Attachment

.

Appendix B

oore VCLIN RILLI	NNATE IATION NG M	s 3044 : Veri Achine	D. BI-2 030.94,603736.85,595.98	ULE		I III HY BORE				OJEC	т					CC CO ELI	ompletik Llar el Evation	on date Evation	-042002 : 1005- :595.98 DLE END 50 VORKS		
				D	CP	т _.		RIPTION				CORE RQD	RECOVE	RY					ω		
	Cosing size	Care Log	DESCRIPTION OF ROCK /SOIL	Blows	i per 1	5 cm	WATER LEVELM	ALTERATION	DRIENTATION	ROUCHINESS	JONT/m	REC X	ROOX						PERMEMBILITY	LVB TEST	SCREEN PIPE
00		_		0-15	15-30	30-45								8	94	8	8	5			
00			Allimal deposit composed of gravels, pebbles and sand with boulder of marble, schist and quartzite.	48	50	49						27									
		000000										15									
×	-		ALLUMAL DEPOSIT WITH WEATHERED ROCK FRAGMENTS AND SANDY GRAVEL									19									
xo	HW	000000000000000000000000000000000000000		39	43	45						100									
0			ALLUMAL DEPOSIT COMPOSED OF BOULDERS OF MARBLE, QUARTZITE AND SCHIST(=30-40cm) WITH GRAVELS, PEBBLES, ROCK FRAGMENTS, AND SANDY SOIL									71									
0				47	46	49						29 70									
0			top of the Bedrock									57									
			W2-W3,LIGHT YELLOW COLORED, WEAK FRACTURED MARBLE ROCK.									100	57								
	NW		W2-W3,LIGHT GRAY COLOR, MEDIUM STRONG,			-					+	100	40								
0										r	10 9	87	77								
										- 9		100	29								
			W2-W3,LIGHT GRAY TO WHITE COLOR, MEDIUM STRONG, JOINTED MARBLE WITH LAMINATIONS.							er	12	55	28								
_	ABBF	REVIA	TION Rough =r, irregular=ir, Stepped= st, Crusbed= cr, Iron stain=Fea, Fractured	Smoot 1 zone	th= s, s = f2	Slicke Mect	nsided	⇒ si, t Break	Undulat age= 1	ling	un, Plo resh ≠	nner= W1. <	pl, Cl	dy≕ cl Wenth	, Sand	== ↓= so, = ₩2 ₩	Mico=	= mi,		1	

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Coori Inclii Drillu	NINATES VATION ING MA	5 30440 : Verti Chine :). B1-2 330.94,633736.85,595.98 ICAL : TONE-UD5 ROTARY													COL COL ELE	mpletk Lar el Vation	on date Evation	le end 56	-	
				5	5 P	T		RIPTION				CORE RQD 7		RY					ω		Γ
Depth.m	Coning size	Core Log	DESCRIPTION OF ROCK /SOIL	Blows	per	15 cm	ater levelm	ALTERATION	ORENTATION	ROUGHNESS	JONT/m	REC X	RODX						PERMEABILITY	K8 EST	
10.00				0-15	15-3	30 30-45	<u> </u>	-	- 0	E.	- 3	æ	<u>e</u>	ន	Ş	8	98	8	<u> </u>		\vdash
				1	\uparrow							55	28								┢
		臣		 	<u> </u>	+															
		臣	W1,-W2 LIGHT YELLOW COLORED, WEAK,																		
11.00		臣	FRACTURED MARBLE.									26									
		Ē	1																		
			CORE LOSS BETWEEN 11.40-11.70m																		
12.00		HT.	W2-W3 , FRACTURED, WEAK MARBLE FRAGMENTS AND SANDY GRAVEL									44									ĺ
		臣																			
		HT.																			
13.00	NX			L .																	
13.00			W2-W3 WEAK, FRACTURED MARBLE CORE LOSS 12.9-13.2m.									39									
				-		+-+		+													i I
		<u>L</u> T	W1,-W2 MEDIUM STRONG MARBLE									85									
14.00			W1-W3, LIGHT GRAY, FRACTURED,				- 1	- 1	- 1	- +		100									
			LAMINATED MARBLE.																		
			W2-W3 WEAK, FRACTURED MARBLE	-		++	- +	- +	- +			100									
15.00				<u> </u>		+-+	- +	- +	- +			- "-+									
			W2-W3, MEDIUMSTORNG, GRAY MARBLE COLOR MARBLE.																		
												26									
16.00			W2-W3, WEAK FRACTURED MARBLE			+ $+$	- +	- +	- +		+	· +					—				
10.00			CORE LOSS 15.6-16.00m									33									
						ΤT	- 1	- T		- 1											
			CRUSHED AND SHEARED SLUDGE																		
7.00	NW		SAMPLE COLLCTED.									0									
			TOTAL CORE LOSS 16.20-17.55m									-									
																_					
8.00			W2-W3 FRACTURED MARBLE FRAGMENTS			T	T	- T	T	T	- +										
]		Ţ	CORELOSS 17.55-18.00 m									52									
		는										100									
9.00		<u>_</u>	W2-W3 FRACTURED MARBLE FRAGMENTS			╞─╴┼	- +	- +	- +	- +		+									
2.00		井		┝── ┟		╞╼╶┟	- +	- +	- +	+		100-									
			W2-W3,LAMINATED PHYLLITE AND MARBLE									66	22								
	ſ		W2W3, LAMINATED MARBLE AND PHYLLITE	†		ΓŤ	- †	- †	- +	• 🕇	- +	1									
0.00	ļ		CORE LOSS 19.50-19.85 m									50	7								
			ION Rough =r, Irregular=ir, Stepped= st,	Smoot	h= s		l						E				Maga				

COOR INCLI DRILL	VINATE: VATION ING MA	: VERTI	130.94,603736.85,595.98 KAL : TONE-UD5			BORE	HOLE	LOG								α 00 Ευ	ompletic Llar el Evation	on date Evation	-04-2002 : 10-05- :595.98 LE END 56 'ORKS		
				s	P 1	•		RIPTION ONTINUIT				CORE RQD	RECOV	ERY					LU		[
Depth.m	Casing size	Core Log	DESCRIPTION OF ROCK /SOIL	Blows	per 18	i cm	water levelm	ALTERATION	ONENTATION	ROUCHINESS	JONT/m	REC X	RODX						PERMEABILITY	LAB TEST	SCREEN PIPE
20.00				015	1530	30-45								8	ŧ	8	8	ŝ	· · · · ·		
			N1-W2 MEDIUM STRONG LAMINATED MARBLE.							r	9	50	7								
1.00			W2,-W3 WEAK, FLACTURED MARBLE WTH SCHIST PARTING . CORE LOSS 20.50-21.00 m								12	41	+								
			W1-W2 , MEDIUM STRONG JOINTED WARBLE CORE LOSS 21.35-21.50 m							s	12	63	7								
2.00		臣	W1-W2 , MEDIUM STRONGLAMMATED SCHIST CORE LOSS 22.00-22.20 m							r	15	66									
			W2-W3 MEDIUM STRONG GRAY MARBLE MB AT 22.73							s	6	100	35								
3.00		Ē	W2 LAMINATED MARBLE WITH SCHIST.				_]			s	9	100	0								
		日	W1W2 MEDIUM STRONG GRAY MARBLE	L		╞╴╷					9	100	23								
4.00			W2-W3, GRAY COLOR LAWINATED MARBLE CORE LOSS 24.15-24.50 m							r	8	59	37								
			W1-W2 GRAY COLOR FRACTURED MARBLE				-	$=$ \downarrow		_'_	10	100									
			W1-W2 MEDIUM STRONG MARBLE	┝── ╽			- +	+		_ '_	9	100	_33								
5.00			W2-W3 WEAK FRACTURED MARBLE CORE LOSS 25.80-28.00 m							s	10	40	0								
5.00			W1,W2, WEAK FRACTURED MARBLE CORE LOSS 26.50-26.70 m							s	8	73	13								
.00	NW		W2,W3 MEDIUM STRONG MARBLE WITH LAMINATIONS.					- +			9	100	37								
.00			W1-W2 WEAK, LAMINATED GRAY TO BROWNISH CLOR MARBLE WITH SCHIST CORE LOSS 28.30-28.65 m							r	7	69									
.00			W1-W2 MEDIUM STRONG GRAY COLOR MARBLE WITH HRREGULAR JOINTS/ SOME LAMINATED SAMPLES.							s	6	100	52								
	ABBF	REVIAT	ION Rough =r, Irregular=ir, Stepped= st, Crusbed= cr, Iron stain=Feo, Frocture	Smooth)= s,	Slicken	sided×	si, U	ndulati	ng= u	in, Pia	inner=		lay= c	i, Sona	l = 1 J= so,	Mica=	= mi,			

COOR INCLI DRILL	dinate: Nation Ing Ma	: VERTI	. BA-1 12,603174.55,493.932 CAL TONE-UD5	ULE			YDROF HOLE			OJFC.	f					CC CO EL	mpletic Llar el Evation	EVATION	: Sep.2,200 :493.932 E END :463		
				D	СР	T		RIPTION				CORE RQD	RECOVI	RY		Γ		111111	LU		[
urindan	Casing size	Core Log	DESCRIPTION OF ROCK /SOIL	Biows	per 1	5 cm	WATER LEVELM	ALTERATION	ORIENTATION	ROUGHNESS	JO∯NT/m	REC X	RODX						PERMEABILITY	LAB TEST	SCREEN PIPE
.00				0-15	15-30	30-4	5					_		8	Ş	8	8	5			
00			0.00-0.50m POORLY GRADED GRAVELLY SAND WITH SOME BOULDERS OF GREENISH AND DOLOMITE 0.50-1.00m CORE LOSS.					-	-	-	-	50	-								
00		1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	1.00-1.50m core loss below it poorly graded silty sand	30	30	32		-	-	-	-	67									
00			CORE LOSS					-	-	-											
×			3.10-3.60m CORE LOSS BELOW IT GRAVELLY SAND.	31	28	35		-	-	-		45	-								
8		00000000000000000000000000000000000000	40.00-4.75m CORE LOSS BELOW IT FRESH STRONG BOULDER OF SILICIOUS DOLOMITE PLUS MIXED OF SILTY SAND.					-	-	-	-	38	17								
20			5.20–5.40m SILTY SAND BELOW IT POORLY GRADED COARSE GRAVEL.	36	33	37		-	-	-	-	100	-								
2			6.50-7.55m BROWN COLOR CLAY SILT MIXED SAND BELOW IT FRESH STRONG BOULDER OF DOLOMITE.					-	-	-	-	100	13								
0			BROWN COLOR GRAVEL, SILT CLAY MIXED SAND.					-	-	-	-	100									
			BROWN COLOR GRAVEL, SILT CLAY MIXED SAND.	41	45	44		-	-		-	100	-								
	ABBR	EVIATI	l ON Rough =r, Irregular=ir, Stepped= st, Crusbed= cr, Iron stain=Feo, Fracture	Smoot	h= s,	Slicke	ensided=	= si, (Jndula	ting=	un, Pl	onner=	pi, C	lay≠ c	I, Sar	id= sa	, Mica	= mi,	E		

KULEKHANI III HYDROPOWER PROJECT DRILL HOLE NO. BA-1 BORE HOLE LOG START DATE : 18 Aug,2002 COMPLETION DATE : Sep.2,2002 COLLAR ELEVATION :493.932 COORDINATES 3040012,603174.55,493.932 INCLINATION : VERTICAL DRILLING MACHINE : TONE-UD5 ELEVATION OF HOLE END :463.932 DRILLING METHOD : ROTARY LOCATION : BRIDGE DESCRIPTION OF CORE RECOVERY LU SPT DISCONTINUITIES ROD X HEALT size PIPE LEVEL PERMEABILITY ROUGHNESS 3 RENTATION **LTERATION** ESI DESCRIPTION OF ROCK /SOIL Depth.m Blows per 15 cm JOHNT/m Casing ж SCREEN Core Ð 3 XQQX ц Ц 10.00 0-15 15-30 30-45 ន ç 8 ଛ 8 10.00-10.60m BROWN COLOR CLAY SILT MIXED SAND BELOW IT COARSE GRAVEL. --_ _ 100 _ 11.00 10.85-11.25m SILTY SAND BELOW IT FRESH BOULDERS OF LIMESTONE. 100 _ ---_ -_ FRESH BOULDERS OF LIMESTONE AND COARSE GRAVEL. 12.00 ----100 _ 12.50-12.95m FRESH BOULDERS OF LIMESTONE 13.00 BELOW IT GRAVELLY SAND. _ ----_ ... 17 100 14.00 ------100 --GRAVELLY SAND. - ---- -POORLY GRADED CLAY SILT MIXED SAND 47 15.00 48 49 _ ----100 ABOUT 25% BOULDERS OF LIMESTONE THEN 16.00 BROWN COLOR ABOUT 10% GRAVEL MIXED SAND ... ----100 17 17.00 17.00-17.50m BROWN COLOR GRAVELLY SAND THEN BOULDERS OF LINESTONE. ----_ _ 100 32 46 40 37 18.00 BROWN COLOR CLAY SILT MIXED POORLY GRADED SAND -100 _ 19.00 BROWN COLOR CLAY SILT MIXED POORLY GRADED SAND ------100 -20.00 ABBREVIATION Rough =r, Irregular=ir, Stepped= st, Smooth= s, Slickensided= sl, Undulating= un, Planner= pl, Clay= cl, Sand= sa, Mica= mi, Crusbed= cr, Iron stain=Feo, Fractured zane = f2, Mechanical Breakage= MB, Fresh = W1, Slightly Weathered = W2,Mod. Weathered =W3, Highly Weathered= W4, Decomposed = W5. DRILLED BY :B. NEUPANE/R. ADHIKARI (DRILLING FOREMAN)SRCL

DRILL HOLE NO. BA-1 COORDINATES 3040012,603174.55,493,932 INCLINATION : VERTICAL DRILLING MACHINE : TONE-UD5 DRILLING METHOD : ROTARY

START DATE : 18 Aug.2002 COMPLETION DATE : Sep.2,2002 COLLAR ELEVATION :493.932 ELEVATION OF HOLE END :463.932 LOCATION : BRIDGE

				s	ΡT			RIPTION				RQD	RECOVE	.RY					LU I		ſ
	Casing size	Care Log	DESCRIPTION OF ROCK /SOIL	Blows	per 15	cm	WATER LEVELM	ALTERATION	ORTENTATION	ROUCHINESS	JOINT/m	REC X	RODX						PERMEABILITY	LAB TEST	
0				0-15	15-30	30-45								50	ş	8	8	8			t
			BROWN COLOR CLAY SILTY MIXED SAND					-	-	-	-	100	-								Ī
0			GRAY COLOR COARSE SANDY GRAVEL.					_	-	-	-	100	-				N				
			W2-W3 MEDIUM STRONG DARK GRAY COLOR THINLY FOLIATED PHYLLITE(BED ROCK).					-	-	-	-	100	13								
			W2-W3 MEDIUM STRONG DARK GRAY COLOR																		
			CHINEY FOLIATED PHYLITE(BED ROCK).									100									
			MIXED OF SOME BOULDER OF PHMLLITE.					-	-	-	-	100									
			24.24.40m GRAY COLOR GRAVELLY SAND BELOW IT W3, MED STRONG FRACTURED PHYLLITE <10cm CORE.					-	-	-	-	100	-								
			GRAY COLOR GRAVELLY SAND.						-			100									
			WI-W2 STRONG DARK GRAY COLOR THINLY FOLIATED PHYLLITE.					-	-	-	-	100	69								
			W1-W2 STRONG DARK GRAY COLOR THINLY FOLIATED PHYLLITE.						-	_	 	100	70								
	-		W1-W2 STRONG DARK GRAY COLOR THINLY FOLLATED PHYLLITE. 27.10-27.40m,SAND THEN W3 FRACTURED									100	55					_			
			PHYLLITE <10cm CORE. 27.50-27.75m W3 PHYLLITE THEN 27.75-28.00m GRAY COLOR SAND BELOW IT, W1 STRONG PHYLLITE.								- -	100									
			28.00-28.70m GRAY COLOR SAND BELOW IT FRESH BOULDER OF LIMESTONE. DOLOMITE <10cm CORE.									100									
			FRESH BOULDERS OF QUARTZITE SCHIST, (29.15-30.10m)					 				100									
	BBRI		ON Rough =r, Irregular=ir, Stepped= st,	Smootl		Slicker	nsided=	= si, L	Indulot	ino= 1	In, Pla	nner=	<u>рі.</u> С	lav= r	. San	d= ea	Mice	= mi			-
			Crusbed= cr, Iron stain=Feo, Fracture Highly Weathered= W4, Decomposed	d zone	= 12,	Mech	onical	Break	oge=)	AB, Fr	esh ≖	W1, S	lightly	Weath	iered =	= W2,I	Mod. W	leather	ed =\W3,		

coor Incli Drill	DINATE NATION NG MA		TONE		1	BORE	HOLE	ELOG								C Ci Ei	ompleti Dllar ei Levation	EVATION	: 21Aug. 2 :510.664 F END :480		
				s	P 1			RIPTION				CORE RQD	RECOVE	RY		Τ			LU		
mmden	Casing size	Corre Log	DESCRIPTION OF ROCK /SOIL	Blows	per 15	i cm	WATER LEVELM	ALTERATION	ORIENTATION	ROUGHNESS	JOINT/m	REC X	ROOX						PERMEABILITY	LAB TEST	SCREEN PIPE
.00				0-15	15-30	3045								82	Ş	8	8	5			
00			BROWN COLOR RESIDUAL SOIL					-	-	-	-	100	-								
00			1.00-1.60m Core Loss Below This Brown Color Residual Soil	30	30	31		-	-	-	_	100	-								
20			CLAY AND SILT DOMINENT BROWN COLOR SAND ABOUT 5% GRAVEL MIXED IN SOIL.									100									
20			CLAY AND SILT DOMINENT BROWN COLOR SAND ABOUT 5% GRAVEL MIXED IN SOIL	35					-	-		100									
0			CLAY AND SILT DOMINENT BROWN COLOR SAND ABOUT 1-5% GRAVEL MIXED IN SOIL.																		
0			CLAY SILTY SAND					-	-	-		100									
0			CLAY AND SILT DOMINENT GRAVELLY SAND.	44	43	33		-	-	-	-	100	-								
0			CLAY AND SILT DOMINENT GRAVELLY SAND.					-	-	-	-	100	-								
•	BBR	EVIATI	ON Rough =r, Irregular≖ir, Stepped= st, Crusbed= cr, Iron stain=Feo, Fractured	Smoot	h= s,	Slicker	risided=	= sl, L	Indula	ting=	un, Pie	nner=	pl. Cl	dy= c	I, Sor	nd= s:	1. Mico	= mi			

DRILL HOLE NO. BA-2 COORDINATES3039976.250,603004.973,510.664 INCLINATION : VERTICAL DRILLING MACHINE : TONE DRILLING METHOD : ROTARY

START DATE : Aug.16,2002 COMPLETION DATE : 21Aug. 2,2002 COLLAR ELEVATION :510.664 ELEVATION HOLE OF END :480.664 LOCATION : BRIDGE

				s	ΡŢ		DISC	RIPTION			•	RQD	RECOV	ERY					LU		
	Casing size	Core Log	DESCRIPTION OF ROCK /SOIL	Blows	per 15	i cm	WATER LEVELM	ALTERATION	ORIENTATION	ROUGHNESS	JOINT/m	REC X	RODX						PERMEABILITY	LAB TEST	
.00				0-15	15-30	30-45								8	\$	8	8	<u>5</u>			Γ
_			ABOUT 50% BOULDER AND GRAVEL DOMINET SAND.	33	38	38				+		100	_								
00			Boulder Mixed Brown Color Gravelly Sand.																		
00			GRAY COLOR GRAVEL SILTY SAND.	26	25	28		-	-	-		100	-								
00																					
80			gray color gravel silty sand.	31	30	31		-		-	-	100	-								
8	-		BROWNISH-GRAY COLOR SILTY SAND PLUS AROUND 5% GRAVELS OF PHYLLITE.						-	~	-	100	-								
90 			BROWNISH-GRAY COLOR SILTY SAND PLUS AROUND 5% GRAVELS OF PHYLLITE.							-		100									
20	-							-	-	-	-	100	-								
8			Brownish-gray color silty sand Plus around 5% gravels of phyllite.					-	-	-	-	100	-								
			BROWNISH-GRAY COLOR SILTY SAND PLUS AROUND 5% GRAVELS OF PHYLLITE.						-	-	-	100	-								
	BBR	EVIATI	ION Rough =r, Irregular=ir, Stepped= st, Crusbed= cr, Iron stain=Feo, Fracture	Smoot	h= s,	Slicke	l nsided	=	Jndulal	ing= ı	un, Pla	nner=	= pl, (lay= a	I, San	nd= so	, Mica	= mi,			-
			Crusbed= cr, Iron stain=Feo, Fracture Highly Weathered= W4, Decomposed	a zone I = W5	= 12	, Mech	anical	Break	oge= 1	vill, Fr	esh =	W1,	Slightly	(Weat)	nered	= W2,	Mod. \	Veather	ed =W3,		
	-0.0		HNU KC/R. ADHIKARI(DRILLING SUPER	_																	_

KULEKHANI III HYDROPOWER PROJECT BORE HOLE LOG DRILL HOLE NO. BA-2 START DATE : Aug.16,2002 COMPLETION DATE : 21Aug. 2,2002 COLLAR ELEVATION :510.664 COORDINATES3039976.250,603004.973,510.664 INCLINATION : VERTICAL DRILLING MACHINE : TONE ELEVATION HOLE OF END :480.664 DRILLING METHOD : ROTARY LOCATION : BRIDGE DESCRIPTION OF CORE RECOVERY LU SPT DISCONTINUITIES RQD X size 鱼 EVED PERMEABILITY RENTATION ROUGHNESS ŝ ALTERATION EST DESCRIPTION OF ROCK /SOIL Depth.m Blows per 15 cm Casing m/int/m × SCREEN g Ĕ ¥ XODX 8 20.00 0-15 15-30 30-45 2 ¥ 8 2 8 W2 MEDIUM STRONG PHYLLITE (BED ROCK) <10cm CORE. _ -_ 100 -20.50-21.70m BROWN COLOR CLAY AND SILT 21.00 DOMINENT SAND BELOW IT WI STRONG FRESH PHYLLITE (BED ROCK) ---100 10 ---22.00 DARK BROWN COLOR, SILT AND CLAY DOMINENT SAND 23.00 --100 23.50-24.60m DARK BROWN COLOR SILT 24.00 AND CLAY DOMINENT SAND BELOW IT W1 PHYLLITE (BED ROCK) <10cm CORE. _ ~ 100 ----_ 25.00 25.00-26.25m, DARK BROWN COLOR SILT AND CLAY DOMINENT SAND BELOW IT,W1 PHYLLITE <10cm CORE. 26.00 ----------100 DARK BROWN COLOR SILT DOMINENT 27.00 POORLY GRADED SAND. -100 --28.00 DARK BROWN COLOR SILT DOMINENT POORLY GRADED SAND. 100 ---29.00 29.00-29.50m SANDY SILT BELOW IT W1 PHYLLITE (BEDROCK) <10cm CORE. -_ _ _ 100 30.00 ABBREVIATION Rough =r, Irregular≖ir, Stepped= st, Smooth= s, Slickensided= sl, Undulating= un, Planner= pl, Clay= cl, Sand= sa, Mica= mi, Crusbed= cr, Iron stain≠Fea, Fractured zone = f2, Mechanical Breakage= MB, Fresh = W1, Slightly Weathered = W2,Mad. Weathered = W3, Highly Weathered= W4, Decomposed = W5. DRILLED BY : BISHNU KC/R. ADHIKARI(DRILLING SUPER VISOR/FOREMAN), SRCL

EAST DRILLING COMPANY (P) LTD. BORE HOLE LOG

KULEKHANI-3 HYDROELECTRIC POWER PROJECT

DRILL HOLE NO .: BP-1 COORDINATES: 3039975.144 N, 603116.975 E. DRILLING MACHINE: VOLT-35 DRILLING METHOD: ROTARY

START DATE: 07/05/2002 COLLAR ELEVATION:419.401m ELEVATION HOLE END:379.401 m LOCATION: RAPATI RIVER

INCLINATION: VERTICAL

		r—	Γ		000	Ť	T			INC	CLIN/								
					DCF	- 1						RQI	re R 2%	ieco	ve	ry	H		kg/cm2
o Depth, m 8	Barrel size	Core Log	Description		rs per 1	5 cm	Water Table m.	Alteration	Orientation	Roughness	Joint/R cm	REC%	RQD%	20	40	60	80		Laboratory
	NX		Alluvium deposition of coarse grain sand with		1.0.0	100 -	+ -								_			-	
1.00		°.0	pebble to cobbles of light grey to dark grey quartzite and dolomite.	36	44	26/80	1.40	-	-	-	-	53	-						
2.00		o //	Alluvium deposition of coarse grain, sand and cobble to boulders of dark to light grey and white, fine to medium grain slate, phyllite and marble.	80	-	- 12/80		-	-	-	-	26	-						
3.00		11	Alluvium deposition of coarse grain sand and cobble to boulder of white medium grain, crystalline marble.	19	61	- 27/80	2.00	-	-	-	-	16	-						
4.00			Alluvium deposition of medium grain sand and cobble to boulder of light to dark grey, fine to medium grain quartzite, dolomite and marble greenish grey phyllite.	28	25	18 45/71	2.00	-	-	-	-	65	-						
5.00		$\left \right $	Alluvium deposition of coarse grain sand and cobble to boulder of dark grey, fine grain slate and white, medium grain marble.	20	31	29 42/80	2.00	-	-	-	-	19	-						
6.00			Alluvium deposition of medium to coarse grain sand and cobble to boulders of white, medium grain marble and dark grey, fine grain quartzite.	15	15	19 45/49		-	-	-	-	32	-						
7.00			Alluvium deposition of coarse grain sand and cobble to boulder of dark grey, fine grain quartzite and light grey, medium grain marble.	19	21	23 45/63	2.50 3.00	-	-	-	-	13	-						
8.00			Allluvium deposition of coarse grain sand and cobble to boulders of dark grey, fine grain quartzite and light grey, coarse grain, crystalline granite with mica, quartz, feldspar.	80	-	- 11/80		-	-	-	-	17	-						
9.00		//	Alluvium deposition of cobbles to boulder size dark grey, fine grain quartzite, white, medium grain marble and light grey, coarse grain granite with mica, quartz and feldspar.	50	30	- 20/80	2.80	-	-	-	-	85	-						
10.00		//•	Alluvium deposition of coarse grain sand and cobble to boulder of light to greenish grey, fine grain phyllite and quartzite and medium grain narble.	15	23	14 45/52		-	-	-	-	20	-						
Zone, ME	3=Mec tured,	hanic CL=	igh=r, smooth=s, slickensided=sl, un=undulating, pl=pl al Breakage, W1=Fresh, W2=slightly Weathered, W3= Core loss AJHI	anar, c Moder	lay=ci, ately V	sand-s	a, mic ed, W4	a=mi, 4=Hig	crusi hly W	hed-o	er, iron ered, V	stain V5=D	=FeO ecom	posed	 1.	I			

EAST DRILLING COMPANY (P) LTD. BORE HOLE LOG

KULEKHANI-3 HYDROELECTRIC POWER PROJECT

DRILL HOLE NO.: BP-1 COORDINATES: 3039975.144 N, 603116.975 E. DRILLING MACHINE: VOLT-35 DRILLING METHOD: ROTARY

START DATE: 07/05/2002 COLLAR ELEVATION:419.401m ELEVATION HOLE END:379.401 m LOCATION: RAPATI RIVER INCLINATION: VERTICAL

				Π	DCF	· T · ·	Τ					00	re t	Tec	ove	ary -		Ē	
				+			$+ \frac{1}{2}$	<u> </u>	T	<u>т — </u>	r	RQ	D%	r	<u> </u>	1		Ē	kg/cm2
m Depth, m 10.00	Barrel size	Core Log	Description			15 cm 0 30-4	Water Table m	Alteration	Orientation	Roughness	Joint/R cm	REC%	RQD%	20	40	60	80	100	Laboratory
	NX	17	Alluvium deposition of medium to coarse				1—		 										
11.00			grain, light brown sand. Alluvium deposition of fine grain, light	17	11	5 45/3	3.00	-	-	-	-	0	-						
12.00			brown sand. Alluvium deposition of fine to medium	10	19	20 45/49		-	-	-	-	0	-						
13.00		$\langle \rangle$	grain, light brown sand. Alluvium deposition of fine to medium	8	4	30 45/42		-	-	-	-	0	-						
14.00			grain sand and boulder of dark grey, fine grain quartzite. Alluvium deposition of medium grain sand	13	15	11 45/39		-	-	•	-	14	-						
15.00		//	and cobbles of dark grey, fine grain quartzite and light grey, fine grain dolomite.	80		12/80		-	-	-	-	14	-						
16.00	↓	///	The run from 15.00m bed rock is observed. W1, strong hard, dark grey, fine grain, fractured and ragmented slate with quartz vein. Core loss : 15.30 to 16.00 m.				3.00	-	10 ^v 50 ^v	ir	4	30	-						
17.00	66	//[W1, strong hard, dark grey, fine grain, moderately jointed calcarious slate with quartz vein. Core loss : 16.00 to 16.80 m.				3.00	-	20" 30" 50"	Ir	5	20	-						
18.00	↓		Fotal core loss, dard grey, coarse grain sand particle found as sludge black water return during drilled. Core loss :17.00 to 18.00 m.					-	-	-	0	0	-						
19.00	вх	//	Fotal core loss dark grey, fine to medium grain sand size particle as sludge, black vater return during drilled.Core loss : 8.00 to 19.00 m.				3.00	-	-	-	0	0	-						
20.00			fotal core loss dark grey, fine grain sand size particle as sludge black water return rom hole during drilled. Core loss : 19.00 to 20.00 m.					-	-	-	0	0	-						
ABBREV	IATION	roug	h-r, smooth-s, slickensided-sl, un-undulating, pl	-plana	ar, cla	y=cl, s	and-s	a, mi	ca-mi	, crus	hed=	cr, iro	n sta	in=F	eO	L_			
FZ= Fract	ured, C	L= C		v3=Mc	derati	ely We	ather	ed, W	4=Hig	phiy W	eath/	ered,	W5=	Dece	ompo	osed.	•		
Drilled by	SANT	A MA.)HI											Т					

COOF	rdin/ .ing	ATE: MAC	KULEKHANI-3 HYDROELECT O.: BP-1 S: 3039975.144 N, 603116.975 E. CHINE: VOLT-35 HOD: ROTARY					JEC	ST/ CO ELI LO	LLA EVA CAT	TIOI ION ATIC	LEV N H(: RA ON:	ATIO OLE PA VEF	ON: EN TI R	419. D:37 IVEF	
									RQI	re F D%	lecc	ver	у	ĪĦ	ŦŦŦ	kg/cm
11 'indea 20.00	Barrel size	Core Log		Water Table m	Alteration	Orientation	Roughness	Joint/R cm	REC%	RQD%	20	40	60	80	100	Laboratory
21.00	BX		Total core loss . Dark grey, fine to medium, grair sand particle as sludge. Black water return from hole during drilled.Cl : 20.00 to 21.00 m. Total core loss . dark grey, fine grain, sand	3.00	-	-	-	0	0	-						
2.00	▼ 56		particle as sludge. Black water return from hole during drilled. Core loss : 21.00 to 22.00 m. W1, strong hard, dark grey, fine grain slaty	3.00	-	-	-	0	0	-						
3.00	•	//	cleavage, moderately jointed slate. Sludge are found. Core loss : 22.00 to 22.95 m.	3.00	-	40 ⁰ 50 ⁰	· Ir	2	5	-						
4.00	BX		Total core loss, dark grey, fine to medium grain sand particle as sludge. Core loss : 23.00 to 24.00 m.	3.00	-	-	-	0	0	-						
5.00	56	///	W1, strong hard, dark grey, fine grain, fragmented calcic slate with quartz vein . Sludge are found. Core loss : 24.10 to 25.00 m.	3.00	-	20 ^v 40 ^v	Ir	4	10	-						
<u>3.00</u>		$\langle \rangle$	W1, strong hard, dark grey, fine grain, highly jointed and fragmented, calcic slate with quartz vein. Core loss : 25.45 to 25.85 m.		-	30″ 50″	Ir	8	60	-						
.00			W1, strong hard, dark grey, fine grain slaty cleavage, highly jointed and fragmented slate with quartz vein. Core loss : 26.00 to 26.60 m.	3.00	-	30 ^u	Ir	6	40	-						
.00			W1, strong hard, dark grey, fine grain, slaty cleavage, moderately jointed and fragmented calcic slate. Cl :27.00 to 27.38 m & 27.66 to 28.00 m.		-	20 ⁰ 30° 50 ⁰	Ir	5	28	-						
.00			W1, strong hard, dark grey, fine grain, noderately jointed and fragmented slate. Sludge are found. Core loss : 28.18 to 29.00 m.		-	30 ⁰ 50 ⁰	lr	4	18	-						
.00		///i	W1, strong hard, dark grey, fine grain highly ointed and fragmented slate. Sludge are found. Core loss : 29.00 to 29.81 m.	3.00	-	20 ^v 50 ^u	Ir	з	19	-						

Drilled by: SANTA MAJHI

EAST DRILLING COMPANY (P) LTD.

BORE HOLE LOG

KULEKHANI-3 HYDROELECTRIC POWER PROJECT

DRILL HOLE NO.: BP-1 COORDINATES: 3039975.144 N, 603116.975 E. DRILLING MACHINE: VOLT-35 DRILLING METHOD: ROTARY

START DATE: 07/05/2002 COLLAR ELEVATION:419.401m ELEVATION HOLE END:379.401 m LOCATION: RAPATI RIVER INCLINATION: VERTICAL

										ICO RQI	re F	leco	ove	ry		-	kg/cm2
Depth, m 00.00	Barel size	Core Log	Description	Mictor Table	Alteration		Orientation	Roughness	Joint/R cm	REC%	ROD%	20	40	60	80	100	Laboratory
31.00	56mm		W1, strong hard, dark grey, fine grain, slaty cleavage, moderately jointed and fragmented slate. Core loss : 30.34 to 31.00 m.		-		20" 50"	lr	7	34	-						
32.00			Total core loss dark grey, medium grain sand size particle as sludge are found. Core loss : 31.00 to 32.00 m.		-		-	•	0	0	-						
33.00			Total core loss dark grey, coarse grain sand size particle as sludge are found. Core loss : 32.00 to 33.00 m.		-		-	-	0	0	-						
34.00			size particles as sludge are found. Core loss : 33.00 to 34.00 m.	3.00	-		-	-	0	0	-						
35.00			W1, strong hard, dark grey, fine grain, slaty cleavage, moderately jointed slate with quartz vein. Core loss : 34.00 to 34.71 m.		-	ę	30″ 50″	ir	6	29	-						
36.00			W1, strong hard, dark grey, fine grain, slaty cleavage, moderately jointed slate with quartz vein. Core loss : 35.51 to 36.00 m.		-	E	20 ^v 50 ^v	Ir	8	51	-						
37.00			Total core loss, dark grey, medium grain sand size particle as sludge. Core loss : 36.00 to 37.00 m.		-		-	-	0	0	-						
38.00			W1, strong hard, dark grey, fine grain slate with quartz vein. Sludge as dard grey medium grain sand size particle. Core loss : 37.00 to 37.19 m		-		-	-	2	9						1	
39.00		//	Total core loss, dark grey, fine to medium grain sand size particle as sludge. Core loss : 38.00 to 39.00 m.		-		-	-	0	0	-						
40.00		$\langle \rangle$	W1, strong hard, dark grey, fine grain, slaty cleavage, jointed slate dark grey, medium grain sand size particle as sludge. CL : 39.00 to 39.86 m.		-	4	20" 0"	ir	5	14	-						
ABBREVIA Zone, MB-N FZ- Fracture Drilled by: M	Mechan ed, CL:	iical E - Cor		, clay= lerately	rl, sar / Wea	nd=s ther	sa, mic red, W4	a-mi, 4-Higi	crush	ned=c eathe	r, iror red, \	W5=D	n=Fe Deco	O mpos	sed.		

DRILL HOLE NO. BCT-1 COORDINATES 3043672.006,603225,647,773.892 INCLINATION : VERTICAL DRILLING MACHINE : TONE-UD5 DRILLING METHOD : ROTARY

START DATE : 15-05-2002 COMPLETION DATE : 21-05-2002 COLLAR ELEVATION :773.892 ELEVATION OF HOLE END : 733.892 LOCATION : CONNECTION TUNNEL

				s	i P 1		DISC	ription Ontinuit		r		CORE RQD 9			,				w		L
inindeo	Casing size	Care Log	DESCRIPTION OF ROCK /SOIL	Blows	per 18	5 cm	WATER LEVELM	ALTERATION	ORENTATION	ROUGHNESS	JOINT/m	REC X	RODX						PERMEABILITY	LAB TEST	
.00				015	15-30	3045								8	¥	8	8	8			t
80			Top collimum composed of topsoil with cobbles.									0									
			COARSE SANDY MATRIX OF MARBLE AND SOIL									100									
×			MARBLE MATRIX.									_ 1 <u>00</u>									
2			WEATHERED FRAGMENTS OF MARBLE W2-W3 MARBLE BOULDERS WITH COLLUVIUM, DAMETER UPTO 37 cm. LIGHT YELLOW COLOR SANDY MATRIX									100									
20	ľ		COLLECTED AS MATRIX UPTO 3.60m.																		
0			WJ-W4 MANDLE BOULLENS WITH YELLOW COLOR SANDY SOIL AS SLUDGE.																		
0			W3-W4 MARBLE BOULDERS WITH LIGHT GRAY TO YELLOW COLOR SANDY SOIL/CALCAREOUS MATRIX.								-	100									
			W1-W2 MARBLE BOULDERS WITH SAND / CALCAREOUS MATRIX COLLECTED AS SLUDGE.								-	100									
			W3-W4 YELLOW COLOR CALCAREOUS DUST/ CALCAREOUS MATRIX WITH WARBLE FRAGMENTS.					- +				100									
• •	ABBRI	EVIATI	ON Rough =r, Irregular=ir, Stepped= st, Crusbed= cr, Iron stain=Feo, Fracture	d zone	= f2	Slicker , Mech	nsided= anical	= si, L Breaka	Indulati ige= N	ing= u AB, Fre	in, Pla ish ≈	nner= W1, S	pi, Ci lightly	ay= c Weath	l, San ered :	d= so = W2,1	, Mica Vod, W	= mi, /eathere	nd =₩3,		
			Highly Weathered= W4, Decomposed	i ≕ ₩5	.																_

COORI INCLI DRILL	NNATES VATION ING MA	; 30436 ; Verti ; Chine ;). BCT-1 72.006,603225.647,773.892 CAL TONE-UD5 ROTARY			BORE	HOLE	E LOG								CO COI ELE	MPLETIC LLAR EL EVATION	on date Levation Of HC	-05-2002 : 21-05-; :773.892 XLE END : ; CTION TUNI	733.892	
		Τ		s	Ρl	тт		RIPTION				CORE RQD	RECOVI	URY .			L		ω		
Depth.m	Casing size	Corre Log	DESCRIPTION OF ROCK /SOIL	Blows	per 1	5 cm	WIER LEVELM	ALTERATION	DRENTATION	ROUCHNESS	JONNT/m	REC X	RODX						PERMEABILITY	LAB TEST	SCREEN PIPE
10.00				0-15	15-30	30-45								8	ş	8	8	ğ			
			W3-W4 MARBLE ROCK FRAGMENTS.							r		100									
11.00			CORELOSS 10.40-11.15 m. TOP OF BEDROCK AT 11.15m																		
12.00			W1-W2, Medium Strong , Jointed, Marble Rock.							s	9	50	44				Turr				
13.00			W1-W2, MEDIUM STRONG, JOINTED, WHITE TO LIGHT GRAY CLOR MARBLE ROCK.								6	100	84								
14.00			W1-W2 MEDIUM STRONG, JOINTED, MEDIUM TO COARSE GRANED MARBLE WITH FEW LAMINATIONS.								8	100	76								
6.00	_		W1-W2, WHITE AND LIGHT GRAY COARSE GRAINED GOOD QUALITY MARBLE ROCK.							 s	7	100	76								
7.00			W1-W2, WHITE AND LIGHT GRAY COARSE GRANED GOOD QUALITY MARBLE ROCK.							,	7	100	76								
8.00			W1-W2 STRONG, LIGHT GRAY TO WHITE COLOR COARES GRAINED BLOCKY TYPE GOOD QUALITY MARBLE.							s	6	100	94								
			W1-W2 MEDRUM STRONG JOINTED				- +		- +		9	100	58								

DRILL HOLE NO. BCT-1 COORDINATES 3043672.006,603225,647,773,892 INCLINATION : VERTICAL DRILLING MACHINE : TONE--UD5 DRILLING METHOD : ROTARY

START DATE : 15-05-2002 COMPLETION DATE : 21-05-2002 COLLAR ELEVATION :773.892 ELEVATION OF HOLE END : 733.892 LOCATION : CONNECTION TUNNEL

e is t				s	PI	·	DISC	iription Ontinui				CORE ROD	ERY					W			
urtpdag 20.00	Cosing size	Core Log	DESCRIPTION OF ROCK /SOIL	Blows per 15 cm		i cm	WATER LEVELM	ALTERATION	ORIENTATION	ROUGHNESS	JONT/m	REC X	RODX						PERMEABILITY	LAB TEST	1
0.00				0-15	15-30	30-45								8	¥	8	8	100			t
					†						L										ł
		- <u>L</u>	BLOCKY MARBLE OF FAIR TO			1					_	100	59								
_			GOOD QUALITY.	ĺ						r	7		30								
.00																					
		- +																			
		T																			
			W1W2 MEDIUM GRAINED, STRONG, JOINTED, GREY LAMINATEDN AND																		
.00			WHITE COLOR, MARBLE ROCK.							r	6	100	83								ĺ
_	Ē									S											ł
	ŀ																				
_		41		1								-									Í
.00																					
	ļ	그	W1-W2 STRONG , LIGHT GRAY TO																		
		<u>_</u>	WHITE COLOR, COARSE GRAINED STRONG MARBLE.								6	100	78								
_	•	-1		┥																	
00			W1-W2, MEDIUM STRONG ,																		
	Ē	<u> </u>	MASIVE TYPE, WHITE AND							s											
-	Ē		GRAY COLOR WARBLE.																		
00	Ļ										6	100	81								
	-																				
_																					
	Ē																				
00	-		W1-W2, MEDIUM STROG,						-	-		86	66				шни				
	-	I	JOINTED, COARSE GRAINED WHITE TO LIGHT GRAY COLOR MARBLE.									~									
	Ē		CORE LOSS AT 26.57-26.77m.																1		
	þ																				
00	Ē																				
=	·								·	-			_								
	-	+	W1W2, STRONG, MASSIVE TYPE LIGHT GRAY AND WHITE																		
20	-		COLOR MARBLE.			1					,										
-	-									'	7	100	82								
	-					1															
-	-																				
20	T		W1-W2 MEDIUM STRONG ,		-				·		—	- †	-	mt			шш				
	-		JOINTED MARBLE OF FAIR																		
	-	I	quality.																		
										s	10	100	46								
00	Ē	T																			•
	ABBRE		ON Rough =r, irregular=ir, Stepped= st,	Smootl	h= s,	Slicker	i nsided=	= si, L	Indulat	ing= u	in, Pla	nner=	<u>م</u> ا. C	ov≠ c	. Sanc	= so.	Mico	i= mi			_
			Crusbed= cr, Iron stain=Feo, Fracture Highly Weathered= W4, Decomposed	d zone	= 12	, Mech	anical	Breaka	ige= I	AB, Fre	sh =	W1, S	lightly	Weath	ered =	= W2,N	lod. \	Weathere	ed =W3,		-
			- 	ι — πJ	•																
LLE	D BY :	8. NE	UPANE(DRILLING FOREMAN), SRCL								_	_									_

DRILL HOLE NO. BCT-1 COORDINATES 3043672.006,603225.647,773.892 INCLINATION : VERTICAL DRILLING MACHINE : TONE-UD5 DRILLING METHOD : ROTARY

START DATE : 15-05-2002 COMPLETION DATE : 21-05-2002 COLLAR ELEVATION :773.892 ELEVATION OF HOLE END : 733.892 LOCATION : CONNECTION TUNNEL

				s	PT		1	DNTINUN	nes		r	RQD	RECOVE			E		LU		ļ
	Casing size	Corre Log			per 15	cm	water levelm	ALTERATION	ORENTATION	ROUCHINESS	JONT/m	REC X	RODK					PERMEMBILITY	LVB TEST	
.00				0-15	1530	30-45								R 8	8	8	3 8			t
			W2-W3, MEDIUM STRONG MARBLE.								4	100	90							
.00																				
00			W1-W2 LIGHT GRAY TO WHITE Color, Strong , Marble of Good quality.							8	6	100	83							
-			W1-W2 MEDIUM STRONG MARBLE.							8	9	100	60							
8						·					9	100	60							
00			W1-W2 WHITE COLOR, STRONG, MASSIME MARBLE OF GOOD QUALITY								6	100	91							
			W1-W2, LIGHT GRAY COLOR, STRONG, MASSINE TYPE MARBLE OF GOOD QUALITY.					-		s										
00						•					7	100	92							:
80			W1-W2, WHITE TO LIGHT GRAY COLOR ,OFTEN LAMINATED, MASSINE TYPE MARBLE CORE LOSS AT 35.67-35.77m.							r	8	93	81							
20			W1-W2 , LAMINATED AND							 										
20		I	WHITE COLOR, STRONG, GOOD QUALITY MARBLE.							r	10	100	80							
<u> </u>			W1-W2 LIGHT GRAY AND	_					-											
			WHITE COLOR, JOINTED, MARBLE OF FAIR TO GOOD QUALITY. CORE LOSS AT 38.55-38.75m.								9	87	67							
	F									r			l l				E I			