OPEN - END PERMEABILITY TEST

(Sheet 1 OF 5)

PROJECT : G.I. At Upper Liwagu Mini Hydro Project Site HOLE No. LT-1

LOCATION Head pond DATE OF TEST 18-1-92 TESTED BY Litto

GROUND ELEVATION 1031.62 m SIZE OF CASING NW CHECKED BY Michael Liew

GEOLOGICAL CONDITION OF THE BOTTOM OF DRILL HOLE Yellowish brown sandy silty CLAY with weathered sandstone fragments

DEPTH FROM GROUND SURFACE TO THE BOTTOM OF CASING 200 cm

HEIGHT FROM GROUND SURFACE TO THE TOP OF CASING 73 cm

INTERNAL RADIUS OF CASING : r = 3.9 cm

GROUND TEMPERATURE 25 ^{o}C WATER TEMPERATURE 20 ^{o}C

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE BEFORE TEST 78 cm

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE AFTER TEST 0 cm

Time		Differential Head Of Water H (cm)	Water Volume			Coefficient Of Permeability K (cm/sec)
Clock Hr min	min		Accum. Flow (lt)	Diff. Flow (lt/min)	Constant Rate Of Flow Q (cm^3/sec)	
08 50	0		0			
08 55	5		0			
09 00	10		0			
09 05	15		0			
09 10	20		0			
09 15	25		0			
09 20	30		0			
09 25	35		0			
09 30	40	151	0.2	0.04	0.67	$1.14X10^{-4}$
09 35	45		0.2	0		
09 40	50		0.2	0		
09 45	55		0.2	0		
09 50	60		0.2	0		

Constant Rate Of Flow For Steady State Condition : Q = 0.67 cm^3/sec

Coefficient Of Permeability For Steady State Condition : K = $1.14X10^{-4}$ cm/sec

OPEN - END PERMEABILITY TEST

(Sheet 2 OF 5)

PROJECT : G.I. At Upper Liwagu Mini Hydro Project Site HOLE No. LT-1

LOCATION Head Pond DATE OF TEST 18-1-92 TESTED BY Litto

GROUND ELEVATION 1031.62 m SIZE OF CASING NW CHECKED BY M. Liew

GEOLOGICAL CONDITION OF THE BOTTOM OF DRILL HOLE Dark grey sandy silty CLAY

DEPTH FROM GROUND SURFACE TO THE BOTTOM OF CASING 500 cm

HEIGHT FROM GROUND SURFACE TO THE TOP OF CASING 64 cm

INTERNAL RADIUS OF CASING : r = 3.9 cm

GROUND TEMPERATURE 25 ^{o}C WATER TEMPERATURE 20 ^{o}C

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE BEFORE TEST 207 cm

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE AFTER TEST 0 cm

Time		Differential Head Of Water H (cm)	Water Volume			Coefficient Of Permeability K (cm/sec)
Clock Hr min	min		Accum. Flow (lt)	Diff. Flow (lt/min)	Constant Rate Of Flow Q (cm^3/sec)	
17 35	0		0			-
17 40	5		0			-
17 45	10		0			-
17 50	15		0			-
17 55	20		0			-
18 00	25		0			-
18 05	30	271	0			-
18 10	35		0			-
18 15	40		0			-
18 20	45		0			-
18 25	50		0			-
18 30	55		0			-
18 35	60		0			-

Constant Rate Of Flow For Steady State Condition : Q = - cm^3/sec

Coefficient Of Permeability For Steady State Condition : K = - cm/sec

OPEN - END PERMEABILITY TEST

(Sheet 3 Of 5)

PROJECT : G.I. At Upper Liwagu Mini Hydro Project Site HOLE No. LT-1

LOCATION Head pond DATE OF TEST 19-1-92 TESTED BY Litto

GROUND ELEVATION 1031.62 m SIZE OF CASING NW CHECKED BY M. Liew

GEOLOGICAL CONDITION OF THE BOTTOM OF DRILL HOLE Grey SILTSTONE

DEPTH FROM GROUND SURFACE TO THE BOTTOM OF CASING 600 cm

HEIGHT FROM GROUND SURFACE TO THE TOP OF CASING 57 cm

INTERNAL RADIUS OF CASING : r = 3.9 cm

GROUND TEMPERATURE 25 °C WATER TEMPERATURE 20 °C

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE BEFORE TEST 213 cm

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE AFTER TEST 3 cm

Time		Differential Head Of Water H (cm)	Water Volume			Coefficient Of Permeability K (cm/sec)
Clock Hr min	min		Accum. Flow (lt)	Diff. Flow (lt/min)	Constant Rate Of Flow Q (cm^3/sec)	
10 11	0		0	0		
10 16	5		0.2	0.04	0.67	$1.76X10^{-3}$
10 21	10		0.2	0		
10 26	15		0.2	0		
10 31	20		0.4	0.04	0.67	$1.76X10^{-3}$
10 36	25		0.4	0		
10 41	30	270	0.6	0.04	0.67	$1.76X10^{-3}$
10 46	35		0.6	0		
10 51	40		0.6	0		
10 56	45		0.8	0.04	0.67	$1.76X10^{-3}$
11 01	50		0.8	0		
11 06	55		0.8	0		
11 11	60		0.8	0		

Constant Rate Of Flow For Steady State Condition : Q = 0.67 cm^3/sec

Coefficient Of Permeability For Steady State Condition : K = $1.76X10^{-3}$ cm/sec

OPEN - END PERMEABILITY TEST

PROJECT : G.I. At Upper Liwagu Mini Hydro Project Site HOLE No. LT-1

LOCATION Head pond DATE OF TEST 19-1-92 TESTED BY Litto

GROUND ELEVATION 1031.62 m SIZE OF CASING NW CHECKED BY M. Liew

GEOLOGICAL CONDITION OF THE BOTTOM OF DRILL HOLE Brown sandy silty CLAY

DEPTH FROM GROUND SURFACE TO THE BOTTOM OF CASING 800 cm

HEIGHT FROM GROUND SURFACE TO THE TOP OF CASING 43 cm

INTERNAL RADIUS OF CASING : r = 3.9 cm

GROUND TEMPERATURE 25 ^{o}C WATER TEMPERATURE 20 ^{o}C

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE BEFORE TEST 2.21 cm

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE AFTER TEST 0 cm

Time		Differential Head Of Water H (cm)	Water Volume			Coefficient Of Permeability K (cm/sec)
Clock Hr min	min		Accum. Flow (lt)	Diff. Flow (lt/min)	Constant Rate Of Flow Q (cm^3/sec)	
17 29	0		0			
17 34	5		0			
17 39	10		0			
17 44	15	45.21	0.2	0.04	0.67	$1.18X10^{-4}$
17 49	20		0.2	0		
17 54	25		0.4	0.04	0.67	$1.18X10^{-4}$
17 59	30		0.4	0		
18 04	35		0.4	0		
18 09	40		0.4	0		
18 14	45		0.6	0.04	0.67	$1.18X10^{-4}$
18 19	50		0.6	0		
18 24	55		0.6	0		
18 29	60		0.6	0		

Constant Rate Of Flow For Steady State Condition : Q = 0.67 cm^3/sec

Coefficient Of Permeability For Steady State Condition : K = $1.18X10^{-4}$ cm/sec

OPEN - END PERMEABILITY TEST

(Sheet 5 Of 5)

PROJECT : G.I. At Upper Liwagu Mini Hydro Project Site HOLE No. LT-1

LOCATION Head pond DATE OF TEST 20-1-92 TESTED BY Litto

GROUND ELEVATION 1031.62 m SIZE OF CASING NW CHECKED BY M. Liew

GEOLOGICAL CONDITION OF THE BOTTOM OF DRILL HOLE Brownish grey SILTSTONE

DEPTH FROM GROUND SURFACE TO THE BOTTOM OF CASING 1000 cm

HEIGHT FROM GROUND SURFACE TO THE TOP OF CASING 30 cm

INTERNAL RADIUS OF CASING : r = 3.9 cm

GROUND TEMPERATURE 25 ^{o}C WATER TEMPERATURE 20 ^{o}C

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE BEFORE TEST 177 cm

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE AFTER TEST 5 cm

Time		Differential Head Of Water H (cm)	Water Volume			Coefficient Of Permeability K (cm/sec)
Clock Hr min	min		Accum. Flow (lt)	Diff. Flow (lt/min)	Constant Rate Of Flow Q (cm^3/sec)	
12 10	0		0			
12 15	5		0.2	0.04	0.67	
12 20	10		0.4	0.04	0.67	
12 25	15		0.6	0.04	0.67	
12 30	20		0.9	0.06	1.00	
12 35	25	207	1.2	0.06	1.00	0.72
12 40	30		1.5	0.06	1.00	
12 45	35		1.6	0.02	0.33	
12 50	40		1.8	0.04	0.67	
12 55	45		2.0	0.04	0.67	
13 00	50		2.2	0.04	0.67	
13 05	55		2.4	0.04	0.67	
13 10	60		2.6	0.04	0.67	

Constant Rate Of Flow For Steady State Condition : Q = 0.72 cm^3/sec

Coefficient Of Permeability For Steady State Condition : K = 1.62×10^{-4} cm/sec

OPEN - END PERMEABILITY TEST

(Sheet 1 Of 5)

PROJECT : G.I. At Upper Liwagu Mini Hydro Project Site HOLE No. LT-2

LOCATION Head Pond DATE OF TEST 11-1-92 TESTED BY Ampahon & Litto

GROUND ELEVATION 1035.53 m SIZE OF CASING NW CHECKED BY M. Liew

GEOLOGICAL CONDITION OF THE BOTTOM OF DRILL HOLE Grey weathered SANDSTONE

DEPTH FROM GROUND SURFACE TO THE BOTTOM OF CASING 250 cm

HEIGHT FROM GROUND SURFACE TO THE TOP OF CASING 35 cm

INTERNAL RADIUS OF CASING : r = 3.90 cm

GROUND TEMPERATURE 25 ^{o}C WATER TEMPERATURE 20 ^{o}C

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE BEFORE TEST 204 cm

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE AFTER TEST 53 cm

Time		Differential Head Of Water H (cm)	Water Volume			Coefficient Of Permeability K (cm/sec)
Clock Hr min	min		Accum. Flow (lt)	Diff. Flow (lt/min)	Constant Rate Of Flow Q (cm^3/sec)	
16 07	0		0			
16 12	5		4	0.8	13.33	$2.60X10^{-3}$
16 17	10		6	0.4	6.67	$1.30X10^{-3}$
16 22	15		8	0.4	6.67	$1.30X10^{-3}$
16 27	20		11	0.6	10.00	$1.95X10^{-3}$
16 32	25		15	0.8	13.33	$2.60X10^{-3}$
16 37	30	239	17	0.4	6.67	$1.30X10^{-3}$
16 42	35		19	0.4	6.67	$1.30X10^{-3}$
16 47	40		21	0.4	6.67	$1.30X10^{-3}$
16 52	45		25	0.8	13.33	$2.60X10^{-3}$
16 57	50		26	0.2	3.33	$6.50X10^{-3}$
17 02	55		27	0.2	3.33	$6.50X10^{-3}$
17 07	60		31	0.8	13.33	$2.60X10^{-3}$

Constant Rate Of Flow For Steady State Condition : Q = 8.61 cm^3/sec

Coefficient Of Permeability For Steady State Condition : K = $1.68X10^{-3}$ cm/sec

OPEN - END PERMEABILITY TEST

(Sheet 2 Of 5)

PROJECT : C.I. At Upper Liwagu Mini Hydro Project Site HOLE No. LT-2

LOCATION Head Pond DATE OF TEST 12-1-92 TESTED BY Ampahon & Litto

GROUND ELEVATION 1035.53 m SIZE OF CASING NW CHECKED BY M. Liew

GEOLOGICAL CONDITION OF THE BOTTOM OF DRILL HOLE Grey weathered SANDSTONE

DEPTH FROM GROUND SURFACE TO THE BOTTOM OF CASING 400 cm

HEIGHT FROM GROUND SURFACE TO THE TOP OF CASING 61 cm

INTERNAL RADIUS OF CASING : r = 3.90 cm

GROUND TEMPERATURE 25 ^{o}C WATER TEMPERATURE 20 ^{o}C

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE BEFORE TEST 287 cm

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE AFTER TEST 47 cm

Time		Differential Head Of Water H (cm)	Water Volume			Coefficient Of Permeability K (cm/sec)
Clock Hr min	min		Accum. Flow (lt)	Diff. Flow (lt/min)	Constant Rate Of Flow Q (cm^3/sec)	
14 30	0		0			
14 35	5		0.4	0.08	1.33	$1.78X10^{-4}$
14 40	10		0.8	0.08	1.33	$1.78X10^{-4}$
14 45	15		1.10	0.06	1.00	$1.34X10^{-4}$
14 50	20		1.50	0.08	1.33	$1.78X10^{-4}$
14 55	25		1.80	0.06	1.00	$1.34X10^{-4}$
15 00	30	348	2.30	0.10	1.67	$2.24X10^{-4}$
15 05	35		2.70	0.08	1.33	$1.78X10^{-4}$
15 10	40		3.0	0.06	1.00	$1.34X10^{-4}$
15 15	45		3.25	0.05	0.83	$1.11X10^{-4}$
15 20	50		3.60	0.07	1.17	$1.57X10^{-4}$
15 25	55		4.15	0.11	1.83	$2.45X10^{-4}$
15 30	60		4.55	0.08	1.33	$1.78X10^{-4}$

Constant Rate Of Flow For Steady State Condition : Q = 1.26 cm^3/sec

Coefficient Of Permeability For Steady State Condition : K = $1.69X10^{-4}$ cm/sec

OPEN - END PERMEABILITY TEST

PROJECT : C.I. At Upper Liwagu Mini Hydro Project Site HOLE No. LT-2

LOCATION Head Pond DATE OF TEST 13-1-92 TESTED BY Ampahon & Litto

GROUND ELEVATION 1035.53 m SIZE OF CASING NW CHECKED BY M. Liew

GEOLOGICAL CONDITION OF THE BOTTOM OF DRILL HOLE Grey weathered SANDSTONE

DEPTH FROM GROUND SURFACE TO THE BOTTOM OF CASING 600 cm

HEIGHT FROM GROUND SURFACE TO THE TOP OF CASING 89 cm

INTERNAL RADIUS OF CASING : r = 3.90 cm

GROUND TEMPERATURE 25 °C WATER TEMPERATURE 20 °C

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE BEFORE TEST 354 cm

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE AFTER TEST 103 cm

Time		Differential Head Of Water H (cm)	Water Volume			Coefficient Of Permeability K (cm/sec)
Clock Hr min	min		Accum. Flow (lt)	Diff. Flow (lt/min)	Constant Rate Of Flow Q (cm^3/sec)	
12 52	0		0			
12 57	5		0.80	0.16	2.67	$2.78X10^{-4}$
13 02	10		2.00	0.24	4.00	$4.21X10^{-4}$
13 07	15		3.00	0.20	3.33	$3.50X10^{-4}$
13 12	20		3.80	0.16	2.67	$2.81X10^{-4}$
13 17	25		5.20	0.28	4.67	$4.91X10^{-4}$
13 22	30	443	5.95	0.15	2.50	$2.63X10^{-4}$
13 27	35		6.75	0.16	2.67	$2.81X10^{-4}$
13 32	40		7.95	0.24	4.00	$4.21X10^{-4}$
13 37	45		8.95	0.20	3.33	$3.50X10^{-4}$
13 42	50		10.05	0.22	3.67	$3.86X10^{-4}$
13 47	55		10.95	0.18	3.00	$3.16X10^{-4}$
13 52	60		12.10	0.23	3.83	$4.03X10^{-4}$

Constant Rate Of Flow For Steady State Condition : Q = 3.36 cm^3/sec

Coefficient Of Permeability For Steady State Condition : K = $3.54X10^{-4}$ cm/sec

OPEN - END PERMEABILITY TEST

(Sheet 4 Of 5)

PROJECT : G.I. At Upper Liwagu Mini Hydro Project Site HOLE No. LT-2

LOCATION Head Pond DATE OF TEST 13-1-92 TESTED BY Ampahon & Litto

GROUND ELEVATION 1035.53 m SIZE OF CASING NW CHECKED BY M. Liew

GEOLOGICAL CONDITION OF THE BOTTOM OF DRILL HOLE Reddish brown sandy silty CLAY

DEPTH FROM GROUND SURFACE TO THE BOTTOM OF CASING 800 cm

HEIGHT FROM GROUND SURFACE TO THE TOP OF CASING 40 cm

INTERNAL RADIUS OF CASING : r = 3.90 cm

GROUND TEMPERATURE 25 ^{o}C WATER TEMPERATURE 20 ^{o}C

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE BEFORE TEST 203 cm

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE AFTER TEST 15 cm

Time		Differential Head Of Water H (cm)	Water Volume			Coefficient Of Permeability K (cm/sec)
Clock Hr min	min		Accum. Flow (lt)	Diff. Flow (lt/min)	Constant Rate Of Flow Q (cm^3/sec)	
16 45	0		0			
16 50	5		0	0		
16 55	10		0.10	0.02	0.33	$6.33x10^{-5}$
17 00	15		0.10	0		
17 05	20		0.15	0.01	0.17	$3.26x10^{-5}$
17 10	25		0.15	0		
17 15	30	243	0.20	0.01	0.17	$3.26x10^{-5}$
17 20	35		0.20	0		
17 25	40		0.20	0		
17 30	45		0.25	0.01	0.17	$3.26x10^{-5}$
17 35	50		0.25	0		
17 40	55		0.25	0		
17 45	60		0.25	0		

Constant Rate Of Flow For Steady State Condition : Q = 0.21 cm^3/sec

Coefficient Of Permeability For Steady State Condition : K = $4.03x10^{-5}$ cm/sec

OPEN - END PERMEABILITY TEST

(Sheet 5 Of 5)

PROJECT : G.I. At Upper Liwagu Mini Hydro Project Site HOLE No. LT-2

LOCATION Head Pond DATE OF TEST 14-1-92 TESTED BY Ampahon & Litto

GROUND ELEVATION 1035.53 m SIZE OF CASING NW CHECKED BY M. Liew

GEOLOGICAL CONDITION OF THE BOTTOM OF DRILL HOLE Reddish brown sandy silty CLAY

DEPTH FROM GROUND SURFACE TO THE BOTTOM OF CASING 1000 cm

HEIGHT FROM GROUND SURFACE TO THE TOP OF CASING 66 cm

INTERNAL RADIUS OF CASING : r = 3.9 cm

GROUND TEMPERATURE 25 ^{o}C WATER TEMPERATURE 20 ^{o}C

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE BEFORE TEST 271 cm

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE AFTER TEST 17 cm

Time		Differential Head Of Water H (cm)	Water Volume			Coefficient Of Permeability K (cm/sec)
Clock Hr min	min		Accum. Flow (lt)	Diff. Flow (lt/min)	Constant Rate Of Flow Q (cm^3/sec)	
13 50	0		0	0		
13 55	5		0	0		
14 00	10		0	0		
14 05	15		0	0		
14 10	20		0	0		
14 15	25		0.1	0.02	0.33	4.57×10^{-5}
14 20	30	337	0.1	0		
14 25	35		0.1	0		
14 30	40		0.1	0		
14 35	45		0.15	0.01	0.17	2.35×10^{-5}
14 40	50		0.15	0		
14 45	55		0.15	0		
14 50	60		0.15	0		

Constant Rate Of Flow For Steady State Condition : Q = 0.25 cm^3/sec

Coefficient Of Permeability For Steady State Condition : K = 3.46×10^{-5} cm/sec

OPEN - END PERMEABILITY TEST

PROJECT : G.I. At Upper Liwagu Mini Hydro Project Site HOLE No. LP-1

LOCATION : Penstock DATE OF TEST 6-12-91 TESTED BY LU

GROUND ELEVATION 975.08 m SIZE OF CASING NW CHECKED BY M. Liew

GEOLOGICAL CONDITION OF THE BOTTOM OF DRILL HOLE Yellowish orange sandy silty CLAY

DEPTH FROM GROUND SURFACE TO THE BOTTOM OF CASING 200 cm

HEIGHT FROM GROUND SURFACE TO THE TOP OF CASING 100 cm

INTERNAL RADIUS OF CASING : r = 3.90 cm

GROUND TEMPERATURE 25 ^{o}C WATER TEMPERATURE 20 ^{o}C

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE BEFORE TEST 30 cm

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE AFTER TEST 100 cm

Time		Differential Head Of Water H (cm)	Water Volume			Coefficient Of Permeability K (cm/sec)
Clock Hr min	min		Accum. Flow (lt)	Diff. Flow (lt/min)	Constant Rate Of Flow Q (cm^3/sec)	
16 17	90		0.20			
16 22	95		0.20	0		
16 27	100		0.20	0		
16 32	105		0.20	0		
16 37	110		0.20	0		
16 42	115	130	0.30	0.02	0.33	$1.18X10^{-4}$
16 47	120		0.30	0		
16 52	125		0.30	0		
16 57	130		0.30	0		
17 02	135		0.30	0		
17 07	140		0.30	0		
17 12	145		0.30	0		
17 17	150		0.30	0		

Constant Rate Of Flow For Steady State Condition : Q = 0.33 cm^3/sec

Coefficient Of Permeability For Steady State Condition : K = $1.18X10^{-4}$ cm/sec

OPEN - END PERMEABILITY TEST

PROJECT : G.I. At Upper Liwagu Mini Hydro Project Site HOLE No. LP-1

LOCATION Penstock DATE OF TEST 7-12-91 TESTED BY LU

GROUND ELEVATION 975.08 m SIZE OF CASING NW CHECKED BY M. Liew

GEOLOGICAL CONDITION OF THE BOTTOM OF DRILL HOLE Yellowish orange sandy silty CLAY

DEPTH FROM GROUND SURFACE TO THE BOTTOM OF CASING 400 cm

HEIGHT FROM GROUND SURFACE TO THE TOP OF CASING 60 cm

INTERNAL RADIUS OF CASING : r = 3.90 cm

GROUND TEMPERATURE 25 °C WATER TEMPERATURE 20 °C

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE BEFORE TEST 96 cm

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE AFTER TEST 2 cm

Time		Differential Head Of Water H (cm)	Water Volume			Coefficient Of Permeability K (cm/sec)
Clock Hr min	min		Accum. Flow (lt)	Diff. Flow (lt/min)	Constant Rate Of Flow Q (cm^3/sec)	
14 52	0		0			
14 57	5		0	0		
15 02	10		0	0		
15 07	15		0	0		
15 12	20		0	0		
15 17	25		0.2	0.04	0.67	$2.00X10^{-4}$
15 22	30	156	0.2	0		
15 27	35		0.2	0		
15 32	40		0.2	0		
15 37	45		0.4	0.04	0.67	$2.00X10^{-4}$
15 42	50		0.4	0		
15 47	55		0.4	0		
15 52	60		0.4	0		

Constant Rate Of Flow For Steady State Condition : Q = 0.67 cm^3/sec

Coefficient Of Permeability For Steady State Condition : K = $2.00X10^{-4}$ cm/sec

OPEN - END PERMEABILITY TEST

(Sheet 3 Of 5)

PROJECT : G.I. At Upper Liwagu Mini Hydro Project Site HOLE No. Lp-1

LOCATION Penstock DATE OF TEST 8-12-91 TESTED BY LU

GROUND ELEVATION 975.08 m SIZE OF CASING NW CHECKED BY M. Liew

GEOLOGICAL CONDITION OF THE BOTTOM OF DRILL HOLE Yellowish grey weathered SANDSTONE

DEPTH FROM GROUND SURFACE TO THE BOTTOM OF CASING 642 cm

HEIGHT FROM GROUND SURFACE TO THE TOP OF CASING 42 cm

INTERNAL RADIUS OF CASING : r = 3.9 cm

GROUND TEMPERATURE 25 °C WATER TEMPERATURE 20 °C

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE BEFORE TEST 247 cm

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE AFTER TEST 15 cm

Time		Differential Head Of Water H (cm)	Water Volume			Coefficient Of Permeability K (cm/sec)
Clock Hr min	min		Accum. Flow (lt)	Diff. Flow (lt/min)	Constant Rate Of Flow Q (cm^3/sec)	
11 55	0		0			
12 00	5		1.20	0.24	4.00	$6.45X10^{-4}$
12 05	10		2.45	0.25	4.17	$6.73X10^{-4}$
12 10	15		3.60	0.23	3.83	$6.18X10^{-4}$
12 15	20		4.90	0.26	4.33	$6.98X10^{-4}$
12 20	25		6.05	0.23	3.83	$6.18X10^{-4}$
12 25	30	289	7.55	0.30	5.00	$8.07X10^{-4}$
12 30	35		8.80	0.25	4.17	$6.73X10^{-4}$
12 35	40		9.95	0.23	3.83	$6.18X10^{-4}$
12 40	45		11.25	0.26	4.33	$6.98X10^{-4}$
12 45	50		12.25	0.20	3.33	$5.37X10^{-4}$
12 50	55		13.45	0.24	4.00	$6.45X10^{-4}$
12 55	60		14.80	0.27	4.50	$7.26X10^{-4}$

Constant Rate Of Flow For Steady State Condition : Q = 4.11 cm^3/sec

Coefficient Of Permeability For Steady State Condition : K = $6.63X10^{-4}$ cm/sec

OPEN - END PERMEABILITY TEST

(Sheet 4 Of 5)

PROJECT : G.I. At Upper Liwagu Mini Hydro Project Site HOLE No. LP-1

LOCATION Penstock DATE OF TEST 9-12-91 TESTED BY LU

GROUND ELEVATION 975.08 m SIZE OF CASING NW CHECKED BY M. Liew

GEOLOGICAL CONDITION OF THE BOTTOM OF DRILL HOLE Light grey fine-grained SANDSTONE

DEPTH FROM GROUND SURFACE TO THE BOTTOM OF CASING 835 cm

HEIGHT FROM GROUND SURFACE TO THE TOP OF CASING 25 cm

INTERNAL RADIUS OF CASING : r = 3.90 cm

GROUND TEMPERATURE 25 °C WATER TEMPERATURE 20 °C

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE BEFORE TEST 647 cm

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE AFTER TEST 155 cm

Time		Differential Head Of Water H (cm)	Water Volume			Coefficient Of Permeability K (cm/sec)
Clock Hr min	min		Accum. Flow (lt)	Diff. Flow (lt/min)	Constant Rate Of Flow Q (cm^3/sec)	
10 08	0		0			
10 13	5		3.60	0.72	12.00	$8.33X10^{-4}$
10 18	10		7.00	0.68	11.33	$7.86X10^{-4}$
10 23	15		10.40	0.68	11.33	$7.86X10^{-4}$
10 28	20		14.15	0.75	12.50	$8.67X10^{-4}$
10 33	25		17.65	0.70	11.67	$8.10X10^{-4}$
10 38	30	672	21.20	0.71	11.83	$8.21X10^{-4}$
10 43	35		24.95	0.75	12.5	$8.67X10^{-4}$
10 48	40		28.35	0.68	11.33	$7.86X10^{-4}$
10 53	45		31.90	0.71	11.83	$8.21X10^{-4}$
10 58	50		35.35	0.69	11.50	$7.98X10^{-4}$
11 03	55		39.00	0.73	12.17	$8.44X10^{-4}$
11 08	60		42.70	0.74	12.33	$8.55X10^{-4}$

Constant Rate Of Flow For Steady State Condition : Q = 12.83 cm^3/sec

Coefficient Of Permeability For Steady State Condition : K = $8.90X10^{-4}$ cm/sec

OPEN - END PERMEABILITY TEST

(Sheet 5 OF 5)

PROJECT : G.I. At Upper Liwagu Mini Hydro Project Site HOLE No. LP-1

LOCATION Penstock DATE OF TEST 9-12-91 TESTED BY LU

GROUND ELEVATION 975.08 m SIZE OF CASING NW CHECKED BY M. Liew

GEOLOGICAL CONDITION OF THE BOTTOM OF DRILL HOLE Light grey fine-grained SANDSTONE

DEPTH FROM GROUND SURFACE TO THE BOTTOM OF CASING 1000 cm

HEIGHT FROM GROUND SURFACE TO THE TOP OF CASING 56 cm

INTERNAL RADIUS OF CASING : r = 3.9 cm

GROUND TEMPERATURE 25 ^{o}C WATER TEMPERATURE 20 ^{o}C

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE BEFORE TEST 160 cm

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE AFTER TEST 10 cm

Time		Differential Head Of Water H (cm)	Water Volume			Coefficient Of Permeability K (cm/sec)
Clock Hr min	min		Accum. Flow (lt)	Diff. Flow (lt/min)	Constant Rate Of Flow Q (cm^3/sec)	
13 50	0		0			
13 55	5		0.2	0.04	0.67	$1.45X10^{-4}$
14 00	10		0.2	0		
14 05	15		0.4	0.04	0.67	$1.45X10^{-4}$
14 10	20		0.4	0		
14 15	25		0.4	0		
14 20	30	216	0.6	0.04	0.67	$1.45X10^{-4}$
14 25	35		0.6	0		
14 30	40		0.6	0		
14 35	45		0.8	0.04	0.67	$1.45X10^{-4}$
14 40	50		0.8	0		
14 45	55		0.8	0		
14 50	60		0.8	0		

Constant Rate Of Flow For Steady State Condition : Q = 0.67 cm^3/sec

Coefficient Of Permeability For Steady State Condition : K = 1.45X10-4 cm/sec

OPEN - END PERMEABILITY TEST

PROJECT : G.I. At Upper Liwagu Mini Hydro Project Site HOLE NO. : LP-2

LOCATION : Penstock DATE OF TEST : 21-1-92 TESTED BY : Andy

GROUND ELEVATION 913.65 m SIZE OF CASING : NW CHECKED BY : M. Liew

GEOLOGICAL CONDITION OF THE BOTTOM OF DRILL HOLE : Brown sandy silty CLAY

DEPTH FROM GROUND SURFACE TO THE BOTTOM OF CASING : 200 cm

HEIGHT FROM GROUND SURFACE TO THE TOP OF CASING : 53 cm

INTERNAL RADIUS OF CASING : r = 3.9 cm

GROUND TEMPERATURE 25 ^{o}C WATER TEMPERATURE 20 ^{o}C

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE BEFORE TEST : 185 cm

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE AFTER TEST : 7.5 cm

Time		Differential Head Of Water H (cm)	Water Volume			Coefficient Of Permeability K (cm/sec)
Clock Hr min	min		Accum. Flow (lt)	Diff. Flow (lt/min)	Constant Rate Of Flow Q (cm^3/sec)	
09 05	0		0			
09 10	5		0.45	0.09	1.50	$2.93X10^{-4}$
09 15	10		0.95	0.10	1.67	$3.27X10^{-4}$
09 20	15		1.40	0.09	1.50	$2.94X10^{-4}$
09 25	20		2.00	0.12	2.00	$3.92X10^{-4}$
09 30	25		2.35	0.07	1.17	$2.29X10^{-4}$
09 35	30	238	2.80	0.09	1.50	$2.94X10^{-4}$
09 40	35		3.20	0.08	1.33	$2.61X10^{-4}$
09 45	40		3.65	0.09	1.50	$2.94X10^{-4}$
09 50	45		4.10	0.09	1.50	$2.94X10^{-4}$
09 55	50		4.50	0.08	1.33	$2.61X10^{-4}$
10 00	55		4.90	0.08	1.33	$2.61X10^{-4}$
10 05	60		5.35	0.09	1.50	$2.94X10^{-4}$

Constant Rate Of Flow For Steady State Condition : Q = 1.49 cm^3/sec

Coefficient Of Permeability For Steady State Condition : K = $2.92X10^{-4}$ cm/sec

OPEN - END PERMEABILITY TEST

Sheet 2 of 5

G.I. At Upper Liwagu Mini Hydro Project Site — Hole No. LP-2

Type of Hole Penstock — Date of Test 21-1-92 — Tested By Andy

Ground Elevation 913.65 m — Size of Casing NW — Observed by M. Liew

Geological condition of the bottom of drill hole Yellowish brown sandy silty CLAY

DEPTH FROM GROUND SURFACE TO THE BOTTOM OF CASING 395 cm

HEIGHT FROM GROUND SURFACE TO THE TOP OF CASING 58 cm

INTERNAL RADIUS OF CASING : r = 3.9 cm

GROUND TEMPERATURE 25 ^{o}C WATER TEMPERATURE 20 ^{o}C

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE BEFORE TEST 123 cm

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE AFTER TEST 24 cm

Time		Differential Head Of Water H (cm)	Water Volume			Coefficient Of Permeability K (cm/sec)
Clock Hr min	min		Accum. Flow (lt)	Diff. Flow (lt/min)	Constant Rate Of Flow Q (cm^3/sec)	
13 10	0		0			
13 15	5		4.20	0.84	14	3.61×10^{-3}
13 20	10		8.00	0.76	12.67	3.26×10^{-3}
13 25	15		11.50	0.70	11.67	3.01×10^{-3}
13 30	20		15.90	0.88	14.67	3.78×10^{-3}
13 35	25		19.70	0.76	12.67	3.26×10^{-3}
13 40	30	59.23	24.20	0.90	15.00	3.86×10^{-3}
13 45	35		28.20	0.80	13.33	3.43×10^{-3}
13 50	40		31.70	0.70	11.67	3.01×10^{-3}
13 55	45		35.70	0.80	13.33	3.43×10^{-3}
14 00	50		40.30	0.92	15.33	3.95×10^{-3}
14 05	55		43.80	0.70	11.67	3.01×10^{-3}
14 10	60		47.80	0.80	13.33	3.43×10^{-3}

Constant Rate Of Flow For Steady State Condition : Q = 13.28 cm^3/sec

Coefficient Of Permeability For Steady State Condition : K = 3.42×10^{-3} cm/sec

OPEN - END PERMEABILITY TEST

Sheet 3 of 5

PROJECT : G.I. At Upper Liwagu Mini Hydro Project Site HOLE NO. : Lp-2

LOCATION : Penstock DATE OF TEST : 22-1-92 TESTED BY : Andy

GROUND ELEVATION 913.65 m SIZE OF CASING : NW CHECKED BY : M. Liew

GEOLOGICAL CONDITION OF THE BOTTOM OF DRILL HOLE : Brown sandy silty CLAY

DEPTH FROM GROUND SURFACE TO THE BOTTOM OF CASING 600 cm

HEIGHT FROM GROUND SURFACE TO THE TOP OF CASING 61 cm

INTERNAL RADIUS OF CASING : r = 3.9 cm

GROUND TEMPERATURE 25 ^{o}C WATER TEMPERATURE 20 ^{o}C

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE BEFORE TEST 580 cm

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE AFTER TEST 6.5 cm

Time		Differential Head Of Water H (cm)	Water Volume			Coefficient Of Permeability K (cm/sec)
Clock Hr min	min		Accum. Flow (lt)	Diff. Flow (lt/min)	Constant Rate Of Flow Q (cm^3/sec)	
07 20	0		0			
07 25	5		0.25	0.05	0.83	$6.04X10^{-5}$
07 30	10		0.50	0.05	0.83	$6.04X10^{-5}$
07 35	15		0.72	0.044	0.73	$5.31X10^{-5}$
07 40	20		1.00	0.056	0.93	$6.76X10^{-5}$
07 45	25		1.20	0.04	0.67	$4.87X10^{-5}$
07 50	30	641	1.45	0.05	0.83	$6.04X10^{-5}$
07 55	35		1.60	0.03	0.50	$3.64X10^{-5}$
08 00	40		1.85	0.05	0.83	$6.04X10^{-5}$
08 05	45		2.05	0.04	0.67	$4.87X10^{-5}$
08 10	50		2.30	0.05	0.83	$6.04X10^{-5}$
08 15	55		2.55	0.05	0.83	$6.04X10^{-5}$
08 20	60		2.75	0.04	0.67	$4.87X10^{-5}$

Constant Rate Of Flow For Steady State Condition : Q = 0.76 cm^3/sec

Coefficient Of Permeability For Steady State Condition : K = $5.53X10^{-5}$ cm/sec

OPEN - END PERMEABILITY TEST

(Sheet 4 of 5)

PROJECT : G.I. At Upper Liwagu Mini Hydro Project Site HOLE No. Lp-2

LOCATION : Penstock DATE OF TEST : 23-1-92 TESTED BY : Andy

GROUND ELEVATION : 913.65 m SIZE OF CASING : NW CHECKED BY : M. Liew

GEOLOGICAL CONDITION OF THE BOTTOM OF DRILL HOLE : Grey weathered fine-grained SANDSTONE

DEPTH FROM GROUND SURFACE TO THE BOTTOM OF CASING : 890 cm

HEIGHT FROM GROUND SURFACE TO THE TOP OF CASING : 66 cm

INTERNAL RADIUS OF CASING : r = 3.9 cm

GROUND TEMPERATURE : 25 °C WATER TEMPERATURE : 20 °C

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE BEFORE TEST : 405 cm

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE AFTER TEST : 13 cm

Time		Differential Head Of Water H (cm)	Water Volume			Coefficient Of Permeability K (cm/sec)
Clock Hr min	min		Accum. Flow (lt)	Diff. Flow (lt/min)	Constant Rate Of Flow Q (cm^3/sec)	
10 35	0		0			
10 40	5		1.20	0.24	4.00	$3.96x10^{-4}$
10 45	10		2.45	0.25	4.17	$4.13x10^{-4}$
10 50	15		3.20	0.15	2.50	$2.47x10^{-4}$
10 55	20		4.05	0.17	2.83	$2.80x10^{-4}$
11 00	25		5.15	0.22	3.67	$3.63x10^{-4}$
11 05	30	70.05	6.20	0.21	3.50	$3.46x10^{-4}$
11 10	35		7.30	0.22	3.67	$3.63x10^{-4}$
11 15	40		8.45	0.23	3.83	$3.79x10^{-4}$
11 20	45		9.50	0.21	3.50	$3.46x10^{-4}$
11 25	50		10.45	0.19	3.17	$3.14x10^{-4}$
11 30	55		11.35	0.18	3.00	$2.97x10^{-4}$
11 35	60		12.40	0.21	3.50	$2.31x10^{-4}$

Constant Rate Of Flow For Steady State Condition : Q = 3.45 cm^3/sec

Coefficient Of Permeability For Steady State Condition : K = $3.41x10^{-4}$ cm/sec

OPEN - END PERMEABILITY TEST

PAGE 5 OF 5

PROJECT G.I. At Upper Liwagu Mini Hydro Project Site BOREHOLE NO. LP-2

LOCATION Penstock DATE OF TEST 23-1-92 TESTED BY Andy

GROUND ELEVATION 913.65 m SIZE OF CASING NW CHECKED BY M. Liew

GEOLOGICAL CONDITION OF THE BOTTOM OF DRILL HOLE Grey , fine-grained SANDSTONE

DEPTH FROM GROUND SURFACE TO THE BOTTOM OF CASING 1000 cm

HEIGHT FROM GROUND SURFACE TO THE TOP OF CASING 74 cm

INTERNAL RADIUS OF CASING : r = 3.9 cm

GROUND TEMPERATURE 25 ^{o}C WATER TEMPERATURE 20 ^{o}C

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE BEFORE TEST 237 cm

DEPTH FROM GROUND SURFACE TO WATER SURFACE IN THE DRILL HOLE AFTER TEST 22 cm

Time		Differential Head Of Water H (cm)	Water Volume			Coefficient Of Permeability K (cm/sec)
Clock Hr min	min		Accum. Flow (lt)	Diff. Flow (lt/min)	Constant Rate Of Flow Q (cm^3/sec)	
16 45	0		0			
16 50	5		1.70	0.34	5.67	8.50×10^{-4}
16 55	10		3.20	0.30	5.00	7.50×10^{-4}
17 00	15		4.75	0.31	5.17	7.75×10^{-4}
17 05	20		6.15	0.28	4.67	7.00×10^{-4}
17 10	25		7.63	0.30	5.00	7.50×10^{-4}
17 15	30	76.37	9.08	0.29	4.83	7.24×10^{-4}
17 20	35		10.58	0.30	5.00	7.50×10^{-4}
17 25	40		11.98	0.28	4.67	7.00×10^{-4}
17 30	45		13.53	0.31	5.17	7.75×10^{-4}
17 35	50		15.08	0.31	5.17	7.75×10^{-4}
17 40	55		16.68	0.32	5.33	7.99×10^{-4}
17 45	60		18.33	0.33	5.50	8.24×10^{-4}

Constant Rate Of Flow For Steady State Condition : Q = 5.53 cm^3/sec

Coefficient Of Permeability For Steady State Condition : K = 8.29×10^{-4} cm/sec

PERMEABILITY TEST IN DRILL HOLE

PROJECT: G.I. At Upper Lowagu Mini Hydro Project Site HOLE No. LI-1 (Sheet ___ Of ___)

LOCATION Sg. Liwagu Intake DEPTH OF HOLE 15 m TEST DATE 2-1-92

ELEVATION 1049.91 m DIAMETER OF HOLE 8.0 cm TESTED BY Lu

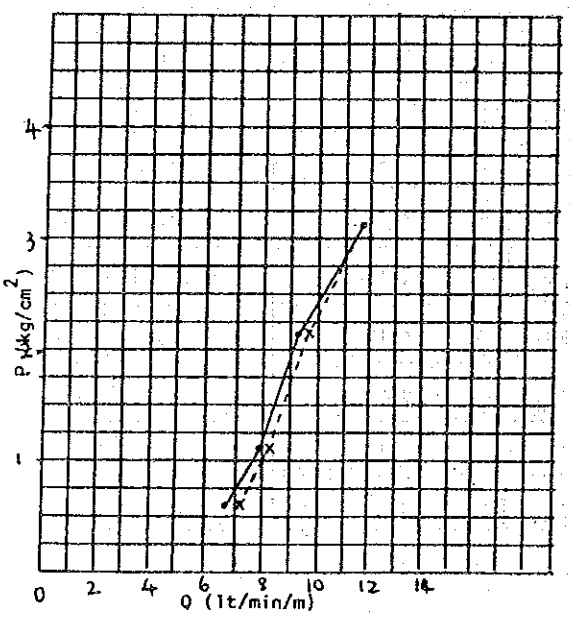
COORDINATE E76 5742.5 N66 2788.5 DRILLED DEPTH 15 m DRILLED BY Wil

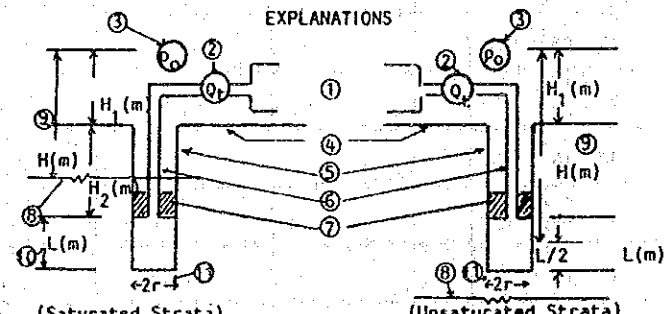
ANGLE FROM HORIZONTAL 90° LEVEL OF WATER TABLE: CHECKED BY M. Liew

Before Test: 0.45 m After Test: 0.40 m

TEST SECTION : FROM 10 m To 15 m

L (m)	H_1 (m)	H_2 (m)	H (m)	P_o (kg/cm^2)	P (kg/cm^2)	t (min)	Q_t (lt)	Q_o (lt/min)	Q (lt/min/m)	Lu (Lugeon)	K (cm/sec)
5	0.84	0.45	1.29	0.50	0.629	10	335	33.50	6.70	106.52	1.36×10^{-3}
				1.00	1.129	10	398	39.80	7.96	70.50	9.03×10^{-4}
				2.00	2.129	10	469	46.90	9.38	44.06	5.64×10^{-4}
				3.00	3.129	10	587	58.7	11.74	37.52	4.81×10^{-4}
				2.00	2.129	10	486	48.60	9.72	45.66	5.85×10^{-4}
				1.00	1.129	10	407	40.70	8.14	72.10	9.23×10^{-4}
				0.50	0.629	10	360	36.0	7.20	114.45	1.47×10^{-3}





① : Pump
② : Flow Meter
③ : Pressure Gauge
④ : Ground Surface
⑤ : Drill Hole
⑥ : Injection Pipe
⑦ : Packer
⑧ : Water Table
⑨ : Hydrostatic Head
⑩ : Length of Test Section
⑪ : Diameter of Hole

P_o : Gauge Pressure
H_1 : Height of Pressure Gauge
H_2 : Depth of Ground Water (Saturated Strata)
P : Effective Pressure $P=P_o + H/10$, $H=H_1+H_2$
t : Injection Time
Q_t : Water Volume During Time t
Q_o : Water Volume per min.
Lu : Lugeon Value in lt/min/m/ $10kg/cm^2$
K : Coefficient of Permeabilit

PERMEABILITY TEST IN DRILL HOLE

PROJECT: G.I. At Upper Liwagu Mini Hydro Project Site HOLE No. LI-2 (Sheet ___ Of ___)

LOCATION Liwagu River Intake DEPTH OF HOLE 15 m TEST DATE 12-1-92

ELEVATION 1049.81 m DIAMETER OF HOLE 8.0 cm TESTED BY Lu

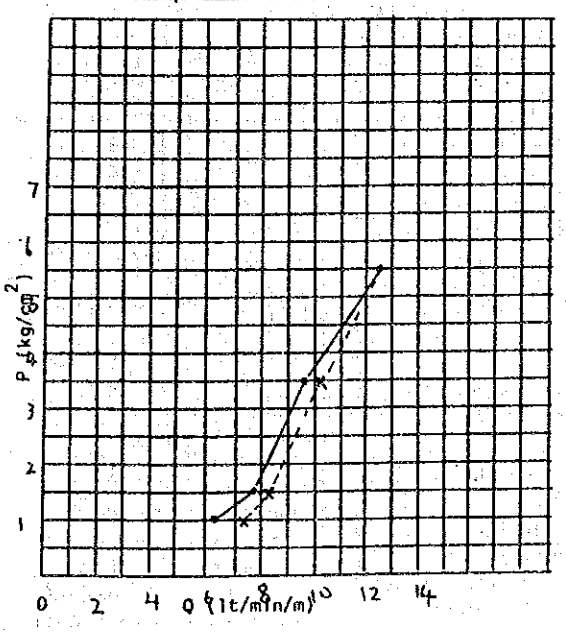
COORDINATE E76 5732.5 N66 2777.5 DRILLED DEPTH 15 m DRILLED BY Wil

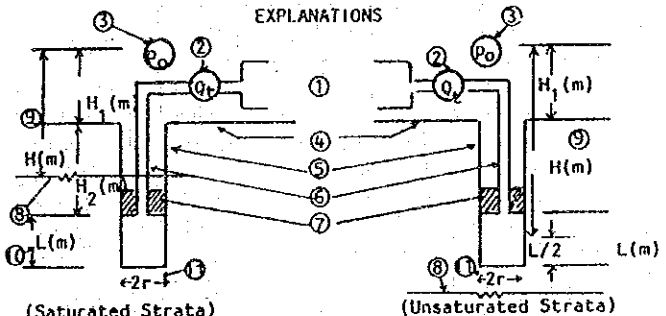
ANGLE FROM HORIZONTAL 90 ° LEVEL OF WATER TABLE: CHECKED BY M. Liew

Before Test: 4.60 m After Test: 4.32 m

TEST SECTION : FROM 10 m To 15 m

L (m)	H_1 (m)	H_2 (m)	H (m)	P_o (kg/cm^2)	P (kg/cm^2)	t (min)	Q_t (lt)	Q_o (lt/min)	Q (lt/min/m)	Lu (Lugeon)	K (cm/sec)
5	0.68	4.60	5.28	0.50	1.028	10	315	31.50	6.30	61.28	7.85×10^{-4}
				1.00	1.528	10	384	38.40	7.68	50.26	6.44×10^{-4}
				3.00	3.528	10	476	47.60	9.52	26.98	3.46×10^{-4}
				5.00	5.528	10	627	62.70	12.54	22.68	2.91×10^{-4}
				3.00	3.528	10	514	51.40	10.28	29.14	3.73×10^{-4}
				1.00	1.528	10	413	41.30	8.26	54.06	6.92×10^{-4}
				0.50	1.028	10	372	37.20	7.44	72.37	9.27×10^{-4}





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⑩ : Length of Test Section
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P_o : Gauge Pressure
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H_2 : Depth of Ground Water (Saturated Strata)
P : Effective Pressure $P=P_o + H/10$, $H=H_1 + H_2$
t : Injection Time
Q_t : Water Volume During Time
Q_o : Water Volume per min.
Lu : Lugeon Value in lt/min/m/ $10kg/cm^2$
K : Coefficient of Permeabili

PERMEABILITY TEST IN DRILL HOLE

PROJECT: G.I. At Upper Liwagu Mini Hydro Project Site HOLE No. LT-1 (Sheet ___ Of ___)

LOCATION Head Pond DEPTH OF HOLE 15 m TEST DATE 22-1-92

ELEVATION 1031.62 m DIAMETER OF HOLE 8.0 cm TESTED BY Lu

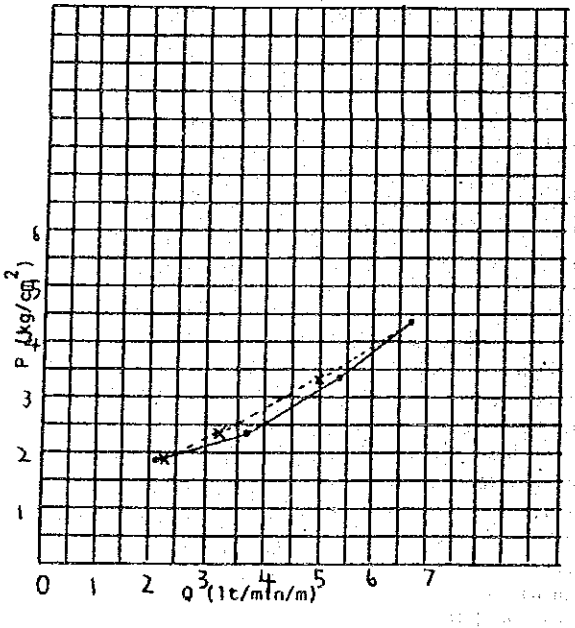
COORDINATE E76 7818 N66 1692.5 DRILLED DEPTH 15 m DRILLED BY Litto

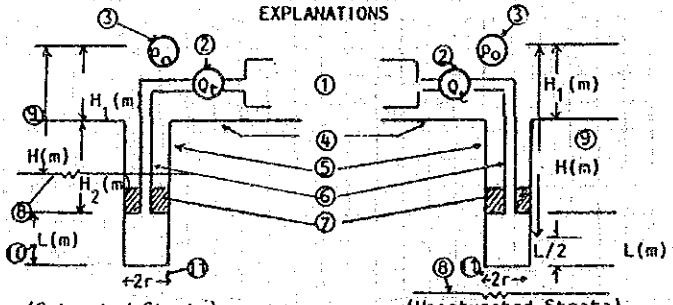
ANGLE FROM HORIZONTAL 90 ° LEVEL OF WATER TABLE: CHECKED BY M. Liew

Before Test: 13.45 m After Test: 13.12 m

TEST SECTION : FROM 10 m To 15 m

L (m)	H_1 (m)	H_2 (m)	H (m)	P_o (kg/cm^2)	P (kg/cm^2)	t (min)	Q_t (lt)	Q_o (lt/min)	Q (lt/min/m)	Lu (Lugeon)	K (cm/sec)
5	0.69	13.45	14.14	0.50	1.819	10	108	10.80	2.16	11.87	1.52×10^{-4}
				1.00	2.319	10	187	18.70	3.74	16.13	2.07×10^{-4}
				2.00	3.319	10	270	27.00	5.40	16.27	2.08×10^{-4}
				3.00	4.319	10	335	33.50	6.70	15.51	1.99×10^{-4}
				2.00	3.319	10	248	24.80	4.96	14.94	1.91×10^{-4}
				1.00	2.319	10	161	16.10	3.22	13.89	1.78×10^{-4}
				0.50	1.819	10	111	11.1	2.22	12.20	1.56×10^{-4}





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H_1 : Height of Pressure Gauge
H_2 : Depth of Ground Water (Saturated Strata)
P : Effective Pressure $P=P_o + H/10$, $H=H_1 + H_2$
t : Injection Time
Q_t : Water Volume During Time
Q_o : Water Volume per min.
Lu : Lugeon Value in lt/min/m/ 10kg/cm^2
K : Coefficient of Permeabili

PERMEABILITY TEST IN DRILL HOLE

PROJECT: G.I. At Upper Liwagu Mini Hydro Project Site HOLE No. LT-1 (Sheet ___ Of ___)

LOCATION: Head Pond DEPTH OF HOLE: 20 m TEST DATE: 24-1-92

ELEVATION: 1031.62 m DIAMETER OF HOLE: 8.0 cm TESTED BY: Lu

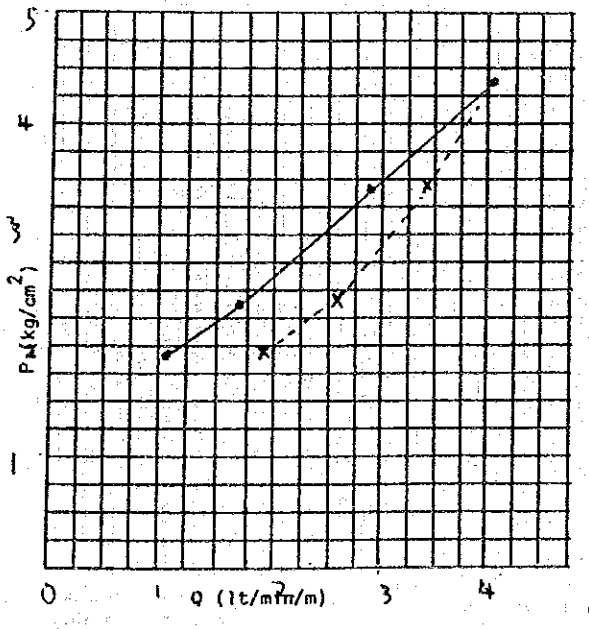
COORDINATE: E76 7818 N66 1692.5 DRILLED DEPTH: 20 m DRILLED BY: Litto

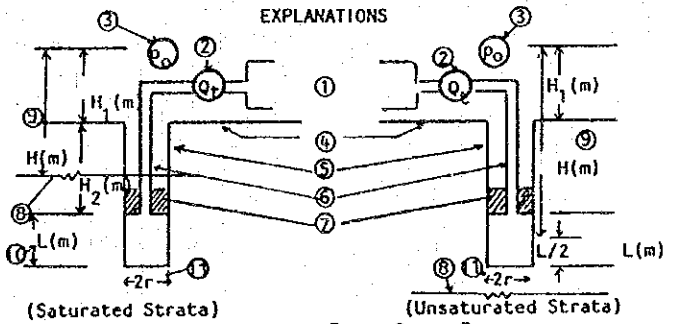
ANGLE FROM HORIZONTAL: 90 ° LEVEL OF WATER TABLE: CHECKED BY: M. Liew

Before Test: 17.03 m After Test: 16.80 m

TEST SECTION : FROM 15 m To 20 m

L (m)	H_1 (m)	H_2 (m)	H (m)	P_o (kg/cm^2)	P (kg/cm^2)	t (min)	Q_t (lt)	Q_o (lt/min)	Q (lt/min/m)	Lu (Lugeon)	K (cm/sec)
5	0.65	17.03	17.68	0.50	1.815	10	58.0	5.80	1.16	6.39	8.19×10^{-5}
				1.00	2.315	10	85.0	8.50	1.70	7.34	9.41×10^{-5}
				2.00	3.315	10	144.0	14.40	2.88	8.69	1.11×10^{-4}
				3.00	4.315	10	203.0	20.30	4.06	9.41	1.21×10^{-4}
				2.00	3.315	10	160.0	16.0	3.20	9.65	1.24×10^{-4}
				1.00	2.315	10	132.0	13.20	2.64	11.40	1.46×10^{-4}
				0.50	1.815	10	95.00	9.50	1.90	10.46	1.34×10^{-4}





① : Pump
② : Flow Meter
③ : Pressure Gauge
④ : Ground Surface
⑤ : Drill Hole
⑥ : Injection Pipe
⑦ : Packer
⑧ : Water Table
⑨ : Hydrostatic Head
⑩ : Length of Test Section
⑪ : Diameter of Hole

P_o : Gauge Pressure
H_1 : Height of Pressure Gauge
H_2 : Depth of Ground Water (Saturated Strata)
P : Effective Pressure $P=P_o + H/10$, $H=H_1+H_2$
t : Injection Time
Q_t : Water Volume During Time
Q_o : Water Volume per min.
Lu : Lugeon Value in lt/min/m/ $10kg/cm^2$
K : Coefficient of Permeabilit

PERMEABILITY TEST IN DRILL HOLE

PROJECT: G.I. At Upper Liwagu Mini Hydro Project Site HOLE No. LT-2 (Sheet ___ Of ___)

LOCATION Head pond DEPTH OF HOLE 15 m TEST DATE 15-1-92

ELEVATION 1035.53 m DIAMETER OF HOLE 8.0 cm TESTED BY Lu

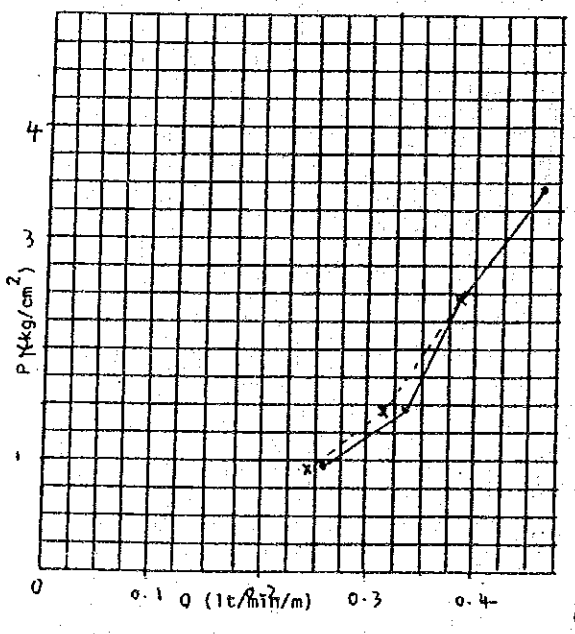
COORDINATE E76 7725.5 N66 1707.5 DRILLED DEPTH 15 m DRILLED BY Litto

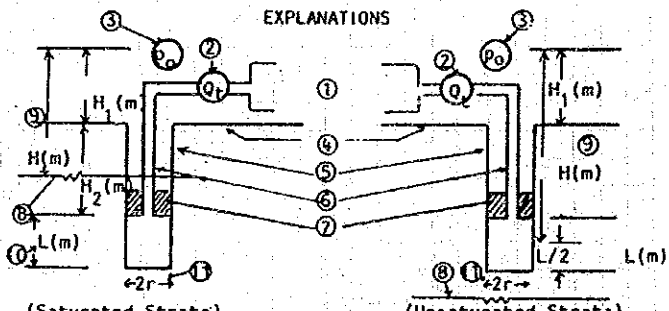
ANGLE FROM HORIZONTAL 90 ° LEVEL OF WATER TABLE: CHECKED BY M. Liew

Before Test: 3.12 m After Test: 3.08 m

TEST SECTION : FROM 10 m To 15 m

L (m)	H_1 (m)	H_2 (m)	H (m)	P_o (kg/cm^2)	P (kg/cm^2)	t (min)	Q_t (lt)	Q_o (lt/min)	Q (lt/min/m)	Lu (Lugeon)	K (cm/sec)
5	1.08	3.12	4.20	0.50	0.92	10	12.60	1.26	0.252	2.74	3.51×10^{-5}
				1.00	1.42	10	16.70	1.67	0.334	2.35	3.01×10^{-5}
				2.00	2.42	10	19.20	1.92	0.384	1.59	2.03×10^{-5}
				3.00	3.42	10	23.40	2.34	0.468	1.37	1.75×10^{-5}
				2.00	2.42	10	19.20	1.92	0.384	1.59	2.03×10^{-5}
				1.00	1.42	10	15.80	1.58	0.316	2.23	2.85×10^{-5}
				0.50	0.92	10	12.20	1.22	0.244	2.65	3.40×10^{-5}





① : Pump
② : Flow Meter
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⑧ : Water Table
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P_o : Gauge Pressure
H_1 : Height of Pressure Gauge
H_2 : Depth of Ground Water (Saturated Strata)
P : Effective Pressure $P=P_o + H/10$, $H=H_1 + H_2$
t : Injection Time
Q_t : Water Volume During Time
Q_o : Water Volume per min.
Lu : Lugeon Value in lt/min/m/ $10kg/cm^2$
K : Coefficient of Permeabili

PERMEABILITY TEST IN DRILL HOLE

PROJECT: G.I. At Upper Liwagu Mini Hydro Project Site HOLE No. LT-2 (Sheet ___ Of ___)

LOCATION Head Pond DEPTH OF HOLE 20 m TEST DATE 16-1-92

ELEVATION 1035.53 m DIAMETER OF HOLE 8.0 cm TESTED BY Lu

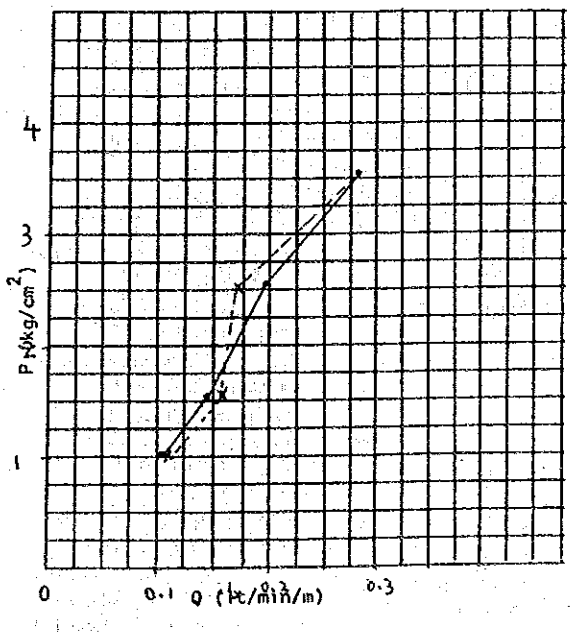
COORDINATE E76 7725.5 N66 1707.5 DRILLED DEPTH 20 m DRILLED BY Litto

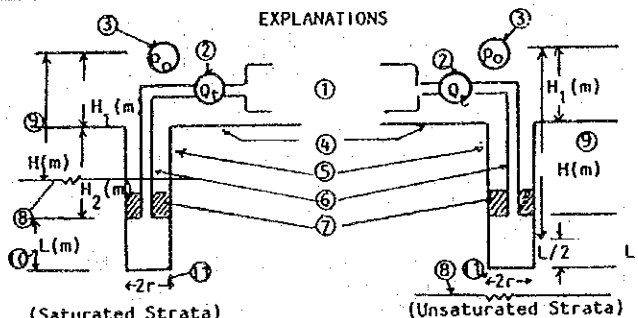
ANGLE FROM HORIZONTAL 90 ° LEVEL OF WATER TABLE: CHECKED BY M. Liew

Before Test: 4.20 m After Test: 4.00 m

TEST SECTION : FROM 15 m To 20 m

L (m)	H_1 (m)	H_2 (m)	H (m)	P_o (kg/cm^2)	P (kg/cm^2)	t (min)	Q_t (lt)	Q_o (lt/min)	Q (lt/min/m)	Lu (Lugeon)	K (cm/sec)
5	1.52	4.20	5.72	0.50	1.072	10	5.30	0.53	0.106	0.99	1.27×10^{-5}
				1.00	1.572	10	7.00	0.70	0.140	0.89	1.14×10^{-5}
				2.00	2.572	10	9.90	0.99	0.198	0.77	9.86×10^{-6}
				3.00	3.572	10	14.20	1.42	0.284	0.79	1.02×10^{-5}
				2.00	2.572	10	8.40	0.84	0.168	0.65	8.37×10^{-6}
				1.00	1.572	10	8.10	0.81	0.162	1.03	1.32×10^{-5}
				0.50	1.072	10	5.40	0.54	0.108	1.01	1.29×10^{-5}





① : Pump
② : Flow Meter
③ : Pressure Gauge
④ : Ground Surface
⑤ : Drill Hole
⑥ : Injection Pipe
⑦ : Packer
⑧ : Water Table
⑨ : Hydrostatic Head
⑩ : Length of Test Section
⑪ : Diameter of Hole

P_o : Gauge Pressure
H_1 : Height of Pressure Gauge
H_2 : Depth of Ground Water (Saturated Strata)
P : Effective Pressure $P=P_o + H/10$, $H=H_1 + H_2$
t : Injection Time
Q_t : Water Volume During Time t
Q_o : Water Volume per min.
Lu : Lugeon Value in lt/min/m/10kg/cm^2
K : Coefficient of Permeabilit

PERMEABILITY TEST IN DRILL HOLE

PROJECT: G.I. At Upper Liwagu Mini Hydro Project Site HOLE No. LP-1 (Sheet ___ Of ___)

LOCATION Kundasang DEPTH OF HOLE 15 m TEST DATE 10-12-91

ELEVATION 975.08 m DIAMETER OF HOLE 8.0 cm TESTED BY Lu

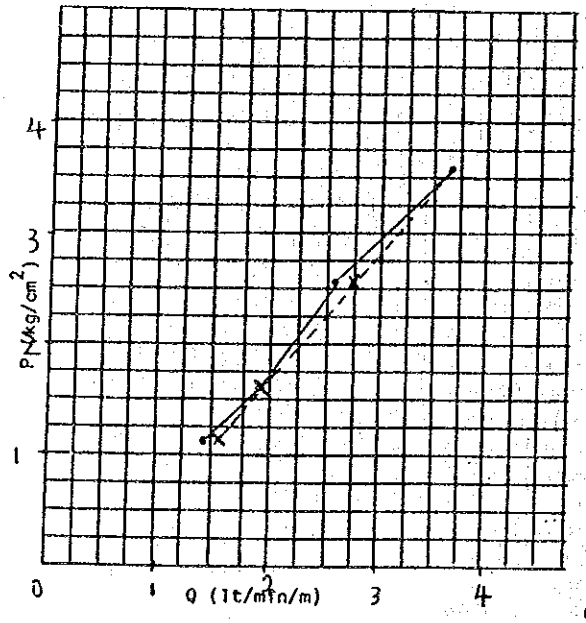
COORDINATE E76 7727 N66 1434 DRILLED DEPTH 15 m DRILLED BY Andy

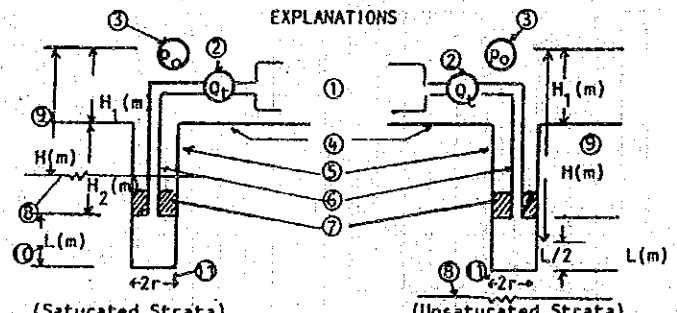
ANGLE FROM HORIZONTAL 90° LEVEL OF WATER TABLE: 15 CHECKED BY M. Liew

Before Test: 5.63 m After Test: 5.30 m

TEST SECTION : FROM 10 m To 15 m

L (m)	H_1 (m)	H_2 (m)	H (m)	P_0 (kg/cm^2)	P (kg/cm^2)	t (min)	Q_t (lt)	Q_o (lt/min)	Q (lt/min/m)	Lu (Lugeon)	K (cm/sec)
5	0.77	5.63	6.40	0.50	1.14	10	71	7.10	1.42	12.46	1.60×10^{-4}
				1.00	1.64	10	95	9.50	1.90	1.59	1.48×10^{-4}
				2.00	2.64	10	127	12.70	2.54	9.62	1.23×10^{-4}
				3.00	3.64	10	170	17.0	3.40	9.34	1.20×10^{-4}
				2.00	2.64	10	137	13.7	2.74	10.38	1.33×10^{-4}
				1.00	1.64	10	95	9.50	1.90	11.59	1.48×10^{-4}
				0.50	1.14	10	80	8.00	1.60	14.04	1.80×10^{-4}





① : Pump
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③ : Pressure Gauge
④ : Ground Surface
⑤ : Drill Hole
⑥ : Injection Pipe
⑦ : Packer
⑧ : Water Table
⑨ : Hydrostatic Head
L : Length of Test Section
2r : Diameter of Hole

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t : Injection Time
Q_t : Water Volume During Time t
Q_o : Water Volume per min.
Lu : Lugeon Value in lt/min/m/ 10kg/cm^2
K : Coefficient of Permeabilit

PERMEABILITY TEST IN DRILL HOLE

PROJECT: G.I. At upper Liwagu Mini Hydro Project Site HOLE No. LP-1 (Sheet ___ Of ___)

LOCATION Kundasang DEPTH OF HOLE 20 m TEST DATE 13-12-91

ELEVATION 975.08 m DIAMETER OF HOLE 8.0 cm TESTED BY Lu

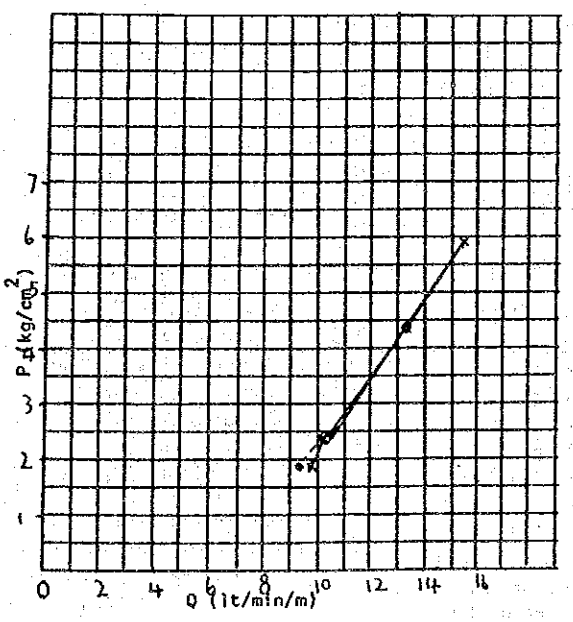
COORDINATE E76 7727 N66 1434 DRILLED DEPTH 20 m DRILLED BY Andy

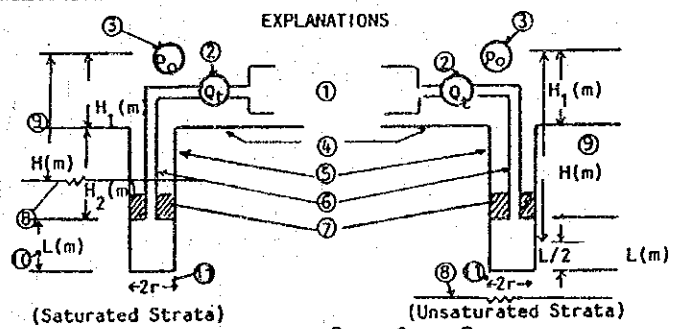
ANGLE FROM HORIZONTAL 90° LEVEL OF WATER TABLE: CHECKED BY M. Liew

Before Test: 13.35 m After Test: 13.02 m

TEST SECTION : FROM 15 m To 20 m

L (m)	H_1 (m)	H_2 (m)	H (m)	P_o (kg/cm^2)	P (kg/cm^2)	t (min)	Q_t (lt)	Q_o (lt/min)	Q (lt/min/m)	Lu (Lugeon)	K (cm/sec)
5	13.35	0.77	14.12	0.50	1.912	10	489	48.9	9.78	51.15	6.55×10^{-4}
				1.00	2.412	10	531	53.1	10.10	10.62	5.64×10^{-4}
				3.00	4.412	10	666	66.6	13.32	30.19	3.87×10^{-4}
				5.00	6.412	10	780	78.0	15.60	24.33	3.12×10^{-4}
				3.00	4.412	10	667	66.7	13.34	30.24	3.87×10^{-4}
				1.00	2.412	10	522	52.2	10.44	43.28	5.54×10^{-4}
				0.50	1.912	10	471	47.1	9.42	49.27	6.31×10^{-4}





① : Pump
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Q_o : Water Volume per min.
Lu : Lugeon Value in lt/min/m/ 10kg/cm^2
K : Coefficient of Permeabilit

PERMEABILITY TEST IN DRILL HOLE

PROJECT: Geological Investigation At Upper Liwagu Mini Hydro HOLE No. LP-2 (Sheet ___ Of ___)

LOCATION Penstock DEPTH OF HOLE Project Site 15 m TEST DATE 25-1-92

ELEVATION 913.65 m DIAMETER OF HOLE 8.0 cm TESTED BY Lu

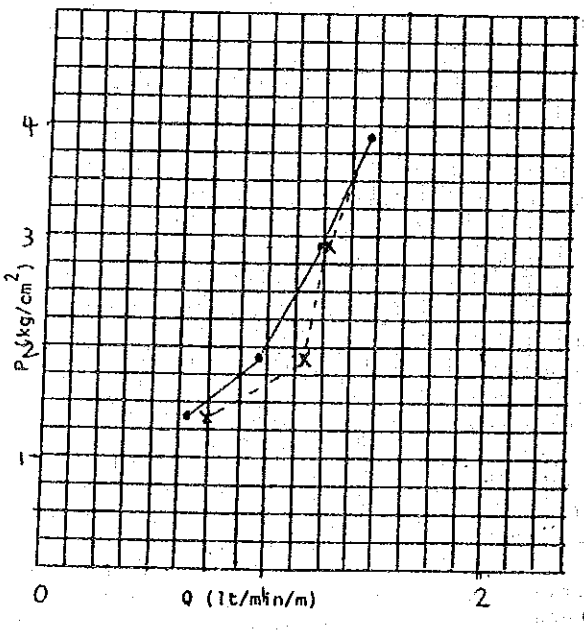
COORDINATE E76 7717.5 N66 1236 DRILLED DEPTH 15 m DRILLED BY Andy

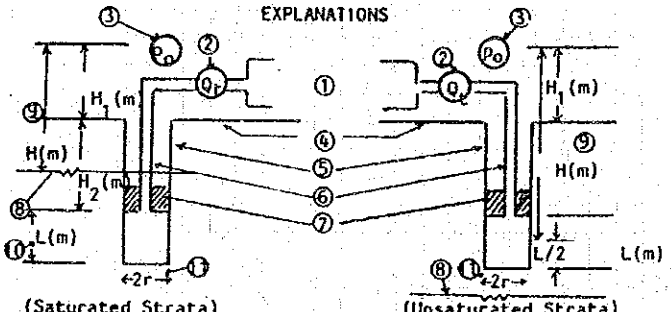
ANGLE FROM HORIZONTAL 90° LEVEL OF WATER TABLE: CHECKED BY

Before Test: 7.39 m After Test: 6.80 m

TEST SECTION : FROM 10 m To 15 m

L (m)	H_1 (m)	H_2 (m)	H (m)	P_o (kg/cm^2)	P (kg/cm^2)	t (min)	Q_t (lt)	Q_o (lt/min)	Q (lt/min/m)	Lu (Lugeon)	K (cm/sec)
5	0.99	7.39	8.38	0.50	1.34	10	34	3.4	0.68	5.01	6.50×10^{-5}
				1.00	1.84	10	49	4.9	0.98	5.33	6.82×10^{-5}
				2.00	2.84	10	63	6.3	1.26	4.44	5.68×10^{-5}
				3.00	3.84	10	73	7.3	1.46	3.80	4.87×10^{-5}
				2.00	2.84	10	63	6.3	1.26	4.44	5.68×10^{-5}
				1.00	1.84	10	57	5.7	1.14	6.20	7.94×10^{-5}
				0.50	1.34	10	37	3.7	0.74	5.52	7.07×10^{-5}





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Q_o : Water Volume per min.
Lu : Lugeon Value in lt/min/m/ 10kg/cm^2
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PERMEABILITY TEST IN DRILL HOLE

PROJECT: Geological Investigation At Upper Liwagu Mini Hydro HOLE No. LP-2 (Sheet ___ Of ___)

LOCATION Penstock DEPTH OF HOLE Project Site 20 m TEST DATE 27-1-92

ELEVATION 913.65 m DIAMETER OF HOLE 8.0 cm TESTED BY LU

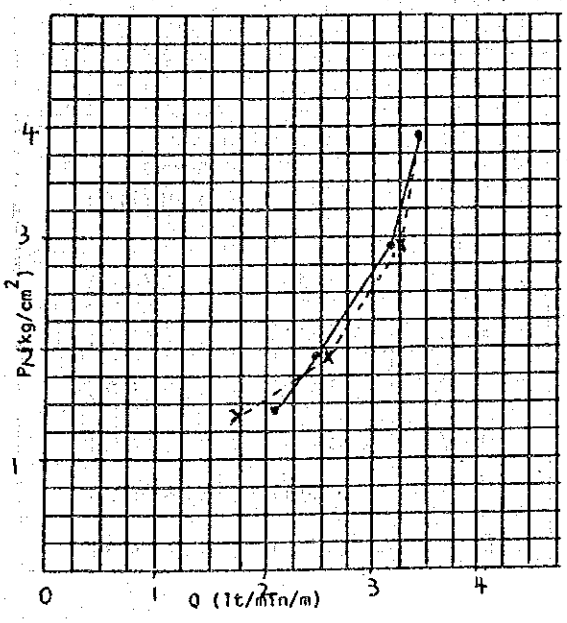
COORDINATE E76 7717.5 N66 1236 DRILLED DEPTH 20 m DRILLED BY Andy

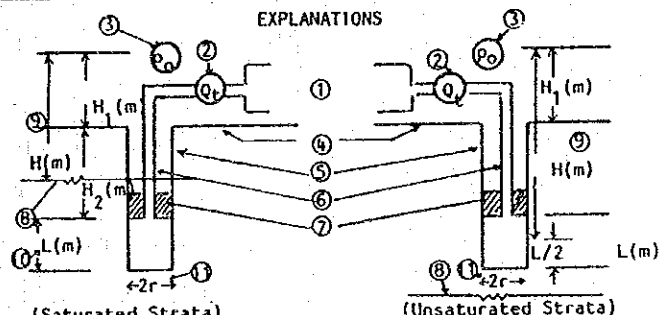
ANGLE FROM HORIZONTAL 90 ° LEVEL OF WATER TABLE: CHECKED BY M. Liew

Before Test: 8.48 m After Test: 8.10 m

TEST SECTION : FROM 15 m To 20 m

L (m)	H_1 (m)	H_2 (m)	H (m)	P_o (kg/cm^2)	P (kg/cm^2)	t (min)	Q_t (lt)	Q_o (lt/min)	Q (lt/min/m)	Lu (Lugeon)	K (cm/sec)
5	1.12	8.48	9.60	0.50	1.46	10	104	10.4	2.08	14.25	1.82×10^{-4}
				1.00	1.96	10	123	12.3	2.46	12.55	1.61×10^{-4}
				2.00	2.96	10	144	14.4	2.88	9.73	1.25×10^{-4}
				3.00	3.96	10	165	16.5	3.30	8.33	1.07×10^{-4}
				2.00	2.96	10	150	15.0	3.00	10.14	1.30×10^{-4}
				1.00	1.96	10	131	13.1	2.62	13.37	1.71×10^{-4}
				0.50	1.46	10	86	8.6	1.72	11.78	1.51×10^{-4}





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Lu : Lugeon Value in lt/min/m/ 10kg/cm^2
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SEISMOLOGICAL DATA OF EARTHQUAKES, SABAH AND OFFSHORE, 1897-1991

Presented by Lim Pen Siong

NO	DATE MM/DD/YR	ORIGIN TIME HH/MIN/SEC (UTC)	LAT. (N)	LONG. (E)	DEPTH KM	MAG.
1.	09/20/97 (1897)	19/06/00.0	6.0	122.0	-	8.6
2.	09/21/97 (1897)	05/12/00.0	6.0	122.0	-	8.7
3.	04/19/23 (1923)	03/09/08.0	2.5	117.5	-	7.0(PAS)
4.	08/11/23	00/54/25.0	4.5	119.5	-	6.5(PAS)
5.	07/21/30	14/06/02.0	7.0	114.0	-	6.0(PAS)
6.	09/15/32	11/13/15.1	6.0	120.75	-	6.25(PAS)
7.	12/04/32	08/11/12.0	2.5	121.0	-	7.1(PAS)
8.	04/12/51	11/06/39.0	6.2	117.0	-	-
9.	06/02/51	06/47/51.0	6.9	116.8	-	5.75
10.	07/27/51	00/03/04.0	7.6	120.7	160	-
11.	10/26/58	02/17/32.0	5.5	117.0	-	5.75
12.	05/09/60	02/46/08.0	5.5	122.0	-	-
13.	10/10/60	10/44/56.0	7.0	117.4	100	-
14.	05/18/66	17/25/50.1	5.9	116.7	52	5.3(MB) ISC
15.	07/27/68	22/10/03.8	6.1	120.89	60	5.3(MB)
16.	04/28/73	20/39/43.9	6.39	117.7	71	5.1(MB) ISC
17.	06/18/76	18/40/39.7	6.04	119.77	33N	4.5(MB)
18.	07/25/76	14/03/17.8	5.09	118.29	NORMAL	5.3(MB)
19.	07/25/76	14/03/19.7	4.96	118.43	108.1	4.1
20.	07/26/76	02/56/39.4	4.93	118.34	29	5.8(MB) ISC
21.	07/26/76	03/03/15.1	5.06	118.39	NORMAL	5.3(MB)
22.	07/26/76	05/35/10.3	4.99	118.59	NORMAL	5.2(MB)
23.	07/26/76	08/36/12.2	4.90	118.05	NORMAL	5.3(MB)
24.	07/26/76	08/36/17.98	4.77	118.05	125.4	5.3(MB)
25.	07/26/76	08/49/34.6	4.89	118.34	NORMAL	5.3(MB)
26.	07/26/76	09/43/50.6	4.99	118.55	NORMAL	5.1(MB)

NO	DATE MM/DD/YR	ORIGIN TIME HH/MIN/SEC (UTC)	LAT. (N)	LONG. (E)	DEPTH KM	MAG.
27.	07/26/76	09/43/55.95	4.35	118.51	186	4.1(MB)
28.	07/26/76	13/12/11.0	4.59	118.16	NORMAL	4.5(MB)
29.	07/27/76	03/38/39.71	6.0	119.5	-	-
30.	07/27/76	03/42/33.37	5.0	119.0	-	-
31.	08/14/76	11/10/28.0	4.71	118.42	36	5.1(MB)
32.	08/27/76	09/00/28.59	4.89	118.59	-	4.5
33.	09/18/76	07/54/44.9	4.64	118.03	NORMAL	5.0(MB)
34.	09/18/76	07/54/47.7	4.64	117.61	-	4.0
35.	09/20/76	20/50/51.35	5.0	119.0	-	4.6
36.	10/23/80	14/00/21.4	6.52	117.96	51	5.1(MB)
38.	12/09/81	19/24/59.1	3.80	117.32	57	4.8(MB)
39.	12/25/81	00/28/15.79	4.76	118.48	39.1	5.4(MB) USGS
40.	12/25/81	00/28/18.4	5.3	118.6	-	5.8
41.	03/22/83	22/44/24.87	3.84	118.86	57.6	5.0(MB) USGS
42.	07/31/83	02/52/14.6	1.31	117.8	33N	5.1(MB)
43.	03/14/84	00/39/00.8	5.2	119.6	-	6.0
45.	03/16/84	19/52/56.7	6.0	119.0	-	4.0
46.	04/13/84	00/39/18.5	5.22	118.45	52	5.6(MB)
47.	05/24/84	14/56/44.0	4.0	118.4	-	3.8
48.	10/28/85	02/56/39.3	4.96	118.31	NORMAL	5.8(MB) USGS
49.	12/14/88	17/06/22.9	5.7	117.8	33	5.0(MB) USGS
50.	05/26/91	10/59/49.1	5.84	116.72	33N	5.2(MB) USGS
51.	05/26/91	11/17/01.3	5.79	116.77	33N	5.1(MB)

Abbreviations:
PAS: California Institute of Technology, Pasadena.
USGS: National Earthquake Information Centre, United

States Geological Survey.

MB: Body Wave Magnitude.

UTC: Universal Co-ordinated Time.

ISC: International Seismological Centre, London.

Notes:

a) Data provided by Meteorological services Department, Malaysia unless otherwise stated.

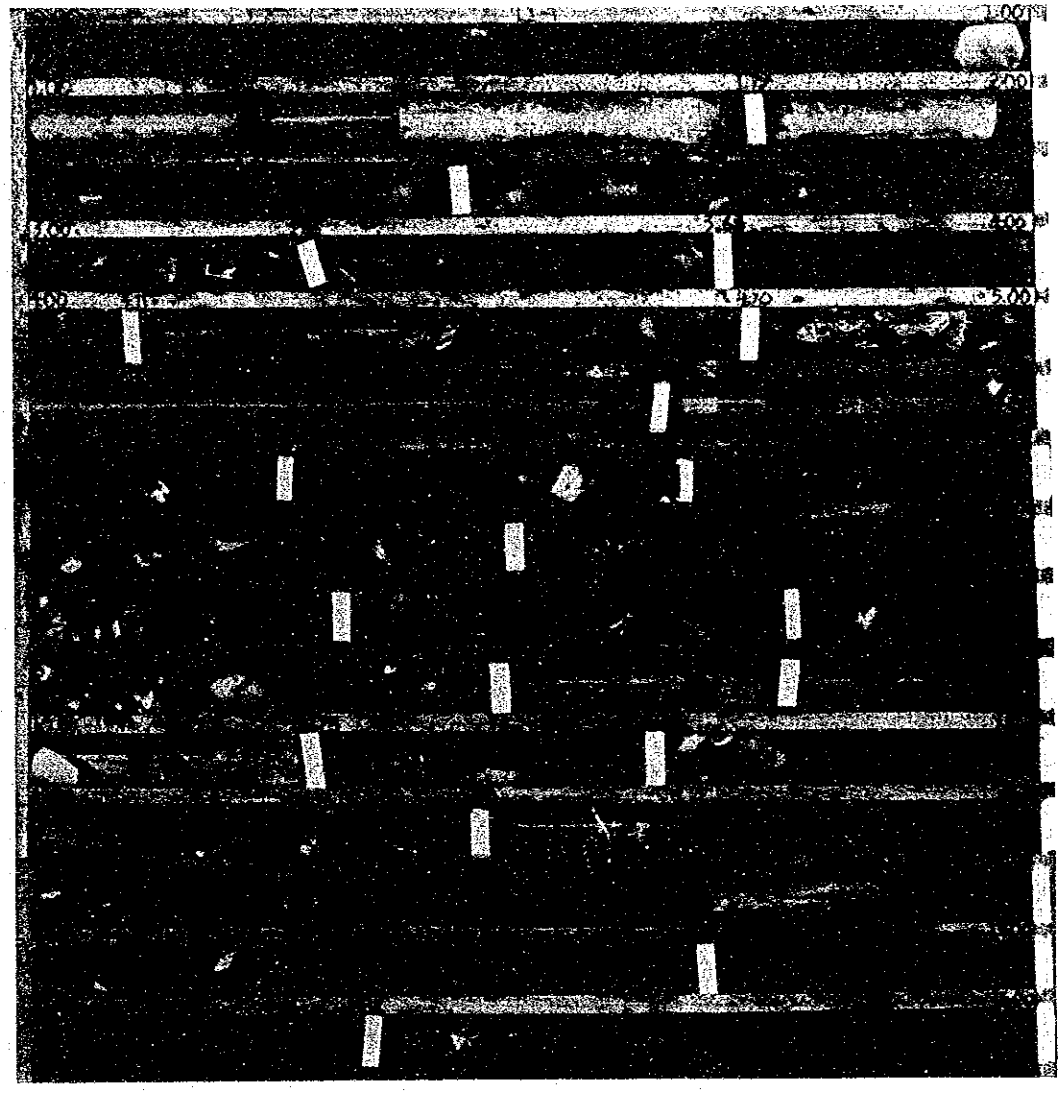
b) An `N' following the depth value indicated the depth was restraint at 33 km for earthquake whose character on seismograms indicated a shallow focus but whose depth was not satisfactorily determined by the data.

c) Focal depth < 70 km is said to be `Normal'.

d) Magnitude on Richter Scale unless otherwise stated.

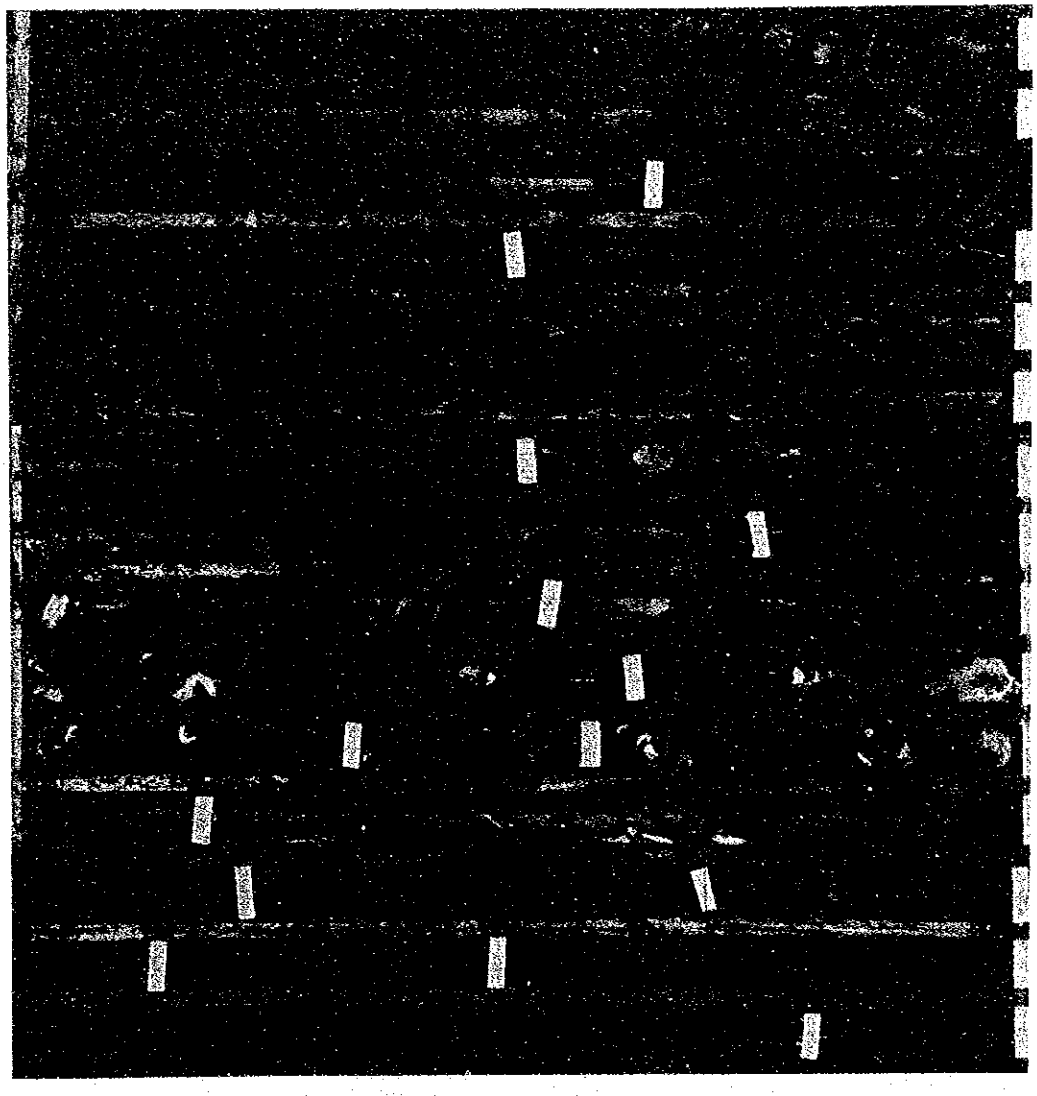
CORE PHOTOGRAPH OF LI-1

LI-1 Liwagu Intake Dam E765,742.5 N662,788.5 EL.1,049.91m DEPTH 15.00m



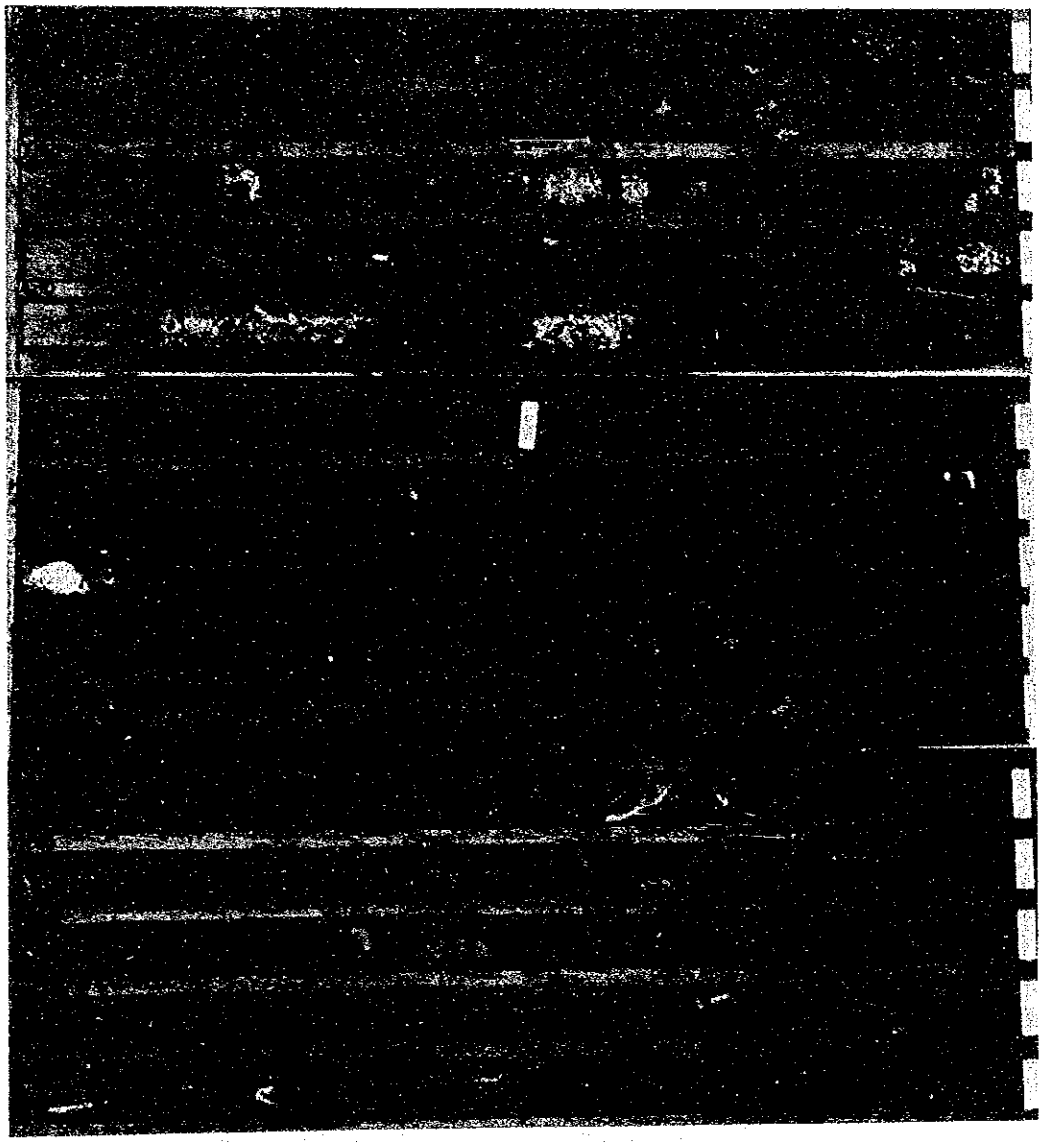
CORE PHOTOGRAPH OF LI-2

LI-2 Liwagu Intake Dam E765,732.5 N662,777.5 EL.1,049.81m DEPTH 15.00m



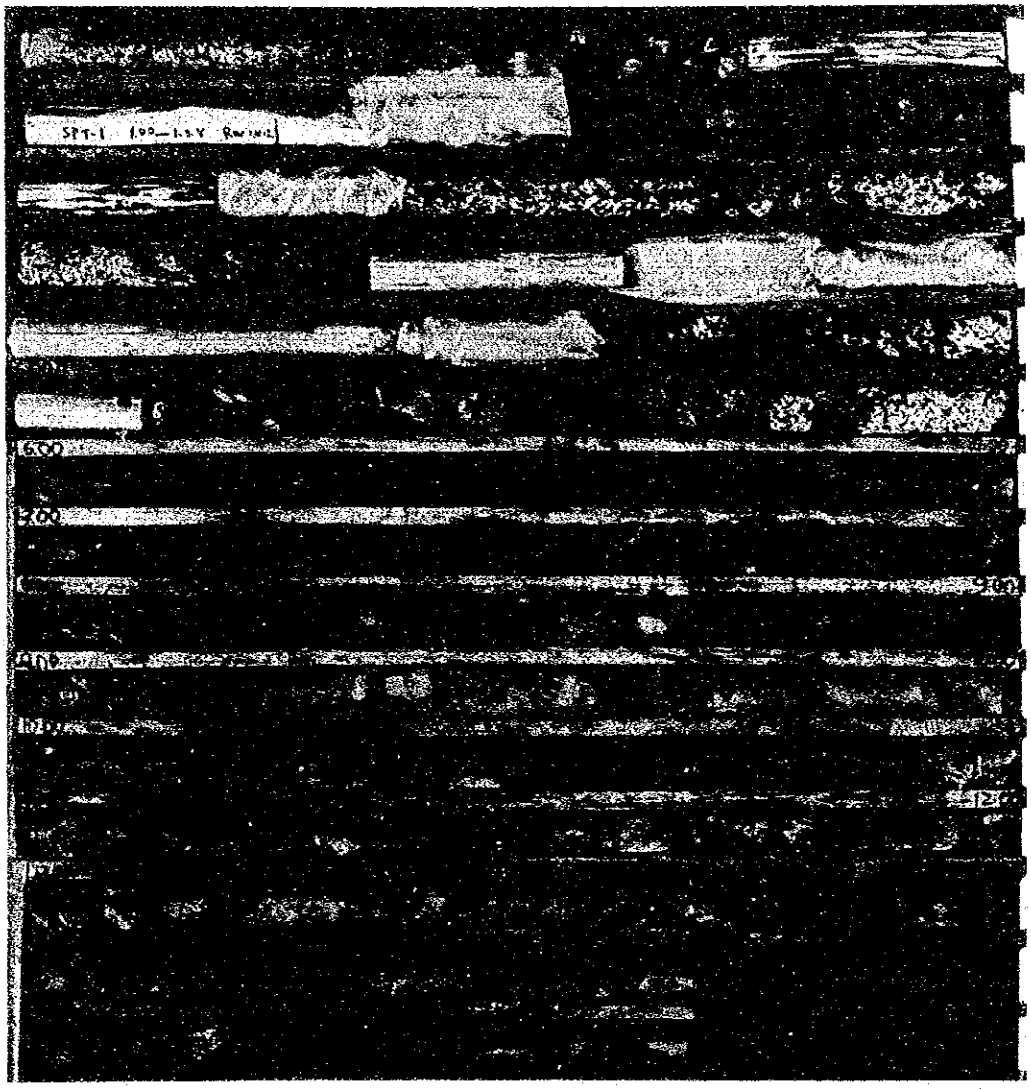
CORE PHOTOGRAPH OF LI-3

LI-3 Mesilau Intake Dam E767,644.5 N662,603.5 EL.1,035.96m DEPTH 15.00m



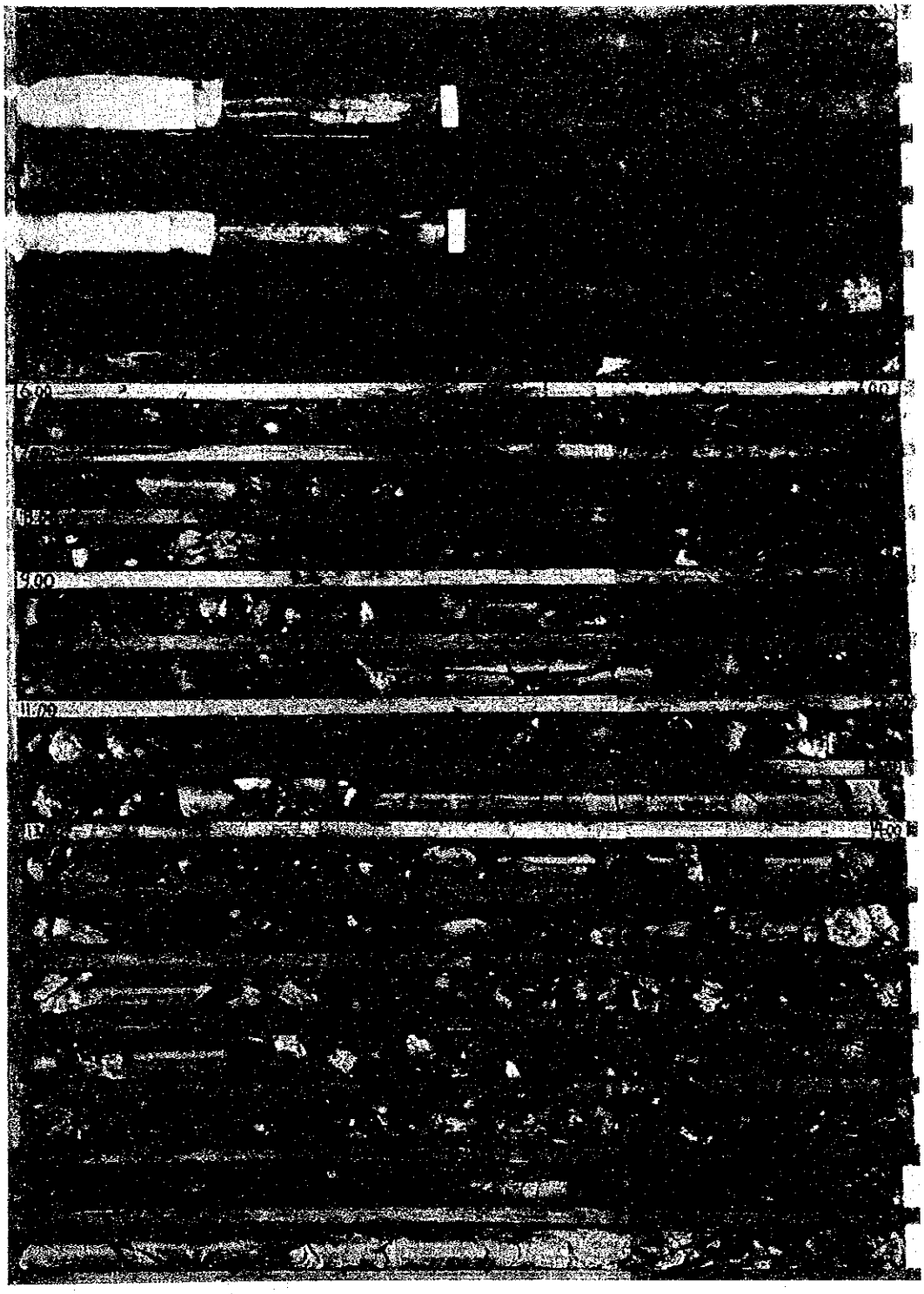
CORE PHOTOGRAPH OF L I – 4

LI-4 Mesilau Intake Dam E767,623.3 N662,597.5 EL.1,035.34m DEPTH 15.00m



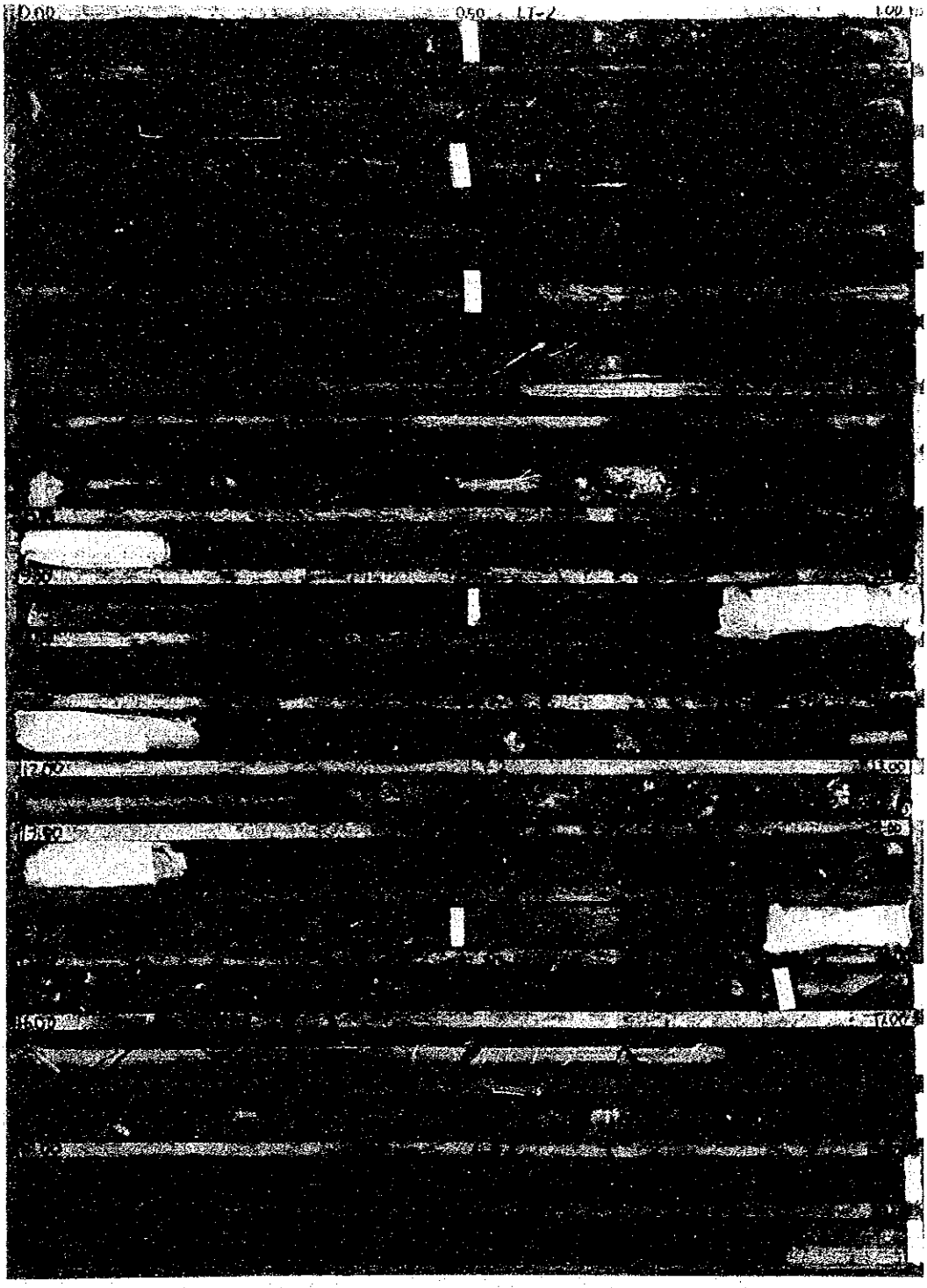
CORE PHOTOGRAPH OF LT-1

LT-1 Head Pond E767,818.0 N661,692.5 EL.1,031.62m DEPTH 20.00m



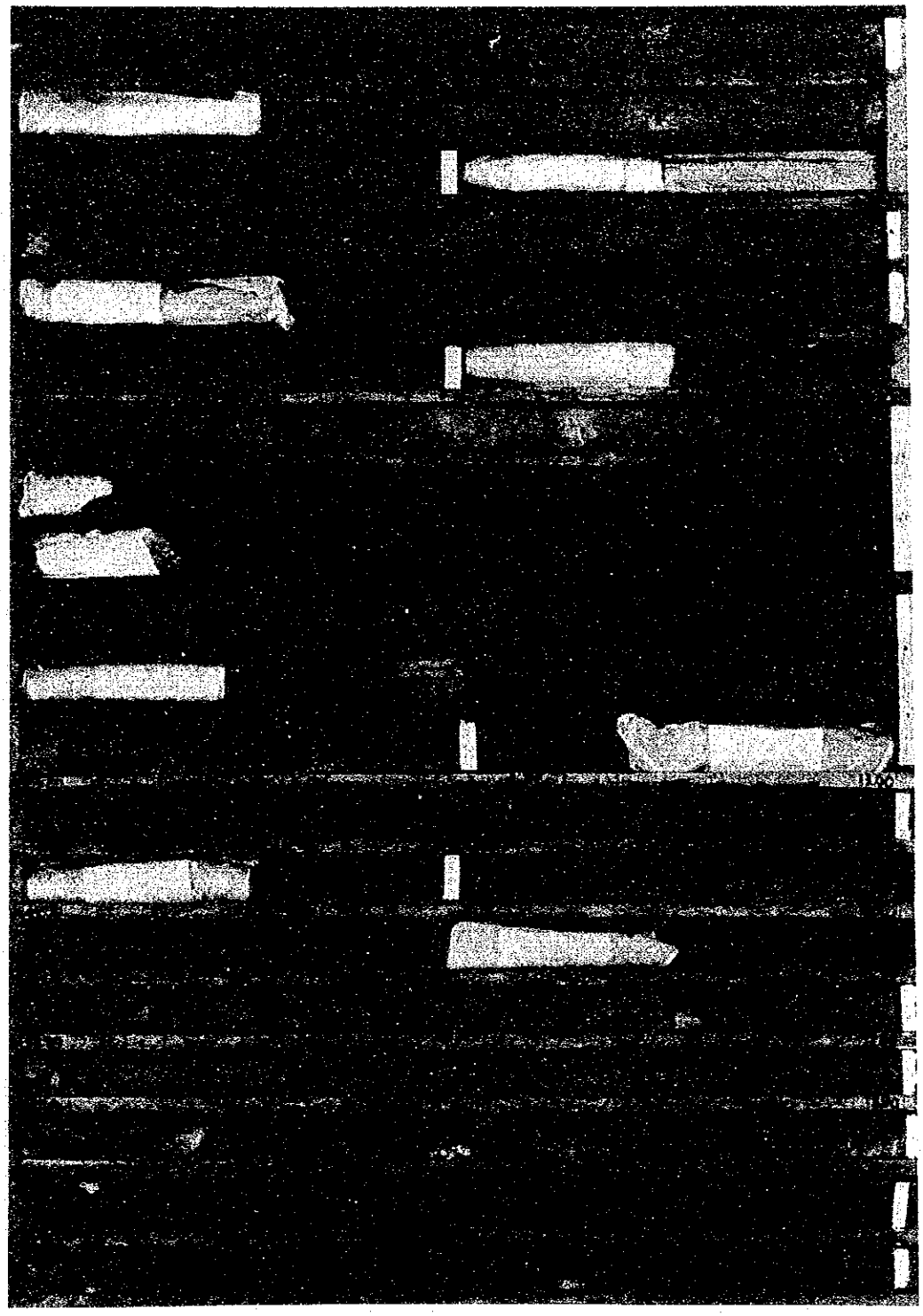
CORE PHOTOGRAPH OF LT-2

LT-2 Head Pond E767,725.5 N661,707.5 EL.1,035.53m DEPTH 20.00m



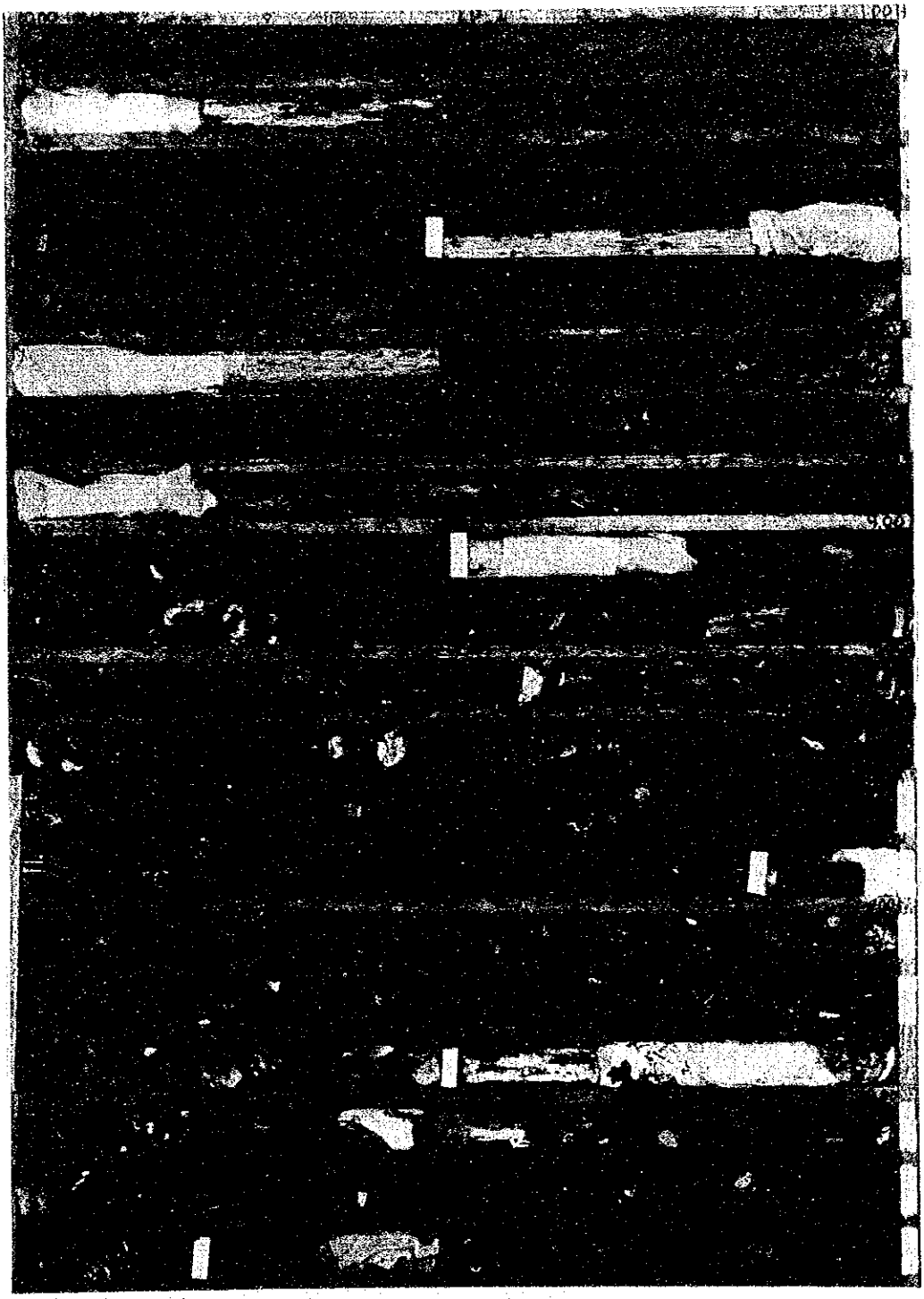
CORE PHOTOGRAPH OF LP-1

LP-1 Penstock E767,727.0 N661,434.0 EL. 975.08m DEPTH 20.00m



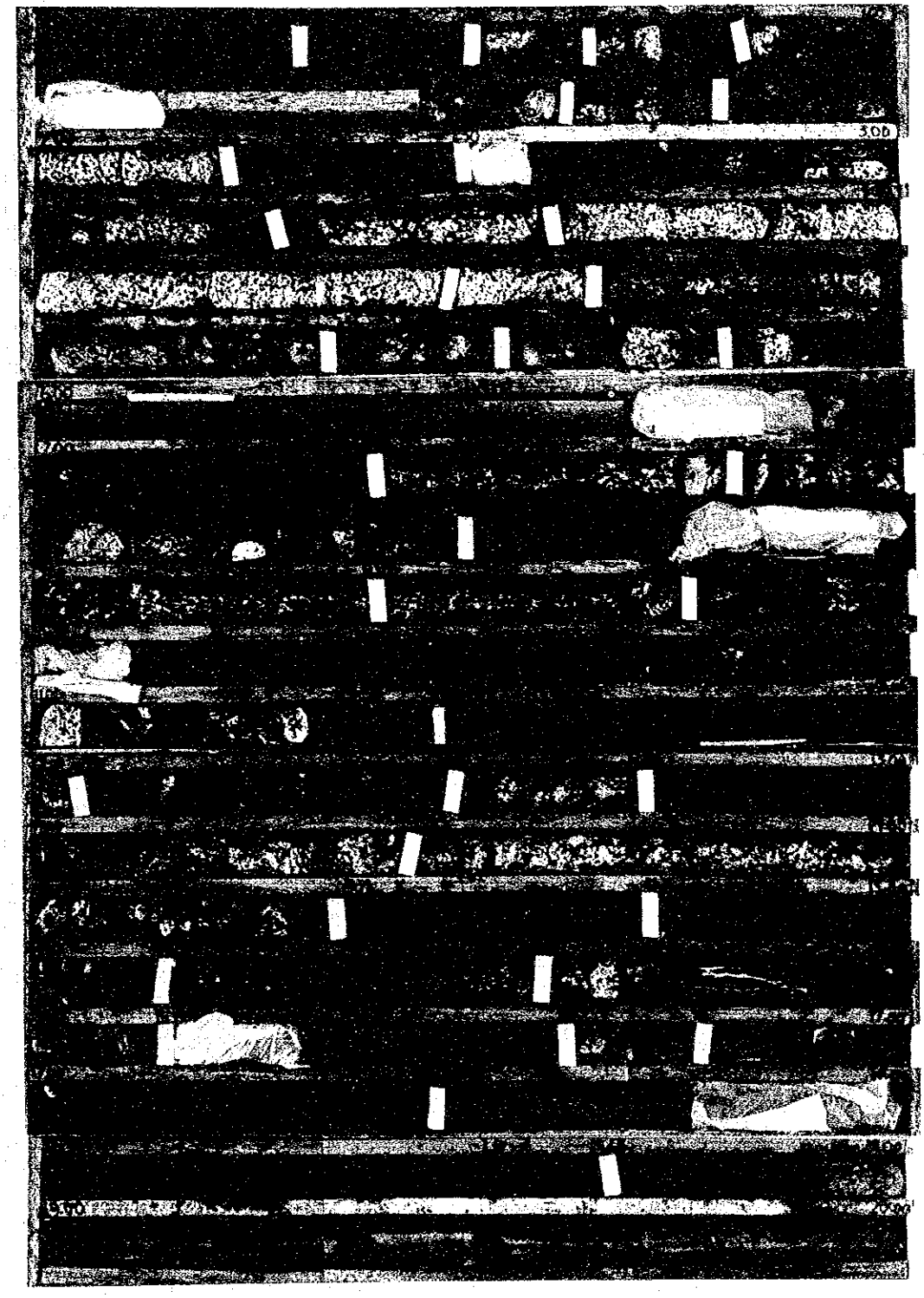
CORE PHOTOGRAPH OF LP-2

LP-2 Penstock E767,717.0 N661,237.0 EL. 913.65m DEPTH 20.00m



CORE PHOTOGRAPH OF LP-3

LP-3 Power House E767,712.0 N661,075.0 EL. 861.67m DEPTH 20.00m

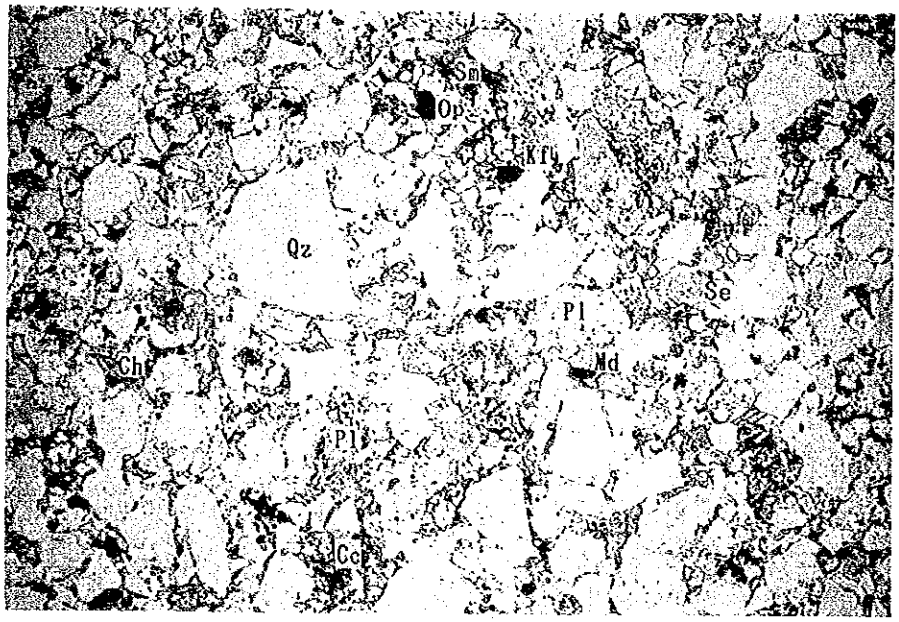


Micrograph and Petrographic Discription of Rock

Locality : Drill Hole LT-1 Depth 10.5m

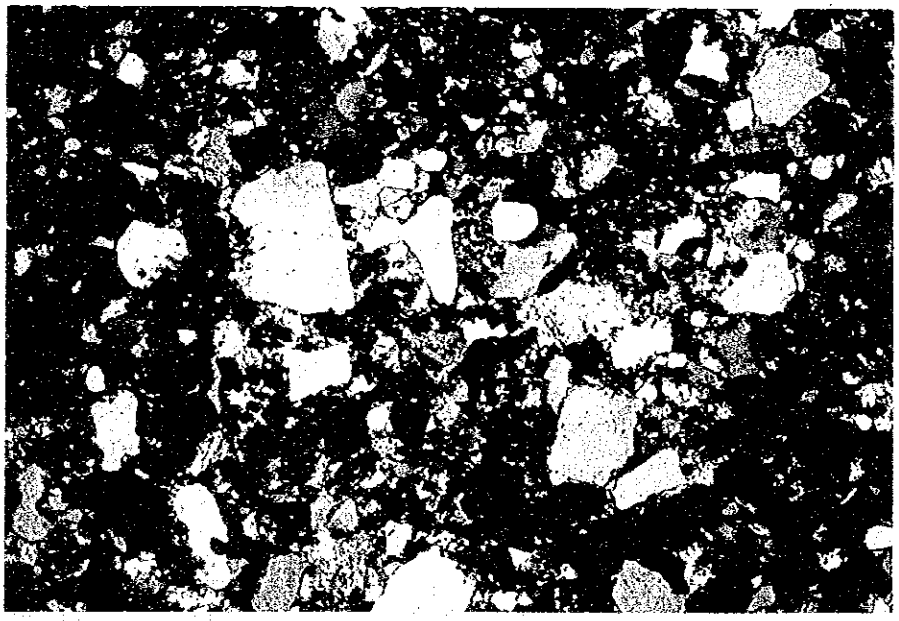
Rock Name : Sandstone

Petrographic Discription : Clastic texture



Open nicol

0 0.5mm



Crossed nicol

0 0.5mm

Qz:Quartz Ch:Chlorite Pl:Plagioclase Cc:Carbonate mineral Sm:Smectites

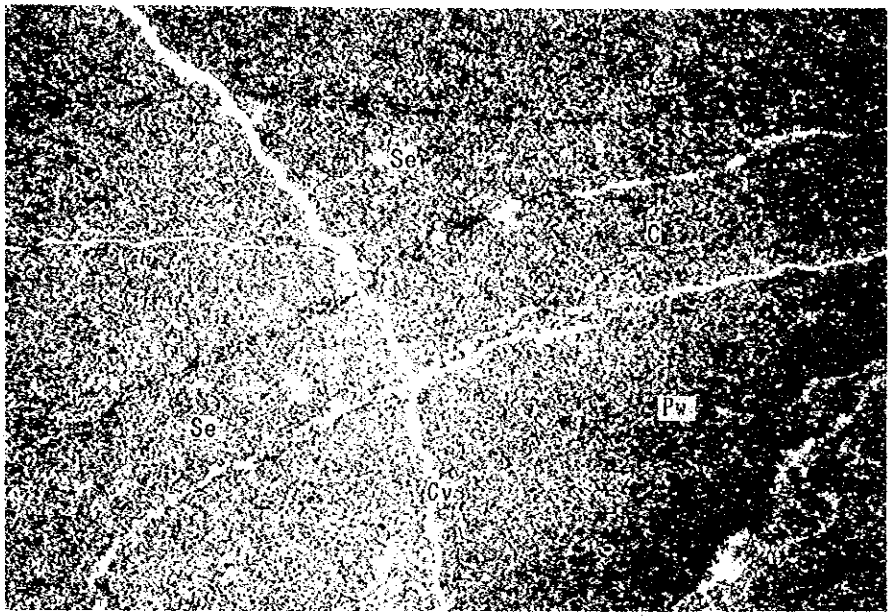
Op:Opaque mineral Se:Sericite Kf:Alkali feldspar Md:Fragment of mudstone

Micrograph and Petrographic Discription of Rock

Locality : Drill Hole LT-1 Depth 8.4m

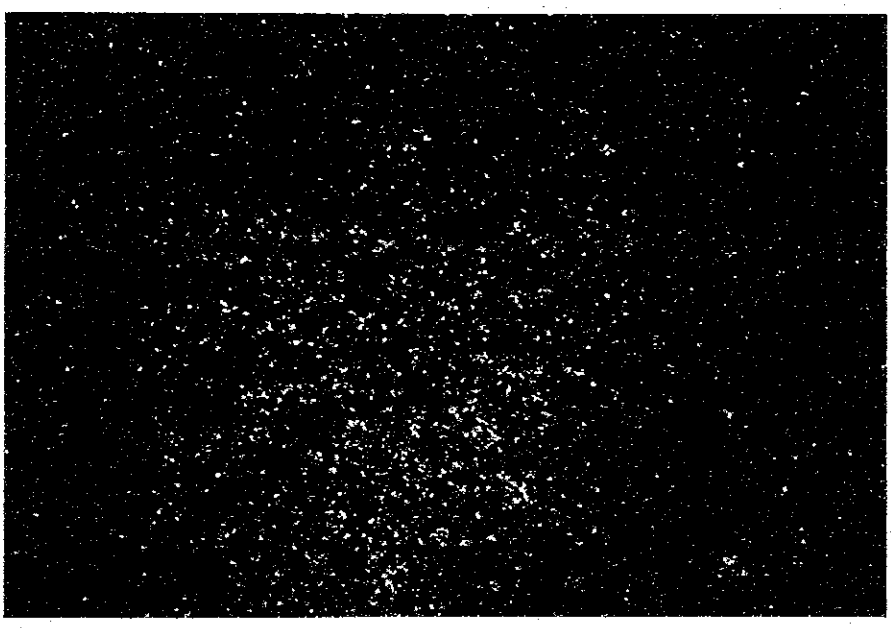
Rock Name : Red Siltstone (Shale)

Petrographic Discription : Micro clastic texture



Open nicol

0 0.5mm



Crossed nicol

0 0.5mm

Se:Sericite C:Coal Pw:Micro iron mineral Cv:Crack

Appendix 3 METEOROLOGICAL AND HYDROLOGICAL DATA

Appendix 3

METEOROLOGICAL AND HYDROLOGICAL DATA

CONTENTS

1. Daily Rainfall Data

Kundasang

Daily Rainfall at Kundassang Rainfall Gauging Station (1970)

(unit: mm)

DAY	1	2	3	4	5	6	7	8	9	10	11	12
1	4.10	3.80	0.0	30.50	30.50	1.50	0.0	3.30	16.50	6.10	0.0	0.0
2	5.10	4.80	0.0	27.90	0.0	5.60	0.0	3.00	0.0	12.40	0.0	1.80
3	25.40	10.40	52.80	19.30	10.70	65.30	0.0	0.50	5.10	1.80	0.0	8.40
4	10.70	8.10	0.0	1.00	2.80	44.20	0.0	4.10	3.60	0.80	0.0	38.10
5	13.20	1.80	2.00	2.80	6.60	21.30	4.80	3.60	0.0	0.0	11.20	46.20
6	3.30	0.0	0.0	0.0	0.0	4.80	0.0	7.40	42.90	0.30	24.90	0.0
7	22.10	0.0	0.0	0.0	0.0	0.30	0.0	13.00	0.0	2.50	3.00	6.30
8	3.80	0.0	0.0	0.0	0.0	0.0	4.60	0.0	7.60	3.80	24.90	0.0
9	6.30	0.0	0.0	0.0	0.0	0.0	8.60	57.70	0.30	0.30	26.40	3.00
10	6.30	0.0	0.0	0.0	1.30	20.30	0.0	16.00	0.0	3.80	15.20	0.80
11	0.0	0.0	0.0	0.0	0.0	0.0	0.30	1.50	0.0	33.80	0.0	0.0
12	2.00	6.30	0.0	2.50	19.00	0.0	0.0	6.60	0.0	8.10	0.0	10.40
13	0.0	0.0	0.0	0.0	2.00	0.0	0.0	19.80	0.0	34.50	0.0	0.0
14	0.0	0.0	0.0	0.0	35.10	0.0	0.0	0.0	1.00	46.20	0.0	1.00
15	0.0	0.0	0.0	0.0	0.50	0.0	3.00	0.0	8.10	4.10	0.0	4.10
16	0.0	0.0	0.0	0.0	0.0	4.30	8.10	14.00	0.0	0.0	0.50	1.30
17	11.40	0.0	0.0	0.0	0.0	6.60	0.50	6.10	1.50	14.00	0.0	0.50
18	12.70	0.0	0.0	10.20	27.90	1.50	0.30	4.80	5.60	0.50	0.0	0.0
19	4.60	0.0	12.20	11.90	28.40	0.50	3.30	0.0	35.30	11.20	10.40	0.0
20	3.60	0.0	12.20	5.10	0.0	0.0	9.10	6.60	30.50	2.80	7.60	0.30
21	50.50	0.0	0.0	0.30	0.0	0.0	0.0	0.0	3.60	1.50	5.10	1.80
22	2.80	0.0	0.0	0.0	0.0	19.00	0.0	18.00	0.50	19.00	20.30	10.90
23	3.60	0.0	1.30	0.0	4.10	37.10	16.50	0.30	6.10	0.0	1.30	0.0
24	0.0	0.0	0.0	0.0	25.90	9.10	0.50	0.0	2.30	0.0	0.30	45.70
25	3.80	0.0	1.80	19.60	15.00	11.70	0.0	0.0	3.60	0.50	2.50	0.0
26	0.0	0.0	0.0	1.30	2.80	10.90	23.10	0.0	7.60	0.0	27.20	2.80
27	0.0	0.0	38.60	5.10	0.0	0.0	20.30	0.0	0.80	0.0	10.70	1.30
28	0.0	0.0	30.20	9.10	11.70	3.60	8.60	7.60	5.30	11.20	0.50	10.20
29	4.80		0.0	15.00	15.30	7.60	0.0	6.10	0.0	0.50	12.20	5.30
30	0.0		1.00	6.60	0.0	0.0	4.80	4.10	0.0	33.30	0.0	5.60
31	0.0		31.20		4.30		4.10	2.30		0.0		0.0
TOTAL	200.10	35.20	183.30	168.20	244.90	275.20	120.50	206.40	187.80	253.00	204.20	205.80
AVERAGE	6.45	1.26	5.91	5.61	7.90	9.17	3.89	6.66	6.26	8.16	6.81	6.64
MAXIMUM	50.50	10.40	52.80	30.50	35.10	65.30	23.10	57.70	42.90	46.20	27.20	46.20
MINIMUM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

MAX-NICHI DATE < 700603 > 65.30
3S-NICHI DATE < 700610 > 20.30
9S-NICHI DATE < 700505 > 6.60
18S-NICHI DATE < 700914 > 1.00
27S-NICHI DATE < 700416 > 0.0
35S-NICHI DATE < 701130 > 0.0
MIN-NICHI DATE < 701231 > 0.0
*ITEM(14)

ANNUAL			
TOTAL	AVERAGE	MAXIMUM	MINIMUM
2284.60	6.26	65.30	0.0

Daily Rainfall at Kundassang Rainfall Gauging Station (1971)

(unit: mm)

DAY	1	2	3	4	5	6	7	8	9	10	11	12
1	6.10	1.30	3.60	0.0	0.0	6.30	4.80	5.30	7.10	0.0	0.80	5.10
2	5.10	0.0	0.0	0.0	0.30	7.40	0.30	4.10	2.30	1.30	5.60	1.00
3	6.30	0.0	0.0	0.0	5.60	11.40	0.30	38.60	0.0	37.60	3.60	0.0
4	0.30	0.0	0.0	0.0	0.0	0.0	0.80	6.10	0.0	24.40	0.30	0.0
5	27.20	50.00	0.0	0.0	0.0	3.80	0.0	19.80	0.0	0.0	24.40	0.0
6	7.90	49.80	9.90	0.0	2.30	2.80	0.0	6.90	0.0	0.0	2.80	1.30
7	16.30	34.30	0.50	0.0	0.0	0.0	1.80	10.70	2.00	2.30	36.60	0.80
8	0.80	64.80	0.30	0.0	0.0	14.50	0.50	7.60	0.0	0.0	20.80	2.50
9	9.10	22.90	37.60	0.0	11.70	12.70	0.0	39.90	6.30	0.0	0.80	1.00
10	6.10	38.40	0.30	0.0	0.0	3.00	0.0	19.30	4.10	22.40	0.0	8.10
11	7.40	3.80	0.0	0.0	1.50	13.70	0.0	8.10	0.0	35.60	1.50	10.70
12	8.10	2.30	0.0	0.0	0.0	1.50	4.30	0.0	0.0	8.40	14.70	5.80
13	0.30	13.70	4.80	0.0	0.0	0.30	0.0	0.0	1.80	14.20	55.40	0.0
14	0.0	18.00	8.60	0.0	0.0	3.60	0.80	2.30	2.80	10.40	6.10	1.50
15	0.0	24.10	2.30	0.0	0.0	2.00	2.50	27.40	10.70	0.30	4.30	1.30
16	0.0	5.30	2.30	0.0	0.0	1.80	0.0	2.00	14.00	8.40	16.00	6.30
17	0.0	17.00	8.40	0.0	1.50	0.0	0.0	14.70	17.80	1.30	38.40	3.30
18	0.0	7.60	6.10	23.43	0.0	5.30	0.0	3.80	0.30	0.0	0.50	0.50
19	21.10	0.50	0.0	15.62	0.50	0.0	0.0	5.60	25.90	10.40	1.00	5.30
20	0.30	26.70	0.0	3.47	2.80	0.30	0.0	3.60	10.40	13.50	5.30	0.0
21	0.0	36.30	0.0	0.0	3.00	5.30	0.0	0.0	14.20	14.50	0.50	0.80
22	5.10	0.50	0.0	0.0	0.50	0.30	0.50	19.30	2.30	14.20	0.80	4.60
23	0.0	0.30	0.0	0.0	2.30	0.0	0.0	0.80	20.10	0.80	1.80	39.10
24	6.30	0.50	0.0	0.0	15.50	5.30	0.0	8.60	45.70	0.50	9.90	0.0
25	1.30	20.10	0.0	0.0	0.0	49.00	6.90	33.50	0.0	4.10	4.10	17.80
26	1.50	10.70	1.00	0.0	0.80	2.80	30.20	19.10	0.0	6.90	0.50	0.0
27	4.80	0.50	0.50	0.0	4.80	5.30	9.90	1.30	0.80	16.00	0.0	0.0
28	3.30	5.60	0.0	0.0	0.0	3.30	5.80	0.0	4.10	16.50	0.0	4.80
29	18.00		0.0	0.0	0.0	4.80	0.50	0.0	0.0	8.10	8.90	7.90
30	1.30		0.50	0.0	0.30	3.60	2.00	2.00	0.30	0.80	46.20	16.00
31	9.40		0.0		16.00		0.0	19.00		1.00		21.10
TOTAL	173.40	455.00	86.70	42.52	69.40	170.10	71.90	329.40	193.00	273.90	311.60	166.60
AVERAGE	5.59	16.25	2.80	1.42	2.24	5.67	2.32	10.63	6.43	8.84	10.39	5.37
MAXIMUM	27.20	64.80	37.60	23.43	16.00	49.00	30.20	39.90	45.70	37.60	55.40	39.10
MINIMUM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

MAX-NICHI	DATE < 710208 >	64.80
35-NICHI	DATE < 710923 >	20.10
95-NICHI	DATE < 710602 >	7.40
185-NICHI	DATE < 711214 >	1.50
275-NICHI	DATE < 710404 >	0.0
355-NICHI	DATE < 711110 >	0.0
MIN-NICHI	DATE < 711227 >	0.0

*ITEM(14)

ANNUAL

TOTAL	AVERAGE	MAXIMUM	MINIMUM
2343.52	6.42	64.80	0.0

Daily Rainfall at Kundassang Rainfall Gauging Station (1972)

(unit: mm)

DAY	1	2	3	4	5	6	7	8	9	10	11	12
1	19.10	4.60	0.0	3.00	0.30	0.0	0.0	0.0	2.80	3.00	0.0	1.00
2	0.30	3.30	0.0	2.30	0.50	0.0	0.0	79.00	0.0	3.80	1.30	10.20
3	3.80	13.70	0.0	1.80	16.30	0.0	13.20	10.40	17.80	6.60	0.0	54.40
4	15.70	1.00	0.0	0.50	36.30	0.0	0.0	0.30	0.50	13.00	0.0	12.70
5	11.40	0.0	6.30	0.0	0.80	0.0	1.00	0.30	22.60	10.90	0.0	0.30
6	3.30	0.0	14.20	0.0	41.10	0.0	1.30	0.0	40.40	19.00	0.0	0.0
7	12.70	0.0	0.30	2.80	17.00	11.20	0.0	21.10	6.30	6.30	10.20	0.0
8	2.50	0.0	0.30	0.0	15.50	6.60	0.0	20.30	0.50	1.50	0.0	12.40
9	2.50	0.0	2.50	17.30	1.80	0.80	0.0	0.50	0.0	25.90	7.60	1.00
10	0.0	0.0	2.80	11.40	0.0	10.40	0.0	1.50	8.10	17.50	1.00	3.30
11	0.0	0.0	9.10	0.0	0.0	0.50	0.0	3.60	19.00	0.0	23.40	0.0
12	0.0	0.0	0.0	0.0	0.0	2.50	0.0	0.0	1.30	0.80	0.0	4.30
13	1.00	0.0	0.0	0.0	1.30	0.0	0.0	0.0	0.0	2.00	0.0	1.50
14	4.30	0.0	0.0	0.0	4.10	0.0	0.0	11.90	0.0	9.70	17.80	0.0
15	14.00	0.0	0.0	0.0	0.0	14.20	0.0	0.0	0.0	15.70	36.10	0.0
16	7.40	16.50	18.00	0.0	3.60	15.20	0.0	0.80	0.0	0.0	4.10	0.0
17	55.10	36.30	31.20	0.0	8.90	0.0	2.00	6.60	7.90	0.0	0.0	1.00
18	5.30	2.50	6.60	1.00	0.0	0.30	0.0	10.90	34.00	0.0	0.0	0.0
19	1.30	0.50	1.30	4.10	22.40	0.50	0.0	3.60	24.90	0.0	0.0	0.0
20	6.30	7.60	15.00	0.0	0.50	0.0	0.0	5.30	25.10	0.0	0.0	61.70
21	1.00	2.00	3.00	0.0	52.80	0.80	0.0	0.0	3.60	5.60	22.40	0.0
22	8.90	0.80	0.0	0.80	0.0	4.80	0.0	0.0	0.0	4.60	13.70	0.0
23	1.00	42.90	41.90	0.0	14.20	0.80	0.0	2.00	5.30	0.0	8.90	0.0
24	0.30	10.20	4.60	0.0	0.0	0.50	0.0	19.00	34.80	0.0	12.40	4.60
25	0.0	7.90	0.0	0.0	0.0	0.0	0.0	8.90	46.00	5.80	0.0	6.60
26	0.0	0.0	0.0	0.0	2.80	0.50	0.0	2.50	11.70	2.30	0.0	0.0
27	1.50	0.0	1.30	0.0	0.50	0.0	0.0	0.30	8.10	0.0	0.0	0.0
28	2.00	0.0	0.0	0.0	28.70	0.0	9.40	0.0	1.00	1.00	5.30	0.0
29	1.30	0.0	53.80	0.0	6.90	0.0	0.0	0.80	1.80	1.50	18.50	0.50
30	10.70		23.60	1.30	2.00	0.0	0.0	0.0	6.10	51.60	64.50	0.50
31	20.60		19.10		1.30		0.0	2.80		0.30		5.30
TOTAL	213.30	149.80	254.90	46.30	279.60	69.60	26.90	212.40	329.60	208.40	247.20	181.30
AVERAGE	6.88	5.17	8.22	1.54	9.02	2.32	0.87	6.85	10.99	6.72	8.24	5.85
MAXIMUM	55.10	42.90	53.80	17.30	52.80	15.20	13.20	79.00	46.00	51.60	64.50	61.70
MINIMUM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

MAX-NICHI DATE < 720802 > 79.00
35-NICHI DATE < 720911 > 19.00
95-NICHI DATE < 721225 > 6.60
185-NICHI DATE < 720816 > 0.80
275-NICHI DATE < 720604 > 0.0
355-NICHI DATE < 721211 > 0.0
MIN-NICHI DATE < 721228 > 0.0
*ITEM(14)

ANNUAL

TOTAL	AVERAGE	MAXIMUM	MINIMUM
2219.30	6.06	79.00	0.0

Daily Rainfall at Kundassang Rainfall Gauging Station (1973)

(unit: mm)

DAY	1	2	3	4	5	6	7	8	9	10	11	12
1	5.10	0.0	0.0	3.30	14.20	4.10	9.40	0.0	12.70	0.0	7.40	1.30
2	0.0	0.0	0.0	6.10	0.0	0.0	21.60	4.10	68.60	7.60	9.70	0.30
3	5.30	0.0	0.0	11.40	13.50	0.0	13.50	7.60	0.50	68.80	9.90	0.50
4	0.0	0.0	0.0	0.0	3.30	2.80	11.90	10.20	9.90	0.0	5.60	2.80
5	21.30	0.0	0.0	0.0	1.00	8.10	9.10	0.30	30.50	12.40	1.80	11.70
6	0.0	0.0	0.0	0.0	5.60	0.0	9.10	0.0	2.30	0.0	19.80	0.80
7	0.0	0.0	0.0	0.0	6.10	4.60	10.40	23.10	0.0	0.0	12.40	1.50
8	0.0	0.0	0.0	0.0	2.30	0.0	10.40	5.10	0.0	8.40	0.30	0.0
9	1.00	0.0	0.0	0.0	1.30	0.0	1.50	0.0	6.90	16.30	1.30	0.0
10	0.0	0.0	0.0	0.0	11.40	1.30	0.0	9.40	9.40	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.10	17.80	0.0	0.0	0.0
12	0.0	0.0	0.0	0.0	3.80	0.0	0.0	7.10	0.30	12.20	5.30	0.0
13	0.0	20.30	0.0	12.20	15.70	0.0	0.0	0.0	7.90	18.50	0.80	0.0
14	0.0	0.50	0.0	2.50	3.00	0.0	0.0	5.30	14.50	0.0	0.0	0.0
15	0.0	0.0	0.0	0.0	0.0	0.0	1.80	3.30	35.80	9.70	57.10	0.0
16	0.0	0.0	0.0	5.80	0.0	0.0	0.0	1.30	25.10	10.70	0.80	0.0
17	0.0	0.0	1.30	14.50	1.00	5.10	0.0	0.0	43.40	0.0	0.0	8.90
18	0.0	0.0	0.0	7.90	0.0	8.40	0.0	4.10	43.40	5.60	18.80	0.0
19	0.0	0.0	0.0	5.10	0.0	24.10	0.0	2.80	1.50	0.0	4.80	0.0
20	0.0	0.0	4.30	0.0	31.70	0.0	13.70	0.0	0.30	4.10	6.30	0.0
21	0.0	0.0	0.0	5.30	29.00	1.50	20.60	0.0	0.0	0.0	18.50	18.30
22	0.0	0.0	4.60	0.30	0.0	1.80	30.70	0.0	24.10	2.80	4.60	6.10
23	0.0	0.0	0.80	7.10	1.50	0.0	5.30	0.0	10.90	1.80	0.0	16.80
24	0.0	0.0	0.0	0.50	2.00	0.0	17.30	13.20	27.20	4.80	0.50	14.20
25	0.0	0.0	0.0	9.40	0.0	0.0	11.90	0.0	34.50	1.30	54.60	19.00
26	0.0	0.0	0.0	5.80	14.70	4.80	0.0	0.0	10.70	35.10	4.80	7.10
27	0.0	0.0	0.0	1.30	0.0	0.0	0.0	7.60	0.0	14.70	0.80	15.00
28	0.0	0.0	0.50	53.10	0.0	0.0	4.80	0.0	11.40	9.90	2.30	0.30
29	0.0		6.60	9.70	1.80	45.20	21.10	1.80	6.90	1.80	5.80	30.50
30	0.0		6.30	56.60	7.40	0.0	8.90	1.80	7.10	2.30	0.30	3.00
31	0.0		2.50		7.40		0.30	2.30		8.10		1.50
TOTAL	32.70	20.80	26.90	217.90	177.70	111.80	233.30	119.50	463.60	256.90	254.30	159.60
AVERAGE	1.05	0.74	0.87	7.26	5.73	3.73	7.53	3.85	15.45	8.29	8.48	5.15
MAXIMUM	21.30	20.30	6.60	56.60	31.70	45.20	30.70	23.10	68.60	68.80	57.10	30.50
MINIMUM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

MAX-NICHI DATE < 731003 >	68.80
35-NICHI DATE < 730724 >	17.30
95-NICHI DATE < 730812 >	7.10
185-NICHI DATE < 730903 >	0.50
275-NICHI DATE < 730406 >	0.0
355-NICHI DATE < 731209 >	0.0
MIN-NICHI DATE < 731220 >	0.0

*ITEM(14)

ANNUAL			
TOTAL	AVERAGE	MAXIMUM	MINIMUM
2075.00	5.68	68.80	0.0

Daily Rainfall at Kundassang Rainfall Gauging Station (1974)

(unit: mm)

DAY	1	2	3	4	5	6	7	8	9	10	11	12
1	33.30	51.60	17.30	0.0	10.20	0.0	0.0	25.90	0.0	0.0	5.30	0.0
2	5.30	0.0	3.00	0.0	40.60	0.0	0.0	39.10	0.0	4.80	5.30	21.23
3	14.50	1.30	36.80	0.0	4.60	0.0	0.0	0.0	2.50	8.90	0.0	22.56
4	3.00	2.00	1.80	0.0	4.10	0.0	0.0	0.50	0.0	6.10	3.80	5.31
5	5.10	4.60	0.0	0.0	0.80	0.0	0.0	44.20	2.00	9.10	18.00	19.90
6	8.90	0.0	0.0	39.40	1.50	0.0	0.0	0.0	31.70	0.50	0.50	41.13
7	6.30	0.80	0.0	2.50	0.0	0.0	0.0	0.0	0.0	8.10	0.0	2.65
8	6.60	15.20	3.80	34.00	14.70	0.0	0.0	0.0	0.0	2.00	5.30	0.0
9	25.90	1.80	0.50	2.50	5.80	30.70	0.0	0.0	0.0	0.0	0.0	15.92
10	8.90	19.60	31.70	1.50	4.10	25.90	1.00	0.0	0.0	0.0	0.0	3.98
11	0.0	6.30	48.30	0.0	0.0	2.50	11.90	10.20	7.60	33.50	2.80	0.0
12	0.0	163.80	6.10	2.00	0.0	10.40	27.20	12.70	0.0	28.20	10.40	0.0
13	0.0	81.30	0.50	5.10	0.0	1.30	7.60	0.0	0.0	7.90	0.80	0.0
14	0.0	6.30	5.10	0.0	36.10	7.40	1.80	0.0	3.00	0.0	1.80	0.0
15	0.0	0.0	0.0	1.30	2.00	2.80	0.50	0.0	2.30	0.0	10.90	0.0
16	0.0	0.0	0.0	10.20	0.0	1.30	1.80	0.0	2.30	0.0	0.0	0.0
17	22.60	0.0	0.0	7.60	57.70	29.50	10.90	0.0	1.30	0.0	0.0	0.0
18	1.80	0.0	0.0	18.00	16.30	0.0	9.70	0.0	4.80	27.40	2.00	13.28
19	0.0	3.00	0.0	5.80	15.50	6.60	5.30	0.0	7.90	1.30	0.0	13.28
20	1.30	0.0	5.60	0.0	1.50	2.80	1.30	4.10	9.70	0.0	0.0	1.33
21	13.20	5.80	3.30	0.0	6.30	0.0	0.0	31.70	21.80	0.0	1.30	1.33
22	0.0	22.10	0.0	0.0	4.80	0.0	0.0	7.10	8.90	0.0	22.40	1.33
23	0.0	21.80	0.0	0.0	5.60	42.20	7.40	1.80	0.0	1.80	0.50	1.33
24	0.0	0.80	0.0	0.0	8.90	0.0	0.0	0.0	5.80	5.80	5.60	1.33
25	0.0	8.10	0.0	0.0	1.30	16.00	12.70	6.60	41.70	5.60	14.00	1.33
26	3.80	0.0	5.60	0.0	0.50	46.00	0.0	4.80	5.80	16.00	1.30	38.48
27	4.30	2.00	4.10	0.0	13.20	0.0	0.0	7.90	0.0	1.50	0.0	62.36
28	0.80	2.80	0.0	0.0	0.80	0.0	0.0	0.0	4.30	0.0	3.30	3.98
29	0.0		3.80	0.80	0.0	0.0	21.60	0.0	2.80	9.70	0.0	0.0
30	3.00		0.0	9.90	0.0	26.90	9.40	7.90	11.40	49.80	3.00	1.33
31	10.20		0.0		0.0		4.80	0.0		8.10		3.98
TOTAL	178.80	421.00	177.30	140.60	256.90	252.30	134.90	204.50	177.60	236.10	118.30	277.35
AVERAGE	5.77	15.04	5.72	4.69	8.29	8.41	4.35	6.60	5.92	7.62	3.94	8.95
MAXIMUM	33.30	163.80	48.30	39.40	57.70	46.00	27.20	44.20	41.70	49.80	22.40	62.36
MINIMUM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

MAX-NICHI DATE < 740212 > 163.80
35-NICHI DATE < 741203 > 22.56
95-NICHI DATE < 740822 > 7.10
185-NICHI DATE < 741221 > 1.33
275-NICHI DATE < 740530 > 0.0
355-NICHI DATE < 741129 > 0.0
MIN-NICHI DATE < 741229 > 0.0
*ITEM(14)

ANNUAL

TOTAL	AVERAGE	MAXIMUM	MINIMUM
2575.65	7.06	163.80	0.0

Daily Rainfall at Kundassang Rainfall Gauging Station (1975)

(unit: mm)

DAY	1	2	3	4	5	6	7	8	9	10	11	12
1	23.10	2.30	9.70	2.80	0.0	19.60	0.0	0.0	1.50	7.60	56.90	1.30
2	59.20	4.10	10.20	0.0	10.40	0.80	0.0	0.0	0.50	0.0	27.70	0.0
3	1.30	0.50	13.20	0.0	7.60	13.20	0.0	0.0	1.50	0.0	3.80	8.90
4	3.00	0.0	0.50	2.80	21.60	2.00	0.30	0.0	3.60	0.0	3.60	0.0
5	53.80	0.0	0.0	57.70	3.80	1.50	0.0	0.0	0.0	35.60	28.70	16.30
6	6.30	0.0	0.0	0.0	2.30	3.80	0.0	2.80	0.0	30.70	25.70	0.50
7	2.00	0.0	0.0	0.0	17.80	3.60	1.00	0.0	0.0	57.40	13.70	5.30
8	76.70	0.0	0.0	0.0	1.50	1.80	0.0	0.0	7.60	34.80	6.10	0.0
9	4.80	0.0	21.10	0.0	27.90	0.0	2.30	3.00	4.10	6.10	0.80	1.50
10	6.60	0.0	0.50	0.0	14.20	0.0	15.70	27.90	0.80	0.0	0.0	2.00
11	0.0	0.0	0.0	0.0	12.20	5.10	0.0	0.0	21.60	9.70	0.0	0.0
12	0.0	0.0	0.0	0.0	10.70	0.0	0.0	0.0	3.30	0.0	2.80	0.0
13	0.0	0.0	0.0	0.0	32.50	0.0	12.70	0.0	3.60	21.30	32.30	1.00
14	3.60	1.00	0.0	0.0	30.00	2.50	17.50	4.10	0.0	0.50	0.50	0.80
15	19.80	0.0	0.0	1.30	25.40	0.0	19.00	22.60	1.30	1.00	3.60	1.50
16	0.0	2.50	0.0	0.0	6.60	0.0	8.60	27.90	0.50	0.80	0.50	41.40
17	0.0	0.0	22.90	0.0	1.00	4.60	55.10	2.00	1.50	0.0	28.20	37.10
18	1.00	1.30	0.0	0.0	15.70	1.80	11.90	8.10	1.00	0.0	41.70	0.30
19	11.20	30.50	0.80	0.0	2.80	0.80	1.00	3.00	2.00	1.00	1.80	6.10
20	2.80	35.80	0.50	0.0	1.50	0.0	1.30	55.90	0.0	0.0	10.40	8.40
21	2.00	12.70	6.90	10.90	9.10	0.0	2.00	21.80	2.30	0.0	11.90	0.50
22	0.0	45.70	0.0	2.80	1.00	2.50	6.10	0.0	24.90	5.60	11.40	1.00
23	0.0	17.80	0.0	0.0	0.0	0.0	2.80	17.00	7.60	0.50	31.70	7.60
24	0.0	25.90	0.0	0.0	0.0	0.0	8.10	0.0	17.30	0.80	1.50	8.40
25	0.0	0.50	0.0	0.0	0.0	5.60	1.00	1.80	0.50	0.0	7.10	3.60
26	1.30	0.0	0.0	0.0	2.00	0.0	5.80	0.50	5.30	4.10	25.10	54.90
27	0.80	0.0	0.0	0.0	5.30	0.0	13.20	6.90	29.20	17.80	0.50	55.90
28	0.0	9.70	0.0	0.0	59.20	5.10	13.70	0.80	47.00	3.00	0.80	42.70
29	0.0		0.0	1.50	0.0	10.20	0.0	21.80	8.90	5.80	10.40	41.90
30	2.30		0.0	0.0	0.0	0.50	2.00	32.30	34.30	0.0	0.0	1.80
31	2.80		2.80		9.10		0.0	0.0		20.80		2.50
TOTAL	284.40	190.30	89.10	79.80	331.20	85.00	201.10	260.20	231.70	264.90	389.20	353.20
AVERAGE	9.17	6.80	2.87	2.66	10.68	2.83	6.49	8.39	7.72	8.55	12.97	11.39
MAXIMUM	76.70	45.70	22.90	57.70	59.20	19.60	55.10	55.90	47.00	57.40	56.90	55.90
MINIMUM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

MAX-NICHI DATE < 750108 > 76.70
35-NICHI DATE < 750816 > 27.90
95-NICHI DATE < 750818 > 8.10
185-NICHI DATE < 750126 > 1.30
275-NICHI DATE < 750328 > 0.0
355-NICHI DATE < 751021 > 0.0
MIN-NICHI DATE < 751212 > 0.0
*ITEM(14)

ANNUAL			
TOTAL	AVERAGE	MAXIMUM	MINIMUM
2760.10	7.56	76.70	0.0

Daily Rainfall at Kundassang Rainfall Gauging Station (1976)

(unit: mm)

DAY	1	2	3	4	5	6	7	8	9	10	11	12
1	0.0	20.30	0.0	6.60	11.70	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	9.70	0.0	0.0	18.30	0.0	4.60	15.20	7.90	0.0	15.70	0.0
3	0.80	0.0	0.0	0.0	4.60	2.30	0.0	31.00	0.0	0.30	9.90	0.0
4	0.50	0.0	0.0	0.0	1.80	7.60	4.60	5.30	10.90	5.60	5.10	1.50
5	0.0	0.0	5.30	5.30	3.30	23.10	0.0	0.0	0.0	0.0	0.0	0.0
6	1.50	4.10	0.0	0.0	1.80	1.00	9.40	0.0	0.0	0.0	1.50	20.60
7	2.50	0.0	0.0	6.90	0.0	6.60	0.80	0.0	0.0	34.30	7.90	0.50
8	16.50	0.0	0.0	0.0	14.20	2.30	20.60	0.0	0.0	5.80	0.80	0.0
9	1.00	0.0	20.60	0.0	16.30	0.0	3.80	0.0	0.50	3.50	46.50	0.0
10	3.50	13.50	15.20	0.0	4.80	0.50	4.80	22.60	0.0	9.40	44.90	0.0
11	42.70	15.50	3.50	0.0	7.60	0.0	4.10	5.60	0.0	0.0	0.0	0.0
12	5.80	12.70	0.0	0.0	3.00	0.0	9.40	8.10	1.00	0.50	0.50	3.30
13	0.0	2.80	0.0	0.0	0.0	0.0	13.50	0.0	0.0	12.90	1.50	3.30
14	0.0	0.0	0.0	0.0	0.0	5.30	0.0	20.30	0.0	29.70	2.00	0.30
15	0.80	0.0	0.0	10.40	8.90	0.0	40.60	2.00	0.0	19.30	2.30	0.0
16	10.20	0.0	0.0	3.80	0.0	0.80	0.0	1.50	0.0	0.0	0.30	0.0
17	7.90	0.0	0.30	0.0	0.0	3.00	0.0	0.0	1.30	1.50	19.80	0.0
18	18.00	0.0	0.0	0.0	0.0	10.40	17.80	6.10	0.80	8.90	0.50	14.50
19	21.30	0.0	0.0	0.0	1.30	0.0	0.0	0.0	0.0	17.00	0.0	17.30
20	1.00	0.0	0.0	0.0	0.0	0.0	0.0	0.50	2.50	33.50	0.0	22.60
21	2.30	2.80	3.80	0.0	39.60	0.0	0.0	19.50	0.0	0.30	4.30	1.50
22	2.80	0.0	5.10	0.0	71.40	0.30	0.0	7.60	6.90	3.30	16.80	0.30
23	33.00	0.0	0.0	0.0	0.0	0.0	22.90	2.30	52.10	14.20	3.00	10.20
24	26.90	0.0	0.0	2.30	0.0	0.0	0.0	0.50	0.0	4.80	8.90	13.70
25	44.20	7.90	0.0	0.0	0.0	0.0	0.0	8.10	0.0	0.50	0.0	5.10
26	6.60	0.50	0.0	1.80	0.0	0.0	0.0	0.0	0.0	3.80	5.10	4.60
27	11.70	4.30	0.0	5.60	0.0	0.0	7.40	14.20	0.0	0.80	0.0	12.70
28	0.50	2.50	15.70	9.10	0.0	1.50	40.10	10.20	5.10	1.30	4.10	2.00
29	5.10	0.0	3.00	18.50	17.50	3.50	21.80	1.50	8.60	1.30	5.80	2.30
30	4.60		1.00	1.00	0.0	0.0	0.0	3.00	0.80	18.30	1.50	0.0
31	10.20		0.0		2.00		0.0	0.0		6.60		0.30
TOTAL	281.90	96.60	73.50	71.30	228.10	68.20	226.20	185.10	98.40	237.40	208.70	136.60
AVERAGE	9.09	3.33	2.37	2.38	7.36	2.27	7.30	5.97	3.28	7.66	6.96	4.41
MAXIMUM	44.20	20.30	20.60	18.50	71.40	23.10	40.60	31.00	52.10	34.30	46.50	22.60
MINIMUM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

MAX-NICHI DATE < 760522 > 71.40
35-NICHI DATE < 760529 > 17.50
95-NICHI DATE < 760427 > 5.60
185-NICHI DATE < 761108 > 0.80
275-NICHI DATE < 760523 > 0.0
355-NICHI DATE < 761201 > 0.0
MIN-NICHI DATE < 761230 > 0.0
*ITEM(14)

ANNUAL

TOTAL	AVERAGE	MAXIMUM	MINIMUM
1912.00	5.22	71.40	0.0

Daily Rainfall at Kundassang Rainfall Gauging Station (1977)

(unit: mm)

DAY	1	2	3	4	5	6	7	8	9	10	11	12
1	0.80	0.0	0.0	0.0	0.0	1.50	5.50	0.0	0.0	30.50	41.70	0.0
2	11.70	6.30	0.0	0.0	0.0	0.0	2.50	3.00	0.0	0.0	12.70	0.0
3	0.0	3.50	0.0	0.0	0.0	1.30	0.0	1.30	0.0	2.80	0.50	1.30
4	0.0	65.80	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.00	1.00	0.0
5	0.0	28.20	0.0	0.0	0.0	0.0	0.0	2.50	0.0	21.60	17.30	61.00
6	0.0	13.20	0.50	0.0	0.0	13.50	5.80	13.20	0.0	29.20	1.50	14.20
7	0.0	0.50	11.70	0.0	0.0	4.10	11.20	14.00	0.30	34.30	7.10	37.30
8	2.00	18.00	0.80	0.0	0.0	6.60	15.20	5.30	0.30	13.70	25.90	6.10
9	7.90	15.70	5.30	0.0	9.70	2.30	25.90	5.10	0.0	2.30	2.00	3.80
10	1.00	3.50	0.80	0.0	0.50	1.00	5.10	0.50	6.30	0.50	0.80	11.70
11	16.30	2.00	0.0	0.0	8.90	31.70	5.30	0.50	0.0	7.60	4.10	1.30
12	7.60	0.30	0.0	0.0	9.70	9.10	3.00	0.0	0.0	5.10	1.00	2.00
13	13.20	0.0	0.0	15.70	3.50	39.90	26.20	4.10	0.0	0.50	2.00	0.50
14	126.70	12.20	0.0	43.20	8.40	8.10	3.80	0.0	0.0	41.90	0.0	0.0
15	23.90	39.60	2.30	0.0	17.50	27.90	0.0	0.0	0.0	0.30	2.80	19.10
16	18.80	7.40	6.60	16.00	0.50	5.80	0.0	0.0	13.20	21.30	7.40	5.30
17	0.50	68.10	8.90	3.00	0.0	14.50	5.30	0.0	0.0	2.50	0.30	3.80
18	2.50	46.50	0.0	0.50	0.0	9.10	5.80	0.0	3.80	1.00	0.0	0.80
19	0.50	6.10	4.30	0.0	0.0	3.50	0.0	0.0	0.50	0.80	0.30	6.90
20	0.0	125.70	1.30	0.0	0.0	2.00	0.0	2.30	0.30	20.30	0.0	12.90
21	0.0	16.80	0.0	0.0	5.30	0.0	9.90	6.30	0.0	0.0	0.50	21.60
22	0.0	13.70	0.0	0.0	7.60	4.60	2.50	5.80	59.40	10.70	0.0	0.0
23	23.10	20.80	4.10	0.0	13.70	7.60	0.0	17.80	9.40	10.20	0.0	0.0
24	0.30	8.10	0.0	5.80	0.0	20.80	1.80	10.20	5.30	0.0	17.80	0.0
25	8.60	0.0	0.50	9.40	3.30	0.0	7.60	0.0	0.50	2.50	24.10	0.0
26	6.10	1.00	0.0	0.30	18.80	0.0	0.0	2.50	0.0	0.0	6.60	2.50
27	0.50	4.80	0.0	0.0	6.10	0.0	15.20	76.70	1.80	0.0	21.60	1.50
28	0.0	13.70	0.0	0.0	11.20	9.10	4.10	9.90	1.30	33.00	23.10	0.0
29	0.0		0.0	9.40	13.20	26.20	2.30	3.80	30.50	1.30	26.90	0.0
30	0.0		0.0	0.0	0.50	1.00	0.0	0.0	1.30	1.30	0.0	5.30
31	0.0		0.0		1.50		0.0	0.0		2.30		0.0
TOTAL	272.00	541.50	47.10	103.30	139.90	251.20	164.00	184.80	134.20	314.50	249.00	218.90
AVERAGE	8.77	19.34	1.52	3.44	4.51	8.37	5.29	5.96	4.47	10.15	8.30	7.06
MAXIMUM	126.70	125.70	11.70	43.20	18.80	39.90	26.20	76.70	59.40	41.90	41.70	61.00
MINIMUM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

MAX-NICHI DATE < 770114 > 126.70
3S-NICHI DATE < 771016 > 21.30
9S-NICHI DATE < 770109 > 7.90
18S-NICHI DATE < 770930 > 1.30
27S-NICHI DATE < 770411 > 0.0
35S-NICHI DATE < 771201 > 0.0
MIN-NICHI DATE < 771231 > 0.0
*ITEM(14)

ANNUAL			
TOTAL	AVERAGE	MAXIMUM	MINIMUM
2620.40	7.18	126.70	0.0

Daily Rainfall at Kundassang Rainfall Gauging Station (1978)

(unit: mm)

DAY	1	2	3	4	5	6	7	8	9	10	11	12
1	0.0	0.0	0.0	0.0	0.0	0.50	17.30	2.80	1.30	0.0	3.30	3.80
2	0.0	0.0	0.0	0.0	2.30	13.70	18.50	2.50	0.0	0.0	2.80	3.30
3	0.0	0.0	0.0	0.0	1.00	0.0	6.10	0.0	0.0	0.0	0.0	14.00
4	1.30	0.0	0.0	0.0	0.0	6.30	0.50	22.30	1.80	2.00	12.70	16.50
5	13.50	0.0	0.0	0.0	0.0	1.50	0.0	0.0	0.0	0.50	26.70	1.50
6	1.30	0.0	0.0	15.20	0.0	4.80	2.00	7.10	7.10	0.0	15.70	0.80
7	1.50	0.0	23.40	0.0	1.50	2.80	7.10	5.80	21.30	1.50	7.10	5.30
8	2.80	0.0	1.00	0.0	10.70	11.40	5.30	0.0	0.0	2.00	1.60	2.50
9	0.0	0.0	63.00	1.50	3.00	14.50	4.30	10.90	20.30	47.00	13.70	0.0
10	1.50	0.0	0.0	0.0	7.60	0.0	0.50	13.50	0.0	19.10	20.30	7.10
11	6.90	0.50	0.0	1.00	8.10	3.80	0.0	21.10	7.60	16.50	5.10	35.10
12	41.10	6.60	0.0	0.0	1.80	8.60	7.90	0.0	0.0	0.0	16.00	21.10
13	13.20	8.10	0.0	10.70	4.30	0.50	12.20	0.0	2.30	0.0	9.70	19.50
14	16.00	9.10	0.0	23.40	7.40	3.50	6.10	0.0	10.70	0.0	0.0	0.0
15	3.30	1.50	0.0	3.80	9.40	1.80	11.40	0.0	1.50	0.0	11.90	3.80
16	0.0	2.80	0.50	0.0	19.10	7.40	1.30	1.50	0.0	86.40	29.70	16.30
17	0.0	19.80	0.20	0.0	7.40	2.30	12.20	0.0	0.0	5.80	4.30	8.10
18	0.0	7.90	0.0	0.0	20.80	37.60	0.0	0.0	0.0	30.70	0.0	0.0
19	0.0	0.30	0.0	0.0	5.80	0.0	0.0	0.0	0.0	3.30	8.90	0.0
20	1.00	0.0	0.0	0.0	12.70	72.40	4.10	1.50	11.90	0.50	14.50	0.80
21	0.0	0.0	0.0	0.50	12.40	15.50	14.50	0.0	6.90	10.20	4.30	7.90
22	7.40	2.30	17.50	18.80	4.10	22.30	2.00	0.0	3.80	5.10	0.80	0.0
23	4.30	20.60	0.0	12.70	2.00	0.0	3.30	0.0	0.0	3.50	14.50	0.0
24	10.90	15.70	0.0	11.20	0.0	13.70	2.30	0.0	80.30	3.80	15.50	0.0
25	5.80	1.00	1.80	20.10	5.30	10.20	0.0	0.0	2.30	1.30	1.50	0.0
26	0.0	0.50	0.0	5.30	0.80	17.50	5.10	2.50	0.0	5.80	0.0	0.0
27	0.0	10.20	0.0	6.10	0.0	21.60	1.80	0.0	0.0	0.0	0.0	0.0
28	0.0	1.00	0.0	16.50	0.0	0.0	1.80	0.0	0.0	3.30	3.80	14.00
29	0.0		0.0	0.0	0.0	0.50	0.0	4.60	0.0	9.40	3.80	0.0
30	0.0		0.0	0.0	2.30	0.0	0.0	1.00	0.0	11.40	5.30	5.80
31	0.0		0.0		10.20		1.80	12.90		11.20		3.80
TOTAL	131.80	107.90	107.40	146.80	160.00	294.70	149.40	110.00	179.10	280.30	253.70	191.00
AVERAGE	4.25	3.85	3.46	4.89	5.16	9.82	4.82	3.55	5.97	9.04	8.46	6.16
MAXIMUM	41.10	20.60	63.00	23.40	20.80	72.40	18.50	22.30	80.30	86.40	29.70	35.10
MINIMUM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

MAX-NICHI DATE < 781016 > 86.40
35-NICHI DATE < 781011 > 16.50
95-NICHI DATE < 780514 > 7.40
185-NICHI DATE < 780816 > 1.50
275-NICHI DATE < 780405 > 0.0
355-NICHI DATE < 781209 > 0.0
MIN-NICHI DATE < 781229 > 0.0
*ITEM(14)

ANNUAL			
TOTAL	AVERAGE	MAXIMUM	MINIMUM
2112.10	5.79	86.40	0.0

Daily Rainfall at Kundassang Rainfall Gauging Station (1979)

(unit: mm)

DAY	1	2	3	4	5	6	7	8	9	10	11	12
1	0.80	0.0	0.0	0.0	0.0	8.10	16.00	0.0	5.60	0.0	0.30	3.80
2	3.80	0.50	4.80	14.00	0.0	9.10	2.50	0.0	18.50	7.90	0.0	0.50
3	0.0	0.0	4.80	6.30	0.0	6.60	0.0	0.0	10.90	5.30	0.0	5.10
4	1.30	0.0	0.50	0.0	0.0	0.50	7.40	0.0	0.0	6.30	12.40	0.0
5	2.50	0.0	4.10	0.0	0.0	4.10	6.30	9.10	0.0	30.70	1.00	0.50
6	2.80	0.0	0.0	0.0	0.0	0.0	4.80	0.50	0.0	41.90	34.30	0.0
7	0.0	0.0	18.50	0.0	72.40	0.50	5.60	1.00	0.0	49.60	0.0	18.50
8	0.0	0.0	7.10	0.0	21.30	4.80	9.10	0.0	13.50	42.90	33.30	0.0
9	0.0	0.0	0.0	0.0	4.80	2.80	3.80	0.0	6.30	41.40	2.80	11.20
10	0.0	0.0	0.0	0.0	7.10	0.0	0.0	0.0	13.50	6.10	0.0	6.30
11	0.0	2.30	6.10	0.0	2.30	5.80	10.70	0.0	11.70	21.60	16.30	4.80
12	0.0	0.50	1.50	18.80	0.0	3.80	1.30	0.0	23.60	19.30	4.10	2.50
13	0.0	2.30	17.80	4.80	0.0	18.80	22.30	0.0	0.0	10.90	4.60	5.60
14	0.0	9.90	0.0	3.80	0.0	42.90	0.0	0.0	0.0	8.60	1.50	0.0
15	0.0	5.80	49.00	0.0	5.80	0.0	16.00	0.0	0.0	10.70	0.0	2.80
16	0.0	0.50	21.10	0.0	0.0	8.40	10.20	0.0	0.80	0.50	7.90	0.80
17	0.0	0.0	0.0	0.0	0.0	10.70	0.0	0.0	33.50	0.0	10.70	1.80
18	0.80	0.0	0.50	0.0	0.0	6.10	5.80	0.0	6.10	41.70	5.30	0.0
19	0.0	0.0	4.10	0.0	0.0	41.70	18.80	14.50	1.00	16.30	1.00	0.50
20	10.20	0.0	0.0	0.0	0.0	4.10	12.70	4.10	64.50	13.50	2.50	15.70
21	3.80	0.0	3.00	0.0	11.70	4.30	0.0	1.80	15.20	4.80	0.0	17.30
22	0.50	0.0	0.0	14.00	0.0	8.60	8.10	15.50	2.50	5.30	0.0	53.10
23	1.00	0.0	0.0	0.0	0.0	0.50	43.40	39.90	13.70	3.50	38.10	7.60
24	0.0	3.80	0.0	0.80	0.0	0.0	3.80	4.10	5.30	4.10	0.0	3.50
25	0.50	0.0	0.0	2.00	0.0	0.0	0.0	0.0	1.00	4.10	3.50	8.60
26	0.0	0.0	0.0	2.50	4.10	0.0	0.0	5.10	4.10	0.80	0.0	7.60
27	0.0	0.0	4.10	0.0	14.20	2.80	23.40	2.30	2.30	13.70	5.80	5.30
28	0.0	0.0	2.50	0.0	5.10	9.10	0.0	8.40	1.30	3.00	1.00	5.80
29	0.0		0.0	0.0	5.30	1.50	0.0	13.50	0.0	42.70	5.10	0.30
30	0.0		0.0	0.0	12.70	17.50	0.0	14.50	5.10	4.10	1.80	0.0
31	0.50		0.0		13.50		6.10	6.30		5.60		0.0
TOTAL	28.50	25.60	149.50	67.00	180.30	223.10	238.10	140.60	260.00	467.10	193.30	189.50
AVERAGE	0.92	0.91	4.82	2.23	5.82	7.44	7.68	4.54	8.67	15.07	6.44	6.11
MAXIMUM	10.20	9.90	49.00	18.80	72.40	42.90	43.40	39.90	64.50	49.80	38.10	53.10
MINIMUM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

MAX-NICHI DATE < 790507 > 72.40
35-NICHI DATE < 791221 > 17.30
95-NICHI DATE < 790311 > 6.10
185-NICHI DATE < 790807 > 1.00
275-NICHI DATE < 790409 > 0.0
355-NICHI DATE < 791121 > 0.0
MIN-NICHI DATE < 791231 > 0.0
*ITEM(14)

ANNUAL			
TOTAL	AVERAGE	MAXIMUM	MINIMUM
2162.60	5.92	72.40	0.0

2. Daily Mean Discharge Data

Bedukan

Tomboloi

Tampias

Daily Mean Discharge at Bedukan Gauging Sation (1970)

(unit: m^3/s)

DAY	1	2	3	4	5	6	7	8	9	10	11	12
1	********	3.64	2.03	11.01	7.44	4.30	8.00	6.16	8.67	6.72	11.25	13.35
2	********	4.04	2.00	12.23	7.64	3.82	6.85	5.66	10.33	9.74	7.47	10.04
3	********	5.03	1.96	7.78	3.72	7.35	5.48	4.92	11.39	5.90	5.77	29.41
4	********	10.26	4.66	4.35	4.43	21.88	6.11	4.34	8.56	7.81	6.24	25.39
5	********	9.94	2.57	3.69	4.38	28.70	13.38	4.87	7.28	7.70	6.25	27.14
6	********	6.24	2.52	3.41	3.82	15.04	9.40	5.22	11.39	4.64	6.18	28.83
7	********	4.51	2.26	********	2.96	12.83	6.90	6.69	8.84	3.99	10.97	16.07
8	********	4.05	2.14	********	6.03	8.24	5.21	13.58	5.65	3.97	11.97	12.03
9	********	3.84	2.05	2.40	7.58	6.79	5.42	6.59	5.12	3.92	32.24	9.53
10	********	3.47	2.02	2.27	4.00	5.60	5.88	17.30	4.18	5.83	14.24	8.33
11	********	3.40	1.96	2.25	3.74	5.33	4.33	14.14	3.70	8.50	25.08	7.37
12	********	3.49	1.91	2.16	5.25	4.35	4.20	9.01	3.59	19.21	12.40	6.47
13	********	3.39	1.82	2.19	6.89	4.03	4.08	7.68	3.29	11.60	9.08	6.47
14	********	3.06	1.75	2.12	5.27	3.84	3.70	5.93	3.48	34.31	7.02	6.65
15	********	2.90	1.74	1.89	6.50	3.76	4.16	5.03	3.66	47.97	6.46	5.21
16	********	2.78	1.76	1.82	3.88	3.82	4.05	8.27	3.22	17.05	6.27	6.26
17	********	2.70	1.77	1.81	3.47	5.40	4.22	7.60	3.01	10.61	5.07	5.31
18	********	2.50	1.74	1.92	3.55	5.66	3.70	6.24	3.48	11.28	4.73	5.30
19	********	2.46	1.91	4.79	11.85	4.64	3.73	5.46	10.31	16.15	5.58	4.89
20	********	2.42	2.48	4.46	6.67	4.05	4.01	4.95	8.21	15.04	7.07	4.63
21	********	2.42	2.60	6.10	4.39	3.76	4.88	5.74	12.52	10.11	5.91	4.40
22	********	2.38	2.05	3.07	3.87	4.15	3.64	9.65	6.95	10.53	4.99	********
23	********	2.37	1.82	2.57	3.73	6.47	7.63	8.31	8.68	11.28	4.99	********
24	********	2.30	1.86	2.31	4.12	15.78	8.58	5.58	14.37	8.67	5.29	********
25	********	2.24	1.83	2.88	6.54	13.28	4.29	5.15	10.31	7.04	4.98	********
26	********	2.15	2.06	3.97	8.71	13.04	4.96	5.10	6.06	5.59	8.18	********
27	********	2.02	6.51	3.28	5.73	13.90	10.60	4.17	5.65	4.96	17.31	********
28	********	2.05	4.70	4.53	3.94	10.66	14.74	4.20	5.91	4.66	13.39	********
29	********		4.14	4.40	3.77	13.10	8.50	7.10	5.12	5.39	11.29	********
30	3.88		2.68	5.54	6.10	12.49	5.67	7.13	4.58	8.98	17.73	********
31	3.74		2.94		4.11		6.64	6.52		14.32		********
TOTAL	********	102.05	76.24	********	164.08	266.06	192.94	218.29	207.51	343.47	295.40	********
AVERAGE	********	3.64	2.46	********	5.29	8.87	6.22	7.04	6.92	11.08	9.85	********
MAXIMUM	3.88	10.26	6.51	12.23	11.85	28.70	14.74	17.30	14.37	47.97	32.24	29.41
MINIMUM	********	2.02	1.74	********	2.96	3.76	3.64	4.17	3.01	3.92	4.73	********

ANNUAL			
TOTAL	AVERAGE	MAXIMUM	MINIMUM
**********	**********	47.97	**********

Daily Mean Discharge at Bedukan Gauging Sation (1971)

(unit: m^3/s)

DAY	1	2	3	4	5	6	7	8	9	10	11	12
1	********	12.10	18.60	4.80	2.30	3.50	6.60	2.70	20.00	4.10	9.40	10.00
2	********	8.10	14.10	4.50	2.50	4.90	7.30	3.00	16.00	3.80	********	8.10
3	********	7.40	10.60	4.40	3.20	6.60	7.80	3.10	10.70	6.20	********	6.60
4	********	6.60	9.30	4.00	3.80	8.40	3.80	5.30	6.60	11.70	********	5.10
5	********	19.20	8.60	4.10	2.70	4.10	3.20	7.30	5.50	13.30	7.30	4.30
6	17.60	209.50	8.00	3.70	2.90	4.80	3.10	8.70	4.70	6.80	8.50	4.00
7	13.70	330.40	8.90	3.50	2.80	4.30	2.80	8.10	4.30	5.00	7.30	3.60
8	13.70	99.50	8.20	3.20	2.70	6.90	2.70	12.10	3.80	4.50	14.80	4.00
9	9.20	330.40	45.50	3.40	3.50	7.90	2.40	11.90	3.50	3.90	9.30	4.20
10	13.40	99.20	20.70	3.60	3.10	6.30	2.20	10.60	6.20	3.70	6.80	5.80
11	12.00	114.60	11.90	3.40	2.70	4.10	2.20	10.70	9.00	10.30	6.30	11.10
12	10.70	29.70	9.10	3.10	2.60	5.10	2.10	9.80	5.60	15.30	6.40	13.40
13	8.60	19.30	8.10	3.00	2.40	3.90	2.40	5.40	4.00	9.00	20.00	8.40
14	7.30	47.20	8.40	3.10	2.50	3.30	2.60	4.50	7.30	14.90	20.60	5.10
15	6.20	35.70	17.80	3.20	2.40	3.90	2.30	5.30	8.50	11.20	23.40	4.40
16	5.40	27.20	21.90	3.10	2.10	3.10	2.40	25.80	10.90	7.90	11.30	6.10
17	5.00	26.40	32.70	3.10	2.20	2.80	2.00	10.10	12.40	12.60	16.60	6.50
18	4.60	29.70	24.60	3.70	2.30	2.80	1.90	16.10	9.10	12.40	176.20	5.00
19	4.50	18.60	22.10	9.10	2.00	3.30	1.80	12.10	6.20	19.70	22.20	5.10
20	9.90	17.80	12.70	3.80	2.10	2.50	1.70	10.20	6.50	14.10	13.90	4.70
21	6.10	20.00	10.70	3.60	5.10	2.90	1.60	14.10	7.70	10.40	17.80	3.50
22	4.70	13.00	9.00	3.40	4.10	3.80	1.60	11.90	12.20	16.50	14.40	3.70
23	6.70	9.90	7.70	3.40	2.70	3.90	1.60	7.40	7.60	12.50	12.90	8.60
24	8.10	8.50	7.00	3.00	2.80	3.60	1.60	8.70	20.40	9.80	11.70	16.10
25	9.00	12.30	6.70	2.70	4.00	3.80	1.50	14.20	18.80	12.70	9.30	9.90
26	8.50	13.50	6.20	2.60	3.10	3.80	2.20	20.60	8.50	14.30	7.80	6.10
27	7.60	11.00	6.20	2.60	6.60	3.20	2.70	19.40	6.50	22.60	6.10	4.40
28	7.40	12.30	5.70	2.50	4.60	3.30	3.10	10.30	6.50	32.30	5.60	4.40
29	15.00		5.40	2.70	2.90	4.00	2.80	7.10	5.40	21.30	7.50	7.10
30	14.80		5.20	2.40	2.50	3.00	2.20	7.20	4.30	15.10	11.40	13.70
31	15.90		5.00		2.50		2.20	13.60		11.40		16.30
TOTAL	********	1589.10	396.60	106.70	93.70	127.80	86.40	317.30	258.70	369.30	********	219.30
AVERAGE	********	56.75	12.79	3.56	3.02	4.26	2.79	10.24	8.62	11.91	********	7.07
MAXIMUM	17.60	330.40	45.50	9.10	6.60	8.40	7.80	25.80	20.40	32.30	176.20	16.30
MINIMUM	********	6.60	5.00	2.40	2.00	2.50	1.50	2.70	3.50	3.70	********	3.50

ANNUAL			
TOTAL	AVERAGE	MAXIMUM	MINIMUM
**********	**********	330.40	**********

Daily Mean Discharge at Bedukan Gauging Sation (1972)

(unit: m^3/s)

DAY	1	2	3	4	5	6	7	8	9	10	11	12
1	11.80	18.60	6.50	19.30	2.00	3.20	1.90	0.80	3.40	6.80	6.70	15.50
2	7.80	8.70	6.50	15.80	2.80	3.10	1.80	0.70	5.30	6.70	4.70	10.60
3	23.90	11.20	5.20	11.60	3.00	2.80	1.80	1.20	6.40	13.30	4.20	13.60
4	13.00	10.00	4.60	8.70	7.50	2.90	2.00	1.70	3.90	14.10	3.50	16.20
5	8.60	7.10	4.30	7.10	5.70	2.70	1.90	1.70	5.50	12.40	3.20	12.00
6	7.00	6.00	8.20	5.40	4.50	2.50	1.90	1.50	4.30	14.20	6.90	9.00
7	9.80	4.90	12.60	6.60	21.30	2.70	1.80	3.60	3.90	11.90	********	7.40
8	8.70	4.40	7.70	8.60	13.00	3.10	1.60	3.70	3.70	12.80	********	24.80
9	6.90	4.10	5.20	16.60	9.50	3.10	1.50	3.20	3.00	15.00	********	11.50
10	5.40	3.80	4.70	18.40	8.80	3.50	1.30	4.60	2.30	16.30	********	7.60
11	4.50	3.50	4.20	8.10	6.20	5.90	1.20	4.20	3.20	10.30	********	5.90
12	4.30	3.30	4.20	6.00	5.00	3.70	1.30	2.40	3.30	7.00	********	5.10
13	3.60	3.10	3.90	4.90	4.00	3.10	1.30	2.20	2.40	6.30	********	4.80
14	3.40	2.80	3.90	4.30	3.60	2.70	1.20	2.90	1.80	9.70	********	4.00
15	4.90	2.50	3.40	4.20	3.20	2.40	1.20	3.10	1.80	8.70	14.00	3.70
16	6.60	2.50	3.20	3.70	2.90	3.10	1.70	1.90	1.70	5.80	15.50	3.50
17	27.90	11.70	6.40	3.20	3.20	5.60	2.00	1.90	1.70	4.60	9.10	3.40
18	111.20	13.60	15.40	2.90	4.90	3.20	2.50	5.70	4.00	3.90	4.90	3.30
19	40.40	6.70	15.00	3.00	3.40	2.70	1.70	4.20	4.50	3.50	4.30	3.30
20	14.10	5.60	12.80	3.20	4.50	2.60	1.50	3.90	9.10	3.20	3.80	2.90
21	14.10	6.40	8.90	2.60	12.30	2.60	1.40	4.60	8.30	3.00	8.30	2.70
22	10.70	6.90	8.50	2.70	8.60	5.80	1.30	3.30	5.50	3.80	13.70	2.80
23	15.70	11.50	13.60	3.30	5.30	5.90	1.20	1.80	5.60	4.20	13.90	2.80
24	9.00	42.90	9.80	2.70	8.40	3.80	1.10	1.90	12.80	3.10	8.30	2.80
25	7.40	28.10	5.70	3.60	5.10	3.70	0.90	5.20	22.40	3.60	6.50	2.90
26	6.40	15.80	5.10	2.70	3.80	2.60	0.80	9.80	20.80	3.30	4.40	3.10
27	5.80	9.60	4.90	2.30	3.20	2.40	0.80	5.10	25.80	3.20	3.90	2.70
28	5.10	7.30	4.20	2.20	3.30	2.10	0.90	3.50	15.70	3.10	3.70	2.40
29	5.30	6.20	4.20	2.10	4.20	2.10	1.00	2.40	10.80	6.00	5.60	2.30
30	5.50		11.80	2.00	3.80	2.10	0.80	3.30	6.60	18.30	13.00	2.20
31	9.30		17.80		3.50		0.70	3.00		29.50		3.60
TOTAL	418.10	268.80	232.40	187.80	180.50	97.70	44.00	99.00	209.50	267.60	********	198.40
AVERAGE	13.49	9.27	7.50	6.26	5.82	3.26	1.42	3.19	6.98	8.63	********	6.40
MAXIMUM	111.20	42.90	17.80	19.30	21.30	5.90	2.50	9.80	25.80	29.50	15.50	24.80
MINIMUM	3.40	2.50	3.20	2.00	2.00	2.10	0.70	0.70	1.70	3.00	********	2.20

ANNUAL			
TOTAL	AVERAGE	MAXIMUM	MINIMUM
**********	**********	111.20	**********

Daily Mean Discharge at Bedukan Gauging Sation (1973)

(unit: m^3/s)

DAY	1	2	3	4	5	6	7	8	9	10	11	12
1	5.45	0.96	1.22	2.08	********	3.73	6.87	3.95	3.56	10.36	12.28	7.31
2	3.63	0.91	1.48	3.81	5.65	4.51	8.72	3.21	4.78	7.80	14.08	7.21
3	2.82	0.86	1.35	3.65	4.79	5.08	11.30	3.35	7.55	7.80	15.10	8.32
4	5.60	0.86	1.41	2.56	8.13	5.81	9.76	3.03	5.59	23.92	14.58	6.69
5	4.32	0.80	1.38	2.19	6.42	3.87	9.10	3.69	7.70	9.73	11.73	9.08
6	6.28	0.77	1.42	1.67	4.65	3.00	7.82	3.01	10.51	8.04	11.18	9.96
7	3.53	0.72	1.46	1.15	8.87	2.59	7.00	2.61	5.89	6.38	17.33	6.15
8	3.11	0.73	1.56	1.00	7.94	3.39	5.15	4.39	4.39	5.66	13.60	5.21
9	2.78	0.65	1.54	0.93	6.76	2.47	4.94	7.93	5.01	6.32	9.22	4.42
10	2.53	0.65	1.60	0.83	5.37	2.20	4.56	5.82	9.58	5.62	7.67	4.01
11	2.33	0.63	1.53	0.71	6.72	4.04	3.57	18.51	10.50	4.68	7.27	3.63
12	2.16	0.59	1.50	0.64	4.65	4.51	3.05	10.17	11.50	4.39	7.13	3.30
13	1.98	0.85	1.54	0.97	4.96	2.61	2.53	6.75	8.31	4.66	6.24	3.16
14	1.69	1.55	1.54	2.61	6.49	2.12	2.21	5.58	11.60	5.81	5.88	3.43
15	1.69	1.61	1.37	1.87	5.09	1.86	1.89	9.32	41.52	4.96	6.91	3.37
16	1.62	1.39	1.18	1.53	3.55	1.80	1.74	8.22	24.33	5.66	7.28	3.90
17	1.49	1.37	1.58	4.72	2.87	1.84	1.73	5.31	18.63	4.96	8.05	4.94
18	1.45	1.29	1.94	5.89	2.81	3.47	1.63	4.11	18.24	3.89	9.93	4.43
19	1.42	1.23	1.62	3.92	2.69	6.76	1.61	4.08	12.55	4.01	8.36	3.77
20	1.32	1.14	1.66	2.90	2.50	7.35	1.95	3.73	9.60	4.84	7.48	3.22
21	1.29	1.11	1.87	3.23	4.76	4.52	3.47	2.84	8.30	4.19	8.53	3.09
22	1.21	1.01	1.94	3.95	3.26	5.26	4.67	2.27	8.47	3.73	7.58	3.93
23	1.15	0.89	1.88	3.50	3.67	6.25	5.80	1.88	7.99	3.28	6.55	3.71
24	1.09	0.67	1.79	2.94	3.35	5.33	5.64	1.67	12.12	3.07	6.78	4.53
25	1.08	0.63	1.74	2.74	2.72	3.91	8.45	5.18	16.88	3.13	12.20	9.75
26	1.07	0.65	1.68	2.88	2.49	4.66	5.65	3.49	22.90	4.36	24.63	10.86
27	1.07	0.73	1.42	2.21	4.83	6.63	4.76	2.68	13.49	8.24	13.80	9.57
28	0.99	0.61	1.60	6.42	3.79	3.79	4.44	8.27	9.97	11.60	9.56	16.22
29	0.99		1.90	12.92	2.85	4.16	7.05	4.02	12.57	8.50	8.18	10.40
30	0.97		2.32	11.61	2.81	12.60	8.14	3.24	12.77	6.43	8.33	28.34
31	0.96		2.50		4.09		4.88	2.76		8.01		11.12
TOTAL	69.07	25.86	50.52	98.03	********	130.12	160.08	155.07	356.80	203.83	307.44	217.03
AVERAGE	2.23	0.92	1.63	3.27	********	4.34	5.16	5.00	11.89	6.58	10.25	7.00
MAXIMUM	6.28	1.61	2.50	12.92	8.87	12.60	11.30	18.51	41.52	23.92	24.63	28.34
MINIMUM	0.96	0.59	1.18	0.64	********	1.80	1.61	1.67	3.56	3.07	5.88	3.09

ANNUAL			
TOTAL	AVERAGE	MAXIMUM	MINIMUM
**********	**********	41.52	**********

Daily Mean Discharge at Bedukan Gauging Sation (1974)

(unit: m^3/s)

DAY	1	2	3	4	5	6	7	8	9	10	11	12
1	12.10	18.30	15.90	********	2.80	********	********	10.90	********	9.80	********	2.80
2	11.40	25.50	19.50	********	12.10	********	********	12.60	********	7.70	********	3.10
3	24.60	14.80	23.80	********	10.40	********	********	12.10	********	11.00	********	5.10
4	14.80	12.70	14.40	2.30	7.70	********	********	8.70	********	8.50	********	2.90
5	12.20	15.30	10.90	5.30	6.60	********	********	8.10	********	7.90	********	4.70
6	11.60	14.10	9.70	7.00	4.90	********	********	21.90	********	7.40	********	5.70
7	12.70	11.60	9.30	2.50	3.00	********	********	10.80	********	6.40	4.50	3.30
8	17.20	10.50	7.70	2.60	2.60	********	********	7.20	********	7.50	3.80	3.00
9	22.30	11.00	6.80	5.30	8.20	********	********	6.00	********	5.20	3.30	6.50
10	23.00	12.60	6.60	5.30	6.30	********	2.20	5.40	********	3.50	2.80	6.70
11	17.30	13.90	********	5.80	4.50	********	2.40	4.30	0.80	********	4.00	6.90
12	14.60	72.70	********	6.20	3.20	********	3.80	4.30	1.20	********	4.30	4.30
13	12.80	326.00	********	5.90	2.90	********	6.10	6.60	0.60	********	3.60	3.50
14	11.30	100.80	********	5.00	8.50	********	4.70	3.50	0.60	********	3.30	3.00
15	10.10	35.80	********	3.70	7.40	********	3.50	2.90	1.30	********	3.10	3.00
16	9.70	23.50	********	6.70	8.50	********	3.10	2.90	1.10	********	4.00	2.70
17	9.20	17.50	********	7.00	10.20	********	4.10	2.60	1.20	********	2.80	********
18	17.00	15.70	********	9.90	20.50	********	5.80	2.10	1.20	********	2.70	********
19	12.80	14.30	4.60	8.50	10.70	********	6.80	2.00	1.70	********	3.40	********
20	11.00	12.90	4.30	5.70	13.30	********	6.70	1.80	5.20	********	2.60	********
21	11.80	12.20	4.00	3.70	11.10	********	5.10	6.00	4.90	********	2.10	********
22	19.10	13.00	3.70	3.10	11.70	********	3.30	********	4.50	********	3.50	********
23	11.50	21.50	3.50	2.90	11.60	********	3.00	********	5.90	********	5.90	********
24	9.30	24.20	3.30	2.70	8.50	********	3.30	********	2.50	********	4.00	********
25	8.70	13.50	3.30	2.10	7.40	********	4.90	********	5.00	********	3.70	********
26	10.00	11.50	********	2.00	********	********	7.30	********	13.90	********	3.80	********
27	13.00	9.10	********	1.90	********	********	3.60	********	6.20	********	3.40	********
28	12.20	8.00	********	1.80	********	********	4.20	********	3.80	********	2.80	********
29	11.10		********	1.90	********	********	4.90	********	4.60	********	3.00	********
30	9.30		********	3.10	********	********	8.30	********	3.50	********	2.60	********
31	9.50		********		********		11.80	********		********		********
TOTAL	413.20	892.50	********	********	********	********	********	********	********	********	********	********
AVERAGE	13.33	31.88	********	********	********	********	********	********	********	********	********	********
MAXIMUM	24.60	326.00	23.80	9.90	20.50	********	11.80	21.90	13.90	11.00	5.90	6.90
MINIMUM	8.70	8.00	********	********	********	********	********	********	********	********	********	********

ANNUAL			
TOTAL	AVERAGE	MAXIMUM	MINIMUM
**********	**********	326.00	**********

Daily Mean Discharge at Bedukan Gauging Sation (1975)

(unit: m^3/s)

DAY	1	2	3	4	5	6	7	8	9	10	11	12
1	********	4.07	11.36	********	********	********	********	********	12.07	********	********	********
2	********	3.33	16.08	********	********	********	********	2.29	8.13	********	********	********
3	********	2.98	16.58	********	********	********	********	1.98	6.85	********	********	********
4	********	2.49	14.13	********	********	********	********	5.56	5.87	********	********	********
5	********	2.28	9.59	********	********	********	********	12.00	12.14	********	********	********
6	********	1.95	7.95	********	********	********	********	15.66	7.26	********	********	********
7	********	2.06	7.17	********	********	********	********	9.56	5.85	********	********	********
8	********	1.81	5.86	********	********	********	********	20.89	5.16	********	********	********
9	********	1.43	4.99	********	********	********	********	12.22	7.22	********	********	********
10	********	1.75	5.13	********	********	********	********	7.57	6.14	********	********	********
11	********	1.68	7.98	********	********	********	********	6.70	9.23	********	********	********
12	********	1.23	5.24	********	********	********	********	6.35	13.16	********	********	********
13	********	1.06	4.78	********	********	********	********	8.17	9.31	********	********	********
14	********	2.13	4.03	********	********	********	********	7.25	7.81	********	********	********
15	********	3.51	4.23	********	********	********	********	********	6.41	********	********	********
16	********	1.38	3.95	********	********	********	********	********	7.58	********	********	********
17	********	1.29	********	********	********	********	********	********	8.29	********	********	********
18	********	1.50	********	********	********	********	********	********	9.03	********	********	********
19	********	1.50	********	********	********	********	********	********	6.17	********	********	********
20	********	3.90	********	********	********	********	********	********	5.19	********	********	********
21	********	18.03	********	********	********	********	********	********	6.80	********	********	********
22	********	39.11	********	********	********	********	********	12.85	********	********	********	********
23	********	23.03	********	********	********	********	********	14.64	********	********	********	********
24	********	45.84	********	********	********	********	********	16.17	********	********	********	********
25	********	21.17	********	********	********	********	********	9.16	********	********	********	********
26	********	11.23	********	********	********	********	********	7.67	********	********	********	********
27	********	7.84	********	********	********	********	********	6.40	********	********	********	********
28	********	7.26	********	********	********	********	********	5.27	********	********	********	********
29	********		********	********	********	********	********	5.14	********	********	********	********
30	2.72		********	********	********	********	********	7.78	********	********	********	********
31	3.10		********		********		********	16.96		********		********
TOTAL	********	216.84	********	********	********	********	********	********	********	********	********	********
AVERAGE	********	7.74	********	********	********	********	********	********	********	********	********	********
MAXIMUM	3.10	45.84	16.58	********	********	********	********	20.89	13.16	********	********	********
MINIMUM	********	1.06	********	********	********	********	********	********	********	********	********	********

ANNUAL			
TOTAL	AVERAGE	MAXIMUM	MINIMUM
**********	**********	45.84	**********

Daily Mean Discharge at Bedukan Gauging Sation (1976)

(unit: m^3/s)

DAY	1	2	3	4	5	6	7	8	9	10	11	12
1	********	********	2.60	2.17	2.42	1.98	2.74	2.41	5.22	1.17	8.91	8.20
2	********	********	2.45	1.99	5.10	1.94	2.36	3.24	4.48	1.00	8.12	5.46
3	********	********	2.31	1.85	6.24	2.30	2.73	6.16	5.59	0.91	11.99	4.53
4	********	********	2.46	1.98	7.76	2.05	1.67	7.05	3.84	0.85	14.81	4.02
5	********	********	3.05	2.18	5.29	2.54	1.53	3.36	3.96	0.77	9.54	4.31
6	********	********	3.89	2.88	3.77	2.92	1.45	2.95	2.78	0.33	8.97	4.88
7	********	7.34	2.94	2.09	3.36	2.53	4.48	2.25	2.37	0.55	12.20	4.81
8	********	6.81	2.43	3.94	4.53	4.18	5.18	2.01	2.05	4.40	13.06	3.23
9	********	6.29	7.19	3.96	4.59	3.57	4.82	1.80	1.84	2.63	16.21	2.62
10	********	5.98	10.93	2.46	5.05	2.79	5.75	1.59	1.62	4.12	17.66	2.64
11	********	7.27	7.55	1.93	8.60	2.69	6.45	1.48	1.42	3.63	16.46	2.75
12	********	********	3.93	1.73	6.60	3.38	4.85	1.68	1.56	2.41	11.50	2.85
13	********	7.57	2.98	2.50	4.71	3.35	4.66	1.90	1.72	2.76	11.44	2.89
14	********	5.45	2.52	2.63	3.85	2.80	3.36	2.13	1.26	10.77	11.96	2.66
15	********	4.41	2.29	2.70	3.63	2.58	4.06	2.64	1.03	15.01	10.53	2.40
16	********	4.02	2.34	3.91	3.94	1.99	7.70	3.08	0.98	12.04	9.61	2.41
17	********	3.80	2.43	2.73	3.42	1.87	3.51	2.66	1.00	8.69	8.22	2.62
18	********	3.59	2.51	1.92	********	2.11	3.32	1.96	1.08	8.68	7.29	2.84
19	********	3.42	2.60	1.67	2.23	2.66	5.54	5.13	1.15	10.12	6.48	8.86
20	********	3.27	2.69	1.53	1.89	1.75	2.89	3.90	1.23	13.82	5.59	11.20
21	********	3.12	3.28	1.41	2.04	1.51	2.44	2.29	1.30	13.07	5.06	14.92
22	********	2.97	4.75	1.43	19.04	1.55	2.37	8.86	1.99	10.46	6.01	10.06
23	********	2.82	2.53	1.48	30.43	2.48	2.94	13.60	9.25	13.26	7.39	6.58
24	********	3.39	2.34	1.53	5.16	1.69	2.67	10.48	21.03	13.04	11.00	12.77
25	********	3.06	2.16	1.59	3.64	1.59	2.07	4.91	4.29	10.15	12.90	13.93
26	********	3.68	1.98	1.64	2.93	1.49	1.82	3.67	2.44	8.93	10.59	10.12
27	********	3.90	1.83	1.69	2.49	1.39	2.30	3.36	1.81	7.35	8.12	8.30
28	********	3.64	2.03	4.94	2.21	1.42	2.54	3.26	1.49	6.10	6.26	7.78
29	********	2.85	3.85	6.70	2.07	2.84	2.72	3.64	1.51	6.42	6.84	7.58
30	********		3.24	4.23	1.92	3.33	8.36	8.13	1.29	12.09	7.44	8.17
31	********		2.45		2.08		2.93	5.38		11.98		6.25
TOTAL	********	********	102.53	75.39	********	71.27	112.21	126.96	92.58	217.51	302.16	192.64
AVERAGE	********	********	3.31	2.51	********	2.38	3.62	4.10	3.09	7.02	10.07	6.21
MAXIMUM	********	7.57	10.93	6.70	30.43	4.18	8.36	13.60	21.03	15.01	17.66	14.92
MINIMUM	********	********	1.83	1.41	********	1.39	1.45	1.48	0.98	0.33	5.06	2.40

ANNUAL			
TOTAL	AVERAGE	MAXIMUM	MINIMUM
**********	**********	30.43	**********