Fig. A 11

DRILL LOG

HOLE NO. SY-3 SHEET NO. 1 OF 2

PROJECT	REGIONAL WATER RESOURCES STUDY OF S.JOHORE - CORE DRILLING			DEPTH	35 metres
SITE	KG.SG.SAYONG PINANG, SAYONG	COORDINATE	: :	INCLINATION	Vertical
AVERAGE CORE RECOVERY		DATE	FROM 22-11-84 TO 29-11-84	DRILLED	

ELEVATION	
DRILL RIG	KOKEN OE-2L
LOGGED	K.Y.Wong

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	BIT & DIAMETER	GROUNDWATER LEVEL
	0		TOP SOIL		Medium stiff, dark brown, silty CLAY, with rootlets	76 mm	Full
	0·30		ALLUVIAL		Medium stiff, light brown, silty CLAY, little sand		
22	3·00						
	5				Medium dense, light brown, coarse to fine, silty SAND		
	6·00						
23	9·00		ALLUVIAL				
	10		RESIDUAL SOIL		Medium dense to dense, light grey and brown, coarse SAND (Decomposed granite)		
	10·50						
	12·00						
24							
	15	15·00					
25					Strong to very strong, shades of white and grey, with mottled black, partly fractured, biotite GRANITE		
	20	20·00			Fresh (CH-B)		
26		22·50			* Occasional light grey discoloration		
27	25	25·50					
28							
	30	30·0	GRANITE				

CORE RECOVERY %	cm	R.Q.D %	WATER PRESSURE TEST LUGEON VALUE AND STANDARD PENETRATION TEST
	94		Lu=541 K=5.4x10^{-3}
	10		6/30
	43		
	15		7/30
	38		
			10/30
			13/30
			14/30
			16/30
			17/30
			18/30
			26/30
	144	64%	
	130	100%	Lu<0.1 K=5.0x10^{-7}
	135		
	150	83%	
	140	66%	Lu=0.1 K=1.5x10^{-6}
	132	83%	
	138		
	136		Lu=0.1 K=1.3x10^{-6}
	134	100%	
	150		
	150		Lu=0.2 K=2.2x10^{-6}
	150	86%	
	138	78%	

HOLE NO. SY-3

LOG FORM B

*R.Q.D is Rock Quality Designation. R.Q.D = Total length of cylindric cores longer than 10 cm / Total core length × 100%
*LUGEON VALUE is L/min/m water injection water pressure of 10kg/cm²
*DEPTH and ELEVATION are in meter
*DIAMETER is in millimeter

NIPPON KOEI CO., LTD.
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Fig. A 12

DRILL LOG

HOLE NO. SY-3 SHEET NO. 2 OF 2

PROJECT	REGIONAL WATER RESOURCES STUDY OF S.JOHORE - CORE DRILLING	DEPTH 35 metres	ELEVATION
SITE	KG.SG.SAYONG PINANG,SAYONG COORDINATE	INCLINATION Vertical	DRILL RIG KOKEN OE-2L
AVERAGE CORE RECOVERY	DATE FROM 22-11-84 TO 29-11-84	DRILLED	LOGGED K.Y.Wong

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	BIT DIAMETER	GROUNDWATER LEVEL	CORE RECOVERY (cm)	R.Q.D (%)	WATER PRESSURE TEST LUGEON VALUE	DEPTH
	30										30
29			GRANITE		Strong to very strong, shades of white and grey, with mottled black, slightly fractured, biotite GRANITE Fresh (CH-B)	76mm		145 146 150 50	100% 90% 100%	Lu=0.1 K=1.0x10^{-6}	
	35				END OF BOREHOLE 35 m.						35

HOLE NO. SY-3

B FORM 207

*R.Q.D is Rock Quality Designation, R.Q.D = Total length of cylindric cores longer than 10 cm / Total core length × 100 %
*LUGEON VALUE is 1 min m under injection water pressure of 10kg/cm²
*DEPTH and ELEVATION are in meter
*DIAMETER is in millimeter

NIPPON KOEI CO., LTD.
CONSULTING ENGINEERS, TOKYO.

Fig. A 13

DRILL LOG

HOLE NO. SY-4 SHEET NO. 1 OF 1

PROJECT	REGIONAL WATER RESOURCES STUDY OF S.JOHORE - CORE DRILLING	DEPTH 30 metres	ELEVATION
SITE	KG.SG.SAYONG PINANG,SAYONG COORDINATE	INCLINATION Vertical	DRILL RIG KOKEN OE-2L
AVERAGE CORE RECOVERY	DATE FROM 9-12-84 TO 14-12-84	DRILLED	LOGGED K.Y.Wong

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	BIT DIAMETER	GROUNDWATER LEVEL
	0		TOP SOIL		Medium stiff, dark brown silty CLAY with rootlets	75 mm	
9	0-20						1-13m. Average for 6 days
					Medium stiff, light yellowish brown, silty CLAY, little gravelly sand		
	3-00						
	5		ALLUVIAL				
10	6-00				Stiff to very stiff, light brown with mottled white, sandy silty CLAY		
			ALLUVIAL				
	7-50				Medium dense, greyish white, fine to coarse, SAND		
	9-00		ALLUVIAL				
	10		RESIDUAL SOIL		Very stiff, reddish brown with mottled yellow, silty CLAY, some gravelly sand		
	11-00						
11	11-40		COMPLETELY WEATHERED GRANITE		Hard, grey and brown, gravelly fractured GRANITE fragments (D)		
	15-00						
12					Strong to very strong, shades of white and grey with mottled black, partly gractured, biotite GRANITE		
					Fresh (CH-B)		
	20-00						
13							
	24-90						
14			GRANITE				
	30				END OF BOREHOLE 30 m.		

CORE RECOVERY %	R.Q.D %	WATER PRESSURE TEST LUGEON VALUE AND STANDARD PENETRATION TEST
100		Lu=291 $K=3.6\times10^{-3}$
127		6/30
55		
125		6/30
55		
28		8/30
55		
28		9/30
55		
128		4/30
55		
41		Lu=157 $K=2.0\times10^{-3}$ 14/30
20		
30		18/30
30		
0		22/30
30		
41		19/30
50		
40		23/30
55		
20		50/25
150	90%	Lu=0.1 $K=1.8\times10^{-6}$
150	93%	
150	86%	
150	90%	Lu=0.2 $K=2.2\times10^{-6}$
150	100%	
150	60%	
150	66%	Lu=0.1 $K=1.8\times10^{-6}$
150		
150	93%	
150		
150	85%	Lu=0.1 $K=1.5\times10^{-6}$
150	66%	
60	83%	

HOLE NO. SY-4

LOG FORM B

※R.Q.D is Rock Quality Designation. R.Q.D = Total length of intact cores longer than 10 cm / Total core length × 100 %
※LUGEON VALUE is the loss of water under injection water pressure of 10kg/cm²
※DEPTH and ELEVATION are in meter
※DIAMETER is in millimeter

NIPPON KOEI CO., LTD.
CONSULTING ENGINEERS, TOKYO

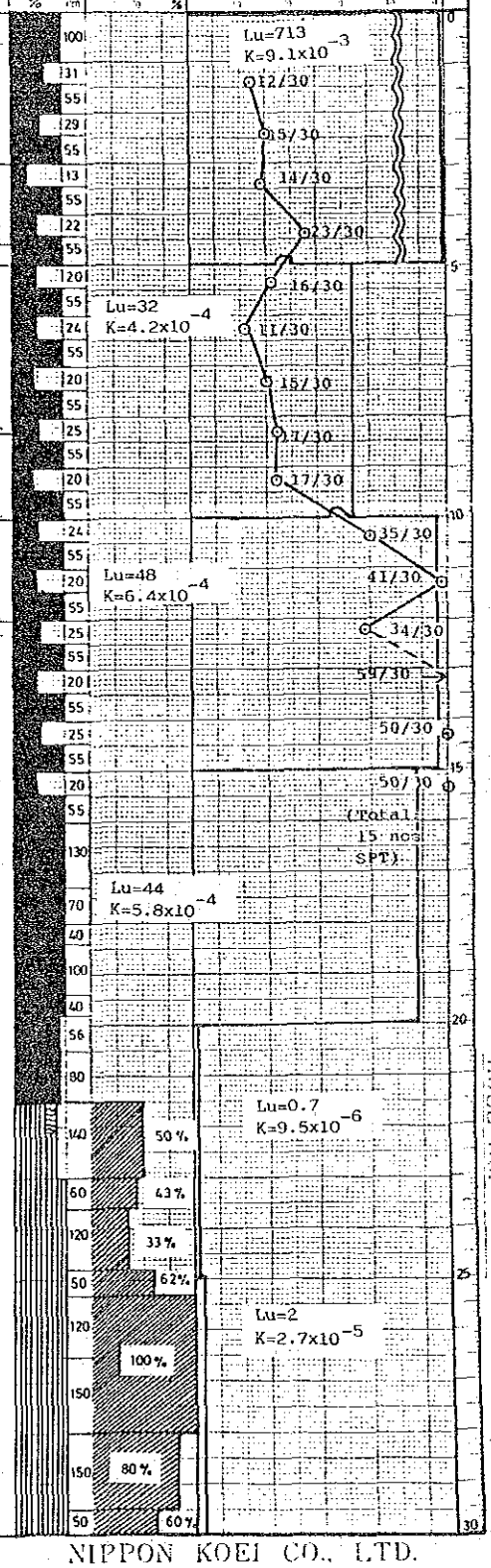
Fig. A 14

DRILL LOG

HOLE NO. SY-5 SHEET NO. 1 OF 2

PROJECT	REGIONAL WATER RESOURCES STUDY OF S.JOHORE - CORE DRILLING	DEPTH	35 metres
SITE	KG.SG.SAYONG PINANG,SAYONG	COORDINATE	
AVERAGE CORE RECOVERY		DATE	FROM 6-12-84 TO 14-12-84
INCLINATION	Vertical	DRILL RIG	KOKEN OE-2L
DRILLED	Hamzah	LOGGED	K.Y. Wong

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	BIT DIAMETER	GROUNDWATER LEVEL
6	1.50		TOP SOIL		Stiff, light brown, silty CLAY, little gravelly sand and plant rootlets near surface	65mm	Time: 0800 hr.
6	5.45		RESIDUAL SOIL		Stiff to very stiff, reddish brown, silty CLAY, little gravelly sand		3.00 m. 9 Dec. 11 Dec. 4.50 m. 5.00 m. 8 Dec. 8.30 m. 13 Dec.
7	9.50						
8	11.45		RESIDUAL SOIL AND COMPLETED WEATHERED GRANITE		Hard, light reddish brown with mottled white and yellow, silty CLAY, little gravelly sand		10.00 m. 14 & 15 Dec. 12.00 m. 10 Dec.
8	14.45						
9	16.00						
9	17.30		SOIL DERIVED FROM WEATHERED GRANITE		Hard, light brown with mottled yellow, silty CLAY, some gravelly sand (Partly D)		
10	20.00						
11	21.50						
11	23.00		GRANITE		Strong to very strong, shades of white and grey with mottled black, biotite GRANITE, occasional 40°-60° inclined fracture, Slightly weathered from 21.50m to 25.00m b.g.l.		
13	25.30						
14	30				Fresh (C_H)		



HOLE NO. SY-5

LOG FORM B

NIPPON KOEI CO., LTD.
CONSULTING ENGINEERS, TOKYO

*R.Q.D is Rock Quality Designation. R.Q.D = Total length of cylindric cores longer than 10 cm / Total core length × 100 %
*LUGEON VALUE is 1 cm in under specific water pressure of 10kg/cm
*DEPTH and ELEVATION are in meter
*DIAMETER is in millimeter

Fig. A 15

DRILL LOG

HOLE NO. SY-5 SHEET NO. 2 OF 2

PROJECT	REGIONAL WATER RESOURCES STUDY OF S.JOHORE - CORE DRILLING	DEPTH	35 metres
SITE	KG.SG.SAYONG PINANG,SAYONG COORDINATE :	INCLINATION	Vertical
AVERAGE CORE RECOVERY	DATE FROM 6-12-84 TO 16-12-84	DRILLED	Hamzah
ELEVATION		DRILL RIG	KOKEN OE-2L
		LOGGED	K.Y. Wong

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	BIT SIZE DIAMETER	GROUNDWATER LEVEL	CORE RECOVERY %	R.Q.D	WATER PRESSURE TEST LUGEON VALUE	DEPTH
	30		GRANITE		Strong to very strong, shades of white and grey, biotite GRANITE, vertically fractured from 32.5m to 34.0m b.g.l. (Fresh: C_H)	65mm		100 / 150 / 60 / 100	60% / 53% / 22% / 70%	Lu=2 $K=2.7\times10^{-5}$	30
	35				END OF BOREHOLE - 35m.						35

*RQD is Rock Quality Designation. RQD = Total length of cylinder cores longer than 10 cm / Total core length × 100 %
*LUGEON VALUE is 1 min in under injection water pressure of 10kg/cm
*DEPTH and ELEVATION are in meter
*DIAMETER is in millimeter

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HOLE NO. SY-5

LOG FORM II

Fig. A 16

DRILL LOG

HOLE NO. US-1 SHEET NO. 1 OF 2

PROJECT	REGIONAL WATER RESOURCES STUDY OF SOUTH JOHORE - CORE DRILLING	DEPTH	40 metres
SITE	Ulu Sedili	COORDINATE	
INCLINATION	Vertical	DRILL RIG	Koken OE-2L
AVERAGE CORE RECOVERY		DATE	FROM 28-11-84 TO 10-12-84
DRILLED	Ahmad	LOGGED	K.Y. Wong

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	HOLE DIAMETER	GROUNDWATER LEVEL
28	0 – 0.70		TOP SOIL		Medium stiff to stiff, light yellowish brown, silty CLAY	65 mm.	0800 hr.
	0.70 – 2.40		RESIDUAL SOIL		Stiff, reddish brown, silty CLAY, little gravelly sand		
	2.40 – 2.75		RESIDUAL SOIL		Very stiff to hard, yellowish brown, silty CLAY, little gravelly sand		
29	2.75 – 10.3		PHYLLITE		Hard or very weak, brownish grey, friable, PHYLLITE (Completely weathered - D)		6&7 Dec. 10.5m 11.0m 10&11 Dec. 12.2m 4 Dec. 12.8m 5 Dec.
3	10.3 – 20.0		PHYLLITE		Weak to moderately weak, brownish grey, blocky angular fractured, partly friable, PHYLLITE. Iron oxide stains from 18m. to 20m. B.G.L. Occasional fine matrix quartz veins (Moderately weathered) C_L - C_M		
5	20.0 – 29.5		PHYLLITE		Moderately weak to moderately strong, greyish black, blocky angular fractured, slightly friable, PHYLLITE with fine matrix quartz veins. Iron oxide stains from 20m. to 22m. B.G.L. Trace fine pyritization. Thick (75mm) quartz vein at 29.8m B.G.L. (Highly to moderately weathered - C_M)		

CORE RECOVERY %	cm	R. Q. D %	WATER PRESSURE TEST LUGEON VALUE AND STANDARD PENETRATION TEST	DEPTH
100				0
12				
55			8/30	
17				
55			12/30	
18			SPT Plot	
55			30/30	
17			Lu=0.3 K=3.6x10^{-6}	
60			50/25	
13				5
63			50/22	
13			50/13	
65				
14				
60			Lu=2 K=2.2x10^{-5} 50/25	
17			50/5	
40				
19			50/4	
40				10
22			50/18	
25				
14			50/7	
10				
9			50/6	
50			Lu=3 K=4.1x10^{-5}	
10			50/3	
50				
5			50/1	
5				15
100				
150		17%		
			Lu=4 K=5.9x10^{-5}	
110				
140		18%		20
120				
100		10%		
130		30%	Lu=4 K=5.5x10^{-5}	
50				
100				25
60				
60				
150		46%		
			Lu=11 K=1.4x10^{-4}	
90				
90				
50				30

HOLE NO. US-1

LOG FORM B

NIPPON KOEI CO., LTD.
CONSULTING ENGINEERS, TOKYO

*R.Q.D is Rock Quality Designation. R.Q.D= Total length of cylindrical cores longer than 10 cm / Total core length × 100
*LUGEON VALUE is water in inner injection water pressure of 10kg/cm²
*DEPTH and ELEVATION are in meter
*DIAMETER is in millimeter

Fig. A 17

DRILL LOG

HOLE NO. US-1 SHEET NO. 2 OF 2

PROJECT	REGIONAL WATER RESOURCES STUDY OF S.JOHORE - CORE DRILLING	DEPTH 40 metres	ELEVATION
SITE	Ulu Sedili / COORDINATE	INCLINATION Vertical	DRILL RIG Koken OE-2L
AVERAGE CORE RECOVERY	DATE FROM 28-11-84 TO 10-12-84	DRILLED Ahmad	LOGGED K.Y.Wong

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	BIT DIAMETER	GROUNDWATER LEVEL	CORE RECOVERY %	R.Q.D %	WATER PRESSURE TEST LUGEON VALUE	DEPTH
7	30					65 mm.		60, 80, 70			30
	32.1				Moderately weak to moderately strong, greyish black, blocky angular fractured, slighty friable, PHYLLITE with fine quartz matrix veins			10, 50, 40	30%	Lu=3 K=4.2x10^{-5}	
8								50, 90			
	35 35.4				Thick quartz vein from 39m to 39.5m B.G.L			65, 95			35
9					Trace fine pyritization			100		Lu=3 K=4.0x10^{-5}	
	39.3		PHYLLITE		(Moderately weathered) - C_M			130, 70	14%		
10	40 40.0				END OF BOREHOLE - 40m.						40

HOLE NO. US-1

NIPPON KOEI CO., LTD.
CONSULTING ENGINEERS, TOKYO.

*RQD is Rock Quality Designation. R.Q.D = Total length of cylinder cores longer than 10 cm / Total core length × 100 %
*WATER PRESSURE TEST : 1 min. in under injection water pressure of 10kg/cm
*DEPTH and ELEVATION are in meter
*DIAMETER is in millimeter

LOG FORM 0

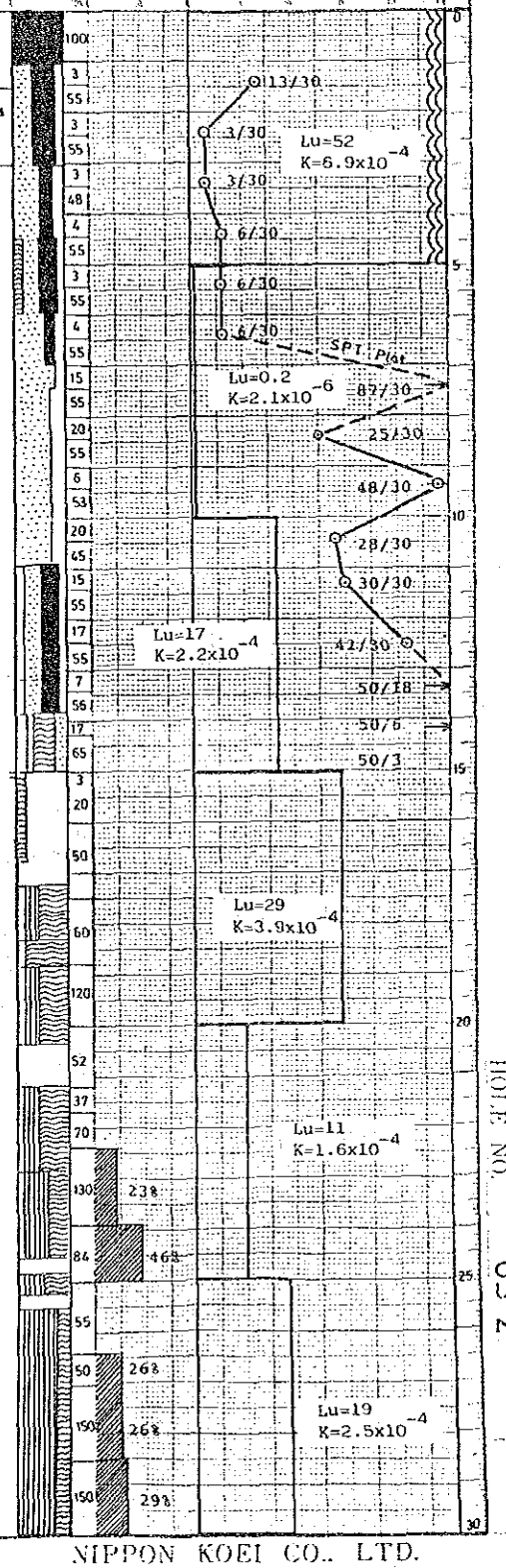
Fig. A 18

DRILL LOG

HOLE NO. US-2 SHEET NO. 1 OF 2

PROJECT	REGIONAL WATER RESOURCES STUDY OF S.JOHORE - CORE DRILLING	DEPTH 45 metres	ELEVATION
SITE	Ulu Sedili / COORDINATE	INCLINATION Vertical	DRILL No. Koken OE-2L
AVERAGE CORE RECOVERY	DATE FROM 25-10-84 TO 9-12-84	DRILLED Rosli	LOGGED K.Y.Wong

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	BIT DIAMETER	GROUNDWATER LEVEL
25	0 – 0.90		TOP SOIL		Yellowish brown, clayey SILT, little fine sand	65 mm.	Time: 0800 hr.
26	1.00 – 5.00		ALLUVIAL		Very loose to loose, Yellowish brown to light greyish, silty fine SAND		1.50 m. Average for 4 days; 3.00 m. Average for 10 days
	5.00 – 5.50		ALLUVIAL		Medium stiff, Light greyish, clayey SILT		
27	5.50 – 7.50		ALLUVIAL		Very dense, light yellowish white, clayey silty fine SAND		
28	7.50 – 11.0		ALLUVIAL		Medium dense to dense, Light yellowish brown to greyish white, medium to coarse SAND with trace sub-angular gravel		
29	11.0 – 13.3		SOIL DERIVED FROM WEATHERED PHYLLITE		Hard, greyish black, clayey SILT with gravelly fractured phyllite inclusion. (Residual soil - D)		
1	13.3 – 16.5		PHYLLITE		Hard or very weak, greyish black, gravelly fractured, friable, PHYLLITE, with occasional fine matrix quartz veins (Completely weathered) C_L - D		
2	16.5 – 21.2		PHYLLITE		Moderately weak, greyish black, blocky angular fractured, partly friable, PHYLLITE. Occasional fine matrix quartz veins and trace fine pyritization (Highly weathered - C_L)		
4	21.2 – 23.0		PHYLLITE		Moderately weak to moderately strong, greyish black, partly fractured, PHYLLITE. Occasional fine matrix quartz veins and trace fine pyritization (Moderately weathered) C_M		
5	23.0 – 26.5		PHYLLITE				
6	26.5 – 30		PHYLLITE				



HOLE NO. US-2

NIPPON KOEI CO., LTD.
CONSULTING ENGINEERS, TOKYO

*R.Q.D is Rock Quality Designation. R.Q.D = Total length of cylinder cores longer than 10 cm / Total core length × 100
*LUGEON VALUE is water in under injection water pressure of 10kg/cm
*DEPTH and ELEVATION are in meter
*DIAMETER is in millimeter

LOG FORM B

Fig. A 19

DRILL LOG

HOLE NO. US-2 SHEET NO. 2 OF 2

PROJECT	REGIONAL WATER RESOURCES STUDY OF S.JOHORE - CORE DRILLING	DEPTH	45 metres	ELEVATION	
SITE	Ulu Sedili	COORDINATE : :	INCLINATION	Vertical	DRILL RIG Koken OE-2L
AVERAGE CORE RECOVERY		DATE FROM 25-11-84 TO 9-12-84	DRILLED	Rosli	LOGGED K.Y.Wong

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	BIT & DIAMETER	GROUNDWATER LEVEL	CORE RECOVERY %	cm	R. Q. D %	WATER PRESSURE TEST LUGEON VALUE	DEPTH
6	30 – 32.7		PHYLLITE		Moderately strong to strong greyish black, slightly fractured, PHYLLITE with fine matrix quartz veins (Moderately weathered) C_M	65 mm			130, 140	75%, 65%	Lu=5 $K=6.4\times10^{-5}$	30
7	35 – 36.5		PHYLLITE		Moderately weak to moderately strong, greyish black, partly fractured, PHYLLITE with fine matrix quartz veins (Moderately weathered) C_M				60, 150, 150	17%, 42%		35
8	40 – 43.0		PHYLLITE		Moderately weak, greyish black, blocky angular fractured, PHYLLITE with fine matrix quartz veins (Moderately weathered) C_M				30, 15, 50, 120, 150, 150, 100, 65	27%	Lu=6 $K=8.4\times10^{-5}$; Lu=3 $K=3.5\times10^{-5}$	40
9	45				END OF BOREHOLE - 45 m.							45

HOLE NO. US-2

FORM B

*R.Q.D = Rock Quality Designation. R.Q.D = Total length of extended cores longer than 10 cm / Total core length × 100%

*LUGEON VALUE = 1 min. in under injection water pressure of 10kg/cm

*DEPTH and ELEVATION are in meter

*DIAMETER = in millimeter

NIPPON KOEI CO., LTD.

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Fig. A 20

DRILL LOG

HOLE NO. US-3 SHEET NO. 1 OF 2

PROJECT	REGIONAL WATER RESOURCES STUDY OF S. JOHORE - CORE DRILLING	DEPTH	39 metres
SITE	Ulu Sedili	COORDINATE	
INCLINATION	Vertical	ELEVATION	
DRILL RIG	Koken OE-2L	AVERAGE CORE RECOVERY	
DATE	FROM 11-12-84 TO 16-12-84	DRILLED	Rosli
LOGGED	K.Y.Wong		

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	BIT DIAMETER	GROUNDWATER LEVEL
	0 – 2.00		TOP SOIL		Very stiff, reddish brown, silty CLAY, some gravel	65mm	Time: 0800 hr.
	2.00 – 4.00		RESIDUAL SOIL		Medium stiff to stiff, reddish brown and yellow, silty CLAY, some gravelly sand		
11	4.00 – 8.00		RESIDUAL SOIL		Hard, reddish brown and greyish yellow, silty CLAY, some gravelly sand		4.90 m. Average for 5 days; 7.00 m. 13 Dec.
	8.00 – 9.30		PHYLLITE		Hard or very weak, reddish brown, friable, PHYLLITE, iron oxide discoloration (Completely weathered) C_L		
12	9.30 – 16.00		PHYLLITE		Very weak to weak, greyish black, friable, PHYLLITE. Fine matrix quartz veins, iron oxide discoloration & trace fine pyritization. Thick quartz vein from 14.5m to 15m B.G.L. (Highly weathered : C_L-C_M)		
13	16.00 – 23.60				Weak to moderately strong, greyish black, blocky angular fractured, PHYLLITE. Fine matrix quartz veins and fine pyritization. Thick quartz vein from 27.8m to 29.6m B.G.L.		
14	23.60 – 30		PHYLLITE		(Moderately weathered) C_M		

CORE RECOVERY (%) and R.Q.D (%):

Depth (m)	CORE RECOVERY (%)	R.Q.D (%)
0	100	
1	25	
2	55	
3	22	
4	55	
5	24	
6	55	
7	26	
8	55	
9	21	
10	55	
11	24	
12	50	
13	20	
14	25	
15	117	
16	75	
17	4	
18	125	
19	25	
20	50	
21	60	
22	20	
23	75	
24	50	
25	150	28 %
26	60	
27	140	15 %
28	130	7 %
29	100	
30	90	
31	115	
32	40	
33	145	
34	50	
35	55	
36	70	

WATER PRESSURE TEST LUGEON VALUE AND STANDARD PENETRATION TEST

- 28/30
- 7/30
- 20/30
- 43/30
- SPT Plot
- 50/26
- 41/30
- 50/2
- 50/20
- 50/3

Lu=2 K=2.1x10^{-5}

Lu=34 K=4.6x10^{-4}

Lu=4 K=4.8x10^{-5}

Lu=2 K=2.6x10^{-5}

Lu=16 K=2.1x10^{-4}

Lu=8 K=1.1x10^{-4}

HOLE NO. US-3

NIPPON KOEI CO., LTD.
CONSULTING ENGINEERS, TOKYO.

*R.Q.D is Rock Quality Designation. R.Q.D = Total length of cylindric cores longer than 10 cm / Total core length × 100
*LUGEON VALUE is 1 min in inter-section water pressure at 10kg/cm
*DEPTH and ELEVATION are in meter
*DIAMETER is in millimeter

LOG FORM B

Fig. A 21

DRILL LOG

HOLE NO. US-3 SHEET NO. 2 OF 2

PROJECT	REGIONAL WATER RESOURCES STUDY OF S.JOHORE - CORE DRILLING	DEPTH	39 metres	ELEVATION	
SITE	Oli Sedili	COORDINATE	: :	INCLINATION	Vertical	DRILL RIG	Koken OE-2L
AVERAGE CORE RECOVERY		DATE	FROM 11-12-84 TO 16-12-84	DRILLED	Rosli	LOGGED	K.Y.Wong

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	BIT & DIAMETER	GROUNDWATER LEVEL	CORE RECOVERY (cm)	R. Q. D (%)	WATER PRESSURE TEST LUGEON VALUE	DEPTH
14	30					65 mm		60			30
	30·60							150	18 %		
					Weak to moderately strong, greyish black, blocky angular fractured, PHYLLITE					Lu=8 K=1.1x10^{-4}	
15								150			
					Fine matrix quartz veins and fine pyritization.			50			
	35				Quartz veins inclusion, with thickness varying from 0.5m to 0.7m, occurring at regular intervals			150			35
	36·00							140			
16					(Moderately weathered) C_M			100		Lu=1 K=1.5x10^{-5}	
			PHYLLITE					100			
	39				END OF BOREHOLE 39 m.						39

*R.Q.D is Rock Quality Designation. R.Q.D = Total length of cylindric cores longer than 10 cm / Total core length × 100%.
*LUGEON VALUE is 1 min in under injection water pressure of 10kg/cm
*DEPTH and ELEVATION are in meter
*DIAMETER is in millimeter

NIPPON KOEI CO., LTD.
CONSULTING ENGINEERS, TOKYO.

HOLE NO. US-3

LOG FORM B

LIST OF TABLES

FOR

RESULT OF WATER PRESSURE TEST

Table B 1

RESULT OF WATER PRESSURE TEST

SOUTH JOHOR PERMEABILITY TEST 1985

BOREHOLE NUMBER : LINGGIU LG-1

DEPTH FROM	DEPTH TO	LENGTH TESTED	HOLE DIA.	PRESSURE READING	STATIC HEAD	GAUGE HEIGHT	FRICTION LOSS	TOTAL HEAD	WATER INJECTED	COEFFICIENT OF PERMEABILITY	LUGEON UNIT	STEP
m	m	m	cm	Kg/cm2	m	m	m	m	l/min	cm/sec	-	no
4.00	5.00	1.00	9.0	1.0	4.50	0.50	0.00	15.00	10.6	5.8E-04	70.7	1
4.00	5.00	1.00	9.0	2.5	4.50	0.50	0.00	30.00	100.3	2.8E-03	334.3	2
4.00	5.00	1.00	9.0	1.0	4.50	0.50	0.00	15.00	57.5	3.2E-03	383.3	3
7.00	10.00	3.00	9.0	1.0	8.50	0.50	0.00	19.00	9.9	1.9E-04	17.4	1
7.00	10.00	3.00	9.0	2.5	8.50	0.50	0.00	34.00	100.2	1.1E-03	98.2	2
7.00	10.00	3.00	9.0	1.0	8.50	0.50	0.00	19.00	51.2	1.0E-03	89.8	3
10.00	15.00	5.00	6.6	1.0	11.50	0.50	0.00	22.00	62.8	7.6E-04	57.1	1
10.00	15.00	5.00	6.6	2.0	11.50	0.50	0.00	32.00	100.1	8.3E-04	62.6	2
10.00	15.00	5.00	6.6	1.0	11.50	0.50	0.00	22.00	69.9	8.5E-04	63.5	3
15.00	20.00	5.00	6.6	1.0	11.50	0.50	0.00	22.00	50.1	6.1E-04	45.5	1
15.00	20.00	5.00	6.6	2.5	11.50	0.50	0.00	37.00	100.3	7.2E-04	54.2	2
15.00	20.00	5.00	6.6	1.0	11.50	0.50	0.00	22.00	51.5	6.2E-04	46.8	3
20.50	25.50	5.00	6.6	1.0	11.50	0.50	0.00	22.00	66.3	8.0E-04	60.3	1
20.50	25.50	5.00	6.6	2.5	11.50	0.50	0.00	37.00	100.3	7.2E-04	54.2	2
20.50	25.50	5.00	6.6	1.0	11.50	0.50	0.00	22.00	78.0	9.4E-04	70.9	3
25.00	30.00	5.00	6.6	1.0	11.50	0.50	0.00	22.00	1.3	1.6E-05	1.2	1
25.00	30.00	5.00	6.6	3.0	11.50	0.50	0.00	42.00	4.0	2.5E-05	1.9	2
25.00	30.00	5.00	6.6	6.0	11.50	0.50	0.00	72.00	100.3	3.7E-04	27.9	3
25.00	30.00	5.00	6.6	3.0	11.50	0.50	0.00	42.00	5.7	3.6E-05	2.7	4
25.00	30.00	5.00	6.6	1.0	11.50	0.50	0.00	22.00	1.5	1.8E-05	1.4	5
30.00	35.00	5.00	6.6	1.0	11.50	0.50	0.00	22.00	1.7	2.1E-05	1.5	1
30.00	35.00	5.00	6.6	3.0	11.50	0.50	0.00	42.00	7.6	4.8E-05	3.6	2
30.00	35.00	5.00	6.6	5.5	11.50	0.50	0.00	67.00	99.9	4.0E-04	29.8	3
30.00	35.00	5.00	6.6	3.0	11.50	0.50	0.00	42.00	10.3	6.5E-05	4.9	4
30.00	35.00	5.00	6.6	1.0	11.50	0.50	0.00	22.00	2.0	2.4E-05	1.8	5
35.00	40.00	5.00	6.6	1.0	11.50	0.50	0.00	22.00	2.6	3.1E-05	2.4	1
35.00	40.00	5.00	6.6	3.0	11.50	0.50	0.00	42.00	7.0	4.4E-05	3.3	2
35.00	40.00	5.00	6.6	6.0	11.50	0.50	0.00	72.00	100.2	3.7E-04	27.8	3
35.00	40.00	5.00	6.6	3.0	11.50	0.50	0.00	42.00	8.8	5.6E-05	4.2	4
35.00	40.00	5.00	6.6	1.0	11.50	0.50	0.00	22.00	3.2	3.9E-05	2.9	5

Table B 2

RESULT OF WATER PRESSURE TEST

SOUTH JOHOR PERMEABILITY TEST 1985

BOREHOLE NUMBER : LINGGIU LG-2

DEPTH FROM	DEPTH TO	LENGTH TESTED	HOLE DIA.	PRESSURE READING	STATIC HEAD	GAUGE HEIGHT	FRICTION LOSS	TOTAL HEAD	WATER INJECTED	COEFFICIENT OF PERMEABILITY	LUGEON UNIT	STEP
m	m	m	cm	Kg/cm2	m	m	m	m	l/min	cm/sec	-	no
0.00	5.00	5.00	6.6	1.0	2.50	0.50	0.00	13.00	93.6	1.9E-03	144.0	1
0.00	5.00	5.00	6.6	3.5	2.50	0.50	0.00	38.00	105.1	7.4E-04	55.3	2
0.00	5.00	5.00	6.6	1.0	2.50	0.50	0.00	13.00	90.6	1.9E-03	139.4	3
5.00	10.00	5.00	6.6	1.0	4.00	0.50	0.00	14.50	60.1	1.1E-03	82.9	1
5.00	10.00	5.00	6.6	2.0	4.00	0.50	0.00	24.50	103.7	1.1E-03	84.7	2
5.00	10.00	5.00	6.6	1.0	4.00	0.50	0.00	14.50	19.9	3.7E-04	27.4	3
10.00	15.00	5.00	6.6	1.0	4.00	0.50	0.00	14.50	55.3	1.0E-03	76.3	1
10.00	15.00	5.00	6.6	3.5	4.00	0.50	0.00	39.50	103.7	7.0E-04	52.5	2
10.00	15.00	5.00	6.6	1.0	4.00	0.50	0.00	14.50	54.4	10.0E-04	75.0	3
15.00	20.00	5.00	6.6	1.0	3.00	0.50	0.00	13.50	54.4	1.1E-03	80.6	1
15.00	20.00	5.00	6.6	3.0	3.00	0.50	0.00	33.50	104.4	8.3E-04	62.3	2
15.00	20.00	5.00	6.6	1.0	3.00	0.50	0.00	13.50	72.9	1.4E-03	108.0	3
20.00	25.00	5.00	6.6	1.0	3.50	0.50	0.00	14.00	76.0	1.4E-03	108.6	1
20.00	25.00	5.00	6.6	2.5	3.50	0.50	0.00	29.00	103.5	9.5E-04	71.4	2
20.00	25.00	5.00	6.6	1.0	3.50	0.50	0.00	14.00	70.6	1.3E-03	100.9	3
25.00	30.00	5.00	6.6	1.0	3.00	0.50	0.00	13.50	77.6	1.5E-03	115.0	1
25.00	30.00	5.00	6.6	3.0	3.00	0.50	0.00	33.50	102.7	8.2E-04	61.3	2
25.00	30.00	5.00	6.6	1.0	3.00	0.50	0.00	13.50	73.2	1.4E-03	108.4	3
30.00	35.00	5.00	6.6	1.0	3.00	0.50	0.00	13.50	63.4	1.3E-03	93.9	1
30.00	35.00	5.00	6.6	2.5	3.00	0.50	0.00	28.50	102.5	9.6E-04	71.9	2
30.00	35.00	5.00	6.6	1.0	3.00	0.50	0.00	13.50	63.4	1.3E-03	93.9	3
35.00	42.00	7.00	6.6	1.0	3.00	0.50	0.00	13.50	68.7	1.0E-03	72.7	1
35.00	42.00	7.00	6.6	4.0	3.00	0.50	0.00	43.50	96.7	4.5E-04	31.8	2
35.00	42.00	7.00	6.6	4.5	3.00	0.50	0.00	48.50	104.0	4.4E-04	30.6	3
35.00	42.00	7.00	6.6	4.0	3.00	0.50	0.00	43.50	91.8	4.3E-04	30.1	4
35.00	42.00	7.00	6.6	1.0	3.00	0.50	0.00	13.50	61.8	9.3E-04	65.4	5

Table B 3

RESULT OF WATER PRESSURE TEST

SOUTH JOHOR PERMEABILITY TEST 1985

BOREHOLE NUMBER : LINGGIU LG-3

DEPTH FROM	DEPTH TO	LENGTH TESTED	HOLE DIA.	PRESSURE READING	STATIC HEAD	GAUGE HEIGHT	FRICTION LOSS	TOTAL HEAD	WATER INJECTED	COEFFICIENT OF PERMEABILITY	LUGEON UNIT	STEP
m	m	m	cm	Kg/cm2	m	m	m	m	l/min	cm/sec	-	no
1.00	5.00	4.00	9.0	1.0	3.00	0.50	0.00	13.50	51.3	1.1E-03	95.0	1
1.00	5.00	4.00	9.0	2.0	3.00	0.50	0.00	23.50	101.3	1.3E-03	107.8	2
1.00	5.00	4.00	9.0	1.0	3.00	0.50	0.00	13.50	70.7	1.6E-03	130.9	3
5.00	10.00	5.00	9.0	1.0	7.50	0.50	0.00	18.00	53.8	7.5E-04	59.8	1
5.00	10.00	5.00	9.0	2.0	7.50	0.50	0.00	28.00	100.0	8.9E-04	71.4	2
5.00	10.00	5.00	9.0	1.0	7.50	0.50	0.00	18.00	81.4	1.1E-03	90.4	3
10.00	15.00	5.00	6.6	1.0	12.50	0.50	0.00	23.00	69.7	8.1E-04	60.6	1
10.00	15.00	5.00	6.6	2.5	12.50	0.50	0.00	38.00	101.0	7.1E-04	53.2	2
10.00	15.00	5.00	6.6	1.0	12.50	0.50	0.00	23.00	87.1	1.0E-03	75.7	3
15.00	20.00	5.00	6.6	1.0	12.50	0.50	0.00	23.00	101.3	1.2E-03	88.1	1
15.00	20.00	5.00	6.6	2.0	12.50	0.50	0.00	33.00	110.9	9.0E-04	67.2	2
15.00	20.00	5.00	6.6	1.0	12.50	0.50	0.00	23.00	96.4	1.1E-03	83.8	3
21.00	25.00	4.00	6.6	1.0	12.50	0.50	0.00	23.00	92.1	1.3E-03	100.1	1
21.00	25.00	4.00	6.6	2.0	12.50	0.50	0.00	33.00	107.2	1.0E-03	81.2	2
21.00	25.00	4.00	6.6	1.0	12.50	0.50	0.00	23.00	94.7	1.3E-03	102.9	3
25.00	30.00	5.00	6.6	1.0	12.50	0.50	0.00	23.00	80.0	9.3E-04	69.6	1
25.00	30.00	5.00	6.6	2.5	12.50	0.50	0.00	38.00	101.2	7.1E-04	53.3	2
25.00	30.00	5.00	6.6	1.0	12.50	0.50	0.00	23.00	73.7	8.5E-04	64.1	3
30.00	35.00	5.00	6.6	1.0	12.50	0.50	0.00	23.00	63.0	7.3E-04	54.8	1
30.00	35.00	5.00	6.6	2.5	12.50	0.50	0.00	38.00	101.6	7.1E-04	53.5	2
30.00	35.00	5.00	6.6	1.0	12.50	0.50	0.00	23.00	73.0	8.5E-04	63.5	3
35.00	40.00	5.00	6.6	1.0	12.50	0.50	0.00	23.00	44.7	5.2E-04	38.9	1
35.00	40.00	5.00	6.6	3.0	12.50	0.50	0.00	43.00	63.4	3.9E-04	29.5	2
35.00	40.00	5.00	6.6	4.0	12.50	0.50	0.00	53.00	101.5	5.1E-04	38.3	3
35.00	40.00	5.00	6.6	3.0	12.50	0.50	0.00	43.00	81.3	5.0E-04	37.8	4
35.00	40.00	5.00	6.6	1.0	12.50	0.50	0.00	23.00	48.3	5.6E-04	42.0	5

Table B 4

RESULT OF WATER PRESSURE TEST

SOUTH JOHOR PERMEABILITY TEST 1985

BOREHOLE NUMBER : SAYONG SY-1

DEPTH FROM	DEPTH TO	LENGTH TESTED	HOLE DIA.	PRESSURE READING	STATIC HEAD	GAUGE HEIGHT	FRICTION LOSS	TOTAL HEAD	WATER INJECTED	COEFFICIENT OF PERMEABILITY	LUGEON UNIT	STEP
m	m	m	cm	Kg/cm2	m	m	m	m	l/min	cm/sec	-	no
0.00	2.00	2.00	9.5	0.0	1.00	0.00	0.00	1.00	1.9	9.2E-04	92.7	1
10.00	15.00	5.00	7.6	1.0	6.00	0.80	0.00	16.80	0.6	9.2E-06	0.7	1
10.00	15.00	5.00	7.6	4.0	6.00	0.80	0.00	46.80	1.0	5.5E-06	0.4	2
10.00	15.00	5.00	7.6	7.0	6.00	0.80	0.00	76.80	0.5	1.7E-06	0.1	3
10.00	15.00	5.00	7.6	10.0	6.00	0.80	0.00	106.80	0.5	1.1E-06	0.1	4
10.00	15.00	5.00	7.6	7.0	6.00	0.80	0.00	76.80	0.1	3.4E-07	0.0	5
10.00	15.00	5.00	7.6	4.0	6.00	0.80	0.00	46.80	0.2	1.1E-06	0.1	6
10.00	15.00	5.00	7.6	1.0	6.00	0.80	0.00	16.80	0.1	1.5E-06	0.1	7
15.00	20.00	5.00	7.6	1.0	6.05	0.50	0.00	16.55	0.3	4.7E-06	0.4	1
15.00	20.00	5.00	7.6	4.0	6.05	0.50	0.00	46.55	0.4	2.2E-06	0.2	2
15.00	20.00	5.00	7.6	7.0	6.05	0.50	0.00	76.55	0.5	1.5E-06	0.1	3
15.00	20.00	5.00	7.6	10.0	6.05	0.50	0.00	106.55	0.6	1.5E-06	0.1	4
15.00	20.00	5.00	7.6	7.0	6.05	0.50	0.00	76.55	0.6	1.9E-06	0.1	5
15.00	20.00	5.00	7.6	4.0	6.05	0.50	0.00	46.55	0.3	1.4E-06	0.1	6
15.00	20.00	5.00	7.6	1.0	6.05	0.50	0.00	16.55	0.1	7.8E-07	0.1	7
20.00	25.00	5.00	7.6	1.0	6.00	0.40	0.00	16.40	0.2	3.2E-06	0.2	1
20.00	25.00	5.00	7.6	4.0	6.00	0.40	0.00	46.40	0.4	2.0E-06	0.2	2
20.00	25.00	5.00	7.6	7.0	6.00	0.40	0.00	76.40	0.4	1.2E-06	0.1	3
20.00	25.00	5.00	7.6	10.0	6.00	0.40	0.00	106.40	0.7	1.6E-06	0.1	4
20.00	25.00	5.00	7.6	7.0	6.00	0.40	0.00	76.40	0.5	1.7E-06	0.1	5
20.00	25.00	5.00	7.6	4.0	6.00	0.40	0.00	46.40	0.3	1.6E-06	0.1	6
20.00	25.00	5.00	7.6	1.0	6.00	0.40	0.00	16.40	0.1	1.6E-06	0.1	7
25.00	30.00	5.00	7.6	1.0	6.00	0.60	0.00	16.60	0.3	3.9E-06	0.3	1
25.00	30.00	5.00	7.6	4.0	6.00	0.60	0.00	46.60	0.5	2.5E-06	0.2	2
25.00	30.00	5.00	7.6	7.0	6.00	0.60	0.00	76.60	0.3	1.0E-06	0.1	3
25.00	30.00	5.00	7.6	10.0	6.00	0.60	0.00	106.60	0.6	1.5E-06	0.1	4
25.00	30.00	5.00	7.6	7.0	6.00	0.60	0.00	76.60	0.6	1.9E-06	0.1	5
25.00	30.00	5.00	7.6	4.0	6.00	0.60	0.00	46.60	0.4	1.9E-06	0.2	6
25.00	30.00	5.00	7.6	1.0	6.00	0.60	0.00	16.60	0.1	1.6E-06	0.1	7
30.00	35.00	5.00	7.6	1.0	6.00	0.72	0.00	16.72	0.8	1.2E-05	0.9	1
30.00	35.00	5.00	7.6	4.0	6.00	0.72	0.00	46.72	2.9	1.6E-05	1.2	2
30.00	35.00	5.00	7.6	7.0	6.00	0.72	0.00	76.72	1.8	6.1E-06	0.5	3
30.00	35.00	5.00	7.6	10.0	6.00	0.72	0.00	106.72	2.0	4.9E-06	0.4	4
30.00	35.00	5.00	7.6	7.0	6.00	0.72	0.00	76.72	1.5	5.1E-06	0.4	5
30.00	35.00	5.00	7.6	4.0	6.00	0.72	0.00	46.72	0.7	3.6E-06	0.3	6
30.00	35.00	5.00	7.6	1.0	6.00	0.72	0.00	16.72	0.2	2.3E-06	0.2	7

Table B 5

RESULT OF WATER PRESSURE TEST

SOUTH JOHOR PERMEABILITY TEST 1985

BOREHOLE NUMBER : SAYONG SY-2

DEPTH FROM	DEPTH TO	LENGTH TESTED	HOLE DIA.	PRESSURE READING	STATIC HEAD	GAUGE HEIGHT	FRICTION LOSS	TOTAL HEAD	WATER INJECTED	COEFFICIENT OF PERMEABILITY	LUGEON UNIT	STEP
m	m	m	cm	Kg/cm2	m	m	m	m	l/min	cm/sec	-	no
0.00	2.00	2.00	9.5	0.0	0.60	0.00	0.00	0.60	2.2	1.8E-03	185.2	1
15.00	20.00	5.00	7.6	1.0	0.00	0.70	0.00	10.70	0.6	1.3E-05	1.0	1
15.00	20.00	5.00	7.6	4.0	0.00	0.70	0.00	40.70	0.6	3.5E-06	0.3	2
15.00	20.00	5.00	7.6	7.0	0.00	0.70	0.00	70.70	0.4	1.3E-06	0.1	3
15.00	20.00	5.00	7.6	10.0	0.00	0.70	0.00	100.70	0.8	2.1E-06	0.2	4
15.00	20.00	5.00	7.6	7.0	0.00	0.70	0.00	70.70	0.7	2.5E-06	0.2	5
15.00	20.00	5.00	7.6	4.0	0.00	0.70	0.00	40.70	0.3	1.6E-06	0.1	6
15.00	20.00	5.00	7.6	1.0	0.00	0.70	0.00	10.70	0.2	3.6E-06	0.3	7
20.00	25.00	5.00	7.6	1.0	0.00	0.80	0.00	10.80	0.6	1.4E-05	1.1	1
20.00	25.00	5.00	7.6	4.0	0.00	0.80	0.00	40.80	0.4	2.2E-06	0.2	2
20.00	25.00	5.00	7.6	7.0	0.00	0.80	0.00	70.80	0.7	2.6E-06	0.2	3
20.00	25.00	5.00	7.6	10.0	0.00	0.80	0.00	100.80	1.0	2.6E-06	0.2	4
20.00	25.00	5.00	7.6	7.0	0.00	0.80	0.00	70.80	0.6	2.0E-06	0.2	5
20.00	25.00	5.00	7.6	4.0	0.00	0.80	0.00	40.80	0.4	2.2E-06	0.2	6
20.00	25.00	5.00	7.6	1.0	0.00	0.80	0.00	10.80	0.1	2.4E-06	0.2	7
25.00	30.00	5.00	7.6	1.0	0.00	0.76	0.00	10.76	0.6	1.3E-05	1.0	1
25.00	30.00	5.00	7.6	4.0	0.00	0.76	0.00	40.76	0.7	4.4E-06	0.3	2
25.00	30.00	5.00	7.6	7.0	0.00	0.76	0.00	70.76	0.7	2.6E-06	0.2	3
25.00	30.00	5.00	7.6	10.0	0.00	0.76	0.00	100.76	1.4	3.5E-06	0.3	4
25.00	30.00	5.00	7.6	7.0	0.00	0.76	0.00	70.76	0.5	1.6E-06	0.1	5
25.00	30.00	5.00	7.6	4.0	0.00	0.76	0.00	40.76	0.4	2.2E-06	0.2	6
25.00	30.00	5.00	7.6	1.0	0.00	0.76	0.00	10.76	0.1	1.2E-06	0.1	7

Table B 6

RESULT OF WATER PRESSURE TEST

SOUTH JOHOR PERMEABILITY TEST 1985

BOREHOLE NUMBER : SAYONG SY-3

DEPTH FROM	DEPTH TO	LENGTH TESTED	HOLE DIA.	PRESSURE READING	STATIC HEAD	GAUGE HEIGHT	FRICTION LOSS	TOTAL HEAD	WATER INJECTED	COEFFICIENT OF PERMEABILITY	LUGEON UNIT	STEP
m	m	m	cm	Kg/cm2	m	m	m	m	l/min	cm/sec	-	no
0.00	2.00	2.00	9.5	0.0	0.55	0.00	0.00	0.55	6.0	5.4E-03	541.1	1
10.00	15.00	5.00	7.6	1.0	0.53	2.00	0.00	12.53	0.2	3.1E-06	0.2	1
10.00	15.00	5.00	7.6	4.0	0.53	2.00	0.00	42.53	0.3	1.5E-06	0.1	2
10.00	15.00	5.00	7.6	7.0	0.53	2.00	0.00	72.53	0.4	1.2E-06	0.1	3
10.00	15.00	5.00	7.6	10.0	0.53	2.00	0.00	102.53	0.2	5.0E-07	0.0	4
10.00	15.00	5.00	7.6	7.0	0.53	2.00	0.00	72.53	0.3	1.1E-06	0.1	5
10.00	15.00	5.00	7.6	4.0	0.53	2.00	0.00	42.53	0.3	1.9E-06	0.1	6
10.00	15.00	5.00	7.6	1.0	0.53	2.00	0.00	12.53	0.2	4.1E-06	0.3	7
15.00	20.00	5.00	7.6	1.0	0.00	0.98	0.00	10.98	0.2	4.7E-06	0.4	1
15.00	20.00	5.00	7.6	4.0	0.00	0.98	0.00	40.98	0.3	1.9E-06	0.1	2
15.00	20.00	5.00	7.6	7.0	0.00	0.98	0.00	70.98	0.4	1.5E-06	0.1	3
15.00	20.00	5.00	7.6	10.0	0.00	0.98	0.00	100.98	0.6	1.3E-06	0.1	4
15.00	20.00	5.00	7.6	7.0	0.00	0.98	0.00	70.98	0.5	1.3E-06	0.1	5
15.00	20.00	5.00	7.6	4.0	0.00	0.98	0.00	40.98	0.3	1.6E-06	0.1	6
15.00	20.00	5.00	7.6	1.0	0.00	0.98	0.00	10.98	0.2	3.5E-06	0.3	7
20.00	25.00	5.00	7.6	1.0	0.00	0.44	0.00	10.44	0.2	5.0E-06	0.4	1
20.00	25.00	5.00	7.6	4.0	0.00	0.44	0.00	40.44	0.5	3.2E-06	0.2	2
20.00	25.00	5.00	7.6	7.0	0.00	0.44	0.00	70.44	0.6	2.2E-06	0.2	3
20.00	25.00	5.00	7.6	10.0	0.00	0.44	0.00	100.44	0.5	1.3E-06	0.1	4
20.00	25.00	5.00	7.6	7.0	0.00	0.44	0.00	70.44	0.5	1.8E-06	0.1	5
20.00	25.00	5.00	7.6	4.0	0.00	0.44	0.00	40.44	0.3	1.9E-06	0.1	6
20.00	25.00	5.00	7.6	1.0	0.00	0.44	0.00	10.44	0.1	2.5E-06	0.2	7
25.00	30.00	5.00	7.6	1.0	0.00	0.45	0.00	10.45	0.1	2.5E-06	0.2	1
25.00	30.00	5.00	7.6	4.0	0.00	0.45	0.00	40.45	0.1	6.4E-07	0.0	2
25.00	30.00	5.00	7.6	7.0	0.00	0.45	0.00	70.45	0.8	2.8E-06	0.2	3
25.00	30.00	5.00	7.6	10.0	0.00	0.45	0.00	100.45	0.9	2.2E-06	0.2	4
25.00	30.00	5.00	7.6	7.0	0.00	0.45	0.00	70.45	0.7	2.6E-06	0.2	5
25.00	30.00	5.00	7.6	4.0	0.00	0.45	0.00	40.45	0.6	3.5E-06	0.3	6
25.00	30.00	5.00	7.6	1.0	0.00	0.45	0.00	10.45	0.1	1.2E-06	0.1	7
30.00	35.00	5.00	7.6	1.0	0.00	0.87	0.00	10.87	0.2	4.8E-06	0.4	1
30.00	35.00	5.00	7.6	4.0	0.00	0.87	0.00	40.87	0.2	9.5E-07	0.1	2
30.00	35.00	5.00	7.6	7.0	0.00	0.87	0.00	70.87	0.4	1.3E-06	0.1	3
30.00	35.00	5.00	7.6	10.0	0.00	0.87	0.00	100.87	0.4	1.0E-06	0.1	4
30.00	35.00	5.00	7.6	7.0	0.00	0.87	0.00	70.87	0.3	1.1E-06	0.1	5
30.00	35.00	5.00	7.6	4.0	0.00	0.87	0.00	40.87	0.3	1.9E-06	0.1	6
30.00	35.00	5.00	7.6	1.0	0.00	0.87	0.00	10.87	0.1	2.4E-06	0.2	7

Table B 7

RESULT OF WATER PRESSURE TEST

SOUTH JOHOR PERMEABILITY TEST 1985

BOREHOLE NUMBER : SAYONG SY-4

DEPTH FROM	DEPTH TO	LENGTH TESTED	HOLE DIA.	PRESSURE READING	STATIC HEAD	GAUGE HEIGHT	FRICTION LOSS	TOTAL HEAD	WATER INJECTED	COEFFICIENT OF PERMEABILITY	LUGEON UNIT	STEP
m	m	m	cm	Kg/cm2	m	m	m	m	l/min	cm/sec	-	no
0.00	5.00	5.00	9.5	0.0	1.20	1.90	0.00	3.10	45.1	3.6E-03	290.6	1
5.00	10.00	5.00	8.8	0.0	1.37	1.87	0.00	3.24	25.5	2.0E-03	157.1	1
10.00	15.00	5.00	7.6	1.0	1.37	1.90	0.00	13.27	0.2	4.5E-06	0.3	1
10.00	15.00	5.00	7.6	4.0	1.37	1.90	0.00	43.27	0.4	2.2E-06	0.2	2
10.00	15.00	5.00	7.6	7.0	1.37	1.90	0.00	73.27	0.5	1.6E-06	0.1	3
10.00	15.00	5.00	7.6	10.0	1.37	1.90	0.00	103.27	0.7	1.8E-06	0.1	4
10.00	15.00	5.00	7.6	7.0	1.37	1.90	0.00	73.27	0.4	1.3E-06	0.1	5
10.00	15.00	5.00	7.6	4.0	1.37	1.90	0.00	43.27	0.2	1.1E-06	0.1	6
10.00	15.00	5.00	7.6	1.0	1.37	1.90	0.00	13.27	0.1	2.7E-06	0.2	7
15.00	20.00	5.00	7.6	1.0	1.45	1.76	0.00	13.21	0.2	3.5E-06	0.3	1
15.00	20.00	5.00	7.6	4.0	1.45	1.76	0.00	43.21	0.3	1.9E-06	0.1	2
15.00	20.00	5.00	7.6	7.0	1.45	1.76	0.00	73.21	0.6	2.1E-06	0.2	3
15.00	20.00	5.00	7.6	10.0	1.45	1.76	0.00	103.21	0.9	2.2E-06	0.2	4
15.00	20.00	5.00	7.6	7.0	1.45	1.76	0.00	73.21	0.5	1.8E-06	0.1	5
15.00	20.00	5.00	7.6	4.0	1.45	1.76	0.00	43.21	0.3	1.6E-06	0.1	6
15.00	20.00	5.00	7.6	1.0	1.45	1.76	0.00	13.21	0.2	3.5E-06	0.3	7
20.00	25.00	5.00	7.6	1.0	1.47	1.84	0.00	13.31	0.1	2.7E-06	0.2	1
20.00	25.00	5.00	7.6	4.0	1.47	1.84	0.00	43.31	0.3	1.6E-06	0.1	2
20.00	25.00	5.00	7.6	7.0	1.47	1.84	0.00	73.31	0.4	1.3E-06	0.1	3
20.00	25.00	5.00	7.6	10.0	1.47	1.84	0.00	103.31	0.7	1.9E-06	0.1	4
20.00	25.00	5.00	7.6	7.0	1.47	1.84	0.00	73.31	0.6	1.9E-06	0.2	5
20.00	25.00	5.00	7.6	4.0	1.47	1.84	0.00	43.31	0.3	1.6E-06	0.1	6
20.00	25.00	5.00	7.6	1.0	1.47	1.84	0.00	13.31	0.1	1.8E-06	0.1	7
25.00	30.00	5.00	7.6	1.0	1.18	1.92	0.00	13.10	0.1	2.8E-06	0.2	1
25.00	30.00	5.00	7.6	4.0	1.18	1.92	0.00	43.10	0.3	1.9E-06	0.1	2
25.00	30.00	5.00	7.6	7.0	1.18	1.92	0.00	73.10	0.5	1.6E-06	0.1	3
25.00	30.00	5.00	7.6	10.0	1.18	1.92	0.00	103.10	0.6	1.5E-06	0.1	4
25.00	30.00	5.00	7.6	7.0	1.18	1.92	0.00	73.10	0.2	6.4E-07	0.0	5
25.00	30.00	5.00	7.6	4.0	1.18	1.92	0.00	43.10	0.1	5.4E-07	0.0	6
25.00	30.00	5.00	7.6	1.0	1.18	1.92	0.00	13.10	0.1	1.8E-06	0.1	7

Table B 8

RESULT OF WATER PRESSURE TEST

SOUTH JOHOR PERMEABILITY TEST 1985

BOREHOLE NUMBER : SAYONG SY-5

DEPTH FROM	DEPTH TO	LENGTH TESTED	HOLE DIA.	PRESSURE READING	STATIC HEAD	GAUGE HEIGHT	FRICTION LOSS	TOTAL HEAD	WATER INJECTED	COEFFICIENT OF PERMEABILITY	LUGEON UNIT	STEP
m	m	m	cm	Kg/cm2	m	m	m	m	l/min	cm/sec	-	no
1.00	5.00	4.00	6.6	0.0	3.00	0.50	0.00	3.50	99.8	9.1E-03	712.9	1
5.00	10.00	5.00	6.6	1.0	5.00	0.50	0.00	15.50	9.6	1.6E-04	12.4	1
5.00	10.00	5.00	6.6	3.5	5.00	0.50	0.00	40.50	64.2	4.2E-04	31.7	2
5.00	10.00	5.00	6.6	1.0	5.00	0.50	0.00	15.50	18.6	3.2E-04	24.0	3
10.00	15.00	5.00	6.6	1.0	3.00	0.50	0.00	13.50	6.4	1.3E-04	9.5	1
10.00	15.00	5.00	6.6	3.0	3.00	0.50	0.00	33.50	81.0	6.4E-04	48.4	2
10.00	15.00	5.00	6.6	1.0	3.00	0.50	0.00	13.50	35.8	7.1E-04	53.0	3
15.00	20.00	5.00	6.6	1.0	12.00	0.50	0.00	22.50	19.8	2.3E-04	17.6	1
15.00	20.00	5.00	6.6	2.0	12.00	0.50	0.00	32.50	6.8	5.6E-05	4.2	2
15.00	20.00	5.00	6.6	3.0	12.00	0.50	0.00	42.50	92.4	5.8E-04	43.5	3
15.00	20.00	5.00	6.6	2.0	12.00	0.50	0.00	32.50	8.2	6.7E-05	5.0	4
15.00	20.00	5.00	6.6	1.0	12.00	0.50	0.00	22.50	6.8	8.1E-05	6.0	5
20.00	25.00	5.00	6.6	1.0	8.30	0.50	0.00	18.80	1.0	1.4E-05	1.1	1
20.00	25.00	5.00	6.6	4.0	8.30	0.50	0.00	48.80	2.0	1.1E-05	0.8	2
20.00	25.00	5.00	6.6	7.0	8.30	0.50	0.00	78.80	2.8	9.5E-06	0.7	3
20.00	25.00	5.00	6.6	4.0	8.30	0.50	0.00	48.80	1.8	9.8E-06	0.7	4
20.00	25.00	5.00	6.6	1.0	8.30	0.50	0.00	18.80	1.0	1.4E-05	1.1	5
25.00	30.00	5.00	6.6	1.0	5.00	0.50	0.00	15.50	1.6	2.7E-05	2.1	1
25.00	30.00	5.00	6.6	4.0	5.00	0.50	0.00	45.50	4.0	2.3E-05	1.8	2
25.00	30.00	5.00	6.6	7.0	5.00	0.50	0.00	75.50	7.6	2.7E-05	2.0	3
25.00	30.00	5.00	6.6	4.0	5.00	0.50	0.00	45.50	3.6	2.1E-05	1.6	4
25.00	30.00	5.00	6.6	1.0	5.00	0.50	0.00	15.50	1.8	3.1E-05	2.3	5
30.00	35.00	5.00	6.6	1.0	10.00	0.50	0.00	20.50	3.0	3.9E-05	2.9	1
30.00	35.00	5.00	6.6	4.0	10.00	0.50	0.00	50.50	5.6	3.0E-05	2.2	2
30.00	35.00	5.00	6.6	7.0	10.00	0.50	0.00	80.50	8.2	2.7E-05	2.0	3
30.00	35.00	5.00	6.6	4.0	10.00	0.50	0.00	50.50	5.4	2.8E-05	2.1	4
30.00	35.00	5.00	6.6	1.0	10.00	0.50	0.00	20.50	2.2	2.9E-05	2.1	5

Table B 9

RESULT OF WATER PRESSURE TEST

SOUTH JOHOR PERMEABILITY TEST 1985

BOREHOLE NUMBER : SEDILI US-1

DEPTH FROM	DEPTH TO	LENGTH TESTED	HOLE DIA.	PRESSURE READING	STATIC HEAD	GAUGE HEIGHT	FRICTION LOSS	TOTAL HEAD	WATER INJECTED	COEFFICIENT OF PERMEABILITY	LUGEON UNIT	STEP
m	m	m	cm	Kg/cm2	m	m	m	m	l/min	cm/sec	-	no
0.00	5.00	5.00	6.6	0.0	2.50	0.00	0.00	2.50	0.0	3.6E-06	0.3	1
5.00	10.00	5.00	6.6	1.0	1.00	1.70	0.00	12.70	0.7	1.5E-05	1.1	1
5.00	10.00	5.00	6.6	3.0	1.00	1.70	0.00	32.70	1.2	9.4E-06	0.7	2
5.00	10.00	5.00	6.6	7.0	1.00	1.70	0.00	72.70	5.9	2.2E-05	1.6	3
5.00	10.00	5.00	6.6	10.0	1.00	1.70	0.00	102.70	8.5	2.2E-05	1.7	4
5.00	10.00	5.00	6.6	7.0	1.00	1.70	0.00	72.70	4.4	1.6E-05	1.2	5
5.00	10.00	5.00	6.6	5.0	1.00	1.70	0.00	52.70	3.8	1.9E-05	1.4	6
5.00	10.00	5.00	6.6	3.0	1.00	1.70	0.00	32.70	1.1	8.8E-06	0.7	7
5.00	10.00	5.00	6.6	1.0	1.00	1.70	0.00	12.70	0.4	9.2E-06	0.7	8
10.00	15.00	5.00	6.6	1.0	12.20	0.50	0.00	22.70	2.3	2.7E-05	2.0	1
10.00	15.00	5.00	6.6	2.0	12.20	0.50	0.00	32.70	3.3	2.7E-05	2.0	2
10.00	15.00	5.00	6.6	3.0	12.20	0.50	0.00	42.70	5.2	3.2E-05	2.4	3
10.00	15.00	5.00	6.6	4.0	12.20	0.50	0.00	52.70	7.3	3.7E-05	2.8	4
10.00	15.00	5.00	6.6	5.0	12.20	0.50	0.00	62.70	9.6	4.1E-05	3.0	5
10.00	15.00	5.00	6.6	4.0	12.20	0.50	0.00	52.70	8.8	4.4E-05	3.3	6
10.00	15.00	5.00	6.6	3.0	12.20	0.50	0.00	42.70	6.7	4.1E-05	3.1	7
10.00	15.00	5.00	6.6	2.0	12.20	0.50	0.00	32.70	3.9	3.2E-05	2.4	8
10.00	15.00	5.00	6.6	1.0	12.20	0.50	0.00	22.70	2.7	3.2E-05	2.4	9
15.00	20.00	5.00	6.6	1.0	12.30	0.80	0.00	23.10	4.1	4.7E-05	3.5	1
15.00	20.00	5.00	6.6	2.0	12.30	0.80	0.00	33.10	6.4	5.2E-05	3.9	2
15.00	20.00	5.00	6.6	3.0	12.30	0.80	0.00	43.10	9.3	5.7E-05	4.3	3
15.00	20.00	5.00	6.6	4.0	12.30	0.80	0.00	53.10	11.1	5.5E-05	4.2	4
15.00	20.00	5.00	6.6	5.0	12.30	0.80	0.00	63.10	14.0	5.9E-05	4.4	5
15.00	20.00	5.00	6.6	4.0	12.30	0.80	0.00	53.10	12.6	6.3E-05	4.7	6
15.00	20.00	5.00	6.6	3.0	12.30	0.80	0.00	43.10	10.0	6.1E-05	4.6	7
15.00	20.00	5.00	6.6	2.0	12.30	0.80	0.00	33.10	7.5	6.0E-05	4.5	8
15.00	20.00	5.00	6.6	1.0	12.30	0.80	0.00	23.10	4.9	5.6E-05	4.2	9
20.00	25.00	5.00	6.6	1.0	10.50	1.55	0.00	22.05	4.8	5.7E-05	4.3	1
20.00	25.00	5.00	6.6	3.0	10.50	1.55	0.00	42.05	5.8	3.7E-05	2.8	2
20.00	25.00	5.00	6.6	5.0	10.50	1.55	0.00	62.05	9.2	3.9E-05	3.0	3
20.00	25.00	5.00	6.6	6.0	10.50	1.55	0.00	72.05	14.9	5.5E-05	4.1	4
20.00	25.00	5.00	6.6	5.0	10.50	1.55	0.00	62.05	10.3	4.4E-05	3.3	5
20.00	25.00	5.00	6.6	3.0	10.50	1.55	0.00	42.05	6.9	4.3E-05	3.3	6
20.00	25.00	5.00	6.6	1.0	10.50	1.55	0.00	22.05	4.8	5.8E-05	4.4	7
25.50	30.15	4.65	6.6	1.0	10.50	1.50	0.00	22.00	6.1	7.8E-05	5.9	1
25.50	30.15	4.65	6.6	3.0	10.50	1.50	0.00	42.00	11.0	7.4E-05	5.6	2
25.50	30.15	4.65	6.6	5.0	10.50	1.50	0.00	62.00	13.8	6.3E-05	4.8	3
25.50	30.15	4.65	6.6	6.0	10.50	1.50	0.00	72.00	35.9	1.4E-04	10.7	4
25.50	30.15	4.65	6.6	5.0	10.50	1.50	0.00	62.00	15.0	6.8E-05	5.2	5
25.50	30.15	4.65	6.6	3.0	10.50	1.50	0.00	42.00	11.0	7.4E-05	5.6	6

Table B10

RESULT OF WATER PRESSURE TEST

SOUTH JOHOR PERMEABILITY TEST 1985

BOREHOLE NUMBER : SEDILI US-1

DEPTH FROM	DEPTH TO	LENGTH TESTED	HOLE DIA.	PRESSURE READING	STATIC HEAD	GAUGE HEIGHT	FRICTION LOSS	TOTAL HEAD	WATER INJECTED	COEFFICIENT OF PERMEABILITY	LUGEON UNIT	STEP
m	m	m	cm	Kg/cm2	m	m	m	m	l/min	cm/sec	-	no
25.50	30.15	4.65	6.6	1.0	10.50	1.50	0.00	22.00	7.1	9.2E-05	7.0	7
30.00	35.40	5.40	6.6	1.0	11.00	1.50	0.00	22.50	3.2	3.6E-05	2.6	1
30.00	35.40	5.40	6.6	3.0	11.00	1.50	0.00	42.50	5.0	3.0E-05	2.2	2
30.00	35.40	5.40	6.6	7.0	11.00	1.50	0.00	82.50	13.8	4.2E-05	3.1	3
30.00	35.40	5.40	6.6	3.0	11.00	1.50	0.00	42.50	5.8	3.4E-05	2.5	4
30.00	35.40	5.40	6.6	1.0	11.00	1.50	0.00	22.50	3.6	4.0E-05	3.0	5
35.00	40.00	5.00	6.6	1.0	11.00	1.50	0.00	22.50	4.9	5.8E-05	4.3	1
35.00	40.00	5.00	6.6	3.0	11.00	1.50	0.00	42.50	5.9	3.7E-05	2.8	2
35.00	40.00	5.00	6.6	5.0	11.00	1.50	0.00	62.50	8.5	3.6E-05	2.7	3
35.00	40.00	5.00	6.6	7.0	11.00	1.50	0.00	82.50	12.4	4.0E-05	3.0	4
35.00	40.00	5.00	6.6	5.0	11.00	1.50	0.00	62.50	9.1	3.9E-05	2.9	5
35.00	40.00	5.00	6.6	3.0	11.00	1.50	0.00	42.50	6.4	4.0E-05	3.0	6
35.00	40.00	5.00	6.6	1.0	11.00	1.50	0.00	22.50	5.2	6.1E-05	4.6	7

Table B11

RESULT OF WATER PRESSURE TEST

SOUTH JOHOR PERMEABILITY TEST 1985

BOREHOLE NUMBER : SEDILI US-2

DEPTH FROM	DEPTH TO	LENGTH TESTED	HOLE DIA.	PRESSURE READING	STATIC HEAD	GAUGE HEIGHT	FRICTION LOSS	TOTAL HEAD	WATER INJECTED	COEFFICIENT OF PERMEABILITY	LUGEON UNIT	STEP
m	m	m	cm	Kg/cm2	m	m	m	m	l/min	cm/sec	-	no
0.00	5.00	5.00	6.6	0.0	2.50	0.00	0.00	2.50	6.5	6.9E-04	51.8	1
5.00	10.00	5.00	6.6	1.0	3.00	0.00	0.00	13.00	0.1	2.1E-06	0.2	1
10.00	15.00	5.00	6.6	1.0	0.70	0.70	0.00	11.40	5.2	1.2E-04	9.1	1
10.00	15.00	5.00	6.6	3.0	0.70	0.70	0.00	31.40	10.7	9.1E-05	6.8	2
10.00	15.00	5.00	6.6	5.0	0.70	0.70	0.00	51.40	17.7	9.2E-05	6.9	3
10.00	15.00	5.00	6.6	7.0	0.70	0.70	0.00	71.40	32.6	1.2E-04	9.1	4
10.00	15.00	5.00	6.6	10.0	0.70	0.70	0.00	101.40	85.4	2.2E-04	16.8	5
10.00	15.00	5.00	6.6	7.0	0.70	0.70	0.00	71.40	27.1	1.0E-04	7.6	6
10.00	15.00	5.00	6.6	5.0	0.70	0.70	0.00	51.40	19.9	1.0E-04	7.7	7
10.00	15.00	5.00	6.6	3.0	0.70	0.70	0.00	31.40	12.8	1.1E-04	8.1	8
10.00	15.00	5.00	6.6	1.0	0.70	0.70	0.00	11.40	5.6	1.3E-04	9.8	9
15.00	20.00	5.00	6.6	1.0	0.70	0.70	0.00	11.40	10.4	2.4E-04	18.2	1
15.00	20.00	5.00	6.6	3.0	0.70	0.70	0.00	31.40	31.4	2.7E-04	20.0	2
15.00	20.00	5.00	6.6	5.0	0.70	0.70	0.00	51.40	75.0	3.9E-04	29.2	3
15.00	20.00	5.00	6.6	3.0	0.70	0.70	0.00	31.40	63.2	5.4E-04	40.3	4
15.00	20.00	5.00	6.6	1.0	0.70	0.70	0.00	11.40	44.2	1.0E-03	77.5	5
18.00	25.00	7.00	6.6	1.0	1.50	0.76	0.00	12.26	10.1	1.7E-04	11.8	1
18.00	25.00	7.00	6.6	3.0	1.50	0.76	0.00	32.26	18.5	1.2E-04	8.2	2
18.00	25.00	7.00	6.6	5.0	1.50	0.76	0.00	52.26	19.7	7.7E-05	5.4	3
18.00	25.00	7.00	6.6	7.0	1.50	0.76	0.00	72.26	55.4	1.6E-04	11.0	4
18.00	25.00	7.00	6.6	5.0	1.50	0.76	0.00	52.26	45.8	1.8E-04	12.5	5
18.00	25.00	7.00	6.6	3.0	1.50	0.76	0.00	32.26	29.8	1.9E-04	13.2	6
18.00	25.00	7.00	6.6	1.0	1.50	0.76	0.00	12.26	13.9	2.3E-04	16.2	7
25.00	30.00	5.00	6.6	1.0	3.00	1.30	0.00	14.30	11.3	2.1E-04	15.8	1
25.00	30.00	5.00	6.6	3.0	3.00	1.30	0.00	34.30	15.5	1.2E-04	9.0	2
25.00	30.00	5.00	6.6	5.0	3.00	1.30	0.00	54.30	39.8	2.0E-04	14.7	3
25.00	30.00	5.00	6.6	8.0	3.00	1.30	0.00	84.30	78.6	2.5E-04	18.6	4
25.00	30.00	5.00	6.6	5.0	3.00	1.30	0.00	54.30	45.9	2.3E-04	16.9	5
25.00	30.00	5.00	6.6	3.0	3.00	1.30	0.00	34.30	15.6	1.2E-04	9.1	6
25.00	30.00	5.00	6.6	1.0	3.00	1.30	0.00	14.30	9.6	1.8E-04	13.4	7
30.00	35.00	5.00	6.6	1.0	3.00	2.50	0.00	15.50	4.4	7.6E-05	5.7	1
30.00	35.00	5.00	6.6	3.0	3.00	2.50	0.00	35.50	5.0	3.8E-05	2.8	2
30.00	35.00	5.00	6.6	5.0	3.00	2.50	0.00	55.50	10.8	5.2E-05	3.9	3
30.00	35.00	5.00	6.6	7.0	3.00	2.50	0.00	75.50	14.0	4.9E-05	3.7	4
30.00	35.00	5.00	6.6	9.0	3.00	2.50	0.00	95.50	22.9	6.4E-05	4.8	5
30.00	35.00	5.00	6.6	5.0	3.00	2.50	0.00	55.50	9.2	4.4E-05	3.3	6
30.00	35.00	5.00	6.6	3.0	3.00	2.50	0.00	35.50	5.9	4.4E-05	3.3	7
30.00	35.00	5.00	6.6	1.0	3.00	2.50	0.00	15.50	3.9	6.7E-05	5.0	8
35.00	40.00	5.00	6.6	1.0	1.50	2.50	0.00	14.00	3.9	7.4E-05	5.6	1
35.00	40.00	5.00	6.6	3.0	1.50	2.50	0.00	34.00	6.0	4.7E-05	3.5	2

Table B 12

RESULT OF WATER PRESSURE TEST

SOUTH JOHOR PERMEABILITY TEST 1985

BOREHOLE NUMBER : SEDILI US-2

DEPTH FROM	DEPTH TO	LENGTH TESTED	HOLE DIA.	PRESSURE READING	STATIC HEAD	GAUGE HEIGHT	FRICTION LOSS	TOTAL HEAD	WATER INJECTED	COEFFICIENT OF PERMEABILITY	LUGEON UNIT	STEP
m	m	m	cm	Kg/cm2	m	m	m	m	l/min	cm/sec	-	no
35.00	40.00	5.00	6.6	5.0	1.50	2.50	0.00	54.00	10.4	5.1E-05	3.8	3
35.00	40.00	5.00	6.6	7.0	1.50	2.50	0.00	74.00	18.6	6.7E-05	5.0	4
35.00	40.00	5.00	6.6	9.0	1.50	2.50	0.00	94.00	29.6	8.4E-05	6.3	5
35.00	40.00	5.00	6.6	7.0	1.50	2.50	0.00	74.00	20.8	7.5E-05	5.6	6
35.00	40.00	5.00	6.6	5.0	1.50	2.50	0.00	54.00	12.9	6.4E-05	4.8	7
35.00	40.00	5.00	6.6	3.0	1.50	2.50	0.00	34.00	6.6	5.2E-05	3.9	8
35.00	40.00	5.00	6.6	1.0	1.50	2.50	0.00	14.00	4.0	7.6E-05	5.7	9
40.00	45.00	5.00	6.6	1.0	1.50	0.80	0.00	12.30	1.0	2.2E-05	1.6	1
40.00	45.00	5.00	6.6	3.0	1.50	0.80	0.00	32.30	2.9	2.4E-05	1.8	2
40.00	45.00	5.00	6.6	5.0	1.50	0.80	0.00	52.30	4.7	2.4E-05	1.8	3
40.00	45.00	5.00	6.6	8.0	1.50	0.80	0.00	82.30	10.9	3.5E-05	2.7	4
40.00	45.00	5.00	6.6	5.0	1.50	0.80	0.00	52.30	5.1	2.6E-05	1.9	5
40.00	45.00	5.00	6.6	3.0	1.50	0.80	0.00	32.30	3.6	3.0E-05	2.2	6
40.00	45.00	5.00	6.6	1.0	1.50	0.80	0.00	12.30	1.2	2.5E-05	1.9	7

Table B13

RESULT OF WATER PRESSURE TEST

SOUTH JOHOR PERMEABILITY TEST 1985

BOREHOLE NUMBER : SEDILI US-3

DEPTH FROM	DEPTH TO	LENGTH TESTED	HOLE DIA.	PRESSURE READING	STATIC HEAD	GAUGE HEIGHT	FRICTION LOSS	TOTAL HEAD	WATER INJECTED	COEFFICIENT OF PERMEABILITY	LUGEON UNIT	STEP
m	m	m	cm	Kg/cm2	m	m	m	m	l/min	cm/sec	-	no
0.00	5.00	5.00	6.6	0.0	2.50	0.00	0.00	2.50	0.2	2.1E-05	1.6	1
5.00	10.00	5.00	6.6	1.0	5.00	1.00	0.00	16.00	12.4	2.1E-04	15.5	1
5.00	10.00	5.00	6.6	3.0	5.00	1.00	0.00	36.00	38.5	2.9E-04	21.4	2
5.00	10.00	5.00	6.6	5.0	5.00	1.00	0.00	56.00	96.1	4.6E-04	34.3	3
5.00	10.00	5.00	6.6	3.0	5.00	1.00	0.00	36.00	44.9	3.3E-04	25.0	4
5.00	10.00	5.00	6.6	1.0	5.00	1.00	0.00	16.00	19.9	3.3E-04	24.8	5
10.00	15.00	5.00	6.6	1.0	5.00	1.20	0.00	16.20	0.7	1.1E-05	0.8	1
10.00	15.00	5.00	6.6	3.0	5.00	1.20	0.00	36.20	1.9	1.4E-05	1.1	2
10.00	15.00	5.00	6.6	5.0	5.00	1.20	0.00	56.20	6.9	3.3E-05	2.4	3
10.00	15.00	5.00	6.6	7.0	5.00	1.20	0.00	76.20	10.5	3.7E-05	2.7	4
10.00	15.00	5.00	6.6	10.0	5.00	1.20	0.00	106.20	19.3	4.8E-05	3.6	5
10.00	15.00	5.00	6.6	5.0	5.00	1.20	0.00	56.20	7.1	3.3E-05	2.5	6
10.00	15.00	5.00	6.6	3.0	5.00	1.20	0.00	36.20	2.2	1.6E-05	1.2	7
10.00	15.00	5.00	6.6	1.0	5.00	1.20	0.00	16.20	0.9	1.5E-05	1.1	8
15.00	20.00	5.00	6.6	1.0	0.70	1.10	0.00	11.80	2.7	6.1E-05	4.6	1
15.00	20.00	5.00	6.6	3.0	0.70	1.10	0.00	31.80	3.7	3.1E-05	2.3	2
15.00	20.00	5.00	6.6	5.0	0.70	1.10	0.00	51.80	5.2	2.7E-05	2.0	3
15.00	20.00	5.00	6.6	7.0	0.70	1.10	0.00	71.80	8.0	3.0E-05	2.2	4
15.00	20.00	5.00	6.6	10.0	0.70	1.10	0.00	101.80	10.1	2.6E-05	2.0	5
15.00	20.00	5.00	6.6	7.0	0.70	1.10	0.00	71.80	8.9	3.3E-05	2.5	6
15.00	20.00	5.00	6.6	5.0	0.70	1.10	0.00	51.80	5.9	3.0E-05	2.3	7
15.00	20.00	5.00	6.6	3.0	0.70	1.10	0.00	31.80	4.2	3.5E-05	2.6	8
15.00	20.00	5.00	6.6	1.0	0.70	1.10	0.00	11.80	3.1	6.9E-05	5.2	9
20.00	25.15	5.15	6.6	1.0	4.80	1.20	0.00	16.00	8.8	1.4E-04	10.6	1
20.00	25.15	5.15	6.6	3.0	4.80	1.20	0.00	36.00	14.5	1.0E-04	7.8	2
20.00	25.15	5.15	6.6	5.0	4.80	1.20	0.00	56.00	29.0	1.3E-04	10.1	3
20.00	25.15	5.15	6.6	7.0	4.80	1.20	0.00	76.00	57.3	2.0E-04	14.6	4
20.00	25.15	5.15	6.6	10.0	4.80	1.20	0.00	106.00	84.6	2.1E-04	15.5	5
20.00	25.15	5.15	6.6	7.0	4.80	1.20	0.00	76.00	62.8	2.1E-04	16.0	6
20.00	25.15	5.15	6.6	5.0	4.80	1.20	0.00	56.00	31.8	1.5E-04	11.0	7
20.00	25.15	5.15	6.6	3.0	4.80	1.20	0.00	36.00	18.5	1.3E-04	10.0	8
20.00	25.15	5.15	6.6	1.0	4.80	1.20	0.00	16.00	10.5	1.7E-04	12.7	9
25.00	30.60	5.60	6.6	1.0	4.80	1.70	0.00	16.50	5.1	7.6E-05	5.6	1
25.00	30.60	5.60	6.6	3.0	4.80	1.70	0.00	36.50	7.6	5.1E-05	3.7	2
25.00	30.60	5.60	6.6	5.0	4.80	1.70	0.00	56.50	12.7	5.5E-05	4.0	3
25.00	30.60	5.60	6.6	7.0	4.80	1.70	0.00	76.50	22.3	7.1E-05	5.2	4
25.00	30.60	5.60	6.6	10.0	4.80	1.70	0.00	106.50	48.5	1.1E-04	8.1	5
25.00	30.60	5.60	6.6	7.0	4.80	1.70	0.00	76.50	25.1	8.0E-05	5.9	6
25.00	30.60	5.60	6.6	5.0	4.80	1.70	0.00	56.50	14.4	6.2E-05	4.5	7
25.00	30.60	5.60	6.6	3.0	4.80	1.70	0.00	36.50	9.1	6.1E-05	4.5	8

Table B14

RESULT OF WATER PRESSURE TEST

SOUTH JOHOR PERMEABILITY TEST 1985

BOREHOLE NUMBER : SEDILI US-3

DEPTH FROM	DEPTH TO	LENGTH TESTED	HOLE DIA.	PRESSURE READING	STATIC HEAD	GAUGE HEIGHT	FRICTION LOSS	TOTAL HEAD	WATER INJECTED	COEFFICIENT OF PERMEABILITY	LUGEON UNIT	STEP
m	m	m	cm	Kg/cm2	m	m	m	m	l/min	cm/sec	-	no
25.00	30.60	5.60	6.6	1.0	4.80	1.70	0.00	16.50	5.5	8.1E-05	6.0	9
30.00	35.60	5.60	6.6	1.0	4.80	1.70	0.00	16.50	9.0	1.3E-04	9.7	1
30.00	35.60	5.60	6.6	3.0	4.80	1.70	0.00	36.50	13.4	8.9E-05	6.5	2
30.00	35.60	5.60	6.6	5.0	4.80	1.70	0.00	56.50	21.8	9.4E-05	6.9	3
30.00	35.60	5.60	6.6	7.0	4.80	1.70	0.00	76.50	35.1	1.1E-04	8.2	4
30.00	35.60	5.60	6.6	10.0	4.80	1.70	0.00	106.50	48.9	1.1E-04	8.2	5
30.00	35.60	5.60	6.6	7.0	4.80	1.70	0.00	76.50	35.6	1.1E-04	8.3	6
30.00	35.60	5.60	6.6	5.0	4.80	1.70	0.00	56.50	25.1	1.1E-04	7.9	7
30.00	35.60	5.60	6.6	3.0	4.80	1.70	0.00	36.50	14.1	9.4E-05	6.9	8
30.00	35.60	5.60	6.6	1.0	4.80	1.70	0.00	16.50	10.3	1.5E-04	11.2	9
35.00	39.00	4.00	6.6	1.0	4.80	0.70	0.00	15.50	0.2	3.1E-06	0.2	1
35.00	39.00	4.00	6.6	3.0	4.80	0.70	0.00	35.50	0.9	8.2E-06	0.6	2
35.00	39.00	4.00	6.6	5.0	4.80	0.70	0.00	55.50	2.0	1.1E-05	0.9	3
35.00	39.00	4.00	6.6	7.0	4.80	0.70	0.00	75.50	3.9	1.6E-05	1.3	4
35.00	39.00	4.00	6.6	10.0	4.80	0.70	0.00	105.50	5.1	1.5E-05	1.2	5
35.00	39.00	4.00	6.6	7.0	4.80	0.70	0.00	75.50	4.2	1.8E-05	1.4	6
35.00	39.00	4.00	6.6	5.0	4.80	0.70	0.00	55.50	1.9	1.1E-05	0.9	7
35.00	39.00	4.00	6.6	3.0	4.80	0.70	0.00	35.50	0.9	8.1E-06	0.6	8
35.00	39.00	4.00	6.6	1.0	4.80	0.70	0.00	15.50	0.1	2.9E-06	0.2	9

LIST OF FIGURES

FOR

RESULT OF WATER PRESSURE TEST

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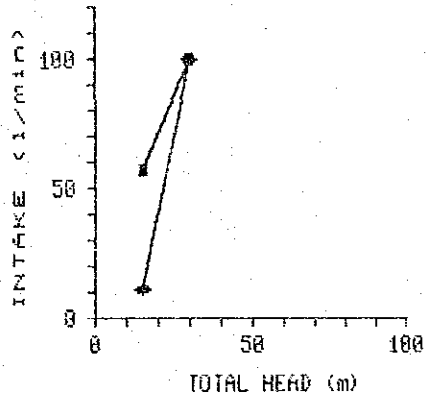
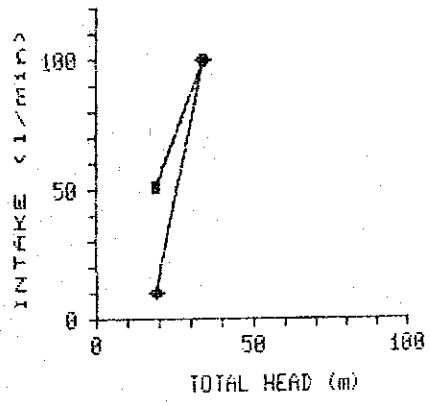
Fig C 1

HOLE No : LINGGIU LG-1
DEPTH : 4 - 5 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	15.0	10.6	70.7	5.8E-04
2	30.0	100.3	334.3	2.8E-03
3	15.0	57.5	383.3	3.2E-03

HOLE No : LINGGIU LG-1
DEPTH : 7 - 10 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	19.0	9.9	17.4	1.9E-04
2	34.0	100.2	98.2	1.1E-03
3	19.0	51.2	89.8	1.0E-03

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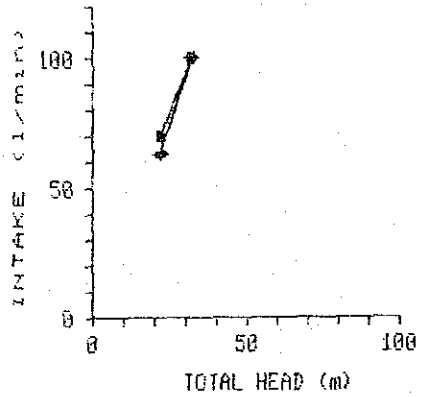
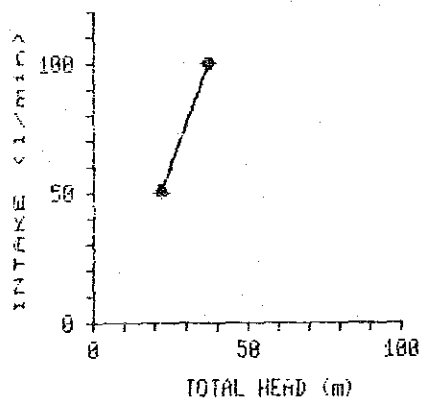
Fig C 2

HOLE No : LINGGIU LG-1
DEPTH : 10 - 15 m



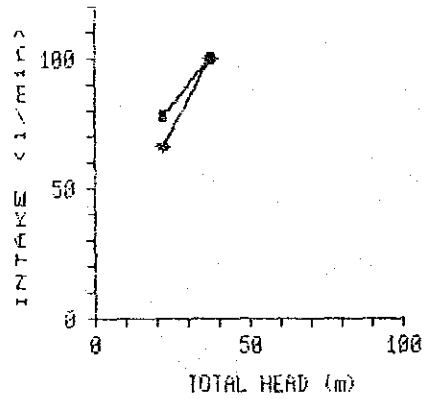
STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	22.0	62.8	57.1	7.6E-04
2	32.0	100.1	62.6	8.3E-04
3	22.0	69.9	63.5	8.5E-04

HOLE No : LINGGIU LG-1
DEPTH : 15 - 20 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	22.0	50.1	45.5	6.1E-04
2	37.0	100.3	54.2	7.2E-04
3	22.0	51.5	46.8	6.2E-04

HOLE No : LINGGIU LG-1
DEPTH : 20.5 - 25.5 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	22.0	66.3	60.3	8.0E-04
2	37.0	100.3	54.2	7.2E-04
3	22.0	78.0	70.9	9.4E-04

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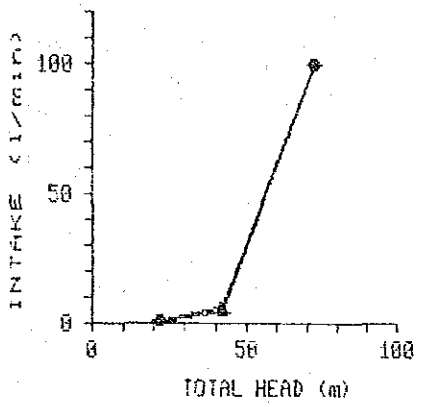
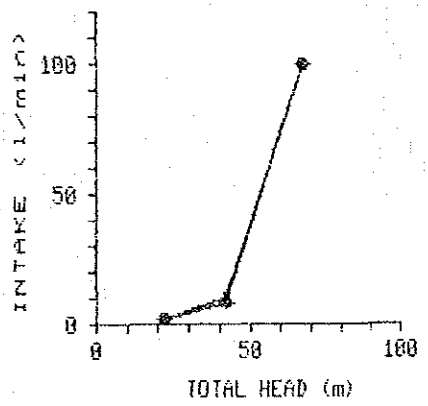
Fig C 3

HOLE No : LINGGIU LG-1
DEPTH : 25 - 30 m



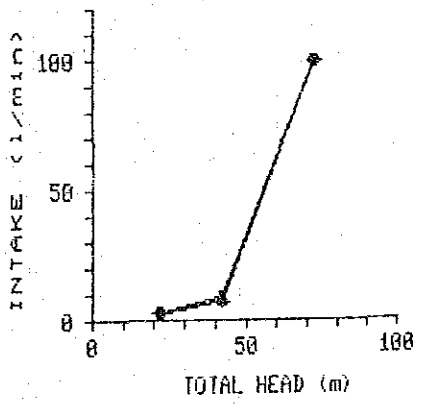
STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	22.0	1.3	1.2	1.6E-05
2	42.0	4.0	1.9	2.5E-05
3	72.0	100.3	27.9	3.7E-04
4	42.0	5.7	2.7	3.6E-05
5	22.0	1.5	1.4	1.8E-05

HOLE No : LINGGIU LG-1
DEPTH : 30 - 35 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	22.0	1.7	1.5	2.1E-05
2	42.0	7.6	3.6	4.8E-05
3	67.0	99.9	29.8	4.0E-04
4	42.0	10.3	4.9	6.5E-05
5	22.0	2.0	1.8	2.4E-05

HOLE No : LINGGIU LG-1
DEPTH : 35 - 40 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	22.0	2.6	2.4	3.1E-05
2	42.0	7.0	3.3	4.4E-05
3	72.0	100.2	27.8	3.7E-04
4	42.0	8.0	4.2	5.6E-05
5	22.0	3.2	2.9	3.9E-05

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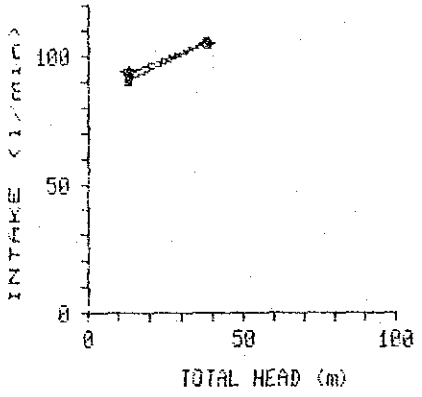
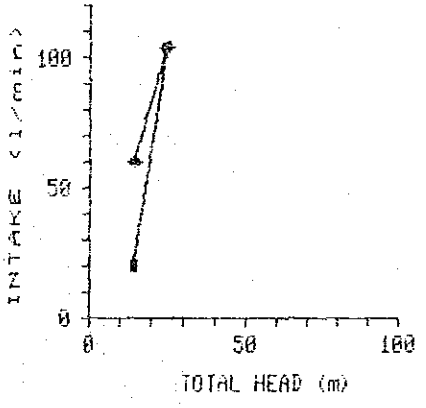
Fig C 4

HOLE No : LINGGIU LG-2
DEPTH : 0 - 5 m



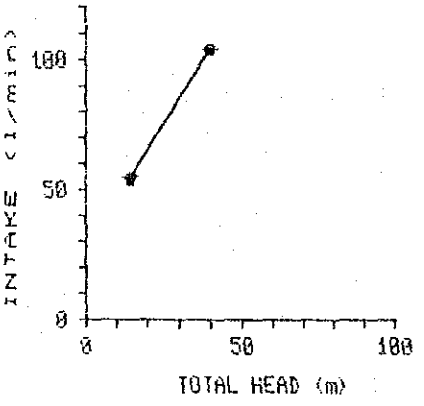
STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	13.0	93.6	144.0	1.9E-03
2	38.0	105.1	55.3	7.4E-04
3	13.0	90.6	139.4	1.9E-03

HOLE No : LINGGIU LG-2
DEPTH : 5 - 10 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	14.5	60.1	82.9	1.1E-03
2	24.5	103.7	84.7	1.1E-03
3	14.5	19.9	27.4	3.7E-04

HOLE No : LINGGIU LG-2
DEPTH : 10 - 15 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	14.5	55.3	76.3	1.0E-03
2	39.5	103.7	52.5	7.0E-04
3	14.5	54.4	75.0	10.0E-04

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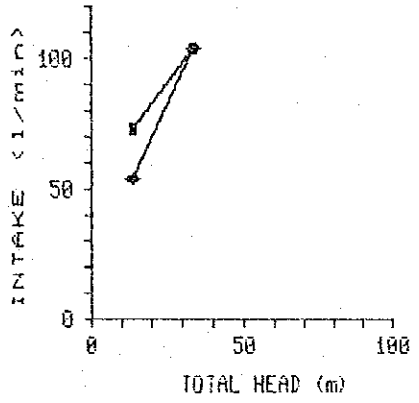
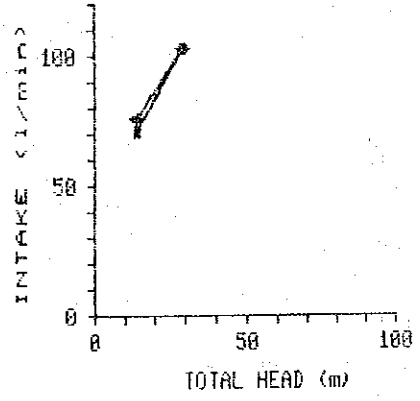
Fig C 5

HOLE No : LINGGIU LG-2
DEPTH : 15 - 20 m



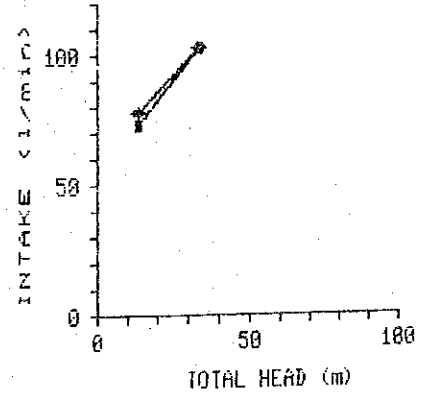
STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	13.5	54.4	80.6	1.1E-03
2	33.5	104.4	62.3	8.3E-04
3	13.5	72.9	108.0	1.4E-03

HOLE No : LINGGIU LG-2
DEPTH : 20 - 25 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	14.0	76.0	108.6	1.4E-03
2	29.0	103.5	71.4	9.5E-04
3	14.0	70.6	100.9	1.3E-03

HOLE No : LINGGIU LG-2
DEPTH : 25 - 30 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	13.5	77.6	115.0	1.5E-03
2	33.5	102.7	61.3	8.2E-04
3	13.5	73.2	108.4	1.4E-03

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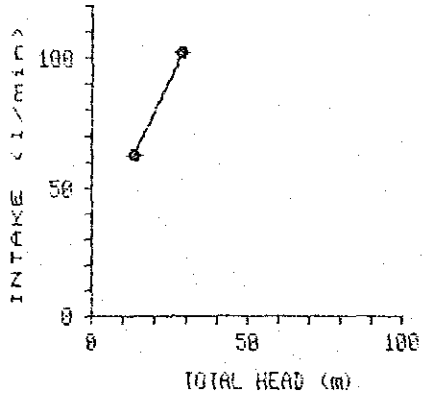
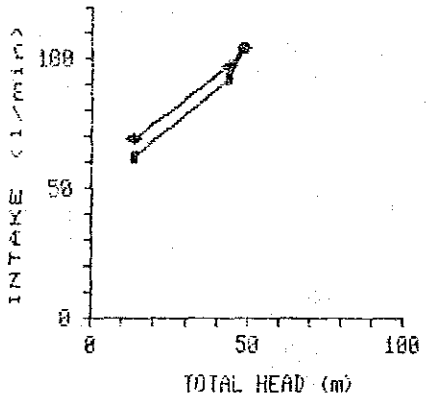
Fig C 6

HOLE No : LINGGIU LG-2
DEPTH : 30 - 35 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	13.5	63.4	93.9	1.3E-03
2	28.5	102.5	71.9	9.6E-04
3	13.5	63.4	93.9	1.3E-03

HOLE No : LINGGIU LG-2
DEPTH : 35 - 42 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	13.5	68.7	72.7	1.0E-03
2	43.5	96.7	31.8	4.5E-04
3	48.5	104.0	30.6	4.4E-04
4	43.5	91.8	30.1	4.3E-04
5	13.5	61.8	65.4	9.3E-04

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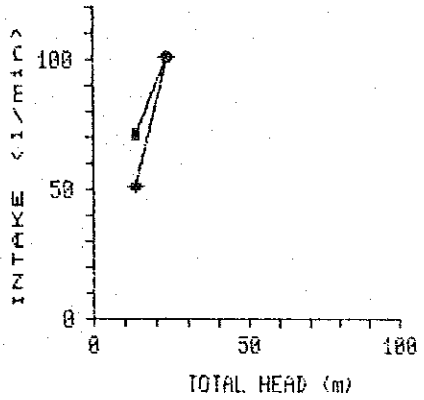
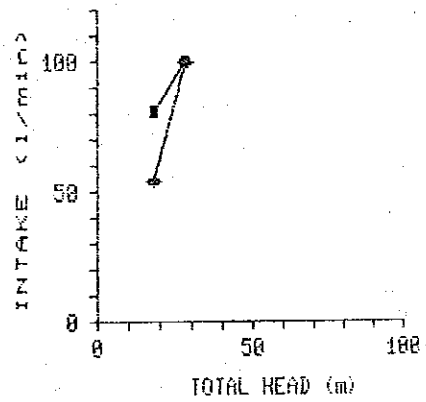
Fig C 7

HOLE No : LINGGIU LG-3
DEPTH : 1 - 5 m



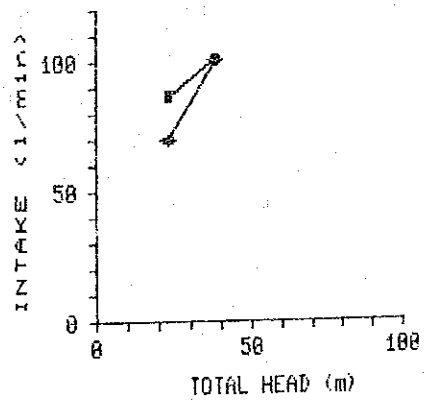
STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	13.5	51.3	95.0	1.1E-03
2	23.5	101.3	107.8	1.3E-03
3	13.5	70.7	130.9	1.6E-03

HOLE No : LINGGIU LG-3
DEPTH : 5 - 10 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	18.0	53.8	59.0	7.5E-04
2	28.0	100.0	71.4	8.9E-04
3	18.0	81.4	90.4	1.1E-03

HOLE No : LINGGIU LG-3
DEPTH : 10 - 15 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	23.0	69.7	60.6	8.1E-04
2	38.0	101.0	53.2	7.1E-04
3	23.0	87.1	75.7	1.0E-03

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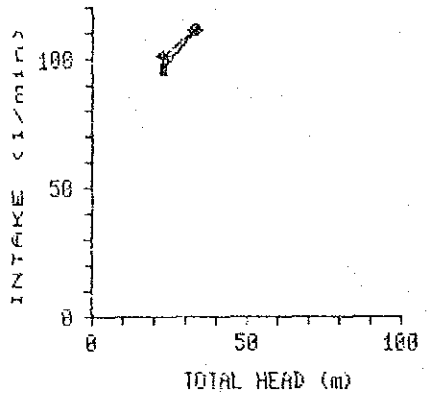
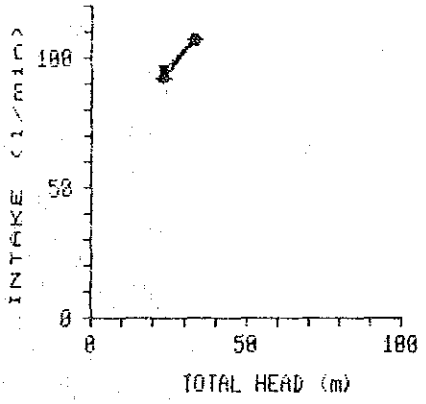
Fig C 8

HOLE No : LINGGIU LG-3
DEPTH : 15 - 20 m



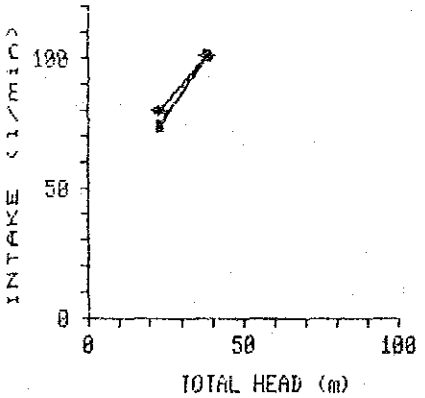
STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	23.0	101.3	88.1	1.2E-03
2	33.0	110.9	67.2	9.0E-04
3	23.0	96.4	83.8	1.1E-03

HOLE No : LINGGIU LG-3
DEPTH : 21 - 25 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	23.0	92.1	100.1	1.3E-03
2	33.0	107.2	81.2	1.0E-03
3	23.0	94.7	102.9	1.3E-03

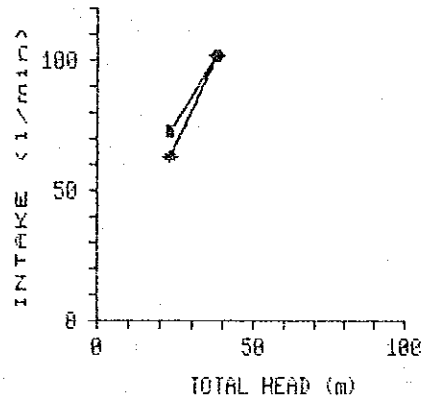
HOLE No : LINGGIU LG-3
DEPTH : 25 - 30 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	23.0	80.0	69.6	9.3E-04
2	38.0	101.2	53.3	7.1E-04
3	23.0	73.7	64.1	8.5E-04

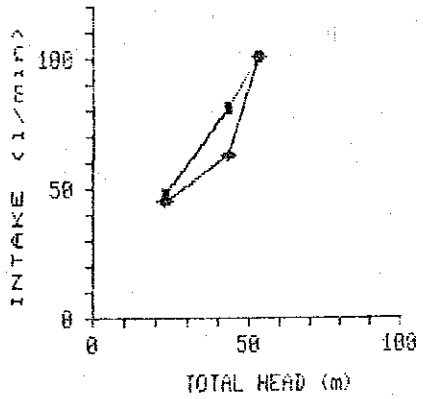
Fig C 9

HOLE No : LINGGIU LG-3
DEPTH : 30 - 35 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	23.0	63.0	54.0	7.3E-04
2	38.0	101.6	53.5	7.1E-04
3	23.0	73.0	63.5	8.5E-04

HOLE No : LINGGIU LG-3
DEPTH : 35 - 40 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	23.0	44.7	38.9	5.2E-04
2	43.0	63.4	29.5	3.9E-04
3	53.0	101.5	38.3	5.1E-04
4	43.0	81.3	37.3	5.0E-04
5	23.0	48.3	42.0	5.6E-04

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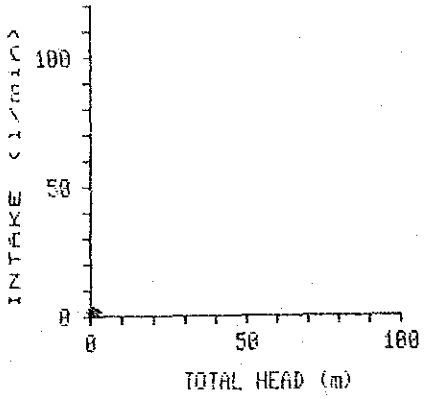
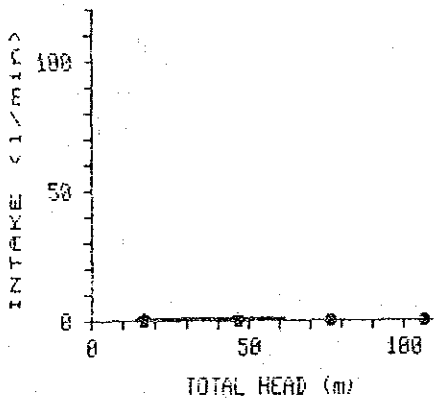
Fig C10

HOLE No : SAYONG SY-1
DEPTH : 0 - 2 m



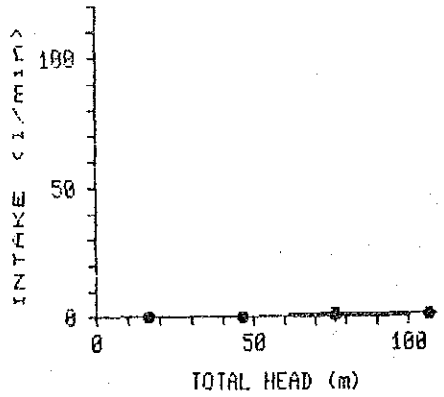
STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	1.0	1.9	92.7	9.2E-04

HOLE No : SAYONG SY-1
DEPTH : 10 - 15 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	16.8	0.6	0.7	9.2E-06
2	46.8	1.0	0.4	5.5E-06
3	76.8	0.5	0.1	1.7E-06
4	106.8	0.5	0.1	1.1E-06
5	76.8	0.1	0.0	3.4E-07
6	46.8	0.2	0.1	1.1E-06
7	16.8	0.1	0.1	1.5E-06

HOLE No : SAYONG SY-1
DEPTH : 15 - 20 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	16.6	0.3	0.4	4.7E-06
2	46.6	0.4	0.2	2.2E-06
3	76.6	0.5	0.1	1.5E-06
4	106.6	0.6	0.1	1.5E-06
5	76.6	0.6	0.1	1.9E-06
6	46.6	0.3	0.1	1.4E-06
7	16.6	0.1	0.1	7.8E-07

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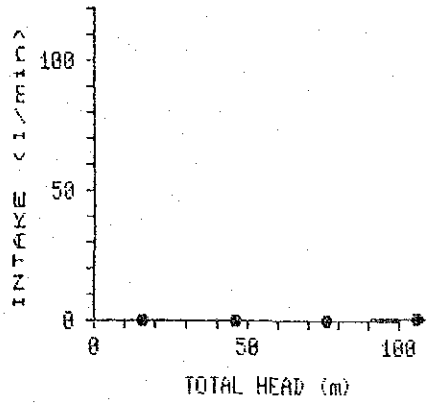
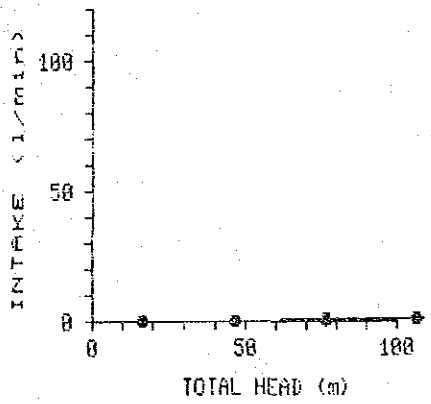
Fig C11

HOLE No : SAYONG SY-1
DEPTH : 20 - 25 m



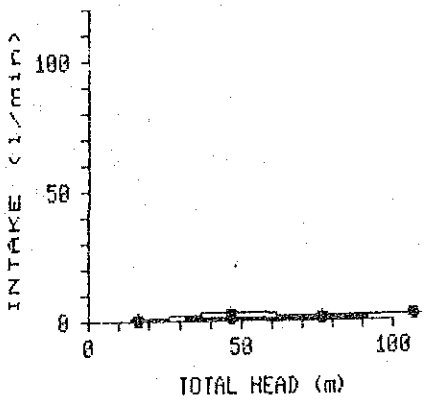
STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	16.4	0.2	0.2	3.2E-06
2	46.4	0.4	0.2	2.0E-06
3	76.4	0.4	0.1	1.2E-06
4	106.4	0.7	0.1	1.6E-06
5	76.4	0.5	0.1	1.7E-06
6	46.4	0.3	0.1	1.6E-06
7	16.4	0.1	0.1	1.6E-06

HOLE No : SAYONG SY-1
DEPTH : 25 - 30 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	16.6	0.3	0.3	3.9E-06
2	46.6	0.5	0.2	2.5E-06
3	76.6	0.3	0.1	1.0E-06
4	106.6	0.6	0.1	1.5E-06
5	76.6	0.6	0.1	1.9E-06
6	46.6	0.4	0.2	1.9E-06
7	16.6	0.1	0.1	1.6E-06

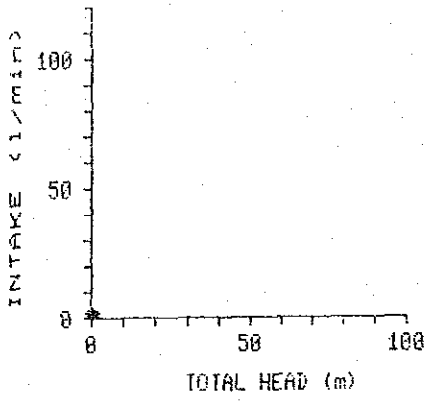
HOLE No : SAYONG SY-1
DEPTH : 30 - 35 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	16.7	0.8	0.9	1.2E-05
2	46.7	2.9	1.2	1.6E-05
3	76.7	1.8	0.5	6.1E-06
4	106.7	2.0	0.4	4.9E-06
5	76.7	1.5	0.4	5.1E-06
6	46.7	0.7	0.3	3.6E-06
7	16.7	0.2	0.2	2.3E-06

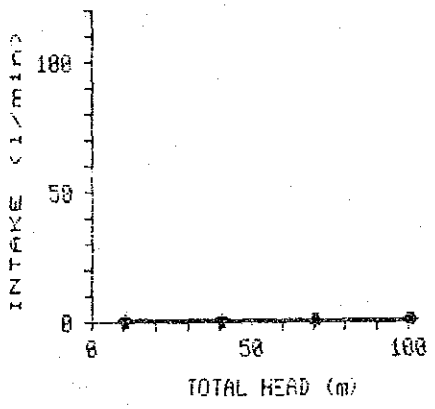
Fig C12

HOLE No : SAYONG SY-2
DEPTH : 0 - 2 m



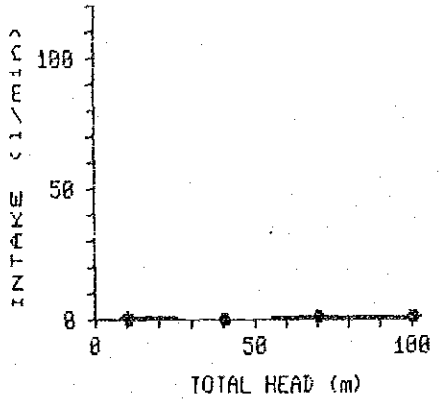
STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	0.6	2.2	185.2	1.8E-03

HOLE No : SAYONG SY-2
DEPTH : 15 - 20 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	10.7	0.6	1.0	1.3E-05
2	40.7	0.6	0.3	3.5E-06
3	70.7	0.4	0.1	1.3E-06
4	100.7	0.8	0.2	2.1E-06
5	70.7	0.7	0.2	2.5E-06
6	40.7	0.3	0.1	1.6E-06
7	10.7	0.2	0.3	3.6E-06

HOLE No : SAYONG SY-2
DEPTH : 20 - 25 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	10.8	0.6	1.1	1.4E-05
2	40.8	0.4	0.2	2.2E-06
3	70.8	0.7	0.2	2.6E-06
4	100.8	1.0	0.2	2.6E-06
5	70.8	0.6	0.2	2.0E-06
6	40.8	0.4	0.2	2.2E-06
7	10.8	0.1	0.2	2.4E-06

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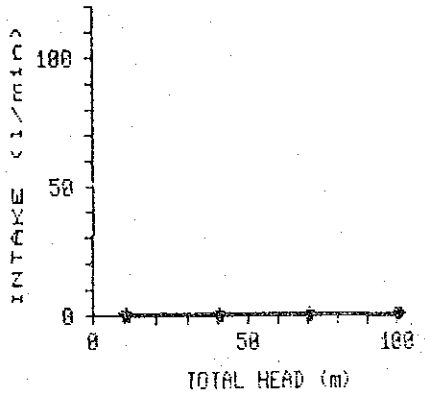
Fig C13

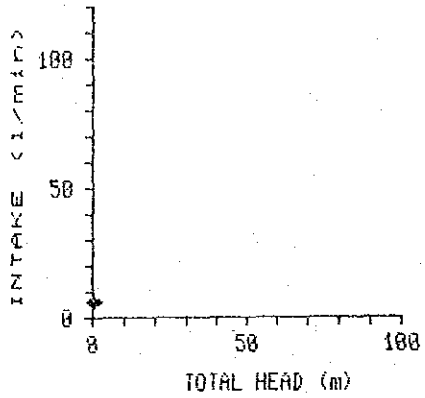
HOLE No : SAYONG SY-2
DEPTH : 25 - 30 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	10.8	0.6	1.0	1.3E-05
2	40.8	0.7	0.3	4.4E-06
3	70.8	0.7	0.2	2.6E-06
4	100.8	1.4	0.3	3.5E-06
5	70.8	0.5	0.1	1.6E-06
6	40.8	0.4	0.2	2.2E-06
7	10.8	0.1	0.1	1.2E-06

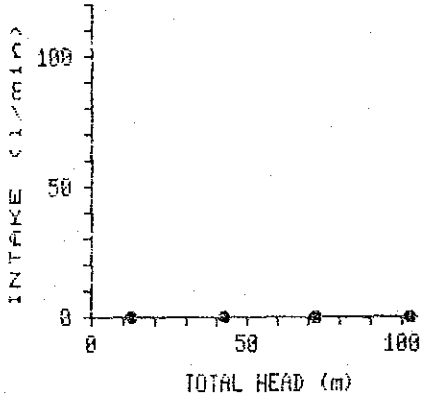
Fig C14

HOLE No : SAYONG SY-3
DEPTH : 0 - 2 m



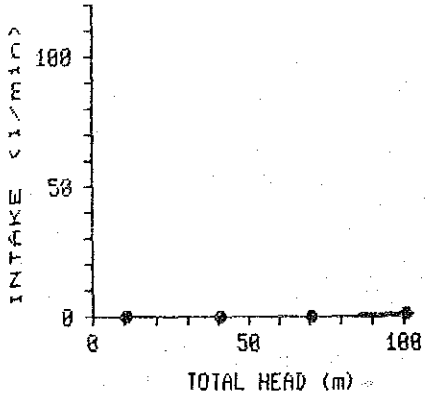
STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	0.6	6.0	541.1	5.4E-03

HOLE No : SAYONG SY-3
DEPTH : 10 - 15 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	12.5	0.2	0.2	3.1E-06
2	42.5	0.3	0.1	1.5E-06
3	72.5	0.4	0.1	1.2E-06
4	102.5	0.2	0.0	5.0E-07
5	72.5	0.3	0.1	1.1E-06
6	42.5	0.3	0.1	1.8E-06
7	12.5	0.2	0.3	4.1E-06

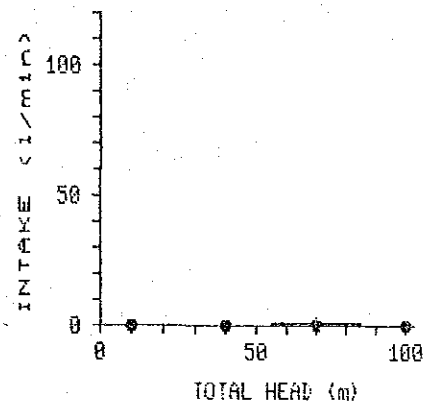
HOLE No : SAYONG SY-3
DEPTH : 15 - 20 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	11.0	0.2	0.4	4.7E-06
2	41.0	0.3	0.1	1.9E-06
3	71.0	0.4	0.1	1.5E-06
4	101.0	0.6	0.1	1.5E-06
5	71.0	0.5	0.1	1.8E-06
6	41.0	0.3	0.1	1.6E-06
7	11.0	0.2	0.3	3.5E-06

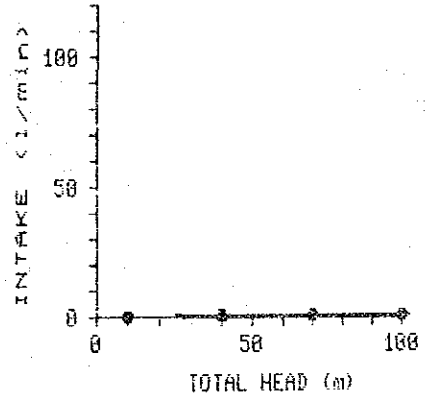
Fig C15

HOLE No : SAYONG SY-3
DEPTH : 20 - 25 m



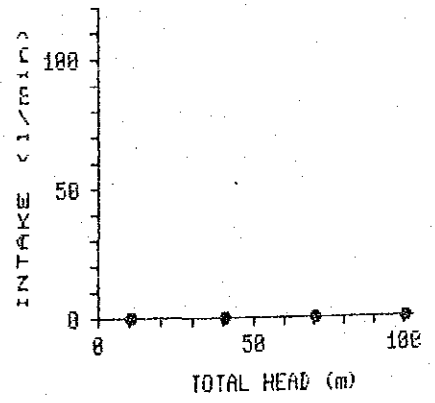
STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	10.4	0.2	0.4	5.0E-06
2	40.4	0.5	0.2	3.2E-06
3	70.4	0.6	0.2	2.2E-06
4	100.4	0.5	0.1	1.3E-06
5	70.4	0.5	0.1	1.8E-06
6	40.4	0.3	0.1	1.9E-06
7	10.4	0.1	0.2	2.5E-06

HOLE No : SAYONG SY-3
DEPTH : 25 - 30 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	10.5	0.1	0.2	2.5E-06
2	40.5	0.1	0.0	6.4E-07
3	70.5	0.8	0.2	2.0E-06
4	100.5	0.9	0.2	2.2E-06
5	70.5	0.7	0.2	2.6E-06
6	40.5	0.6	0.3	3.5E-06
7	10.5	0.1	0.1	1.2E-06

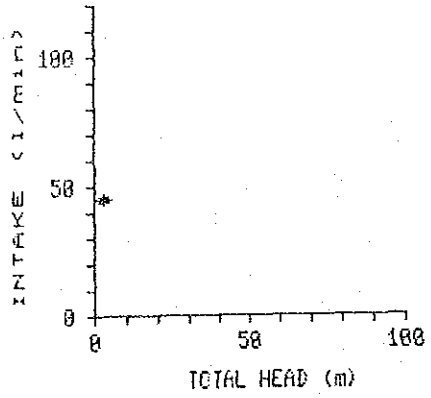
HOLE No : SAYONG SY-3
DEPTH : 30 - 35 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	10.9	0.2	0.4	4.8E-06
2	40.9	0.2	0.1	9.5E-07
3	70.9	0.4	0.1	1.3E-06
4	100.9	0.4	0.1	1.0E-06
5	70.9	0.3	0.1	1.1E-06
6	40.9	0.3	0.1	1.9E-06
7	10.9	0.1	0.2	2.4E-06

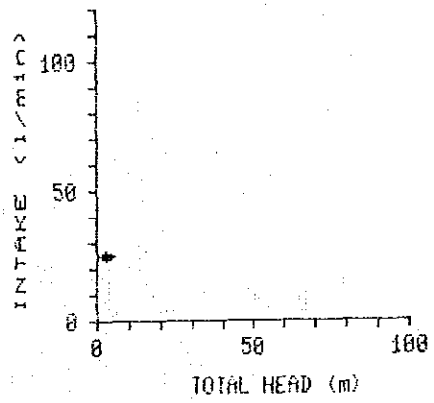
Fig C16

HOLE No : SAYONG SY-4
DEPTH : 0 - 5 m



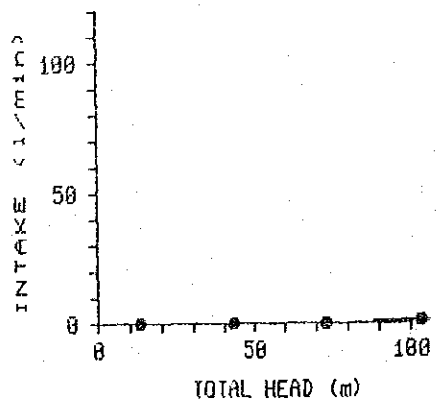
STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	3.1	45.1	290.6	3.6E-03

HOLE No : SAYONG SY-4
DEPTH : 5 - 10 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	3.2	25.5	157.1	2.0E-03

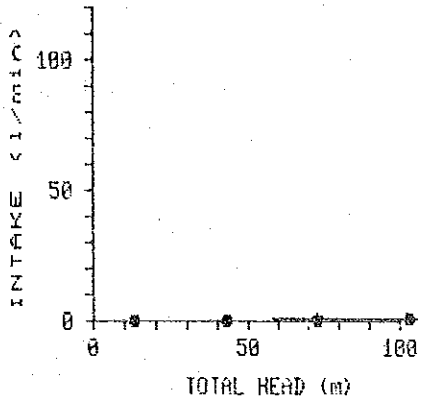
HOLE No : SAYONG SY-4
DEPTH : 10 - 15 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	13.3	0.2	0.3	4.5E-06
2	43.3	0.4	0.2	2.2E-06
3	73.3	0.5	0.1	1.6E-06
4	103.3	0.7	0.1	1.8E-06
5	73.3	0.4	0.1	1.3E-06
6	43.3	0.2	0.1	1.1E-06
7	13.3	0.1	0.2	2.7E-06

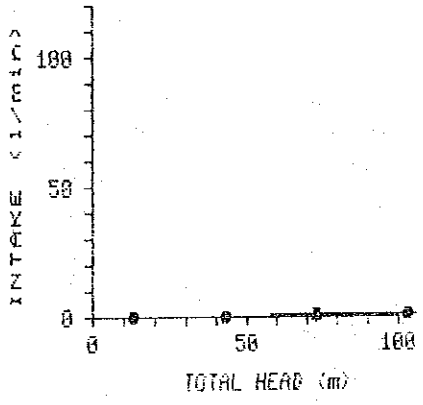
Fig C17

HOLE No : SAYONG SY-4
DEPTH : 15 - 20 m



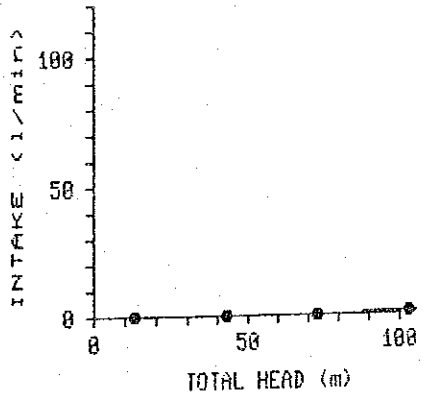
STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	13.2	0.2	0.3	3.5E-06
2	43.2	0.3	0.1	1.9E-06
3	73.2	0.6	0.2	2.1E-06
4	103.2	0.9	0.2	2.2E-06
5	73.2	0.5	0.1	1.8E-06
6	43.2	0.3	0.1	1.6E-06
7	13.2	0.2	0.3	3.5E-06

HOLE No : SAYONG SY-4
DEPTH : 20 - 25 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	13.3	0.1	0.2	2.7E-06
2	43.3	0.3	0.1	1.6E-06
3	73.3	0.4	0.1	1.3E-06
4	103.3	0.7	0.1	1.8E-06
5	73.3	0.6	0.2	1.9E-06
6	43.3	0.3	0.1	1.6E-06
7	13.3	0.1	0.1	1.3E-06

HOLE No : SAYONG SY-4
DEPTH : 25 - 30 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	13.1	0.1	0.2	2.8E-06
2	43.1	0.3	0.1	1.9E-06
3	73.1	0.5	0.1	1.6E-06
4	103.1	0.6	0.1	1.5E-06
5	73.1	0.2	0.0	6.4E-07
6	43.1	0.1	0.0	5.4E-07
7	13.1	0.1	0.1	1.8E-06

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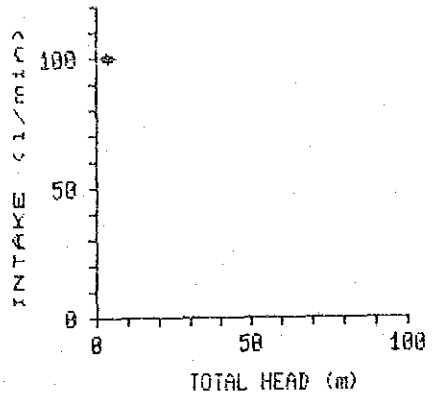
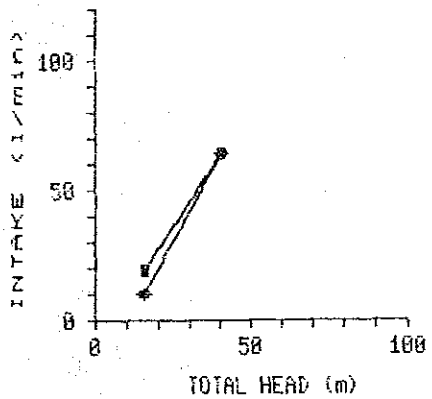
Fig C18

HOLE No : SAYONG SY-5
DEPTH : 1 - 5 m



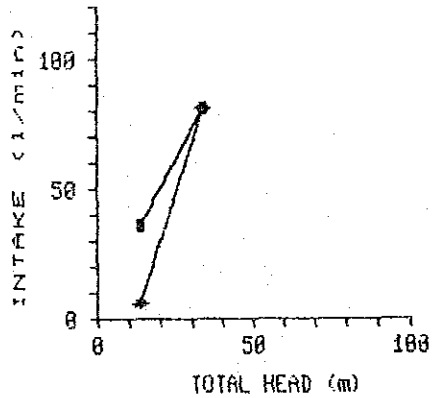
STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	3.5	99.8	712.9	9.1E-03

HOLE No : SAYONG SY-5
DEPTH : 5 - 10 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	15.5	9.6	12.4	1.6E-04
2	40.5	64.2	31.7	4.2E-04
3	15.5	18.6	24.0	3.2E-04

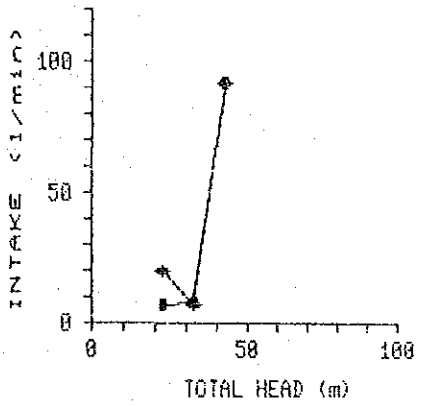
HOLE No : SAYONG SY-5
DEPTH : 10 - 15 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	13.5	6.4	9.5	1.3E-04
2	33.5	81.0	48.4	6.4E-04
3	13.5	35.8	53.0	7.1E-04

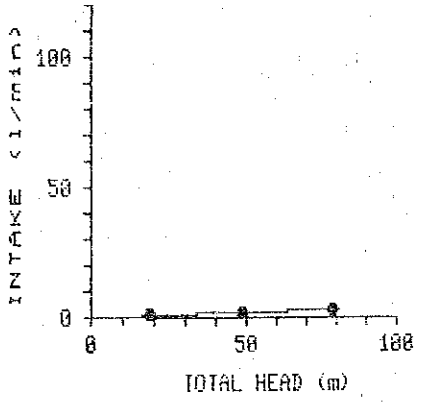
Fig C19

HOLE No : SAYONG SY-5
DEPTH : 15 - 20 m



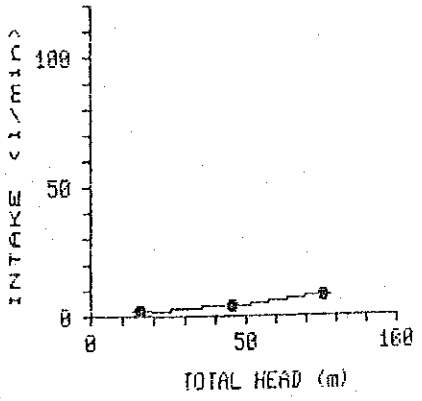
STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	22.5	19.8	17.6	2.3E-04
2	32.5	6.8	4.2	5.6E-05
3	42.5	92.4	43.5	5.8E-04
4	32.5	8.2	5.0	6.7E-05
5	22.5	6.8	6.0	8.1E-05

HOLE No : SAYONG SY-5
DEPTH : 20 - 25 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	19.8	1.0	1.1	1.4E-05
2	49.8	2.0	0.8	1.1E-05
3	79.8	2.6	0.7	9.5E-06
4	48.8	1.8	0.7	9.8E-06
5	18.8	1.0	1.1	1.4E-05

HOLE No : SAYONG SY-5
DEPTH : 25 - 30 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	15.5	1.6	2.1	2.7E-05
2	45.5	4.0	1.8	2.3E-05
3	75.5	7.6	2.0	2.7E-05
4	45.5	3.6	1.6	2.1E-05
5	15.5	1.8	2.3	3.1E-05

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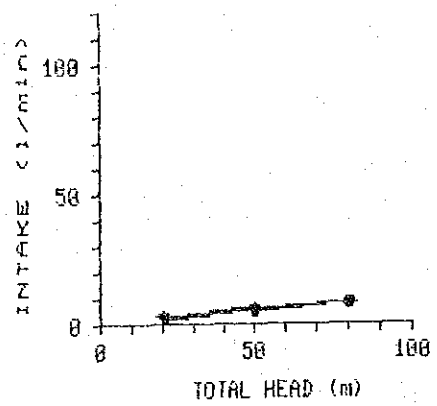
Fig C20

HOLE No : SAYONG SY-5
DEPTH : 30 - 35 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	20.5	3.0	2.9	3.9E-05
2	50.5	5.6	2.2	3.0E-05
3	80.5	8.2	2.0	2.7E-05
4	50.5	5.4	2.1	2.8E-05
5	20.5	2.2	2.1	2.9E-05

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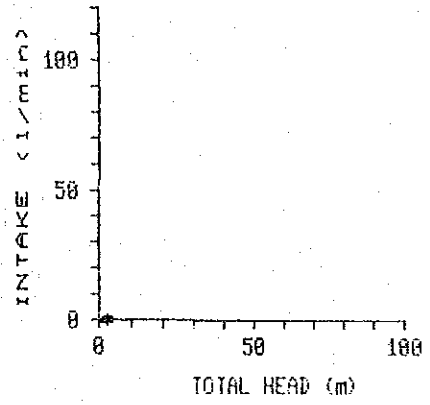
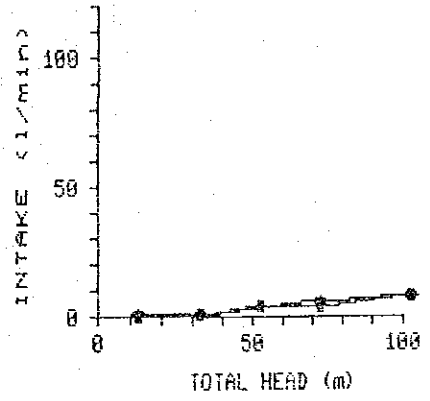
Fig C21

HOLE No : SEDILI US-1
DEPTH : 0 - 5 m



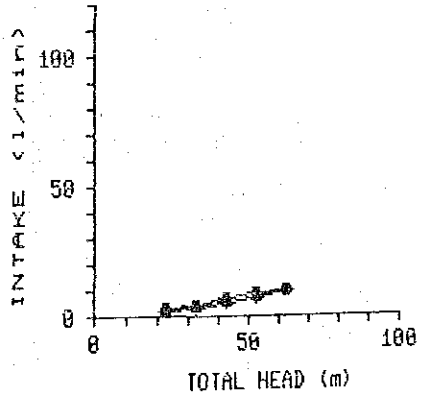
STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	2.5	0.0	0.3	3.6E-06

HOLE No : SEDILI US-1
DEPTH : 5 - 10 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	12.7	0.7	1.1	1.5E-05
2	32.7	1.2	0.7	9.4E-06
3	72.7	5.9	1.6	2.2E-05
4	102.7	8.5	1.7	2.2E-05
5	72.7	4.4	1.2	1.6E-05
6	52.7	3.8	1.4	1.9E-05
7	32.7	1.1	0.7	8.8E-06
8	12.7	0.4	0.7	9.2E-06

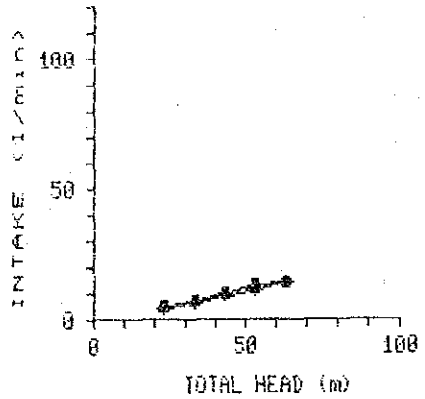
HOLE No : SEDILI US-1
DEPTH : 10 - 15 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	22.7	2.3	2.0	2.7E-05
2	32.7	3.3	2.0	2.7E-05
3	42.7	5.2	2.4	3.2E-05
4	52.7	7.3	2.8	3.7E-05
5	62.7	9.6	3.0	4.1E-05
6	52.7	8.8	3.3	4.4E-05
7	42.7	6.7	3.1	4.1E-05
8	32.7	3.9	2.4	3.2E-05
9	22.7	2.7	2.4	3.2E-05

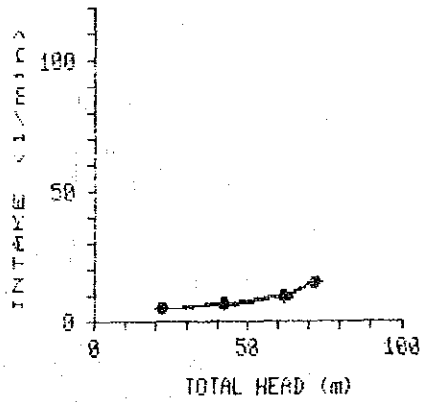
Fig C22

HOLE No : SEDILI US-1
DEPTH : 15 - 20 m



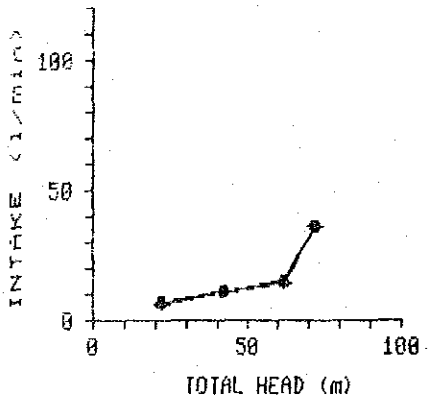
STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	23.1	4.1	3.5	4.7E-05
2	33.1	6.4	3.9	5.2E-05
3	43.1	9.3	4.3	5.7E-05
4	53.1	11.1	4.2	5.5E-05
5	63.1	14.0	4.4	5.9E-05
6	53.1	12.6	4.7	6.3E-05
7	43.1	10.0	4.6	6.1E-05
8	33.1	7.5	4.5	6.0E-05
9	23.1	4.9	4.2	5.6E-05

HOLE No : SEDILI US-1
DEPTH : 20 - 25 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	22.1	4.8	4.3	5.7E-05
2	42.1	5.8	2.8	3.7E-05
3	62.1	9.2	3.0	3.9E-05
4	72.1	14.9	4.1	5.5E-05
5	62.1	10.3	3.3	4.4E-05
6	42.1	6.9	3.3	4.3E-05
7	22.1	4.8	4.4	5.8E-05

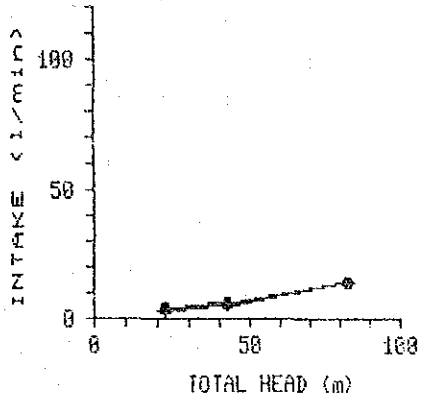
HOLE No : SEDILI US-1
DEPTH : 25.5 - 30.15 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	22.0	6.1	5.9	7.8E-05
2	42.0	11.0	5.6	7.4E-05
3	62.0	13.3	4.8	6.3E-05
4	72.0	35.9	10.7	1.4E-04
5	62.0	15.0	5.2	6.8E-05
6	42.0	11.0	5.6	7.4E-05
7	22.0	7.1	7.0	9.2E-05

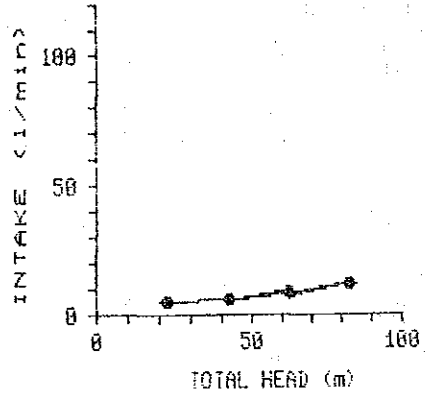
Fig C23

HOLE No : SEDILI US-1
DEPTH : 30 - 35.4 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	22.5	3.2	2.6	3.6E-05
2	42.5	5.0	2.2	3.0E-05
3	82.5	13.0	3.1	4.2E-05
4	42.5	5.8	2.5	3.4E-05
5	22.5	3.6	3.0	4.0E-05

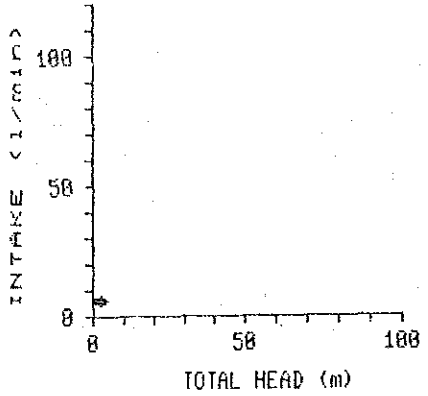
HOLE No : SEDILI US-1
DEPTH : 35 - 40 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	22.5	4.9	4.3	5.8E-05
2	42.5	5.9	2.8	3.7E-05
3	62.5	8.5	2.7	3.6E-05
4	82.5	12.4	3.0	4.0E-05
5	62.5	9.1	2.9	3.9E-05
6	42.5	6.4	3.0	4.0E-05
7	22.5	5.2	4.6	6.1E-05

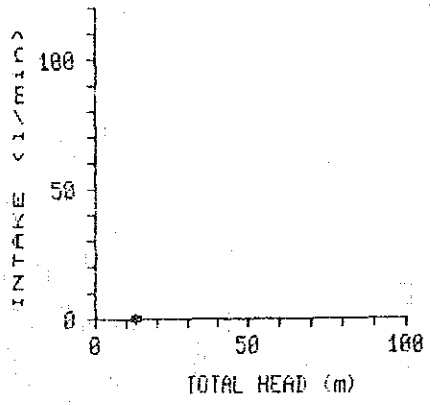
Fig C24

HOLE No : SEDILI US-2
DEPTH : 0 - 5 m



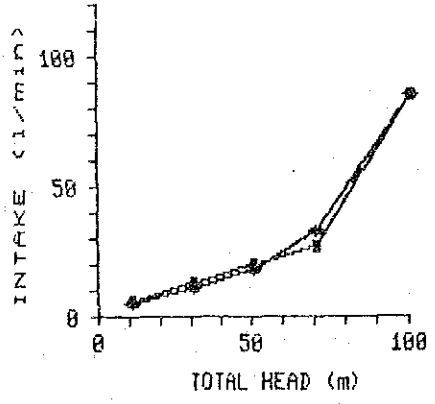
STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	2.5	6.5	51.8	6.9E-04

HOLE No : SEDILI US-2
DEPTH : 5 - 10 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	13.0	0.1	0.2	2.1E-06

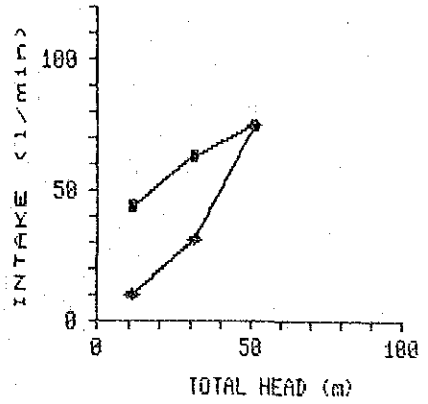
HOLE No : SEDILI US-2
DEPTH : 10 - 15 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	11.4	5.2	9.1	1.2E-04
2	31.4	10.7	6.8	9.1E-05
3	51.4	17.7	6.9	9.2E-05
4	71.4	32.6	9.1	1.2E-04
5	101.4	85.4	16.8	2.2E-04
6	71.4	27.1	7.6	1.0E-04
7	51.4	19.9	7.7	1.0E-04
8	31.4	12.8	8.1	1.1E-04
9	11.4	5.6	9.8	1.3E-04

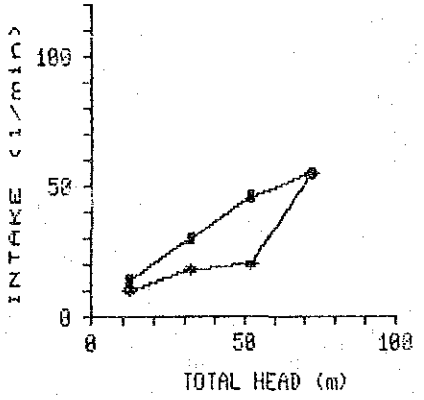
Fig C25

HOLE No : SEDILI US-2
DEPTH : 15 - 20 m



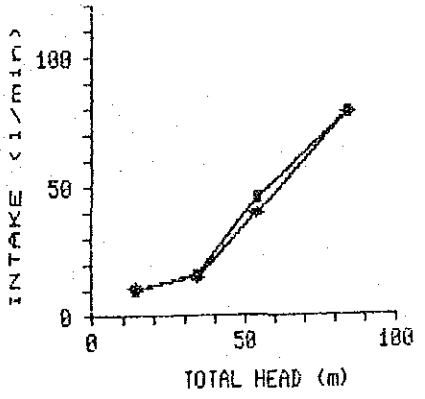
STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	11.4	10.4	18.2	2.4E-04
2	31.4	31.4	20.0	2.7E-04
3	51.4	75.0	29.2	3.9E-04
4	31.4	63.2	40.3	5.4E-04
5	11.4	44.2	77.5	1.0E-03

HOLE No : SEDILI US-2
DEPTH : 18 - 25 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	12.3	10.1	11.8	1.7E-04
2	32.3	18.5	8.2	1.2E-04
3	52.3	19.7	5.4	7.7E-05
4	72.3	55.4	11.0	1.6E-04
5	52.3	45.8	12.5	1.8E-04
6	32.3	29.8	13.2	1.9E-04
7	12.3	13.9	16.2	2.3E-04

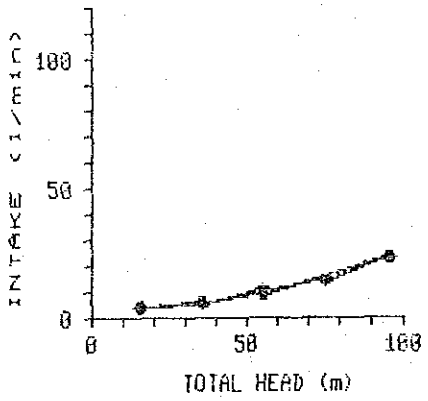
HOLE No : SEDILI US-2
DEPTH : 25 - 30 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	14.3	11.3	15.8	2.1E-04
2	34.3	15.5	9.0	1.2E-04
3	54.3	39.8	14.7	2.0E-04
4	84.3	78.6	18.6	2.5E-04
5	54.3	45.9	16.9	2.3E-04
6	34.3	15.6	9.1	1.2E-04
7	14.3	9.6	13.4	1.8E-04

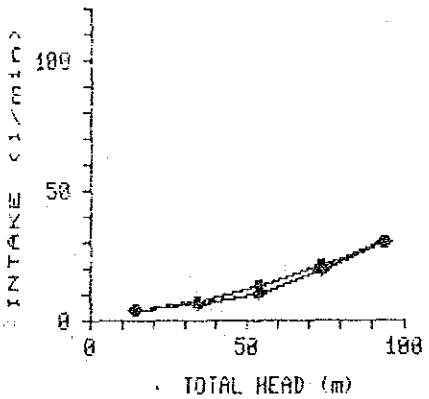
Fig C26

HOLE No : SEDILI US-2
DEPTH : 30 - 35 m



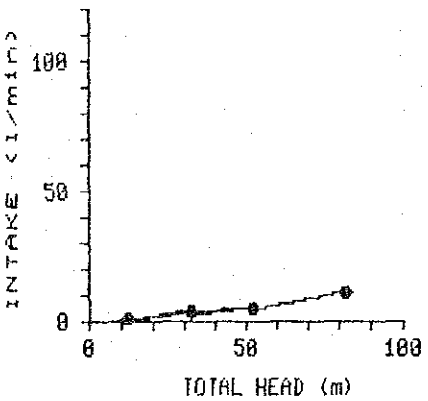
STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	15.5	4.4	5.7	7.6E-05
2	35.5	5.8	2.8	3.8E-05
3	55.5	10.8	3.9	5.2E-05
4	75.5	14.8	3.7	4.9E-05
5	95.5	22.9	4.8	6.4E-05
6	55.5	9.2	3.3	4.4E-05
7	35.5	5.9	3.3	4.4E-05
8	15.5	3.9	5.0	6.7E-05

HOLE No : SEDILI US-2
DEPTH : 35 - 40 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	14.0	3.9	5.6	7.4E-05
2	34.0	6.0	3.5	4.7E-05
3	54.0	10.4	3.3	5.1E-05
4	74.0	18.6	5.0	6.7E-05
5	94.0	29.6	6.3	8.4E-05
6	74.0	20.8	5.6	7.5E-05
7	54.0	12.9	4.8	6.4E-05
8	34.0	6.6	3.9	5.2E-05
9	14.0	4.0	5.7	7.6E-05

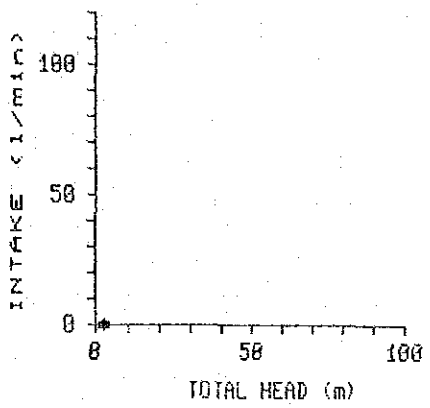
HOLE No : SEDILI US-2
DEPTH : 40 - 45 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	12.3	1.0	1.6	2.2E-05
2	32.3	2.9	1.8	2.4E-05
3	52.3	4.7	1.8	2.4E-05
4	82.3	10.3	2.7	3.5E-05
5	52.3	5.1	1.9	2.6E-05
6	32.3	3.6	2.2	3.0E-05
7	12.3	1.2	1.9	2.5E-05

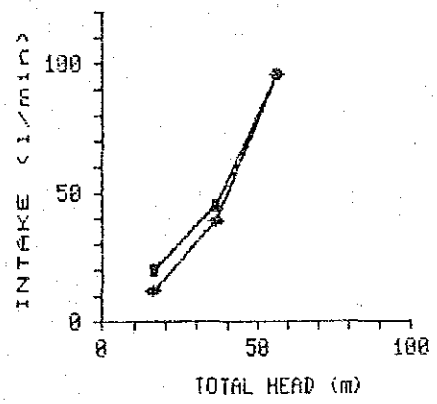
Fig C27

HOLE No : SEDILI US-3
DEPTH : 0 - 5 m



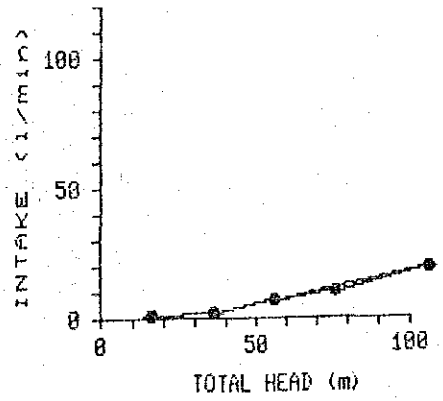
STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	2.5	0.2	1.6	2.1E-05

HOLE No : SEDILI US-3
DEPTH : 5 - 10 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	16.0	12.4	15.5	2.1E-04
2	36.0	38.5	21.4	2.9E-04
3	56.0	96.1	34.3	4.6E-04
4	36.0	44.9	25.0	3.3E-04
5	16.0	19.9	24.8	3.3E-04

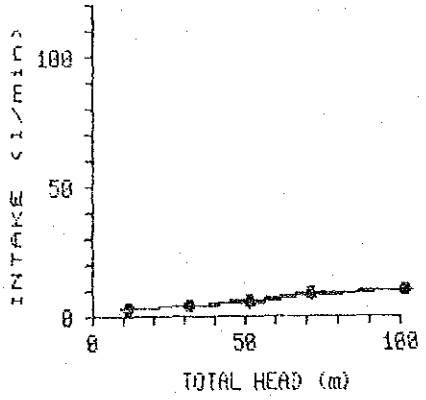
HOLE No : SEDILI US-3
DEPTH : 10 - 15 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	16.2	0.7	0.8	1.1E-05
2	36.2	1.9	1.1	1.4E-05
3	56.2	6.9	2.4	3.3E-05
4	76.2	10.5	2.7	3.7E-05
5	106.2	19.3	3.6	4.8E-05
6	56.2	7.1	2.5	3.3E-05
7	36.2	2.2	1.2	1.6E-05
8	16.2	0.9	1.1	1.5E-05

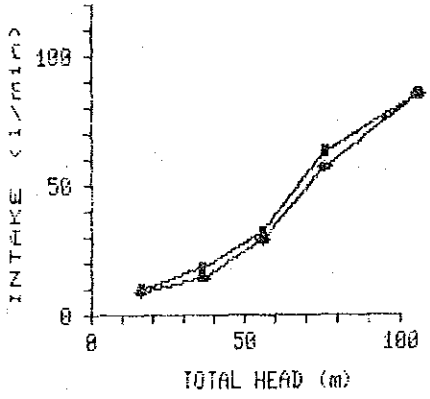
Fig C28

HOLE No : SEDILI US-3
DEPTH : 15 - 20 m



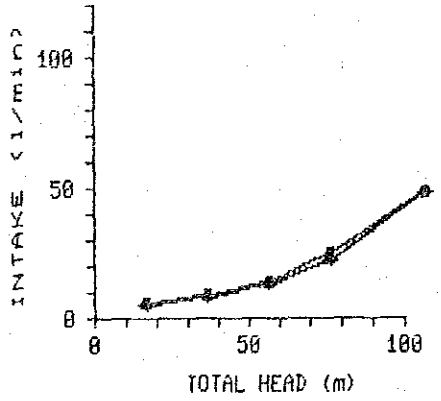
STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	11.8	2.7	4.6	6.1E-05
2	31.8	3.7	2.3	3.1E-05
3	51.8	5.2	2.0	2.7E-05
4	71.8	8.0	2.2	3.0E-05
5	101.8	10.1	2.0	2.6E-05
6	71.8	8.9	2.5	3.3E-05
7	51.8	5.9	2.3	3.0E-05
8	31.8	4.2	2.6	3.5E-05
9	11.8	3.1	5.2	6.9E-05

HOLE No : SEDILI US-3
DEPTH : 20 - 25.15 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	16.0	8.8	10.6	1.4E-04
2	36.0	14.5	7.3	1.0E-04
3	56.0	29.0	10.1	1.3E-04
4	76.0	57.3	14.6	2.0E-04
5	106.0	84.6	15.5	2.1E-04
6	76.0	62.8	16.0	2.1E-04
7	56.0	31.3	11.0	1.5E-04
8	36.0	18.5	10.0	1.3E-04
9	16.0	10.5	12.7	1.7E-04

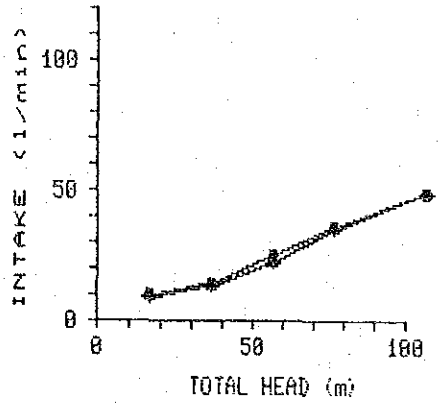
HOLE No : SEDILI US-3
DEPTH : 25 - 30.6 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	16.5	5.1	5.6	7.6E-05
2	36.5	7.6	3.7	5.1E-05
3	56.5	12.7	4.0	5.5E-05
4	76.5	22.3	5.2	7.1E-05
5	106.5	48.5	8.1	1.1E-04
6	76.5	25.1	5.9	8.0E-05
7	56.5	14.4	4.5	6.2E-05
8	36.5	9.1	4.5	6.1E-05
9	16.5	5.5	6.0	8.1E-05

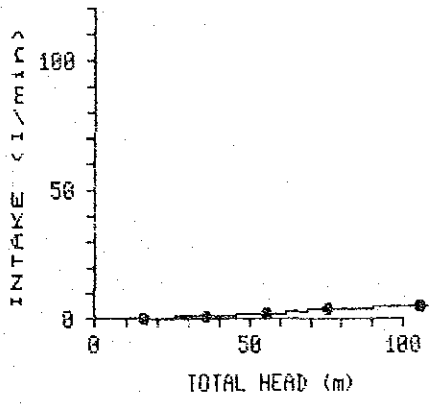
Fig C29

HOLE No : SEDILI US-3
DEPTH : 30 - 35.6 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	16.5	9.0	9.7	1.3E-04
2	36.5	13.4	6.5	8.9E-05
3	56.5	21.8	6.9	9.4E-05
4	76.5	35.1	8.2	1.1E-04
5	106.5	48.9	8.2	1.1E-04
6	76.5	35.6	8.3	1.1E-04
7	56.5	25.1	7.9	1.1E-04
8	36.5	14.1	6.9	9.4E-05
9	16.5	10.3	11.2	1.5E-04

HOLE No : SEDILI US-3
DEPTH : 35 - 39 m



STEP	HEAD (m)	INTAKE (l/min)	Lu ( )	K (cm/sec)
1	15.5	0.2	0.2	3.1E-06
2	35.5	0.9	0.6	8.2E-06
3	55.5	2.0	0.9	1.1E-05
4	75.5	3.9	1.3	1.6E-05
5	105.5	5.1	1.2	1.5E-05
6	75.5	4.2	1.4	1.8E-05
7	55.5	1.9	0.9	1.1E-05
8	35.5	0.9	0.6	8.1E-06
9	15.5	0.1	0.2	2.9E-06

ANNEX I
CONSTRUCTION MATERIAL

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1. INTRODUCTION

The objective of the construction material survey at this survey is to assess the availability of natural materials such as earthfill material, sand and gravel and quarried rock for the construction of proposed facilities based on the data obtained through surface exploration and brief sub-surface investigation.

The investigation was focused on the proposed four promising damsites of Sayong, Sedili, Linggiu and Upper Pengli and the existing aggregate quarry sites.

The site investigation, including field reconnaissance survey, test pitting and sampling for laboratory tests, was carried out from August 17, 1984 to September 30, 1984. And the laboratory tests were performed by the DID research laboratory in Kuala Lumpur from October, 1984 to March, 1985. The engineering assessment of construction materials was made in Japan from April to July, 1985.

2. METHOD OF FIELD INVESTIGATION

Surface exploration were performed at the following nine possible damsites prior to geotechnical investigation.

Pontian Besar Damsite
Benut Damsite
Linggiu Damsite
Upper Pengli Damsite
Sayong Damsite
Telor Damsite
Sedili Damsite
Layau Kiri Damsite (Main)

Among them, the following promising sites have been selected for the more precise geotechnical investigation which comprises core boring along the dam axis and test pitting with hand auger. The location sites are shown on Fig. II.

1) Sayong Damsite
2) Sedili Damsite
3) Linggiu Damsite
4) Upper Pengli Damsite (only test pitting and auger boring were made)

The surveys of construction material were two test pitting and auger boring for each site. The possible materials for the earthworks were samples at each test pit and hauled to the DID research laboratory in Kuala Lumpur for laboratory soil testing. All the test pits are located within a distance of 1-2 km from relevant damsite. Most of the test pits are 3 m in depth and hand auger dug 2 m more from the bottom thereof.

The investigation of borrow sites for sand and gravel to be used for filter, rock rip-rap and concrete aggregate has been carried out at the following sites;

1) Lombong site for sand (former tin mine)
2) Sayong site for sand (former tin mine)
3) Kg. Semanger site for sand
4) Bt. Lunchu for quarried rock

The first three sites for sand deposit are privately operated and the site 4) for quarried rock is operated by PWD. The materials were sampled at each site and hauled to the DID research laboratory in Kuala Lumpur for laboratory testing.

3. LABORATORY TESTING

3.1 General

All the laboratory tests were undertaken by the DID research laboratory in Kuala Lumpur, except rock tests such as abrasion and soundness. Laboratory tests were carried out in accordance with BS 1377:1975, comprising specific gravity, moisture content, gradation, consistency, compaction and permeability as shown on Table 1. The summary of the laboratory test results are presented in the following tables:

Earthfill material	Table 2, 3
Quarried rock	Table 4
Sand & gravel	Table 5

3.2 Earthfill Material

3.2.1 In-situ moisture content

Sayong Damsite

The in-situ moisture content of the residual soil (T.P.No.1) ranged from 12 to 22%. While the optimum moisture contents thereof is estimated at 16%. The in-situ moisture contents of the residual soil (T.P.No.2) ranged from 30 to 35%. They are deemed to be close to the optimum of 34% as shown in Fig. 2.

Sedili Besar Damsite

The in-situ moisture content is in the order of 25-35%. The figures are significantly higher than the optimum of 20-22%, as shown in Fig. 3.

Linggiu Damsite

The in-situ moisture content is in the order of 30% for the soil in the shallow portion from the ground surface to 2 m deep, while that in the deeper portion is in the order of 15-20%, being close to the optimum as shown in Fig. 4.

Upper Pengli Damsite

The in-situ moisture content appeared in the order of 20-35%, being significantly above the optimum of 15%, as shown in Fig. 5.

3.2.2 Soil profile

The soil profiles of each test pit explored are summarized and in Figs. 6 to 9.

3.2.3 Classification tests

The classification tests such as gradation and consistency were carried out on several samples from each test pit.

(i) Gradation

Sayong Damsite

The gradation curves shown in Figs. 10 and 11 indicate that the material occurred in T.P.No.1 is rather coarse-grained soil showing silt and clay particle size content of as low as 10 to 30%. The material in T.P.No.2 is rather fine because silt and clay content thereof turned to be 30 to 60%.

Sedili Besar Damsite

As shown in Fig. 12, the material appears to be rather uniform in gradation. The fraction of silt and clay is 50 to 60%. The material is of moderately to highly plastic soil type.

Linggiu Damsite

The material is of sandy silt to clayey silt type with silt and clay contents of 60 to 70%, as shown in Fig. 13.

Upper Pengli Damsite

The materials is of silty sand with silt and clay contents of 30 to 40% as shown in Figs. 14 and 15.

(ii) Consistency Tests

The results of liquid limit and plastic limit tests are shown on Fig. 16. All the materials show moderate to high plasticity. The conventional test results have indicate that the plastic limit is close to or slightly over the optimum. But most of the plastic limits test results obtained from the present laboratory tests are far beyond the optimum.

3.2.4 Compaction and permeability

The standard compaction tests to determine the maximum dry density and optimum moisture content and the permeability tests were carried out on two samples from each test pit.

All the materials could be impervious, or the coefficients of permeability could be in the order of 1×10^{-3} cm/s, if properly compacted at the designated range of moisture contents.

Sayong Damsite

As illustrated in Fig. 17, the samples of T.P.No.1 and T.P.No.2 show distinctive difference in compaction characteristics, reflecting the difference in the proportion of fine-particle size contents. The test for the silty sand material occurred in T.P.NO.1 showed high coefficient of permeability, that is, being in the order of 1×10^{-3} cm/s. This value is unnaturally high for the material of which the

content of silt and clay is about 30%. Further detailed investigation will be necessary.

Sedili Besar Damsite

The materials of T.P.No.1 and T.P.No.2 show the same compaction characteristics as presented in Fig. 18, mainly due to the uniform soil distribution in the borrow areas.

Linggiu Damsite

No conclusive compaction characteristics was obtained as shown in Fig. 19.

Upper Pengli Damsite

The materials of T.P.No.1 and T.P.No.2 show the same compaction characteristics as exhibited in Fig. 20, mainly due to the uniform soil distribution in the borrow areas.

3.3 Quarried Rock

3.3.1 General

The test performed include specific gravity, absorption, Los Angles Value and sulphate soundness. Samples were taken at random at Bt.Lunchu quarry site to test the engineering properties of quarried rock (Sample A) and crushed rock (Sample B).

3.3.2 Engineering properties

As shown on Table 4, these laboratory test results indicate that the quarried rock sampled at Bt. Lunchu is suitable for use as concrete coarse aggregate as well as rock rip-rap.

The absorption is low and the specific gravity is adequate. The Los Angles tests were carried out to JIS 1121 Grading B and the loss

determined at 500 revolutions. The samples were also tested for the Sodium Sulphate Soundness. All the results are satisfactorily below the acceptable limits empirically adopted for concrete aggregate and rock rip-rap.

3.4 Sand and Gravel

3.4.1 General

The performed testing items include sieve analysis, specific gravity, water absorption and organic content. The samples were taken at random at three sites and are designated as follows:

Sayong A and B
Lombong A and B
Semengar

3.4.2 Engineering properties

As shown on Table 5, the laboratory test results indicate that the sands sampled are suitable to use to filter as well as fine concrete aggregate. The gradation curves of sand for each sand deposit are shown in Fig. 21.

4. SUMMARY AND RECOMMENDATIONS

4.1 Sources of Construction Materials and Basic Engineering Properties

4.1.1 Earthfill material

The engineering assessment of the earthfill material for the selected damsites such as Sayong, Sedili Besar, Linggiu and Upper Pengli is summarized on Table 6. The soils proposed to use for the impervious earthfill at each site are of fine-grained and plastic type as a whole, which could be expected to show high resistance against piping. However, these fine-grained soils are highly susceptible to drying crack, so that the filter should be designed carefully.

<u>Sayong Damsite</u>

Impervious earth material for the Sayong Dam will come from the residual soil underlain by the weathered granite, which is considered to occur uniformly over a vast area with a thickness of 5 m at minimum on both banks. The test pits were dug on the left bank immediately upstream from the damsite.

The soil occurred in the test pit (T.P.No.1) is of silty sand-gravel while the soil in the test pit (T.P.No.2) is of sandy silt. As mentioned before, the moisture contents of samples from T.P.No.1 are slightly higher than the optimum of 16%, while those from T.P.No.2 are close to the optimum of 34%. Both soils show high plasticity.

At this stage, it couldn't be determined which one is dominant soil. This kind of difference in particle size may be due to the difference in degree of weathering. Both materials could be impervious if properly compacted without special handling operation because the in-situ moisture contents are close to the optimum. Further, these two types of soil may be utilized as impervious earthfill material even if they are mixed at random during excavation work.

Sedili Besar Damsite

Impervious earthfill material for the Sedili Besar Dam will come from the residual soil and heavily weathered Phyllite underlain by Phyllite, Mersing group of Permian age, which abound around the damsite. The borrow pits were dug on the slope of the mountain on the left side immediately upstream from the damsite.

The soils occurred in the two test pits are of sandy silt, which shows rather high plasticity. Heavily weathered Phyllite could be easily broken down to a silty soil, which has moderate or high plasticity suitable for the earthfill material. In-situ moisture contents are of the order of 25-35%, which is rather high compared with optimum moisture content of 20% around.

Therefore, it is essential to reduce the moisture content to the designated value by air-drying. The material could be impervious if properly compacted after crushing down the weathered Phyllite to create sufficient fines and reducing the moisture content to the designated value with careful handling operation.

Linggiu Damsite

Impervious earthfill material for the Linggiu dam will come from the residual soil underlain by Tuffaceous sandstone. The soil occurred in the test pit is of silty clay to clayey silt in the shallow portion from the ground surface to 3-3.5 m deep, of sandy silt in the shallow portion to 3-3.5 m deep and of sandy silt in the deep portion to 5 m deep at minimum.

The soil occurred in the deeper portion would be more preferable than those in the shallow portion for the earthfill material, because in-situ moisture contents of the former ones are of the order of 15-20%, being close to the optimum moisture content of 14% while the in-situ moisture contents of the latter one are of 30%, being rather high.

If the clayey soil occurred in the shallow portion of the test pits be overwhelmingly dominant, all the efforts should be made to

reduce the water content to the designated level by such a method that the soil be excavated as thinly as possible and be exposed to sunshine before loading in the borrow area.

In the worst case, the soil concerned should be blended with sand-gravel which be hauled from the sand deposit. If the soil occurred at the deep portion in the test pit, being of sandy silt, be distributed widely, it may not cause any difficult problem in handling the material.

Upper Pengli Damsite

Impervious earthfill material for the Upper Pengli dam will come from the Pengli Sand Member, thickness thereof is assumed to be 20 to 80 m. The soil occurred in the test pits are of silty sand which is loosely deposited with a thin layer of silty clay intercalated at places. The soil shows rather moderate plasticity.

In-situ moisture contents are 20 to 30%, which is significantly above the optimum moisture content of 15%. The material could be impervious if properly compacted after reducing the moisture content to the designated value by excavating the soil as thinly as possible and exposing it to sunshine.

Pontian Besar Damsite

No subsurface investigation has been carried out. The soil being of sandy silt originated in shale and sandstone of Mesozoic, is presumed to be widely distributed around the dam site. This soil appears to be usable in view of gradation and in-situ moisture content, but its availability is subject to further investigation.

Benut Damsite

No subsurface investigation has been carried out. The soil being of sandy silt originated in shale and sandstone of Mesozoic, is assumed to be widely distributed around the dam site. This soil appears to be usable, but its availability is subject to further investigation.

Telor Damsite

No subsurface investigation has been carried out. The soil being of sandy silt to silty sand originated in weathered granite is assumed to be widely distributed around the proposed damsite. Its availability is subject to further investigation.

Layau Kiri Damsite

No subsurface investigation has been carried out. The soil being of sandy silt to clay originated in weathered granite is assumed to be widely distributed around the proposed damsite. Its availability is subject to further investigation.

4.1.2 Sand and gravel

The brief surface exploration along the river of each site has revealed that deposits of the river sand are limited in location and scarce in quantity. Accordingly there is no possibility to have a borrow area to obtain sand and gravel for filter and concrete aggregate materials in the vicinity of each damsite.

The sand deposits at Lombong situated about 5 km north of Kota Tinggi, former tin mine, are privately operated for producing sand with water pump and supplying it to the stockpile yard or the construction sites. The same kind of sand deposits is located at Sayong, also former tin mine and is also privately operated in the same manner as Lombong. The other site of sand deposits is located at Kg. Semangar where sand is directly pumped up from the river. The facility is also privately operated.

According to the owners of Lombong sand deposit and Sayong sand deposit, the reserves of sand could estimated at not less than 5.0×10^6 m3 and 3.0×10^6 m3, respectively. All the sand deposits are close to the main road and the accessbility is fairly good.

The main engineering properties shown below indicates that the sand sampled is suitable for use of filter and concrete aggregate. The laboratory test results of sand are presented on Table 5 and Fig. 21.

Content of clay and silt	less than 5%
D 15%	< 0.5 mm
(D 60%)/(D 1-10%) = 4-5	<20
D Max.	< 4.76mm
Specific gravity	2.65 around
Organix content	less than 0.5%
Water absorption	less than 5

4.1.3 Quarried rock

No overall site exploration for quarried rock sources has been carried out at this stage. The granite mountain of Bt. Lunchu which is located at Masai, is operated in a large scale by P.W.D. as rock quarry.

The site is close to the main road which connect Masai and Johor Bahru. And the accessbility thereto is fairly good. It is supposed that the reserves is more than 2.5×10^6 m^3 at minimum.

The main engineering properties indicate that the quarried rock sampled is suitable to use of rock rip-rap and concrete aggregate. The limiting acceptance values are also presented with laboratory test results on Table 4.

Specific gravity	2.60
Water absorption	less than 1%
Abrasion	less than 30%
Soundness	1 to 2%

4.2 The Design Values

The design values for the embankment materials are presented on Table 7 for the preliminary design purposes for the master plan.

4.3 Recommendation for Future Study

4.3.1 General

The investigations carried out during the present master plan study have identified several further study necessary to carry out the feasibility study. Comprehensive data are necessary for the feasibility design.

4.3.2 Earthfill materials

Sayong Damsite

The earthfill borrow area is believed to contain adequate material. More precise investigation is necessary to confirm the magnitude and variation of in-situ moisture content and gradation of the residual soil by depth and space. In this connection, it should be noted that the material reserve be more than two times of design requirements in view of practical operation efficiency. The shearing strength parameters and coefficient of permeability should be confirmed.

Subsurface exploration by test pitting on a 200 m grid covering the necessary area is recommended. The exploration should be supplemented by hand-auger survey at 50 m or 100 m grid spacing over the same area.

Sedili Besar Damsite

The earthfill borrow area is believed to contain adequate material. More precise investigation is necessary to confirm the magnitude and variation of in-situ water content of the residual soil

by depth in association with the optimum moisture content. The shearing strength parameters assumed at this stage for preliminary design purposes should be confirmed.

Subsurface exploration by test pitting with a 200 m grid covering the necessary area is recommended. The exploration should be supplemented by hand-auger survey at 50 m or 100 m grid spacing over the same area.

Linggiu Damsite

The earthfill borrow area is expected to contain adequate material. More precise investigation is necessary to confirm the magnitude and variation of in-situ moisture content and gradation of the residual soil by depth and space. The shearing strength parameters assumed at this stage for preliminary design purposes should be reconfirmed.

Subsurface exploration by test pitting with a 200 m grid covering the necessary area is recommended. The exploration should be supplemented by hand-auger survey at 50 m or 100 m grid spacing over the same area.

Upper Pengli

The earthfill borrow area is believed to contain adequate material. More precise investigation is necessary to confirm the magnitude and variation of in-situ moisture content of the residual soil by depth. The optimum moisture content should be also established. The shearing strength parameters assumed at this stage for preliminary design purposes should be confirmed.

Subsurface exploration by test pitting with a 200 m grid covering the necessary area is recommended. This exploration should be supplemented by hand auger survey at 50 m or 100 m grid spacing over the same area.

4.3.3 Quarried rock

The bedrock in the project area consists of granitic rock as a whole. The core boring along the proposed dam axis at the Sayong site showed that the bedrock of fresh granite was reached at a depth of 8 to 20 m. In addition, unconfined compression tests of the rock samples taken from the borehole shows 1,160 kg/cm^{-2}, 1,405 kg/cm^{-2}, and 1,120 kg/cm^{-2}. Judging from these test results, the bed rock of a proposed dam, is expected to be usable for rockfill material and concrete aggregate.

Due to the location of Bt. Lunchu, the quarried rock is planned to be transported over 60 to 70 km to the damsites. The transportation entails a high cost of rock material. With this regard, a more precise investigation is recommended to be carried out to locate a quarry mountain and to assess the availability of quarried rock in the next stage.

TABLES

Table 1 LIST OF WORK QUANTITIES FOR LABORATORY TESTING

Test Items	Sayong	Linggia	Sedili	Upper Pengli	Lorikong	Sesangar	Bt. Lanchu	Test Number
1. Earthfill Material								
(1-a) Specific gravity	10	10	7	9				36
(1-b) Natural water content	16	13	9	14				52
(1-c) Gradation	8	7	7	9				31
(1-d) Liquid limit	8	6	6	8				28
(1-e) Plastic limit	8	6	6	8				28
(1-f) Compaction	2	2	2	2				8
(1-g) Permeability	1	1	1	1				4
2. Sand								
(2-a) Specific gravity and absorption	2				2	1		5
(2-b) Natural water content	2				2	1		5
(2-c) Gradation	2				2	1		5
(2-d) Organic impurities	2				2	1		5
3. Quarried rock								
(3-a) Specific gravity and absorption							2	2
(3-b) Abrasion							2	2
(3-c) Soundness							2	2

Table 2 SUMMARY OF LABORATORY TEST RESULTS FOR THE EARTHFILL MATERIALS (1/2)

Location of Test Pit	Depth m	Unified Classi-fication	Gradation (a)	(b)	(c)	(d)	(e)	Consistency LL %	PL %	PI %	Moisture Content %	Specific Gravity GS	Compaction MDD t/m³	OMC %	Remarks
SAYONG	0.5										20.2				
(TP 1)	1.0	GC	10	39	36	6	19	87.0	41.7	45.3	17.7	2.65			
	1.5										19.2				
	2.0	SC	10	34	37	12	19	83.6	47.0	36.6	20.2	2.68	1.70	16.4	K = 1.47 x
	2.5										20.9				10^{-3}cm/s
	3.0	SM	10	35	36	15	14	67.0	39.5	27.5	22.3	2.68			
	4.0	SM	10	35	49	11	5				11.9	2.67			
	5.0	SM	10	36	54	10	-				14.0	2.68			
SAYONG	0.5										33.1				
(TP 2)	1.0	MH	5	1	41	10	48	72.2	40.2	32.0	34.5	2.64			
	1.5										36.5				
	2.0	SC	5	4	65	10	21	76.0	41.6	34.4	36.1	2.66	34.0		
	2.5										35.4				
	3.0	SC	5	14	40	13	33	80.8	48.2	32.6	30.1	2.69			
	4.0							80.0	43.7	36.3	35.5	2.66			
	5.0							56.5	35.7	20.8	34.6	2.63			
SEDILI	1.0	MH	5	31	19	30	20	61.2	33.9	27.3	26.8	2.75			
(TP 1)	1.5	MH	5	5	16	59	20	50.2	32.8	17.4	26.7	2.76	1.49	20.3	
	2.0	MH	5	14	31	40	15	48.7	31.4	17.3	24.9	2.75			
SEDILI	0.5										31.2				
(TP 2)	1.0	GC	5	39	15	18	28	80.7	44.7	36.0	24.8	2.73			
	1.5										34.6				
	2.0	MH	5	23	15	31	31	64.3	36.3	28.0	34.7	2.74	1.45	21.5	K = 5.55 x
	2.5		5	20	26	38	16				34.2	2.75			10^{-7}cm/s
	3.0	ML	5	15	26	45	14	47.2	30.1	17.1	32.2	2.77			

(a) Max. Size mm
(b) Gravel 2 mm
(c) Sand 2 mm to 0.063 mm
(d) Silt 0.063 mm to 0.002 mm
(e) Clay 0.002 mm

Table 3 SUMMARY OF LABORATORY TEST RESULTS FOR THE EARTHFILL MATERIALS (2/2)

Location of Test Pit	Depth m	Unified Classi-fication	Gradation (a)	(b)	(c)	(d)	(e)	Consistency LL %	PL %	PI %	Moisture Content %	Specific Gravity GS	Compaction MDD t/m³	OMC %	Remarks
LINGGIU	0.5							60.5	32.8	27.7	29.8	2.64			
(TP 1)	1.0							56.8	27.8	29.0	29.2	2.60			
	1.5							53.4	28.3	25.1	29.1	2.60			
LINGGIU	0.5										27.6				
(TP 2)	1.0		5	4	24	32	40				31.6	2.66			
	1.5										31.6				
	2.0	MH	5	17	9	48	26	65.4	40.9	24.5	31.8	2.69	1.58	20.5	K = 4.99 x
	2.7	ML	5	1	30	35	34	31.2	24.8	6.4	15.3	2.67	1.76	14.4	10^{-7}cm/s
	3.5		5	3	30	48	19				16.2	2.60			
	4.0		5	2	31	49	18				14.8	2.67			
	4.2		5	1	32	45	22				19.4	2.66			
	4.5		5	1	32	45	22				17.5	2.69			
UPPER	0.5										42.3				
PENGLI	1.0	SC	5	4	56	13	27	69.0	27.9	41.1	27.1	2.60			
(TP 1)	1.4										30.5				
	1.5	SC	5	5	65	13	17	65.0	27.6	37.4	17.4	1.58			
	2.0	SM	5	1	68	12	19	42.7	20.6	22.1	19.5	2.60	1.76	14.5	
	2.5										43.1				
	3.0	SC	5	1	7	34	58	89.0	28.8	60.2	39.2	2.59			
UPPER	0.5										36.8				
PENGLI	1.0	CH	5	1	22	22	55	73.4	29.3	44.1	37.5	2.59			
(TP 2)	1.5	SC	5	3	61	10	26	70.4	24.2	46.2	19.7	2.61			
	2.0	SC	5	3	69	10	18	66.4	31.3	35.1	21.3	2.58	1.77	16.2	K = 1.87 x
	2.5										18.6				10^{-7}cm/s
	3.0	SC	5	3	63	12	22	52.0	22.8	29.2	30.1	2.58			
	4.0		5	2	75	10	13				15.3	2.62			

(a)	Max. Size	mm
(b)	Gravel	2 mm
(c)	Sand	2 mm to 0.063 mm
(d)	Silt	0.063 mm to 0.002 mm
(e)	Clay	0.002 mm

Table 4 SUMMARY OF LABORATORY TEST FOR QUARRIED ROCK

Testing Items	Sample A	Sample B	Limiting Acceptance Values		
			Concrete Manual	Australian Standard	Japanese Standard
Specific Gravity	2.61	2.60	-	-	2.5
Absorption	0.44	0.49	-	5.0 %	3.0 %
Los Angeles Value	28.4 %	28.6 %	40 %	30 %	40 %
Sodium Sulphate Soundness	1.08 %	1.85 %	-	12 %	12 %

Table 5 SUMMARY OF LABORATORY TESTS FOR SAND AND GRAVEL

Sample Name	Natural Moisture Content %	Sieve Analysis Max.Size mm	Gravels %	Sand %	Silt %	Clay %	Specific Gravity	Organic Content %	Water Absorption %
SAYONG A	4.17	5	18	81	1	-	2.66	0.47	3.64
SAYONG B	1.23	5	16	83	1	-	2.65	0.19	2.27
LOMBONG A	4.65	5	15	83	2	-	2.63	0.39	3.28
LOMBONG B	5.67	5	4	93	3	-	2.63	0.26	4.66
SEMANGAR	10.89	5	14	86	-	-	2.62	0.25	3.09