Pancakarsa Purnajaya, Tulangbawang  
Land Form Depression  
Slope Flat  
Vegetation or Land Use Swampy land  
Drainage Condition Poor drained  
(groundwater table is 0.1 m below  
land surface)

### Profile Description

01	22 - 6 cm	Brownish black (10 YR 3/1) wet; silt loam; very loose (moist), soft (dry); abrupt smooth boundary
02	6 - 0 cm	Brownish black (10 YR 2/3) wet; silty clay loam; very loose (moist), soft (dry); abrupt smooth boundary
0C	0 - 18 cm	Olive brown (2.5 Y 4/3) wet; clay loam; very loose (moist), soft (dry); abrupt smooth boundary
C	18 - 30 cm	Light olive brown (2.5 Y 5/4) wet; clay loam; loose (moist), slightly hard (dry)

## SOIL DESCRIPTION

Profile Number                    No. 53  
Soil Classification                Orange Podzolic Soils  
Date of Examination                August 24, 1981  
Location                            Banjaragung  
Land Form                            Peneplain  
Slope                                Gently sloping  
Vegetation or Land Use             Forest  
Drainage Condition                 Well drained

### Profile Description

A1      C - 13 cm      Dark brown (10 YR 3/4) wet; silt loam; weak  
fine subangular blocky; frequent large particles  
of quartz; non sticky and non plastic (wet);  
abrupt smooth boundary

B2      13 - 100 cm±      Dull yellow orange (10 YR 6/4) wet; loam;  
structureless massive; frequent hard red  
ironstone nodules; non sticky and non plastic  
(wet)

## SOIL DESCRIPTION

Profile Number No. 54  
Soil Classification Orange Podzolic Soils  
Date of Examination August 24, 1981  
Location Banjarangung  
Land Form Peneplain  
Slope Gently sloping  
Vegetation or Land Use Forest  
Drainage Condition Well drained

### Profile Description

A1 0 - 19 cm. Brownish black (10 YR 2/2) wet; loamy clay; weak fine subangular blocky; slightly sticky and slightly plastic (wet); abrupt smooth boundary

B2t 19 - 66 cm. Orange (7.5 YR 6/8) wet; silty clay; structureless massive; few medium faint red (10 R 4/8) mottles at the bottom of horizon; sticky and slightly plastic (wet); clear smooth boundary

C1 66 - 110 cm. Pale yellow (2.5 Y 8/3) wet; loam; structureless massive; few coarse faint red (10 R 4/8) mottles; slightly sticky and slightly plastic (wet)

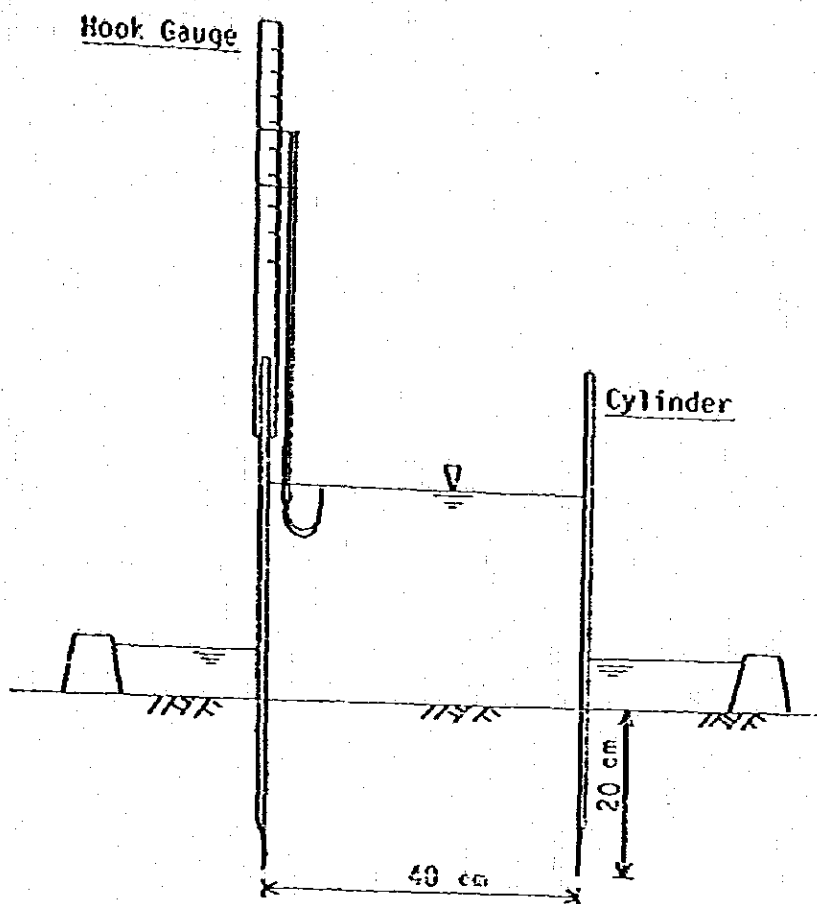
III.3.3 PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

Soil No.	Symbol of Horizon	Depth (cm)	pH (1:10)	Organic Carbon (%)	Total Nitrogen (%)	Available Phosphorus (mg/100g)	Exchangeable Cations (me/100g)				CNC (me/100g)	RC (mmole/cm)	Particle Size Distribution		
							Na	K	Ca	Mg			Silt	Clay	Sand
1.	A1	0-20	4.7	1.99	0.18	0.12	1.15	0.67	12.26	0.140	42.21	26.96	30.53		
	B1	26-72	5.1	0.25	0.03	0.12	0.86	0.29	33.85	0.425	32.98	0.87	66.13		
	C	72-100*	5.2	0.19	0.02	0.08	1.15	0.19	71.81	0.575	17.24	0.19	82.57		
2.	A1	0-17	4.9	1.36	0.14	0.10	1.44	0.16	32.02	0.723	26.86	23.83	49.31		
	B11	17-47	5.9	0.35	0.04	0.12	0.91	0.18	36.73	0.455	51.86	2.16	45.98		
	B12	47-70	5.0	0.82	0.07	0.16	0.77	0.73	31.91	0.470	9.40	16.21	76.39		
	CE	70-100*	5.2	0.12	0.02	0.12	0.86	0.16	32.86	0.480	3.73	11.95	84.31		
	Ap	0-18	4.8	1.16	0.11	0.12	0.77	0.38	36.22	0.650	37.43	22.41	40.45		
3.	Ayx	18-22	5.3	0.27	0.03	0.08	0.86	0.29	32.12	0.575	51.40	2.51	46.09		
	ClE	22-100	5.3	1.17	0.12	0.20	0.77	0.17	12.78	0.700	54.79	5.46	39.75		
	A1	0-12	4.7	2.37	0.22	0.30	0.77	0.38	36.29	0.540	24.00	24.29	51.71		
5.	B11	12-37	4.6	0.70	0.07	0.30	0.67	0.18	36.46	0.340	18.42	39.67	41.91		
	B12	37-64	4.7	0.51	0.05	0.24	0.58	0.37	37.18	0.425	33.01	43.85	23.42		
	CE	64-100*	4.7	0.39	0.04	0.12	0.77	0.38	45.73	0.440	17.16	37.05	25.79		
	A1	0-9	4.2	3.47	0.20	0.44	0.96	0.38	33.40	0.625	31.22	48.26	19.49		
	B12	9-71	4.4	0.82	0.04	0.24	0.77	0.19	33.49	0.485	19.42	62.02	21.56		
10.	B12	71-100*	4.5	0.51	0.05	0.12	0.67	0.19	45.89	0.650	29.48	38.61	11.91		
	Ayx	0-12	4.6	1.56	0.13	0.35	1.15	0.39	36.65	0.625	59.82	32.97	4.21		
	B2E	12-70*	4.7	0.31	0.02	0.36	1.06	0.15	39.48	0.180	49.13	49.62	1.25		
	Ay	0-9	4.6	2.30	0.20	0.68	1.24	0.49	39.32	0.225	33.93	24.68	41.37		
	AGr	9-40	5.0	0.31	0.01	0.60	1.06	0.48	32.29	0.145	50.16	2.28	42.56		
16.	ClE	40-55	5.1	0.51	0.05	0.16	1.15	0.77	36.37	0.500	60.13	22.29	17.56		
	CE	55-100*	5.0	0.16	0.02	0.16	1.15	0.38	39.61	0.550	42.93	30.42	26.65		
	A1	0-9	4.0	2.14	0.19	0.44	1.15	0.77	42.99	0.335	12.25	35.44	52.31		
	B214	9-25	4.3	0.58	0.04	0.30	1.15	0.38	39.87	0.575	9.74	47.74	42.52		
	Ay	0-8	4.7	1.16	0.12	0.21	1.06	0.57	44.16	0.635	38.25	22.06	39.69		
18.	Ayx	8-15	4.8	0.55	0.05	0.20	1.44	0.48	44.13	0.385	33.11	19.64	47.25		
	ICE	15-34	5.0	0.23	0.03	0.16	0.80	0.19	30.79	0.475	17.05	9.69	73.26		
	ITCE	34-70*	5.2	0.12	0.02	0.16	0.63	0.25	33.44	1.000	3.22	9.10	87.68		
	Ay	0-8	4.2	2.41	0.23	0.32	1.72	0.38	65.21	0.425	48.38	42.89	8.33		
	AGr	8-29	4.2	1.56	0.14	0.48	1.44	0.34	55.72	0.350	45.38	44.15	10.47		
21.	ClE	20-34	4.2	1.09	0.10	0.40	0.67	0.22	64.49	1.000	43.47	53.70	7.83		
	CE	34-59	4.3	0.43	0.04	0.36	0.84	0.27	57.57	0.375	40.53	34.94	4.48		
	Cy	59-100*	4.4	0.39	0.04	0.17	0.50	0.31	52.88	0.475	38.42	59.26	2.12		
	A1	0-13	4.5	3.16	0.27	1.04	1.25	0.29	42.17	0.425	32.38	36.19	32.43		
	B24	13-34	4.1	0.86	0.07	0.36	0.67	0.19	49.16	0.450	20.53	60.95	18.15		
23.	Cl	34-100*	4.1	0.48	0.06	0.26	0.67	0.33	75.98	0.450	22.46	74.85	2.69		
	Ay	0-16	4.4	1.99	0.17	0.72	0.67	0.29	55.36	0.850	35.96	31.32	22.72		
	B24E	16-50	4.4	1.05	0.11	0.41	1.72	0.38	56.15	0.375	35.00	62.60	2.40		

Soil No.	Symbol of Horizon	Depth (cm)	pH(H <sub>2</sub> O)	Organic Carbon (%)	Total Nitrogen (%)	Available Phosphorus (mg/100g)	Exchangeable Cations (me/100g)				CEC (me/100g)	pH	Particle Size Distribution		
							Na	K	Ca	Mg			Silt	Clay	Sand
25.	A1	0-11	4.5	3.90	0.31	0.84	0.09	0.13	0.86	0.48	18.69	0.800	44.71	20.77	34.52
	B11	11-34	4.9	0.51	0.05	0.64	0.09	0.17	0.96	0.54	31.89	0.105	38.16	15.03	46.81
	B12	34-84	5.1	0.15	0.01	0.48	0.12	0.30	0.86	0.48	32.69	0.080	43.62	15.27	44.09
	C1	84-100+	5.4	0.23	0.02	0.36	0.12	0.29	0.96	0.39	35.39	0.091	40.03	5.36	84.39
27.	A1P	0-2	3.7	3.60	0.32	0.64	0.10	0.22	1.15	0.54	36.11	0.375	30.20	35.63	34.27
	A12P	2-30	4.0	1.13	0.10	0.64	0.08	0.04	0.97	0.39	32.09	0.070	30.00	45.91	24.09
	C1	30-70+	4.1	0.70	0.07	0.60	0.07	0.04	0.96	0.38	40.82	0.085	26.57	48.18	27.25
31.	A1	0-21	4.0	0.54	0.05	0.44	0.09	0.14	0.77	0.34	31.43	0.090	23.38	69.02	13.60
	B2	21-62	4.2	2.53	0.22	0.76	0.10	0.05	0.94	0.36	32.88	0.100	24.50	68.43	7.07
	B3	62-100+	4.1	0.58	0.05	0.34	0.12	0.03	0.84	0.44	17.95	0.180	14.85	19.92	65.20
	C			0.32	0.04	0.16	0.09	0.02	0.67	0.48	40.61	0.040	12.34	46.09	41.57
35.	A1	0-22	5.4	1.44	0.13	4.33	0.27	0.31	0.26	0.38	40.67	0.165	55.19	21.50	23.31
	B2+G	22-69	6.5	0.88	0.08	1.60	0.23	0.36	1.04	0.47	43.40	0.115	57.98	39.24	2.78
	B3	69-89	5.9	0.47	0.04	1.52	0.19	0.16	0.86	0.29	42.83	0.185	40.67	34.63	24.48
	C	89-100+	5.6	0.31	0.01	1.48	0.17	0.12	0.67	0.29	32.12	0.190	40.52	26.05	33.43
	A1	0-24	4.2	1.92	0.14	0.72	0.09	0.07	0.94	0.19	32.40	0.165	6.13	15.34	78.53
36.	B2	24-51	4.0	0.90	0.02	0.56	0.08	0.04	0.86	0.48	31.55	0.110	38.42	0.01	61.57
	B22	51-82	4.3	0.51	0.03	0.28	0.08	0.04	1.24	0.11	35.84	0.090	5.57	43.41	51.02
	C	82-100+	4.6	0.27	0.02	0.24	0.05	0.04	0.94	0.57	31.71	0.080	51.78	0.55	47.71
	A1	0-17	4.8	1.52	0.23	0.88	0.05	0.04	0.57	0.49	36.59	0.450	64.22	7.10	24.68
37.	B2	17-56	5.2	0.16	0.04	0.44	0.06	0.03	0.57	0.29	32.16	0.010	57.18	1.49	41.33
	C	56-100+	5.3	0.31	0.01	0.08	0.05	0.06	0.86	0.77	33.61	0.070	86.80	0.03	13.78
	A1	0-12	4.2	3.51	0.31	0.41	0.05	0.34	1.93	0.77	61.40	0.500	17.31	48.91	13.78
39.	B1	12-36	4.1	3.25	0.11	0.72	0.05	0.22	1.43	0.30	43.65	0.350	40.16	58.63	1.21
	C1	36-50	4.0	0.86	0.08	0.16	0.04	0.21	1.15	0.31	43.54	0.425	37.12	58.55	4.35
	A1	0-9	4.2	2.57	0.23	0.56	0.23	0.31	1.72	0.58	61.58	0.950	40.02	36.38	3.80
	B1	9-25	4.8	1.05	0.10	0.32	0.25	0.17	1.25	0.57	61.59	0.625	49.79	46.88	3.33
40.	C1	25-70	5.3	0.74	0.06	0.23	0.20	0.10	1.30	0.61	55.35	0.700	45.37	51.23	3.40
	A1	0-16	4.6	2.24	0.19	0.80	0.12	0.19	0.39	0.36	35.70	0.500	33.41	16.49	30.10
	B2	16-45	4.1	0.74	0.07	0.72	0.07	0.24	0.24	0.46	37.74	0.085	27.93	23.63	48.44
42.	C1	45-100+	4.9	0.54	0.05	0.56	0.11	0.21	0.23	0.19	33.19	0.330	22.21	42.49	35.30
	A1	0-10	4.2	1.53	0.13	0.72	0.07	0.40	0.40	0.48	31.61	0.300	12.33	22.68	65.39
	B2	10-29	4.1	1.01	0.09	0.52	0.11	0.15	0.15	0.29	35.91	0.175	10.32	23.46	64.22
	B22	29-52	4.0	0.94	0.04	0.32	0.09	0.07	0.07	0.19	39.49	0.080	9.21	38.00	52.29
	C1	52-100+	4.1	0.62	0.06	0.24	0.10	0.24	0.24	0.19	34.16	0.090	22.55	73.51	3.94
44.	A1	0-14	4.6	2.25	0.23	0.58	0.06	0.17	0.67	0.29	44.09	0.750	13.15	31.58	53.27
	B2	14-37	4.4	0.24	0.08	0.41	0.06	0.08	1.25	0.29	44.06	0.375	33.56	49.34	17.10
	B22	37-69	4.5	0.55	0.05	0.24	0.07	0.07	0.90	0.15	42.96	0.425	31.24	48.06	20.70
	C1	69-100+	4.6	0.58	0.05	0.20	0.04	0.04	0.70	0.19	40.40	0.400	15.58	68.15	16.27

Soil No.	Symbol of Horizon	Depth (cm)	pH (H <sub>2</sub> O)	Organic Carbon (%)	Nitrogen (%)	Available Phosphorus (mg/100g)	Exchangeable Cations (meq/100g)				CEC (meq/100g)	Particle Size Distribution			
							Na	K	Ca	Mg		Clay	Silt	Sand	
45.	A1	0-12	5.1	1.21	0.12	0.96	0.06	0.12	0.67	0.33	12.89	0.700	7.85	27.11	65.04
	B21	12-46	4.5	0.98	0.09	0.82	0.06	0.18	0.96	0.38	34.68	0.500	9.37	23.64	66.99
	B22	46-76	4.5	0.70	0.06	0.28	0.05	0.12	0.90	0.50	11.78	0.450	8.86	42.40	48.74
46.	A1	0-17	5.0	1.48	0.15	0.36	0.08	0.20	0.77	0.38	12.36	1.000	15.21	17.68	67.22
	B21	17-46	4.2	0.88	0.06	0.32	0.07	0.25	1.06	0.18	36.64	0.375	20.09	34.52	55.59
	B22	46-63	4.3	0.27	0.03	0.28	0.06	0.15	1.06	0.25	37.11	0.400	19.30	36.03	24.67
	C1	63-100+	4.3	0.27	0.02	0.12	0.05	0.12	0.98	0.38	47.03	0.400	29.52	61.94	8.34
48.	A1	0-12	3.8	1.68	0.15	0.52	0.16	0.20	0.52	0.40	57.11	0.800	17.92	66.02	16.06
	B2	12-54	3.8	1.56	0.13	0.23	0.20	0.15	1.05	0.20	54.16	0.500	20.27	48.05	1.68
	B2	54-100+	4.0	1.36	0.12	0.12	0.25	0.11	0.97	0.38	39.39	0.500	31.46	52.21	13.33
49.	A1	0-26	5.8	1.51	0.31	1.60	0.05	0.26	1.06	0.38	16.66	0.850	24.67	35.30	50.03
	B2	26-150+	4.6	0.90	0.08	0.36	0.05	0.05	0.67	0.33	37.63	0.375	25.43	32.86	41.71
50.	A1	0-29	4.4	1.52	0.33	1.36	0.05	0.08	0.44	0.34	16.40	0.550	22.34	25.12	42.54
	B21	29-60	4.5	0.90	0.08	0.41	0.05	0.06	0.44	0.38	35.48	0.400	41.24	29.86	37.59
	B22	60-80	4.3	0.31	0.03	0.28	0.06	0.04	0.34	0.23	45.67	0.400	37.18	27.41	35.41
	C1	80-140+	4.3	0.27	0.02	0.12	0.07	0.08	0.38	0.20	45.70	0.400	40.39	24.89	34.72

III.4.1 Equipment for Intake Rate



Flood Type Infiltrometer



III.4.2 Time and Volume Measurement for Intake Rate

Time Accum. (MIN.)	Rasuan	Seribunga	Cahaya Maju	Tebing Suluh	Pancakarsa Purnajaya	Negara Batin
0	0	0	0	0	0	0
0.5	1.4	1.5	1.0	1.3	1.4	1.1
1.0	2.3	2.8	1.8	2.0	2.6	2.0
1.5	3.4	3.9	2.7	2.9	3.8	2.9
2.0	4.5	5.0	3.5	3.7	4.9	3.6
2.5	5.4	5.7	4.3	4.6	5.5	4.5
3.0	6.5	6.8	5.0	5.3	6.7	5.1
3.5	7.0	7.4	5.7	6.1	7.3	5.9
4.0	7.8	8.2	6.4	6.9	8.1	6.7
4.5	8.7	9.3	7.0	7.7	9.1	7.5
5.0	9.5	10.1	7.7	8.4	10.0	8.2
6.0	10.9	11.6	8.7	9.5	11.3	9.3
7.0	12.6	13.5	9.9	10.6	13.2	10.5
8.0			10.8	11.8		
9.0			11.8	12.9		
10.0						
11.0						
12.0						
13.0						
14.0						
15.0						

III.4.3

Experiment Result for Basic Intake Rate

Location	$D = Ct^n$	$I_B$ (mm/hr)
Rasuan	$D = 2.4t^{0.85}$	62.3
Seribunga	$D = 2.8t^{0.78}$	44.8
Cahaya Maju	$D = 1.9t^{0.87}$	56.3
Tebing Suluh	$D = 2.0t^{0.90}$	71.7
Pancakarsa Purnajaya	$D = 2.6t^{0.84}$	63.1
Negara Batin	$D = 2.0t^{0.86}$	55.5

The results are calculated by following equations.

$$D = Ct^n \dots\dots\dots (1)$$

$$I = Cnt^{n-1} \dots\dots\dots (2)$$

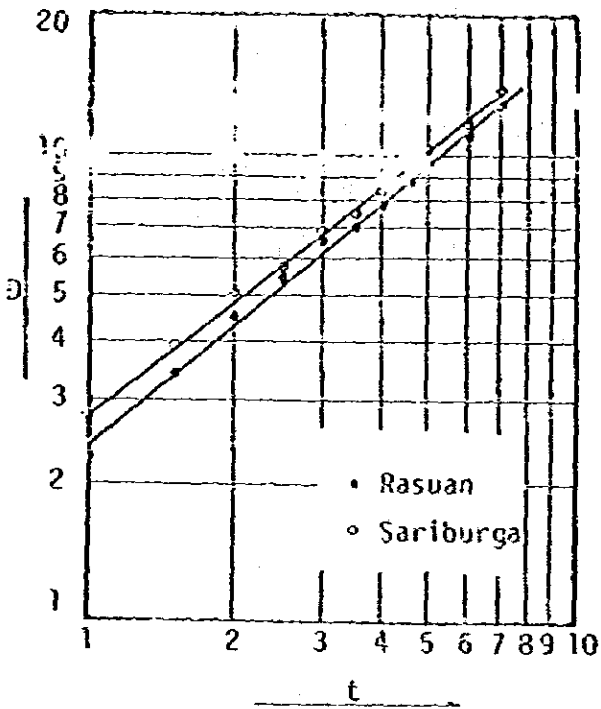
$$t_B = 600 (1 - n) \dots\dots\dots (3)$$

D: accumulated percolation

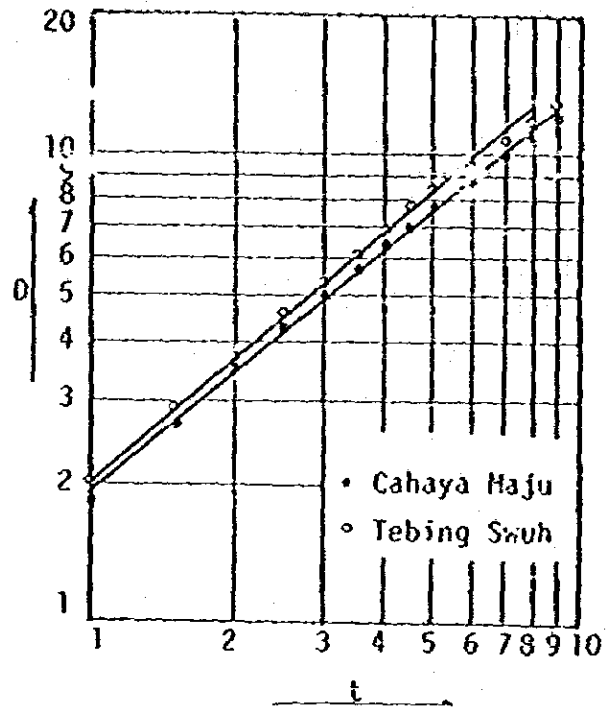
t: time (minutes)

III 4.4 Results of Basic Intake Rate for Each Irrigation Area

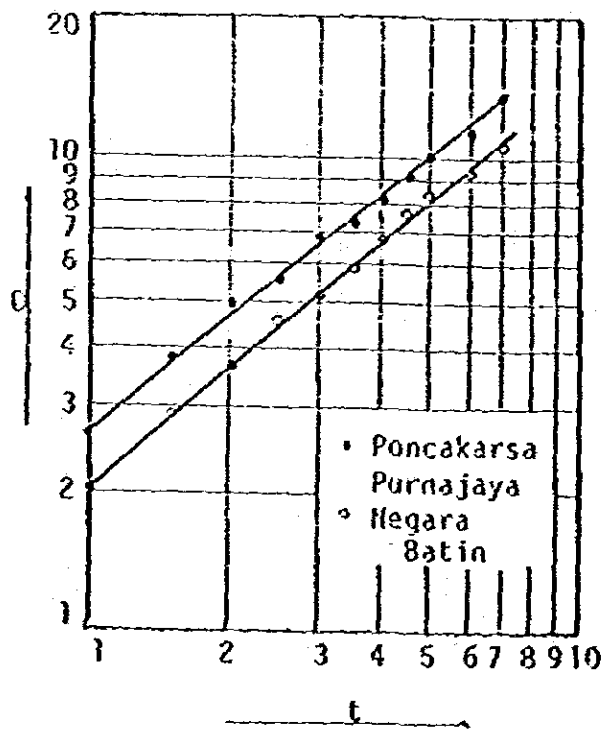
Muncak Kabau



Lempuing



Tulanobawang



IV. SOIL MECHANICS



IV.1.1. Results of Mechanical Property Tests

Stratum	Sample Name	Initial Condition of Specimen	Triaxial Compression Test				Permeability Coefficient of Permeability k (cm/sec)	Consolidation Test					
			U-U Test /1		C-U Test /2			Coefficient of Consolidation Cv (cm <sup>2</sup> /sec) × 10 <sup>-3</sup>		Cc	Py (kg/cm <sup>2</sup> )	S <sub>z</sub>	
			Cu (t/m <sup>2</sup> )	φu (deg.)	C' (t/m <sup>2</sup> )	φ' (deg.)		lowest	highest				mean
2nd stratum on hilly area (Diluvium)	L. No.2	1	5.5	5.5	0	29.0	3.3 × 10 <sup>-7</sup>	1.2	3.5	2.1	0.35	1.3	7.2
	Z = 2.5m	2	3.7	5.0	0.8	29.5	1.6 × 10 <sup>-7</sup>	1.0	3.4	2.0	0.35	3.0	9.9
Group (3) on paddy field (Alluvium)	M. No.2	3	10.8	11.5	2.5	36.0	3.3 × 10 <sup>-7</sup>	1.4	5.2	3.3	0.20	1.4	6.4
	Z = 1.5m	4	7.3	7.0	--	--	3.0 × 10 <sup>-7</sup>	1.6	5.6	3.4	0.17	5.0	8.3

Initial Condition	D-value (%)	σ (t/m <sup>2</sup> )	w (%)	t (t/m <sup>2</sup> )	e	Sr (%)
1	100	1.32	37.3	1.01	1.07	95
2	95	1.25	40.9	1.76	1.18	94
3	100	1.51	23.1	1.86	0.70	85
4	95	1.43	27.4	1.82	0.80	88

Remark

/1 : indicating with total stress

/2 : indicating with effective stress

/3 : settlement percent when consolidation pressure is 2.0kg/cm<sup>2</sup>

Results of Mechanical Property Tests

Stratum	Sample Name	Initial Condition of Specimen	Triaxial Compression Tests				Permeability Coefficient of Permeability k (cm/sec)	Consolidation Test			L3 S (%)		
			U-U Test		C-U Test			Cv (cm <sup>2</sup> /sec) x 10 <sup>-3</sup>	Cc	Py (kg/cm <sup>2</sup> )			
			σ <sub>1</sub> (t/m <sup>2</sup> )	φ <sub>u</sub> (deg.)	σ <sub>1</sub> (t/m <sup>2</sup> )	ψ <sub>1</sub> (deg.)							
Volcanic ash	D. No. 4	Z = 1.0m	4.2	6.0	1.8	21.5	1.6 x 10 <sup>-6</sup>	lowest 4.4	highest 8.6	7.3	0.67	1.7	22.2
	Z = 1.0m		2.3	7.0	2.0	20.0	3.4 x 10 <sup>-6</sup>	1.2	3.3	1.9	0.70	1.3	22.6
Talus deposit of Granite	D. No. 5	Z = 1.0m	1.8	35.0	7.0	38.5	4.6 x 10 <sup>-7</sup>	2.9	19.0	12.0	0.049	>12.8	4.9
	Z = 1.0m		2.0	38.0	0	39.0	1.8 x 10 <sup>-7</sup>	2.0	7.9	5.3	0.092	>12.8	8.1
Volcanic ash	D. No. 12	Z = 2.4m	0.8	28.5	0	34.0	2.0 x 10 <sup>-7</sup>	1.4	2.6	1.8	0.30	2.5	12.7
	Z = 2.4m		0.8	13.5	0.4	29.5	5.3 x 10 <sup>-7</sup>	2.0	7.0	4.0	0.32	1.8	16.4
Talus deposit of Sedimentary rock	D. No. 13	Z = 3.0m	1.0	10.0	0.5	33.5	2.1 x 10 <sup>-7</sup>	1.2	4.2	3.1	0.18	4.0	9.9
	Z = 3.0m		0.8	7.5	2.0	31.5	2.3 x 10 <sup>-7</sup>	2.2	5.6	3.5	0.19	3.0	11.6

N-2

Index Number	Initial Condition		γ <sub>d</sub> (t/m <sup>3</sup> )	w (%)	γ <sub>t</sub> (t/m <sup>3</sup> )	e	S <sub>r</sub> (%)
	D-value (%)	γ <sub>u</sub> (t/m <sup>3</sup> )					
1	100	1.02	1.62	58.6	1.65	1.65	96
2	95	0.97	1.58	63.1	1.79	1.79	95
3	100	2.02	2.24	10.8	0.32	0.32	91
4	95	1.92	2.18	13.8	0.39	0.39	95
5	100	1.26	1.75	39.2	1.08	1.08	95
6	95	1.20	1.71	42.8	1.18	1.18	95
7	100	1.64	2.00	22.0	0.65	0.65	92
8	95	1.56	1.96	25.6	0.73	0.73	94

Initial Condition

Remarks

L1 : indicating with total stress

L2 : indicating with effective stress

L3 : settlement percent when consolidation pressure is 6.4kg/cm<sup>2</sup>

IV. 1. 2. RESULT OF INDEX PROPERTIES TEST (1) MUNGKAC KADAU MAIN CANAL

HOLE NUMBER	DEPTH (m)	GEOLOGICAL CLASSIFICATION	UNIFIED CLASSIFICATION	FIELD MOISTURE CONTENT (%)	SPECIFIC GRAVITY G <sub>s</sub>	CONSISTENCY		GRADATION						C <sub>c</sub>	REMARKS			
						L.L. (%)	P.L. (%)	P. I.	75 μm	75 μm	75 μm	75 μm	75 μm			75 μm	75 μm	75 μm
M. No. 1	1.0	A1, G(2)	SC	27.6	2.509	40.6	18.0	22.6	100.0	87.3	40.0	0.070	0.002	0.12	0.059	0.016	7.5	0.55
	2.0	A1, G(2)	CL	42.1	2.602	46.0	24.0	21.0	100.0	92.0	52.0	0.070	0.002	0.089	0.036	0.0076	12	0.52
	3.0	A1, G(1)	SC	N.P.	2.601	N.P.	N.P.	N.P.	99.5	95.5	30.5	0.070	0.002	0.50	0.35	0.12	4.8	0.57
M. No. 2	1.0	A1, G(1)	SP	12.0	2.609	10.0	N.P.	N.P.	100.0	66.5	0.5	0.070	0.002	1.45	0.52	0.33	0.4	1.52
	1.0	A1, G(2)	SC	2.499	2.499	100.0	92.0	22.2	100.0	92.0	42.5	0.070	0.002	0.21	0.045	0.0045	24	0.23
	1.5	A1, G(2)	CL	2.671	2.671	37.0	15.7	22.2	100.0	100.0	51.4	0.070	0.002	0.091	0.030	0.0010	91	0.10
M. No. 3	2.0	A1, G(2)	SC	33.4	2.605	100.0	100.0	21.5	100.0	92.0	31.5	0.070	0.002	0.092	0.072	0.016	5.8	0.29
	2.0	A1, G(2)	CL	36.8	2.501	66.5	19.9	21.6	100.0	95.5	55.5	0.070	0.002	0.087	0.019	0.0018	48	0.43
	2.0	A1, G(2)	CL	44.5	2.609	91.0	23.5	27.5	100.0	100.0	20.0	0.070	0.002	0.008	0.008	0.008	—	—
M. No. 4	1.0	A1, G(3)	SC - CH	43.0	2.602	90.4	31.5	50.9	100.0	98.5	47.0	0.070	0.002	0.13	0.012	0.0010	139	0.90
	2.0	DL, 1st	SM	31.0	2.670	94.7	46.2	51.5	100.0	70.5	25.0	0.070	0.002	0.26	0.094	0.025	10	0.74
	2.0	DL, 2nd	SM - SW	27.3	2.603	100.0	N.P.	N.P.	94.0	35.0	9.5	0.070	0.002	1.02	0.34	0.079	13	0.70
M. No. 5	1.0	A1, G(3)	CH	37.0	2.577	87.9	43.7	44.2	100.0	100.0	25.0	0.070	0.002	0.072	0.0029	0.0029	29	0.35
	2.0	A1, G(3)	SM - CH	39.4	2.610	93.6	33.0	29.0	100.0	99.0	42.5	0.070	0.002	0.115	0.030	0.0030	30	0.38
	2.0	A1, G(3)	CH	51.0	2.607	60.3	25.0	34.5	100.0	92.5	59.0	0.070	0.002	0.072	0.0066	0.00045	176	0.82
M. No. 6	1.0	A1, G(3)	ML	43.2	2.703	90.3	40.6	49.7	100.0	99.0	56.5	0.070	0.002	0.090	0.012	0.0015	60	0.80
	1.0	A1, G(3)	ML	40.0	2.606	93.6	41.0	52.6	100.0	99.0	33.0	0.070	0.002	0.0075	0.0014	0.0014	—	—
	1.0	A1, G(2)	CL - SC	29.6	2.552	49.0	15.2	29.8	100.0	98.0	50.0	0.070	0.002	0.093	0.035	0.0047	20	0.36
M. No. 7	1.0	A1, G(2)	SC	29.7	2.595	52.0	23.2	29.4	100.0	100.0	45.0	0.070	0.002	0.102	0.042	0.0060	17	0.35
	2.0	A1, G(3)	CL	45.2	2.502	45.2	21.5	24.1	100.0	99.0	21.0	0.070	0.002	0.052	0.017	0.0021	25	0.38
	2.0	A1, G(3)	ML	67.0	2.496	67.0	36.0	31.8	100.0	100.0	26.0	0.070	0.002	0.050	0.018	0.0017	29	0.26
M. No. 8-U (undisturbed)	1.0	A1, G(2)	SC	39.7	2.652	44.6	23.1	21.5	100.0	98.0	31.0	0.070	0.002	0.115	0.072	0.015	7.7	0.33
	2.0	A1, G(3)	CH	32.6	2.592	52.7	25.9	26.8	100.0	100.0	55.0	0.070	0.002	0.091	0.023	0.0042	22	0.72
	3.0	A1, G(2)	SM	43.8	2.401	100.0	N.P.	N.P.	100.0	99.0	28.5	0.070	0.002	0.003	0.040	0.0107	7.8	0.56



RESULT OF INDEX PROPERTIES TEST (P) LEMPHU: MAIN CANAL

HOLE NUMBER	DEPTH (m)	GEOLOGICAL CLASSIFICATION	UNIFIED CLASSIFICATION	FIELD MOISTURE CONTENT Wf (%)	SPECIFIC GRAVITY Gs	CONSISTENCY		GRADATION							Cu	Cc	REMARKS		
						L.L. (%)	P.L. (%)	P.I.	4.75 (mm)	75 (mm)	2.00 (mm)	0.42 (mm)	0.075 (mm)	0.0075 (mm)				0.002 (mm)	0.075 (mm)
L. No. 1	2.0	DL 1st	GM	15.5	2.932	83.3	38.4	44.9	100.0	100.0	97.0	84.0	5.0	1.0	0.002	1.29	0.15	26	0.35
	3.0	DL 1st	SM	40.6	2.699	102.1	47.4	58.7	100.0	100.0	98.5	78.5	21.5	12.6	0.002	0.0025	0.0025	68	0.16
	4.0	DL 2nd	SC	37.3	2.731	66.3	35.5	30.8	100.0	100.0	97.5	48.0	17.5	4.5	0.002	0.0102	0.0066	162	0.045
	5.0	DL 2nd	SC	36.3	2.621	63.8	25.2	49.7	100.0	100.0	98.0	49.5	19.0	4.5	0.002	0.0026	0.0026	122	0.10
	6.0	DL 3rd	SC	34.6	2.638	33.6	15.3	18.3	100.0	100.0	98.5	87.0	23.0	4.5	0.002	0.0115	0.0115	18	0.22
L. No. 2	1.0	AL G(2)	CL	29.0	2.650	105.1	31.2	73.2	100.0	100.0	99.0	51.5	11.0	4.5	0.002	0.0102	0.0102	11	0.29
	2.0	AL G(3)	ML	51.3	2.646	107.0	46.3	62.7	100.0	100.0	100.0	76.0	32.0	9.0	0.002	0.0038	0.0038	26	0.45
	3.0	AL G(2)	SM	66.6	2.609	79.6	37.9	41.7	100.0	100.0	100.0	42.0	9.0	9.0	0.002	0.0117	0.0117	20	0.37
	4.0	AL G(3)	ML	28.1	2.647	95.9	42.5	53.4	100.0	100.0	96.0	79.0	42.0	9.0	0.002	0.0024	0.0024	—	—
	5.0	AL G(2)	SM	32.7	2.613	68.4	32.7	35.7	100.0	100.0	100.0	46.5	19.0	9.0	0.002	0.017	0.017	120	0.93
L. No. 3	1.0	AL G(3)	ML	36.0	2.621	82.4	40.2	42.2	100.0	100.0	99.0	68.0	26.0	9.0	0.002	0.0079	0.0079	75	0.67
	2.0	AL G(2)	SM	26.1	2.612	97.8	41.8	56.0	100.0	100.0	99.0	41.5	15.0	9.0	0.002	0.030	0.030	67	0.33
	3.0	AL G(2)	SM	21.1	2.701	71.1	30.1	41.2	100.0	100.0	99.0	40.8	10.6	9.0	0.002	0.042	0.042	29	0.28
	4.0	AL G(2)	SM	13.5	2.664	47.4	20.2	27.2	100.0	100.0	99.5	74.0	38.5	4.0	0.002	0.126	0.126	9.1	0.62
	5.0	AL G(2)	SM	21.4	2.621	100.7	46.4	54.3	100.0	100.0	90.0	66.5	31.5	6.046	0.002	0.0025	0.0025	29	0.60
L. No. 4	1.0	DL 1st	SC	30.7	2.671	97.5	46.1	51.4	100.0	100.0	94.0	68.0	29.5	9.0	0.002	0.0055	0.0055	87	1.28
	2.0	DL 2nd	SC	33.2	2.682	69.2	23.2	32.5	100.0	100.0	100.0	46.5	21.0	9.112	0.002	0.0145	0.0145	224	0.27
	3.0	DL 3rd	CL	42.1	2.616	65.0	30.6	34.4	100.0	100.0	100.0	52.5	28.0	0.002	0.0069	0.0069	80	1.81	
	4.0	DL 3rd	CL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	5.0	DL 2nd	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

TILANGKAWANG MAIN CANAL

RESULTS OF SOILS PROPERTIES TEST (3)

SOIL NO.	DEPTH (m)	GEOLOGICAL CLASSIFICATION	FIELD MOISTURE CONSTANT Wc (%)	SHRINKAGE RATIO	PLASTICITY		GRADATION				Cu	Cc	REMARKS				
					L.P. (%)	P.L. (%)	4.75 mm	7.5 mm	20 mm	60 mm				Passed Percentage (%)	Particle Size (mm)		
T. No. 1	1.0	01, 1st	10.5	2.634	50.5	20.2	30.3	100.0	99.0	60.0	15.5	0.003	0.42	0.16	0.055	7.6	0.90
	2.2	01, 2nd	20.2	2.601	66.8	28.1	30.7	100.0	100.0	100.0	22.0	under	0.24	0.105	0.035	6.2	0.76
T. No. 2	1.0	01, 1st	30.8	2.637	100.6	47.8	58.0	100.0	96.0	68.5	78.5	40.0	0.022	0.0013	---	---	---
	2.0	01, 3rd	45.2	2.614	101.5	45.1	56.4	100.0	99.0	97.0	95.0	55.0	0.0076	0.00083	---	---	---
	3.0	01, 3rd	49.2	2.663	119.2	53.7	65.5	100.0	99.5	98.5	77.0	44.5	0.028	0.0017	---	---	---
	4.0	01, 3rd	70.2	2.661	108.1	51.0	57.1	---	---	---	100.0	40.0	0.028	0.0016	---	---	---
	5.0	01, 3rd	42.6	2.704	122.1	55.8	66.3	---	---	---	100.0	30.0	0.033	0.0042	0.00063	57	1.78
T. No. 3	1.0	01, 1st	23.9	2.734	62.5	24.6	44.9	97.5	89.0	65.5	27.0	7.0	0.316	0.007	0.0110	20	0.46
	2.0	01, 2nd	37.2	2.652	114.7	47.1	57.6	100.0	98.0	91.0	73.5	30.5	0.024	0.0016	---	---	---
	3.0	01, 2nd	---	2.603	66.5	31.5	35.0	95.5	94.5	88.0	68.5	37.0	0.036	0.0021	---	---	---
	4.0	01, 3rd	---	2.641	63.1	23.7	39.4	99.5	97.5	70.6	21.5	5.0	0.316	0.123	0.032	9.9	0.67
	5.0	01, 3rd	---	2.600	69.4	22.4	26.8	100.0	93.0	82.5	14.5	---	0.69	0.25	0.035	20	0.39
T. No. 4	1.0	A1, G(2)	---	2.659	60.7	30.9	29.8	100.0	99.0	90.0	33.5	10.5	0.186	0.061	0.0040	42	0.10
	2.0	A1, G(2)	---	2.401	76.1	20.7	47.4	---	100.0	83.5	27.5	under	0.23	0.084	0.022	10	0.72
T. No. 5	2.5	A1, G(1)	---	2.415	N.P.	N.P.	---	91.0	91.0	35.0	3.5	under	0.69	0.39	0.166	4.2	0.75
	0.5	A1, G(1)	16.2	2.100	N.P.	N.P.	---	48.5	38.5	24.5	5.0	under	6.0	0.71	0.13	46	1.55
	1.5	A1, G(2)	25.8	---	70.3	33.0	46.3	91.0	96.0	81.0	23.0	5.0	0.25	0.10	0.030	8.3	0.75
3.0	A1, G(2)	24.7	2.655	49.7	23.9	25.8	88.0	91.7	39.0	11.0	---	0.69	0.30	0.060	12	0.46	

O1 : Diluvium  
 A1 : Alluvium  
 1st: First stratum on hilly area  
 2nd: Second stratum on hilly area  
 3rd: Third stratum on hilly area  
 4th: Fourth stratum on hilly area  
 G(1) : Group (1) on paddy field  
 G(2) : Group (2) on paddy field  
 G(3) : Group (3) on paddy field

RESULT OF INDEX PROPERTIES TEST (4) - EMPANMENT MATERIALS FOR DAMS

PILE NUMBER	DEPTH (m)	GEOLOGICAL CLASSIFICATION	UNIFIED CLASSIFICATION	FIELD MOISTURE CONTENT (%)	SPECIFIC GRAVITY	CONSISTENCY		GRADATION				Cc	Remarks					
						L.L. (%)	P.L. (%)	7.5mm	2.0mm	Passed Percentage (%)	7.5mm			2.0mm	0.75mm	0.075mm	Ret. 0.005mm	Ret. 0.002mm
D. No. 1	0.5	RT	SC	—	2.660	—	—	—	99.0	97.0	72.2	21.6	3.5	0.26	0.069	0.017	15	0.20
D. No. 2	0.5	RT	SC	—	2.600	54.2	25.2	29.4	—	100.0	70.0	10.0	under	0.33	0.132	0.066	2.2	0.22
D. No. 3	0.5	RT	VL	21.1	2.712	162.3	32.0	135.8	—	100.0	99.8	96.0	60.0	0.016	0.0023	—	—	—
D. No. 4	0.6	RT	VII	68.4	2.660	149.5	71.4	78.1	—	100.0	99.5	96.2	43.0	0.013	0.0021	—	—	—
D. No. 5	1.0	RT	VII	68.3	2.704	127.8	63.8	64.0	—	100.0	99.0	99.0	24.8	0.019	0.0069	0.001	19	0.30
D. No. 6	2.0	RT	VII	57.5	2.743	123.5	40.6	82.9	—	100.0	97.3	97.3	29.5	0.022	0.0053	0.0007	31	0.55
D. No. 7	2.5	RT	VII	53.3	2.721	130.5	46.8	83.2	—	100.0	99.5	85.0	22.0	0.047	0.0100	0.0014	30	0.65
D. No. 8	1.0	Gr(T)	SM	3.3	2.600	—	N.P.	—	94.0	60.5	25.2	4.0	under	1.91	0.91	0.23	8.2	0.53
D. No. 9	2.0	Gr(T)	GM	5.9	2.624	—	N.P.	—	73.5	48.5	8.7	1.5	0	2.62	1.26	0.49	5.8	0.82
D. No. 10	2.5	Gr(T)	SC	12.2	2.631	20.2	16.3	8.9	74.2	64.0	36.5	16.2	5.3	1.57	0.23	0.024	65	0.98
D. No. 11	1.0	Gr(T)	SC	9.7	2.651	23.8	19.2	8.6	92.0	83.0	39.5	11.0	0	0.93	0.26	0.081	12	1.11
D. No. 12	1.5	Gr(T)	SM - SW	8.2	2.620	—	—	—	66.5	55.0	29.7	8.7	under	2.82	0.46	0.087	32	1.16
D. No. 13	1.0	Gr(T)	SC	12.3	2.750	33.9	16.2	17.7	54.0	48.0	38.0	10.0	under	9.12	0.25	0.076	120	11.1
D. No. 14	2.0	Gr(R)	SC	41.5	2.622	—	—	—	100.0	99.8	83.2	14.5	under	0.31	0.19	0.022	14	0.32
D. No. 15	1.0	Gr(R)	SC	11.7	2.639	—	—	—	—	100.0	68.0	6.5	under	0.43	0.29	0.105	3.9	0.51
D. No. 16	2.0	Gr(T)	SC	14.9	2.637	70.6	29.4	41.2	97.0	76.5	44.5	15.2	5.0	0.91	0.19	0.044	21	1.11
D. No. 17	2.0	Gr(R)	SC	20.2	2.641	53.7	24.3	29.4	96.5	80.0	37.5	10.7	—	1.12	0.20	0.069	16	0.99
D. No. 18	3.0	Gr(R)	SC	16.1	2.628	65.4	22.1	23.3	97.3	82.5	47.0	12.8	—	0.76	0.18	0.068	11	1.60
D. No. 19	1.0	RT	SM	40.6	2.642	76.4	39.3	37.1	—	100.0	78.5	48.0	24.3	0.16	0.013	—	—	—
D. No. 20	1.0	RT	SC	40.4	2.650	69.6	31.1	28.5	—	109.0	72.3	19.2	5.0	0.31	0.12	0.043	7.2	0.93
D. No. 21	2.0	RT	SM	35.5	2.617	72.2	36.4	41.5	100.0	92.0	69.5	19.2	—	0.36	0.12	0.048	2.5	1.20
D. No. 22	3.0	RT	SM	20.2	2.617	—	—	—	—	100.0	63.0	13.0	—	0.34	0.14	0.066	5.8	1.24
D. No. 23	1.0	Td	SC	23.6	2.616	50.8	23.2	27.6	100.0	98.0	70.0	17.3	—	0.33	0.13	0.046	2.2	0.90
D. No. 24	2.0	Td	SC	25.2	2.633	51.9	21.7	22.8	82.5	87.7	57.2	23.2	5.0	0.49	0.12	0.018	22	0.60
D. No. 25	3.0	Td	SC	21.8	2.206	34.3	18.3	16.0	61.5	54.0	29.3	11.3	under	4.07	0.96	0.062	65	1.21
D. No. 26	1.0	Td	SC	25.9	2.609	49.0	22.3	27.6	94.5	81.3	46.4	12.5	—	0.63	0.21	0.062	10	0.89
D. No. 27	2.0	Td	SC	29.6	2.651	49.1	12.0	22.2	89.3	83.4	48.0	17.0	—	0.52	0.17	0.042	15	0.92
K. No. 1	—	Sand	SP	—	2.609	—	—	—	99.5	99.0	60.5	2.0	0	0.35	0.20	0.129	2.2	1.13
X. No. 2	—	Gravel	GM	—	2.226	—	—	—	—	—	—	—	—	—	—	—	—	—

Gr(T) : Talus deposit originated from Cretaceous Granite  
 Gr(R) : Residual deposit of Cretaceous Granite  
 Td : Talus deposit originated from Neogene Sedimentary rock  
 RT : Volcanic ash of Quaternary

COMPACTION TEST

SAMPLE NAME D.No12 Z=2.4 m LOCATION

Optimum water content 38.5 %, Max. dry density 1.27 g/cm<sup>3</sup>

Relative equations for dry density  $\rho_d$  (g/cm<sup>3</sup>), degree of saturation S%, water content w%, is shown as below

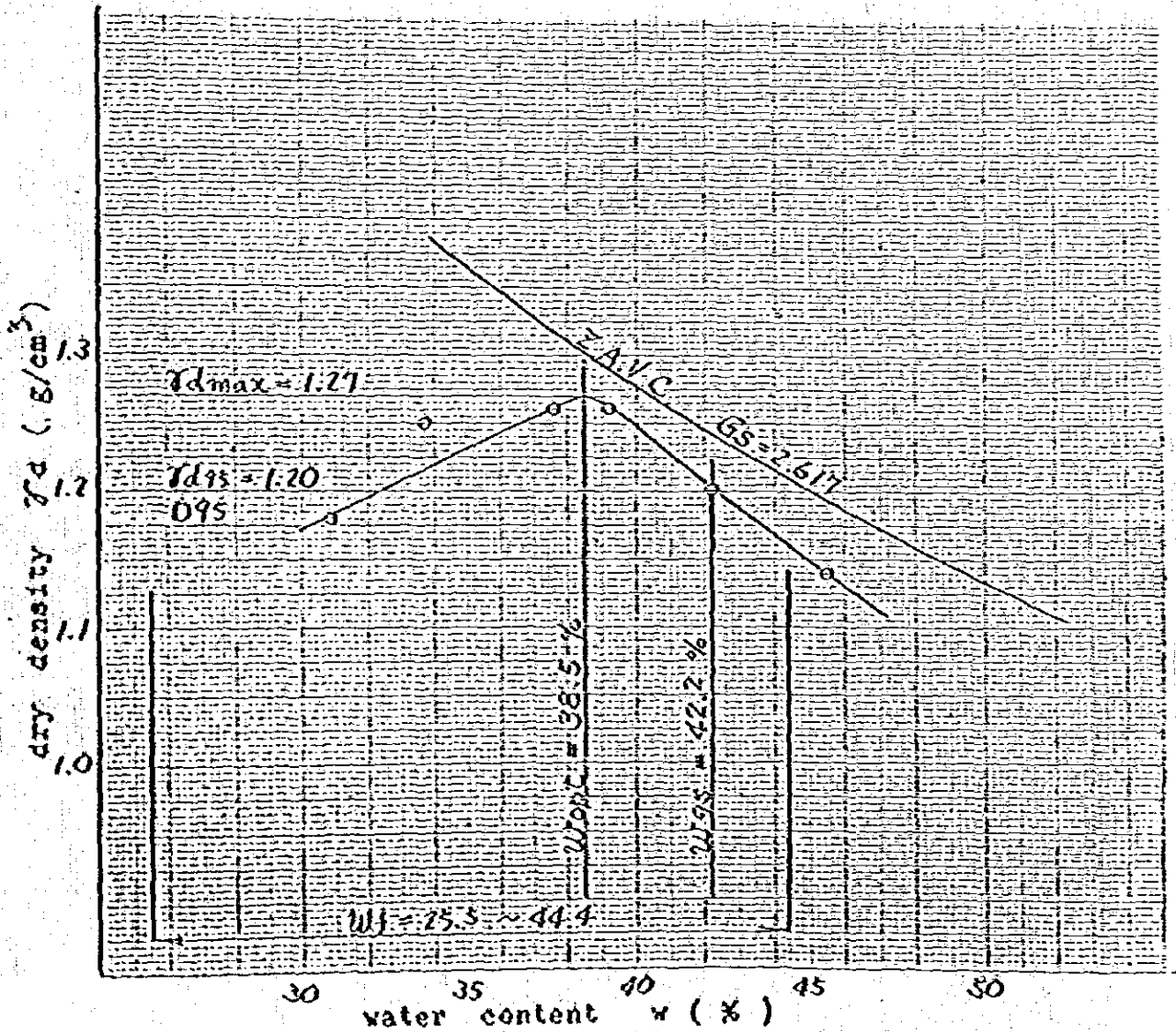
$$\rho_d = \frac{G_s \cdot w}{1 + \frac{w \cdot G_s}{S}}$$

where  $G_s$  ; Specific gravity

$w$  ; unit weight of water = 1 g/cm<sup>3</sup>

this equation corresponds to zero air void curve when S is 100%

	1	2	3	4	5	6
dry density $\rho_d$ (g/cm <sup>3</sup> )	1.18	1.25	1.26	1.26	1.20	1.14
water content w (%)	30.9	33.7	37.6	39.2	42.2	45.5



# COMPACTION TEST

SAMPLE NAME *D.No13 Z=3.0 m* LOCATION

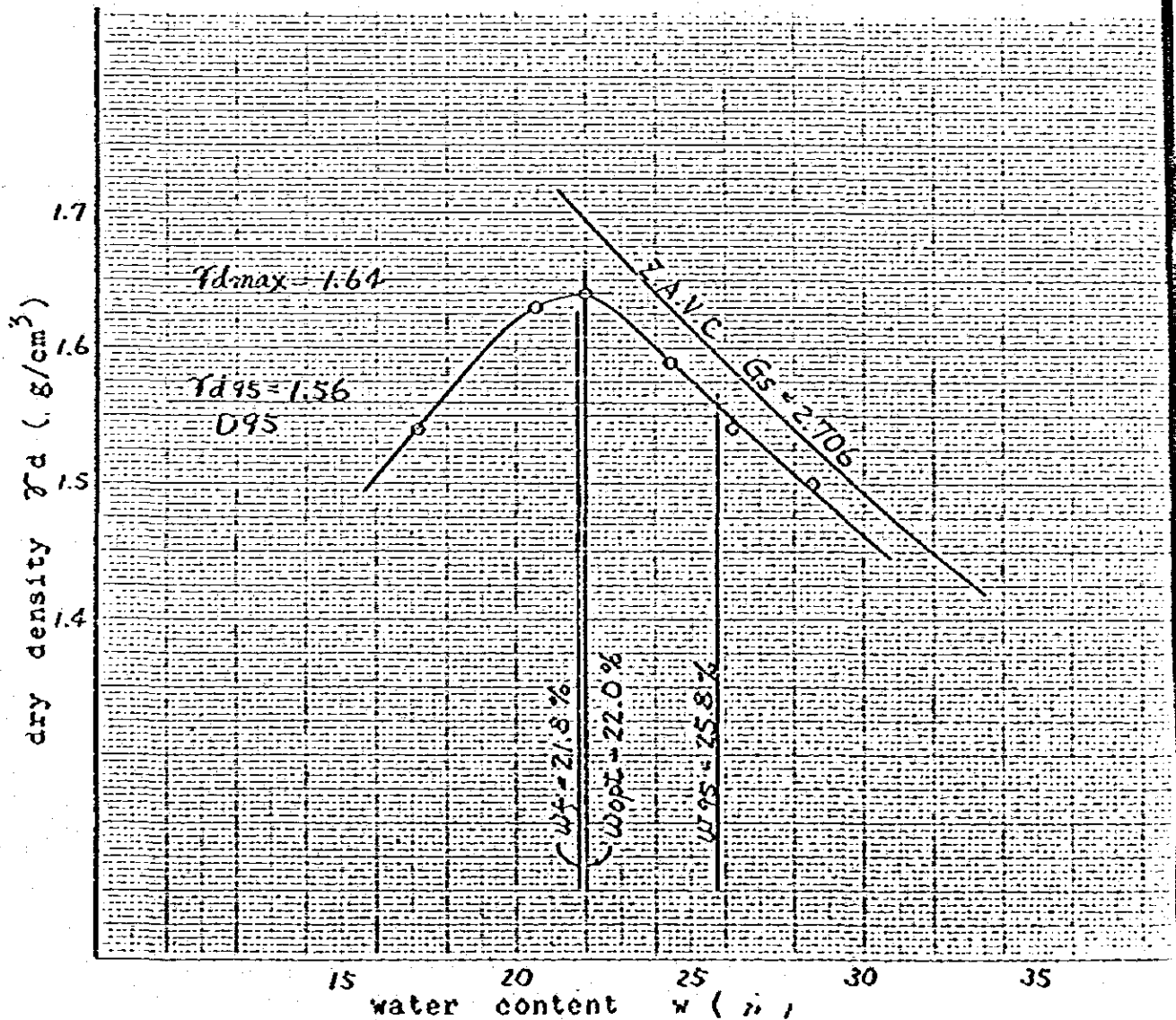
Optimum water content *22.0 %*, Max. dry density *1.64 g/cm<sup>3</sup>*

Relative equations for dry density  $\gamma_d$  g/cm<sup>3</sup>, degree of saturation *S*% water content *w*%, is shown as below

$$\gamma_d = \frac{G_s \cdot w}{1 + \frac{\gamma_w \cdot G_s}{S}}$$

where  $G_s$  ; Specific gravity  
 $\gamma_w$  ; unit weight of water = *1 g/cm<sup>3</sup>*  
 this equation corresponds to zero air void curve when *S* is 100%

	1	2	3	4	5	6
dry density $\gamma_d$ (g/cm <sup>3</sup> )	1.54	1.63	1.64	1.59	1.54	1.50
water content <i>w</i> (%)	17.2	20.6	22.0	24.4	26.2	28.5



# COMPACTION TEST

SAMPLE NAME *L.No2 Z=2.5 m*

LOCATION

Optimum water content *37.3 %*, Max. dry density *1.32 g/cm<sup>3</sup>*

Relative equations for dry density  $\gamma_d$  g/cm<sup>3</sup>, degree of saturation *S%*, water content *w%*, is shown as below

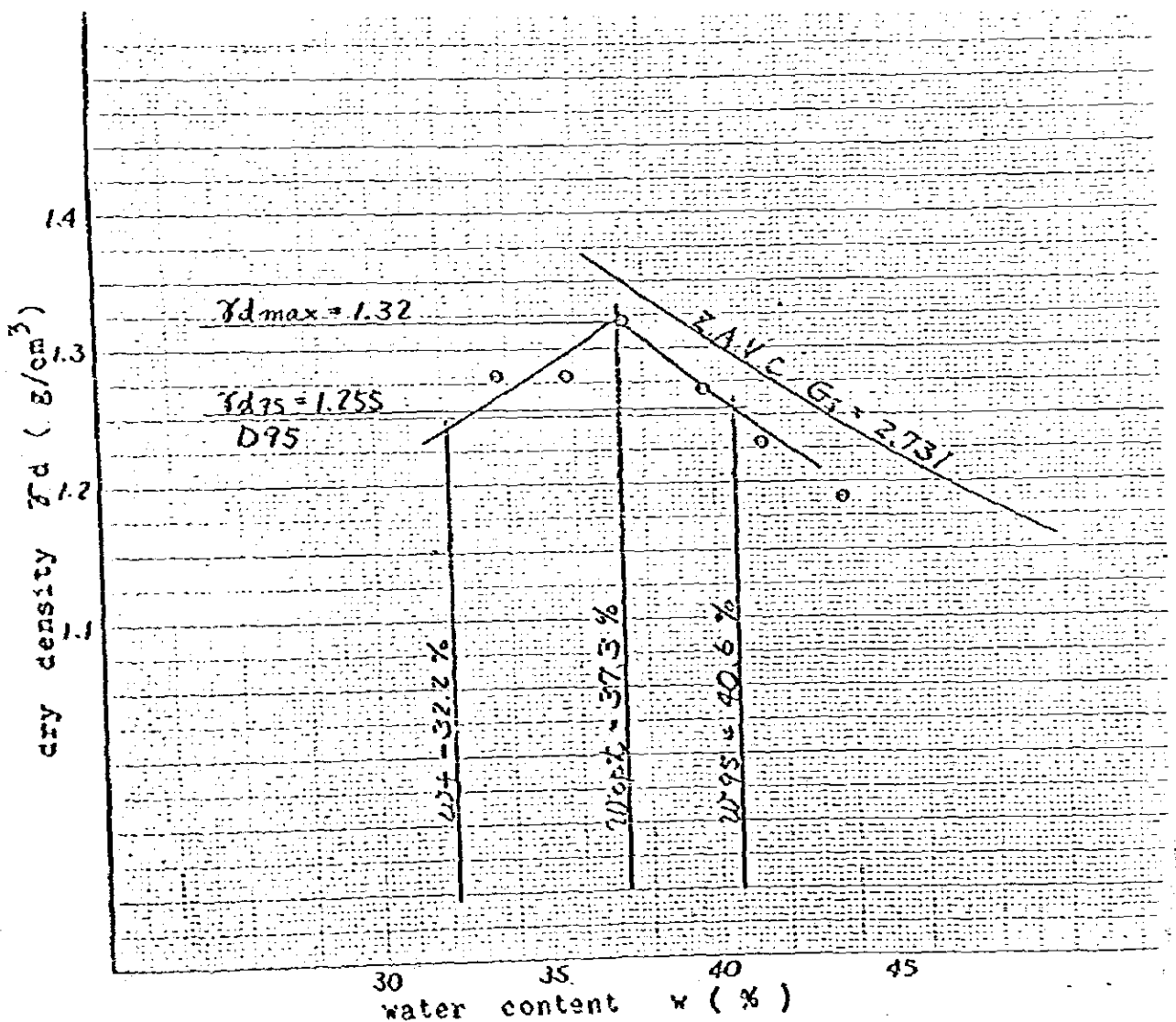
$$\gamma_d = \frac{G_s \cdot w}{1 + \frac{w \cdot G_s}{S}}$$

where  $G_s$  ; Specific gravity

$\gamma_w$  ; unit weight of water = 1 g/cm<sup>3</sup>

this equation corresponds to zero air void curve when *S* is 100%

	1	2	3	4	5	6
dry density $\gamma_d$ (g/cm <sup>3</sup> )	1.28	1.28	1.32	1.27	1.23	1.19
water content <i>w</i> (%)	33.7	35.8	37.4	39.7	41.4	43.7



# COMPACTION TEST

SAMPLE NAME *M.No 2 Z=1.5 m*

LOCATION

Optimum water content *23.1 %*, Max. dry density *1.51 g/cm<sup>3</sup>*

Relative equations for dry density  $\gamma_d$  (g/cm<sup>3</sup>), degree of saturation *S*%, water content *w*%, is shown as below

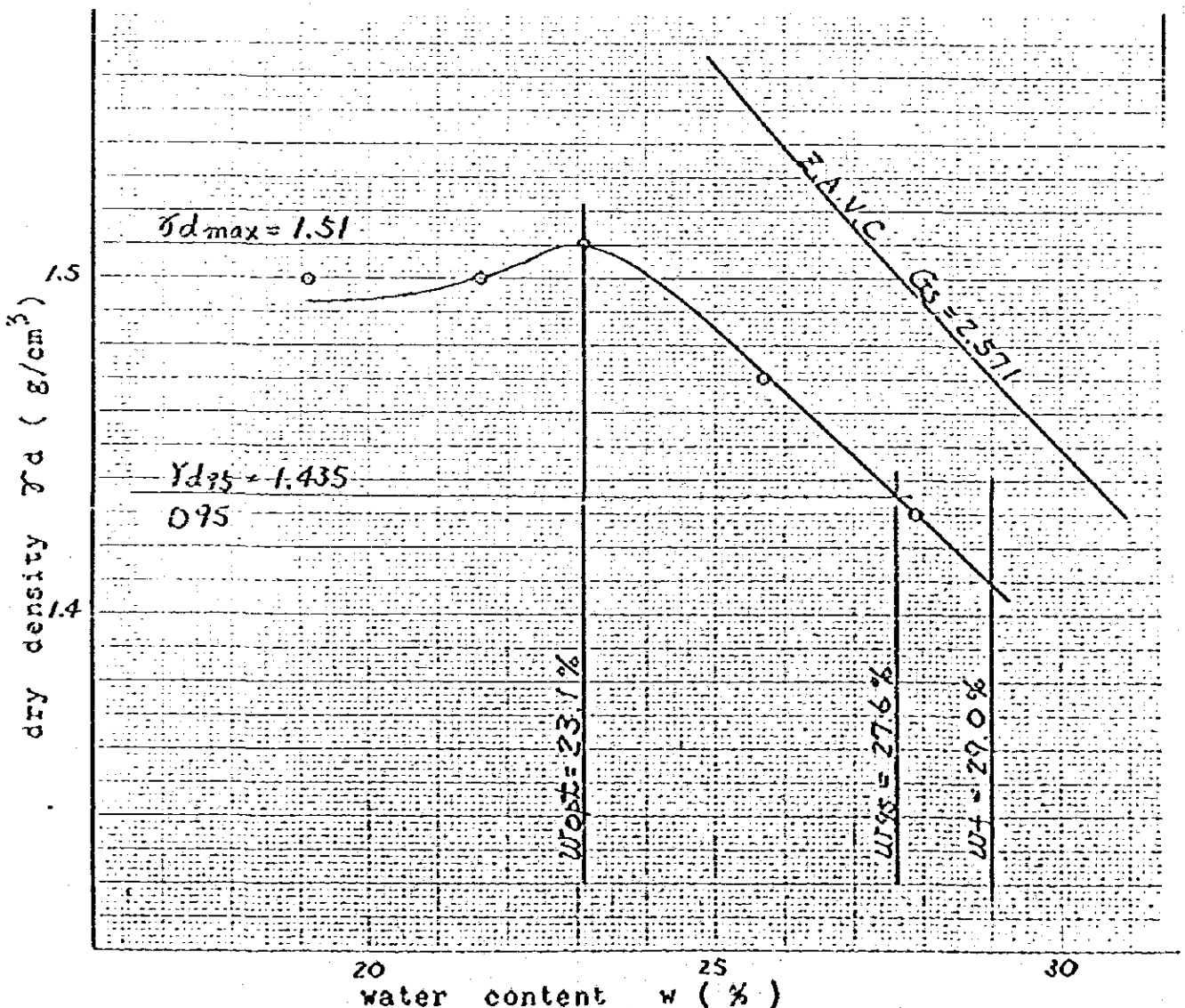
$$\gamma_d = \frac{G_s \cdot w}{1 + \frac{\gamma_w \cdot G_s}{S}}$$

where *G<sub>s</sub>* ; Specific gravity

$\gamma_w$  ; unit weight of water = 1 g/cm<sup>3</sup>

this equation corresponds to zero air void curve when *S* is 100%

	1	2	3	4	5	6
dry density $\gamma_d$ (g/cm <sup>3</sup> )	1.50	1.50	1.51	1.47	1.43	
water content <i>w</i> (%)	19.1	21.6	23.1	25.7	27.9	



# COMPACTION TEST

SAMPLE NAME *D.No 4 Z=1.0 m* LOCATION

Optimum water content *58.6 %*, Max. dry density *1.02 g/cm<sup>3</sup>*

Relative equations for dry density  $\gamma_d$  (g/cm<sup>3</sup>), degree of saturation *S*%, water content *w*%, is shown as below

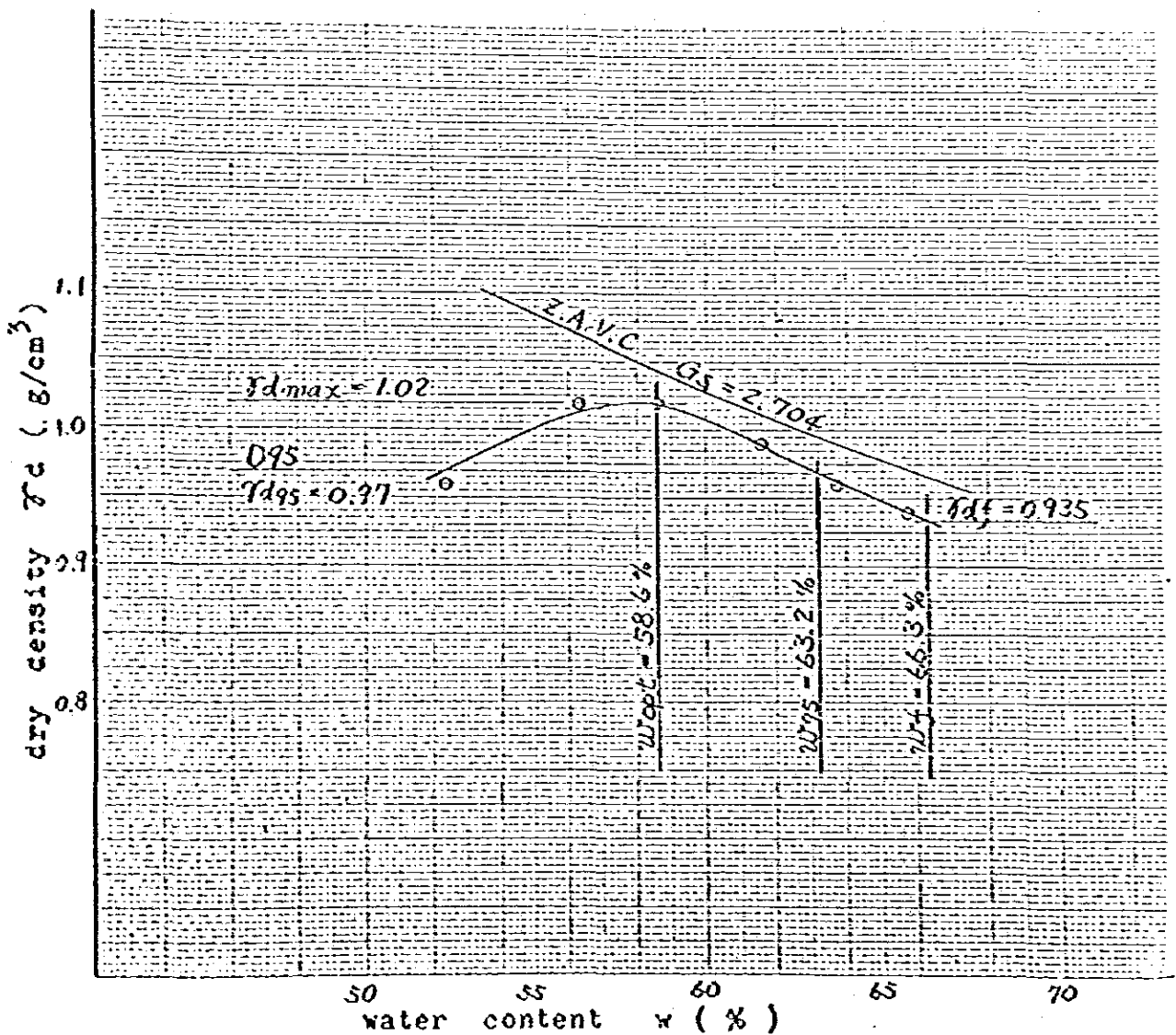
$$\gamma_d = \frac{G_s \cdot w}{1 + \frac{w}{S} \cdot G_s}$$

where  $G_s$  ; Specific gravity

$\gamma_w$  ; unit weight of water =  $1 \text{ g/cm}^3$

this equation corresponds to zero air void curve when *S* is 100%

	1	2	3	4	5	6
dry density $\gamma_d$ (g/cm <sup>3</sup> )	0.96	1.02	1.02	0.99	0.96	0.94
water content <i>w</i> (%)	52.4	56.3	58.6	61.6	63.7	65.7





# COMPACTION TEST

SAMPLE NAME *D. No 5 Z=1.0 m*

LOCATION

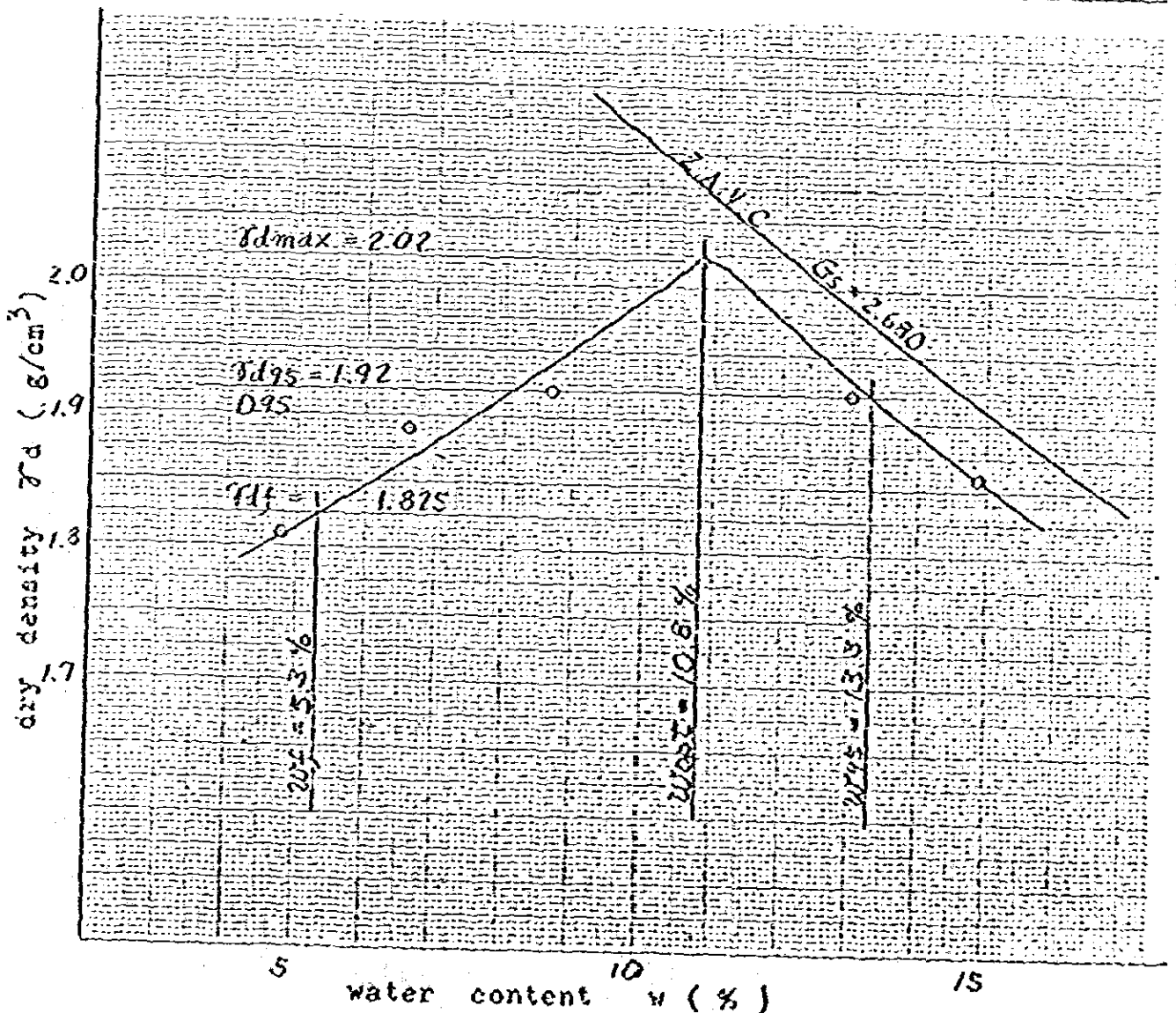
Optimum water content *10.8 %*, Max. dry density *2.02 g/cm<sup>3</sup>*

Relative equations for dry density  $\gamma_d$  g/cm<sup>3</sup>, degree of saturation *S*%, water content *w*%, is shown as below

$$\gamma_d = \frac{G_s \cdot w}{1 + \frac{w \cdot G_s}{S}}$$

where *G<sub>s</sub>* ; Specific gravity  
*w* ; unit weight of water = 1 g/cm<sup>3</sup>  
 this equation corresponds to zero air void curve when *S* is 100%

	1	2	3	4	5	6
dry density $\gamma_d$ (g/cm <sup>3</sup> )	1.81	1.89	1.92	2.02	1.92	1.85
water content <i>w</i> (%)	4.8	6.6	8.7	10.8	13.0	14.9





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