### Table 3.4.1 FLOW DURATION CURVE AT HYDROLOGICAL STATIONS STATION NO.120(NANGRAON) (1/13)

YEAR : 1963 - 1989 TOTAL : 9862 DAYS MAXIMUM : 1440.00 MINIMUM : 7.50 AVERAGE : 65.42

Runoff	Duration	Runoff	Duration	Runoff	Duration	Runoff	Duration
(CMS)	(%)	(CMS)	(%)	(CMS)	(%)	(CMS)	(%)
17.9	- 76	27.7	51	76.2	26	355.5	1
17.6	77	27.2	52	71.3	27	301.5	2
17.4	: · · 78	26.6	53	66.9	28	265.5	3
17.3	79	26.0	54	63.0	29	243.0	4
17.0	80	25.4	- 55	59.2	30	229.5	5
16.9	81	25.0	56	55.1	31	215.6	6
16.6	82	24,5	57	52.2	32	206.8	7
16.4	83	24.1	58	49.6	33	196.9	8
16.2	84	23.6	. 59	47.0	34	188.1	9
16.0	85	23.2	60	44.7	35	180.9	10
15.7	86	22.7	61	42.8	36	172.1	11
15.4	87	22.3	62	41.1	37	164.5	12
15.2	88	21.9	63	39.8	. 38	155.7	13
14.9	89	21.6	64	38.5	39	149.8	14
14.7	90	21.2	65	37.4	40	143.3	15
14.2	91	20.8	66	36.0	41	136.8	16
13.9	92	20.5	67	35.1	42	129.8	17
13.5	93	20.2	68	34.0	43	122.4	18
13.1	94	19.9	69	32.9	44	116.3	. 19
12.6	95	19.6	70	32.2	45	109.6	20
12.2	96	19.3	71	31.2	46	103.5	21
11.5	97	19.1	72	30.3	47	97.7	22
10.5	98	18.7	73	29.7	48	91.6	23
9.6	99	18.5	74	28.9	49	86.6	24
7.5	100	18.1	75	28.4	50	80.3	25

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# Table 3.4.1 FLOW DURATION CURVE AT HYDROLOGICAL STATIONSSTATION NO. 150 (PANCHESHWAR) (2/13)

 YEAR
 : 1984 - 1990

 TOTAL
 : 2189 DAYS

 MAXIMUM: 4731.20 CMS

 MINIMUM
 : 107.24 CMS

 AVERAGE
 : 593.45 CMS

Runo(	Duration	Runoff	Duration	Runoff	Duration	Runoff	Duration
(CMS	(%)	(CMS)	(%)	(CMS)	(%)	(CMS)	(%)
161.	76	292.9	51	734.3	26	3179.4	1
159.	77	285.5	52	686.8	27	2664.3	2
156.	78	277.7	53	662.5	28	2371.6	3
155.	79	269.4	54	631.5	29	2245.1	4
153.	80	260,7	55	599.1	30	2010.8	5
151.	81	251.4	56	571.2	31	1877.8	6
149.0	82	243.1	57	548.0	32	1736.3	. 7
147.	83	234.7	58	528.5	33	1626.1	8
146.	84	227.9	59	502.0	34	1564.8	9
144.	85	220.3	60	487.5	35	1479.5	10
142.	86	215.4	61	473.0	36	1416.5	11
140.	87	210.4	62	462.3	37	1370.6	12
138.	88	205.4	63	453.6	38	1315.7	13
137.	89	202.8	64	439.5	39	1283.7	14
134.:	90	200.8	65	423.4	40	1236.3	15
132.	91	197.7	66	405.6	41	1171.5	16
130.	. 92	192.4	67	390.9	42	1113.3	17
127.	93	188.0	68	378.5	43	1065.2	18
125.	94	183.2	69	366.2	44	1017.5	19
123.	95	180.2	70	357.0	45	982.0	20
122.	96	175.3	71	344.8	46	952.6	21
121.	97	172.3	72	328.1	47	907.2	22
120.	- 98	169.1	73	317.6	48	874.3	23
117.	99	165.5	74	309.5	49	833.7	24
107.1	100	164.1	75	300.0	50	783.1	25

# Table 3.4.1FLOW DURATION CURVE AT HYDROLOGICAL STATIONS<br/>STATION NO. 170 (PATAN) (3/13)

YEAR : 1966 - 1984 TOTAL : 6940 DAYS MAXIMUL: 225.00 CMS MINIMUM : 0.17 CMS AVERAGE : 7.11 CMS

Runof	Duration	Runoff	Duration	Runoff	Duration	Runoff	Duration
(CMS	(%)	(CMS)	(%)	(CMS)	(%)	(CMS)	(%)
0.	76	1.5	51	5.6	26	75.0	- 1
0.	77	1.5	52	5.1	27	58.0	2
0.	78	1.4	53	4.8	28	46.7	3
0.	79	1.4	54	4.5	29	39.0	4
0.	80	1.3	55	4.1	30	31.8	5
0.	81	1.3	56	3.8	31	27.5	6
0.	82	1.3	57	3.5	32	24.4	7
0.	83	1.2	58	3.2	33	22.2	8
0.	84	1.2	59	3.0	34	20.6	9
0.	85	1.2	60	2.9	35	19.0	10
0.1	86	1.2	61	2.7	36	17.5	11
0.	87	1.1	62	2.6	37	16.3	12
0.	88	1.1	63	2.4	38	15.2	13
0.	89	1.1	64	2.3	39	14.4	14
.0.	90	1.1	65	2.2	40	13.4	15
0.	91	1.1	66	2.1	41	12.4	16
0.	92	1.1	67	2.0	42	11.8	17
0.	93	1.0	68	1.9	43	11.1	18
0.	94	1.0	69	1.8	44	10.3	19
0.	95	1.0	70	1.8	45	9.6	20
0.	96	1.0	71	1.7	46	8.9	21
0	97	1.0	72	1.7	47	8.2	22
0.	98	1.0	73	1.6	48	7.4	23
0.	99	0.9	74	1.6	49	6.8	24
0.	100	0.9	75	1.5	50	6.2	25

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# Table 3.4.1FLOW DURATION CURVE AT HYDROLOGICAL STATIONS<br/>STATION NO.240 (ASARA GHAT) (4/13)

.

YEAR: 1963 - 1985TOTAL: 8401 DAYSMAXIMUM: 4246.00 CMSMINIMUM: 78.80 CMSAVERAGE: 502.17 CMS

Duration	Runoff	Duration	Runoff	Duration	Runoff	Duration	Runoff
(%)	(CMS)	(%)	(CMS)	(%)	(CMS)	(%)	(CMS)
<u></u>							
1	1900.0	26	735.5	51	261.0	76	142.0
2	1750.0	27	699.6	52	252.2	77	140.0
3	1650.0	28	666.0	53	244.0	78	138.0
4	1580.3	29	637.0	54	237.0	79	136.0
5	1511.5	30	604.0	55	230.0	. 80	134.0
6	1460.0	31	581.0	56	223.0	81	131.8
7	1410.0	32	558.0	57	218.0	82	130.0
8	1360.0	33	531.0	58	210.0	83	128.0
9	1310.0	34	506.0	59	205.0	84	126.0
10	1270.0	35	482.0	60	200.0	85	124.0
11	1230.0	36	457.2	61	195.0	<b>86</b> )	122.0
12	1200.0	37	435.0	62	190.0	87	120.0
13	1160.0	38	415.0	63	185.7	88	118.0
14	1130.0	39	398.0	64	181.0	· · · 89	116.0
15	1107.0	40	384.0	65	177.0	90	114.0
16	1080.0	41	367.0	66	174.0	91	112.0
17	1045.0	42	354.0	67	169.0	92	110.0
18	1010.0	43	339.9	68	164.0	93	107.0
19	970.0	44	326.0	69	161.4	94	105.0
20	935.0	45	317.0	70	158.0	95	102.0
21	895.0	46	305.0	71	155.0	96	98.1
22	860.0	47	295.4	72	152.0	97	94.4
23	820.4	48	287.0	73	149.0	98	91.3
24	788.5	49	277.0	74	147.0	99	85.4
25	758.0	50	268.0	75	144.0	100	78.8

## Table 3.4.1FLOW DURATION CURVE AT HYDROLOGICAL STATIONS<br/>STATION NO. 260 (BANGA NEAR BELGAON) (5/13)

 YEAR
 : 1963 - 1989

 TOTAL
 : 9862 DAYS

 MAXIMUM:
 : 6400.00 CMS

 MINIMUM
 : 33.00 CMS

 AVERAGE
 : 288.28 CMS

Duration	Runoff	Duration	Runoff	Duration	Runoff	Duration	Runoff
(%)	(CMS)	(%)	(CMS)	(%)	(CMS)	(%)	(CMS)
	1 1580.0	) 26	333.0	51	122.0	76	79.0
	2 1330.0						
	3 1180.0	) 28	292.0			78	78.0
	4 1073.0	) 29	275.0			79	77.0
	5 1010.0	) 30	257.0	55	112.0	80	76.0
	6 954.0	) 31	240.0				
	7 917.0	) 32	229.0	57	108.0	82	74.(
	8 870.0	) 33	216.0	58	106.0		
	9 832.0	) 34	206.0	59	104.0	84	72.
1	0 794.0	) 35	197.0	60	102.0	85	71.
1	1 762.0	) 36	187.0	61	100.0	86	70,
. 1	2 728.0	) 37	181.0	62	. 98.0	87	69.
. 1	3 692.0	) 38	174.0	63	96.0	88	68.
1	4 660.0	) 39	168.0	64	95.0	89	66.
- 1	5 632.0	) 40	163.0	65	94.0	90	65.
1	6 600.0	) 41	158.0	66	92.0	91	64.
1	7 567.0	) 42	153.0	67	90.0	92	62.
1	8 536.0	) 43	149.0	68	89.0	93	60.
1	9 505.0	) 44	144.0	69	87.0	94	58.
2	0 476.0	) 45	140.0	70	86.0	95	56.
2	451.0	) 46	136.0	71	85.0	96	54.
2	2 426.0	) 47	133.0	72	84.0	97	51.
	3 400.0	) 48	130.0			98	47.
	4 378.0	) 49	127.0	74	81.0	99	43.
2	5 354.(	) 50	124.0	75	80.0	100	33.

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# Table 3.4.1 FLOW DURATION CURVE AT HYDROLOGICAL STATIONS STATION NO. 262 (KHANAYATAL) (6/13)

YEAR	:	1970 - 1986
TOTAL	;	6209 DAYS
MAXIMUM	;	1450.00 CMS
MINIMUM	:	0.68 CMS
AVERAGE	:	33.04 CMS

Du	ration	Runoff	Duration	Runoff	Duration	Runoff	Duration	Runof
	(%)	(CMS)	(%)	(CMS)	(%)	(CMS)	(%)	(CMS)
		<b>60</b> 0 0			<i></i> .		- 1	
	1	238.0	26	34.1	51	10.1	76	3.5
	2	186.0	27	32.2	52	9.6	77	3.3
•	3	162.0	28	31.2	53	9.2	78	3.1
	4	141.0	29	29.3	- 54	8.7	79	3.0
	5	128.0	30	27.8	55	8.2	80	3.0
	6	120.0	31	26.6	56	7.7	81	- 2.9
	7	111.0	32	25.8	57	7.3	82	2.8
	8	103.0	. 33	24.9	58	7.0	83	2.7
	9	96.6	34	24.1	59	6.7	84	2.6
	10	90.8	35	23.3	60	6.4	85	2.5
	11	86.0	36	22.0	61	6.2	86	2.4
	12	82.8	37	21.4	62	5.9	87	2.4
	13	77.0	38	20.7	63	5.7	88 :	2.3
	14	73.5	39	19.5	64	5.6	89	2.2
	15	70.0	40	18.4	65	5.3	90	2.1
	16	66.0	41	17.8	66	5.1	91	2.0
	17	61.6	42	16.6	67	4.9	92	1.9
	18	58.7	43	15.5	68	4.7	93	1.8
	19	55.0	44	14.4	69	4.5	94	1.7
	20	50.0	45	13.1	70	4.3	95	1.6
	21	47.0	46	12.4	71	4.1	96	1.5
	22	44.6	47	11.8	72	4.0	97	1.4
	23	42.0	48	11.3	73	3.9	98	1.1
·	24	38.9	49	10.9	74	3.7	99 E	1.2
	25	36.0	50	10.3	75	3.6	100	0.7

# Table 3.4.1 FLOW DURATION CURVE AT HYDROLOGICAL STATIONSSTATION NO. 270 (JAMU) (7/13)

 YEAR
 : 1963 - 1987

 TOTAL
 : 8765 DAYS

 MAXIMUM:
 : 5120.00 CMS

 MINIMUM
 : 50.40 CMS

 AVERAGE
 : 428.75 CMS

Duration	Runoff	Duration	Runoff	Duration	Runoff	Duration	Runof
(%)	(CMS)	(%)	(CMS)	(%)	(CMS)	(%)	(CMS)
1	2420.0	26	505.0	51	151.0	76	96.6
2	2020.0	27	470.0	52	148.0	77	96.4
3	1790.0	28	434.0	53	144.0	78	94.8
4	1660.0	29	399.0	54	141.0	79	93.8
5	1580.0	30	373.0	55	138.0	80	91.7
6	1490.0	31	351.0	56	134.0	81	91.0
7	1440.0	32	327.0	57	132.0	82	89.3
8	1380.0	33	302.0	58	129.0	83	87.6
9	1330.0	34	285.0	59	127.0	84	86,8
10	1280.0	35	266.0	60	125.0	85	85.9
11	1230.0		248.0	61	122.0	86	84.4
12	1180.0	37	236.0	62	122.0	87	84.0
13	1130.0	38	224.0	63	119.0	88	82.5
14	1070.0	39	213.0	64	117.0	89	80.8
15	1020.0	40	205.0	65	114.0	90	79.8
16	982.0	41	198.0	66	112.0	91	79.
17	926.0	42	190.0	67	110.0	92	77.4
18	873.0	43	184.0	68	108.0	93	75.
19	821.0	44	180.0	69	106.0	94	74.(
20	770.0	45	174.0	70	104.0	95	72.7
21	732.0	46	171.0	· 71 ·	103.0	96	70.3
22	693.0	47	166.0	72	101.0	97	68.4
23	647.0	48	162.0	73	100.0	98	66.0
24	603.0	49	159.0	74	98.8	99	61.2
25	550.0	50	155.0	. 75	98.0	100	50.4

### Table 3.4.1 FLOW DURATION CURVE AT HTDROLOGICAL STATIONS STATION NO. 280 (CHISAPANI) (8/13)

YEAR : 1962 - 1988 TOTAL : 9862 DAYS MAXIMUM : 14700.00 CMS MINIMUM : 24.00 CMS AVERAGE : 1377.69 CMS

Duration	Runoff	Duration	Runoff	Duration	Runoff	Duration	Runoff
(%)	(CMS)	(%)	(CMS)	(%)	(CMS)	(%)	(CMS)
		·					
1	6340.0	26	1760.0	51	611.0	76	361.0
2	5620.0	27	1647.0	52	594.0	77 -	358.0
3	5259.0	28	1540.0	53	579.0	78	.352.0
4	4920.0	29	1452.0	54	565.0	79	345.0
5	4650.0	30	1362.0	55	550.0	80	340.0
6	4440.0	31	1273.0	56	535.0	81	334.0
7	4266.0	32	1211.0	57	524.0	82	330.0
8	4110.0	33	1154.0	58	513.0	83	326.0
9	3990.0	34	1104.0	59	505.0	84	322.0
10	3870.0	35	1050.0	. 60	493.0	85	317.0
11	3720.0	36	1004.0	61	483.0	86	314.0
12	3560.0	37	951.0	62	474.0	87	310.0
13	3430.0	38	910.0	63	464.0	88	<u>3</u> 05.0
14	3300.0	39	877.0	64	453.0	89	302.0
15	3150.0	40	847.0	65	443.0	90	298.0
16	3010.0	41	815.0	66	433.0	91	293.0
17	2893.0	42	792.0	67	423.0	92	288.0
18	2730.0	43	770.0	68	412.0	93	283.0
19	2610.0	44	750.0	69	404.0	94	274.(
20	2480.0	45	730.0	70	396.0	95	262.0
21	2380.0	46	707.0	71	392.0	96	253.(
22	2252.0	47	688.0	72	385.0	97	244.(
23	2130.0	48	666.0	73	379.0	98	235.0
24	2000.0	49	646.0	74	372.0	99	217.0
25	1870.0	50	628.0	75	367.0	100	24.(

# Table 3.4.1 FLOW DURATION CURVE AT HYDROLOGICAL STATIONSSTATION NO. 286 (DARADHUNGA) (9/13)

YEAR	;	1972 - 1985
TOTAL	:	5114 DAYS
MAXIMUM	:	670.00 CMS
MINIMUM	:	0.62 CMS
AVERAGE	:	14.76 CMS

Runoff	Duration	Runoff	Duration	Runoff	Duration	Runoff	Duration
(CMS)	(%)	(CMS)	(%)	(CMS)	(%)	(CMS)	(%)
2.8	76	4.9	51	14.2	26	130.0	1
2.7	77	4.8	52	13.5	20 27	87.0	2
2.6	78	4.8	53	12.5	28	70.0	3
2.5	79	4.6	54	11,7	29	61.2	4
2.5	80	4.5	55	10.8	30	54.8	5
2.4	81	4,4	56	10.1	31	49.8	6
2.4	82	4.4	57	9.6	32	45.8	7
2.3	83	4.4	58	9.2	33	42.3	8
2.3	84	4.3	59	8.7	34	40.0	9
2.2	85	4.2	60	8.2	35	37.0	10
2.2	86	4.1	61	7.8	36	35.3	11
2.2	87	4.0	62	7.5	37	33.7	12
2.1	83	3.9	63	7.3	38	32.0	13
2.1	89	3.8	64	7.0	39	30.6	14
2.0	90	3.7	65	6.8	40	29.0	15
1.9	91	3.6	66	6.6	41	27.5	16
1.8	92	3.5	67	6.4	42	26.5	17
1.7	93	3.4	68	6.2	43	25.0	18
1.7	94	3.4	69	5.9	44	23.8	19
1.6	95	3.3	70	5.8	45	22.4	20
1.5	96	3.3	<sup>°</sup> 71	5.6	46	21.0	21
1.5	97	3.2	72	5.4	47	20.0	22
1.3	98	3.1	73	5.2	48	18.2	23
1.1	99	3.0	74	5.1	49	16.4	24
0.6	100	2.8	75	4.9	50	15.0	25

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# Table 3.4.1FLOW DURATION CURVE AT HYDROLOGICAL STATIONSSTATION NO.290 (BARGADHA) (10/13)

YEAR : 1967 - 1986 TOTAL : 6573 DAYS MAXIMUM : 6120.00 CMS MINIMUM : 4.04 CMS AVERAGE : 87.26 CMS

Runof	Duration	Runoff	Duration	Runoff	Duration	Runoff	Duration
(CMS	(%)	(CMS)	(%)	(CMS)	(%)	(CMS)	(%)
				_			in a supervision of the supervision
12.	76	23.4	51	79.6	26	960.0	1
12.0	77	22.9	52	76.0	27	580.0	2
- 11.	78	22.1	53	71.3	28	432.0	3
11.4	79	21.3	54	66.8	29	351.0	4
11.0	80	20.7	55	62.8	30	305.0	5
10.0	81	20.0	56	59.0	31	282.0	6
10.	82	19.6	57	54.8	. 32	258.0	7
10.	83	19.4	58	51.8	33	236.0	8
10.	84	18.9	59	49.5	34	214.0	9
<u>9</u> .'	.85	18.4	60	46.5	35	202.0	10
9.	86	18.0	61	44.3	36	188.0	11
9.1	87	17.5	62	41.8	37	176.0	12
9.	88	17.2	63	39.6	38	166.0	13
8.	89	16.8	64	37.2	39	158.0	14
8.	90	16.5	65	34.9	40	149.0	15
8.	91	16.0	66	33.4	41	140.0	16
8.	92	15.6	67	32.2	42	133.0	17
7.	93	15.1	68	30.6	43	124.0	18
7.	94	14.8	69	29.4	44	117.0	19
7.	95	14.4	70	28.5	45	110.0	20
7.	96	14.1	71	27.4	46	104.0	21
6.	97	13.8	72	26.8	47	98.8	22
5.	98	13.5	73	25.7	48	92.8	23
5.	99	13.0	74	25.0	49	88.0	24
4.	100	12.8	75	24.2	50	83.8	25

# Table 3.4.1 FLOW DURATION CURVE AT HYDROLOGICAL STATIONSSTATION NO. 330 (NAYAGAON) (11/13)

YEAR	;	1965 - 1985
TOTAL	:	6575 DAYS
MAXIMUM	:	835.00 CMS
MINIMUM	:	4.48 CMS
AVERAGE	:	60.39 CMS

(%)(CMS)(%)(CMS)(%)(CMS)(%)(%)1 $390.0$ 26 $70.4$ 51 $21.0$ 762 $313.0$ 27 $66.6$ 52 $20.5$ 773 $284.0$ 28 $62.0$ 53 $19.8$ 784 $261.0$ 29 $57.7$ $54$ $19.6$ 795 $243.0$ 30 $53.8$ $55$ $19.1$ $80$ 6 $223.0$ 31 $50.3$ $56$ $18.6$ $81$ 7 $210.0$ $32$ $46.6$ $57$ $18.1$ $82$ 8 $195.0$ $33$ $44.0$ $58$ $17.7$ $83$ 9 $184.0$ $34$ $41.0$ $59$ $17.3$ $84$ 10 $172.0$ $35$ $38.8$ $60$ $17.0$ $85$ 11 $160.0$ $36$ $37.0$ $61$ $16.6$ $86$ 12 $152.0$ $37$ $35.4$ $62$ $16.5$ $87$ 13 $143.0$ $38$ $33.7$ $63$ $16.2$ $88$ 14 $134.0$ $39$ $32.0$ $64$ $15.8$ $89$ 15 $125.0$ $40$ $30.8$ $65$ $15.6$ $90$ 16 $117.0$ $41$ $29.4$ $66$ $15.4$ $91$ 17 $111.0$ $42$ $28.2$ $67$ $15.0$ $92$ 18 $106.0$ $43$ $27.2$ $68$ $15.0$ $93$ 19 $101.0$ $44$ $26.2$ $69$ <th>Duration</th> <th>Runoff</th> <th>Duration</th> <th>Runoff</th> <th>Duration</th> <th>Runoff</th> <th>Duration</th> <th>Runoff</th>	Duration	Runoff	Duration	Runoff	Duration	Runoff	Duration	Runoff
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	(%)	(CMS)	(%)	(CMS)	(%)	(CMS)	(%)	(CMS)
$\begin{array}{cccccccccccccccccccccccccccccccccccc$								
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	-							13.0
$\begin{array}{cccccccccccccccccccccccccccccccccccc$								12.8
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$								12.7
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$								12.5
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	5	243.0	30		55	19.1	80	12.2
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	6	223.0	31		56	18.6	81	12.0
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		210.0		46.6				11.9
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		195.0	33	44.0	58	17.7	83	11.6
11 $160.0$ $36$ $37.0$ $61$ $16.6$ $86$ $12$ $152.0$ $37$ $35.4$ $62$ $16.5$ $87$ $13$ $143.0$ $38$ $33.7$ $63$ $16.2$ $88$ $14$ $134.0$ $39$ $32.0$ $64$ $15.8$ $89$ $15$ $125.0$ $40$ $30.8$ $65$ $15.6$ $90$ $16$ $117.0$ $41$ $29.4$ $66$ $15.4$ $91$ $17$ $111.0$ $42$ $28.2$ $67$ $15.0$ $92$ $18$ $106.0$ $43$ $27.2$ $68$ $15.0$ $93$ $19$ $101.0$ $44$ $26.2$ $69$ $14.6$ $94$ $20$ $96.9$ $45$ $25.2$ $70$ $14.5$ $95$ $21$ $92.0$ $46$ $24.5$ $71$ $14.3$ $96$ $22$ $87.0$ $47$ $23.8$ $72$ $13.9$ $97$ $23$ $84.0$ $48$ $22.9$ $73$ $13.4$ $99$		184.0	34		59	17.3	84	11.4
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	. 10	172.0	35	38.8	60	17.0	85	11.2
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	. 11	160.0	36	37.0	61	16.6	86	10.9
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	12	152.0	37	35.4	62	16.5	87	10.7
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	13	143.0	38	33.7	63	16.2	88	10.4
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	14	134.0	39	32.0	64	15.8	89	10.2
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	15	125.0	40	30.8	65	15.6	90	10.1
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	16	117.0	41	29.4	66	15.4	91	9.8
19101.04426.26914.6942096.94525.27014.5952192.04624.57114.3962287.04723.87213.9972384.04822.97313.8982479.04922.27413.499	17	111.0	42	28.2	67	15.0	92	9.4
2096.94525.27014.5952192.04624.57114.3962287.04723.87213.9972384.04822.97313.8982479.04922.27413.499	18	106.0	43	27.2	68	15.0	93	9.1
2192.04624.57114.3962287.04723.87213.9972384.04822.97313.8982479.04922.27413.499	19	101.0	44	26.2	69	14.6	94	8.7
2287.04723.87213.9972384.04822.97313.8982479.04922.27413.499	20	96.9	45	25.2	70	14.5	95	8.3
2287.04723.87213.9972384.04822.97313.8982479.04922.27413.499	21	92.0	46		. 71	14.3	96	7.9
2384.04822.97313.8982479.04922.27413.499				23.8	72	13.9	97	7.3
24 79.0 49 22.2 74 13.4 99			48	22.9	73	13.8	98	6.7
					74	13.4	99	5.9
		· · · · ·			75		100	4.5

-T.47-

# Table 3.4.1 FLOW DURATION CURVE AT HYDROLOGICAL STATIONSSTATION NO. 350 (BAGASOTI GAON) (12/13)

YEAR : 1976 - 1985 TOTAL : 3653 DAYS MAXIMUM : 1690.00 CMS MINIMUM : 7.74 CMS AVERAGE : 93.42 CMS

Duration	Runoff	Duration	Runoff	Duration	Runoff	Duration	Runoff
(%)	(CMS)	(%)	(CMS)	(%)	(CMS)	(%)	(CMS)
					*0.0		
1	488.0	26	122.0	51	39.0	76	23.2
2	395.0	27	114.0	52	38.0	- 77	23.0
3	355.0	28	105.0	53	37.2	78	22.4
4	323.0	. 29	99.6	54	36.3	79	21.8
5	305.0	30	94.2	55	35.4	80	21.4
6	282.0	31	89.5	56	34.6	81	21.0
7	273.0	32	84.8	57	34.0	82	20.5
8	260.0	33	79.4	58	33.5	83	20.1
9	249.0	34	74.0	59	32.7	84	19.6
10	238.0	35	70.6	60	31.8	85	19.4
11	230.0	36	68.2	61	30.9	86	18.7
12	224.0	37	64.3	62	30.4	87	18.7
13	216.0	38	61.6	63	30.0	88	18.0
14	210.0	39	58.0	64	29.2	89	17.3
15	202.0	40	56.0	65	28.8	90	16.9
16	196.0	41	53.9	66	28.3	91	16.6
17	189.0	42	51.3	67	28.0	92	16.0
18	183.0	43	49.8	68	27.5	93	15.6
19	176.0	44	47.8	69	27.0	94	15.2
20	170.0	45	46.7	70	26.4	95	-14.5
21	164.0	46	45.0	71	25.8	96	14.0
22	157.0	47	43.8	72	25.0	97	13.2
23	151.0	48	42.6	73	24.9	98	12.3
24	143.0	49	41.6	74	24.1	99	10.7
25	132.0	50	40.2	75	24.0	100	7.7

### Table 3.4.1 FLOW DURATION CURVE AT HYDROLOGICAL STATIONS STATION NO. 360 (JALKUNDI) (13/13)

 YEAR
 : 1964 - 1985

 TOTAL
 : 8036 DAYS

 MAXIMUM : 5110.00 CMS

 MINIMUM
 : 1.05 CMS

 AVERAGE
 : 123.09 CMS

Runo	Duration	Runoff	Duration	Runoff	Duration	Runoff	Duration
(CMS	(%)	(CMS)	(%)	(CMS)	(%)	(CMS)	(%)
							÷.,
17.	76	32.7	51	141.0	26	970.0	. 1
17.	. 77	31.6	52	134.0	27	.715.0	- 2
16.	78	30.9	53	126.0	28	584.0	3
16.	79	30.4	54	117.0	29	510.0	4
15.	80	29.3	55	109.0	30	465.0	- 5
15.	81	28.7	56	102.0	31	438.0	6
14.	82	28.0	57	94.8	32	411.0	7
14.	83	27.5	58	87.6	-33	384.0	8
14.	84	27.0	59	80.1	34	361.0	9
13.	. 85	26.5	60	75.0	35	340.0	: 10
13.	86	26.0	61	70.0	36	321.0	11
12.	87	25.5	62	65.0	37	303.0	12
12.	88	25.0	63	60.8	38	286.0	. 13
11.	89	24.5	64	56.8	39	270.0	14
10.	90	24.0	65	53.6	40	261.0	15
10.	91	23.0	66	50.5	41	248.0	16
9.	92	22.5	67	48.0	42	238.0	17
8.	93	22.0	68	44.8	43	226.0	18
7.	94	21.5	69	42.4	44	214.0	19
6.	95	21.0	70	40.3	45	204.0	20
5.	96	20.5	71	38.8	46	193.0	21
4.	97	20.0	72	37.6	47	182.0	22
4.	98	19.2	73	36.3	48	170.0	23
3,	99	18.8	74	35.2	49	160.0	24
1.	100	18.0	75	33,9	50	151.0	25

-T.49-

 Table 3.5.1
 DISCHARGE DATA MEASURED IN THE IRRIGATION PROJECTS (1/4)

NUMBER	ROJECT NAME	DISTRICI	ELEVATIO	DISTRICT ELEVATION RIVER NAME CATCHMENT AREA (km^2)	CATCHMENT AREA (km^2)	INFORMATION OF DISCHARGE m^3/s
RIVER BAS	RIVER BASIN Karnali Zone					
Kı	Juphal Irrigation Project	Dolpa	2850 m	Khur Khola		0.15 m3/s (Date 1989 Jun) Measured
K2	Garjyangkot Irrigation Project	Jumla	2430 to 2670 m	Talpunera Khola	15.75	Minimum discharge = 773.05 l/s October and September
K3	Ukhadi Khola Irrigation Project	Kalikot	1800 m (approx)	Ukhadikhola	30.6	Measured discharge on date = 1.078 m^3/s (18-5-1985)
<b>K</b> 4	Jubitha Irrigation Project	<b>:</b>	2200 m to 2480 m	Khanla Gad Khola	13.82	Min discharge 0.138 m/3/s Measured discharge on date (15-5-1987)=450 l/s
K5	Dhilamghatta Irrigation Project	Mugu	2000 m	Kalgad	18	Min Flow = 0.2 m^3/s Measured discharge on date (1988, 2 Aus)
K6	Natharpu V.P. Irrigation Project	£			· ·	s/svm 62.0
K7	Sanyo Irrigation Project	Humla	2000 m	Sanya Khola	2.22	Min discharge = 9 l/sec Discharge on date 1944 Apr = 10 l/s
K8	Yanchu Irrigation Project		2100 m	Yanchu Khola	2.22 km^2	Min discharge = 38 lit/sec
RIVER BAS	RIVER BASIN Seti Zone S1. Jukot Irrigation Project	Bajura	1800 m	Bhatera Khola	1.621	Min Flow 0.13 m3/s

 Table 3.5.1
 DISCHARGE DATA MEASURED IN THE IRRIGATION PROJECTS (2/4)

NUMBER	PROJECT NAME	DISTRICT	ELEVATIO	DISTRICT ELEVATION RIVER NAME CATCHMENT AREA ( $Km^{2}$ )	CATCHMENT AREA (Km^2)	INFORMATION OF DISCHARGE m^3/s
RIVER BASI	RIVER BASIN Bheri Zone					
BI	Gitachour-Rawatkot Irrigation Project	Dailekha	916 m	Sano Khola	42.25	Minmum discharge : 1.43 m^3/s
B2	Holy Bhairabikhola Irrigation Project	Jajarkot	660 m to 700	Holu Khola	17.5	Min. discharge 0.2 m^3/s
<b>B</b> 3	Nalagad Irrigation Project	Ŧ	1000 m	Nal Gad	675	Min discharge 3.4 m^3/s
<b>H</b>	Daha Gad Irrigation Project	•	2000 m	Dahakhoia	54	Min discharge = 0.16 m/3/s (March) Measured discharge = 0.52 m/3/s Date (1088-5-30)
BS	Salkot Irrigation Project	Surkhet	335 to 450 m	Khamarle Khola Bhyagute Khola	3.94 6.3	Measured Flow 165 I/s (1983-1-22) Measured Flow 105 I/s (1983-1-23)
B6	Kaprichaur Irrigation Project	± .	690 m	Simta Khola	80	Min. Flow 0.3 m^3/s (1979 May)
B7	Khorke Khola Irrigation Project	÷	760 m	Khorke	12	Min Flow 0.008 m^3/s (Monthly)
B8	Surkhet valley Irrigation Project	=	670 m	Chingar Khola	153	Min Flow 0.998 m^3/s

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 Table 3.5.1
 DISCHARGE DATA MEASURED IN THE IRRIGATION PROJECTS (3/4)

NUMBER	PROJECT NAME	DISTRICT	ELEVATION	DISTRICT ELEVATION RIVER NAME CATCHMENT AREA (Km/2)	CATCHMENT AREA (Km^2)	INFORMATION OF DISCHARGE m^3/s
M1.	Dhari Gad Irrigation Project	Darchula	650 m	Dhari Gad	2.86	Min Monthly Flow : 0.052 m^3/s (April) Discharge ( On Date April 1987) 0.075 m^3/s
M2.	Kukure Gad Irrigation Project	T	1560 m	Kukure Gad	6.052	Min Flow 200 lit/sec Discharge ( On Date April 1987) 9.61 m^3/s
M3.	Lati Nath Irrigation Project	I	1500	Dad Khoia	3.9	Min. Flow 0.082 m^3/s
M4.	Dhap Irrigation Project	Ŧ	650 m to 850 m	Thali Gad Khola	36.75	Min. Flow 0.082 m^3/s (1986-4-18)
M5.	Sakyal Irrigation Project	Dadeldhura	680 m	Sakayal Khola	38	Min Flow 800 l/s Discharge (On Date 1988 May) 0.99 m^3/s
M6.	Doti Khola Irrigation Project	<b>±</b>	1500 m	Doti Khola	30	Min. Flow 0.241 m^3/s
M7.	Sirse Khola Irrigation Project	E 	369 m to 488 m	Sirse Gad	56.6	Min Flow 0.077 m^3/s Discharge (On Date 26 Jan, 1991)
M8.	Gilla Irrigation Project	.1	970 m to 1026 m Sakyal Khola	ı Sakyal Khola	38	Min Flow 0.85 m <sup>A3/s</sup> (1984, Feb)
6W	Dumani Gad Irrigation Project	Baitadi	1095 m	Dumani Gad	1.38	Min Monthly Flow 1.78 lit/sec Discharge ( On Date 1.78 lit/sec)
M10.	Satgad Kulo Irrigation Project	±	1554 m	Satgad	24.97	Min Flow 0.056 m <sup>A3/s</sup> Discharge ( On Date 1984 Jan 19) 110 lit/sce
IIM	Dilleswari M. B Irrigation Project	<b>5</b>	1990 m	Loli Gad	23.41	Min. Monthly Flow 0.051 m <sup>3</sup> 3/s Discharge (On Date 1984 Jan) 117.06 l/s
M12	Sunwagadi Imgation Project	<b>t</b>	1920 m	Sunwagadi	2.54	Min. Flow 2.5 l/s Measured (On Date 1984 Jan) 26.4 l/s
MI3	Kakari Meighat Irrigation Project	£	600 m to 700 m	Sumayagad	416	Min Flow : 1.739 m^3/s (Date May 1988)
M14	Maleria Nala Irrigation Project	Kanchanpur	102 ш	Maleria Nala		Discharge mensured 0.75 m^3/s
MIS	Kalapani Imgation Project	*	225 to 238 m	Shihali River Toli Nala	14.25 9.75	Min Flow 0.18 m <sup>v3/s</sup> Min Flow 0.123 m <sup>v3/s</sup>

-T.52-

 Table 3.5.1
 DISCHARGE DATA MEASURED IN THE IRRIGATION PROJECTS (4/4)

NUMBER	PROJECT NAME	DISTRICT	ELEVATION	RIVER NAME	CATCHMENT AREA (Km^2)	INFORMATION OF DISCHARGE m^3/s
RIVER BASIN	Rapti Zone					
R1	Lunninadi Imgation Project	Pyuthan	762 m to 1844 m Lungri Khola	Lungri Khola	331	Min discharge $0.813 \text{ m}^{3/\text{s}}$
R2	Pakiibesi Irrigation Project	Pyuthan	625 m	Jhimruk	1070	Measured flow 2.95 m^3/s
R3.	Maranthan Irrigation Project	Pynchan	853 m	Dhamabati Nadi		Min discharge $6.31 \text{ m}^{\text{A3/s}}$
R4.	Khangri chour Irrigation Project	Rolpa	615 m to 675 m	Deukhuri Khola	-	Measured discharge 2.132 cusec
S.	Banjb Kanda Irrigation Project	Salyan	1105 m	Sharda River	E1	Meausred discharge = $0.3 m^{A3/s}$
RG	Ghatte Khola Imgation Project	Rukum	1050 m	Ghaue Khola	0.95	Min discharge 0.011 m^3/s
•.	F			Nathi Gad	16.72	Min discharge 0.016 m^3/s
R7.	Kamal Irrigation Project	E	1400 m to 200 m Hari Khola	Hari Khola	1.766	Min discharge 5.609 cusecs = 0.1588 m^3/s
R8.	Nathigad Irrigation Project	<b>2</b>	1868 m to 1086 r Nathi Gad	Nathi Gad	0.3	Min. Flow = 0.25 m^3/s Discharge (On Date 1988-2-18) 427 D/S
R9.	Sodi Khola Irrigation Project	Dang	615m to 705 m	Hapur Khola	50	Low flow : 30 l/sec Discharge (1988-9-18) 1.269 m^3/s
R10.	Sonpur Natri Irrigation Project	t	94 m	Burlailya	55.5	Discharge (On Date 1991 Jun) 2.2 m^3/s Min Flow - Not Available
R11.	Bahundada Imgation Project	<b>2</b>	28° 04' N 82° 28' E	Sewar Khola	23.54	Min. Flow 5.1 Cusecs = 0.1444 m^3/s
R12.	Sir Khola Irrigation Project	<b>\$</b>	76 m	Sir Khols	58	Min Flow 0.095 m^3/s
R13.	Arjun Khola Irrigation Project	<b>t</b>	240 m to 264 m Ajun Khola	Ajun Khola	510.5	Discharge On Date 1984 Oct 1.02 m^3/s
114	Maison Whele Infection Punject	Ruhm	1100 m to 1400 r Petel Khols	Patel Khola	4.08	Films on (1981-4-17)- 24 57 11e

-T.53-

Table 4.2.1 Annual Maximum Instantaneous Discharge

Unit: m3/s (1,480)(1,020)(1,0360 750 750 1,330 1,090 1,090 1,090 1,500 3,000 1,390 1,390 1,220 1,220 1,220 695 350 432 760 525 498 520 385 213 340 330 1,410 5,080 5,080 5,720 5,720 5,720 5,720 6,480 6,480 5,480 3,520 1,110 2,300 3,880 3,200 3,200 1,752 1,780 1,430 1,620 290 96 335 335 168 286 22 Station No. 30 262 260 5,0703,7803,7803,3103,3103,3103,6409,6009,6003,70250 2,850 3,560 2,380 1,300 2,360 2,290 2,290 2,6505,0505,0502,1202,1203,3403,3402,2701,6201,6201,6201,6201,5202,27240 170 4,664 5,475 5,475 6,726 6,726 6,726 9,685 9,685 8,093 8,093 8,093 10,704 9,154 9,154 9,154 12,375 8,826 8,826 9,751 9,751 6,854 4,956 6,949 6,949 6,949 Banbasa 1976 1977 1978 1979 1980 1981 1983 1984 1985 1986 1988 1988 1988 Year 1962 1963 1965 1965 1965 1970 1971 1971 1973 1975

-T.54-

10,677

]		Tributary	Type of	Catchment					Probabl	Probable Peak Discharge for Return Priods	charge for	Return Pri	spo		
Ż	Name of Scheme	• •	Scheme	Area	c		- c	ų	Ç,	Ş		· S	50	No. A	
]				YUU7		2	01	3	S I	31	87	S.	ANN.1	22.0	3
5 <b>2</b> 1 =	<u>Karnali River Basin</u>	2	f							000 00	00, <u>00</u>	000 00		2000	02 EC
¥.	Kamalı/Unisapanı The value actimated bu HPC) *1	Karnali ed hu HPC ) * 1	Keservoir	42,0/9	9,400	13,000	15,400	18,400	20,000	22,800	2,100 2,00	28,000	36,600	31,000	
KI	KR 7	cu vy nr c) - i Karnali	Run-of-river	21,314	2,558	3.411	3,837	4.264	5,116	5,543	5,969	6,396	6,822	8,101	8,527
	•	•	• . •					. '	÷						
R	KR 3/Lakharpata	Kamali	Run-of-river	21,291	2,557	3,410	3,836	4,262	5,115	5,541	5,967	6,393	6,820	860,8	8,52
K	Kamali Bend/KR 1A	Karnalı	Run-of-river	20,120	2,513	3,351	3,770	4,189	5,027	5,446	5,865	6,284	6,703	7,959	8,37
2	KR 2	Karnali	Reservoir	15,739	2,327	3,103	3,491	3,879	4,655	5,043	5,431	5,819	6,207	7,370	7,758
2	KR 4	Kamali	Run-of-river	13,238	2,201	2,935	3,302	3,668	4,402	4,769	5,136	5,503	5,869	6,970	1,33
F	TR 1	Tila	Run-of-river	3,326	1,337	1,782	2,005	2,228	2,674	2,896	3,119	3,342	3,565	4,233	4
	TR 2	Tila	Run-of-river	2,840	1,255	1,673	1,882	2,091	2,510	2,719	2,928	3,151	<b>9</b>	5,974	4,1
2	MKR 1	Mugu	Run-of-river	6,008 2,255	1,675	2,233	2,512	2,791	3,349	3,628	3,907	4,18	465	5,503	2 2 2 2
H	HKR 1	Humla	Run-of-river	5,964	1,670	2,227	2,505	2,783	3,340	3,018	5,69	01.4	4,405 1000	2,288	
	BR1/Bhcri/Babai	Bheri	Run-of-river	11,815	3,180	4,593	5,300	6,360	1,000,1	511,1	8,480	0,540	9,894	11.000	12,50
а 5.Т	BR3A/Surkhet	Bheri	Reservoir	11,554	3,157	4,559	5,261	6,313	7,014	7,716	8,417	9,470	9,820	11,574	12,275
	BR5/Thapna	Bhen	Reservoir	10,757	3,082	4,451	5,136	6,164	6,848	7,533	8,218	9,245	9,588	11,300	11,98
	BR 4	Bheri	Reservoir	10,305	3,037	4,387	5,062	6,075	6,750	7,425	8,100	9,112	9,450	11,137	11,81
B	BR 6	Bheri	Run-of-river	1,367	1,380	1,993	2,299	2,759	3,066	3,372	3,679	4,139	4,292	5,059	5,36
5	SR 6	Seti	Reservoir	7,213	2,981	4,770	5,664	7,155	8,049	8,944	9,838	11,329	12,223	14,608	15,50
3	West Seti/SR 1	Seti	Reservoir	4,250	2,451	3,922	4,658	5,884	6,619	7,354	8,090	9,316	10,051	12,012	12,74
S	SR 3 -	Seti	Run-of-river	2,421	1,959	3,135	3,722	4,702	5,290	5,878	6,465	7,445	8,033	<b>6</b> ,600	10,18
E	THR 1	Thuli Gad	Run-of-river	626	532	851	1,064	1,383	1,702	1,808	2,127	2,446	2,659	3,191	3,4(
24	Mahakali River Basîn	Mahakaii	Decension	10 200	6.858	572 0	11 550	14 077	15 881	17 686	19,491	22.017	23,822	27.792	29,597
1	Increstiwar	Internetwo		14,000	oro(n			10.11	10061	2001					
Ж	Rupali Regulating											. *		·	
Ş	dam	Mahakali	Reservoir					:							
Po	Poomagini	Mahakali	Reservoir	15,000	7,258	10,314	12.224	14,898	16,808	18,718	20,628	23,302	25,211	29,413	31,323
ΰ	Chamiiva	Chamliva	Reservoir	1.570	3.096	4.400	5.215	6.355	7.170	7.985	8,800	9,940	10,755	12,547	13,362

		Type of	Catchment				P	obable I	Peak Dise	Probable Peak Discharge for Return Periods	Return	Periods		
vame of Scheme	Tributary	Scherne	Area km2	7	5	10	25	50	100	200	500	1,000	5,000	10,000
Karnali River Basin	r Basin							· ·						
TR3	Tila	Run-of-river	3,105	1,301	1,734	1,951	2,168	2,601	2,818	3,035	3,252	3,469	4,119	4,336
TR4	Tila	Run-of-river	513	578	1 <i>LL</i>	867	963	1,156	1,252	1,349	1,445	1,541	1,830	1,926
MKR2	Mugu	Run-of-river	5,773	1,650	2,200	2,475	2,750	3,300	3,575	3,850	4,125	4,400	5,226	5,501
MKR3	Mugu	Run-of-river	4,251	1,471	1,961	2,207	2,452	2,942	3,187	3,432	3,678	3,923	4,658	4,903
HKR2	Humla	Run-of-river	5.654	1.638	2.183	2.456	2.729	3.275	3.548	3.821	4.094	4.367	5.186	5,459
HKR3	Humla	Run-of-river	4,144	1,457	1,942	2,185	2,428	2,913	3,156	3,399	3,642	3,885	4,613	4,856
HKR4	Humla	Run-of-river	3,807	1,410	1,880	2,114	2,349	2,819	3,054	3,289	3,524	3,759	4,464	4,699
acya RCM T.56	Bheri	Reservoir	10,910	3,096	4,473	5,161	6,193	6,881	7,569	8,257	9,289	9,633	11,354	12,042
BR7	Bheri	Run-of-river	628	959	1,385	1,598	1,917	2,130	2,343	2,556	2,876	2,982	3,515	3,728
BR8	Bheri	Run-of-river	2,438	1,768	2,554	2,947	3,537	3,930	4,323	4,716	5,305	5,502	6,484	6,877
LR1	Lohore	Reservoir	733	689	616	1,034	1,148	1,378	1,493	1,608	1,723	1,837	2,182	2,297
BSI	Buriganga	Run-of-river	853	1,235	1,975	2,346	2,963	3,333	3,704	4,074	4,691	5,062	6,049	6,420
SR7	Seti	Run-of-river	978	1,316	2,106	2,501	3,159	3,554	3,949	4,344	5,002	5,397	6,450	6,845
Mahakali River Basin	iver Basin	·					·	•						
CR1 CR1	Chamliya Chamliva	Run-of-river Run-of-river	280 785	1,334 2,255	1,895 3.204	2,246 3,798	2,738 4,628	3,089 5,222	3,440 5,815	3,791 6.409	4,282	4,633 7,833	5,405 9,138	5,756 9 732

Table 4.4.1	PROPOSED	FLOOD	PATTERNS

Station no.		240	260	270	150
Duration of Flood		7-days	8-days	9-days	9-days
	1	0.021	0.025	0.006	0.154
	2	0.158	0.167	0.021	0.332
	- 3	0.389	0.469	0.188	0.224
	4	0.255	0.231	0.210	0.159
	5	0.114	0.057	0.286	0.057
	6	0.042	0.025	0.203	0.029
	7	0.021	0.015	0.064	0.019
	8		0.011	0.012	0.017
	9			0.009	0.010
Total		1.000	1.000	1.000	1.000

	Tributary	Type of	Catchment	Day						Å	Return Period	1			110	1000
Name of Scheme		Scheme	Area, km2	•	2	5	10	25	50	100	200	500	1,000	5.000	i0,000	PMF
Karnali River Basin													, ,			
Karnali/Chisapani	Karnali	Reservoir	42,890	lst 2nd 3rd	4,350 4,628 6,399 9,400	4,350 4,826 7,860 13,000	4,350 4,957 8,834 15,400	4,350 5,122 10,051 18,400	4,350 5,243 10,944 20,600	4,350 5,364 11,837 22,800	4,350 5,491 12,770 25,100	4,350 5,650 13,947 28,000	4,350 5,771 14,840 30,200	4,350 6,052 16,909 35,300	4,350 6,172 17,802 37,500	4,350 7,574 28,149 63,000
· · ·				5 th 6 th 9 th 9 th	7,660 5,825 4,895 4,623 4,350	10,020 6,877 5,283 4,817 4,350	11,593 7,578 5,542 4,947 4,350	13,560 8,455 5,865 5,109 4,350	15,002 9,097 6,103 5,227 4,350	16,444 9,740 6,340 5,346 4,350	17,952 10,412 6,588 5,470 4,350	19,853 11,259 6,901 5,627 4,350	21,295 11,902 7,138 5,746 4,350	24,638 13.392 7,688 6,021 4,350	26,080 14,035 7,926 6,140 4,350	42,795 21,484 10,676 7,517 4,350
∰ -T.58-	Karmali	Reservoir	15,739	13 2 2 2 3 2 4 5 4 5 5 4 5 5 5 5 5 5 5 5 5 5 5 5 5	823 906 1,434 2,327 1,809 1,263 985 985 823	823 948 1.748 3.103 2.318 1.489 1.489 1.069 823	823 970 1,906 3,491 1,603 1,603 1,111 967 823	823 991 2,063 3,879 2,826 1,716 1,716 1,153 988 823	823 823 2,378 4,655 3,335 1,942 1,236 1,030 823	823 823 2,535 5,043 3,589 2,056 1,278 1,278 1,278 1,278 1,278	823 1,076 2,693 5,431 3,845 2,169 1,320 1,072 823	823 823 2,850 5,819 4,098 2,282 1,093 1,093 823	823 1,119 3,008 6,207 4,352 2,396 1,114 1,114 823	823 1,183 3,480 7,370 5,115 2,736 1,529 1,176 823	823 1,204 3,637 7,758 5,369 2,849 1,571 1,197 823	823 5,778 5,778 5,778 13,034 4,390 2,140 1,482 1,482 1,482
LRI	Lohore	Reservoir	733	11 22 23 23 23 23 25 25 25 25 25 25 25 25 25 25 25 25 25	95 336 689 484 159	95 140 429 919 635 336 184	95 147 476 476 1,034 710 369 369	95 153 522 1,148 785 403 209	95 166 616 1,378 936 470 233	95 172 662 1,493 1,011 503 246	95 178 709 1,608 1,087 537 258	95 184 755 1.723 1.162 770 271	95 191 802 802 1,837 1,837 1,237 283	95 210 242 242 1,463 1,463 1,463 220	95 216 988 988 1,538 1,538 1,538 738	95 302 3,859 3,859 2,852 1,195 501 501
·				8th 9th	127	139	146	152	164 2 2	170	177	185	189	208	214	ณี

	Tributary	Type of	Catchment	Day						~	Return Perioc	q				
Name of Scheme		Scheme	Area,			,	;									
			km2		17	∽	0	R	20	8	200	200	1,000	2,000	10,000	PNE
<b>BR3A/Surkhet</b>	Bheri	Reservoir	11,554	lst	1,208	1,208	1,208	1,208	1,208	1,208	1,208	1,208	1,208	1,208	1,208	1,208
·	·			2nd	1,250	1,280	1,295	1,318	1,333	1,348	1,363	1,385	1,393	1,430	1,445	1,625
			•	3rd	1,354	1,459	1,511	1,590	1,642	1,695	1747	1,826	1,852	1,983	2,035	2,659
				4th	2,486	3,406	3,866	4,557	5,017	5,477	5,937	6,627	6,857	8,008	8,468	13,943
				Sth	2,639	3,669	4,184	4,957	5,472	5,987	6,502	7,275	7,532	8,820	9,335	15,465
				6th	3,157	4,559	5,261	6,313	7,014	7,716	8,417	9.470	9,820	11,574	12,275	20,622
				7th	2,592	3,588	4,086	4,833	5,331	5.829	6,327	7,075	7,324	8,569	6,067	14,994
				8th	1,643	1,956	2,112	2,347	2,503	2,660	2,816	3,051	3,129	3,520	3,677	5,539
				9th	1,290	1.349	1,378	1,422	1,451	1,481	1,510	1,554	1,569	1,643	1,672	2,022
				10th	1,269	1,313	1,335	1,369	1,391	1,413	1,435	1,468	1,479	1,534	1,556	1,819
				11st	1,208	1.208	1,208	1,208	1,208	1,208	1,208	1,208	1.208	1,208	1,208	1,208
		·														
BR3B	Bheri	Reservoir	10,910	lst	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100
				2nd	1,143	1,172	1,187	1,209	1,224	1,239	1,254	1,276	1,283	1,320	1,335	1,510
				3rd	1,249	1.352	1,404	1,481	1,532	1,584	1,635	1,712	1,738	1,867	1,918	2,530
				4th	2,410	3,312	3,764	4,441	4,892	5,343	5,795	6,472	6,698	7,826	8,277	13,649
				Sth	2,566	3,577	4,082	4,840	5,345	5.851	6,356	7,114	7,367	8,630	9,135	15,149
				6th	3,096	4,473	5,161	6,193	6,881	7,569	8,257	9,289	9,633	11,354	12,042	20,230
		·		7th	2,518	3,495	3,984	4,717	5,205	5,694	6,182	6,915	7,160	8,381	8,870	14,685
				8th	1,545	1,852	2,006	2,236	2,390	2,543	2,696	2,927	3,003	3,387	3,541	5,367
	• .			9th	1,184	1,241	1,270	1,314	1,342	1,371	1,400	1,443	1,458	1,530	1,559	1,902
				10th	1,163	1,206	1,228	1,260	1,282	1,303	1,325	1,358	1,368	1,422	1,444	1,702
				llst	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100
			-			:										

-T.59-

	Tributary	Type of	Catchment	Day						Re	Return Period					
Name of Scheme		Scheme	Arca,	F												
			km2		7	5	01	25	50	81	200	500	1.000	5,000	10.000	TMF
BR5/Thapna	Bheri	Reservoir	10,757	lst	1,063	1,063	1,063	1,063	1,063	1,063	1,063	1,063	1,063	1,063	1,063	1,063
•				2nd	1,106	1,136	1,150	1,172	1,187	1,202	1,217	1,239	1,246	1,283	1,297	1.472
				3rd	1,214	1,316	1.368	1,444	1,496	1,547	1,598	1,675	1,700	1,828	1,879	2,489
				4th	2,387	3,286	3,735	4,409	4,858	5,307	5,756	6,430	6,655	7,778	8,227	13,573
				Sth	2,546	3,551	4,054	4,809	5,312	5,815	6,317	7,072	7,323	8,581	9,084	15,068
				6th	3,082	4,451	5,136	6,164	6,848	7,533	8,218	9,245	9,588	11,300	11,985	20,134
				7th	2,497	3,469	3.956	4,685	5,171	5,658	6,144	6,873	7,117	8,332	8,819	14,606
				8th	1,513	1 819	1,972	2,201	2,353	2,506	2,659	2,888	2,965	3,346	3,499	5,317
				9th	1,148	1,205	1,234	1,277	1,306	1,334	1,363	1,406	1,420	1,492	1,521	1,863
÷				10th	1,126	1,170	1,191	1,223	1,245	1,266	1,288	1,320	1,331	1,385	1,406	1.663
				- 11st	1,063	1,063	1,063	1,063	1,063	1,063	ī,063	1,063	1,063	1,063	1,063	1,063
						•							•			
BR 4	Bheri	Reservoir	10,305	lst	683	983	983	- 886	983	983	983	983	983	983	983	983
				2nd	1,027	1.056	1,071	1,092	1,107	1,121	1,136	1,157	1,165	1,201	1,215	1,388
				3rd	1,137	1,238	1,288	1,364	1,414	1,465	1,515	1,591	1,616	1.742	1,793	2,393
:				4th	2,331	3,216	3,659	4,323	4.766	5,209	5,651	6,315	6,537	7,644	8,086	13,355
				5th	2,492	3,483	3,979	4,722	5.218	5.714	6,209	6,953	7,201	8,440	8,936	14,834
				6th	3,037	4,387	5,062	6,075	6,750	7,425	8,100	9,112	9,450	11,137	11.812	19.844
				7th	2,442	3,400	3,880	4,599	5,078	5,557	6,037	6,756	6,995	8,194	8,673	14,377
				8th	1,441	1,742	1,893	2,119	2,269	2,420	2,570	2,796	2,872	3,248	3,399	5,190
				9th	1,069	1,126	1,154	1,197	1,225	1.253	1,281	1,324	1,338	1,409	1,437	1,774
				101	1,048	1,090	1,111	1,143	1,164	1,186	1,207	1,239	1,249	1,302	1,324	1.576
				1	•											

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-T.60-

Name of Scheme	Tributary	Type of	Catchment	Day						æ	Return Period	7				
	· · · ·	Scheme	Arca, km2		6	s	10	52	50	100	- 00 70	200	1.000	5.000	10.000	PMF
50 K	Co+4	Deserve	212	164	OLL	065	044	022	011	024	044		ç F	f	¢.F	C PE
2 20	100	NUCLOUNDED VI			200	100	0~1	2011	221	200	074	1 206	010	2.2		0.1
				517 7	000	7104	070'1	2,042	2,1,2	2 KBA	047'1	0751	0/01	5 607 5	0001	101,2
				510 410	120.1	4.770	5,664	7,155	200's	3,000 8,944	0,838 0,838	4,229	4,847	140,0 808.41	c10,0 15 507	97,768 26.044
				Sth	1,861	2,743	3,184	3,919	4,360	4,801	5,243	5,978	6,419	7.595	8,036	13.236
				6th	1,039	1,257	1,366	1,547	1,656	1,765	1,873	2,055	2,164	2,454	2,563	3,845
				7th	890	987	1,035	1,116	1,164	1,213	1,261	1,342	1,390	1,519	1,568	2,138
				8th	840	896	924	116	666	1,027	1,055	1,102	1,130	1,205	1,234	1.565
				9th	822	864	885	920	941	962	983	1,018	1,039	1,095	1,116	1,363
				10th	770	770	770	770	770	770	170	770	770	770	770	770
•		i														
West Seti/SR 1	Seti	Reservoir	4,250	lst	467	467	467	467	467	467	467	467	467	467	467	<del>16</del> 7
	•	-		2nd	572	649	688	752	161	830	869	933	572	1.075	1,114	1,571
				3rd	1,174	1,697	1,959	2,395	2,657	2,919	3,181	3,617	3,879	4,577	4,839	7,925
				4th	2,451	3,922	4,658	5,884	6,619	7,354	8,090	9,316	10,051	12,012	12,748	21,416
				Sth	1,446	2,171	2,534	3,139	3,501	3,864	4,227	4,831	5,194	6,161	6,524	10,800
		÷		6th	708	887	577	1,126	1,216	1,305	1,394	1,544	1,633	1,872	1,961	3,016
				7th	574	654	694	760	800	840	880	946	986	1,092	1,132	1,601
				8th	529	576	599	637	<b>66</b> 1	684	707	745	769	830	853	1,126
			·	9th	514	548	565	594	611	629	646	675	692	738	755	959
				10th	467	467	467	467	467	467	467	467	467	124	124	124

-T.61-

2         5         10         25         50         100         500         1,000         5,000         10,000           1,750	Tributary Basin Mahakali													Unit :	Unit : m3/sec
Scheme         Arra, Im2         2         10         25         10         25         90         100         500         1000         1000 <th><b>Basin</b> Mahakali</th> <th>Catchment</th> <th>Day</th> <th></th> <th>-</th> <th></th> <th></th> <th></th> <th>Ä</th> <th>sturn Perio</th> <th></th> <th></th> <th></th> <th></th> <th></th>	<b>Basin</b> Mahakali	Catchment	Day		-				Ä	sturn Perio					
Wahakati         Reservoir         12,600         1st         1/730         1/730         1/750	ver Basin Mahakali	Arca, km2		2	s	10	25	50	100	200	200	1.000		10,000	PMF
Mahakaii         Reservoir         12,600         1st         1/730         1/750	Mahakali														
		12 600	1ct	1.750	1.750	. 750	1.750	1.750	1.750	1 750	1 750		1 750	1 750	1 750
3rd         6.858         9.745         11.550         14.077         15.881         17.866         19.491         22.017         23.822         27.792         29.557         2         5         13.211         20.517         23.822         27.792         29.557         6         13.711         15.417         15.606         14.197         15.000         17.500         17.500         17.500         17.500         17.500         17.500         17.500         17.500         17.500         17.500         17.500         17.500         17.500         17.500         17.	· · · · · · · · · · · · · · · · · · ·		2nd	4,127	5,471	6,311	7,487	8,327	9,167	10,007	11,183		13.871	14,711	19,395
$ \begin{array}{llllllllllllllllllllllllllllllllllll$			3rd	6,858	9,745	11,550	14,077	15,881	17,686	19,491	22,017		27,792	29,597	39,660
4,191 $5,72$ $6,44$ $7,642$ $8,504$ $9,567$ $10,230$ $11,477$ $12,300$ $14,197$ $15,050$ $710$ $2,192$ $3,132$ $3,244$ $3,509$ $4,005$ $4,197$ $15,050$ $710$ $2,192$ $3,132$ $3,244$ $3,509$ $4,005$ $3,234$ $3,509$ $4,005$ $3,238$ $4,102$ $4,129$ $5,209$ $3,248$ $3,305$ $4,102$ $5,369$ $4,005$ $3,218$ $2,317$ $3,305$ $4,102$ $5,369$ $4,005$ $3,218$ $2,179$ $2,365$ $2,799$ $3,269$ $4,175$ $5,299$ $3,218$ $3,218$ $3,218$ $3,218$ $3,218$ $3,218$ $2,318$ $3,218$ $2,318$ <			4th	5,194	7,142	8,359	10,062	11,279	12,496	13,713	15,417		19,311	20,528	27,314
			5th	4,191	5,572	6,434	7,642	8,504	9,367	10,230	11,437		14.197	15,060	19,870
			6th	2,622	3,115	3,423	3,854	4,162	4,470	4,778	5,209		6,195	6,503	8,220
Rth         2.050         2.219         2.325         2.473         2.579         2.665         2.791         2.939         3.045         3.278         3.384           10th         1.904         1.750<			7th	2,192	2,442	2,598	2,816	2,972	3,128	3,284	3,503		4,002	4,159	5,029
			8th	2,050	2,219	2,325	2,473	2,579	2,685	2,791	2,939		3.278	3,384	3.974
			- Oth	2,012	2,160	2,252	2,382	2,474	2,567	2,659	2.789		3,085	3,177	3,693
11st1,7501,7501,7501,7501,7501,7501,7501,7501,7501,7501,750ChamliyaReservoir1,57011,5782.182.182.182.182.182.182.182.182.182.182nd1,5582.1642.5443.0753,4543,8334,2124,7435.1225.9576,5363nd1,5582.1642,5443.0753,4543,8334,2124,7435.1225.9576,5363nd1,5582.1642,5443.0753,4543,8334,2124,7435.1225.9576,5363nd1,5942,1593.0383.5874,4005.2156,3357,1707.9858,8009,94010,75512,54713,3626th7099.2212.6063,1511.5441,3551,4051,57413,3629,0827th4675806507498198909601,0751,2246,0117th4675806507498198909601,3751,2241,3559th3664735717717781,3361,3712,3611,3759th3664745335746166587,167,3222,4619th3664745335746166587,177,3281,3752,3611,3569th<			lOth	1,904	166'1	2,045	2,122	2,176	2,230	2,285	2,361		2,535	2,590	2,893
Channliya         Reservoir         1,570         1st         218			llst	1,750	1,750	1,750	1,750	1,750	1,750	1,750	1,750	_	1,750	1,750	1,750
Channliya         Reservoir         1,570         1st         218         213         3535           3rd         3,096         4,400         5,215         6,355         7,170         7,985         8,800         9,940         10,755         12,547         13,365           4th         2,159         3,038         3,587         4,357         4,906         5,455         6,005         6,774         7,352         8,532         9,082           6th         709         9,321         1,541         3,930         4,320         4,865         5,254         6,111         6,501           7th         467         580         514         3,393         1,541         1,653         1,201	· · · ·	- - -													
2nd1,5582,1642,5443,0753,4543,3334,2124,7435,1225,9576,5363rd3,0964,4005,2156,3557,1707,9858,8009,94010,75512,34713,3624th2,1593,0383,5874,3574,3574,9065,4556,0056,7747,3238,5359,0825th1,5942,2172,6063,1513,5413,9304,3204,8655,2546,1116,5016th7099321,0711,2651,4051,5441,6831,8772,0162,3222,4617th4675806507498198198909601,0751,2241,3559th3874635115786566747217888369419899th3664327145786566677495195367,4619th3664335746566677197388369419899th36534436940342845247751153659061410th305344369403218 <td>Chamliva</td> <td>1.570</td> <td>İst</td> <td>218</td>	Chamliva	1.570	İst	218	218	218	218	218	218	218	218	218	218	218	218
3,096       4,400       5,215       6,355       7,170       7,985       8,800       9,940       10,755       12,547       13.362         2,1159       3,038       3,587       4,357       4,906       5,455       6,005       6,774       7,323       8,5322       9,082         1,594       2,217       2,606       3,151       3,541       3,930       4,320       4,323       8,552       9,082         709       932       1,071       1,265       1,405       1,544       1,683       1,877       2,016       2,322       2,461         709       932       1,071       1,265       1,405       1,544       1,683       1,877       2,016       2,322       2,461         709       932       1,071       1,265       1,405       1,544       1,683       1,877       2,016       2,322       2,461         705       532       6,774       712       788       8,50       9,90       1,355         387       463       511       578       1,355       1,357       3,461         716       788       836       941       738       8356       941       989         366       4,32       <		1 - - -	2nd	1,558	2,164	2,544	3,075	3,454	3,833	4,212	4,743	5,122	5.957	6,336	8,451
2,159       3,038       3,587       4,357       4,906       5,455       6,005       6,774       7,323       8,532       9,082         1,594       2,217       2,606       3,151       3,541       3,930       4,320       4,365       5,254       6,111       6,501         709       932       1,071       1,265       1,405       1,544       1,683       1,877       2,016       2,322       2,461         709       932       6,1071       1,265       1,405       1,544       1,683       1,877       2,016       2,322       2,461         709       932       6,10       1,265       1,405       1,544       1,683       1,877       2,016       2,322       2,461         705       580       650       749       819       890       960       1,026       1,355       2,461         387       463       571       578       626       674       721       788       8356       941       989         366       432       474       553       574       616       658       716       738       850       892         365       344       369       403       428       452			3rd	3,096	4,400	5,215	6,355	7.170	7,985	8,800	9,940	10,755	12,547	13,362	17,905
1,594       2,217       2,606       3,151       3,541       3,930       4,320       4,365       5,254       6,111       6,501         709       932       1,071       1,265       1,405       1,544       1,683       1,877       2,016       2,322       2,461         467       580       650       749       819       890       960       1,059       1,224       1,355         387       463       511       578       626       674       721       788       836       941       989         366       432       474       533       574       616       658       716       738       850       892         366       432       474       533       574       616       658       716       758       850       892         305       344       369       403       422       477       511       536       590       614         218	-		4th_	2,159	3,038	3,587	4.357	4,906	5,455	6,005	6,774	7,323	8,532	9,082	12,145
709         932         1.071         1.265         1,405         1,544         1,683         1,877         2,016         2,322         2,461           467         580         650         749         819         890         960         1,039         1,129         1,324         1,355           387         463         511         578         62.6         674         721         788         836         941         989           366         432         474         533         574         616         658         716         758         850         892           305         344         369         403         428         452         477         511         536         590         614           218			Sth	1,594	2,217	2,606	3,151	3,541	3,930	4,320	4,865	5,254	6,111	6,501	3,672
467         580         650         749         819         890         960         1,039         1,129         1,284         1,355           387         463         511         578         626         674         721         788         836         941         989           366         432         474         533         574         616         658         716         758         850         892           305         344         369         403         428         452         477         511         536         590         614           218 <td></td> <td></td> <td>6th</td> <td>602</td> <td>932</td> <td>1,071</td> <td>1,265</td> <td>1,405</td> <td>1,544</td> <td>1,683</td> <td>1,877</td> <td>2,016</td> <td>2,322</td> <td>2,461</td> <td>3,237</td>			6th	602	932	1,071	1,265	1,405	1,544	1,683	1,877	2,016	2,322	2,461	3,237
387     463     511     578     626     674     721     788     836     941     989       366     432     474     533     574     616     658     716     758     850     892       305     344     369     403     428     452     477     511     536     590     614       218     218     218     218     218     218     218     218     218     218     218			7th	467	580	650	749	819	890	096	1,059	1.129	1,284	1,355	1,748
366         432         474         533         574         616         658         716         758         850         892           305         344         369         403         428         452         477         511         536         590         614           218			8th	387	463	511	578	626	674	721	788	836	941	989	1,256
305         344         369         403         428         452         477         511         536         590         614           218			9th	366	432	474	533.	574	616	658	716	758	850	892	1,125
218 218 218 218 218 218 218 218 218 218	-		10th	305	344	369	403	428	452	477	511	536	590	614	751
	•		11st	218	218	218	218	218	218	218	218	218	218	218	218

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#### Table 5.4.1 SEDIMENT CONCENTRATION AND LOAD DATA (STATION 280) (1/4)

Year	Month	Day	Water	Sediment	Sediment	Year	Month	Day	Water	Sediment	Sedimen
				concentration	load			,		concentration	
			(m3/s)	(mg/l)	(kt)	-			(m3/s)	(mg/l)	(kt)
987	JUL.	1	1,370	997	118	1987	AUG.	1	2,480	2,347	503
		2	1,270	1,002	110			2	2,660	3,833	881
		3	1,370	1,064	126			3	2,400	3,352	695
		4	1,500	1,451	188			4	2,530	4,552	995
		5	1,520	1,637	215			5	2,340	2,503	506
		6	1,380	2,541	303			6	2,210	1,953	373
		7	1,690	2,192	320			- 7	2,400	2,744	569
		8	1,620	2,036	285			8	2,450	2,551	540
		- 9	1,660	2,782	399			9	2,430	2,848	598
		10	2,200	2,841	540			10	2,500	3,296	712
		11	2,320	2,085	418			. 11	2,640	4,406	1,005
		12	2,280	4,614	909			12.	3,200	5,668	1,567
		13	2,630	4,621	1,050			13	4,910	12,149	5,154
		14	2,720	3,625	852			14	3,600	6,948	2,161
		15	3,210	5,005	1,388	• •		-15	3,080	4,175	1,111
		16	2,990	4,947	1,278			16	2,920	4,253	1,073
		17	2,160	3,140	586			17	2,870	4,565	1,132
		18	1,830	2,580	403			18	2,740	4,794	1,135
	-	- 19	1,710	2,132	315			19	2,490	3,970	854
		20	1,740	1,690	254			20	2,410	5,201	1,083
		21	1,710	1,834	271			21	2,430	4,606	967
		22	1,710	1,652	244			22	2,900	5,244	1,314
		23	2,140	2,396	443			23	2,680	3,135	726
		24	2,800	4,927	1,192			24	2,720	3,779	888
		25	3,380	8,441	2,465			25	2,630	3,243	737
		26	4,900	29,450	12,468			26	3,420	6,545	1,934
· ·		27	4,590	9,751	3,867			27	2,820	3,907	952
		28 29	3,570	3,839	1,184 708			28	4,280	7,017	2,595
		27	3,050	2,687				29	4,250	7,138	2,621
			-					30	1 7/0	6160	1 /70
ear N	vionth	30 31	2,880 2,660	2,411 2,171	600 499	Ycar	Month	30 31 Day	3,760 3,580 Water	5,168 3,650 Sediment	1,679 1,129 Sedimen
ear N	vionth	30 31 Day	2,880 2,660 Water discharge	2,411 2,171 Sediment concentration	600 499 Sediment Ioad	Ycar	Month		3,580 Water discharge	3,650	1,129 Sedimer load
		30 31 Day	2,880 2,660 Water discharge (m3/s)	2,411 2,171 Sediment concentration (mg/l)	600 499 Sediment Ioad (kt)			31 Day	3,580 Water	3,650 Sediment	1,129 Sedimer
	vionth SEP.	30 31 Day	2,880 2,660 Water discharge (m3/s) 3,180	2,411 2,171 Sediment concentration (mg/l) 3,345	600 499 Sediment load (kt) 919	Ycar 1989		31 Day	3,580 Water discharge	3,650 Sediment concentration	1,129 Sedimer load
		30 31 Day 1 2	2,880 2,660 Water discharge (m3/s) 3,180 2,940	2,411 2,171 Sediment concentration (mg/l) 3,345 2,874	600 499 Sediment load (kt) 919 730			31 Day	3,580 Water discharge	3,650 Sediment concentration	1,129 Sedimer load
		30 31 Day 1 2 3	2,880 2,660 Water discharge (m3/s) 3,180 2,940 2,700	2,411 2,171 Sediment concentration (mg/l) 3,345 2,874 2,842	600 499 Sediment load (kt) 919 730 663			31 Day 1 2 3	3,580 Water discharge	3,650 Sediment concentration	1,129 Sedimer load
		30 31 Day 1 2 3 4	2,880 2,660 Water discharge (m3/s) 3,180 2,940 2,700 2,480	2,411 2,171 Sediment concentration (mg/l) 3,345 2,874 2,842 2,525	600 499 Sediment load (kt) 919 730 663 541			31 Day 1 2 3 4	3,580 Water discharge	3,650 Sediment concentration	1,129 Sedimen load
		30 31 Day 1 2 3 4 5	2,880 2,660 Water discharge (m3/s) 3,180 2,940 2,700 2,480 2,470	2,411 2,171 Sediment concentration (mg/l) 3,345 2,874 2,842 2,525 2,141	600 499 Sediment load (kt) 919 730 663 541 457			31 Day 1 2 3 4 5	3,580 Water discharge	3,650 Sediment concentration	1,129 Sedimen load
		30 31 Day 1 2 3 4 5 6	2,880 2,660 Water discharge (m3/s) 3,180 2,940 2,700 2,480 2,470 2,540	2,411 2,171 Sediment concentration (mg/l) 3,345 2,874 2,842 2,525 2,141 2,369	600 499 Sediment load (kt) 919 730 663 541 457 520			31 Day 1 2 3 4 5 6	3,580 Water discharge	3,650 Sediment concentration	1,129 Sedimen load
		30 31 Day 1 2 3 4 5 6 7	2,880 2,660 Water discharge (m3/s) 3,180 2,940 2,700 2,480 2,470 2,540 2,540 2,460	2,411 2,171 Sediment concentration (mg/l) 3,345 2,874 2,842 2,525 2,141 2,369 2,578	600 499 Sediment load (kt) 919 730 663 541 457 520 548			31 Day 1 2 3 4 5 6 7	3,580 Water discharge	3,650 Sediment concentration	1,129 Sedimen load
		30 31 Day 1 2 3 4 5 6 7 8	2,880 2,660 Water discharge (m3/s) 3,180 2,940 2,700 2,480 2,470 2,540 2,540 2,460 2,670	2,411 2,171 Sediment concentration (mg/) 3,345 2,874 2,842 2,525 2,141 2,369 2,578 3,767	600 499 Sediment load (kt) 919 730 663 541 457 520 548 869			31 Day 1 2 3 4 5 6 7 8	3,580 Water discharge	3,650 Sediment concentration	1,129 Sedimen load
		30 31 Day 1 2 3 4 5 6 7 8 9	2,880 2,660 Water discharge (m3/s) 3,180 2,940 2,700 2,480 2,470 2,540 2,540 2,540 2,670 2,930	2,411 2,171 Sediment concentration (mg/l) 3,345 2,874 2,842 2,525 2,141 2,369 2,578 3,767 3,725	600 499 Sediment load (kt) 919 730 663 541 457 520 548 869 943			31 Day 1 2 3 4 5 6 7 8 9	3,580 Water discharge	3,650 Sediment concentration	1,129 Sedimen load
		30 31 Day 1 2 3 4 5 6 7 8 9 10	2,880 2,660 Water discharge (m3/s) 3,180 2,940 2,700 2,480 2,470 2,540 2,470 2,540 2,670 2,670 2,930 3,160	2,411 2,171 Sediment concentration (mg/) 3,345 2,874 2,842 2,525 2,141 2,369 2,578 3,767 3,725 3,421	600 499 Sediment load (kt) 919 730 663 541 457 520 548 869 943 934			31 Day 1 2 3 4 5 6 7 8 9 10	3,580 Water discharge	3,650 Sediment concentration	1,129 Sedimen load
		30 31 Day 1 2 3 4 5 6 7 8 9 10 11	2,880 2,660 Water discharge (m3/s) 3,180 2,940 2,700 2,480 2,470 2,540 2,470 2,540 2,460 2,670 2,930 3,160 3,290	2,411 2,171 Sediment concentration (mg/) 3,345 2,874 2,842 2,525 2,141 2,369 2,578 3,767 3,725 3,421 3,018	600 499 Sediment load (kt) 919 730 663 541 457 520 548 869 943 934 858			31 Day 1 2 3 4 5 6 7 8 9 10 11	3,580 Water discharge	3,650 Sediment concentration	1,129 Sedimer load
		30 31 Day 1 2 3 4 5 6 7 8 9 10 11 12	2,880 2,660 Water discharge (m3/s) 3,180 2,940 2,700 2,480 2,470 2,540 2,470 2,540 2,460 2,670 2,930 3,160 3,290 2,850	2,411 2,171 Sediment concentration (mg/) 3,345 2,874 2,842 2,525 2,141 2,369 2,578 3,767 3,725 3,421 3,018 2,961	600 499 Sediment load (kt) 919 730 663 541 457 520 548 869 943 934 858 729			31 Day 1 2 3 4 5 6 7 8 9 10 11 12	3,580 Water discharge	3,650 Sediment concentration	1,129 Sedimer load
		30 31 Day 1 2 3 4 5 6 7 8 9 10 11 12 13	2,880 2,660 Water discharge (m3/s) 3,180 2,940 2,700 2,480 2,470 2,480 2,470 2,460 2,670 2,670 2,930 3,160 3,290 2,850 2,850 2,630	2,411 2,171 Sediment concentration (mg/l) 3,345 2,874 2,842 2,525 2,141 2,369 2,578 3,767 3,725 3,421 3,018 2,961 2,517	600 499 Sediment load (kt) 919 730 663 541 457 520 548 869 943 934 858 729 572			31 Day 1 2 3 4 5 6 7 7 8 9 10 11 12 13	3,580 Water discharge	3,650 Sediment concentration	1,129 Sedimer load
		30 31 Day 1 2 3 4 5 6 7 8 9 10 11 12 13 14	2,880 2,660 Water discharge (m3/s) 3,180 2,940 2,700 2,480 2,470 2,540 2,470 2,540 2,460 2,670 2,930 3,160 3,290 2,850 2,850 2,630 2,350	2,411 2,171 Sediment concentration (mg/l) 3,345 2,874 2,842 2,525 2,141 2,369 2,578 3,767 3,725 3,421 3,018 2,961 2,517 2,108	600 499 Sediment load (kt) 919 730 663 541 457 520 548 869 943 934 858 729 572 428			31 Day 1 2 3 4 5 6 7 7 8 9 10 11 12 13 14	3,580 Water discharge (m3/s)	3,650 Sediment concentration (mg/l)	1,129 Sedimer load (kt)
		30 31 Day 1 2 3 4 5 6 7 8 9 10 11 12 13	2,880 2,660 Water discharge (m3/s) 3,180 2,940 2,700 2,480 2,470 2,540 2,460 2,670 2,460 2,670 2,930 3,160 3,290 2,850 2,630 2,250 2,270	2,411 2,171 Sediment concentration (mg/l) 3,345 2,874 2,842 2,525 2,141 2,369 2,578 3,767 3,725 3,421 3,018 2,961 2,517 2,108 1,912	600 499 Sediment load (kt) 919 730 663 541 457 520 548 869 943 934 858 729 572 428 375			31 Day 1 2 3 4 5 6 7 7 8 9 9 10 11 12 13 14 15	3,580 Water discharge (m3/s)	3,650 Sediment concentration (mg/l)	1,129 Sedimen load (kt) 116
		30 31 Day 1 2 3 4 5 6 6 7 8 9 10 11 12 13 14 15 16	2,880 2,660 Water discharge (m3/s) 3,180 2,940 2,700 2,480 2,470 2,540 2,470 2,540 2,460 2,670 2,930 3,160 3,290 2,850 2,630 2,250 2,350 2,270 2,120	2,411 2,171 Sediment concentration (mg/l) 3,345 2,874 2,842 2,525 2,141 2,369 2,578 3,767 3,725 3,421 3,018 2,961 2,517 2,108 1,912 1,338	600 499 Sediment load (kt) 919 730 663 541 457 520 548 869 943 934 858 729 572 428 375 245			31 Day 1 2 3 4 4 5 6 7 7 8 9 9 10 11 11 12 13 14 15 16	3,580 Water discharge (m3/s) 1,230 980	3,650 Sediment concentration (mg/l) 1,089 507	1,129 Sedimen load (kt) 116 43
		30 31 Day 1 2 3 4 5 6 6 7 8 9 9 10 11 12 13 14 15 16 17	2,880 2,660 Water discharge (m3/s) 3,180 2,940 2,700 2,480 2,470 2,480 2,470 2,540 2,460 2,670 2,930 3,160 3,290 2,850 2,630 2,250 2,250 2,270 2,120 2,000	2,411 2,171 Sediment concentration (mg/l) 3,345 2,874 2,842 2,525 2,141 2,369 2,578 3,767 3,725 3,421 3,018 2,961 2,517 2,108 1,912 1,338 1,325	600 499 Sediment load (kt) 919 730 663 541 457 520 548 869 943 934 858 729 572 428 375 245 229			31 Day 1 2 3 4 5 6 7 7 8 9 9 10 11 12 13 14 15 16 17	3,580 Water discharge (m3/s) 1,230 980 830	3,650 Sediment concentration (mg/l) 1,089 507 363	1,129 Sedimen load (kt) 116 43
		30 31 Day 1 2 3 4 5 6 6 7 8 9 10 11 12 13 14 15 16 17 18	2,880 2,660 Water discharge (m3/s) 3,180 2,940 2,700 2,480 2,470 2,480 2,470 2,460 2,470 2,460 2,670 2,930 3,160 3,290 2,850 2	2,411 2,171 Sediment concentration (mg/l) 3,345 2,874 2,842 2,525 2,141 2,369 2,578 3,767 3,725 3,421 3,018 2,961 2,517 2,108 1,912 1,338 1,325 1,213	600 499 Sediment load (kt) 919 730 663 541 457 520 548 869 934 858 729 572 428 375 245 229 195			31 Day 1 2 3 4 4 5 6 7 7 8 9 9 10 11 12 13 14 15 16 17 18	3,580 Water discharge (m3/s) 1,230 980 830 1,030	3,650 Sediment concentration (mg/l) 1,089 507	1,129 Sedimen load (kt) 116 43 26 112
		30 31 Day 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19	2,880 2,660 Water discharge (m3/s) 3,180 2,940 2,700 2,480 2,470 2,480 2,470 2,460 2,470 2,460 2,470 2,460 2,470 2,460 2,670 2,930 3,160 3,290 2,850 2,940 2,850 2,850 2,850 2,940 2,850 2,850 2,970 2,850 2,970 2,850 2,970 2,850 2,970 2,850 2,970 2,970 2,850 2,970 2	2,411 2,171 Sediment concentration (mg/l) 3,345 2,874 2,842 2,525 2,141 2,369 2,578 3,767 3,725 3,421 3,018 2,961 2,517 2,108 1,912 1,338 1,325 1,213 1,304	600 499 Sediment load (kt) 919 730 663 541 457 520 548 869 943 934 858 729 572 428 375 245 229 195 196			31 Day 1 2 3 4 4 5 6 7 7 8 9 9 10 11 12 13 14 15 16 17 18 19	3,580 Water discharge (m3/s) 1,230 980 830 1,030 790	3,650 Sediment concentration (mg/l) 1,089 507 363 1,256 1,905	1,129 Sedimen load (kt) 116 43 26 112 130
		30 31 Day 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	2,880 2,660 Water discharge ( (m3/s) 3,180 2,940 2,700 2,480 2,470 2,470 2,460 2,470 2,460 2,470 2,460 2,470 2,460 2,470 2,930 3,160 3,290 2,850 2,630 2,850 2,630 2,850 2,630 2,850 2,850 2,630 2,850 2,850 2,630 2,850 2,630 2,850 2,850 2,630 2,850 2,850 2,630 2,850 2,940 2,850 2,850 2,940 2,850 2,850 2,940 2,850 2,940 2,850 2,940 2,940 2,850 2,940 2,940 2,850 2,940 2,940 2,850 2,940	2,411 2,171 Sediment concentration (mg/l) 3,345 2,874 2,842 2,525 2,141 2,369 2,578 3,767 3,725 3,421 3,018 2,961 2,517 2,108 1,912 1,338 1,325 1,213 1,304 1,220	600 499 Sediment load (kt) 919 730 663 541 457 520 548 869 943 934 858 729 572 428 375 245 229 195 196 175			31 Day 1 2 3 4 4 5 6 7 7 8 9 9 10 11 12 13 13 14 15 16 17 18 19 20	3,580 Water discharge (m3/s) 1,230 980 830 1,030 790 750	3,650 Sediment concentration (mg/l) 1,089 507 363 1,256 1,905 1,063	1,129 Sedimen load (kt) 116 43 26 112 130 69
		30 31 Day 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	2,880 2,660 Water discharge ( (m3/s) 3,180 2,940 2,700 2,480 2,470 2,470 2,460 2,470 2,460 2,470 2,460 2,460 2,930 3,160 3,290 2,850 2,630 2,850 2,630 2,350 2,270 2,120 2,000 1,860 1,740 1,660 1,700	2,411 2,171 Sediment concentration (mg/l) 3,345 2,874 2,842 2,525 2,141 2,369 2,578 3,767 3,725 3,421 3,018 2,961 2,517 2,108 1,912 1,338 1,325 1,213 1,304 1,220 1,008	600 499 Sediment load (kt) 919 730 663 541 457 520 548 869 943 934 858 729 572 428 375 245 229 195 196 175 148			31 Day 1 2 3 4 4 5 6 7 7 8 9 9 10 11 12 13 14 15 16 17 18 19	3,580 Water discharge (m3/s) 1,230 980 830 1,030 790 750 750	3,650 Sediment concentration (mg/l) 1,089 507 363 1,256 1,905 1,063 562	1,129 Sedimen load (kt) 116 43 26 112 130 69 36
		30 31 Day 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	2,880 2,660 Water discharge (m3/s) 3,180 2,940 2,700 2,480 2,470 2,460 2,470 2,540 2,470 2,540 2,460 2,670 2,930 3,160 3,290 2,850 2,630 2,270 2,120 2,270 2,120 2,000 1,860 1,740 1,660 1,700 1,680	2,411 2,171 Sediment concentration (mg/l) 3,345 2,874 2,842 2,525 2,141 2,369 2,578 3,767 3,725 3,421 3,018 2,961 2,517 2,108 1,912 1,338 1,325 1,213 1,304 1,220 1,008 1,102	600 499 Sediment load (kt) 919 730 663 541 457 520 548 869 943 934 858 729 572 428 375 245 229 195 196 175 148 160			31 Day 1 2 3 4 5 6 7 7 8 9 9 10 11 12 13 14 15 16 17 18 19 20 21 22	3,580 Water discharge (m3/s) 1,230 980 830 1,030 790 750 750 1,090	3,650 Sediment concentration (mg/l) 1,089 507 363 1,256 1,905 1,063 562 4,555	1,129 Sedimen load (kt) 116 43 26 112 130 69 36
		30 31 Day 1 2 3 4 5 6 7 8 9 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	2,880 2,660 Water discharge ( (m3/s) 3,180 2,940 2,700 2,480 2,470 2,470 2,460 2,470 2,460 2,470 2,460 2,460 2,930 3,160 3,290 2,850 2,630 2,850 2,630 2,350 2,270 2,120 2,000 1,860 1,740 1,660 1,700	2,411 2,171 Sediment concentration (mg/l) 3,345 2,874 2,842 2,525 2,141 2,369 2,578 3,767 3,725 3,421 3,018 2,961 2,517 2,108 1,912 1,338 1,325 1,213 1,304 1,220 1,008	600 499 Sediment load (kt) 919 730 663 541 457 520 548 869 943 934 858 729 572 428 375 245 229 195 196 175 148			31 Day 1 2 3 4 4 5 6 7 8 9 9 10 11 12 13 14 15 16 17 18 19 20 21	3,580 Water discharge (m3/s) 1,230 980 830 1,030 790 750 750	3,650 Sediment concentration (mg/l) 1,089 507 363 1,256 1,905 1,063 562	1,129 Sedimen load (kt) 116 43 26 112 130 69 36 429
		30 31 Day 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	2,880 2,660 Water discharge ( (m3/s) 3,180 2,940 2,700 2,480 2,470 2,460 2,470 2,460 2,470 2,460 2,470 2,460 2,670 2,930 3,160 3,290 2,850 2,250 2,250 2,250 2,250 2,250 2,250 2,250 2,250 2,120 2,200 1,860 1,740 1,660 1,760 1,760 1,740	2,411 2,171 Sediment concentration (mg/l) 3,345 2,874 2,842 2,525 2,141 2,369 2,578 3,767 3,725 3,421 3,018 2,961 2,517 2,108 1,912 1,338 1,325 1,213 1,304 1,220 1,008 1,102 1,138 905	600 499 Sediment load (kt) 919 730 663 541 457 520 548 869 943 934 858 729 572 428 375 245 229 195 196 175 148 160 173 136			31 Day 1 2 3 4 4 5 6 7 7 8 9 9 10 11 12 13 14 15 16 17 18 18 9 20 21 22 23 24	3,580 Water discharge (m3/s) 1,230 980 830 1,030 790 750 750 1,090 1,040 1,020	3,650 Sediment concentration (mg/l) 1,089 507 363 1,256 1,905 1,063 562 4,555 1,924 782	1,129 Sedimen load (kt) 116 43 26 112 130 69 36 429 173 69
		30 31 Day 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	2,880 2,660 Water discharge ( (m3/s) 3,180 2,940 2,700 2,480 2,470 2,460 2,470 2,460 2,470 2,460 2,670 2,930 3,160 3,290 2,850 2,250 2,250 2,250 2,250 2,250 2,250 2,250 2,120 2,250 2,120 2,200 1,860 1,740 1,660 1,760 1,760 1,760 1,760 1,760	2,411 2,171 Sediment concentration (mg/l) 3,345 2,874 2,842 2,525 2,141 2,369 2,578 3,767 3,725 3,421 3,018 2,961 2,517 2,108 1,912 1,338 1,325 1,213 1,304 1,220 1,008 1,102 1,138 905 823	600 499 Sediment load (kt) 919 730 663 541 457 520 548 869 943 934 858 729 572 428 375 245 229 195 196 175 148 160 173 136 113			31 Day 1 2 3 4 5 6 6 7 8 9 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	3,580 Water discharge (m3/s) 1,230 980 830 1,030 790 750 750 1,090 1,040	3,650 Sediment concentration (mg/l) 1,089 507 363 1,256 1,905 1,063 562 4,555 1,924	1,129 Sedimen load (kt) 116 43 26 112 130 69 36 429 173 69
		30 31 Day 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	2,880 2,660 Water discharge ( (m3/s) 3,180 2,940 2,700 2,480 2,470 2,460 2,470 2,460 2,470 2,460 2,470 2,460 2,670 2,930 3,160 3,290 2,850 2,250 2,250 2,250 2,250 2,250 2,250 2,250 2,250 2,120 2,200 1,860 1,740 1,660 1,760 1,760 1,740	2,411 2,171 Sediment concentration (mg/l) 3,345 2,874 2,842 2,525 2,141 2,369 2,578 3,767 3,725 3,421 3,018 2,961 2,517 2,108 1,912 1,338 1,325 1,213 1,304 1,220 1,008 1,102 1,138 905 823 735	600 499 Sediment load (kt) 919 730 663 541 457 520 548 869 943 934 858 729 572 428 375 245 229 195 196 175 148 160 173 136			31 Day 1 2 3 4 4 5 6 7 7 8 9 9 10 11 12 13 14 15 16 17 18 18 9 20 21 22 23 24	3,580 Water discharge (m3/s) 1,230 980 830 1,030 790 750 750 1,090 1,040 1,020	3,650 Sediment concentration (mg/l) 1,089 507 363 1,256 1,905 1,063 562 4,555 1,924 782	1,129 Sedimer load (kt) 116 43 26 112 130 69 36 429 173
		30 31 Day 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	2,880 2,660 Water discharge ( (m3/s) 3,180 2,940 2,700 2,480 2,470 2,460 2,470 2,460 2,470 2,460 2,670 2,930 3,160 3,290 2,850 2,250 2,250 2,250 2,250 2,250 2,250 2,250 2,120 2,250 2,120 2,200 1,860 1,740 1,660 1,760 1,760 1,760 1,760 1,760	2,411 2,171 Sediment concentration (mg/l) 3,345 2,874 2,842 2,525 2,141 2,369 2,578 3,767 3,725 3,421 3,018 2,961 2,517 2,108 1,912 1,338 1,325 1,213 1,304 1,220 1,008 1,102 1,138 905 823	600 499 Sediment load (kt) 919 730 663 541 457 520 548 869 943 934 858 729 572 428 375 245 229 195 196 175 148 160 173 136 113			31 Day 1 2 3 4 4 5 6 7 7 8 9 9 10 11 12 13 14 15 16 17 18 18 9 20 21 22 23 24 25	3,580 Water discharge (m3/s) 1,230 980 830 1,030 790 750 750 1,090 1,040 1,020 1,050	3,650 Sediment concentration (mg/l) 1,089 507 363 1,256 1,905 1,063 562 4,555 1,924 782 358	1,129 Sedimer load (kt) 116 43 26 112 130 69 36 429 173 69 33
		30 31 Day 1 2 3 4 5 6 7 8 9 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26	2,880 2,660 Water discharge ( (m3/s) 3,180 2,940 2,700 2,480 2,470 2,460 2,470 2,460 2,470 2,460 2,470 2,930 3,160 3,290 2,850 2,630 2,250 2,250 2,250 2,250 2,350 2,270 2,120 2,000 1,860 1,740 1,660 1,760 1,760 1,760 1,760 1,740 1,590 1,480	2,411 2,171 Sediment concentration (mg/l) 3,345 2,874 2,842 2,525 2,141 2,369 2,578 3,767 3,725 3,421 3,018 2,961 2,517 2,108 1,912 1,338 1,325 1,213 1,304 1,220 1,008 1,102 1,138 905 823 735	600 499 Sediment load (kt) 919 730 663 541 457 520 548 869 943 934 858 729 572 428 375 245 229 195 196 175 148 160 173 136 113 94			31 Day 1 2 3 4 4 5 6 6 7 8 9 9 10 11 12 13 14 15 16 17 18 18 9 20 21 22 23 24 25 26	3,580 Water discharge (m3/s) 1,230 980 830 1,030 790 750 750 1,090 1,040 1,020 1,050 1,140	3,650 Sediment concentration (mg/l) 1,089 507 363 1,256 1,905 1,063 562 4,555 1,924 782 358 462	1,129 Sedimer load (kt) 116 43 26 112 130 69 36 429 173 69 33 46
		30 31 Day 1 2 3 4 5 6 7 8 9 10 11 22 3 4 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27	2,880 2,660 Water discharge ( (m3/s) 3,180 2,940 2,700 2,480 2,470 2,460 2,470 2,460 2,470 2,460 2,470 2,540 2,470 2,930 3,160 3,290 2,850 2,250 2,250 2,250 2,250 2,250 2,250 2,250 2,250 2,250 2,250 2,120 2,200 1,860 1,740 1,660 1,760 1,760 1,760 1,760 1,760 1,760 1,740 1,590 1,480 1,430	2,411 2,171 Sediment concentration (mg/l) 3,345 2,874 2,842 2,525 2,141 2,369 2,578 3,767 3,725 3,421 3,018 2,961 2,517 2,108 1,912 1,338 1,325 1,213 1,304 1,220 1,008 1,102 1,138 905 823 735 672	600 499 Sediment load (kt) 919 730 663 541 457 520 548 869 943 934 858 729 572 428 375 572 428 375 245 229 195 196 175 148 160 173 136 113 94 83			31 Day 1 2 3 4 4 5 6 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 3 24 25 26 27	3,580 Water discharge (m3/s) 1,230 980 830 1,030 750 750 750 750 1,090 1,040 1,020 1,050 1,140 1,380	3,650 Sediment concentration (mg/l) 1,089 507 363 1,256 1,905 1,063 562 4,555 1,924 782 358 462 491	1,129 Sedimen load (kt) 116 43 26 112 130 69 36 429 173 69 33 46 59

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Year Mont	h Day		Sediment	Sediment	Year	Month	Day	Water		Sediment
			concentration			1			concentration	
1111 090		(m3/s)	(mg/l)	(kt)	1989	· A110		(m3/s)	(mg/l)	<u>(kı)</u>
989 JUL	. 1	1,870 2,080	2,293 3,798	371 683	1202	AUG.	1 2		8,402 7,833	4,326
	3	-	1,789	385			3		4,829	3,546
	4	-	760	121			4		2,976	1,873 926
	5	-	676	69			5		3,887	1,767
	6		830	83		·	6		3,078	755
	7	-	2,676	345			7		2,141	503
	8	-	2,252	329			8	•	3,137	764
	9	•	2,317	400			9		3,063	744
	10	-	1,723	308	•		10	•	5,256	1,362
	11	2,940	10,399	2,642			11	3,570	6,394	1,972
	12	4,920	24,365	10,357			12	3,760	5,442	1,768
	13	2,540	5,586	1,226			- 13	4,310	7,314	2,724
	14	3,480	4,393	1,321			14	4,200	5,169	1,876
	15	4,520	9,657	3,771			15	3,800	3,797	1,247
1.11	16	4,990	9,655	4,163			16	3,730	3,856	1,243
	17	3,310	4,228	1,209			17	3,740	3,653	1,180
	18	2,460	1,878	399			18	3,770	3,572	1,164
	19	3,580	1,366	423			19	3,870	3,977	1,330
	-20	2,360	2,741	559			20	3,910	3,267	1,104
	21	2,740	5,436	1,287			21	4,620	6,374	2,544
	22	2,730	4,117	971			22	5,310	8,243	3,782
	23	2,840	5,939	1,457			23	4,220	5,651	2,061
	24	2,530	3,188	697			24	4,460	3,849	1,483
	25	2,280	1,960	386			25	4,690	4,353	1,764
	26	3,930	2,393	813			26	5,010	7,724	3,344
	27	2,620	2,573	582			27	4,850	6,152	2,578
	28	2,720	2,218	521			- 28	5,820	6,166	3,101
	- 00	3,520	14,969	4,553			29	7,050	7,201	4,386
	29								1 A A A A A A A A A A A A A A A A A A A	-
	30	4,580	9,751	3,858			30	5,070	6,384	Z,796
'ear Month	30 31 Day	4,580 5,380 Water	9,335 Sediment	4,339 Sediment	Year 1	Month	30 31 Day	5,060 Water	3,806 Sediment S	
ear Month	30 31 Day	4,580 5,380 Water discharge co	9,335 Sediment Soncentration	4,339 Sediment load	Year	Month	31	5,060 Water discharge	3,806 Sediment S concentration	1,664 Sediment Ioad
	30 31 Day	4,580 5,380 Water discharge co (m3/s)	9,335 Sediment Soncentration (mg/l)	4,339 Sediment load (kt)			31 Day	5,060 Water	3,806 Sediment S	1,664 Sediment
	30 31 Day	4,580 5,380 Water discharge co (m3/s) 4,740	9,335 Sediment Soncentration (mg/l) 4,120	4,339 Sediment load (kt) 1,687	Year 1 1990		31 Day 1	5,060 Water discharge (m3/s)	3,806 Sediment S concentration (mg/l)	1,664 Sediment Ioad (kt)
	30 31 Day 1 2	4,580 5,380 Water discharge c (m3/s) 4,740 4,870	9,335 Sediment S oncentration (mg/) 4,120 4,637	4,339 Sediment load (kt) 1,687 1,951		AUG.	31 Day 1 2	5,060 Water discharge (m3/s) 4,020	3,806 Sediment S concentration (mg/l) 4,491	1,664 Sediment load (kt) 1,560
	30 31 Day	4,580 5,380 Water discharge c (m3/s) 4,740 4,870 4,410	9,335 Sediment S oncentration (mg/) 4,120 4,637 4,050	4,339 Sediment load (kt) 1,687 1,951 1,543		AUG.	31 Day 1 2 3	5,060 Water discharge (m3/s) 4,020 3,650	3,806 Sediment S concentration (mg/l) 4,491 1,611	1,664 Sediment load (kt) 1,560 508
	30 31 Day 1 2 3 4	4,580 5,380 Water discharge c (m3/s) 4,740 4,870 4,410 3,880	9,335 Sediment S oncentration (mg/) 4,120 4,637 4,050 3,168	4,339 Sediment load (kt) 1,687 1,951 1,543 1,062		AUG.	31 Day 1 2 3 4	5,060 Water discharge (m3/s) 4,020 3,650 4,370	3,806 Sediment S concentration (mg/l) 4,491 1,611 1,594	1,664 Sediment load (kt) 1,560 508 602
	30 31 Day 1 2 3 4 5	4,580 5,380 Water discharge c (m3/s) 4,740 4,870 4,410 3,880 3,390	9,335 Sediment 5 oncentration (mg/) 4,120 4,637 4,050 3,168 2,215	4,339 Sediment load (kt) 1,687 1,951 1,543 1,062 649		AUG.	31 Day 1 2 3 4 5	5,060 Water discharge (m3/s) 4,020 3,650 4,370 3,530	3,806 Sediment S concentration (mg/l) 4,491 1,611 1,594 1,246	1,664 Sediment load (kt) 1,560 508 602 380
	30 31 Day 1 2 3 4 5 6	4,580 5,380 Water discharge c (m3/s) 4,740 4,870 4,410 3,880 3,390 3,600	9,335 Sediment 5 oncentration (mg/) 4,120 4,637 4,050 3,168 2,215 3,561	4,339 Sediment load (k1) 1,687 1,951 1,543 1,062 649 1,108		AUG.	31 Day 1 2 3 4 5 6	5,060 Water discharge (m3/s) 4,020 3,650 4,370 3,530 920	3,806 Sediment S concentration (mg/l) 4,491 1,611 1,594 1,246 5,347	1,664 iediment load (kt) 1,560 508 602 380 425
	30 31 Day 1 2 3 4 5 6 7	4,580 5,380 Water discharge c (m3/s) 4,740 4,870 4,410 3,880 3,390 3,600 3,200	9,335 Sediment 5 oncentration (mg/) 4,120 4,637 4,050 3,168 2,215 3,561 2,643	4,339 Sediment load (k1) 1,687 1,951 1,543 1,062 649 1,108 731		AUG.	31 Day 1 2 3 4 5 6 7	5,060 Water discharge (m3/s) 4,020 3,650 4,370 3,530 920 5,190	3,806 Sediment S concentration (mg/l) 4,491 1,611 1,594 1,246 5,347 2,582	1,664 Sediment load (kt) 1,560 508 602 380 425 1,158
	30 31 Day 1 2 3 4 5 6 7 8	4,580 5,380 Water discharge c (m3/s) 4,740 4,870 4,410 3,880 3,390 3,600 3,200 2,870	9,335 Sediment Soncentration (mg/) 4,120 4,637 4,050 3,168 2,215 3,561 2,643 1,662	4,339 Sediment load (kt) 1,687 1,951 1,543 1,062 649 1,108 731 412		AUG.	31 Day 1 2 3 4 5 6 7 8	5,060 Water discharge (m3/s) 4,020 3,650 4,370 3,530 920 5,190 4,620	3,806 Sediment S concentration (mg/l) 4,491 1,611 1,594 1,246 5,347 2,582 1,964	1,664 Sediment load (kt) 1,560 508 602 380 425 1,158 784
	30 31 Day 1 2 3 4 5 6 7 8 9	4,580 5,380 Water discharge c (m3/s) 4,740 4,870 4,410 3,880 3,390 3,600 3,200 2,870 2,610	9,335 Sediment 5 oncentration (mg/) 4,120 4,637 4,050 3,168 2,215 3,561 2,643 1,662 1,366	4,339 Sediment load (kt) 1,687 1,951 1,543 1,062 649 1,108 731 412 308		AUG.	31 Day 1 2 3 4 5 6 7 8 9	5,060 Water discharge (m3/s) 4,020 3,650 4,370 3,530 920 5,190 4,620 4,780	3,806 Sediment S concentration (mg/l) 4,491 1,611 1,594 1,246 5,347 2,582 1,964 1,649	1,664 Sediment load (kt) 1,560 508 602 380 425 1,158 784 681
	30 31 Day 1 2 3 4 5 6 7 8	4,580 5,380 Water discharge c (m3/s) 4,740 4,870 4,410 3,880 3,390 3,600 3,200 2,870 2,610 2,440	9,335 Sediment 5 oncentration (mg/) 4,120 4,637 4,050 3,168 2,215 3,561 2,643 1,662 1,366 1,659	4,339 Sediment load (kt) 1,687 1,951 1,543 1,062 649 1,108 731 412 308 350		AUG.	31 Day 1 2 3 4 5 6 7 8 9 10	5,060 Water discharge (m3/s) 4,020 3,650 4,370 3,530 920 5,190 4,620 4,780 5,450	3,806 Sediment S concentration (mg/l) 4,491 1,611 1,594 1,246 5,347 2,582 1,964 1,649 2,427	1,664 Sediment load (kt) 1,560 508 602 380 425 1,158 784 681 1,143
	30 31 Day 1 2 3 4 5 6 7 8 9 10	4,580 5,380 Water discharge c (m3/s) 4,740 4,870 4,410 3,880 3,390 3,600 3,200 2,870 2,610 2,440 2,530	9,335 Sediment Soncentration (mg/) 4,120 4,637 4,050 3,168 2,215 3,561 2,643 1,662 1,366 1,659 3,854	4,339 Sediment load (kt) 1,687 1,951 1,543 1,062 649 1,108 731 412 308 350 842		AUG.	31 Day 1 2 3 4 5 6 7 8 9 10 11	5,060 Water discharge (m3/s) 4,020 3,650 4,370 3,530 920 5,190 4,620 4,780 5,450 5,190	3,806 Sediment S concentration (mg/l) 4,491 1,611 1,594 1,246 5,347 2,582 1,964 1,649 2,427 1,780	1,664 Sediment load (kt) 1,560 508 602 380 425 1,158 784 681 1,143 798
	30 31 Day 1 2 3 4 5 6 7 8 9 10 11 12	4,580 5,380 Water discharge c (m3/s) 4,740 4,870 4,410 3,880 3,390 3,600 3,200 2,870 2,610 2,440 2,530 2,380	9,335 Sediment Soncentration (mg/) 4,120 4,637 4,050 3,168 2,215 3,561 2,643 1,662 1,366 1,659 3,854 1,669	4,339 Sediment load (kt) 1,687 1,951 1,543 1,062 649 1,108 731 412 308 350 842 343		AUG.	31 Day 1 2 3 4 5 6 7 8 9 10 11 12	5,060 Water discharge (m3/s) 4,020 3,650 4,370 3,530 920 5,190 4,620 4,780 5,450 5,190 5,530	3,806 Sediment S concentration (mg/l) 4,491 1,611 1,594 1,246 5,347 2,582 1,964 1,649 2,427 1,780 2,721	1,664 Sediment load (kt) 1,560 508 602 380 425 1,158 784 681 1,143 798 1,300
	30 31 Day 1 2 3 4 5 6 7 8 9 10 11 12 13	4,580 5,380 Water discharge c (m3/s) 4,740 4,870 4,410 3,880 3,390 3,600 3,200 2,870 2,610 2,610 2,610 2,610 2,530 2,870 2,530 2,380 2,450	9,335 Sediment Soncentration (mg/) 4,120 4,637 4,050 3,168 2,215 3,561 2,643 1,662 1,366 1,659 3,854 1,669 1,806	4,339 Sediment load (kt) 1,687 1,951 1,543 1,062 649 1,108 731 412 308 350 842 343 382		AUG.	31 Day 1 2 3 4 5 6 7 8 9 10 11 12 13	5,060 Water discharge (m3/s) 4,020 3,650 4,370 3,530 920 5,190 4,620 4,780 5,450 5,190 5,530 9,260	3,806 Sediment S concentration (mg/l) 4,491 1,611 1,594 1,246 5,347 2,582 1,964 1,649 2,427 1,780 2,721 5,143	1,664 Sediment load (kt) 1,560 508 602 380 425 1,158 784 681 1,143 798 1,300 4,115
	30 31 Day 1 2 3 4 5 6 7 8 9 10 11 12 13 14	4,580 5,380 Water discharge c (m3/s) 4,740 4,870 4,410 3,880 3,390 3,600 3,200 2,870 2,610 2,610 2,610 2,610 2,610 2,610 2,610 2,610 2,610 2,530 2,570	9,335 Sediment 5 oncentration (mg/l) 4,120 4,637 4,050 3,168 2,215 3,561 2,643 1,662 1,366 1,659 3,854 1,669 1,806 2,395	4,339 Sediment load (k1) 1,687 1,951 1,543 1,062 649 1,108 731 412 308 350 842 343 382 532		AUG.	31 Day 1 2 3 4 5 6 7 8 9 10 11 12 13 14	5,060 Water discharge (m3/s) 4,020 3,650 4,370 3,530 920 5,190 4,620 4,780 5,450 5,190 5,530 9,260 7,470	3,806 Sediment S concentration (mg/) 4,491 1,611 1,594 1,246 5,347 2,582 1,964 1,649 2,427 1,780 2,721 5,143 913	1,664 Sediment load (k1) 1,560 508 602 380 425 1,158 784 681 1,143 798 1,300 4,115 589
	30 31 Day 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	4,580 5,380 Water discharge c (m3/s) 4,740 4,870 4,410 3,880 3,390 3,600 3,200 2,870 2,610 2,440 2,530 2,510 2,550	9,335 Sediment 5 oncentration (mg/l) 4,120 4,637 4,050 3,168 2,215 3,561 2,643 1,662 1,366 1,659 3,854 1,669 1,806 2,395 1,499	4,339 Sediment load (k1) 1,687 1,951 1,543 1,062 649 1,108 731 412 308 350 842 343 382 532 330		AUG.	31 Day 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	5,060 Water discharge (m3/s) 4,020 3,650 4,370 3,530 920 5,190 4,620 4,780 5,450 5,190 5,530 9,260 7,470 6,370	3,806 Sediment S concentration (mg/) 4,491 1,611 1,594 1,246 5,347 2,582 1,964 1,649 2,427 1,780 2,721 5,143 913 2,268	1,664 Sediment load (k1) 1,560 508 602 380 425 1,158 784 681 1,143 798 1,300 4,115 589 1,248
	30 31 Day 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	4,580 5,380 Water discharge c (m3/s) 4,740 4,870 4,410 3,880 3,390 3,600 3,200 2,870 2,610 2,610 2,610 2,610 2,610 2,610 2,610 2,530 2,550 2,550 2,500	9,335 Sediment 5 oncentration (mg/l) 4,120 4,637 4,050 3,168 2,215 3,561 2,643 1,662 1,366 1,659 3,854 1,669 1,806 2,395 1,499 1,095	4,339 Sediment load (k1) 1,687 1,951 1,543 1,062 649 1,108 731 412 308 350 842 343 382 532 330 237		AUG.	31 Day 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	5,060 Water discharge (m3/s) 4,020 3,650 4,370 3,530 920 5,190 4,620 4,780 5,450 5,190 5,530 9,260 7,470 6,370 5,770	3,806 Sediment S concentration (mg/l) 4,491 1,611 1,594 1,246 5,347 2,582 1,964 1,649 2,427 1,780 2,721 5,143 913 2,268 1,753	1,664 Sediment load (k1) 1,560 508 602 380 425 1,158 784 681 1,143 798 1,300 4,115 589 1,248 874
	30 31 Day 1 2 3 4 5 6 7 7 8 9 10 11 12 13 14 15 16 17	4,580 5,380 Water discharge c (m3/s) 4,740 4,870 4,410 3,880 3,390 3,600 3,200 2,870 2,610 2,440 2,530 2,530 2,550 2,550 2,500 2,440	9,335 Sediment 5 oncentration (mg/l) 4,120 4,637 4,050 3,168 2,215 3,561 2,643 1,662 1,366 1,659 3,854 1,669 1,806 2,395 1,499 1,095 962	4,339 Sediment load (k1) 1,687 1,951 1,543 1,062 649 1,108 731 412 308 350 842 343 382 532 330 237 203		AUG.	31 Day 1 2 3 4 5 6 6 7 8 9 10 11 12 13 14 15 16 17	5,060 Water discharge (m3/s) 4,020 3,650 4,370 3,530 920 5,190 4,620 4,780 5,450 5,190 5,530 9,260 7,470 6,370 5,770 5,600	3,806 Sediment S concentration (mg/l) 4,491 1,611 1,594 1,246 5,347 2,582 1,964 1,649 2,427 1,780 2,721 5,143 913 2,268 1,753 1,759	1,664 Sediment load (kt) 1,560 508 602 380 425 1,158 784 681 1,143 798 1,300 4,115 589 1,248 874 851
	30 31 Day 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	4,580 5,380 Water discharge c (m3/s) 4,740 4,870 4,410 3,880 3,390 3,600 3,200 2,870 2,610 2,440 2,530 2,530 2,550 2,550 2,500 2,440 2,550 2,500 2,440 2,420	9,335 Sediment 5 oncentration (mg/l) 4,120 4,637 4,050 3,168 2,215 3,561 2,643 1,662 1,366 1,659 3,854 1,669 1,806 2,395 1,499 1,095 962 1,262	4,339 Sediment load (k1) 1,687 1,951 1,543 1,062 649 1,108 731 412 308 350 842 343 382 532 330 237 203 264		AUG.	31 Day 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	5,060 Water discharge (m3/s) 4,020 3,650 4,370 3,530 920 5,190 4,620 4,780 5,450 5,190 5,530 9,260 7,470 6,370 5,770 5,600 5,860	3,806 Sediment S concentration (mg/l) 4,491 1,611 1,594 1,246 5,347 2,582 1,964 1,649 2,427 1,780 2,721 5,143 913 2,268 1,753 1,759 2,475	1,664 ediment load (kt) 1,560 508 602 380 425 1,158 784 681 1,143 798 1,300 4,115 589 1,248 874 851 1,253
	30 31 Day 1 2 3 4 5 6 7 7 8 9 10 11 12 13 14 15 16 17 18 19	4,580 5,380 Water discharge cc (m3/s) 4,740 4,870 4,410 3,880 3,390 3,600 3,200 2,870 2,610 2,440 2,530 2,550 2,550 2,550 2,500 2,440 2,550 2,500 2,440 2,360	9,335 Sediment 5 oncentration (mg/l) 4,120 4,637 4,050 3,168 2,215 3,561 2,643 1,662 1,366 1,659 3,854 1,669 1,806 2,395 1,499 1,095 962 1,262 1,262 1,065	4,339 Sediment load (k1) 1,687 1,951 1,543 1,062 649 1,108 731 412 308 350 842 343 382 532 330 237 203 264 217		AUG.	31 Day 1 2 3 4 5 6 7 8 9 9 0 10 11 12 13 14 15 16 17 18 19	5,060 Water discharge (m3/s) 4,020 3,650 4,370 3,530 920 5,190 4,620 4,780 5,450 5,190 5,530 9,260 7,470 6,370 5,770 5,600 5,860 5,630	3,806 Sediment S concentration (mg/l) 4,491 1,611 1,594 1,246 5,347 2,582 1,964 1,649 2,427 1,780 2,721 5,143 913 2,268 1,753 1,759 2,475 1,951	1,664 ediment load (kt) 1,560 508 602 380 425 1,158 784 681 1,143 798 1,300 4,115 589 1,248 874 851 1,253 949
	30 31 Day 1 2 3 4 5 6 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	4,580 5,380 Water discharge cc (m3/s) 4,740 4,870 4,410 3,880 3,390 3,600 3,200 2,870 2,610 2,440 2,530 2,550 2,550 2,550 2,550 2,550 2,550 2,500 2,440 2,550 2,550 2,500 2,440 2,550 2,500 2,420 2,360 2,410 2,360 2,610	9,335 Sediment oncentration (mg/l) 4,120 4,637 4,050 3,168 2,215 3,561 2,643 1,662 1,366 1,659 3,854 1,669 1,806 2,395 1,499 1,095 962 1,262 1,265 2,842	4,339 Sediment load (k1) 1,687 1,951 1,543 1,062 649 1,108 731 412 308 350 842 343 382 532 330 237 203 264 217 641		AUG.	31 Day 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	5,060 Water discharge (m3/s) 4,020 3,650 4,370 3,530 920 5,190 4,620 4,780 5,190 5,190 5,530 9,260 7,470 6,370 5,770 5,600 5,860 5,630 5,140	3,806 Sediment S concentration (mg/l) 4,491 1,611 1,594 1,246 5,347 2,582 1,964 1,649 2,427 1,780 2,721 5,143 913 2,268 1,753 1,759 2,475 1,951 1,578	1,664 ediment load (kt) 1,560 508 602 380 425 1,158 784 681 1,143 798 1,300 4,115 589 1,248 874 851 1,253 949 701
Year Month 989 SEP.	30 31 Day 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	4,580 5,380 Water discharge cc (m3/s) 4,740 4,870 4,410 3,880 3,390 3,600 3,200 2,870 2,610 2,440 2,530 2,550 2,550 2,550 2,550 2,550 2,440 2,550 2,550 2,560 2,440 2,550 2,560 2,440 2,550 2,560 2,440 2,550 2,560 2,580	9,335 Sediment oncentration (mg/l) 4,120 4,637 4,050 3,168 2,215 3,561 2,643 1,662 1,366 1,659 3,854 1,669 1,806 2,395 1,499 1,095 962 1,262 1,065 2,842 2,053	4,339 Sediment load (k1) 1,687 1,951 1,543 1,062 649 1,108 731 412 308 350 842 343 382 532 330 237 203 264 217 641 458		AUG.	31 Day 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	5,060 Water discharge (m3/s) 4,020 3,650 4,370 3,530 920 5,190 4,620 4,620 4,620 4,620 4,620 5,190 5,530 9,260 7,470 6,370 5,530 9,260 7,470 5,530 5,530 5,140 4,690	3,806 Sediment S concentration (mg/l) 4,491 1,611 1,594 1,246 5,347 2,582 1,964 1,649 2,427 1,780 2,721 5,143 913 2,268 1,753 1,759 2,475 1,951 1,578 1,515	1,664 Eediment load (kt) 1,560 508 602 380 425 1,158 784 681 1,143 798 1,300 4,115 589 1,248 874 851 1,253 949 701 614
	30 31 Day 1 2 3 4 5 6 7 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	4,580 5,380 Water discharge cr (m3/s) 4,740 4,870 4,410 3,880 3,390 3,200 2,870 2,610 2,440 2,530 2,570 2,550 2,550 2,550 2,500 2,440 2,550 2,500 2,440 2,550 2,500 2,440 2,550 2,500 2,440 2,550 2,500 2,440 2,550 2,500 2,440 2,550 2,500 2,440 2,550 2,500 2,440 2,550 2,500 2,440 2,550 2,400	9,335 Sediment oncentration (mg/l) 4,120 4,637 4,050 3,168 2,215 3,561 2,643 1,662 1,366 1,659 3,854 1,669 1,806 2,395 1,499 1,095 962 1,262 1,065 2,842 2,053 1,279	4,339 Sediment load (k1) 1,687 1,951 1,543 1,062 649 1,108 731 412 308 350 842 343 382 532 330 237 203 264 217 641 458 265		AUG.	31 Day 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	5,060 Water discharge (m3/s) 4,020 3,650 4,370 3,530 920 5,190 4,620 4,780 5,450 5,190 5,450 5,190 5,530 9,260 7,470 6,370 5,770 5,600 5,860 5,630 5,140 4,620	3,806 Sediment S concentration (mg/l) 4,491 1,611 1,594 1,246 5,347 2,582 1,964 1,649 2,427 1,780 2,721 5,143 913 2,268 1,753 1,759 2,475 1,951 1,578 1,515 1,325	1,664 ediment load (kt) 1,560 508 602 380 425 1,158 784 681 1,158 784 681 1,143 798 1,300 4,115 589 1,248 874 851 1,253 949 701 614 529
	30 31 Day 1 2 3 4 5 6 7 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	4,580 5,380 Water discharge cr (m3/s) 4,740 4,870 4,410 3,880 3,390 3,200 2,870 2,610 2,440 2,530 2,570 2,550 2,550 2,550 2,500 2,440 2,550 2,500 2,440 2,550 2,500 2,440 2,550 2,500 2,400 2,580 2,400 2,300	9,335 Sediment oncentration (mg/l) 4,120 4,637 4,050 3,168 2,215 3,561 2,643 1,662 1,366 1,659 3,854 1,669 1,806 2,395 1,499 1,095 962 1,262 1,065 2,842 2,053 1,279 1,125	4,339 Sediment load (k1) 1,687 1,951 1,543 1,062 649 1,108 731 412 308 350 842 343 382 532 330 237 203 264 217 641 458 265 224		AUG.	31 Day 1 2 3 4 5 6 7 8 9 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	5,060 Water discharge (m3/s) 4,020 3,650 4,370 3,530 920 5,190 4,620 4,780 5,450 5,190 5,450 5,190 5,530 9,260 7,470 6,370 5,770 5,600 5,630 5,630 5,140 4,620 4,620 4,410	3,806 Sediment S concentration (mg/l) 4,491 1,611 1,594 1,246 5,347 2,582 1,964 1,649 2,427 1,780 2,721 5,143 913 2,268 1,753 1,759 2,475 1,951 1,578 1,515 1,325 1,430	1,664 ediment load (kt) 1,560 508 602 380 425 1,158 784 681 1,143 798 1,300 4,115 589 1,248 874 851 1,253 949 701 614 529 545
	30 31 Day 1 2 3 4 5 6 7 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	4,580 5,380 Water discharge cr (m3/s) 4,740 4,870 4,410 3,880 3,390 3,200 2,870 2,610 2,440 2,530 2,570 2,550 2,550 2,550 2,500 2,440 2,550 2,550 2,500 2,440 2,550 2,500 2,420 2,550 2,500 2,400 2,300 2,300 2,200	9,335 Sediment oncentration (mg/l) 4,120 4,637 4,050 3,168 2,215 3,561 2,643 1,662 1,366 1,659 3,854 1,669 1,806 2,395 1,499 1,095 962 1,262 1,262 1,265 2,842 2,053 1,279 1,125 1,313	4,339 Sediment load (k1) 1,687 1,951 1,543 1,062 649 1,108 731 412 308 350 842 343 382 532 330 237 203 264 217 641 458 265 224 250		AUG.	31 Day 1 2 3 4 5 6 7 8 9 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	5,060 Water discharge (m3/s) 4,020 3,650 4,370 3,530 920 5,190 4,620 4,780 5,450 5,190 5,450 5,190 5,530 9,260 7,470 6,370 5,770 5,600 5,630 5,630 5,140 4,620 4,620 4,620 4,620	3,806 Sediment S concentration (mg/l) 4,491 1,611 1,594 1,246 5,347 2,582 1,964 1,649 2,427 1,780 2,721 5,143 913 2,268 1,753 1,759 2,475 1,951 1,578 1,515 1,325 1,430 1,626	1,664 ediment load (kt) 1,560 508 602 380 425 1,158 784 681 1,158 784 681 1,143 798 1,300 4,115 589 1,248 874 851 1,253 949 701 614 529 545 496
	30 31 Day 1 2 3 4 5 6 7 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	4,580 5,380 Water discharge c. (m3/s) 4,740 4,870 4,410 3,880 3,390 3,200 2,870 2,610 2,440 2,530 2,450 2,500 2,550 2,500 2,520 2,550 2,500 2,000 2	9,335 Sediment oncentration (mg/) 4,120 4,637 4,050 3,168 2,215 3,561 2,643 1,662 1,366 1,659 3,854 1,669 1,806 2,395 1,499 1,095 962 1,262 1,065 2,842 2,053 1,279 1,125 1,313 1,008	4,339 Sediment load (k1) 1,687 1,951 1,543 1,062 649 1,108 731 412 308 350 842 343 350 842 343 382 532 330 237 203 264 217 641 458 265 224 250 182		AUG.	31 Day 1 2 3 4 5 6 7 8 9 0 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	5,060 Water discharge (m3/s) 4,020 3,650 4,370 3,530 920 5,190 4,620 4,780 5,450 5,450 5,190 5,450 5,190 5,530 9,260 7,470 6,370 5,770 5,600 5,630 5,540 5,530 5,140 4,620 5,140 5,530 5,140 5,530 5,140 4,620 5,140 5,530 5,140 4,620 5,140 5,530 5,140 4,620 5,140 5,530 5,140 5,530 5,140 5,530 5,140 5,530 5,140 5,530 5,140 5,530 5,140 5,530 5,140 5,530 5,150 5,160 5,150 5,150 5,160 5,160 5,160 5,160 5,160 5,160 5,160 5,160 5,160 5,160 5,160 5,160 5,160 5,160 5,160 5,160 5,100 5,1	3,806 Sediment S concentration (mg/l) 4,491 1,611 1,594 1,246 5,347 2,582 1,964 1,649 2,427 1,780 2,721 5,143 913 2,268 1,753 1,759 2,475 1,951 1,578 1,515 1,325 1,430 1,626 1,583	1,664 Sediment load (k1) 1,560 508 602 380 425 1,158 784 681 1,158 784 681 1,158 784 681 1,158 784 681 1,158 784 681 1,300 4,115 589 1,248 874 851 1,253 949 701 614 529 545 496 521
	30 31 Day 1 2 3 4 5 6 7 8 9 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26	4,580 5,380 Water discharge c. (m3/s) 4,740 4,870 4,410 3,880 3,390 3,200 2,870 2,610 2,440 2,530 2,450 2,500 2,550 2,500 2,000 2	9,335 Sediment oncentration (mg/l) 4,120 4,637 4,050 3,168 2,215 3,561 2,643 1,662 1,366 1,659 3,854 1,669 1,806 2,395 1,499 1,095 962 1,262 1,065 2,842 2,053 1,279 1,125 1,313 1,008 942	4,339 Sediment load (k1) 1,687 1,951 1,543 1,062 649 1,108 731 412 308 350 842 343 382 532 330 237 203 264 217 641 458 265 224 250 182 168		AUG.	31 Day 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26	5,060 Water discharge (m3/s) 4,020 3,650 4,370 3,530 920 5,190 4,620 4,780 5,450 5,450 5,190 5,450 5,190 5,450 5,530 9,260 7,470 6,370 5,770 5,600 5,5770 5,600 5,530 5,140 4,620 4,620 4,620 4,620 4,620 4,620 4,620 4,530 3,810 3,540	3,806 Sediment S concentration (mg/l) 4,491 1,611 1,594 1,246 5,347 2,582 1,964 1,649 2,427 1,780 2,721 5,143 913 2,268 1,753 1,759 2,475 1,951 1,578 1,515 1,325 1,430 1,626 1,583 1,435	1,664 Sediment load (k1) 1,560 508 602 380 425 1,158 784 681 1,143 798 1,300 4,115 589 1,248 874 851 1,253 949 701 614 529 545 496 521 439
	30 31 Day 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27	4,580 5,380 Water discharge c. (m3/s) 4,740 4,870 4,410 3,880 3,390 3,200 2,870 2,610 2,440 2,530 2,450 2,500 2,550 2,500 2,550 2,500 2,500 2,500 2,500 2,500 2,500 2,500 2,500 2,500 2,500 2,500 2,500 2,000 2	9,335 Sediment oncentration (mg/) 4,120 4,637 4,050 3,168 2,215 3,561 2,643 1,662 1,366 1,659 3,854 1,669 1,806 2,395 1,499 1,095 962 1,262 1,065 2,842 2,053 1,279 1,125 1,313 1,008 942 1,051	4,339 Sediment load (k1) 1,687 1,951 1,543 1,062 649 1,108 731 412 308 350 842 343 350 842 343 350 842 343 382 532 330 237 203 264 217 641 458 265 224 250 182 168 181		AUG.	31 Day 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27	5,060 Water discharge (m3/s) 4,020 3,650 4,370 3,530 920 5,190 4,620 4,780 5,450 5,450 5,450 5,190 5,450 5,190 5,530 9,260 7,470 6,370 5,770 5,600 5,5770 5,600 5,5770 5,600 5,5140 4,620 5,740 5,530	3,806 Sediment S concentration (mg/l) 4,491 1,611 1,594 1,246 5,347 2,582 1,964 1,649 2,427 1,780 2,721 5,143 913 2,268 1,753 1,759 2,475 1,951 1,578 1,515 1,325 1,430 1,626 1,583 1,435 5,240	1,664 ediment load (k1) 1,560 508 602 380 425 1,158 784 681 1,158 784 681 1,158 784 681 1,158 784 681 1,158 784 681 1,253 949 701 614 529 545 496 521 439 2,096
	30 31 Day 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	4,580 5,380 Water discharge co (m3/s) 4,740 4,870 4,410 3,880 3,390 3,200 2,870 2,610 2,440 2,530 2,450 2,550 2,440 2,550 2,420 2,420 2,420 2,420 2,420 2,420 2,420 2,420 2,420 2,420 2,420 2,400 2,200 2,200 2,200 2,000 2	9,335 Sediment oncentration (mg/) 4,120 4,637 4,050 3,168 2,215 3,561 2,643 1,662 1,366 1,659 3,854 1,669 1,806 2,395 1,499 1,095 962 1,262 1,065 2,842 2,053 1,279 1,125 1,313 1,008 942 1,051 1,207	4,339 Sediment load (k1) 1,687 1,951 1,543 1,062 649 1,108 731 412 308 350 842 343 350 842 343 350 842 343 382 532 330 237 203 264 217 641 458 265 224 250 182 168 181 200		AUG.	31 Day 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	5,060 Water discharge (m3/s) 4,020 3,650 4,370 3,530 920 5,190 4,620 4,780 5,450 5,450 5,450 5,190 5,450 5,190 5,530 9,260 7,470 6,370 5,770 5,600 5,860 5,630 5,140 4,620 4,620 4,620 4,620 4,620 4,620 4,620 4,620 4,620 4,620 4,620 4,620 4,620 4,620 4,620 4,620 4,620 4,620 4,620 3,810 3,540 4,630 3,490	3,806 Sediment S concentration (mg/l) 4,491 1,611 1,594 1,246 5,347 2,582 1,964 1,649 2,427 1,780 2,721 5,143 913 2,268 1,753 1,759 2,475 1,951 1,578 1,515 1,325 1,430 1,626 1,583 1,435 5,240 1,409	1,664 Sediment load (k1) 1,560 508 602 380 425 1,158 784 681 1,143 784 681 1,143 784 681 1,143 784 681 1,143 784 681 1,143 784 681 1,158 784 681 1,253 949 701 614 529 545 496 521 439 2,096 425
989 SEP.	30 31 Day 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29	4,580 5,380 Water discharge c. (m3/s) 4,740 4,870 4,410 3,880 3,390 3,200 2,870 2,610 2,440 2,530 2,450 2,500 2,550 2,500 2,550 2,500 2,500 2,500 2,500 2,500 2,500 2,500 2,500 2,500 2,500 2,500 2,500 2,000 2	9,335 Sediment oncentration (mg/) 4,120 4,637 4,050 3,168 2,215 3,561 2,643 1,662 1,366 1,659 3,854 1,669 1,806 2,395 1,499 1,095 962 1,262 1,065 2,842 2,053 1,279 1,125 1,313 1,008 942 1,051	4,339 Sediment load (k1) 1,687 1,951 1,543 1,062 649 1,108 731 412 308 350 842 343 350 842 343 350 842 343 382 532 330 237 203 264 217 641 458 265 224 250 182 168 181		AUG.	31 Day 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27	5,060 Water discharge (m3/s) 4,020 3,650 4,370 3,530 920 5,190 4,620 4,780 5,450 5,450 5,450 5,190 5,450 5,190 5,530 9,260 7,470 6,370 5,770 5,600 5,5770 5,600 5,5770 5,600 5,5140 4,620 5,740 5,530	3,806 Sediment S concentration (mg/l) 4,491 1,611 1,594 1,246 5,347 2,582 1,964 1,649 2,427 1,780 2,721 5,143 913 2,268 1,753 1,759 2,475 1,951 1,578 1,515 1,325 1,430 1,626 1,583 1,435 5,240	1,664 Sediment load (k1) 1,560 508 602 380 425 1,158 784 681 1,158 784 681 1,158 784 681 1,158 784 681 1,158 784 681 1,300 4,115 589 1,248 874 851 1,253 949 701 614 529 545 496 521 439 2,096

### Table 5.4.1 SEDIMENT CONCENTRATION AND LOAD DATA (STATION 280) (2/4)

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Year Month	Day	Water discharge	Sediment concentration	Sediment load		Year	Month	Day	Water discharge	Sediment concentration	Sediment Ioad
		(m3/s)	(mg/l)	(kt)					(m3/s)	(mg/l)	(kt)
1990 SEP.	1	3,150	871	237		1991	JUN.	1	1,090	318	30
	2	4,010	3,767	1,305				2	910	152	12
	3	3,800	3,244	1,065				3	850	164	12
	4	4,200	7,890	2,863				4	1,010	355	31
· · ·	5	3,860	10,351	3,452				5	1,900	2,116	347
	6	5,250	4,910	2,227				6	1,480	1,301	166
	7	4,310	2,873	1,070				7	1,610	2,556	356
	8	4,100	1,945	.689				8	1,920	3,022	501
	9	3,510	1,375	417				9	1,750	1,732	262
	10	3,230	1,652	461				10	2,100	3,817	693
	11	2,990	1,486	384				11	2,320	3,573	716
	12	2,890	1,274	318				12	3,050	4,831	1,273
	13	3,140	1,482	402	•			13	2,980	2,785	717
	14	3,220	2,703	752				14	2,340	1,729	350
	15	2,990	1,490	385				15	2,350	2,272	461
	16	2,870	1,085	269				16	2,140	1,358	251
	17	2,740	1,225	290	. :.			17	2,240	1,593	308
	18	2,710	1,268	297				18	2,130	1,162	214
	19	2,670	1,738	401				19	1,790	840	130
	20	2,970	1,598	410				20	1,550	896	120
	21	2,830	1,620	396				21	1,450	772	97
	22	2,780	1,203	289				22	1,480	640	82
	23							23	1,620	807	113
	24		1					24	1,720	766	114
•	25							25	1,730	902	135
	26				1			26	1,760	850	129
	27			1.1				27	1,790	983	152
	28		· · ·					28	1,700	886	130
	29						1.1	29	1,700	1,620	238
	30							30	2,160	3,785	706

#### Table 5.4.1 SEDIMENT CONCENTRATION AND LOAD DATA (STATION 280) (3/4)

Year N	Ionth	Day	Water	Sediment	Sediment	Үеаг	Month	Day	Water	Sediment	Sedimen
			discharge	concentration	load				discharge	concentration	load
			(m3/s)	(mg/l)	<u>(kı)</u>				(m3/s)	(mg/l)	(kt)
1991	IUL.	1	2,030	2,154	378	1991	AUG.	1	3,360	1,179	342
		2	2,020	1,858	324			2	3,380	883	258
		3	1,950	1,022	172			3	4,020	2,479	861
		4	2,170	1,499	281			4	5,310	4,475	2,053
		5	2,480	3,246	696			5	4,660	3,010	1,212
		6	2,510	2,287	496			б	4,060	1,613	566
		7	2,410	2,068	431			7	5,830	1,943	979
		8	2,440	2,524	532			8	5,680	4,660	2,287
	· ·	9	2,150	1,782	331			9	5,870	3,695	1,874
		10	1,910	1,416	234			10	5,570	2,722	1,310
		11	1,930	1,636	273			11	4,540	1,933	758
		12	1,950	1,591	268			12	3,870	1,131	378
		13	1,980	1,206	206	· · ·		13	3,460	1,106	331
		14	1,940	742	124			14	3,160	1,528	417
		-15	1,970	1,927	328			15	3,220	1,451	404
		16	2,750	4,127	981			16	4,170	2,825	1,018
		17	2,190	2,798	529			17	4,700	3,107	1,262
		18	2,790	2,002	483			18	5,140	3,119	1,385
		-19	3,470	3,440	1,031			19	5,250	2,055	932
		20	3,740	2,744	887			20	5,130	1,987	881
		21	3,940	2,679	912			21	5,260	3,147	1,430
		22	4,130	1,877	670			22	5,170	2,369	1,058
		23	3,870	1,314	439			23	4,300	1,958	727
		24	3 300	1,702	485			24	4,430	2,084	798
		25	3,190	1,888	520			25	3,990	1,452	501
		26	3,570	2,498	771			26	3,780	1,139	372
		27	3,690	5,392	1,719			27	3,790	1,314	430
		28	3,340	1,537	444	1.1.1		28	3,690	891	284
		29	3,620	2,616	818			- 29	4,050	1,087	380
		30	3,590	1,742	540			30	4,960	2,286	980
		31	3,440	1,196	355			31	5,030	1,951	848

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Year	Month	Day	Water	Sediment	Sediment
			discharge	concentration	load
			(m3/s)	(mg/l)	<u>(kt)</u>
1991	SEP.	1	4,880	1,731	730
		2	4,590	1,474	585
		3	4,190	1,331	482
		4	4,080	1,315	464
	·	5	4,650	3,013	1,211
		6	4,420	1,698	648
	1.11	7	4,410	1,660	632
		8	4,770	3,304	1,362
		9	4,190	1,709	619
		10	3,750	799	259
		11	3,710	1,156	371
		12	3,330	771	222
		. 13	3,320	1,240	356
		14	3,230	989	276
		15	3,100	956	256
		16	3,160	909	248
		17	2,980	1,947	501
		18	2,790	3,587	865
		19	2,600	3,648	819
		20	2,420	1,793	375
		21	2,280	1,729	341
	÷ .	22	2,160	1,693	316
1		23	1,980	1,302	223
		24	1,880	916	149
		25	1,790	797	123
		26	1,690	424	62
		27	1,620	379	53
		28	1,560	281	38
		29	1,550	344	46
		30	1,500	286	. 37

### Table 5.4.1 SEDIMENT CONCENTRATION AND LOAD DATA (STATION 280) (4/4)

### **Table 5.4.2**

### CALCULATED AVERAGE ANNUAL SEDIMENT LOAD AT CHISAPANI

Year	Suspended Load (10^6 t)	Bed Load (10^6 t)	Total Load (10^6 t
			105.00
1962	170.36	25.55	195.92
1963	164.64	24.70	189.34
1964	119.10	17.87	136.97
1965	44.84	6.73	51.57
1966	89.88	13.48	103.36
1967	99.46	14.92	114.38
1968	114.05	17.11	131.15
1969	118.44	17.77	136.21
1970	120.85	18.13	138.98
1971	187.56	28.13	215.70
1972	83.90	12.59	96.49
1973	158.76	23.81	182.57
1974	91.09	13.66	104.75
1975	201.10	30.17	231.27
1976	83.88	12.58	96.46
1977	120.94	18.14	139.09
1978	161.55	24.23	185.78
1979	73.87	11.08	84.95
1980	149.45	22.42	171.87
1981	132.31	19.85	152.16
1982	134.61	20.19	154.81
1983	177.51	26.63	204.13
1984	82.67	12.40	95.07
1985	120.78	18.12	138.90
1986	112.02	16.80	128.82
1987	60.11	9.02	69.12
1988	143.60	21.54	165.14
TOTAL	3317.33	497.60	3814.93
AVERAGE	122.86	18.43	141.29

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Table 5.4.3 SEDIMENT CONCENTRATION	AND LOAD DATA	(STATION 150) (1/3)
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		Day	Water discharge (m3/s)	Sediment concentration (mgA)	Sediment load (kt)	Year N			(m3/s)	Sediment concentration (mg/l)	(k1)
1990	JUN.	1				1990	JUL.	1	883	731	56
		2						2	1,026	4,279	379
		3						3	953	3,386	279
		4						4	847	3,859	283
		5						5	922	3,232	257
		6	463	554	22			6	1,000	2,664	230
		7	463	1,615	65			7	2,012	6,735	1,171
		8	696	2,998	180			8			
		9	463	1,115	45			9	2,056	3,142	558
		10	497	761	33			10	1,473	1,270	162
		11	474	634	26			11	1,473	2,541	323
		12	497	667	29			12	1,234	3,571	381
		13	420	640	23			13	1,131	2.047	200
		14	463	788	32			14	1,902	3,614	594
		15	490	849	36			15	1,435	2,760	342
		16	446	580	22			16	1,650	3,559	507
		17	488	808	34			17	1,837	2,313	367
		18	550	1,704	81			18	1,880	4,385	712
		19	603	1,763	92			19	1,512	2,301	301
		20	654	2,327	132			20	1,416	2,967	363
		21	1,097	-5,615	532			21	1,379	2,257	269
		22	815	2,083	147			22	1,379	3,210	382
		23	795	2,307	159			23	1,397	1,486	179
		24	815	2,505	177			24	1,368	2,078	246
		25	833	4,927	355			25	1,570	3,102	421
		26	680	3,674	216			26	1,753	8,744	1,324
		27	641	1,218	67			27	1,630	3,005	423
		28	907	2,625	206			28	1,531	2,507	332
		29	1,590	6,301	866			29	1,435	2,163	268
		30	1,016	3,303	290			30	1,360	1,408	165
							1	31	1,306	1 641	185

Year N	10nth		Water	Sediment	Sediment	Year	Month Day	Water	Sediment	Sediment
			÷.	concentration	load				concentration	
			(m3/s)	(mg/l)	<u>(kı)</u>		* *	(m3/s)	(mg/l)	<u>(kı)</u>
1990	AUG.	1	1,360	4,584	539	1990	SEP. 1	1,342	7,814	906
		2	1,327	9,100	1,044		2	2,106	5,711	1.039
-		3	1,386	1,731	207		3	2,264	6,517	1,275
		4	1,342	1,755	203		4	1,570	1,677	228
		5	1,360	2,214	260		5	1,610	2,297	319
		6	1,980	5,024	860		6	1,795	3,178	493
		7	1,610	2,149	299		. 7	1,288	1,268	141
		8	1,816	7,159	1,123		8	1,016	2,193	192
		9	1,816	5,545	870		9	1,206	1,848	193
		10	1,837	2,615	415		10	1,032	1,550	138
	÷	11	2,170	4,983	934		11	1,111	1,509	145
		12	2,530	3,950	863		12	1,144	1,631	161
		13	2,359	2,270	463		13	1,570	2,127	289
		14	1,902	1,904	313		14	1,048	1,415	128
		15	1,902	1,500	246		15	1,026	2,894	256
		16	2,605	8,256	1,858		16	1,144	1,183	117
		17	2,656	6,616	1,518		17	984	1,478	126
		18	2,605	3,404	766		18	953	1,356	112
		19	2,311	2,440	487		19	969	1 584	133
		20	1,945	2,177	366		20	937	1,630	132
		21	2,605	2,612	588		21	919	1,115	89
		22	1,691	2,026	296		22	895	1,519	117
		23	1,650	1,790	255		23	877	1,710	130
		24	1,416	1,930	236		24	907	3,658	287
		25	1 306	2,470	279		25	883	2,557	195
		26	1,306	1,732	195		26	790	3,103	212
		27	1,306	2,665	301		27	753	1,420	92
		28	1,386	3,022	362		28	729	1.468	92
		29	1 386	3,426	410		29	675	2,010	117
		30	1,320	1,541	176		30		•	
		31	1.179	1,846	188		1			

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$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Year	Month	Day	discharge	Sediment concentration			Үсаг	• Month	Day	-	Sediment concentration	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$				(m3/s)	(mg/l)	<u>(kt)</u>							(kt)
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	1991	MAY						1991	JUN.				13
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $											410		3
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$										3	454		47
													117
7       7       726       3,873         8       508       1,733       9         10       10       847       7,194         11       11       75       3,823         12       12       12       10         13       12       12       707       1,978         13       13       748       2,454       14         14       16       16       707       3,866         17       17       712       2,423       16         18       675       2,835       19       19       579       1,544         20       20       463       1,250       21       21       463       71       76       2,835         19       579       1,544       20       22       531       1,650       23       24       24       26       667       2,463       2,566       2,77       629       1,214       30       1,650       23       25       665       3,376       26       463       1,250       21       463       1,234       30       1,049       24       26       667       2,666       2,666       2,3376       2,666 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>98</td></td<>													98
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $													34
9       9       790 $2,487$ 10       10 $847$ 7,194         11       11       759 $3,382$ 12       12       12       707 $1,978$ 13       13       748 $2,454$ 14       16       6,738 $3,748$ $2,454$ 14       776 $6,738$ $6,738$ $3,748$ $2,454$ 16       16       707 $3,866$ $1,77$ $12,2423$ $8,866$ 17       12 $2,423$ $18$ $6,75,2835$ $1,76$ $6,73,2433$ 20       20       463 $1,250$ $21$ $463$ $1,250$ 21       22       23 $21$ $463$ $1,250$ 23 $23$ $591$ $1,149$ $24$ $667$ $2,665$ 25 $508$ $1,206$ $53$ $286$ $1,234$ $30$ $10,97$ $2,043$ 30 $508$ $404$ $18$ $30$ $1,097$ $2,043$ 24 $506$ $1,234$												3,873	243
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	:										508	1,783	78
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $											790	2,487	170
$\begin{array}{c c c c c c c c c c c c c c c c c c c $										10	847	7,194	527
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15       1,131       3,994       390       15       1,454       1,978         16       1,570       3,717       504       16       3,387       11,641       3,         17       1,081       1,625       152       17       3,358       5,553       1,         18       1,081       2,847       266       18       2,383       2,615         19       1,335       3,089       356       19       1,880       2,135         20       1,454       3,421       430       20       1,622       1,822         21       1,671       2,106       304       21       2,943       3,604							,						29
16       1,570       3,717       504       16       3,387       11,641       3,         17       1,081       1,625       152       17       3,358       5,553       1,         18       1,081       2,847       266       18       2,383       2,615         19       1,335       3,089       356       19       1,880       2,135         20       1,454       3,421       430       20       1,622       1,822         21       1,671       2,106       304       21       2,943       3,604										14	1,016	667	59
16       1,570       3,717       504       16       3,387       11,641       3,         17       1,081       1,625       152       17       3,358       5,553       1,         18       1,081       2,847       266       18       2,383       2,615         19       1,335       3,089       356       19       1,880       2,135         20       1,454       3,421       430       20       1,622       1,822         21       1,671       2,106       304       21       2,943       3,604				1,131	3,994	390				15	1,454	1,978	248
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18       1,081       2,847       266       18       2,383       2,615         19       1,335       3,089       356       19       1,880       2,135         20       1,454       3,421       430       20       1,622       1,822         21       1,671       2,106       304       21       2,943       3,604						152							1,611
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22 - 167 - 2230 - 323 - 77 - 1774 - 3404 - 3			22	1,671	2,250	325				22	1,774	1,496	229
													180
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#### Table 5.4.3 SEDIMENT CONCENTRATION AND LOAD DATA (STATION 150) (2/3)

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1,570

1,531

1,492

1,671

1,630

1,650

1,570

1,902

1,972

3,204

1,262

2,820

1,270

1,334

1,199

1,097

1,416

1,473

1,379

1,306

1,691

Year N	Month Day		Sediment	Sediment	Year Month	Day	Water	Sediment	Sedimen
			concentration	load			discharge		
		(m3/s)	(mg/l)	<u>(kt)</u>	1001 0/75	<u>.</u>	(m3/s)	(mg/l)	<u>(kı)</u>
1991	SEP. 1	1,551	2,361	316	1991 OCT.	1	519	211	9
	2	1,590	461	63		2	492	479	20
	3	1,590	1,008	138		3	483	185	8
	4.	1,306	902	102		4	468	528	21
	. 5	1,473	3,023	385		5	454	380	15
	6	1,397	624	75		6	454	207	8
	7	1,270	1,249	137		7	448	202	8
	8	1,182	890	91		8	435	470	18
	9	1,097	1,256	119		9	423	992	36
	10	1,016	263	23		10	400	871	30
	11	1,006	284	25		11	394	866	29
	12	984	332	28		12	380	471	15
	13	1,097	893	85		13	366	323	10
	14	1,000	676	58		14	354	289	9
	15	1,065	1,185	109		15	345	251	7
	16	1,091	784	74		16	341	617	18
	17 -	953	224	18		17	326	1,599	45
	18	892	523	40		.18	326	948	27
	19	818	548	39		19	322	729	20
	20	781	536	36		20.	301	1,398	36
	21	748	251	16		21	320	606	17
	22	694	459	27		22	310	304	8
	23	667	563	32		23	304	221	6
	24	634	253	14		24	310	516	14
	25	616	257	14		25	287	524	13
	26	581	713	36		26	285	652	16
:	27	574	1,115	55		27	281	166	4
	28	567	737	36		28	278	773	19
	29	567	153	8		29	269	416	10
	30	529	215	10		30	261	842	19
			•			31	256	367	. 8 .

### Table 5.4.3 SEDIMENT CONCENTRATION AND LOAD DATA (STATION 150) (3/3)

		and the second second second second second second second second second second second second second second second	and the second second second second second second second second second second second second second second second
Year	Suspended Load (10 <sup>6</sup> t)	Bed Load (10^6 t)	Total Load (10^6 t
1984	33.25	6.65	39.90
1985	37.37	7.47	44.84
1986	42.79	8.56	51.35
1987	39.47	7.89	47.36
1988	75.87	15.17	91.04
1990	38.25	7.65	45.90
TOTAL	267.00	53.40	320.40
AVERAGE	44.50	8.90	53.40

### Table 5.4.4 CALCULATED AVERAGE ANNUAL SEDIMENT LOAD AT PANCHESHWAR

-T.71-

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		Mean	Mean Annua		
Reservoir	Watershed	Annual Sediment	Discharge		
of River	Area (km2)	Load (10^6 t/yr)	(m3/s)		
India	·				
Bhakra	56,980	34.10	472		
(Gobind Sagar)					
Matatila	20,720	7.30	250		
Maithan	5,206	9.50	73		
Panchet	9,920	13.08	.124		
Hirakud	82,880	46.00	1,287		
Ganga Sagar	22,533	31.70	149		
Nizam Sagar	21,694	20.00	136		
Shivaji Sagar	892	1.90	105		
Ramganga	3,134	7.30	114		
Mayurkashi	1,792	3.60	260		
Girna	4,729	5.30	143		
Lower Bhawani	4,200	1.80	67		
Tungabhadra	28,179	26.00	399		
Machkunda	1,956	0.60	38		
Dantiwada	2,862	2.50	19		
Mahi	25,330	31.90	254		
Tawa	5,983	6.80	136		
Ukai	62,230	95.80	546		
Pakistan					
Tarbela	120,395	200.00	2,300		
Thelum	28,005	82.80	757		
Kanshi	1,236	3.40	6		
Poonch	4,240	15.80	156		
Warsak	67,400	51.80	704		
Hunza River	13,160	63.20	379		
Gilgit River	12,095	13.60	287		
ndus River (near Kachusal)	112,664	87.10	958		
Shyok River	33,670	33.60	310		

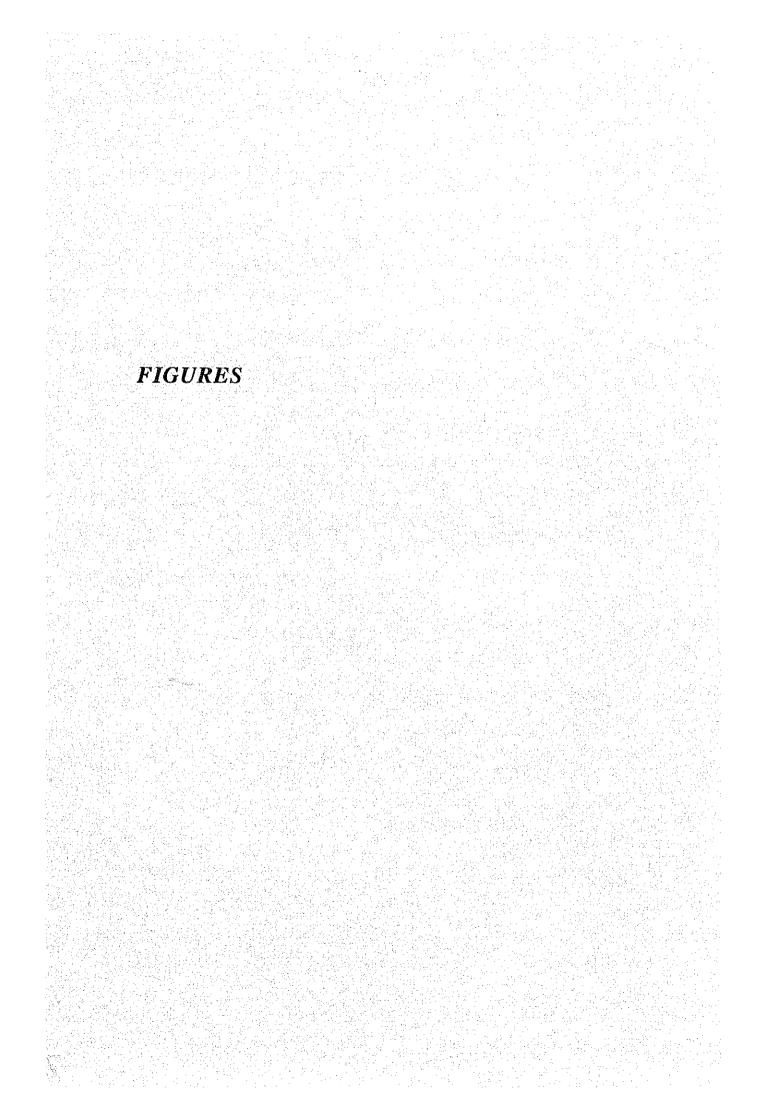
### Table 5.4.5 SEDIMENT DATA OF SELECTED RESERVOIRS AND RIVERS

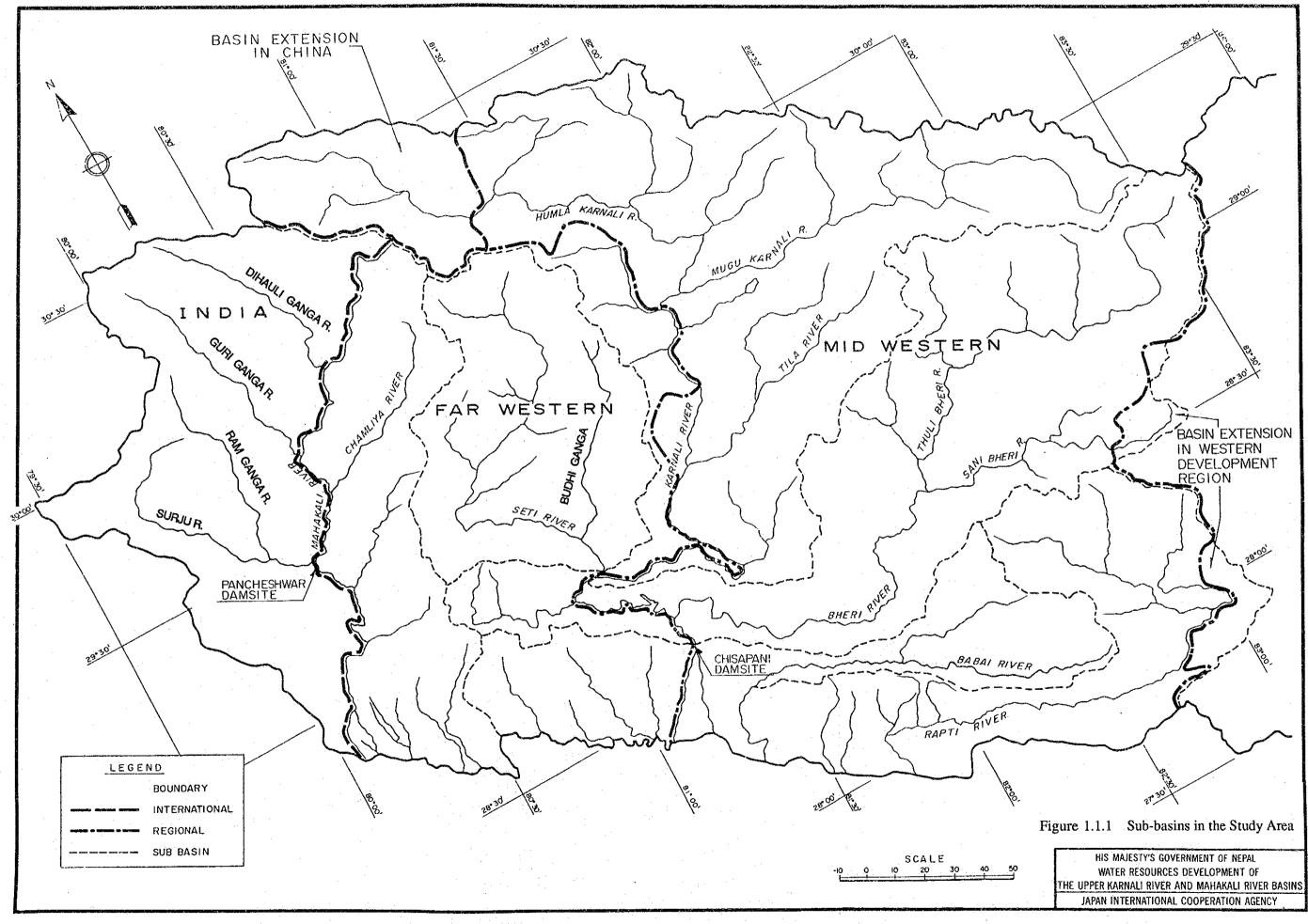
References for Indian data : Bansode, Mehta and Pravesh 1982 Gupta, 1977 Murray, 1976 Murthy, 1977 Narayana and Babu, 1983 References for Pakistani data : Goudic et al, 1984 Harza, 1969 Kalabagh Cons. Ltd., 1984 WAPDA, 1985

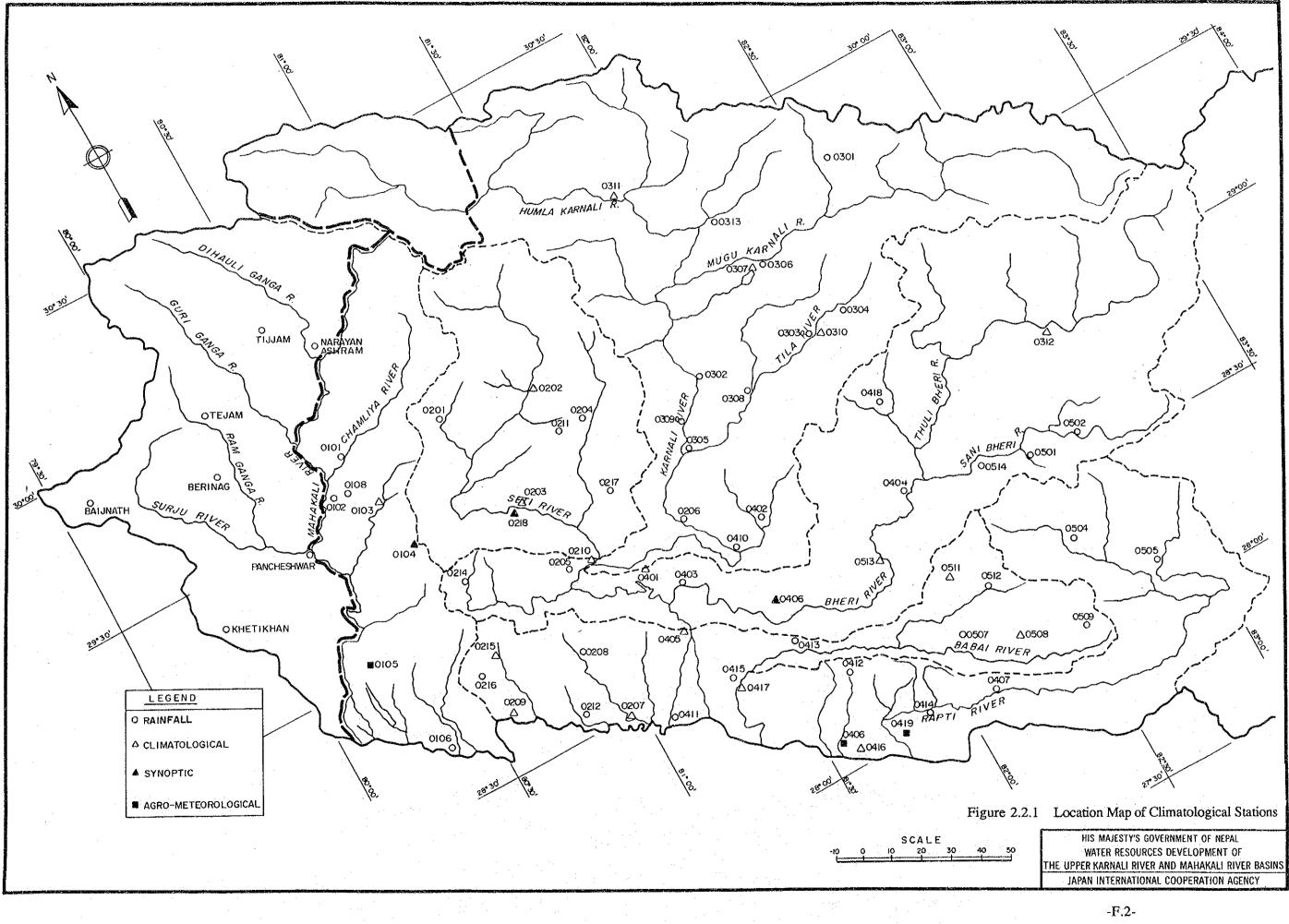
Source : Karnali Multipurpose Project Report Annex E Sedimentation (1989)

Sample		D 50 (mm)
KRIA	Weight	75
	Tape 1	115
	Tape 2	100
	Tape 3	100
BR1	Weight	20
	Tape 1	90
	Tape 2	45
	Tape 3	110
SETI	Weight	20
	Tape 1	80
	Tape 2	85
	Tape 3	110
CHAMLIYA	Weight	35
	Tape 1	90
	Tape 2	100
1. A.	Tape 3	100

Table 5.5.1 Grain Size of River Bed Materials







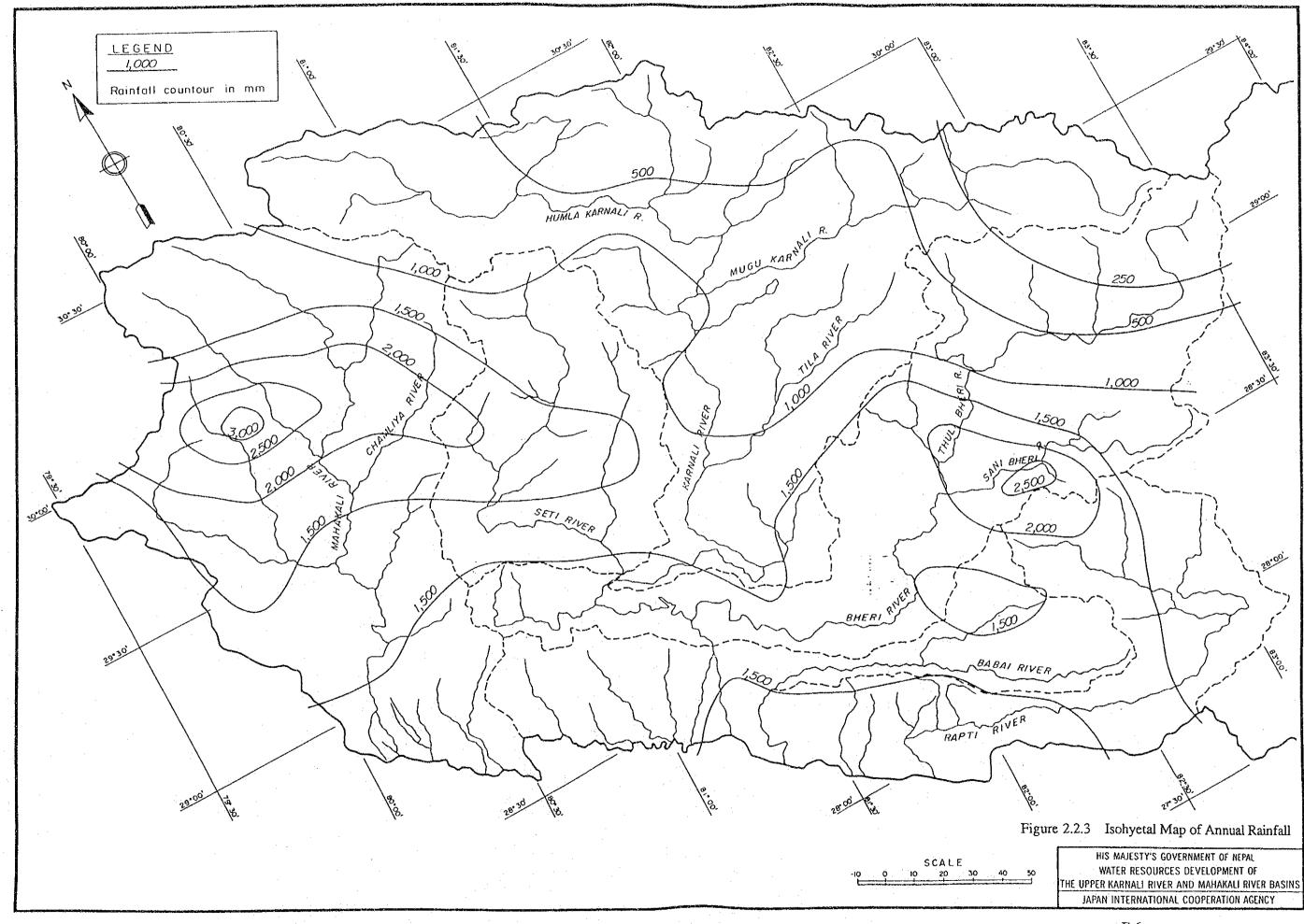
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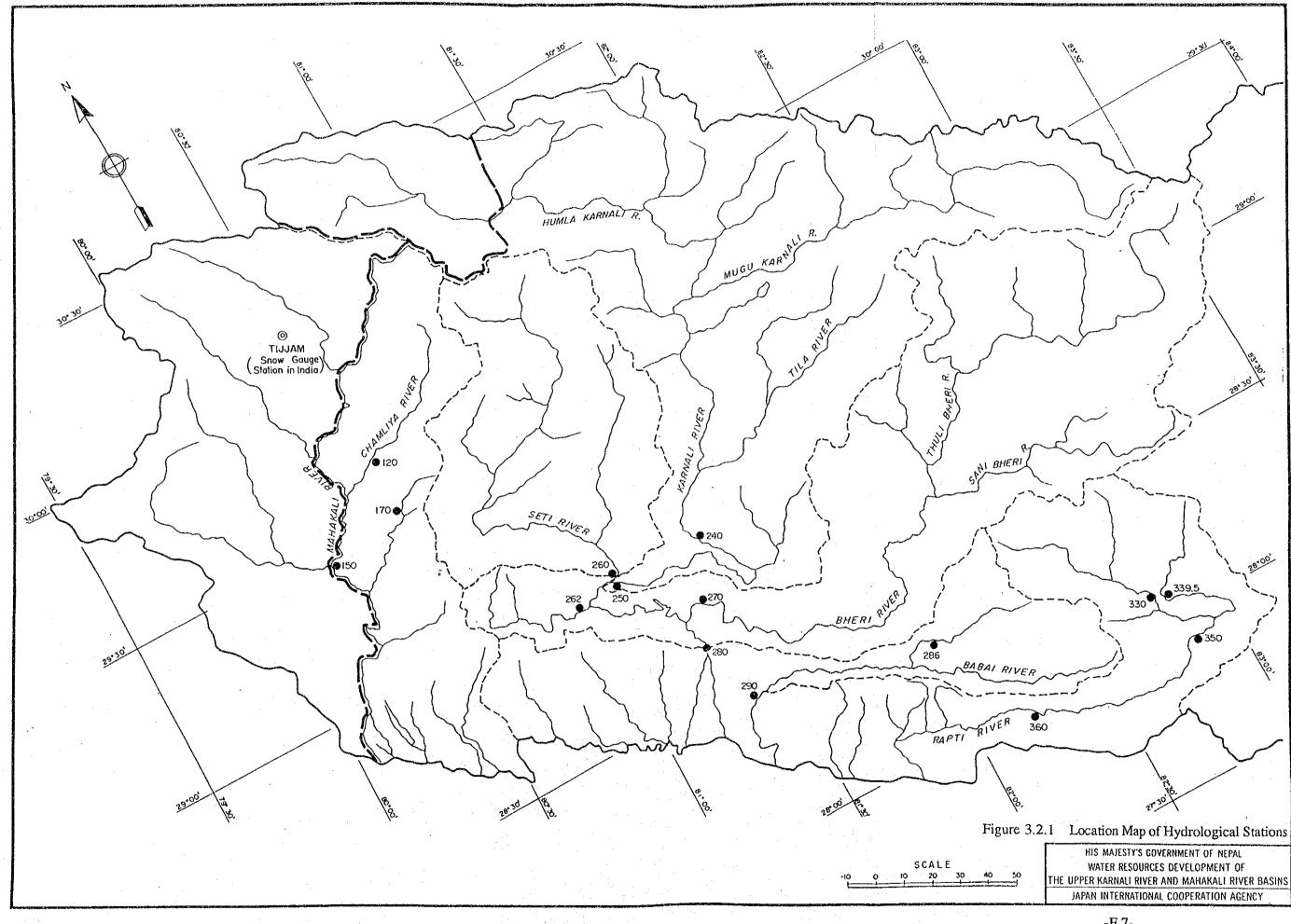
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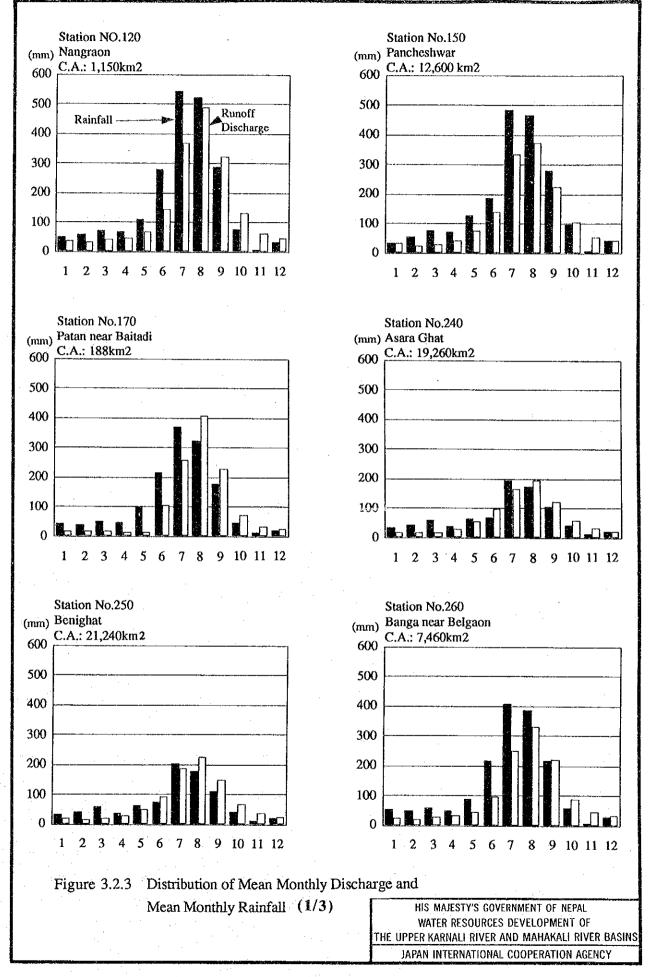
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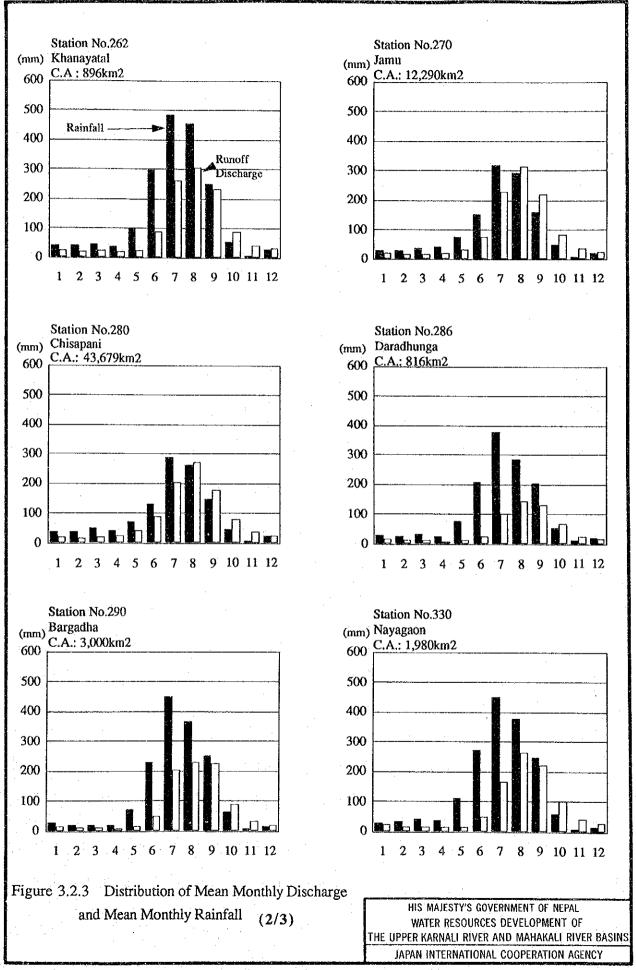
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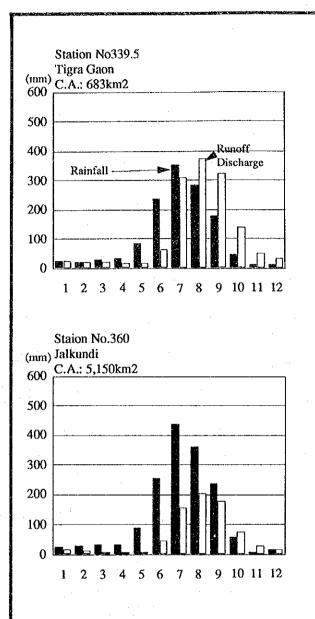
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Duration of Measurements at Hydrological Stations

HIS MAJESTY'S GOVERNMENT OF NEPAL WATER RESOURCES DEVELOPMENT OF THE UPPER KARNALI RIVER AND MAHAKALI RIVER BASINS JAPAN INTERNATIONAL COOPERATION AGENCY







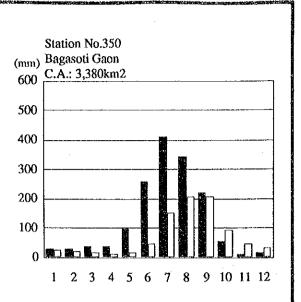
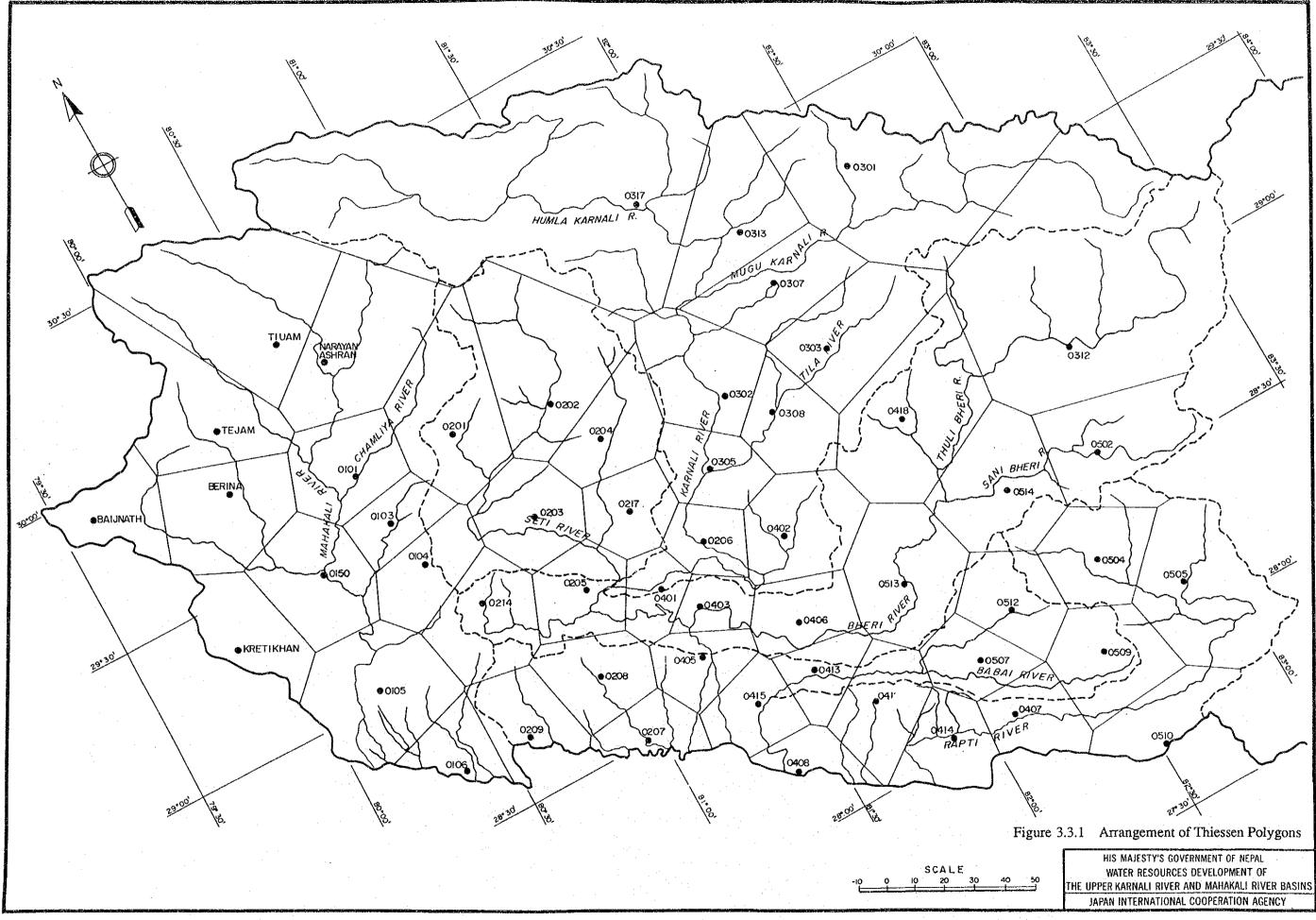


Figure 3.2.3 Distribution of Mean Monthly Discharge and

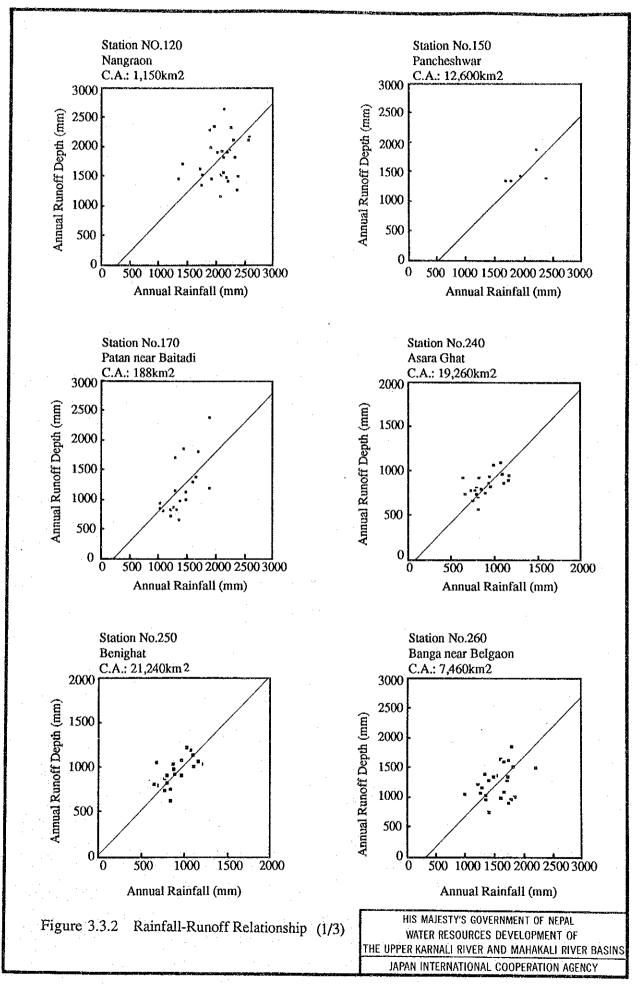
Mean Monthly Rainfall (3/3)

HIS MAJESTY'S GOVERNMENT OF NEPAL WATER RESOURCES DEVELOPMENT OF THE UPPER KARNALI RIVER AND MAHAKALI RIVER BASINS JAPAN INTERNATIONAL COOPERATION AGENCY

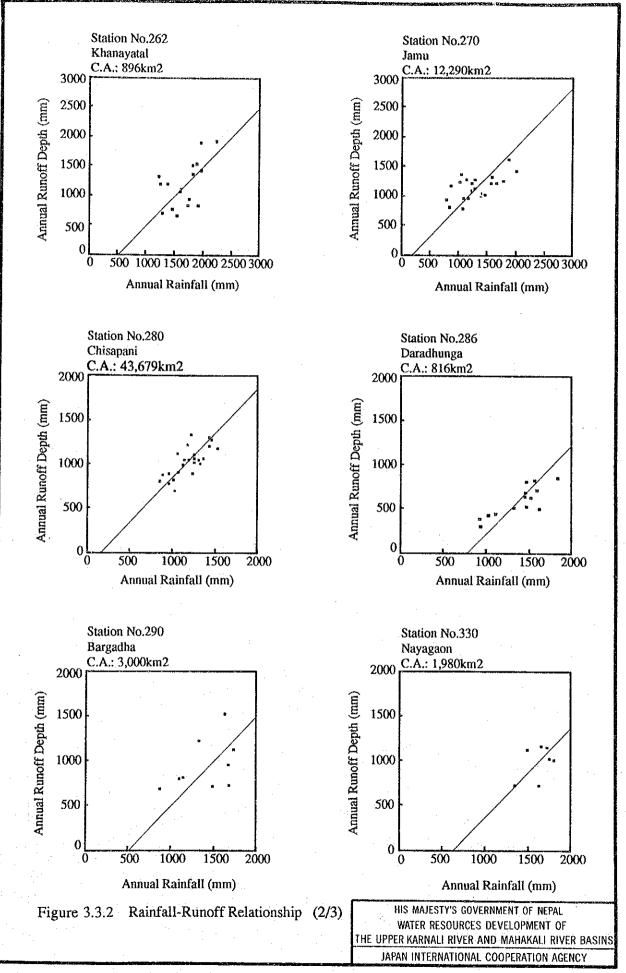
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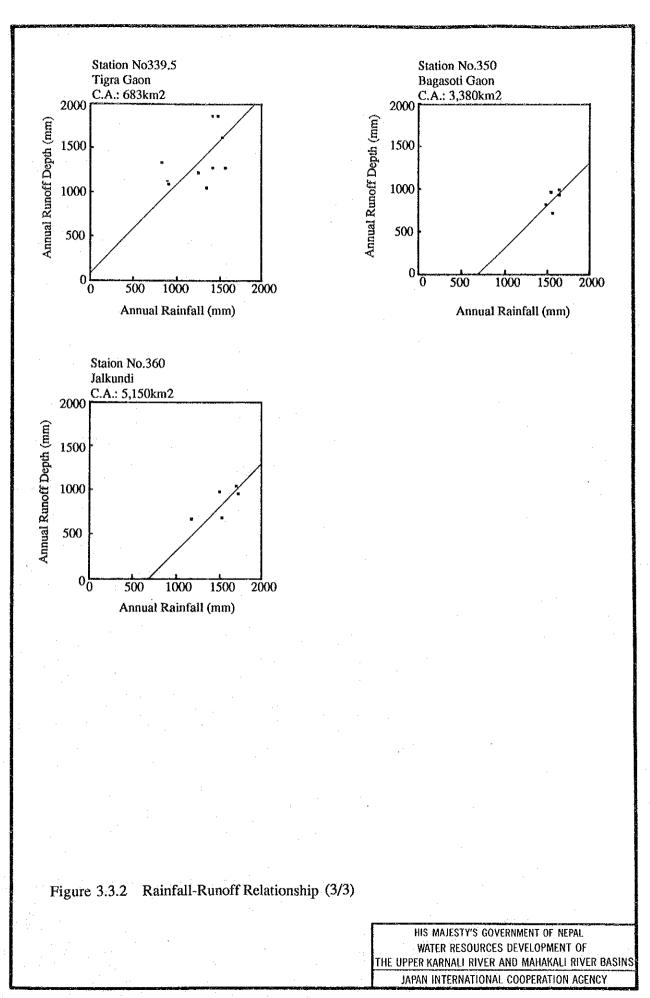
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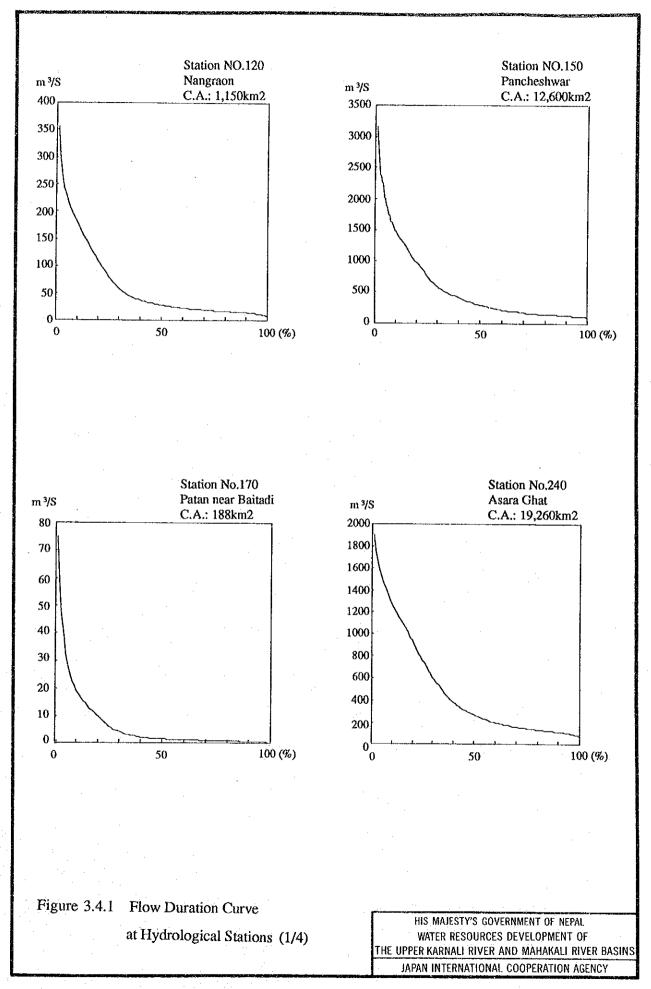




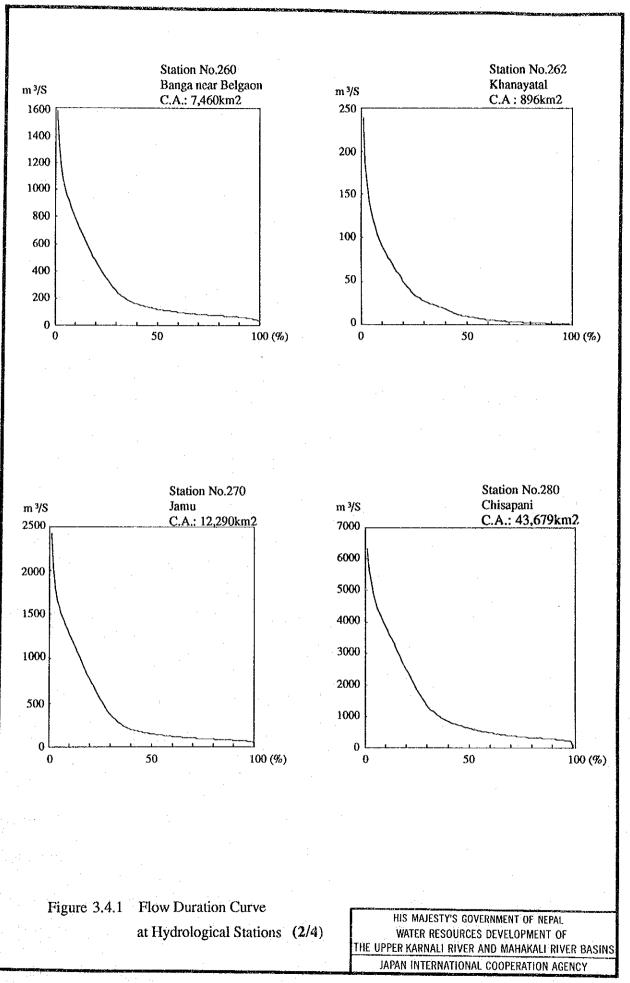




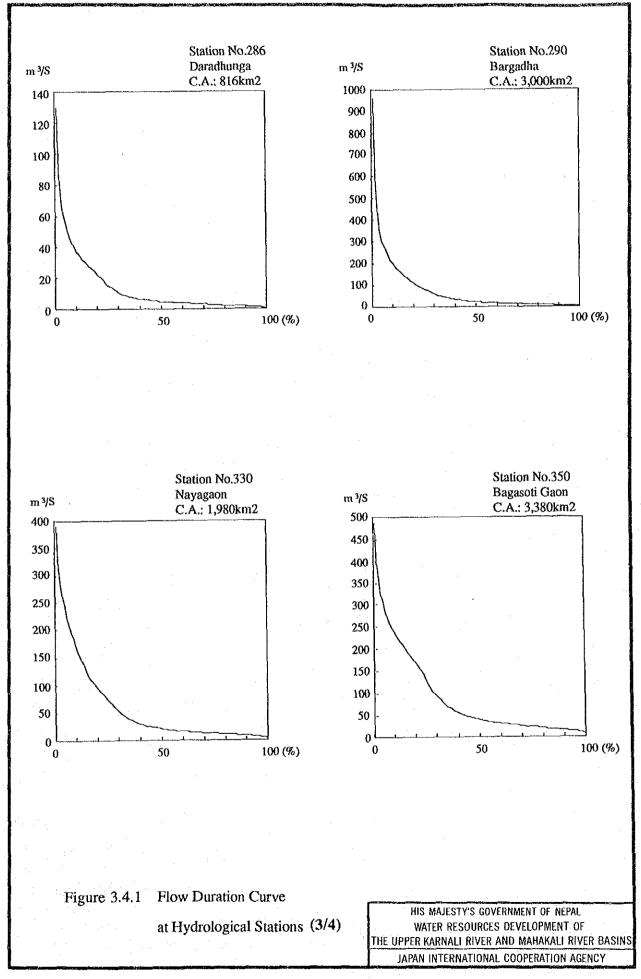




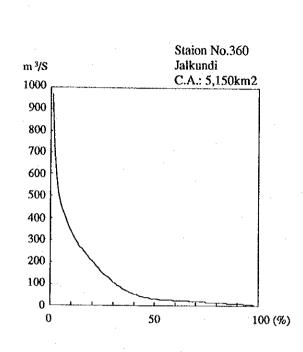


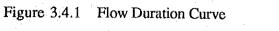




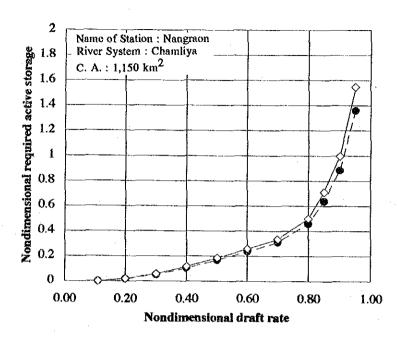








at Hydrological Stations (4/4)



## STATION 150

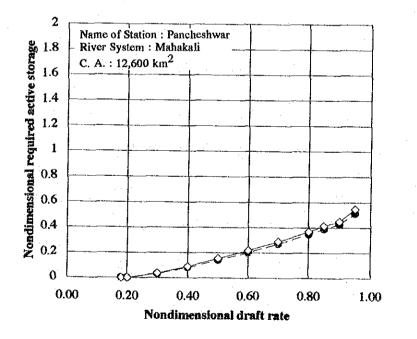
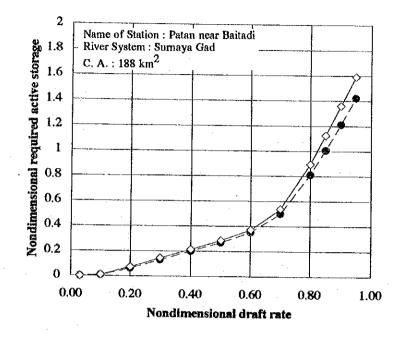
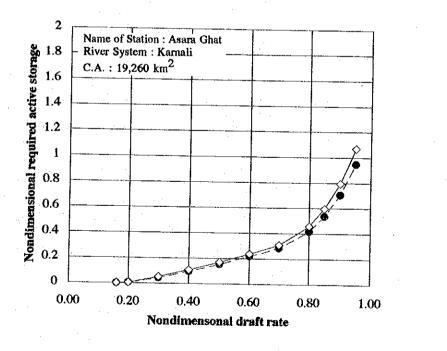


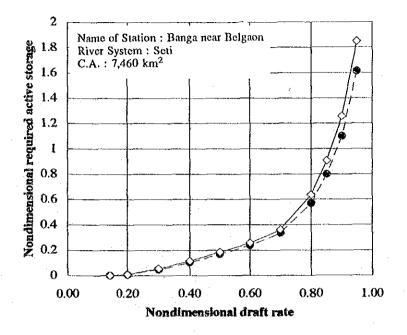
Figure 3.4.2 Storage-Draft Curves (1/7)



#### STATION 240



# Figure 3.4.2 Storage-Draft Curves (217)



### STATION 262

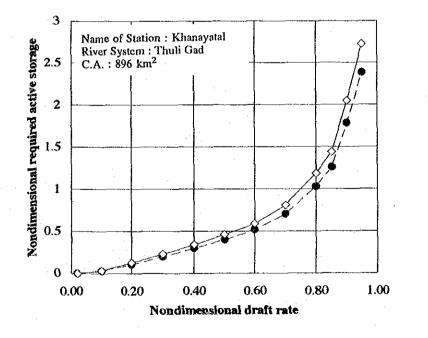
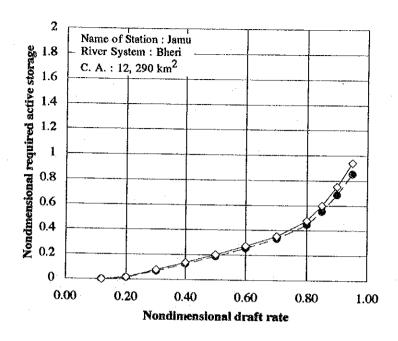
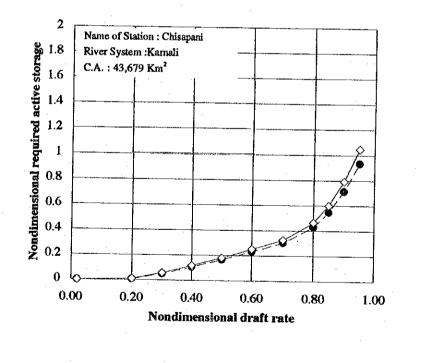


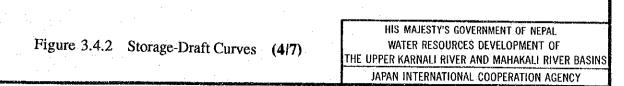
Figure 3.4.2 Storage-Draft Curves (3/7)



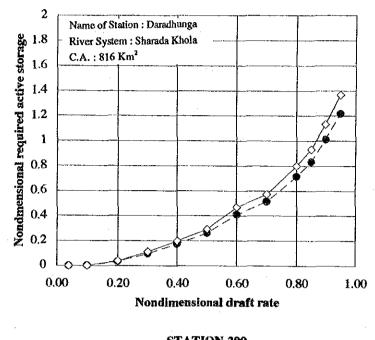


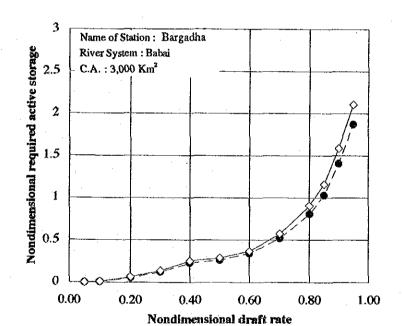














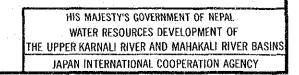
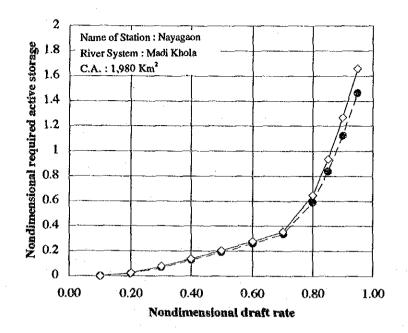


Figure 3.4.2 Storage-Draft Curves (5/7)





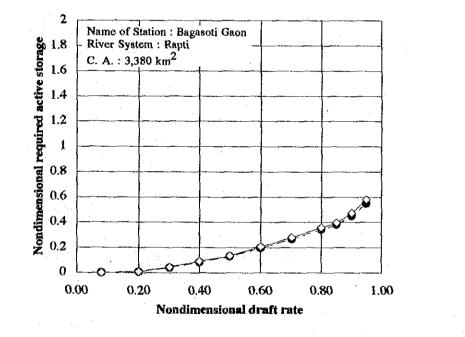
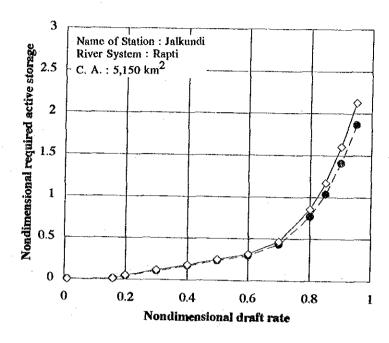
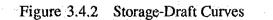
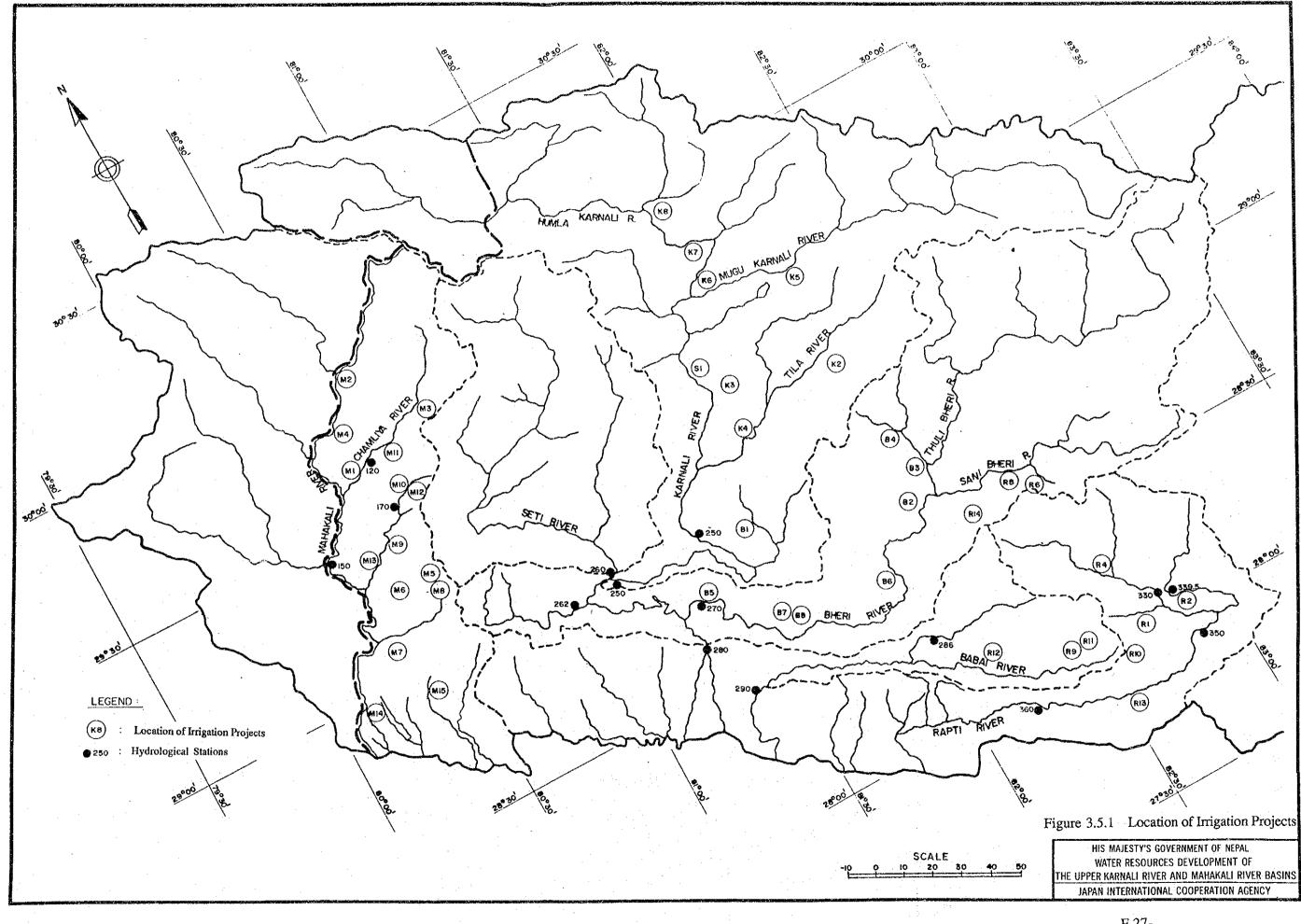


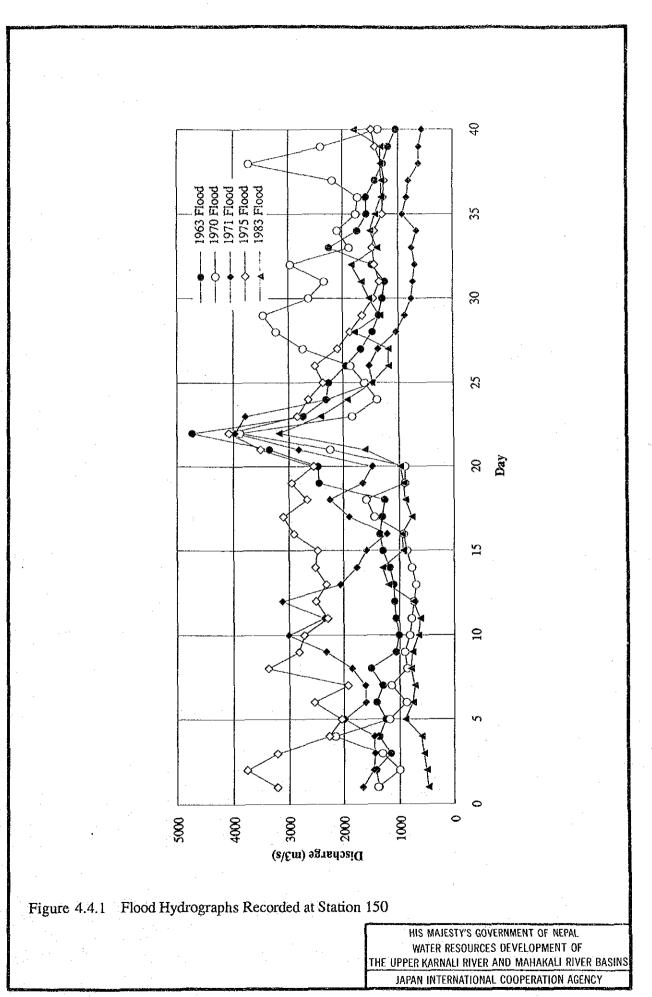
Figure 3.4.2 Storage-Draft Curves (6/7)





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# Figure 4.4.2 Flood Hydrographs Recorded at Station 240

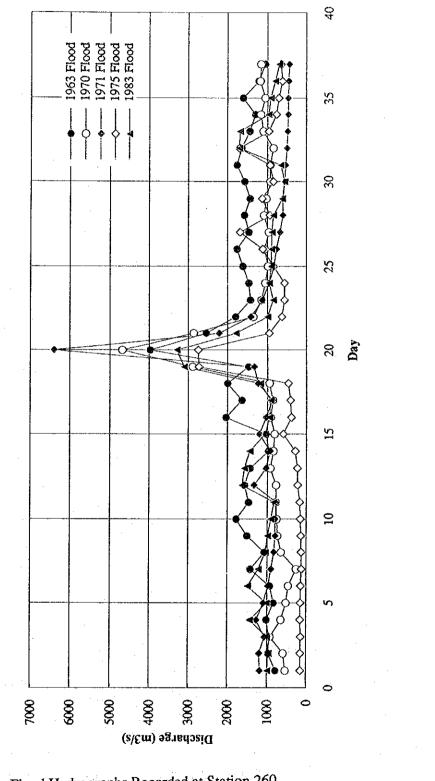
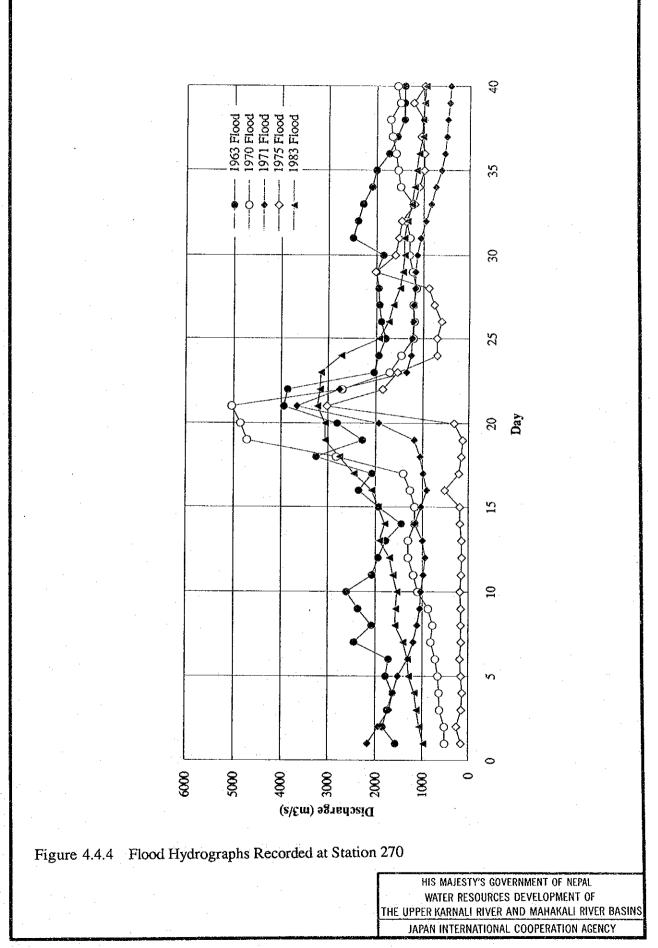


Figure 4.4.3 Flood Hydrographs Recorded at Station 260

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HIS MAJESTY'S GOVERNMENT OF NEPAL
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THE UPPER KARNALI RIVER AND MAHAKALI RIVER BASINS
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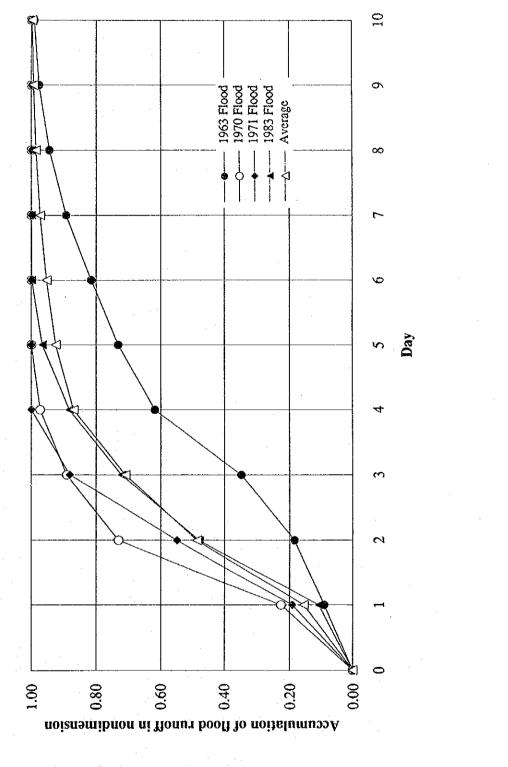
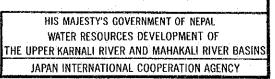
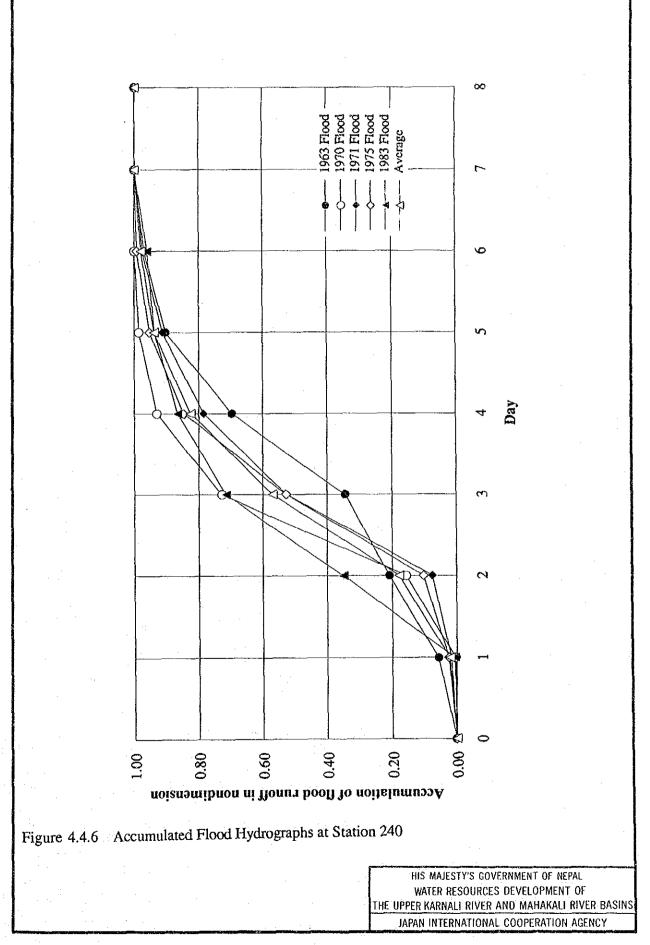


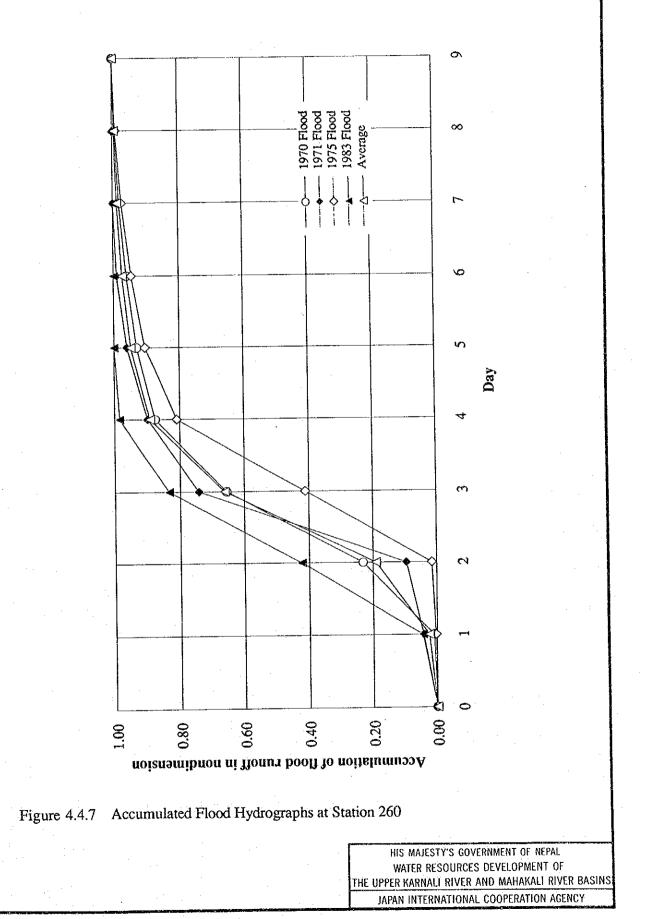
Figure 4.4.5 Accumulated Flood Hydrographs at Statoin 150



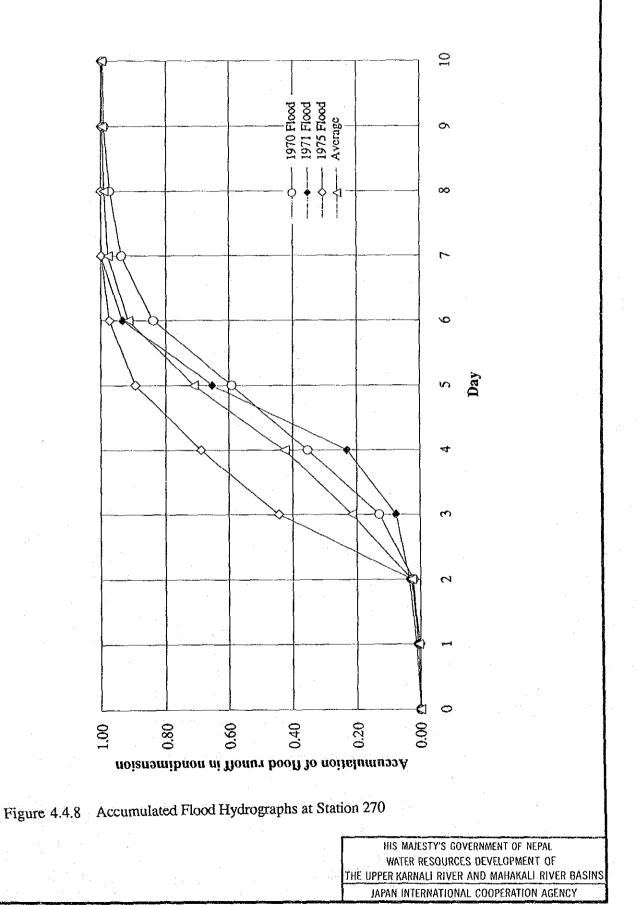


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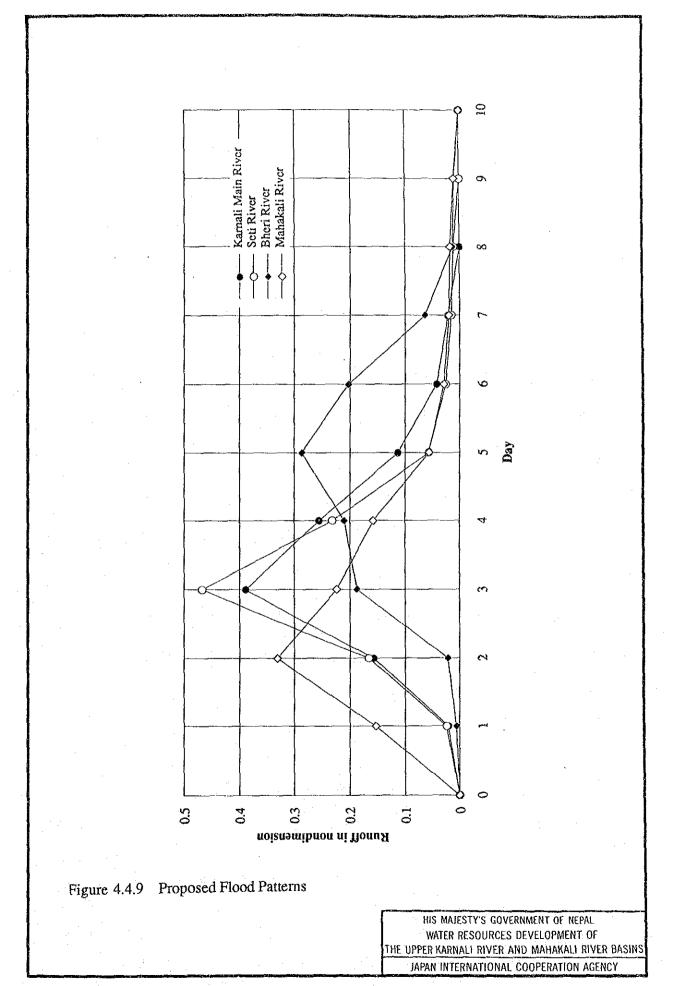
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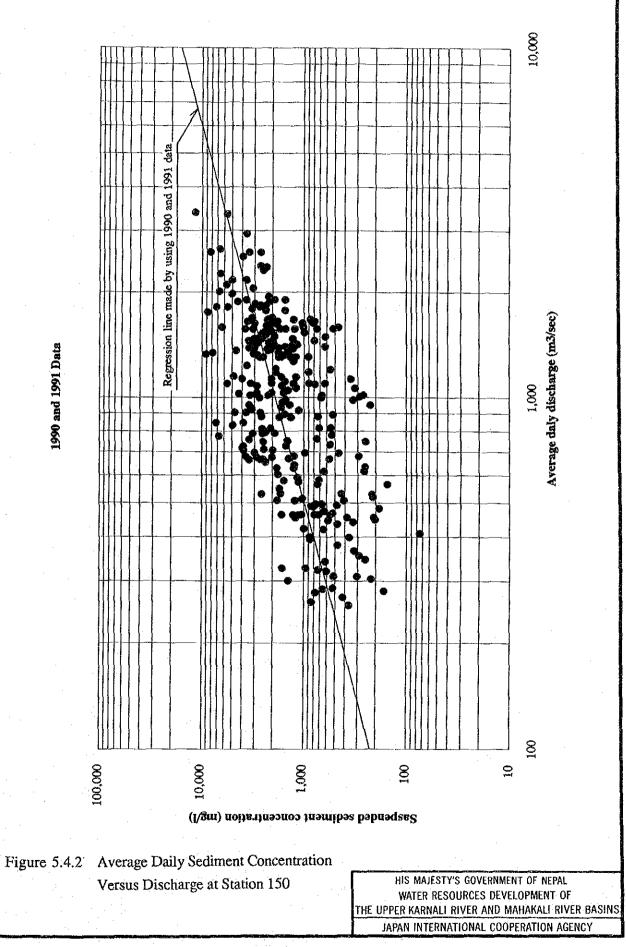


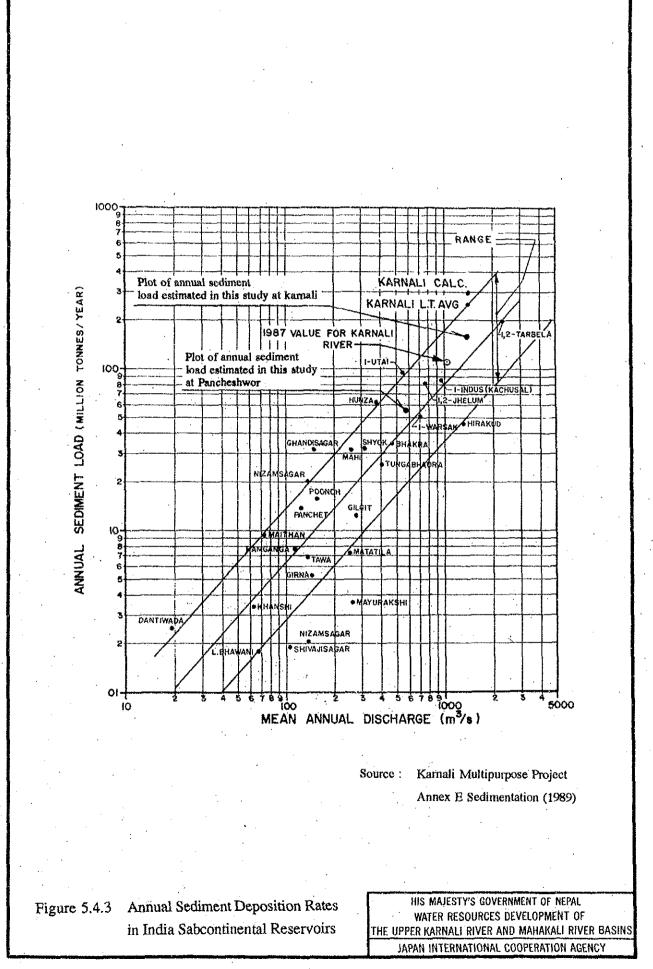
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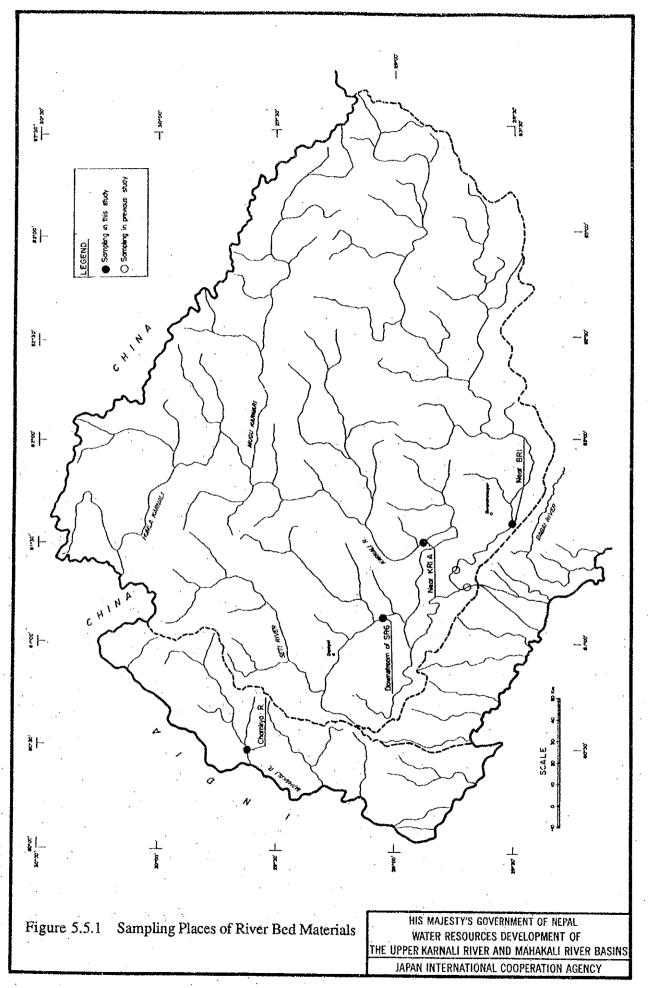


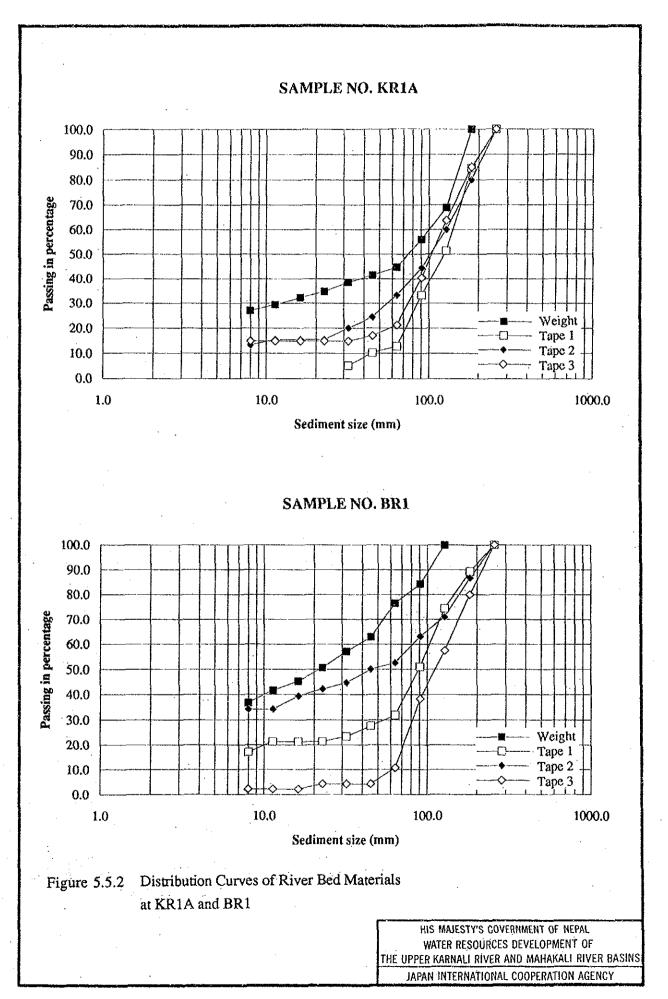
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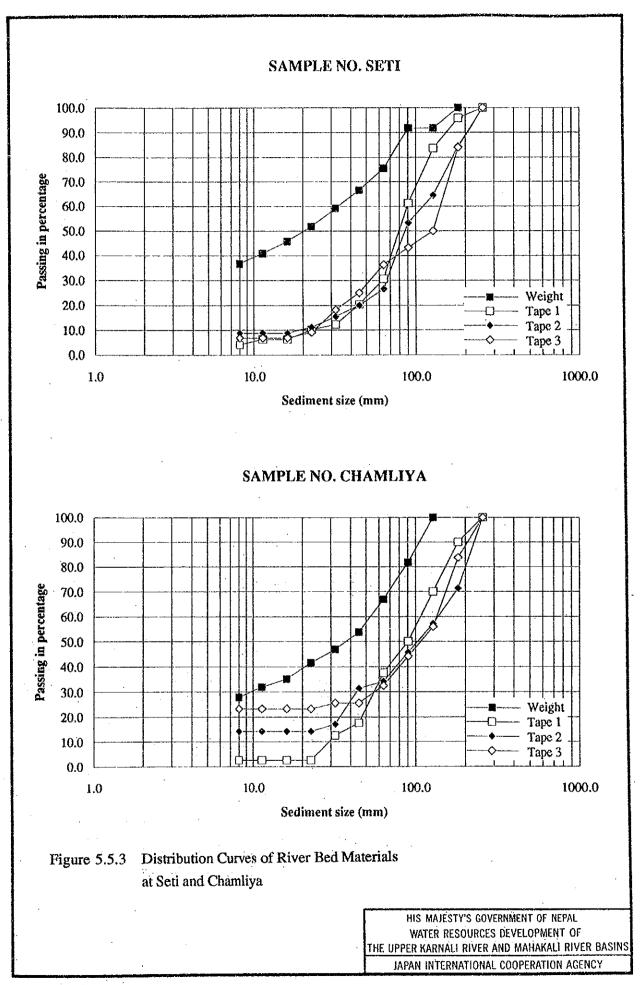
10,000 Regression line made by using 1987 data Average daily discharge (m3/sec) 1987,1989,1990 and 1991 Data 1,000 Regression line made by using 1987, 1989, 1990 and 1991 data 100 100,000 10,000 1,000 8 Suspended sediment concentration (mg/l) Figure 5.4.1 Average Daily Sediment Concentration Versus Discharge at Station 280 HIS MAJESTY'S GOVERNMENT OF NEPAL WATER RESOURCES DEVELOPMENT OF THE UPPER KARNALI RIVER AND MAHAKALI RIVER BASINS JAPAN INTERNATIONAL COOPERATION AGENCY











# APPENDIX III

# LAND USE, ENVIRONMENT AND WATERSHED

# APPENDIX III LAND USE, ENVIRONMENT AND WATERSHED

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#### 1. THE STUDY AREA

#### **1.1** Physical Environment

#### 1.1.1 Soil and Land System

The soil of Nepal is, in general, poor in fertility, although soil type varies extremely with location and physiographic changes. Soil conditions are naturally better in lowlands than hills and mountains, since fertile top soils and organic matters are eroded from uplands and deposited in lowlands.

In the Terai area, the soil type is mainly alluvial, and the texture is fine to medium. The soil layer is generally deep, and thus the water-holding capacity is high. The soil pH ranges from moderately alkaline to moderately acidic, and the contents of organic matters vary in a wide range.

The main soil type of the Siwaliks area is fine loamy or sandy with pebbles. The drainage capability widely varies, and the water-holding capacity is low. The soil development is generally little, and the soil is shallow and acidic.

In the mountainous areas, the major soil types, which are composed of sand and gravels, show light to medium texture. The soil pH is generally acidic, and the soil fertility is low to medium. The typical characteristic of the soil in this area is its high erodibility mainly because of the light texture and steep slopes.

The soil types commonly observed in Nepal are taxonomically Entisols, Inceptisols, Mollisols and Altisols according to the soil order classified by Land Resource Mapping Project (LRMP) in 1986 (Ref. III-1). Their characteristics, such as parent materials, associated climate, slopes, dominant vegetation, development period required and major factors of pedogenetic development, are tabulated in Table 1.1.1. The soil's great groups of 2-Fluvents, 3-Aquepts, 6-Ocrepts, 8-Ustolls and 10-Ustalfs show increasing stability of alluvial landscape as the assigned number becomes higher. On the other hand the stability of mountainous landscape increases in the order of bare rock and non-soil, 1-Orthents, and 4,5,6 and 7-Ochrepts as shown in Figure 1.1.1.

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On the basis of the soil survey above and other landscape features, i.e. location, slope, degree of dissection and flooding frequency, LRMP established seventeen land system classes as shown in Table 1.1.2. The extent of the land systems of the Study Area by development region is shown in Table 1.1.3.

High agricultural productivity in general relies on flat land, deep soil and flood-free area. On the basis of this and the land system criteria, the land units 2, 3a, 4c, 5a, 6a, 6b, 6c, 9b, 9c, 13b, 13c, 13Com, 13d and 14a are likely to have high agricultural potential. The area belonging to these land units is 666,724 ha and accounts for only 10.7% of the Study Area, while the area of high agricultural potential occupies 15% of the whole of Nepal (refer to Table 1.1.3). On the other hand, areas of low agricultural potential (Land Unit: 3b, 3c, 4b, 5b, 5c, 5Com, 9Com, 10a, 11 and 15a) and non-agricultural potential (Land Unit: 1, 3d, 4a, 4Com, 5d, 6d, 7, 8, 9a, 10b, 10Com, 12, 13a, 14b, 15b, 16, 17 and 18) account for 14.6% and 74.7% of the Study Area, while accounting for 18.7% and 66.4% of the whole of Nepal, respectively.

#### 1.1.2 Vegetation

The vegetation of Nepal is a complicated mosaic of flora because of the wide variety of climate from sub-tropic to polar, soil types mentioned in Section 1.1.1 and moisture conditions. The flora of Nepal is, therefore, very rich and forest type has been classified into 35 categories. The general vegetation pattern is illustrated vertically in Figure 1.1.2 in relation to climatic zones, temperature and land use by LRMP (Ref. III-2).

Table 1.1.4 shows the sub-divisions of land use by physiographic region of Nepal. Hardwoods, which are represented by sisso, sal and oak, are dominant in the lower three physiographic regions. In the High Mountain, forests occupy half of the land with a balanced combination of three types of forest.

In the sub-tropical zone of the Karnali River basin, the dominant tree species are Dalbergia sisso (Sisso) and Acacia catechu along river banks. Another dominant tree species in this zone is <u>Shorea robusta (Sal)</u>. At higher altitude, the sub-tropical forests are mainly Castanopsis indica and <u>Quercus lanuginosa</u> (kind of oak) according to New Era, 1987 (Ref. III-3). As the elevation increases, <u>Pinus roxurghii</u> (Chir-pine), <u>Quercus incana</u> and <u>Quercus lanuginosa</u> become dominant. At altitude of 2,000 to 3,000 meters, <u>Pinus wallichiana</u> (blue pine), <u>Picea smithiana</u> (spruce), <u>Cedrus deodara</u> (ceder), <u>Abies pindrow</u> (kind of fir) and <u>Quercus semecarpifolia</u> (khasru oak) are common. Above 4,000 meters in altitude, the dominant tree species are <u>Pinus wallichiana</u>, <u>Quercus semecarpifolia</u>, <u>Tsuga dumosa</u>, <u>Abies</u>

<u>spectabilis(kind of fir), Betula utilis</u> (birch) and <u>Juniperus wallichiona</u>. There are no trees in the alpine zone, but rhododendrons and junipers grow at up to 4,500 meters in altitude.

Forested areas are shrinking gradually. Many forests on steep slopes have been degraded, and eroded especially in the high altitude areas. When the population density was low, Terai, Siwaliks and Mountain areas were covered with forest. Once the population density exceeded a certain critical level, at which the demand and supply of forest resources are balanced, the demand for fodder, fuelwood and the land occupied by forest itself for cultivation increased at a rapid speed, causing shrinkage of forest land. It is presumed that this shrinkage of forest land started to become evident in the 1940's.

LRMP estimated that 62% of the Terai tropical hardwood forests had been cleared and used for cultivation in the last twenty years. The Siwaliks Zone remains relatively well covered with forest, although forest degradation continues. In the Middle Mountain areas where the largest population lives and the most intensive land use is practiced, forest remains only on non-arable land.

Forest is essential for human beings as a source of fodder, fuelwood and construction material in the short-run and for soil and watershed conservation in the long-run. These two aspects of long-run and short-run functions often conflict with the participation by human beings in the utilization of forest resources, and the current trend is the degradation of forest land.

#### 1.1.3 Present Land Use

The land use according to LRMP (1986) has been classified into five categories, i.e. cultivated land, grazing land, forest land, shrub land and others. In the Study Area, the proportional extent of these land uses is 17.49% for cultivated land, 15.20% for grazing land, 42.35% for forest land, 2.21% for shrub and 22.75% for others respectively. The major differences in land use between the Study Area and the national average are (a) that the proportional extent of the cultivated area is nearly 10% lower than that of the national average, and (b) that the proportional extent of the forest land to the Study Area is higher than that of the national level. Details are shown in Table 1.1.5.

#### 1.2 Socio-Cultural Environments

#### 1.2.1 Ethnic Group

A detailed country-wide survey on ethnic groups has not been conducted yet. On the basis of mother tongue statistics, major ethnic groups are classified into 13 (Ref. III-4): Brahman, Chhetri, Thakuri, Bhojpuri, Tamang, Tharu, Newer, Awadhi, Magar, Rai, Gurung, Limbu and Sherpa. The core areas occupied by these major ethnic groups are depicted in Figure 1.2.1. The first three groups, i.e. Brahman, Chhetri and Thakuri, are Nepali-speaking groups and account for over 58% of the total population.

A dominant ethnic group living in the Study Area is the Chhetri, which is distributed in the area except for the Terai and the High Himal. Other Nepali speaking groups such as the Thakuri and the Brahman inhabit the Far Western Development Region.

The Bhotiya, which speaks the Tibet-Burma language and has customs similar to the Sherpa, lives in the High Himal Zone extending along the Humla and Mugu Karnali rivers. The Magar, which has a social culture based on Buddhism, inhabit the valley of the Thuli Bheri River.

The Surkhet valley, where flat terrain extends, is inhabited by the Tharu, which is a dominant ethnic group living in the Terai Zone. The Newar, which occupies such town area as Dipayal and Silgadhi, is mainly engaged in commercial activities.

In the Dailekh District where one reservoir type project is located, nearly 97% of the population is Nepali speaking (refer to Table 1.2.1). Therefore, if involuntary resettlement is conducted within the district, the problem of friction among ethnic groups is not likely to occur.

If the involuntary resettlement is implemented from LR-1, which is one of priority schemes selected in the hydropower sector, in Dailekh to Terai area, careful consideration about the relation between the resettlers and host groups is essential. Since Nepal is composed of many different ethnic groups for many years and HMG/N never experienced the friction of ethnic groups with involuntary resettlement programmes, this sort of problem is no likely to occur as far as fair treatment to both resettlers and host groups is made.