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No. 1

FEDERATIVE REPUBLIC OF BRAZIL

THE STUDY

ON

THE DISASTER PREVENTION AND RESTORATION PROJECT

IN

SERRA DO MAR-CUBATAO REGION, STATE OF SAO PAULO

FINAL REPORT

DATA BOOK

JANUARY 1991

JAPAN INTERNATIONAL COOPERATION AGENCY

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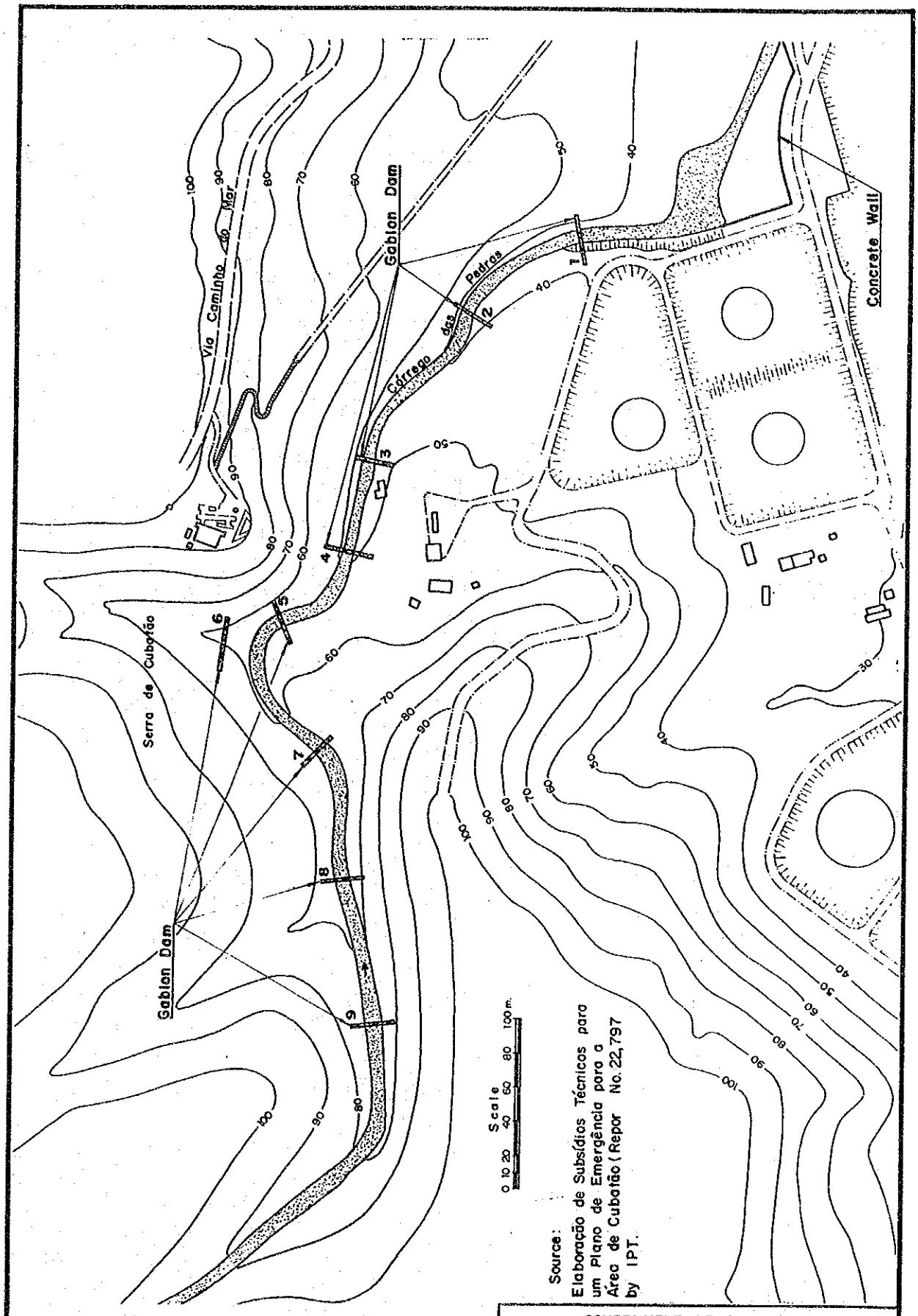

FIG. 1.1
LAYOUT OF EXISTING GABION DAM IN PEDRAS RIVER

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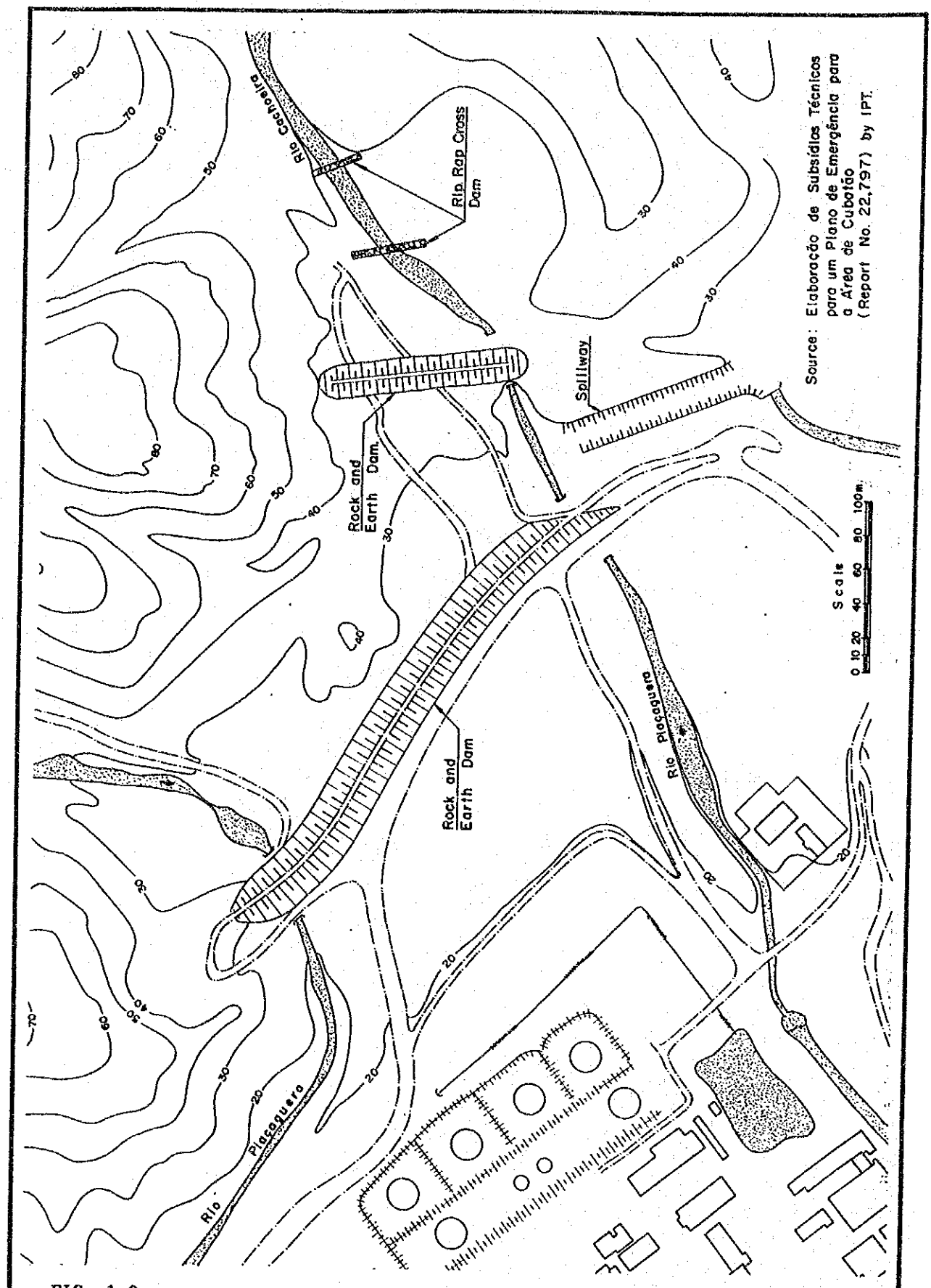

FIG. 1.2
LAYOUT OF EXISTING FLOOD DIKE AND RIPRAP CROSS DAM IN CACHOEIRA RIVER

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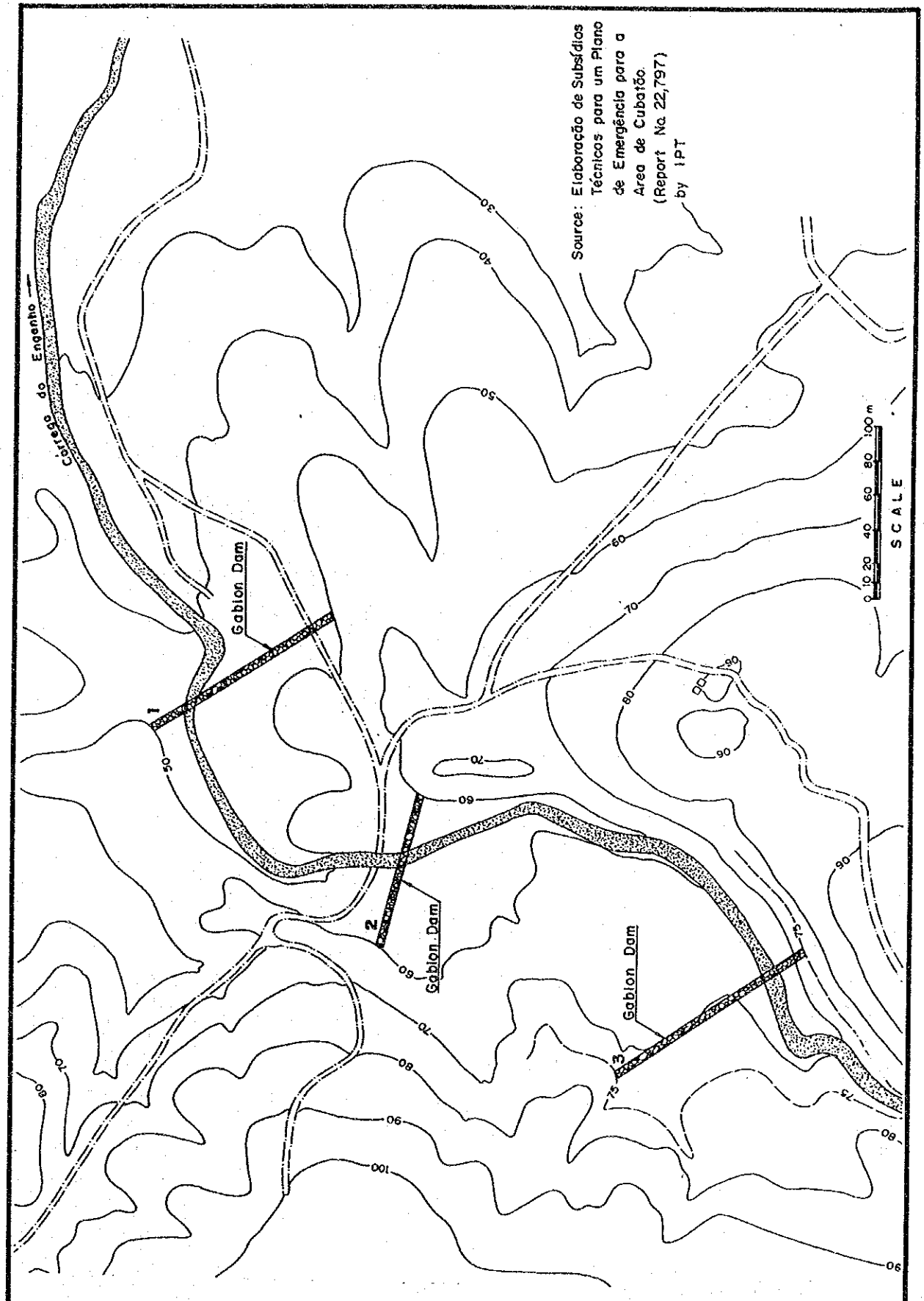

FIG. 1.3
LAYOUT OF EXISTING GABION DAM IN ENGENHO RIVER

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TABLE 2.1 HOURLY RAINFALL DATA OF MAJOR PAST FLOODS (1/3)

FEB.24-25,1971 FLOOD

DATE	TIME	USINA HENRY BORDEN R(mm)	USINA HENRY BORDEN RT(mm)
2.24	20	0.0	0.0
2.24	21	7.0	7.0
2.24	22	2.0	9.0
2.24	23	0.0	9.0
2.24	24	0.0	9.0
2.25	1	2.0	11.0
2.25	2	0.3	11.3
2.25	3	3.7	15.0
2.25	4	0.0	15.0
2.25	5	1.0	16.0
2.25	6	1.0	17.0
2.25	7	29.0	46.0
2.25	8	4.0	50.0
2.25	9	40.2	90.2
2.25	10	9.8	100.0
2.25	11	28.0	128.0
2.25	12	36.0	164.0
2.25	13	22.8	186.8
2.25	14	9.2	196.0
2.25	15	4.8	200.8
2.25	16	6.2	207.0
2.25	17	6.0	213.0
2.25	18	3.0	216.0
2.25	19	3.0	219.0
2.25	20	1.0	220.0
2.25	21	4.0	224.0
2.25	22	2.0	226.0
2.25	23	2.0	228.0
2.25	24	0.5	228.5
2.26	1	5.5	234.0
2.26	2	4.0	238.0
2.26	3	6.0	244.0
2.26	4	4.0	248.0
2.26	5	1.0	249.0
2.26	6	3.0	252.0
2.26	7	0.0	252.0

Source:ELETROPAULO

JAN.16-17,1973 FLOOD

DATE	TIME	STA.E3-153R R(mm)	STA.E3-153R RT(mm)
1.16	8	9.3	9.3
1.16	9	25.2	34.5
1.16	10	20.3	54.8
1.16	11	16.7	71.5
1.16	12	18.5	90.0
1.16	13	15.0	105.0
1.16	14	6.6	111.6
1.16	15	2.3	113.9
1.16	16	1.1	115.0
1.16	17	0.6	115.6
1.16	18	3.8	119.4
1.16	19	0.5	119.9
1.16	20	7.4	127.3
1.16	21	8.7	136.0
1.16	22	1.9	137.9
1.16	23	6.2	144.1
1.16	24	2.3	146.4
1.17	1	0.0	146.4
1.17	2	1.0	147.4
1.17	3	2.0	149.4
1.17	4	0.9	150.3
1.17	5	2.2	152.5
1.17	6	4.0	156.5
1.17	7	3.2	159.7

JAN.20-23,1976 FLOOD

DATE	TIME	STA.E3-153R R(mm)	STA.E3-153R RT(mm)	STA.E3-038R R(mm)	STA.E3-038R RT(mm)
1.20	20	0.0	0.0	0.0	0.0
1.20	21	0.0	0.0	0.0	0.0
1.20	22	57.3	57.3	17.6	17.6
1.20	23	30.3	87.6	9.9	27.5
1.20	24	0.7	88.3	0.5	28.0
1.21	1	0.2	88.5	0.7	28.7
1.21	2	0.2	88.7	2.1	30.8
1.21	3	0.4	89.1	0.7	31.5
1.21	4	2.0	91.1	2.6	34.1
1.21	5	2.7	93.8	1.2	35.3
1.21	6	1.9	95.7	3.2	38.5
1.21	7	1.3	97.0	1.2	39.7
1.21	8	2.1	99.1	3.3	43.0
1.21	9	2.7	101.8	2.5	45.5
1.21	10	7.8	109.6	4.4	49.9
1.21	11	0.9	110.5	1.4	51.3
1.21	12	0.8	111.3	1.1	52.4
1.21	13	0.0	111.3	0.0	52.4
1.21	14	0.1	111.4	1.6	54.0
1.21	15	2.0	113.4	0.8	54.8
1.21	16	10.2	123.6	2.4	57.2
1.21	17	10.2	133.8	18.1	75.3
1.21	18	29.7	163.5	16.0	91.3
1.21	19	49.8	213.3	46.2	137.5
1.21	20	35.7	249.0	18.4	155.9
1.21	21	22.1	271.1	6.5	162.4
1.21	22	16.3	287.4	3.7	166.1
1.21	23	18.4	305.8	9.7	175.8
1.21	24	33.9	339.7	13.9	189.7
1.22	1	24.0	363.7	27.2	216.9
1.22	2	6.1	369.8	11.3	228.2
1.22	3	2.4	372.2	3.1	231.3
1.22	4	2.4	374.6	2.2	233.5
1.22	5	2.5	377.1	2.8	236.3
1.22	6	4.5	381.6	3.6	239.9
1.22	7	2.9	384.5	3.3	243.2
1.22	8	2.2	386.7	0.5	243.7
1.22	9	0.8	387.5	0.9	244.6
1.22	10	0.7	388.2	0.2	244.8
1.22	11	1.3	389.5	0.1	244.9
1.22	12	1.2	390.7	0.1	245.0
1.22	13	0.4	391.1	2.1	247.1
1.22	14	1.9	393.0	3.1	250.2
1.22	15	2.5	395.5	2.4	252.6
1.22	16	1.1	396.6	3.6	256.2
1.22	17	4.6	401.2	7.0	263.2
1.22	18	6.1	407.3	2.4	265.6
1.22	19	0.6	407.9	1.1	266.7
1.22	20	0.6	408.5	0.1	266.8
1.22	21	1.9	410.4	2.6	269.4
1.22	22	2.0	412.4	1.6	271.0
1.22	23	0.7	413.1	0.8	271.8
1.22	24	0.8	413.9	1.3	273.1
1.23	1	1.4	415.3	0.7	273.8
1.23	2	1.3	416.6	2.0	275.8
1.23	3	1.9	418.5	0.8	276.6
1.23	4	7.7	426.2	2.6	279.2
1.23	5	3.3	429.5	0.5	279.7
1.23	6	0.4	429.9	1.2	280.9
1.23	7	1.3	431.2	1.2	282.1

Source;CTH/DAEE

TABLE 2.1 HOURLY RAINFALL DATA OF MAJOR PAST FLOODS (2/3)

JAN.27-29,1976 FLOOD

DATE	TIME	STA.E3-153R R(mm)	STA.E3-153R RT(mm)	STA.E3-038R R(mm)	STA.E3-038R RT(mm)
1.27	12	14.7	14.7		
1.27	13	17.0	31.7		
1.27	14	13.6	45.3		
1.27	15	0.0	45.3		
1.27	16	7.5	52.8		
1.27	17	8.8	61.6		
1.27	18	2.8	64.4		
1.27	19	0.1	64.5		
1.27	20	0.1	64.6		
1.27	21	0.0	64.6		
1.27	22	0.1	64.7		
1.27	23	0.1	64.8		
1.27	24	0.5	65.3		
1.28	1	0.1	65.4		
1.28	2	4.9	70.3		
1.28	3	0.0	70.3		
1.28	4	0.3	70.6		
1.28	5	2.9	73.5		
1.28	6	0.5	74.0		
1.28	7	0.1	74.1		
1.28	8	1.9	76.0	0.7	0.7
1.28	9	10.2	86.2	1.6	2.3
1.28	10	9.6	95.8	4.0	6.3
1.28	11	6.7	102.5	13.0	19.3
1.28	12	26.4	128.9	36.9	55.2
1.28	13	27.2	156.1	17.4	72.6
1.28	14	10.2	166.3	13.7	86.3
1.28	15	18.9	185.2	24.9	111.2
1.28	16	15.8	201.0	19.3	130.5
1.28	17	16.2	217.2	11.8	142.3
1.28	18	4.1	221.3	6.6	148.9
1.28	19	14.6	235.9	2.8	151.7
1.28	20	3.0	238.9	4.1	155.8
1.28	21	2.7	241.6	14.5	170.3
1.28	22	14.6	256.2	4.7	175.0
1.28	23	16.6	272.8	5.6	180.6
1.28	24	31.4	304.2	7.7	188.3
1.29	1	7.1	311.3	6.9	195.2
1.29	2	4.0	315.3	0.5	195.7
1.29	3	47.8	363.1	15.3	211.0
1.29	4	6.3	369.4	3.9	214.9
1.29	5	7.0	376.4	31.3	246.2
1.29	6	13.7	390.1	2.5	248.7
1.29	7	10.8	400.9	2.2	250.9
1.29	8		400.9	0.2	251.1
1.29	9		400.9	6.1	257.2
1.29	10		400.9	1.0	256.2
1.29	11		400.9	0.5	258.7
1.29	12		400.9	0.5	259.2
1.29	13		400.9	0.2	259.4
1.29	14		400.9	0.7	260.1
1.29	15		400.9	28.7	288.8
1.29	16		400.9	3.7	292.5
1.29	17		400.9	2.9	295.4
1.29	18		400.9	2.3	297.7
1.29	19		400.9	0.0	297.7

NOV.8-11,1979 FLOOD

DATE	TIME	STA.E3-153R R(mm)	STA.E3-153R RT(mm)	STA.E3-038R R(mm)	STA.E3-038R RT(mm)
11.08	20	0.0	0.0	0.0	0.0
11.08	21	7.6	7.6	2.5	2.5
11.08	22	4.4	12.0	0.8	3.3
11.08	23	1.0	13.0	1.4	4.7
11.08	24	2.4	15.4	0.4	5.1
11.09	1	1.0	16.4	2.0	7.1
11.09	2	1.5	17.9	2.9	10.0
11.09	3	2.4	20.3	0.5	10.5
11.09	4	2.0	22.3	3.8	14.3
11.09	5	3.8	26.1	5.1	19.4
11.09	6	5.1	31.2	1.0	20.4
11.09	7	6.6	37.8	6.6	27.0
11.09	8	2.9	40.7	2.8	29.8
11.09	9	2.6	43.3	10.5	40.3
11.09	10	7.7	51.0	10.1	50.4
11.09	11	6.9	57.9	8.0	58.4
11.09	12	8.5	66.4	4.2	62.6
11.09	13	9.8	76.2	5.2	67.8
11.09	14	8.1	84.3	8.8	76.6
11.09	15	6.3	90.6	5.4	82.0
11.09	16	5.8	96.4	3.4	85.4
11.09	17	8.3	104.7	3.0	88.4
11.09	18	6.4	111.1	4.9	93.3
11.09	19	6.5	117.6	3.3	96.6
11.09	20	7.3	124.9	2.9	99.5
11.09	21	8.3	133.2	2.1	101.6
11.09	22	7.3	140.5	1.4	103.0
11.09	23	9.2	149.7	1.5	104.5
11.09	24	7.5	157.2	4.1	108.6
11.10	1	9.9	167.1	2.6	111.2
11.10	2	8.2	175.3	2.0	113.2
11.10	3	6.0	181.3	3.1	116.3
11.10	4	6.7	188.0	3.2	119.5
11.10	5	5.4	193.4	4.2	123.7
11.10	6	6.7	200.1	4.0	127.7
11.10	7	5.8	205.9	1.8	129.5
11.10	8	7.5	213.4	2.5	132.0
11.10	9	6.2	219.6	3.3	135.3
11.10	10	10.2	229.8	7.8	143.1
11.10	11	10.7	240.5	7.3	150.4
11.10	12	13.0	253.5	5.9	156.3
11.10	13	11.2	264.7	6.8	163.1
11.10	14	9.3	274.0	8.0	171.1
11.10	15	9.3	283.3	9.7	180.8
11.10	16	8.7	292.0	6.2	187.0
11.10	17	7.3	299.3	10.0	197.0
11.10	18	9.7	309.0	8.5	205.5
11.10	19	6.9	315.9	4.8	210.3
11.10	20	3.6	319.5	0.3	210.6
11.10	21	3.8	323.3	3.5	214.1
11.10	22	4.4	327.7	2.2	216.3
11.10	23	2.2	329.9	2.4	218.7
11.10	24	6.0	335.9	3.2	221.9
11.11	1	3.9	339.8	2.1	224.0
11.11	2	3.9	343.7	4.9	228.9
11.11	3	2.9	346.6	0.7	229.6
11.11	4	0.0	346.6	0.0	229.6
11.11	5	0.0	346.6	3.4	233.0
11.11	6	0.5	347.1	2.3	235.3
11.11	7	1.7	348.8	0.7	236.0
11.11	8	4.3	353.1		
11.11	9	0.9	354.0		
11.11	10	0.9	354.9		
11.11	11	0.3	355.2		

Source;CTH/DAEE

TABLE 2.1 HOURLY RAINFALL DATA OF MAJOR PAST FLOODS (3/3)

FEB.1-2,1983 FLOOD

DATE	TIME	STA.E3-153R R(mm)	STA.E3-153R RT(mm)	STA.E3-038R R(mm)	STA.E3-038R RT(mm)
2.01	14	4.3	4.3		
2.01	15	16.0	20.3		
2.01	16	9.4	29.7		
2.01	17	2.3	32.0		
2.01	18	7.3	39.3		
2.01	19	0.8	40.1		
2.01	20	4.6	44.7		
2.01	21	24.7	69.4		
2.01	22	20.3	89.7		
2.01	23	18.2	107.9		
2.01	24	8.6	116.5		
2.02	1	6.5	123.0		
2.02	2	3.6	126.6		
2.02	3	4.5	131.1		
2.02	4	2.2	133.3		
2.02	5	0.3	133.6		
2.02	6	0.0	133.6		
2.02	7	0.7	134.3		

JAN.22-24,1985 FLOOD

DATE	TIME	STA.E3-153R R(mm)	STA.E3-153R RT(mm)	STA.E3-038R R(mm)	STA.E3-038R RT(mm)
1.22	10	0.1	0.1		
1.22	11	0.2	0.3		
1.22	12	0.4	0.7		
1.22	13	2.3	3.0	0.9	0.9
1.22	14	3.2	6.2	0.5	1.4
1.22	15	7.0	13.2	2.2	3.6
1.22	16	3.7	16.9	2.8	6.4
1.22	17	5.3	22.2	6.2	12.6
1.22	18	5.2	27.4	0.5	13.1
1.22	19	1.6	29.0	0.0	13.1
1.22	20	0.7	29.7	0.1	13.2
1.22	21	1.4	31.1	0.5	13.7
1.22	22	1.1	32.2	1.1	14.8
1.22	23	6.6	38.8	0.7	15.5
1.22	24	12.7	51.5	16.2	31.7
1.23	1	10.5	62.0	9.6	41.3
1.23	2	18.7	80.7	5.3	46.6
1.23	3	17.1	97.8	3.5	50.1
1.23	4	10.1	107.9	2.6	52.7
1.23	5	12.7	120.6	2.3	55.0
1.23	6	26.2	146.8	7.8	62.8
1.23	7	13.3	160.1	65.8	128.6
1.23	8	9.3	169.4	13.0	141.6
1.23	9	19.0	188.4	28.5	170.1
1.23	10	17.1	205.5	19.7	189.8
1.23	11	12.9	218.4	0.0	189.8
1.23	12	2.0	220.4	0.0	189.8
1.23	13	4.7	225.1	0.0	189.8
1.23	14	4.6	229.7	3.1	192.9
1.23	15	3.5	233.2	1.3	194.2
1.23	16	1.6	234.8	1.1	195.3
1.23	17	1.0	235.8	2.3	197.6
1.23	18	1.3	237.1	5.4	203.0
1.23	19	3.3	240.4	3.5	206.5
1.23	20	4.8	245.2	3.6	210.1
1.23	21	4.4	249.6	5.6	215.7
1.23	22	4.2	253.8	3.5	219.2
1.23	23	2.6	256.4	3.1	222.3
1.23	24	3.0	259.4	1.5	223.8
1.24	1	0.2	259.6	0.5	224.3
1.24	2	1.5	261.1	5.7	230.0
1.24	3	7.3	268.4	3.5	233.5
1.24	4	4.3	272.7	1.8	235.3
1.24	5	3.0	275.7	1.3	236.6
1.24	6	1.1	276.8	0.3	236.9
1.24	7	0.9	277.7	0.2	237.1

DEC.20-22,1988 FLOOD

DATE	TIME	STA.E3-153R R(mm)	STA.E3-153R RT(mm)	STA.E3-038R R(mm)	STA.E3-038R RT(mm)
12.20	16	1.6	1.6	11.1	11.1
12.20	17	1.3	2.9	10.0	21.1
12.20	18	0.0	2.9	5.0	26.1
12.20	19	8.5	11.4	28.5	54.6
12.20	20	11.3	22.7	26.5	81.1
12.20	21	16.9	39.6	15.6	96.7
12.20	22	5.2	44.8	7.0	103.7
12.20	23	1.3	46.1	2.3	106.0
12.20	24	29.1	75.2	5.1	111.1
12.21	1	9.2	84.4	6.0	117.1
12.21	2	3.9	88.3	3.3	120.4
12.21	3	1.1	89.4	0.8	121.2
12.21	4	20.3	109.7	9.9	131.1
12.21	5	7.2	116.9	7.8	138.9
12.21	6	3.9	120.8	6.6	145.5
12.21	7	7.8	128.6	3.2	148.7
12.21	8	4.7	133.3	2.3	151.0
12.21	9	2.0	135.3	0.3	151.3
12.21	10	2.5	137.8	0.8	152.1
12.21	11	4.0	141.8		
12.21	12	8.8	150.6		
12.21	13	6.8	157.4		
12.21	14	1.9	159.3		
12.21	15	2.2	161.5		
12.21	16	4.0	165.5		
12.21	17	5.6	171.1		
12.21	18	13.7	184.8		
12.21	19	16.8	201.6		
12.21	20	16.5	218.1		
12.21	21	6.6	224.7		
12.21	22	9.6	234.3		
12.21	23	13.2	247.5		
12.21	24	14.6	262.1		
12.22	1	7.2	269.3		
12.22	2	8.6	277.9		
12.22	3	4.5	282.4		
12.22	4	4.5	286.9		
12.22	5	4.0	290.9		
12.22	6	3.2	294.1		
12.22	7	1.3	295.4		
12.22	8	3.2	298.6		
12.22	9	4.5	303.1		
12.22	10	1.6	304.7		
12.22	11	1.7	306.4		
12.22	12	1.3	307.7		
12.22	13	0.6	308.3		
12.22	14	0.9	309.2		
12.22	15	1.2	310.4		
12.22	16	0.2	310.6		
12.22	17	0.2	310.8		
12.22	18	0.1	310.9		

Source;CTH/DAEE

TABLE 2.2 CORRELATION COEFFICIENT OF 1-DAY RAINFALL BETWEEN STATIONS (1/2)

Y			X		R		A		B	N
1	E3-236R	N = 124								
			3	E3-153R	.907	Y =	.8832	X +	6.20	97
			2	E3-143	.880	Y =	.8884	X +	8.09	124
			7	E3-241	.801	Y =	.7707	X +	22.85	91
			5	E3-101	.766	Y =	.9296	X +	28.27	124
			8	E3-109	.761	Y =	.8547	X +	33.07	120
			4	E3-144	.763	Y =	.8558	X +	29.19	40
			6	E3-038R	.660	Y =	.7527	X +	37.77	111
			10	E3-037	.593	Y =	.6270	X +	48.65	117
			9	E3-149R	.590	Y =	.6426	X +	53.36	120
2	E3-143	N = 287								
			1	E3-236R	.880	Y =	.8707	X +	13.20	124
			3	E3-153R	.875	Y =	.7944	X +	10.19	230
			7	E3-241	.760	Y =	.7296	X +	29.83	99
			5	E3-101	.623	Y =	.7285	X +	38.17	237
			8	E3-109	.615	Y =	.6368	X +	37.25	272
			9	E3-149R	.569	Y =	.5819	X +	56.89	156
			4	E3-144	.564	Y =	.6574	X +	39.70	150
			6	E3-038R	.522	Y =	.5783	X +	41.88	270
			10	E3-037	.494	Y =	.5059	X +	49.34	274
3	E3-153R	N = 237								
			1	E3-236R	.907	Y =	.9312	X +	11.01	97
			2	E3-143	.875	Y =	.9627	X +	11.78	230
			7	E3-241	.803	Y =	.7931	X +	29.70	91
			5	E3-101	.688	Y =	.8537	X +	40.19	211
			8	E3-109	.675	Y =	.7361	X +	38.70	228
			9	E3-149R	.667	Y =	.6954	X +	54.01	129
			6	E3-038R	.633	Y =	.7864	X +	39.09	226
			10	E3-037	.588	Y =	.6554	X +	51.25	230
			4	E3-144	.474	Y =	.5830	X +	55.12	105
4	E3-144	N = 155								
			1	E3-236R	.763	Y =	.6801	X +	10.38	40
			5	E3-101	.581	Y =	.6096	X +	25.17	112
			2	E3-143	.564	Y =	.4839	X +	18.92	150
			8	E3-109	.491	Y =	.4086	X +	26.19	145
			3	E3-153R	.474	Y =	.3858	X +	24.17	105
			9	E3-149R	.371	Y =	.3425	X +	50.02	49
			6	E3-038R	.347	Y =	.3185	X +	32.77	146
			10	E3-037	.312	Y =	.2550	X +	37.34	141
			7	E3-241	.361	Y =	.2043	X +	40.61	13
5	E3-101	N = 248								
			1	E3-236R	.766	Y =	.6317	X +	8.45	124
			3	E3-153R	.688	Y =	.5544	X +	9.26	211
			2	E3-143	.623	Y =	.5322	X +	16.14	237
			9	E3-149R	.621	Y =	.5100	X +	32.65	156
			6	E3-038R	.617	Y =	.5940	X +	20.54	233
			7	E3-241	.616	Y =	.5049	X +	19.30	100
			8	E3-109	.579	Y =	.5157	X +	23.37	244
			4	E3-144	.581	Y =	.5541	X +	23.80	112
			10	E3-037	.539	Y =	.4699	X +	28.74	235

R ;Correlation coefficients
A,B;Constants
N ;Number of samples

Source;CTH/DAEE

TABLE 2.2 CORRELATION COEFFICIENT OF 1-DAY RAINFALL BETWEEN STATIONS (2/2)

Y		X		R		A		B	N
6	E3-038R N = 343								
		1	E3-236R	.660	Y =	.5785	X +	13.38	111
		3	E3-153R	.633	Y =	.5099	X +	18.90	226
		10	E3-037	.616	Y =	.6119	X +	32.07	328
		5	E3-101	.617	Y =	.6407	X +	26.06	233
		7	E3-241	.622	Y =	.4865	X +	21.26	93
		9	E3-149R	.551	Y =	.5272	X +	34.57	142
		2	E3-143	.522	Y =	.4710	X +	28.54	270
		8	E3-109	.442	Y =	.4372	X +	37.44	290
		4	E3-144	.347	Y =	.3788	X +	48.74	146
7	E3-241 N = 100								
		3	E3-153R	.803	Y =	.8127	X +	5.49	91
		1	E3-236R	.801	Y =	.8333	X +	11.19	91
		2	E3-143	.760	Y =	.7912	X +	12.73	99
		8	E3-109	.703	Y =	.8010	X +	31.91	100
		6	E3-038R	.622	Y =	.7953	X +	32.59	93
		9	E3-149R	.618	Y =	.7049	X +	47.33	96
		5	E3-101	.616	Y =	.7516	X +	38.29	100
		10	E3-037	.590	Y =	.6430	X +	45.87	100
		4	E3-144	.361	Y =	.6394	X +	51.29	13
8	E3-109 N = 307								
		1	E3-236R	.761	Y =	.6782	X +	4.57	120
		7	E3-241	.703	Y =	.6161	X +	13.96	100
		9	E3-149R	.693	Y =	.6599	X +	29.64	153
		3	E3-153R	.675	Y =	.6196	X +	16.99	228
		2	E3-143	.615	Y =	.5943	X +	21.61	272
		5	E3-101	.579	Y =	.6498	X +	30.53	244
		10	E3-037	.514	Y =	.5237	X +	36.99	292
		4	E3-144	.491	Y =	.5896	X +	42.13	145
		6	E3-038R	.442	Y =	.4473	X +	38.63	290
9	E3-149R N = 156								
		10	E3-037	.776	Y =	.8385	X +	6.23	147
		8	E3-109	.693	Y =	.7273	X +	8.06	153
		3	E3-153R	.667	Y =	.6406	X -	1.80	129
		5	E3-101	.621	Y =	.7549	X +	10.73	156
		7	E3-241	.618	Y =	.5414	X +	9.23	96
		1	E3-236R	.590	Y =	.5417	X +	7.20	120
		2	E3-143	.569	Y =	.5571	X +	7.19	156
		6	E3-038R	.551	Y =	.5765	X +	18.57	142
		4	E3-144	.371	Y =	.4012	X +	30.95	49
10	E3-037 N = 344								
		9	E3-149R	.776	Y =	.7177	X +	20.28	147
		6	E3-038R	.616	Y =	.6200	X +	19.89	328
		3	E3-153R	.588	Y =	.5281	X +	14.96	230
		1	E3-236R	.593	Y =	.5602	X +	11.55	117
		7	E3-241	.590	Y =	.5418	X +	14.89	100
		5	E3-101	.539	Y =	.6190	X +	27.37	235
		8	E3-109	.514	Y =	.5036	X +	27.69	292
		2	E3-143	.494	Y =	.4821	X +	23.50	274
		4	E3-144	.312	Y =	.3818	X +	46.25	141

R ;Correlation coefficients
A,B;Constants
N ;Number of samples

Source;CTH/DAEE

TABLE 2.3 CORRELATION COEFFICIENT OF 2-DAY RAINFALL BETWEEN STATIONS (1/3)

Y			X	R		A	B	N
1	E3-236R	N= 63						
			3	E3-153R	0.905	Y = 0.9544 X -	0.32	45
			2	E3-143	0.892	Y = 0.9327 X +	7.74	63
			8	E3-109	0.756	Y = 0.8129 X +	74.27	61
			7	E3-241	0.738	Y = 0.6514 X +	68.54	45
			5	E3-101	0.726	Y = 0.8168 X +	74.03	63
			4	E3-144	0.729	Y = 0.6851 X +	85.63	21
			9	E3-149R	0.534	Y = 0.5219 X +	126.12	61
			6	E3-038R	0.524	Y = 0.5846 X +	101.63	55
			10	E3-037	0.472	Y = 0.4342 X +	123.65	59
2	E3-143	N=150						
			1	E3-236R	0.892	Y = 0.8529 X +	31.34	63
			3	E3-153R	0.851	Y = 0.8331 X +	12.72	115
			7	E3-241	0.622	Y = 0.5314 X +	96.93	51
			4	E3-144	0.607	Y = 0.5640 X +	90.30	75
			5	E3-101	0.563	Y = 0.5791 X +	95.96	121
			8	E3-109	0.549	Y = 0.5100 X +	94.51	142
			9	E3-149R	0.527	Y = 0.4862 X +	128.79	81
			10	E3-037	0.385	Y = 0.3424 X +	120.00	143
			6	E3-038R	0.305	Y = 0.3357 X +	117.12	139
3	E3-153R	N=121						
			1	E3-236R	0.905	Y = 0.8587 X +	34.56	45
			2	E3-143	0.851	Y = 0.8691 X +	39.67	115
			7	E3-241	0.707	Y = 0.6024 X +	93.84	45
			9	E3-149R	0.652	Y = 0.5847 X +	120.96	63
			8	E3-109	0.643	Y = 0.5955 X +	99.61	116
			5	E3-101	0.640	Y = 0.6310 X +	107.26	106
			4	E3-144	0.549	Y = 0.5658 X +	112.32	50
			10	E3-037	0.512	Y = 0.4712 X +	126.67	117
			6	E3-038R	0.507	Y = 0.5927 X +	106.94	115
4	E3-144	N= 79						
			5	E3-101	0.716	Y = 0.7307 X +	41.48	56
			1	E3-236R	0.729	Y = 0.7751 X +	4.19	21
			8	E3-109	0.612	Y = 0.5582 X +	31.95	74
			2	E3-143	0.607	Y = 0.6538 X +	13.48	75
			3	E3-153R	0.549	Y = 0.5333 X +	23.69	50
			10	E3-037	0.466	Y = 0.3862 X +	58.10	71
			6	E3-038R	0.448	Y = 0.4805 X +	44.20	73
			9	E3-149R	0.290	Y = 0.2127 X +	121.36	25
			7	E3-241	0.281	Y = 0.2045 X +	82.44	7

R ;Correlation coefficients
A,B;Constants
N ;Number of samples

Source;CTH/DAEE

TABLE 2.3 CORRELATION COEFFICIENT OF 2-DAY RAINFALL BETWEEN STATIONS (2/3)

Y			X		R		A		B		N
5	E3-101	N=128									
			1	E3-236R	0.726	Y =	0.6445	X +	14.15		63
			4	E3-144	0.716	Y =	0.7025	X +	28.25		56
			6	E3-038R	0.673	Y =	0.7549	X +	22.81		119
			9	E3-149R	0.652	Y =	0.5156	X +	67.28		81
			3	E3-153R	0.640	Y =	0.6495	X +	1.60		106
			8	E3-109	0.587	Y =	0.5413	X +	45.21		126
			2	E3-143	0.563	Y =	0.5476	X +	31.15		121
			10	E3-037	0.523	Y =	0.4694	X +	59.78		121
			7	E3-241	0.449	Y =	0.3720	X +	61.75		52
6	E3-038R	N=183									
			5	E3-101	0.673	Y =	0.6001	X +	56.07		119
			9	E3-149R	0.615	Y =	0.5137	X +	71.95		72
			10	E3-037	0.518	Y =	0.4446	X +	83.79		174
			1	E3-236R	0.524	Y =	0.4702	X +	45.42		55
			3	E3-153R	0.507	Y =	0.4334	X +	50.67		115
			8	E3-109	0.458	Y =	0.4176	X +	76.61		152
			4	E3-144	0.448	Y =	0.4172	X +	92.98		73
			7	E3-241	0.398	Y =	0.2966	X +	72.11		48
			2	E3-143	0.305	Y =	0.2780	X +	89.12		139
7	E3-241	N= 52									
			1	E3-236R	0.738	Y =	0.8352	X +	23.11		45
			8	E3-109	0.705	Y =	0.8053	X +	67.85		52
			3	E3-153R	0.707	Y =	0.8301	X +	4.53		45
			2	E3-143	0.622	Y =	0.7288	X +	37.85		51
			9	E3-149R	0.527	Y =	0.5751	X +	114.97		50
			10	E3-037	0.489	Y =	0.5078	X +	112.08		52
			5	E3-101	0.449	Y =	0.5417	X +	105.27		52
			6	E3-038R	0.398	Y =	0.5352	X +	102.17		48
			4	E3-144	0.281	Y =	0.3855	X +	143.06		7
8	E3-109	N=163									
			1	E3-236R	0.756	Y =	0.7033	X +	4.45		61
			7	E3-241	0.705	Y =	0.6166	X +	24.37		52
			9	E3-149R	0.647	Y =	0.5829	X +	68.45		80
			3	E3-153R	0.643	Y =	0.6946	X +	18.45		116
			4	E3-144	0.612	Y =	0.6709	X +	73.93		74
			5	E3-101	0.587	Y =	0.6367	X +	62.41		126
			2	E3-143	0.549	Y =	0.5907	X +	42.01		142
			10	E3-037	0.533	Y =	0.5405	X +	70.59		154
			6	E3-038R	0.458	Y =	0.5029	X +	69.89		152

R ;Correlation coefficients
A,B;Constants
N ;Number of samples

Source;CTH/DAEE

TABLE 2.3 CORRELATION COEFFICIENT OF 2-DAY RAINFALL BETWEEN STATIONS (3/3)

	Y		X	R		A		B	N
9	E3-149R	N= 81							
			10	E3-037	0.789	Y =	0.8629 X +	7.66	76
			5	E3-101	0.652	Y =	0.8237 X +	8.56	81
			3	E3-153R	0.652	Y =	0.7276 X -	23.63	63
			8	E3-109	0.647	Y =	0.7191 X +	15.87	80
			6	E3-038R	0.615	Y =	0.7365 X +	13.66	72
			1	E3-236R	0.534	Y =	0.5465 X +	7.64	61
			2	E3-143	0.527	Y =	0.5710 X +	6.79	81
			7	E3-241	0.527	Y =	0.4828 X +	23.25	50
			4	E3-144	0.290	Y =	0.3952 X +	59.88	25
10	E3-037	N=184							
			9	E3-149R	0.789	Y =	0.7222 X +	40.37	76
			8	E3-109	0.533	Y =	0.5265 X +	51.08	154
			5	E3-101	0.523	Y =	0.5838 X +	58.05	121
			6	E3-038R	0.518	Y =	0.6025 X +	40.79	174
			3	E3-153R	0.512	Y =	0.5574 X +	24.19	117
			7	E3-241	0.489	Y =	0.4712 X +	39.53	52
			1	E3-236R	0.472	Y =	0.5130 X +	31.80	59
			4	E3-144	0.466	Y =	0.5620 X +	73.01	71
			2	E3-143	0.385	Y =	0.4321 X +	54.70	143

R ;Correlation coefficients
A,B;Constants
N ;Number of samples

Source;CTH/DAEE

TABLE 2.4 1-DAY RAINFALL DATA OF STATIONS (1/8)

K	DATE	1 E3-236R	2 E3-143	3 E3-153R	4 E3-144	5 E3-101	6 E3-038R	7 E3-241	8 E3-109	9 E3-149R	10 E3-037
1	1936 1.17	-	-	(198.88)	-	-	203.20	-	(63.59)	-	50.80
2	1936 3. 3	-	-	(148.95)	-	-	139.70	-	(50.29)	-	25.40
3	1937 1.24	-	-	(128.98)	-	-	114.30	-	(63.59)	-	50.80
4	1937 1.25	-	-	(107.04)	-	-	86.40	-	(58.25)	-	40.60
5	1937 5. 3	-	-	(118.99)	-	-	101.60	-	(42.33)	-	10.20
6	1937 5. 4	-	-	(118.99)	-	-	101.60	-	(94.18)	-	109.20
7	1938 2. 9	-	-	(194.87)	-	-	198.10	-	(79.52)	-	81.20
8	1938 2.10	-	-	(72.99)	-	-	43.10	-	(56.94)	-	38.10
9	1938 6. 5	-	-	(158.94)	-	-	152.40	-	(131.42)	-	180.30
10	1938 6. 6	-	-	(67.09)	-	-	35.60	-	(40.97)	-	7.60
11	1939 1.23	-	-	(47.12)	-	-	10.20	-	(44.95)	-	15.20
12	1939 1.24	-	-	(93.04)	-	-	68.60	-	(58.25)	-	40.60
13	1939 2.22	-	-	(122.92)	-	-	106.60	-	(40.97)	-	7.60
14	1940 1. 7	-	-	(128.98)	-	-	114.30	-	(110.15)	-	139.70
15	1940 1. 8	-	-	(131.02)	-	-	116.90	-	(75.59)	-	73.70
16	1940 3.14	-	-	(146.98)	-	-	137.20	-	(100.00)	-	(104.95)
17	1940 12.22	-	-	(146.98)	-	-	137.20	-	(100.83)	-	121.90
18	1940 12.23	-	-	(55.14)	-	-	20.40	-	(38.30)	-	2.50
19	1941 2. 2	-	-	(134.95)	-	-	121.90	-	(62.28)	-	48.30
20	1941 4.17	-	-	(47.12)	-	-	10.20	-	(58.25)	-	40.60
21	1941 4.18	-	-	(204.86)	-	-	210.80	-	(56.94)	-	38.10
22	1942 2.17	-	-	(85.02)	-	-	58.40	-	(39.66)	-	5.10
23	1942 2.18	-	-	(214.85)	-	-	223.50	-	(82.24)	-	86.40
24	1942 2.19	-	-	(144.94)	-	-	134.60	-	(95.54)	-	111.80
25	1942 3.16	-	-	(55.06)	-	-	20.30	-	(46.31)	-	17.80
26	1942 3.17	-	-	(123.00)	-	-	106.70	-	(102.19)	-	124.50
27	1942 11.17	-	-	(104.99)	-	-	83.80	-	(54.27)	-	33.00
28	1942 11.18	-	-	(103.03)	-	-	81.30	-	(74.23)	-	71.10
29	1942 11.30	-	-	(89.03)	-	-	63.50	-	(98.16)	-	116.80
30	1942 12. 1	-	-	(99.02)	-	-	76.20	-	(64.90)	-	53.30
31	1943 10.27	-	-	(91.07)	-	-	66.10	-	(55.63)	-	35.60
32	1943 10.28	-	-	(75.03)	-	-	45.70	-	(90.20)	-	101.60
33	1943 11.18	-	-	(113.01)	-	-	94.00	-	(79.57)	-	81.30
34	1944 2.27	-	-	(232.85)	-	-	246.40	-	(170.02)	-	254.00
35	1944 2.28	-	-	(47.12)	-	-	10.20	-	(50.29)	-	25.40
36	1944 3.12	-	-	(43.11)	-	-	5.10	-	(46.31)	-	17.80
37	1944 3.13	-	-	(228.84)	-	-	241.30	-	(150.06)	-	215.90
38	1945 3. 3	-	-	(152.57)	-	-	109.20	-	154.70	-	86.40
39	1945 3. 4	-	-	(66.67)	-	-	30.50	-	38.00	-	63.50
40	1945 4. 2	-	-	(39.07)	-	-	45.70	-	.50	-	25.40
41	1945 4. 3	-	-	(81.98)	-	-	99.10	-	58.80	-	17.80
42	1945 6.19	-	-	(49.08)	-	-	12.70	-	(50.29)	-	25.40
43	1945 6.20	-	-	(44.23)	-	-	111.80	-	7.50	-	88.90
44	1946 1.19	-	-	(120.44)	-	94.00	114.30	-	82.10	-	147.30
45	1946 1.20	-	-	(60.68)	-	24.00	25.40	-	32.00	-	25.40
46	1946 3.14	-	-	(130.69)	-	106.00	94.00	-	124.00	-	94.00
47	1946 3.15	-	-	(52.15)	-	14.00	30.50	-	15.40	-	66.00
48	1946 3.24	-	-	(53.79)	-	-	106.70	-	20.50	-	76.20
49	1947 1.23	-	-	(195.85)	-	-	254.00	-	213.50	-	35.60
50	1947 1.24	-	-	(91.42)	-	60.00	58.40	-	63.80	-	78.70

( );estimated by correlation

Source;CTH/DAEE

TABLE 2.4 1-DAY RAINFALL DATA OF STATIONS (2/8)

(MM)

K	DATE	1 E3-236R	2 E3-143	3 E3-153R	4 E3-144	5 E3-101	6 E3-038R	7 E3-241	8 E3-109	9 E3-149R	10 E3-037
51	1947 4.19	-	-	(95.60)	-	-	152.40	-	77.30	-	127.00
52	1947 5.18	-	-	(42.68)	-	-	38.10	-	5.40	-	5.10
53	1947 5.19	-	-	(131.15)	-	-	127.00	-	125.60	-	144.80
54	1947 6.20	-	-	(191.51)	-	-	200.70	-	207.60	-	(144.32)
55	1947 6.21	-	-	(127.69)	-	-	299.70	-	120.90	-	218.40
56	1948 3.10	-	-	(81.25)	-	-	27.90	-	57.80	-	38.10
57	1948 3.11	-	-	(100.90)	-	-	101.60	-	84.50	-	147.30
58	1948 3.24	-	-	(55.49)	-	-	132.10	-	22.80	-	88.90
59	1948 3.25	-	-	(68.29)	-	-	35.60	-	40.20	-	50.80
60	1948 11.22	-	-	(104.95)	-	-	.00	-	90.00	-	.00
61	1948 11.23	-	-	(45.55)	-	-	.00	-	9.30	-	.00
62	1949 1. 7	-	-	(38.70)	-	-	88.90	-	.00	-	71.10
63	1949 2. 8	-	-	(42.02)	-	-	106.60	-	4.50	-	172.70
64	1949 2. 9	-	-	(38.70)	-	-	25.40	-	.00	-	12.70
65	1949 3.10	-	-	(66.53)	-	-	.00	-	37.80	-	.00
66	1949 3.11	-	-	(100.75)	-	-	.00	-	84.30	-	.00
67	1950 3.18	-	78.10	(86.96)	-	-	61.00	-	.00	-	60.90
68	1950 3.19	-	86.10	(94.66)	78.00	-	132.10	-	82.00	-	25.40
69	1950 3.31	-	6.40	(17.94)	6.50	-	58.40	-	7.40	-	.00
70	1950 4. 1	-	30.40	(41.04)	6.00	-	139.70	-	7.90	-	.00
71	1950 4. 2	-	14.40	(25.64)	44.80	-	167.60	-	57.80	-	7.60
72	1950 5. 5	-	96.80	(104.97)	-	-	.00	-	135.90	-	.00
73	1950 5. 6	-	10.20	(21.60)	-	-	.00	-	11.40	-	.00
74	1950 9.21	-	88.70	(97.17)	26.00	-	48.30	-	80.00	-	68.60
75	1950 9.22	-	89.50	(97.94)	80.00	-	51.80	-	140.10	-	50.80
76	1950 12. 4	-	171.40	(176.78)	80.90	-	152.40	-	.80	-	127.00
77	1950 12. 5	-	11.30	(22.65)	8.40	-	10.20	-	12.90	-	10.20
78	1950 12 30	-	138.50	(145.11)	-	-	134.60	-	120.30	-	88.90
79	1950 12.31	-	20.40	(31.42)	43.60	-	27.90	-	50.30	-	55.90
80	1951 10.17	-	52.20	(62.03)	.00	-	50.80	-	.10	-	.00
81	1951 10.18	-	97.00	(105.16)	.50	-	15.70	-	8.30	-	40.60
82	1951 10.19	-	126.10	(133.17)	22.40	-	.00	-	40.60	-	50.80
83	1952 1.11	-	190.50	(195.17)	3.00	-	127.00	-	(134.82)	-	106.70
84	1952 1.12	-	22.40	(33.34)	40.00	-	63.50	-	(34.92)	-	25.40
85	1952 2. 5	-	71.80	(80.90)	-	-	127.00	-	(64.28)	-	132.10
86	1952 2. 6	-	9.80	(21.21)	47.00	-	7.60	-	(27.43)	-	25.40
87	1952 2.20	-	215.50	(219.24)	7.00	-	127.00	-	(149.68)	-	203.90
88	1952 2.21	-	16.70	(27.85)	100.00	-	38.10	-	(31.53)	-	162.50
89	1952 9.16	-	7.80	6.90	8.00	-	127.00	-	(21.26)	-	38.10
90	1952 9.17	-	33.00	37.30	23.00	-	45.70	-	(40.10)	-	33.00
91	1952 9.18	-	28.70	32.00	27.50	-	50.80	-	(36.81)	-	.00
92	1952 10.12	-	119.80	122.00	78.00	-	101.60	-	142.70	-	45.70
93	1952 10.13	-	10.50	5.60	5.20	-	7.60	-	4.30	-	20.30
94	1952 12.12	-	51.80	62.90	64.00	-	127.00	-	(55.96)	-	45.70
95	1952 12.13	-	2.60	2.40	.60	-	50.80	-	(18.48)	-	20.30
96	1953 1.24	-	108.60	(116.33)	.00	-	228.60	-	130.00	-	127.00
97	1953 2. 1	-	33.80	40.50	30.00	-	25.40	-	23.50	-	12.70
98	1953 2. 2	-	101.60	86.80	40.00	-	(63.16)	-	124.50	-	55.90
99	1953 7.31	-	25.80	(36.61)	18.50	-	203.20	-	15.00	-	91.40
100	1953 8. 1	-	18.70	(29.78)	35.60	-	12.70	-	143.00	-	2.50

( );estimated by correlation

Source;CTH/DAEE

TABLE 2.4 1-DAY RAINFALL DATA OF STATIONS (3/8) (MM)

K	DATE	1 E3-236R	2 E3-143	3 E3-153R	4 E3-144	5 E3-101	6 E3-038R	7 E3-241	8 E3-109	9 E3-149R	10 E3-037
101	1953 12. 4	-	182.20	168.40	72.80	-	165.10	-	90.40	-	83.80
102	1953 12. 5	-	91.00	96.20	-	-	40.60	-	145.70	-	66.10
103	1954 4.13	-	151.80	155.80	44.60	-	111.80	-	117.20	-	109.20
104	1954 4.14	-	69.30	54.70	11.80	-	38.10	-	132.80	-	50.80
105	1954 4.30	-	174.80	186.00	48.20	-	134.60	-	110.10	-	(103.34)
106	1954 5. 1	-	24.40	19.50	15.10	-	7.60	-	137.30	-	.00
107	1955 1.14	-	109.50	75.20	83.40	-	73.60	-	60.40	-	50.80
108	1955 1.15	-	122.00	162.40	-	-	55.90	-	120.30	-	45.70
109	1955 4.16	-	91.70	100.80	-	64.90	65.50	-	45.20	-	58.40
110	1955 4.17	-	111.80	98.40	-	40.00	45.70	-	62.30	-	45.80
111	1955 5. 5	-	.00 (	11.78)	.00	.00	114.30	-	40.30	-	104.10
112	1955 5.6	-	45.80 (	55.87)	13.60	90.20	5.10	-	20.20	-	22.90
113	1956 3. 1	-	153.60	275.20	-	197.40	221.00	-	146.50	-	101.60
114	1956 3. 2	-	12.20	15.10	-	15.90	27.90	-	22.10	-	33.00
115	1956 3.18	-	61.80	72.60	-	107.20	81.30	-	52.50	-	86.40
116	1956 3.19	-	119.10	139.80	-	96.90	104.20	-	68.90	-	73.70
117	1956 3.20	-	45.30	50.60	-	104.30	33.00	-	75.90	-	33.00
118	1956 3.24	-	162.80	228.60	-	101.50	203.20	-	126.80	-	76.20
119	1956 3.25	-	5.70	4.50	3.70	91.20	27.90	-	86.30	-	60.90
120	1956 11.25	-	3.20 (	14.86)	5.10	10.00	30.50	-	16.20	-	10.20
121	1956 11.26	-	41.20 (	51.44)	.00	.00	142.30	-	.00	-	210.80
122	1957 2.20	-	27.00	20.20	72.00	47.50	25.40	-	35.60	-	38.10
123	1957 2.21	-	101.00	100.30	101.00	39.70	40.70	-	100.50	-	45.70
124	1957 10.28	-	11.30	10.60	24.00	12.00	17.80	-	46.30	-	22.90
125	1957 10.29	-	112.90	105.80	78.80	60.00	94.00	-	70.20	-	58.40
126	1957 12. 7	-	16.80	26.70	.00	30.00	5.10	-	42.80	-	12.70
127	1957 12. 8	-	121.00	97.80	135.50	6.70	63.50	-	85.20	-	83.80
128	1958 3.23	-	123.00	168.90	52.50	167.50	175.30	-	154.00	-	182.90
129	1958 3.24	-	165.00	112.50	200.00	102.80	152.40	-	102.00	-	61.00
130	1958 4.13	-	134.70	148.70	28.20	180.40	104.10	-	80.30	-	172.70
131	1958 4.14	-	21.00	27.50	22.60	74.30	15.30	-	12.90	-	25.40
132	1958 10.30	-	.00 (	11.78)	.60	28.80 (	32.07)	-	3.20	-	.00
133	1958 10.31	-	112.00	135.20	60.00	- (	87.84)	-	42.50	-	.00
134	1958 12.14	-	2.20	18.90	16.80	9.30	10.20	-	.50	-	.00
135	1958 12.15	-	177.50	224.20	10.20	39.60	63.50	-	180.90	-	144.80
136	1958 12.20	-	16.60	19.20	-	.20	15.30	-	14.60	-	25.40
137	1958 12.21	-	161.20	203.90	-	35.80	86.40	-	121.90	-	86.40
138	1959 2.14	-	50.00	83.90	233.50	-	53.30	-	97.20	-	12.70
139	1959 2.15	-	168.00	220.10	121.30	-	142.20	-	138.60	-	152.40
140	1959 2.16	-	126.70	150.20	36.50	-	144.80	-	86.90	-	127.00
141	1959 11.25	-	24.00	124.50	-	97.30	109.20	-	42.30	-	76.20
142	1959 11.26	-	20.20	27.10	-	29.80	12.70	-	28.20	-	25.40
143	1959 12. 4	-	51.30	29.80	14.20	.00	.00	-	45.60	-	2.50
144	1959 12. 5	-	108.90	193.70	-	-	78.70	-	115.70	-	83.90
145	1960 1.24	-	105.50	131.20	64.60	6.30	12.70	-	36.20	-	25.40
146	1960 10.26	-	75.30	78.40	53.10	21.80	28.40	-	35.60	-	66.00
147	1960 10.27	-	101.50	137.70	54.00	18.30	66.00	-	60.30	-	53.30
148	1961 1.25	-	-	131.30	-	45.20	17.70	-	76.50	-	25.40
149	1961 1.26	-	-	133.10	100.40	90.60	66.00	-	95.40	-	76.20
150	1961 1.27	-	110.20	101.10	54.20	110.30	55.90	-	73.20	-	99.10

( );estimated by correlation

Source;CTH/DAEE

TABLE 2.4 1-DAY RAINFALL DATA OF STATIONS (4/8) (MM)

K	DATE	1 E3-236R	2 E3-143	3 E3-153R	4 E3-144	5 E3-101	6 E3-038R	7 E3-241	8 E3-109	9 E3-149R	10 E3-037
151	1961 2. 9	-	153.20	169.10	120.30	-	119.30	-	113.20	-	88.90
152	1961 2.10	-	15.90	15.60	.00	.00	2.50	-	32.30	-	7.60
153	1961 2.27	-	-	111.70	84.70	79.80	121.90	-	69.60	-	121.90
154	1961 2.30	-	-	277.30	20.00	-	147.30	-	333.20	-	205.70
155	1961 12.13	-	3.90	3.10	-	6.80	5.10	-	4.20	-	.00
156	1961 12.14	-	143.70	121.90	-	29.60	.00	-	105.20	-	.00
157	1962 1.26	-	94.30	114.30	126.10	12.80	96.50	-	136.80	-	228.60
158	1962 1.27	-	31.70	27.80	12.20	.10	55.90	-	13.60	-	190.50
159	1962 3.13	-	24.90	38.90	45.00	10.20	38.10	-	34.40	-	12.70
160	1962 3.14	-	83.40	93.20	37.40	120.80	101.60	-	133.40	-	66.10
161	1962 12.27	-	108.50	132.50	83.30	-	86.40	-	136.90	-	182.90
162	1962 12.28	-	24.50	23.40	25.00	-	20.40	-	33.20	-	20.30
163	1963 1.10	-	60.50	34.30	22.50	90.50	7.60	-	90.20	-	.00
164	1963 1.11	-	1.00	64.50	20.00	.30	129.50	-	68.50	-	15.20
165	1963 5.15	-	51.00	59.30	43.20	51.60	45.70	-	75.20	-	12.70
166	1963 5.16	-	44.50	100.90	34.80	9.90	45.80	-	112.60	-	35.50
167	1963 10.23	-	19.60	105.50	8.70	13.60	10.10	-	132.50	-	40.60
168	1963 10.24	-	-	47.10	2.40	11.70	2.50	-	32.40	-	2.50
169	1964 2. 1	-	8.50	8.50	.00	.00	.00	-	1.80	-	.00
170	1964 2. 2	-	90.00	90.00	13.50	1.20	10.20	-	13.70	-	45.70
171	1964 3. 7	-	35.50	35.50	77.00	31.30	66.00	-	91.60	-	60.90
172	1964 3. 8	-	12.00	12.00	1.10	10.50	25.40	-	95.10	-	15.20
173	1964 3.30	-	24.20	24.20	23.30	27.00	58.50	-	48.10	-	43.20
174	1964 3.31	-	84.60	84.60	8.60	5.20	7.60	-	16.70	-	12.70
175	1965 4.18	-	150.00	156.40	155.50	100.50	86.40	-	93.00	-	76.20
176	1965 4.19	-	140.00	157.20	125.50	70.20	170.10	-	15.90	-	132.10
177	1965 12.15	-	70.00	88.00	57.20	34.40	50.80	-	81.50	- (	51.38)
178	1965 12.16	-	-	68.50	16.00	17.30	12.70	-	58.90	- (	27.76)
179	1965 12.23	-	46.00	3.00	71.30	46.80	.00	-	4.20	.00 (	20.28)
180	1965 12.24	-	.00	.00	1.30	.00	.00	-	25.60	20.00 (	34.63)
181	1966 1.10	-	150.00	165.00	140.60	135.80	142.30	-	196.30	-	50.80
182	1966 1.11	-	72.00	75.00	60.10	37.30	76.20	-	182.50	-	63.50
183	1966 3. 6	-	51.00	100.00	130.10	136.40	127.00	-	161.20	-	139.70
184	1966 3. 7	-	210.00	83.00	189.30	185.20	177.80	-	235.60	-	152.40
185	1966 12.20	-	23.00	65.60	21.50	19.70	40.60	-	38.50	-	43.20
186	1966 12.21	-	60.00	230.00	55.00	46.90	88.90	-	73.90	-	91.40
187	1966 12.22	-	64.00	129.00	216.70	193.50	55.90	-	245.90	-	91.40
188	1966 12.23	-	61.00	48.60	129.30	169.60	198.10	-	140.00	-	254.00
189	1967 1.10	-	22.60	32.80	19.30	57.20	20.30	-	23.60	-	61.00
190	1967 1.11	-	81.00	145.20	14.50	93.30	76.20	-	178.60	-	30.50
191	1967 3.17	-	61.00	61.00	53.60	64.50	30.50	-	119.70	-	15.20
192	1967 3.18	-	60.00	60.00	45.00	85.60	165.10	-	13.60	-	43.20
193	1967 11. 2	-	10.00	148.00	7.90	148.10	10.20	-	12.30	- (	26.21)
194	1967 11. 3	-	23.00	2.50	5.20	2.50	33.00	-	31.80	- (	40.35)
195	1968 3.16	-	54.00	151.00	80.00	69.40	81.30	-	219.50	-	127.00
196	1968 3.17	-	13.00	12.90	30.00	14.10	27.90	-	21.00	-	22.90
197	1968 3.27	-	45.00	52.40	49.70	.00	96.50	-	66.50	-	243.80
198	1968 3.28	-	63.00	78.60	50.80	37.00	50.80	-	68.60	40.50	109.30
199	1968 12. 1	-	79.00	142.70	-	60.00	58.40	-	79.00	-	200.70
200	1968 12. 2	-	62.00	74.50	-	38.10	15.20	-	62.00	-	22.90

( );estimated by correlation

Source;CTH/DAEE

TABLE 2.4 1-DAY RAINFALL DATA OF STATIONS (5/8)

(MM)

K	DATE	1 E3-236R	2 E3-143	3 E3-153R	4 E3-144	5 E3-101	6 E3-038R	7 E3-241	8 E3-109	9 E3-149R	10 E3-037
201	1969 2.19	-	117.00	117.40	74.80	4.50	58.40	-	73.50	92.90	111.80
202	1969 2.20	-	42.60	55.70	44.30	49.30	38.10	-	150.70	27.00	71.10
203	1969 3.11	-	33.00	26.10	20.00	14.30	12.70	-	47.20	13.00	20.30
204	1969 3.12	-	71.00	78.60	58.00	21.60	88.90	-	31.40	17.00	10.20
205	1969 11.19	-	88.00	73.50	62.40	59.70	30.50	-	28.70	34.30	33.00
206	1969 11.20	-	290.00	263.20	168.10	65.10	111.80	-	248.60	56.10	81.30
207	1969 12. 7	-	110.00	118.50	-	51.20	66.00	-	124.30	-	66.00
208	1969 12. 8	-	34.50	26.50	-	15.00	5.10	-	29.50	-	17.80
209	1970 1. 9	-	50.00	94.90	-	83.60	124.40	-	56.70	.00	147.30
210	1970 2.23	-	180.00	210.90	-	20.80	152.40	-	98.40	90.20	195.60
211	1970 2.24	-	9.30	19.10	-	6.20	2.50	-	5.30	40.30	.00
212	1970 3.13	-	100.00	204.60	-	145.40	96.50	-	167.50	95.30	83.80
213	1970 3.14	-	166.00	88.70	-	19.80	61.00	-	121.40	113.40	66.00
214	1971 2.24	-	100.00	58.30	-	67.50	47.50	-	17.40	60.10	30.50
215	1971 2.25	-	227.00	292.30	-	186.50 (	167.95)	-	220.70	436.70	116.80
216	1971 3.24	-	50.10	65.20	-	48.20	111.00	-	16.60	23.20	63.50
217	1971 3.25	-	65.00	55.30	-	64.40	80.00	-	58.70	21.60	.60
218	1971 8.25	-	112.20	116.70	-	60.20	18.50	-	58.30	80.30	104.10
219	1971 8.26	-	13.80	12.70	-	7.50	68.00	-	70.60	9.60	15.30
220	1971 10.10	-	15.20	17.10	-	9.90	50.80	-	14.40	30.30	45.70
221	1971 10.11	-	44.20	49.10	-	56.20	139.70	-	42.40	44.50	15.30
222	1971 11.19	-	6.60	10.30	-	5.40	188.00	-	1.40	10.40	23.70
223	1971 11.20	-	60.00	62.40	-	63.70	5.10	-	.20	104.70	21.30
224	1972 1.21	-	45.10	48.30	-	83.20	41.30	-	43.50	69.20	83.50
225	1972 1.22	-	86.00	89.80	-	35.30	127.70	-	79.60	78.70	82.80
226	1972 5.19	-	105.00	97.20	-	88.60	78.50	-	67.30	55.20	54.60
227	1972 5.20	-	.00	5.20	-	8.40	4.00	-	3.90	.00	.00
228	1972 9.21	-	102.00	83.10	-	19.50	18.00	66.00	109.80	54.30	65.10
229	1972 9.22	-	166.10	148.70	-	35.60	27.20	204.40	214.70	38.30	46.00
230	1972 10. 7	-	100.60	94.30	-	27.30	47.30	73.20	86.90	89.00	47.20
231	1972 10. 8	-	19.80	28.90	-	9.10	35.70	15.50	48.10	7.60	41.90
232	1973 1.15	171.20	165.00	172.30	-	136.20 (	112.42)	206.40	136.90	65.10	31.00
233	1973 1.16	230.30	181.70	157.70	-	74.50 (	146.60)	154.20	225.20	139.40	158.80
234	1973 1.25	124.70	139.30	142.80	-	82.30	104.60	86.20	164.40	68.50	79.30
235	1973 1.26	12.30	14.00	14.80	-	3.90	10.80	15.00	.20	4.50	.00
236	1973 2. 5	4.20	1.50	2.70	-	.00	.00	13.90	3.80	2.70	.90
237	1973 2. 6	155.80	160.30	180.30	-	138.00	92.10	146.90	169.90	79.00	117.00
238	1973 6.14	142.50	80.00	128.60	-	50.50	67.00	92.30	33.80	9.30	58.80
239	1973 6.15	13.60	40.00	24.10	-	1.40	3.00	19.50	12.10	6.50	11.90
240	1973 12.20	137.90	184.50	203.30	-	218.30	127.60	103.50	92.70	78.90	68.20
241	1973 12.21	10.80	14.80	14.00	-	.00	1.70	3.80	5.90	5.50	9.40
242	1974 1.15	57.60	80.00	98.90	-	122.10	144.30	91.50	75.50	97.60	177.00
243	1974 1.16	3.30	3.30	5.60	-	5.90	13.70	6.70	5.80	12.20	24.80
244	1974 12. 3	55.20	80.60	86.70	-	60.70	52.30	37.10	67.50	39.80	51.90
245	1974 12. 4	31.90	50.70	44.00	-	31.10	17.00	51.30	58.90	11.80	10.70
246	1975 1. 1	72.50	91.40	88.60	-	54.90	32.70	61.80	33.20	16.70	20.00
247	1975 1. 2	104.10	117.60	107.50	-	78.10	45.50	92.80	34.20	24.80	34.50
248	1975 1.18	180.70	51.60	39.40	-	99.70	46.70	88.60	12.30	26.10	23.80
249	1975 1.19	160.70	241.30	184.30	-	156.70	89.50	125.80	97.20	101.30	104.90
250	1975 2.25	122.00	141.80	134.60	-	121.30	157.00	93.90	27.50	53.50	37.00

( );estimated by correlation

Source;CTH/DAEE

TABLE 2.4 1-DAY RAINFALL DATA OF STATIONS (6/8)

(MM)

K	DATE	1 E3-236R	2 E3-143	3 E3-153R	4 E3-144	5 E3-101	6 E3-038R	7 E3-241	8 E3-109	9 E3-149R	10 E3-037
251	1975 2.26	11.30	16.20	18.30	-	6.30	2.70	6.90	46.50	2.70	3.50
252	1975 10. 9	62.10	71.00	87.00	-	28.40	16.40	61.00	54.60	54.30	44.80
253	1975 10.10	59.00	102.30	81.50	-	26.60	18.50	62.50	39.80	22.80	23.10
254	1975 10.11	76.00	104.90	104.00	-	65.60	28.80	67.50	66.50	19.60	21.00
255	1975 11. 2	130.20	144.80	125.20	-	23.50	10.20	86.70	62.80	20.30	19.50
256	1975 11. 3	64.20	64.70	52.40	-	26.50	6.00	68.60	56.30	7.60	12.60
257	1975 12.28	70.00	67.90	87.50	-	24.90	64.60	84.50	28.20	11.70	14.50
258	1975 12.29	240.70	242.60	186.50	-	125.00	121.50	130.50	64.80	4.50	3.20
259	1976 1.20	94.50	130.60	104.60	-	126.50	39.90	43.00	80.00	98.70	21.30
260	1976 1.21	260.70	236.90	304.10	-	267.60	203.90	116.90	140.40	100.00	207.30
261	1976 1.22	40.00	52.20	50.50	-	36.50	38.90	56.50	60.30	74.80	51.30
262	1976 1.27	126.60	79.30	76.70	-	54.50	28.10	115.70	57.50	20.00	36.20
263	1976 1.28	288.20	364.80	351.70	-	184.70	251.10	442.00	300.00	311.00	279.20
264	1976 3.13	68.80	48.50	64.70	-	22.10	84.80	103.20	50.40	7.60	18.50
265	1976 3.14	112.20	114.00	125.60	-	56.70	55.00	154.50	56.00	23.30	72.10
266	1976 3.15	74.10	57.30	67.10	-	35.50	.40	84.80	54.20	42.70	8.20
267	1976 9.27	180.50	185.10	178.30	-	107.40	61.70	171.60	54.00	32.10	55.40
268	1976 9.28	7.50	20.20	14.30	-	3.20	2.30	17.60	12.20	5.80	5.30
269	1977 1. 5	53.80	50.20	51.10	-	52.50	30.40	- (	41.06)	-	32.30
270	1977 1. 6	110.40	125.60	145.90	-	114.40	146.20	- (	79.45)	220.90	175.00
271	1977 1.18	109.50	117.50	146.50	-	115.10	104.00	- (	78.84)	21.80	53.40
272	1977 1.19	21.80	22.50	22.20	-	17.70	24.50	- (	19.35)	20.40	27.80
273	1977 4.18	109.60	88.80	98.50	-	22.40	38.00	104.80	149.30	124.30	88.00
274	1977 4.19	62.50	132.30	123.50	-	66.10	88.50	72.00	13.80	10.70	33.60
275	1977 10.12	97.00	131.60	124.00	-	33.80	22.30	64.90	.60	22.30	29.00
276	1977 10.13	57.50	65.80	51.30	-	16.20	10.80	44.90	42.80	22.90	3.10
277	1978 1.15	-	182.60	221.70	-	184.50	129.90	112.00	58.50	138.70	177.50
278	1978 1.16	21.90	25.40	27.80	-	29.20	31.80	28.50	45.20	58.10	59.20
279	1978 2. 4	64.80	69.60	73.20	-	102.90	38.80	52.10	31.20	29.90	12.40
280	1978 2. 5	-	75.30	78.60	-	46.50	74.00	110.80	25.10	61.80	77.60
281	1978 2. 6	126.40	127.60	138.30	-	64.80	53.90	87.60	15.10	34.80	23.20
282	1978 3. 6	77.30	59.10	50.50	-	14.70	46.00	103.60	19.40	-	103.70
283	1978 3. 7	42.90	46.00	53.20	-	80.80	128.90	43.00	31.60	-	93.80
284	1978 11.15	-	-	91.00	-	.00	91.00	.40	.00	-	.00
285	1978 11.16	3.70	4.30	.00	-	3.10	.00	2.90	5.10	-	2.30
286	1979 1. 4	66.80	48.30	43.00	-	42.90	119.30	65.40	32.10	10.00	100.50
287	1979 1. 5	39.60	24.80	24.70	-	9.40	4.60	22.00	.00	20.00	18.20
288	1979 11. 9	-	197.10	144.70	-	130.30	102.30	121.50	135.70	122.70	143.20
289	1979 11.10	-	141.50	164.50	-	106.50	106.50	117.20	130.00	152.20	186.40
290	1979 12.15	22.00	29.70	25.30	-	37.10	60.10	49.10	35.00	70.90	84.70
291	1979 12.16	59.00	64.60	78.30	-	55.70	62.00	42.80	37.00	63.00	101.50
292	1980 1.12	20.90	65.00	24.70	-	13.40	27.10	35.10	90.40	25.30	35.80
293	1980 1.13	138.80	113.50	159.50	-	141.60	106.70	147.50	100.60	69.60	72.90
294	1980 2.18	1.30	1.20	3.10	-	.50	5.40	1.80	.30	1.90	.40
295	1980 2.19	186.50	168.60	220.30	-	140.90	107.90	243.00	200.90	240.20	260.00
296	1980 3.31	91.20	75.80	110.20	-	77.30	109.10	43.60	120.60	192.10	174.80
297	1980 4. 1	11.10	30.60	3.10	-	1.10	14.60	-	17.30	23.20	36.00
298	1980 10.12	119.30	135.70	139.00	-	148.10	100.30	123.00	109.80	87.70	70.50
299	1980 10.13	19.10	18.00	17.60	-	4.90	9.50	30.20	28.90	26.20	24.90
300	1981 1.14	92.80	63.50	61.10	-	64.60	80.30	70.80	44.20	83.80	97.00

( );estimated by correlation

Source;CTH/DAEE

TABLE 2.4 1-DAY RAINFALL DATA OF STATIONS (7/8) (MM)

K	DATE	1 E3-236R	2 E3-143	3 E3-153R	4 E3-144	5 E3-101	6 E3-038R	7 E3-241	8 E3-109	9 E3-149R	10 E3-037
301	1981 1.15	83.90	102.60	87.30	-	53.40	33.60	84.60	69.40	26.90	41.90
302	1981 2.10	63.30	121.50	109.70	-	23.70	23.30	3.60	46.40	4.10	5.40
303	1981 3. 8	137.90	130.90	122.50	-	57.80 (	93.15)	179.80	65.70	10.60	21.10
304	1981 3. 9	13.70	4.90	8.90	-	.20 (	21.31)	9.80	13.50	2.60	2.60
305	1981 5.20	200.40	130.50	140.60	-	79.10	174.10	132.10	98.00	135.10	58.90
306	1981 5.21	8.00	16.30	18.80	-	9.20	.50	.90	1.60	.30	.50
307	1982 1. 4	68.20	87.10	86.00	-	46.30	115.30	96.10	62.90	49.80	76.90
308	1982 1. 5	7.50	9.50 (	18.00)	-	8.50	6.60	11.80	1.10	12.10	15.10
309	1982 2.25	.60	3.50	4.50	-	1.50	1.20	2.60	2.10	2.60	2.90
310	1982 2.26	116.20	118.30	119.20	-	40.10 (	80.60)	91.80	72.60	7.50	10.30
311	1982 12. 2	148.70	112.50	143.50	-	113.80	116.90	121.90	99.50	132.00	154.70
312	1982 12. 3	94.10	100.50	95.50	-	68.40	48.80	107.60	93.30	55.70	66.20
313	1983 1.31	12.40	16.50 (	22.56)	-	9.20 (	20.55)	145.30	11.00	24.00	22.10
314	1983 2. 1	257.00	102.10	227.50	-	219.10 (	162.05)	212.10	273.70	203.00	235.30
315	1983 2.12	38.20	51.80	71.50	-	46.80	23.90	54.10	115.90	16.70	4.50
316	1983 2.13	131.80	84.70	112.10	-	64.90	34.30	203.10	18.10	58.70	34.80
317	1983 4. 5	44.20	37.90	44.50	-	39.80	36.50	41.40	45.60	.90	50.00
318	1983 4. 6	123.20	119.50	123.10	-	104.10	96.90	140.50	87.50	90.00	97.30
319	1983 12.10	58.90	50.20	47.00	-	60.70	130.00	-	8.40	11.40	2.30
320	1983 12.11	15.90	19.70	26.50	-	37.60	63.20	48.80	22.10	22.40	17.30
321	1984 1.21	72.00	93.00	75.80	68.10	58.10	57.50	-	45.50	93.70	101.70
322	1984 1.22	107.00	106.20	99.40	12.00	92.40	83.50	-	58.30	53.70	92.10
323	1984 3.29	36.40	36.80	40.60	38.90	55.80	44.80	-	32.80	65.40	113.70
324	1984 3.30	163.30	122.40	124.70	122.70	87.50 (	107.85)	-	168.20	86.60	122.50
325	1985 1.22	151.00	151.50	159.50	95.10	136.20	150.00	117.00	182.30	241.50	210.00
326	1985 1.23	88.10	120.50	117.60	85.50	104.30	110.00	51.90	87.70	169.80	169.40
327	1985 3.25	129.70	134.00	116.30	96.60	57.50	13.30	10.30	102.50	41.30	15.50
328	1985 3.26	5.80	3.50	5.00	3.20	.60	.00	.90	2.50	1.70	3.20
329	1985 4.11	116.90	101.70 (	119.87)	63.70	13.10	76.50	127.50	80.80	65.90	108.40
330	1985 4.12	112.10	127.90 (	115.40)	83.90	78.50	55.40	126.70	22.20	50.20	68.50
331	1985 11. 2	64.20	92.50 (	70.79)	96.40	90.70	47.10	70.30	66.60	58.50	52.30
332	1985 11. 3	138.80	153.50 (	140.26)	84.80	62.80	36.00	173.30	80.20	47.40	25.70
333	1985 11. 4	79.60	88.30 (	85.13)	54.50	32.40	21.70	76.40	68.40	34.10	30.70
334	1986 2. 2	126.20	148.60	160.10	93.00	128.50	138.70	207.80	110.30	91.30	100.50
335	1986 2. 3	5.80	5.50 (	16.41)	5.30	14.40	90.20	12.70	4.90	56.20	77.50
336	1986 2.28	.20	5.30	4.20	.00	6.10	33.80	.50	4.90	.00	.10
337	1986 3. 1	140.80	170.40 (	142.12)	2.00	90.30	158.40	180.00	120.50	137.00	127.00
338	1986 12.18	90.00	120.30 (	94.82)	98.50	144.20	25.80	-	76.60	144.60	158.10
339	1986 12.19	102.00	115.20 (	105.99)	69.00	51.30	83.50	-	54.20	32.20	30.00
340	1987 3.15	120.10	146.20 (	122.85)	124.60	100.50	35.80	-	74.70	42.10	39.00
341	1987 3.16	42.10	49.00 (	50.22)	26.00	28.90	25.40	-	42.70	86.20	33.20
342	1987 6.14	75.30	100.20	117.80	79.00	77.40	47.20	-	48.30	71.50	73.50
343	1987 6.15	50.50	39.80 (	58.04)	51.70	58.10	34.80	-	1.20	72.00	73.10
344	1987 2. 7	121.00	129.00	166.40	112.10	75.40 (	83.38)	-	78.90	73.70	76.90
345	1988 2. 8	51.90	62.10 (	59.34)	43.40	20.10 (	43.40)	-	18.20	18.70	20.00
346	1988 2.20	104.50	54.00 (	108.32)	133.00	86.10 (	73.83)	-	77.00	44.80	53.00
347	1988 2.21	.70	13.00 (	11.67)	12.00	6.80 (	13.78)	-	15.40	2.70	3.90
348	1988 3. 8	120.40	128.50	128.50	67.60	33.20	39.90	-	95.20	27.50	75.00
349	1988 3. 9	32.60	24.00 (	41.37)	10.40	8.20	9.30	-	18.40	5.40	2.00
350	1988 4. 3	105.80	119.70 (	109.53)	99.80	64.00	37.10	-	42.90	33.60	34.50

( );estimated by correlation

Source;CTH/DAEE

TABLE 2.4 1-DAY RAINFALL DATA OF STATIONS (8/8)

(MM)

K	DATE	1 E3-236R	2 E3-143	3 E3-153R	4 E3-144	5 E3-101	6 E3-038R	7 E3-241	8 E3-109	9 E3-149R	10 E3-037
351	1988 4. 4	1.80	.40	(12.69)	.00	1.40	71.50	-	.90	.50	.50
352	1988 12.20	123.60	120.60	165.90	113.10	128.40	152.30	-	88.00	103.50	133.40
353	1988 12.21	190.20	156.80	172.70	117.30	81.20	106.00	-	180.00	166.10	121.50
354	1989 2. 4	79.00	36.10	(84.58)	35.20	40.80	33.20	-	56.90	31.00	(42.53)
355	1989 2. 5	181.60	220.20	(180.11)	182.50	114.10	188.30	-	144.80	38.20	(47.69)
356	1989 2. 6	67.00	83.50	(73.40)	68.70	76.10	(52.14)	-	75.90	6.30	(24.80)
357	1989 3. 8	78.50	75.40	(84.11)	75.30	125.10	142.30	-	76.20	53.40	(58.60)
358	1989 3. 9	198.80	190.00	(196.13)	166.80	90.80	97.10	-	142.50	126.30	(110.93)
359	1989 4.19	95.50	92.30	(99.94)	85.30	76.80	129.50	-	60.50	59.00	(62.62)
360	1989 4.20	72.00	79.70	(78.06)	115.50	93.20	33.60	-	79.10	63.70	(66.00)

( );estimated by correlation

Source;CTH/DAEE

TABLE 2.5 2-DAY RAINFALL DATA OF STATIONS (1/4) (MM)

K	DATE	1 E3-236R	2 E3-143	3 E3-153R	4 E3-144	5 E3-101	6 E3-038R	7 E3-241	8 E3-109	9 E3-149R	10 E3-037
1	1936 1.17	-	-	(150.61)	-	-	203.20	-	(98.04)	-	50.80
2	1936 3. 3	-	-	(138.64)	-	-	139.70	-	(84.32)	-	25.40
3	1937 1.24	-	-	(169.74)	-	-	200.70	-	(119.99)	-	91.40
4	1937 5. 3	-	-	(182.94)	-	-	203.20	-	(135.12)	-	119.40
5	1938 2. 9	-	-	(182.89)	-	-	241.20	-	(135.07)	-	119.30
6	1938 6. 5	-	-	(215.22)	-	-	188.00	-	(172.14)	-	187.90
7	1939 1.23	-	-	(152.97)	-	-	78.80	-	(100.75)	-	55.80
8	1939 2.22	-	-	(130.26)	-	-	106.60	-	(74.69)	-	7.60
9	1940 1. 7	-	-	(227.23)	-	-	231.20	-	(185.92)	-	213.40
10	1940 3.14	-	-	(188.26)	-	-	137.20	-	(138.89)	-	(123.45)
11	1940 12.22	-	-	(185.29)	-	-	157.60	-	(137.82)	-	124.40
12	1941 2. 2	-	-	(149.43)	-	-	121.90	-	(96.69)	-	48.30
13	1941 4.17	-	-	(163.76)	-	-	221.00	-	(113.12)	-	78.70
14	1942 2.17	-	-	(169.79)	-	-	281.90	-	(120.04)	-	91.50
15	1942 2.18	-	-	(220.07)	-	-	358.10	-	(177.71)	-	198.20
16	1942 3.16	-	-	(193.73)	-	-	127.00	-	(147.50)	-	142.30
17	1942 11.17	-	-	(175.73)	-	-	165.10	-	(126.85)	-	104.10
18	1942 11.30	-	-	(206.83)	-	-	139.70	-	(162.52)	-	170.10
19	1943 10.27	-	-	(191.33)	-	-	111.80	-	(144.74)	-	137.20
20	1943 11.18	-	-	(164.98)	-	-	94.00	-	(114.53)	-	81.30
21	1944 2.27	-	-	(258.33)	-	-	256.60	-	(221.59)	-	279.40
22	1944 3.12	-	-	(236.80)	-	-	246.40	-	(196.89)	-	233.70
23	1945 3. 3	-	-	(214.36)	-	-	139.70	-	192.70	-	149.90
24	1945 4. 2	-	-	(134.92)	-	-	144.80	-	59.30	-	43.20
25	1945 6.19	-	-	(180.53)	-	-	124.50	-	(132.36)	-	114.30
26	1946 1.19	-	-	(167.56)	-	118.00	139.70	-	114.10	-	172.70
27	1946 3.14	-	-	(182.62)	-	120.00	124.50	-	139.40	-	160.00
28	1946 3.24	-	-	(111.81)	-	-	106.70	-	20.50	-	76.20
29	1947 1.23	-	-	(264.74)	-	-	312.40	-	277.30	-	114.30
30	1947 4.19	-	-	(145.64)	-	-	152.40	-	77.30	-	127.00
31	1947 5.18	-	-	(177.62)	-	-	165.10	-	131.00	-	149.90
32	1947 6.20	-	-	(295.24)	-	-	500.40	-	328.50	-	(224.02)
33	1948 3.10	-	-	(184.35)	-	-	129.50	-	142.30	-	185.40
34	1948 3.24	-	-	(137.12)	-	-	167.70	-	63.00	-	139.70
35	1948 11.22	-	-	(158.74)	-	-	0.00	-	99.30	-	0.00
36	1949 1. 7	-	-	(99.61)	-	-	88.90	-	0.00	-	71.10
37	1949 2. 8	-	-	(102.29)	-	-	132.00	-	4.50	-	185.40
38	1949 3.10	-	-	(172.32)	-	-	0.00	-	122.10	-	0.00
39	1950 3.18	-	164.20	(182.38)	-	-	193.10	-	82.00	-	86.30
40	1950 3.31	-	36.80	(71.66)	12.50	-	198.10	-	15.30	-	0.00
41	1950 4. 1	-	44.80	(78.61)	50.80	-	307.30	-	65.70	-	7.60
42	1950 5. 5	-	107.00	(132.66)	-	-	0.00	-	147.30	-	0.00
43	1950 9.21	-	178.20	(194.54)	106.00	-	100.10	-	220.10	-	119.40
44	1950 12. 4	-	182.70	(198.45)	89.30	-	162.60	-	13.70	-	137.20
45	1950 12 30	-	158.90	(177.77)	-	-	162.50	-	170.60	-	144.80
46	1951 10.17	-	149.20	(169.34)	0.50	-	66.50	-	8.40	-	40.60
47	1951 10.18	-	223.10	(233.56)	22.90	-	15.70	-	48.90	-	91.40
48	1952 1.11	-	212.90	(224.70)	43.00	-	190.50	-	(102.78)	-	132.10
49	1952 2. 5	-	81.60	(110.59)	-	-	134.60	-	(90.21)	-	157.50
50	1952 2.20	-	232.20	(241.47)	107.00	-	165.10	-	(145.72)	-	366.40

Source: CTH/DAEE

TABLE 2.5 2-DAY RAINFALL DATA OF STATIONS (2/4) (MM)

K	DATE	1 E3-236R	2 E3-143	3 E3-153R	4 E3-144	5 E3-101	6 E3-038R	7 E3-241	8 E3-109	9 E3-149R	10 E3-037
51	1952 9.16	-	40.80	44.20	31.00	-	172.70	-	(49.15)	-	71.10
52	1952 9.17	-	61.70	69.30	50.50	-	96.50	-	(66.59)	-	33.00
53	1952 10.12	-	130.30	127.60	83.20	-	109.20	-	147.00	-	66.00
54	1952 12.12	-	54.40	65.30	64.60	-	177.80	-	(63.81)	-	66.00
55	1953 1.24	-	108.60	(134.05)	0.00	-	228.60	-	130.00	-	127.00
56	1953 2. 1	-	135.40	127.30	70.00	-	(114.29)	-	148.00	-	68.60
57	1953 7.31	-	44.50	(78.35)	54.10	-	215.90	-	158.00	-	93.90
58	1953 12. 4	-	273.20	264.60	-	-	205.70	-	236.10	-	149.90
59	1954 4.13	-	221.10	210.50	56.40	-	149.90	-	250.00	-	160.00
60	1954 4.30	-	199.20	205.50	63.30	-	142.20	-	247.40	-	(181.33)
61	1955 1.14	-	231.50	237.60	-	-	129.50	-	180.70	-	96.50
62	1955 4.16	-	203.50	199.20	-	104.90	111.20	-	107.50	-	104.20
63	1955 5. 5	-	45.80	(79.48)	13.60	90.20	119.40	-	60.50	-	127.00
64	1956 3. 1	-	165.80	290.30	-	213.30	248.90	-	168.60	-	134.60
65	1956 3.18	-	180.90	212.40	-	204.10	185.50	-	121.40	-	160.10
66	1956 3.19	-	164.40	190.40	-	201.20	137.20	-	144.80	-	106.70
67	1956 3.24	-	168.50	233.10	-	192.70	231.10	-	213.10	-	137.10
68	1956 11.25	-	44.40	(78.26)	5.10	10.00	172.80	-	16.20	-	221.00
69	1957 2.20	-	128.00	120.50	173.00	87.20	66.10	-	136.10	-	83.80
70	1957 10.28	-	124.20	116.40	102.80	72.00	111.80	-	116.50	-	81.30
71	1957 12. 7	-	137.80	124.50	135.50	36.70	68.60	-	128.00	-	96.50
72	1958 3.23	-	288.00	281.40	252.50	270.30	327.70	-	256.00	-	243.90
73	1958 4.13	-	155.70	176.20	50.80	254.70	119.40	-	93.20	-	198.10
74	1958 10.30	-	112.00	(137.01)	60.60	-	(83.79)	-	45.70	-	0.00
75	1958 12.14	-	179.70	243.10	27.00	48.90	73.70	-	181.40	-	144.80
76	1958 12.20	-	177.80	223.10	-	36.00	101.70	-	136.50	-	111.80
77	1959 2.14	-	218.00	304.00	354.80	-	195.50	-	235.80	-	165.10
78	1959 2.15	-	294.70	370.30	157.80	-	287.00	-	225.50	-	279.40
79	1959 11.25	-	44.20	151.60	-	127.10	121.90	-	70.50	-	101.60
80	1959 12. 4	-	160.20	223.50	-	-	78.70	-	161.30	-	86.40
81	1960 1.24	-	105.50	131.20	64.60	6.30	12.70	-	36.20	-	25.40
82	1960 10.26	-	176.80	216.10	107.10	40.10	94.40	-	95.90	-	119.30
83	1961 1.25	-	-	264.40	-	135.80	83.70	-	171.90	-	101.60
84	1961 1.26	-	-	234.20	154.60	200.90	121.90	-	168.60	-	175.30
85	1961 2. 9	-	169.10	184.70	120.30	-	121.80	-	145.50	-	96.50
86	1961 2.27	-	-	389.00	104.70	-	269.20	-	402.80	-	327.60
87	1961 12.13	-	147.60	125.00	-	36.40	5.10	-	109.40	-	0.00
88	1962 1.26	-	126.00	142.10	138.30	12.90	152.40	-	150.40	-	419.10
89	1962 3.13	-	108.30	132.10	82.40	131.00	139.70	-	167.80	-	78.80
90	1962 12.27	-	133.00	155.90	108.30	-	106.80	-	170.10	-	203.20
91	1963 1.10	-	61.50	98.80	42.50	90.80	137.10	-	158.70	-	15.20
92	1963 5.15	-	95.50	160.20	78.00	61.50	91.50	-	187.80	-	48.20
93	1963 10.23	-	-	152.60	11.10	25.30	12.60	-	164.90	-	43.10
94	1964 2. 1	-	98.50	98.50	13.50	1.20	10.20	-	15.50	-	45.70
95	1964 3. 7	-	47.50	47.50	78.10	41.80	91.40	-	186.70	-	76.10
96	1964 3.30	-	108.80	108.80	31.90	32.20	66.10	-	64.80	-	55.90
97	1965 4.18	-	290.00	313.60	281.00	170.70	256.50	-	108.90	-	208.30
98	1965 12.15	-	-	156.50	73.20	51.70	63.50	-	139.50	-	(124.52)
99	1965 12.23	-	46.00	3.00	72.60	46.80	0.00	-	29.80	20.00	(54.81)
100	1966 1.10	-	222.00	240.00	200.70	173.10	218.50	-	378.80	-	114.30

Source; CTH/DAEE

TABLE 2.5 2-DAY RAINFALL DATA OF STATIONS (3/4) (MM)

K	DATE	1 E3-236R	2 E3-143	3 E3-153R	4 E3-144	5 E3-101	6 E3-038R	7 E3-241	8 E3-109	9 E3-149R	10 E3-037
101	1966 3. 6	-	261.00	183.00	319.40	321.60	304.80	-	396.80	-	292.10
102	1966 12.20	-	83.00	295.60	76.50	66.60	129.50	-	112.40	-	134.60
103	1966 12.21	-	124.00	359.00	271.70	240.40	144.80	-	319.80	-	182.80
104	1966 12.22	-	125.00	177.60	346.00	363.10	254.00	-	385.90	-	345.40
105	1967 1.10	-	103.60	178.00	33.80	150.50	96.50	-	202.20	-	91.50
106	1967 3.17	-	121.00	121.00	98.60	150.10	195.60	-	133.30	-	58.40
107	1967 11. 2	-	33.00	150.50	13.10	150.60	43.20	-	44.10	-	(74.30)
108	1968 3.16	-	67.00	163.90	110.00	83.50	109.20	-	240.50	-	149.90
109	1968 3.27	-	108.00	131.00	100.50	37.00	147.30	-	135.10	-	353.10
110	1968 12. 1	-	141.00	217.20	-	98.10	73.60	-	141.00	-	223.60
111	1969 2.19	-	159.60	173.10	119.10	53.80	96.50	-	224.20	119.90	182.90
112	1969 3.11	-	104.00	104.70	78.00	35.90	101.60	-	78.60	30.00	30.50
113	1969 11.19	-	378.00	336.70	230.50	124.80	142.30	-	277.30	90.40	114.30
114	1969 12. 7	-	144.50	145.00	-	66.20	71.10	-	153.80	-	83.80
115	1970 1. 9	-	50.00	94.90	-	83.60	124.40	-	56.70	0.00	147.30
116	1970 2.23	-	189.30	230.00	-	27.00	154.90	-	103.70	130.50	195.60
117	1970 3.13	-	266.00	293.30	-	165.20	157.50	-	288.90	208.70	149.80
118	1971 2.24	-	327.00	350.60	-	254.00	(208.50)	-	238.10	496.80	147.30
119	1971 3.24	-	115.10	120.50	-	112.60	191.00	-	75.30	44.80	63.50
120	1971 8.25	-	126.00	129.40	-	67.70	86.50	-	128.90	89.90	119.40
121	1971 10.10	-	59.40	66.20	-	66.10	190.50	-	56.80	74.80	61.00
122	1971 11.19	-	66.60	72.70	-	69.10	193.10	-	1.60	115.10	45.00
123	1972 1.21	-	131.10	138.10	-	118.50	169.00	-	123.10	147.90	166.30
124	1972 5.19	-	105.00	102.40	-	97.00	82.50	-	71.20	55.20	54.60
125	1972 9.21	-	268.10	231.80	-	55.10	45.20	270.40	324.50	92.60	111.10
126	1972 10. 7	-	120.40	123.20	-	36.40	83.00	88.70	135.00	96.60	89.10
127	1973 1.15	401.50	346.70	330.00	-	210.70	(182.52)	360.60	362.10	204.50	189.80
128	1973 1.25	137.00	153.30	157.60	-	86.20	115.40	101.20	164.60	73.00	79.30
129	1973 2. 5	160.00	161.80	183.00	-	138.00	92.10	160.80	173.70	81.70	117.90
130	1973 6.14	156.10	120.00	152.70	-	51.90	70.00	111.80	45.90	15.80	70.70
131	1973 12.20	148.70	199.30	217.30	-	218.30	129.30	107.30	98.60	84.40	77.60
132	1974 1.15	60.90	83.30	104.50	-	128.00	158.00	98.20	81.30	109.80	201.80
133	1974 12. 3	87.10	131.30	130.70	-	91.80	69.30	88.40	126.40	51.60	62.60
134	1975 1. 1	176.60	209.00	196.10	-	133.00	78.20	154.60	67.40	41.50	54.50
135	1975 1.18	341.40	292.90	223.70	-	256.40	136.20	214.40	109.50	127.40	128.70
136	1975 2.25	133.30	158.00	152.90	-	127.60	159.70	100.80	74.00	56.20	40.50
137	1975 10. 9	121.10	173.30	168.50	-	55.00	34.90	123.50	94.40	77.10	67.90
138	1975 10.10	135.00	207.20	185.50	-	92.20	47.30	130.00	106.30	42.40	44.10
139	1975 11. 2	194.40	209.50	177.60	-	50.00	16.20	155.30	119.10	27.90	32.10
140	1975 12.28	310.70	310.50	274.00	-	149.90	186.10	215.00	93.00	16.20	17.70
141	1976 1.20	355.20	367.50	408.70	-	394.10	243.80	159.90	220.40	198.70	228.60
142	1976 1.21	300.70	289.10	354.60	-	304.10	242.80	173.40	200.70	174.80	258.60
143	1976 1.27	414.80	444.10	428.40	-	239.20	279.20	557.70	357.50	331.00	315.40
144	1976 3.13	181.00	162.50	190.30	-	78.80	139.80	257.70	106.40	30.90	90.60
145	1976 3.14	186.30	171.30	192.70	-	92.20	55.40	239.30	110.20	66.00	80.30
146	1976 9.27	188.00	205.30	192.60	-	110.60	64.00	189.20	66.20	37.90	60.70
147	1977 1. 5	164.20	175.80	197.00	-	166.90	176.60	-	(119.93)	-	207.30
148	1977 1.18	131.30	140.00	168.70	-	132.80	128.50	-	(96.80)	42.20	81.20
149	1977 4.18	172.10	221.10	222.00	-	88.50	126.50	176.80	163.10	135.00	121.60
150	1977 10.12	154.50	197.40	175.30	-	50.00	33.10	109.80	43.40	45.20	32.10

Source: CTH/DAEE

TABLE 2.5 2-DAY RAINFALL DATA OF STATIONS (4/4) (MM)

K	DATE	1 E3-236R	2 E3-143	3 E3-153R	4 E3-144	5 E3-101	6 E3-038R	7 E3-241	8 E3-109	9 E3-149R	10 E3-037
151	1978 1.15	-	208.00	249.50	-	213.70	161.70	140.50	103.70	196.80	236.70
152	1978 2. 4	-	144.90	151.80	-	149.40	112.80	162.90	56.30	91.70	90.00
153	1978 2. 5	-	202.90	216.90	-	111.30	127.90	198.40	40.20	96.60	100.80
154	1978 3. 6	120.20	105.10	103.70	-	95.50	174.90	146.60	51.00	-	197.50
155	1978 11.15	-	-	91.00	-	3.10	91.00	3.30	5.10	-	2.30
156	1979 1. 4	106.40	73.10	67.70	-	52.30	123.90	87.40	32.10	30.00	118.70
157	1979 11. 9	-	338.60	309.20	-	236.80	208.80	238.70	265.70	274.90	329.60
158	1979 12.15	81.00	94.30	103.60	-	92.80	122.10	91.90	72.00	133.90	186.20
159	1980 1.12	159.70	178.50	184.20	-	155.00	133.80	182.60	191.00	94.90	108.70
160	1980 2.18	187.80	169.80	223.40	-	141.40	113.30	244.80	201.20	242.10	260.40
161	1980 3.31	102.30	106.40	113.30	-	78.40	123.70	-	137.90	215.30	210.80
162	1980 10.12	138.40	153.70	156.60	-	153.00	109.80	153.20	138.70	113.90	95.40
163	1981 1.14	176.70	166.10	148.40	-	118.00	113.90	155.40	113.60	110.70	138.90
164	1981 2.10	63.30	121.50	109.70	-	23.70	23.30	3.60	46.40	4.10	5.40
165	1981 3. 8	151.60	135.80	131.40	-	58.00	(90.88)	189.60	79.20	13.20	23.70
166	1981 5.20	208.40	146.80	159.40	-	88.30	174.60	133.00	99.60	135.40	59.40
167	1982 1. 4	75.70	96.60	(99.56)	-	54.80	121.90	107.90	64.00	61.90	92.00
168	1982 2.25	116.80	121.80	123.70	-	41.60	(81.03)	94.40	74.70	10.10	13.20
169	1982 12. 2	242.80	213.00	239.00	-	182.20	165.70	229.50	192.80	187.70	220.90
170	1983 1.31	269.40	118.60	(265.89)	-	228.30	(193.08)	357.40	284.70	227.00	257.40
171	1983 2.12	170.00	136.50	183.60	-	111.70	58.20	257.20	134.00	75.40	39.30
172	1983 4. 5	167.40	157.40	167.60	-	143.90	133.40	181.90	133.10	90.90	147.30
173	1983 12.10	74.80	69.90	73.50	-	98.30	193.20	-	30.50	33.80	19.60
174	1984 1.21	179.00	199.20	175.20	80.10	150.50	141.00	-	103.80	147.40	193.80
175	1984 3.29	199.70	159.20	165.30	161.60	143.30	(142.07)	-	201.00	152.00	236.20
176	1985 1.22	239.10	272.00	277.10	180.60	240.50	260.00	168.90	270.00	411.30	379.40
177	1985 3.25	135.50	137.50	121.30	99.80	58.10	13.30	11.20	105.00	43.00	18.70
178	1985 4.11	229.00	229.60	(231.20)	147.60	91.60	131.90	254.20	103.00	116.10	176.90
179	1985 11. 2	203.00	246.00	(208.88)	181.20	153.50	83.10	243.60	146.80	105.90	78.00
180	1985 11. 3	218.40	241.80	(222.10)	139.30	95.20	57.70	249.70	148.60	81.50	56.40
181	1986 2. 2	132.00	154.10	(147.91)	98.30	142.90	228.90	220.50	115.20	147.50	178.00
182	1986 2.28	141.00	175.70	(155.64)	2.00	96.40	192.20	180.50	125.40	137.00	127.10
183	1986 12.18	192.00	235.50	(199.43)	167.50	195.50	109.30	-	130.80	176.80	188.10
184	1987 3.15	162.20	195.20	(173.84)	150.60	129.40	61.20	-	117.40	128.30	72.20
185	1987 6.14	125.80	140.00	(142.59)	130.70	135.50	82.00	-	49.50	143.50	146.60
186	1987 2. 7	172.90	191.10	(183.03)	155.50	95.50	(113.38)	-	97.10	92.40	96.90
187	1988 2.20	105.20	67.00	(124.90)	145.00	92.90	(111.82)	-	92.40	47.50	56.90
188	1988 3. 8	153.00	152.50	(165.94)	78.00	41.40	49.20	-	113.60	32.90	77.00
189	1988 4. 3	107.60	120.10	(126.96)	99.80	65.40	108.60	-	43.80	34.10	35.00
190	1988 12.20	313.80	277.40	338.60	230.40	209.60	258.30	-	268.00	269.60	254.90
191	1989 2. 4	260.60	256.30	(258.34)	217.70	154.90	221.50	-	201.70	69.20	(90.35)
192	1989 2. 5	248.60	303.70	(248.03)	251.20	190.20	(170.22)	-	220.70	44.50	(72.51)
193	1989 3. 8	277.30	265.40	(272.68)	242.10	215.90	239.40	-	218.70	179.70	(170.15)
194	1989 4.19	167.50	172.00	(178.39)	200.80	170.00	163.10	-	139.60	122.70	(128.98)

Source;CTH/DAEE

TABLE 2.6 BASIN MEAN 1-DAY RAINFALL (1/3) (MM)

K	DATE	301 CUBATAO R.	302 MOJI R.	303 WHOLE
1	1936 1.17	127.28	153.16	134.02
2	1936 3. 3	96.73	104.12	98.66
3	1937 1.24	94.37	94.40	94.38
4	1937 1.25	81.22	73.12	79.11
5	1937 5. 3	78.41	74.71	77.45
6	1937 5. 4	105.86	102.26	104.92
7	1938 2. 9	133.82	158.25	140.18
8	1938 2.10	64.49	43.81	59.11
9	1938 6. 5	144.37	155.63	147.30
10	1938 6. 6	53.26	30.36	47.30
11	1939 1.23	45.97	15.69	38.09
12	1939 1.24	74.63	61.36	71.17
13	1939 2.22	79.54	77.29	78.96
14	1940 1. 7	119.01	119.14	119.05
15	1940 1. 8	101.68	102.49	101.89
16	1940 3.14	122.12	125.64	123.03
17	1940 12.22	122.56	129.33	124.32
18	1940 12.23	46.22	18.90	39.11
19	1941 2. 2	96.49	98.73	97.07
20	1941 4.17	53.01	22.76	45.13
21	1941 4.18	126.57	154.65	133.88
22	1942 2.17	61.01	44.74	56.77
23	1942 2.18	144.66	176.49	152.94
24	1942 2.19	118.79	124.80	120.36
25	1942 3.16	50.43	23.09	43.31
26	1942 3.17	111.99	109.89	111.44
27	1942 11.17	78.15	69.29	75.84
28	1942 11.18	87.78	78.24	85.30
29	1942 11.30	93.86	79.19	90.04
30	1942 12. 1	80.96	69.92	78.09
31	1943 10.27	72.32	58.31	68.67
32	1943 10.28	83.06	63.20	77.89
33	1943 11.18	95.31	89.47	93.79
34	1944 2.27	199.59	238.27	209.66
35	1944 2.28	48.80	18.53	40.92
36	1944 3.12	44.80	13.04	36.53
37	1944 3.13	187.15	224.29	196.82
38	1945 3. 3	153.70	110.18	142.37
39	1945 3. 4	51.50	38.44	48.10
40	1945 4. 2	18.66	35.64	23.08
41	1945 4. 3	69.71	76.77	71.55
42	1945 6.19	49.72	20.18	42.03
43	1945 6.20	24.79	93.66	42.72
44	1946 1.19	100.15	117.17	104.58
45	1946 1.20	45.50	26.24	40.49
46	1946 3.14	127.15	97.83	119.51
47	1946 3.15	32.70	36.08	33.58
48	1946 3.24	36.17	89.26	49.99
49	1947 1.23	205.19	202.64	204.53
50	1947 1.24	76.80	63.38	73.31
51	1947 4.19	85.92	137.45	99.33
52	1947 5.18	22.95	26.95	23.99
53	1947 5.19	128.21	130.59	128.83
54	1947 6.20	200.03	189.66	197.33
55	1947 6.21	124.10	259.70	159.40
56	1948 3.10	68.84	33.87	59.73
57	1948 3.11	92.22	109.09	96.61
58	1948 3.24	38.19	109.02	56.63
59	1948 3.25	53.42	39.40	49.77
60	1948 11.22	97.04	11.48	74.76
61	1948 11.23	26.36	1.19	19.81
62	1949 1. 7	18.22	73.80	32.69
63	1949 2. 8	22.16	107.56	44.39
64	1949 2. 9	18.22	19.47	18.55
65	1949 3.10	51.32	4.82	39.22
66	1949 3.11	92.05	10.75	70.88
67	1950 3.18	40.93	53.20	44.13
68	1950 3.19	87.96	103.14	91.91
69	1950 3.31	12.36	39.54	19.44
70	1950 4. 1	23.50	93.34	41.68
71	1950 4. 2	42.66	119.76	62.73
72	1950 5. 5	121.34	17.33	94.26
73	1950 5. 6	16.20	1.45	12.36
74	1950 9.21	88.08	56.64	79.90
75	1950 9.22	120.25	62.85	105.31
76	1950 12. 4	83.64	127.69	95.11
77	1950 12. 5	17.49	10.54	15.68
78	1950 12 30	131.98	123.11	129.67
79	1950 12.31	41.41	36.68	40.18
80	1951 10.17	29.25	33.59	30.38
81	1951 10.18	53.89	20.02	45.08
82	1951 10.19	84.18	15.92	66.41
83	1952 1.11	163.23	123.70	152.94
84	1952 1.12	34.18	51.80	38.76
85	1952 2. 5	72.10	120.08	84.59
86	1952 2. 6	24.50	13.89	21.74
87	1952 2.20	182.42	146.16	172.98
88	1952 2.21	29.80	63.57	38.59
89	1952 9.16	14.50	94.71	35.38
90	1952 9.17	38.78	42.30	39.70
91	1952 9.18	34.55	38.27	35.52
92	1952 10.12	132.96	95.02	123.08
93	1952 10.13	4.91	9.87	6.20
94	1952 12.12	59.23	100.74	70.03
95	1952 12.13	10.91	40.23	18.54
96	1953 1.24	123.56	194.54	142.04
97	1953 2. 1	31.50	22.47	29.15
98	1953 2. 2	106.75	69.45	97.04
99	1953 7.31	25.17	155.55	59.11
100	1953 8. 1	89.70	27.16	73.42
101	1953 12. 4	127.12	138.38	130.05
102	1953 12. 5	122.40	59.40	106.00
103	1954 4.13	135.37	111.94	129.27
104	1954 4.14	96.04	52.86	84.80
105	1954 4.30	145.83	124.86	140.37
106	1954 5. 1	81.85	22.53	66.41
107	1955 1.14	67.37	67.09	67.30
108	1955 1.15	140.12	61.96	119.77
109	1955 4.16	71.37	61.41	68.78
110	1955 4.17	79.29	47.84	71.10
111	1955 5. 5	26.87	102.71	46.61
112	1955 5.6	36.99	10.79	30.17
113	1956 3. 1	207.08	186.25	201.66
114	1956 3. 2	18.80	28.24	21.26
115	1956 3.18	61.96	78.71	66.32
116	1956 3.19	102.27	93.25	99.92
117	1956 3.20	63.99	38.47	57.35
118	1956 3.24	174.72	166.60	172.60
119	1956 3.25	47.80	42.33	46.37
120	1956 11.25	15.57	24.38	17.86
121	1956 11.26	24.21	138.64	54.00
122	1957 2.20	28.35	29.39	28.62
123	1957 2.21	100.41	49.38	87.12
124	1957 10.28	29.50	22.51	27.68
125	1957 10.29	86.96	83.44	86.04
126	1957 12. 7	35.22	11.52	29.05
127	1957 12. 8	91.13	70.56	85.78
128	1958 3.23	161.01	174.19	164.44
129	1958 3.24	106.94	126.64	112.07
130	1958 4.13	112.50	115.57	113.30
131	1958 4.14	19.77	17.13	19.08
132	1958 10.30	7.24	21.61	10.98
133	1958 10.31	86.14	63.48	80.24
134	1958 12.14	9.16	6.81	8.55
135	1958 12.15	201.28	95.67	173.79
136	1958 12.20	16.77	17.35	16.92
137	1958 12.21	160.50	90.93	142.39
138	1959 2.14	90.94	50.31	80.36
139	1959 2.15	176.96	143.90	168.36
140	1959 2.16	116.70	133.65	121.11
141	1959 11.25	80.99	93.69	84.30
142	1959 11.26	27.68	17.36	25.00
143	1959 12. 4	38.16	6.34	29.88
144	1959 12. 5	152.42	84.52	134.74
145	1960 1.24	80.92	18.38	64.64
146	1960 10.26	55.75	37.27	50.94
147	1960 10.27	96.73	62.59	87.84
148	1961 1.25	102.30	26.83	82.65
149	1961 1.26	113.15	71.91	102.41
150	1961 1.27	86.33	67.24	81.36

Source:CTH/DAEE

TABLE 2.6 BASIN MEAN 1-DAY RAINFALL (2/3) (MM)

K	DATE	301 CUBATAO R.	302 MOJI R.	303 WHOLE
151	1961 2. 9	139.51	112.09	132.37
152	1961 2.10	24.44	7.38	20.00
153	1961 2.27	89.42	115.23	96.14
154	1961 2.30	306.89	183.36	274.73
155	1961 12.13	3.68	3.91	3.74
156	1961 12.14	113.06	13.42	87.12
157	1962 1.26	126.21	129.58	127.09
158	1962 1.27	20.28	78.97	35.56
159	1962 3.13	36.52	32.26	35.41
160	1962 3.14	114.48	98.15	110.23
161	1962 12.27	134.83	113.25	129.21
162	1962 12.28	28.59	22.01	26.88
163	1963 1.10	63.89	16.53	51.56
164	1963 1.11	66.62	97.55	74.67
165	1963 5.15	67.72	42.48	61.15
166	1963 5.16	107.09	52.14	92.79
167	1963 10.23	119.79	32.16	96.98
168	1963 10.24	39.32	6.31	30.73
169	1964 2. 1	4.95	.23	3.72
170	1964 2. 2	49.62	18.15	41.43
171	1964 3. 7	65.19	68.19	65.97
172	1964 3. 8	55.98	32.13	49.77
173	1964 3.30	36.85	53.94	41.30
174	1964 3.31	48.66	9.84	38.56
175	1965 4.18	122.84	85.08	113.01
176	1965 4.19	82.41	142.40	98.03
177	1965 12.15	84.56	54.84	76.82
178	1965 12.16	62.94	21.66	52.20
179	1965 12.23	3.64	4.82	3.94
180	1965 12.24	13.55	10.59	12.78
181	1966 1.10	181.57	129.83	168.10
182	1966 1.11	131.90	87.07	120.23
183	1966 3. 6	132.39	134.05	132.82
184	1966 3. 7	163.77	179.80	167.94
185	1966 12.20	51.26	40.88	48.56
186	1966 12.21	147.38	87.52	131.80
187	1966 12.22	190.87	87.64	164.00
188	1966 12.23	96.98	202.51	124.45
189	1967 1.10	27.93	29.33	28.29
190	1967 1.11	162.88	79.59	141.20
191	1967 3.17	92.07	38.64	78.16
192	1967 3.18	35.44	120.00	57.45
193	1967 11. 2	76.18	13.85	59.95
194	1967 11. 3	18.01	34.40	22.28
195	1968 3.16	187.26	108.59	166.78
196	1968 3.17	17.19	25.96	19.47
197	1968 3.27	59.86	123.83	76.51
198	1968 3.28	73.31	65.44	71.26
199	1968 12. 1	108.98	91.12	104.34
200	1968 12. 2	67.88	22.80	56.15
201	1969 2.19	94.16	71.62	88.30
202	1969 2.20	105.98	59.44	93.87
203	1969 3.11	37.27	18.71	32.44
204	1969 3.12	53.62	64.92	56.56
205	1969 11.19	49.79	30.80	44.84
206	1969 11.20	255.47	122.79	220.93
207	1969 12. 7	121.57	73.43	109.04
208	1969 12. 8	28.09	10.90	23.61
209	1970 1. 9	74.68	120.61	86.64
210	1970 2.23	151.36	154.65	152.21
211	1970 2.24	11.80	2.33	9.33
212	1970 3.13	184.96	102.87	163.59
213	1970 3.14	106.01	69.76	96.57
214	1971 2.24	36.65	40.07	37.54
215	1971 2.25	254.40	163.86	230.83
216	1971 3.24	39.48	88.91	52.35
217	1971 3.25	57.10	60.36	57.95
218	1971 8.25	85.79	41.68	74.31
219	1971 8.26	43.35	57.19	46.95
220	1971 10.10	15.67	45.08	23.33
221	1971 10.11	45.55	100.98	59.98
222	1971 11.19	5.59	129.45	37.83
223	1971 11.20	29.48	7.90	23.86
224	1972 1.21	45.76	50.51	47.00
225	1972 1.22	84.40	112.07	91.60
226	1972 5.19	81.37	72.02	78.94
227	1972 5.20	4.51	3.14	4.16
228	1972 9.21	97.23	39.67	82.25
229	1972 9.22	183.63	55.09	150.17
230	1972 10. 7	90.38	52.33	80.48
231	1972 10. 8	39.06	38.59	38.94
232	1973 1.15	153.56	98.32	139.18
233	1973 1.16	193.43	159.21	184.52
234	1973 1.25	154.23	106.87	141.90
235	1973 1.26	7.07	7.16	7.10
236	1973 2. 5	3.28	.67	2.60
237	1973 2. 6	174.80	107.29	157.22
238	1973 6.14	78.42	61.03	73.90
239	1973 6.15	17.75	6.04	14.70
240	1973 12.20	144.76	110.59	135.86
241	1973 12.21	9.71	3.86	8.19
242	1974 1.15	86.51	142.44	101.07
243	1974 1.16	5.71	15.04	8.14
244	1974 12. 3	76.54	54.15	70.71
245	1974 12. 4	51.89	21.01	43.85
246	1975 1. 1	59.28	30.08	51.68
247	1975 1. 2	68.70	41.73	61.68
248	1975 1.18	25.06	37.47	28.29
249	1975 1.19	138.20	93.74	126.63
250	1975 2.25	77.91	115.10	87.60
251	1975 2.26	33.23	8.45	26.78
252	1975 10. 9	69.85	27.28	58.77
253	1975 10.10	59.43	22.19	49.73
254	1975 10.11	84.15	31.96	70.56
255	1975 11. 2	92.17	18.87	73.09
256	1975 11. 3	54.46	13.81	43.88
257	1975 12.28	56.11	49.36	54.36
258	1975 12.29	122.09	89.25	113.54
259	1976 1.20	91.58	41.08	78.43
260	1976 1.21	217.46	196.52	212.01
261	1976 1.22	55.69	44.25	52.71
262	1976 1.27	66.54	33.56	57.95
263	1976 1.28	324.34	263.28	308.44
264	1976 3.13	57.13	66.39	59.54
265	1976 3.14	88.76	58.74	80.95
266	1976 3.15	60.27	8.91	46.90
267	1976 9.27	112.51	59.39	98.68
268	1976 9.28	13.19	4.20	10.85
269	1977 1. 5	45.78	32.16	42.24
270	1977 1. 6	110.73	143.78	119.33
271	1977 1.18	110.69	90.09	105.32
272	1977 1.19	20.69	24.54	21.70
273	1977 4.18	125.39	62.77	109.09
274	1977 4.19	65.44	67.36	65.94
275	1977 10.12	58.69	20.95	48.86
276	1977 10.13	46.80	13.25	38.07
277	1978 1.15	135.32	130.86	134.16
278	1978 1.16	37.01	39.30	37.61
279	1978 2. 4	50.97	32.25	46.10
280	1978 2. 5	50.28	68.53	55.03
281	1978 2. 6	73.09	42.46	65.12
282	1978 3. 6	34.04	54.81	39.45
283	1978 3. 7	41.77	109.07	59.29
284	1978 11.15	42.84	60.15	47.34
285	1978 11.16	2.70	1.14	2.29
286	1979 1. 4	37.23	104.20	54.67
287	1979 1. 5	11.63	6.89	10.39
288	1979 11. 9	139.94	115.21	133.50
289	1979 11.10	146.24	126.40	141.07
290	1979 12.15	30.43	62.10	38.68
291	1979 12.16	56.44	67.17	59.23
292	1980 1.12	59.47	37.01	53.63
293	1980 1.13	128.33	98.77	120.63
294	1980 2.18	1.62	3.69	2.16
295	1980 2.19	210.03	151.93	194.91
296	1980 3.31	115.70	124.46	117.98
297	1980 4. 1	10.62	19.47	12.92
298	1980 10.12	123.54	95.21	116.17
299	1980 10.13	23.58	15.23	21.41
300	1981 1.14	52.16	79.23	59.20

Source: CTH/DAEE

TABLE 2.6 BASIN MEAN 1-DAY RAINFALL (3/3) (MM)

K	DATE	301 CUBATAO R.	302 MOJI R.	303 WHOLE
301	1981 1.15	77.83	39.92	67.96
302	1981 2.10	76.20	22.46	62.21
303	1981 3. 8	92.44	74.41	87.74
304	1981 3. 9	11.33	16.35	12.64
305	1981 5.20	118.05	140.03	123.77
306	1981 5.21	9.70	.64	7.34
307	1982 1. 4	73.77	100.50	80.73
308	1982 1. 5	9.05	7.70	8.70
309	1982 2.25	3.23	1.67	2.82
310	1982 2.26	94.54	64.71	86.77
311	1982 12. 2	120.21	122.68	120.85
312	1982 12. 3	94.34	58.16	84.92
313	1983 1.31	16.44	19.66	17.28
314	1983 2. 1	251.95	191.78	236.29
315	1983 2.12	95.00	31.53	78.48
316	1983 2.13	62.35	32.34	54.54
317	1983 4. 5	45.08	40.52	43.89
318	1983 4. 6	104.26	95.79	102.05
319	1983 12.10	26.57	87.48	42.43
320	1983 12.11	24.17	48.25	30.44
321	1984 1.21	59.76	65.32	61.21
322	1984 1.22	77.65	82.11	78.81
323	1984 3.29	36.47	57.84	42.03
324	1984 3.30	147.72	118.64	140.15
325	1985 1.22	171.57	166.81	170.33
326	1985 1.23	101.77	119.72	106.45
327	1985 3.25	109.00	25.14	87.17
328	1985 3.26	3.68	1.00	2.98
329	1985 4.11	99.19	83.80	95.18
330	1985 4.12	66.07	53.94	62.91
331	1985 11. 2	68.57	50.69	63.92
332	1985 11. 3	108.47	39.46	90.51
333	1985 11. 4	76.28	29.56	64.12
334	1986 2. 2	133.74	127.00	131.99
335	1986 2. 3	10.32	76.64	27.58
336	1986 2.28	4.57	22.99	9.36
337	1986 3. 1	130.68	146.93	134.91
338	1986 12.18	85.18	60.26	78.69
339	1986 12.19	78.58	68.45	75.94
340	1987 3.15	97.36	41.44	82.80
341	1987 3.16	46.24	29.26	41.82
342	1987 6.14	81.01	52.90	73.70
343	1987 6.15	27.95	38.62	30.73
344	1987 2. 7	120.09	81.44	110.03
345	1988 2. 8	37.57	35.24	36.96
346	1988 2.20	91.74	69.83	86.04
347	1988 2.21	13.64	11.90	13.19
348	1988 3. 8	110.87	54.38	96.17
349	1988 3. 9	29.21	8.92	23.93
350	1988 4. 3	74.26	37.29	64.64
351	1988 4. 4	6.45	47.48	17.13
352	1988 12.20	124.67	140.10	128.69
353	1988 12.21	176.56	118.72	161.50
354	1989 2. 4	69.93	38.19	61.67
355	1989 2. 5	161.42	153.01	159.23
356	1989 2. 6	74.72	49.39	68.13
357	1989 3. 8	79.92	116.17	89.36
358	1989 3. 9	167.74	105.81	151.62
359	1989 4.19	79.07	106.56	86.22
360	1989 4.20	78.61	46.25	70.19

Source;CTH/DAEE

TABLE 2.7 BASIN MEAN 2-DAY RAINFALL (1/2) (MM)

K	DATE	301 CUBATAO R.	302 MOJI R.	303 WHOLE
1	1936 1.17	122.79	157.56	131.84
2	1936 3. 3	109.89	108.46	109.52
3	1937 1.24	143.41	167.29	149.62
4	1937 5. 3	157.63	176.79	162.62
5	1938 2. 9	157.58	201.88	169.11
6	1938 6. 5	192.42	185.96	190.74
7	1939 1.23	125.33	76.73	112.68
8	1939 2.22	100.85	81.59	95.84
9	1940 1. 7	205.37	221.66	209.61
10	1940 3.14	162.13	134.51	154.94
11	1940 12.22	160.17	148.06	157.01
12	1941 2. 2	121.52	103.12	116.73
13	1941 4.17	136.96	177.14	147.42
14	1942 2.17	143.46	220.99	163.64
15	1942 2.18	197.65	301.27	224.62
16	1942 3.16	169.26	132.85	159.78
17	1942 11.17	149.86	147.32	149.20
18	1942 11.30	183.38	149.04	174.44
19	1943 10.27	166.67	121.37	154.88
20	1943 11.18	138.28	93.93	126.73
21	1944 2.27	238.89	256.96	243.59
22	1944 3.12	215.68	237.40	221.33
23	1945 3. 3	202.90	148.62	188.77
24	1945 4. 2	94.90	112.41	99.45
25	1945 6.19	155.04	123.35	146.79
26	1946 1.19	139.26	143.42	140.34
27	1946 3.14	159.75	133.91	153.02
28	1946 3.24	63.48	89.26	70.19
29	1947 1.23	271.39	266.02	269.99
30	1947 4.19	109.47	137.45	116.75
31	1947 5.18	152.94	157.54	154.14
32	1947 6.20	312.84	420.02	340.74
33	1948 3.10	162.09	142.96	157.11
34	1948 3.24	97.89	148.43	111.05
35	1948 11.22	127.28	12.66	97.44
36	1949 1. 7	46.89	73.80	53.89
37	1949 2. 8	50.53	127.03	70.45
38	1949 3.10	145.74	15.57	111.85
39	1950 3.18	129.25	156.34	136.30
40	1950 3.31	41.83	132.89	65.53
41	1950 4. 1	71.78	213.10	108.57
42	1950 5. 5	140.41	18.78	108.75
43	1950 9.21	208.07	119.49	185.01
44	1950 12. 4	100.67	138.24	110.45
45	1950 12 30	173.97	159.79	170.28
46	1951 10.17	84.16	53.61	76.21
47	1951 10.18	135.82	35.95	109.82
48	1952 1.11	160.17	166.96	161.94
49	1952 2. 5	99.80	133.78	108.65
50	1952 2.20	190.79	205.20	194.54
51	1952 9.16	46.82	135.46	69.90
52	1952 9.17	67.87	79.25	70.83
53	1952 10.12	137.87	104.88	129.28
54	1952 12.12	64.51	139.62	84.06
55	1953 1.24	131.91	194.54	148.21
56	1953 2. 1	138.26	108.93	130.62
57	1953 7.31	120.51	182.71	136.70
58	1953 12. 4	249.52	197.77	236.05
59	1954 4.13	231.41	164.80	214.07
60	1954 4.30	227.68	163.89	211.07
61	1955 1.14	207.48	129.05	187.07
62	1955 4.16	150.66	109.25	139.88
63	1955 5. 5	69.43	113.50	80.90
64	1956 3. 1	225.89	214.48	222.92
65	1956 3.18	164.24	171.95	166.24
66	1956 3.19	166.26	131.72	157.27
67	1956 3.24	222.51	208.92	218.98
68	1956 11.25	45.41	163.02	76.03
69	1957 2.20	128.76	78.77	115.74
70	1957 10.28	116.45	105.95	113.72
71	1957 12. 7	126.35	82.08	114.83
72	1958 3.23	267.96	300.83	276.51
73	1958 4.13	132.27	132.70	132.38
74	1958 10.30	88.68	61.21	81.53
75	1958 12.14	210.44	102.47	182.34
76	1958 12.20	177.26	108.27	159.30
77	1959 2.14	267.90	194.21	248.72
78	1959 2.15	293.66	277.55	289.47
79	1959 11.25	108.68	111.05	109.29
80	1959 12. 4	190.58	90.86	164.62
81	1960 1.24	80.92	18.38	64.64
82	1960 10.26	152.48	99.86	138.78
83	1961 1.25	215.44	98.73	185.06
84	1961 1.26	199.48	139.15	183.77
85	1961 2. 9	163.95	119.47	152.37
86	1961 2.27	396.30	298.59	370.87
87	1961 12.13	116.74	17.32	90.86
88	1962 1.26	146.49	208.55	162.65
89	1962 3.13	151.00	130.40	145.63
90	1962 12.27	163.42	135.26	156.09
91	1963 1.10	130.50	114.07	126.23
92	1963 5.15	174.81	94.62	153.93
93	1963 10.23	159.11	38.47	127.71
94	1964 2. 1	54.57	18.38	45.15
95	1964 3. 7	121.18	100.32	115.75
96	1964 3.30	85.51	63.78	79.85
97	1965 4.18	205.26	227.48	211.04
98	1965 12.15	147.50	86.10	131.52
99	1965 12.23	17.18	15.39	16.72
100	1966 1.10	313.46	216.90	288.33

Source;CTH/DAEE

TABLE 2.7 BASIN MEAN 2-DAY RAINFALL (2/2) (MM)

K	DATE	301 CUBATAO R.	302 MOJI R.	303 WHOLE
101	1966 3. 6	296.16	313.85	300.76
102	1966 12.20	198.64	128.40	180.35
103	1966 12.21	338.25	175.15	295.79
104	1966 12.22	287.85	290.15	288.45
105	1967 1.10	190.81	108.92	169.49
106	1967 3.17	127.51	158.64	135.61
107	1967 11. 2	94.18	49.89	82.65
108	1968 3.16	204.44	134.55	186.25
109	1968 3.27	133.17	189.27	147.77
110	1968 12. 1	176.87	113.92	160.48
111	1969 2.19	200.15	131.06	182.16
112	1969 3.11	90.89	83.63	89.00
113	1969 11.19	305.26	153.59	265.78
114	1969 12. 7	149.66	84.33	132.65
115	1970 1. 9	74.68	120.61	86.64
116	1970 2.23	163.15	156.98	161.54
117	1970 3.13	290.97	172.63	260.16
118	1971 2.24	291.06	199.33	267.18
119	1971 3.24	96.58	149.28	110.30
120	1971 8.25	129.14	98.87	121.26
121	1971 10.10	61.22	146.06	83.31
122	1971 11.19	35.07	137.35	61.70
123	1972 1.21	130.16	162.58	138.60
124	1972 5.19	85.89	75.16	83.09
125	1972 9.21	280.86	94.76	232.42
126	1972 10. 7	129.45	90.92	119.42
127	1973 1.15	346.99	206.96	310.54
128	1973 1.25	161.31	114.04	149.00
129	1973 2. 5	178.08	107.96	159.83
130	1973 6.14	96.17	67.07	88.60
131	1973 12.20	154.47	114.45	144.05
132	1974 1.15	92.22	157.48	109.21
133	1974 12. 3	128.42	75.16	114.56
134	1975 1. 1	127.98	71.81	113.36
135	1975 1.18	163.26	131.21	154.91
136	1975 2.25	111.14	123.56	114.37
137	1975 10. 9	129.28	49.47	108.50
138	1975 10.10	143.58	54.15	120.30
139	1975 11. 2	146.64	32.69	116.97
140	1975 12.28	178.20	138.61	167.89
141	1976 1.20	309.04	237.60	290.44
142	1976 1.21	273.14	240.77	264.72
143	1976 1.27	390.87	296.84	366.39
144	1976 3.13	145.89	125.13	140.49
145	1976 3.14	149.03	67.66	127.85
146	1976 9.27	125.70	63.58	109.53
147	1977 1. 5	156.21	175.87	161.33
148	1977 1.18	130.64	114.45	126.43
149	1977 4.18	190.83	130.13	175.03
150	1977 10.12	105.49	34.20	86.93
151	1978 1.15	172.33	170.17	171.77
152	1978 2. 4	101.25	100.77	101.13
153	1978 2. 5	123.38	110.98	120.15
154	1978 3. 6	75.81	163.88	98.73
155	1978 11.15	45.53	61.28	49.63
156	1979 1. 4	48.86	111.09	65.06
157	1979 11. 9	286.18	241.61	274.57
158	1979 12.15	86.87	129.27	97.91
159	1980 1.12	187.80	135.79	174.26
160	1980 2.18	211.65	155.62	197.06
161	1980 3.31	126.32	143.93	130.91
162	1980 10.12	147.13	110.44	137.58
163	1981 1.14	129.98	119.15	127.16
164	1981 2.10	76.20	22.46	62.21
165	1981 3. 8	103.77	75.18	96.33
166	1981 5.20	127.75	140.67	131.11
167	1982 1. 4	80.74	108.19	87.89
168	1982 2.25	97.77	65.88	89.46
169	1982 12. 2	214.55	180.83	205.77
170	1983 1.31	275.85	218.37	260.88
171	1983 2.12	157.35	63.87	133.01
172	1983 4. 5	149.34	136.30	145.95
173	1983 12.10	50.74	135.73	72.87
174	1984 1.21	137.41	147.42	140.02
175	1984 3.29	184.20	169.49	180.37
176	1985 1.22	273.34	286.53	276.78
177	1985 3.25	112.67	26.14	90.15
178	1985 4.11	163.35	137.73	156.68
179	1985 11. 2	176.02	90.14	153.66
180	1985 11. 3	183.20	69.02	153.47
181	1986 2. 2	130.60	203.63	149.61
182	1986 2.28	139.63	169.91	147.52
183	1986 12.18	163.11	128.71	154.15
184	1987 3.15	143.97	70.69	124.89
185	1987 6.14	93.32	91.52	92.85
186	1987 2. 7	137.55	107.82	129.81
187	1988 2.20	107.70	97.73	105.10
188	1988 3. 8	138.24	63.29	118.73
189	1988 4. 3	82.94	84.77	83.42
190	1988 12.20	301.23	258.82	290.19
191	1989 2. 4	228.36	191.23	218.70
192	1989 2. 5	233.57	155.99	213.37
193	1989 3. 8	244.11	222.11	238.38

Source:CTH/DAEE

TABLE 2.8 PROBABLE BASIN MEAN RAINFALL BY VARIOUS METHODS

1-DAY RAINFALL

CUBATAO RIVER BASIN — unit;mm

Return Period(yr)	IWAI -KADOYA	WEIBULL	HAZEN	GUMBEL
	Method			
2	149.1	150.1	150.1	150.6
5	203.7	209.3	204.9	205.4
10	240.3	249.1	241.0	241.6
25	287.1	300.0	286.7	287.4
50	322.4	338.2	320.7	321.4
100	357.9	376.7	354.7	355.1

MOJI RIVER BASIN

Return Period(yr)	IWAI -KADOYA	WEIBULL	HAZEN	GUMBEL
	Method			
2	136.1	135.0	135.0	134.3
5	172.8	175.9	173.1	174.9
10	195.0	202.0	197.1	201.8
25	221.3	234.2	226.4	235.8
50	239.8	257.6	247.6	261.0
100	257.6	280.7	268.3	286.1

WHOLE

Return Period(yr)	IWAI -KADOYA	WEIBULL	HAZEN	GUMBEL
	Method			
2	139.5	140.2	140.2	140.4
5	186.8	190.9	187.2	190.3
10	218.1	224.3	217.7	223.4
25	257.5	266.3	255.8	265.2
50	286.9	297.6	283.8	296.2
100	316.4	328.8	311.7	327.0

2-DAY RAINFALL

CUBATAO RIVER BASIN — unit;mm

Return Period(yr)	IWAI -KADOYA	WEIBULL	HAZEN	GUMBEL
	Method			
2	208.1	203.4	203.3	205.7
5	279.9	293.6	286.8	281.2
10	324.1	355.6	343.2	331.2
25	377.1	436.4	415.6	394.4
50	414.9	498.0	470.4	441.3
100	451.5	560.9	525.7	487.8

MOJI RIVER BASIN

Return Period(yr)	IWAI -KADOYA	WEIBULL	HAZEN	GUMBEL
	Method			
2	181.9	182.0	182.0	182.3
5	243.1	248.4	244.0	249.9
10	282.9	292.3	284.3	294.6
25	332.5	347.6	334.8	351.1
50	369.2	388.8	372.1	393.1
100	405.6	430.1	409.1	434.7

WHOLE

Return Period(yr)	IWAI -KADOYA	WEIBULL	HAZEN	GUMBEL
	Method			
2	195.3	191.8	191.8	193.6
5	263.2	270.8	265.3	265.6
10	305.5	324.4	214.3	313.4
25	356.7	393.2	376.6	373.7
50	393.4	445.3	423.2	418.5
100	429.2	498.0	470.1	462.9

Source;CTH/DAEE

TABLE 2.9 N-HOUR MAXIMUM RAINFALLS AT RIO DAS PEDRAS STATION

Year	Date and Rainfall (mm)								
	1 hr	2 hr	3 hr	4 hr	6 hr	9 hr	12 hr	18 hr	24 hr
37-38	09-02	09-02	09-02	24-03	23-03	05-06	05-06	05-06	23-03
	43.2	76.1	94.3	126.2	168.1	175.5	218.0	243.2	278.8
38-39	08-03	08-03	08-03	08-03	24-12	24-12	24-12	24-12	07-08
	44.5	46.9	48.0	48.0	84.0	86.7	86.7	97.8	124.0
39-40	08-01	08-01	12-02	12-02	12-02	12-02	08-01	08-01	08-01
	32.0	46.4	73.5	83.3	106.1	115.7	136.1	159.9	184.3
40-41	17-03	17-03	01-03	17-03	17-03	17-03	17-03	17-03	18-01
	66.5	81.2	92.7	104.8	127.0	131.8	131.9	132.1	226.0
41-42	17-02	17-02	17-02	17-02	17-02	18-02	18-02	18-02	18-02
	63.0	101.3	109.5	113.6	114.0	139.1	188.0	260.2	325.0
42-43	31-05	31-03	31-05	31-05	31-05	18-11	18-11	18-11	18-11
	42.3	54.1	59.5	62.5	63.1	104.3	118.3	130.6	143.0
43-44	24-02	13-03	13-03	13-03	13-03	13-03	13-03	13-03	18-02
	55.2	79.4	97.5	125.4	150.0	191.3	193.6	203.2	243.7
44-45	03-04	03-03	03-03	03-03	03-03	03-03	01-02	01-02	01-02
	44.0	59.6	82.0	91.0	95.6	115.1	140.7	161.9	182.6
45-46	15-02	14-03	14-03	14-03	14-03	14-03	14-03	01-08	14-03
	39.2	54.0	62.2	73.0	91.9	118.9	129.2	145.9	151.0
46-47	24-01	24-01	24-01	24-01	24-01	24-01	24-01	20-06	20-06
	61.2	109.2	131.8	158.0	173.4	180.5	189.5	199.3	220.2
47-48	12-02	12-02	12-02	12-02	12-02	12-02	01-05	14-09	24-08
	69.3	89.1	97.7	102.0	112.3	114.9	130.4	161.4	187.4
48-49	20-01	20-01	20-01	20-01	20-01	20-01	10-09	10-09	25-06
	39.0	59.3	74.1	88.6	99.6	108.2	129.4	173.6	233.7
49-50	05-06	11-03	11-03	11-03	11-03	18-10	17-10	17-10	17-10
	44.8	84.4	90.8	102.7	110.3	114.0	139.8	185.0	211.4
50-51	05-12	05-12	05-12	05-12	05-12	05-12	05-12	05-12	05-12
	53.5	87.1	117.4	133.2	169.4	196.9	206.1	217.1	222.7
51-52	21-02	21-02	21-02	21-02	21-02	21-02	21-02	21-02	21-02
	55.0	95.6	126.7	147.9	173.0	222.6	236.8	257.8	258.4
52-53	24-01	24-01	24-01	02-02	02-02	02-02	02-02	12-10	12-10
	41.0	63.6	68.8	75.3	103.4	125.7	129.2	136.6	155.9
53-54	13-04	13-04	13-04	13-04	13-04	30-04	30-04	30-04	13-04
	58.5	82.0	102.2	113.9	118.1	162.1	185.0	201.3	212.4
54-55	30-03	30-03	30-03	30-03	30-03	15-01	15-01	15-01	15-01
	31.2	38.9	54.3	67.6	101.6	116.1	137.4	156.5	208.6
55-56	20-03	01-03	01-03	25-03	25-03	01-03	01-03	01-03	01-03
	46.5	74.3	81.3	122.9	137.5	156.7	170.9	182.0	219.8
56-57	11-02	11-02	21-02	21-02	21-02	21-02	06-04	05-04	05-04
	34.2	53.9	57.8	67.4	76.0	96.9	115.4	155.9	183.2
57-58	24-03	24-03	24-03	24-03	24-03	24-03	24-03	23-03	23-03
	33.9	52.9	72.1	97.1	121.0	184.0	211.2	234.5	252.4
58-59	15-12	15-12	15-12	15-12	15-12	15-12	15-12	15-12	15-12
	67.0	124.3	128.7	147.7	181.7	184.3	218.8	261.3	301.0

Source; IPT (RELATORIO No.23, 395, Vol.5)
Note; 37-38 (year) means Oct.'37 - Sep.'38
( ) : Maximum

Year	Date and Rainfall (mm)								
	1 hr	2 hr	3 hr	4 hr	6 hr	9 hr	12 hr	18 hr	24 hr
59-60	24-02	03-12	05-12	05-12	05-12	05-12	05-12	05-12	04-12
	68.2	78.3	105.0	129.5	156.3	173.5	181.7	186.3	198.8
60-61	25-01	25-01	28-02	28-02	28-02	28-02	28-02	28-02	27-02
	65 1	75.1	90.0	113.6	151.2	206.2	243.1	298.4	326.0
61-62	14-12	14-12	14-12	14-12	25-01	25-01	25-01	25-01	25-01
	48.7	50.5	79.3	81.6	107.5	122.0	140.3	170.7	199.7
62-63	11-01	11-01	11-01	11-01	27-12	27-01	27-01	16-05	16-05
	58.8	83.5	89.9	90.3	104.5	120.1	137.8	175.5	210.5
63-64	28-01	28-01	28-01	28-01	28-01	03-02	23-10	23-10	23-10
	47.2	56.2	67.1	90.3	91.0	91.7	109.2	135.2	150.1
64-65	19-04	19-04	19-04	19-04	19-04	19-04	19-04	19-04	19-04
	38.5	54.3	59.6	61.3	83.8	109.4	135.4	173.5	220.6
65-66	04-05	04-05	26-03	26-03	26-03	26-03	26-03	10-01	10-01
	60.0	66.6	78.9	84.6	96.9	113.3	126.9	175.3	215.8
66-67	23-12	23-12	23-12	23-12	22-12	22-12	22-12	22-12	22-12
	56.6	84.7	107.1	127.2	152.5	182.2	215.1	267.1	332.5
67-68	31-01	16-03	16-03	16-03	16-03	16-03	16-03	16-03	16-03
	38.0	68.5	91.9	110.3	132.1	157.8	192.0	213.3	219.8
68-69	02-02	02-02	02-02	12-03	13-09	19-02	19-02	19-02	20-02
	57.0	72.4	75.6	82.0	87.7	108.9	138.3	171.6	202.7
69-70	13-03	13-03	13-03	13-03	13-03	13-03	20-11	20-11	20-11
	52.3	86.5	109.0	139.5	152.4	201.7	220.2	247.1	294.3
70-71	25-02	25-02	25-02	25-02	25-02	25-02	25-02	25-02	25-02
	66.2	114.3	140.1	172.6	245.4	274.0	291.3	315.2	355.0
71-72	26-03	26-03	26-03	26-03	26-03	26-03	26-03	26-03	25-08
	59.5	65.1	95.8	115.4	121.2	128.3	129.0	129.2	151.5
72-73	06-02	15-01	16-01	16-01	16-01	16-01	16-01	15-01	15-01
	58.6	74.7	100.4	123.6	160.0	174.6	188.4	261.0	339.4
73-74	20-12	20-12	20-12	20-12	20-12	20-12	20-12	20-12	20-12
	47.2	78.4	105.7	130.2	164.5	194.1	213.3	232.1	245.9
74-75	25-02	19-01	19-01	19-01	19-01	19-01	19-01	19-01	19-01
	65.7	115.0	144.5	164.5	166.9	186.0	210.8	259.8	274.1
75-76	29-01	21-01	21-01	21-01	21-01	21-01	21-01	28-01	28-01
	58.6	97.6	124.6	146.6	183.4	244.7	261.8	294.5	339.1
76-77	18-04	31-05	18-04	18-04	18-04	18-04	27-09	27-09	16-04
	59.5	74.4	79.2	84.6	118.3	130.7	157.4	172.7	184.4
77-78	04-02	04-02	15-01	15-01	15-01	15-01	15-01	15-01	15-01
	68.4	71.6	80.3	108.0	143.0	169.3	180.2	187.6	195.1
78-79	02-03	02-03	02-03	02-03	02-03	02-03	02-03	02-03	01-03
	51.8	67.8	100.8	122.2	138.0	179.5	212.6	234.0	246.8
79-80	25-03	13-01	13-01	13-01	13-01	14-02	19-02	09-11	09-11
	54.8	64.5	104.5	126.6	132.4	146.4	166.8	201.6	261.5
80-81	11-01	20-05	20-05	20-05	20-05	12-10	12-10	12-10	12-10
	75.9	87.0	95.6	100.2	107.4	117.7	133.6	170.9	183.6
81-82	26-02	26-02	26-02	26-02	26-02	26-02	26-02	02-01	02-01
	54.7	77.8	103.0	118.4	132.8	136.5	140.0	150.0	198.4
82-83	27-02	02-12	02-12	02-12	02-12	01-02	01-02	01-02	01-02
	62.0	66.4	99.8	114.4	132.0	175.8	216.1	253.3	291.2
83-84	30-03	30-03	30-03	30-03	30-03	30-03	30-03	30-03	29-03
	50.0	70.0	79.2	83.7	98.0	130.0	152.2	105.0	202.0
84-85	25-03	23-01	23-01	25-03	23-01	22-01	22-01	22-01	22-01
	54.8	64.1	78.1	104.0	141.5	190.5	226.8	244.0	279.9

Source; IPT (RELATORIO No. 23,394, Vol.5)
Note; 59-60 (Year) means Oct.'59 - Sep.'60
( ); Maximum

TABLE 2.10 HOURLY RAINFALL AND WATER LEVEL OF THE FEB.1988 FLOODS SUBJECT TO CALIBRATION

Ultrafertil Station

Date	Time	Hourly Rainfall (mm)	Total (mm)
7	8		
	9		
	10		
	11		
	12		
	13		
	14		
	15		
	16	0.9	0.9
	17	6.0	6.9
	18	26.6	33.5
	19	1.6	35.1
	20	15.0	50.1
	21	12.3	62.4
	22	1.3	63.7
	23	0.4	64.1
	24	2.4	66.5
8	1	0.7	67.2
	2	0.1	67.3
	3	0.9	68.2
	4	0.2	68.4
	5	0.0	68.4
	6	0.7	69.1
	7	1.3	70.4

Paranapiacaba Station

Date	Time	Hourly Rainfall (mm)	Total (mm)
7	8		
	9		
	10		
	11		
	12		
	13		
	14		
	15	0.3	0.3
	16	3.3	3.6
	17	12.1	15.7
	18	20.4	36.1
	19	0.1	36.2
	20	3.4	39.6
	21	24.9	64.5
	22	2.1	66.6
	23	2.3	68.9
	24	2.8	71.7
8	1	2.1	73.8
	2	1.7	75.5
	3	1.0	76.5
	4	0.8	77.3
	5	0.3	77.6
	6	0.5	78.1
	7	0.4	78.5

Feb.7 - 8

Date	Time	Water Level (m)
7	8	0.20
	9	0.20
	10	0.20
	11	0.20
	12	0.20
	13	0.20
	14	0.20
	15	0.16
	16	0.16
	17	0.16
	18	0.21
	19	0.27
	20	0.52
	21	0.49
	22	0.76
	23	0.59
	24	0.59
8	1	0.41
	2	0.37
	3	0.35
	4	0.32
	5	0.30
	6	0.29
	7	0.29
	8	0.29
	9	0.29
	10	0.29
	11	0.29
	12	0.23
	13	0.23
	14	0.23
	15	0.23
	16	0.24
	17	0.26
	18	0.33
	19	0.35
	20	0.32
	21	0.30
	22	0.29
	23	0.29
	24	0.29

Ultrafertil Station

Date	Time	Hourly Rainfall (mm)	Total (mm)
20	8		
	9		
	10		
	11		
	12	0.3	0.3
	13	0.0	0.3
	14	0.0	0.3
	15	0.0	0.3
	16	0.0	0.3
	17	0.0	0.3
	18	1.1	1.4
	19	34.2	35.6
	20	8.2	43.8
	21	11.0	54.8
	22	6.0	60.8
	23	2.3	63.1
	24	2.2	65.3
21	1	0.7	66.0
	2	1.1	67.1
	3	0.2	67.3
	4	0.2	67.5
	5	0.3	67.8
	6	0.0	67.8
	7	0.0	67.8

Paranapiacaba Station

Date	Time	Hourly Rainfall (mm)	Total (mm)
20	8		
	9		
	10		
	11		
	12		
	13		
	14		
	15	0.1	0.1
	16	0.0	0.1
	17	0.0	0.1
	18	2.7	2.8
	19	32.7	35.5
	20	4.4	39.9
	21	8.5	48.4
	22	7.2	55.6
	23	2.1	57.7
	24	0.8	58.5
21	1	0.3	58.8
	2	0.8	59.6
	3	0.6	60.2
	4	0.3	60.5
	5	0.1	60.6
	6	0.1	60.7
	7	0.0	60.7

Feb.20 - 21

Date	Time	Water Level (m)
20	8	0.22
	9	0.22
	10	0.20
	11	0.19
	12	0.19
	13	0.19
	14	0.19
	15	0.19
	16	0.19
	17	0.19
	18	0.19
	19	0.24
	20	0.95
	21	0.79
	22	0.79
	23	0.72
	24	0.62
21	1	0.47
	2	0.41
	3	0.38
	4	0.35
	5	0.33
	6	0.33
	7	0.33
	8	0.29
	9	0.28
	10	0.28
	11	0.28
	12	0.28
	13	0.28
	14	0.24
	15	0.24
	16	0.24
	17	0.24
	18	0.24
	19	0.24
	20	0.23
	21	0.23
	22	0.23
	23	0.23
	24	0.20

Source:CTH/DAEE

TABLE 2.11 HOURLY RAINFALL OF DEC.1989 FLOOD SUBJECT TO CALIBRATION

Portao 40

Date	Time	Hourly Rainfall (mm)	Total (mm)
14	8	0.0	0.0
	9	0.0	0.0
	10	0.0	0.0
	11	0.0	0.0
	12	0.0	0.0
	13	0.0	0.0
	14	0.0	0.0
	15	16.0	16.0
	16	7.0	23.0
	17	0.0	23.0
	18	0.0	23.0
	19	0.0	23.0
	20	29.0	52.0
	21	9.0	61.0
	22	0.0	61.0
	23	0.0	61.0
	24	2.0	63.0
15	1	0.0	63.0
	2	0.0	63.0
	3	0.0	63.0
	4	0.0	63.0
	5	7.0	70.0
	6	2.0	72.0
	7	6.0	78.0
	8	3.0	81.0
	9	11.0	92.0
	10	0.0	92.0
	11	3.0	95.0
	12	4.0	99.0
	13	3.0	102.0
	14	0.0	102.0
	15	0.0	102.0
	16	0.0	102.0
	17	0.0	102.0
	18	6.0	108.0
	19	3.0	111.0
	20	0.0	111.0
	21	0.0	111.0
	22	0.0	111.0
	23	0.0	111.0
	24	0.0	111.0
	1		111.0
	2		111.0
	3		111.0
	4		111.0
	5		111.0
	6		111.0
	7		111.0

Caixa 10

Date	Time	Hourly Rainfall (mm)	Total (mm)
14	8	0.0	0.0
	9	0.0	0.0
	10	2.0	2.0
	11	6.0	8.0
	12	0.0	8.0
	13	0.0	8.0
	14	8.0	16.0
	15	32.0	48.0
	16	12.0	60.0
	17	8.0	68.0
	18	15.0	83.0
	19	15.0	98.0
	20	46.0	144.0
	21	7.0	151.0
	22	1.0	152.0
	23	0.0	152.0
	24	0.0	152.0
15	1	0.0	152.0
	2	0.0	152.0
	3	0.0	152.0
	4	0.0	152.0
	5	5.0	157.0
	6	2.0	159.0
	7	0.0	159.0
15	8	3.0	162.0
	9	7.0	169.0
	10	0.0	169.0
	11	1.0	170.0
	12	0.0	170.0
	13	0.0	170.0
	14	0.0	170.0
	15	0.0	170.0
	16	0.0	170.0
	17	4.0	174.0
	18	3.0	177.0
	19	0.0	177.0
	20	0.0	177.0
	21	0.0	177.0
	22	0.0	177.0
	23	0.0	177.0
	24	0.0	177.0
	1		177.0
	2		177.0
	3		177.0
	4		177.0
	5		177.0
	6		177.0
	7		177.0

Source;CTH/DAEE

TABLE 2.12 ESTIMATED PROBABLE DISCHARGE OF CUBATÃO RIVER (EXISTING CONDITION)

DESIGN DISCHARGE(CUBATAO RIVER FEB.24'71 FLOOD TYPE,W=1/ 2 /EXISTING CONDITION)

	1 END OF PLT	2	3	4 BFR PILOES	5	6	7	8	9 PILOES R. AFT	10 PILOES
QMAX-DATA	25.14.00	25.18.00	25.12.00	25.12.00	25.13.00	25.13.00	25.13.00	25.12.00	25.12.00	25.12.00
Q-MAX	39.09	37.15	384.44	397.38	28.31	30.10	57.66	129.01	172.72	579.10

	11	12	13	14 IMGRTS BRG	15	16	17 ANCHET BRG	18 HNRY BRDEN	19	20 BFR PERQUE
QMAX-DATA	25.13.00	25.12.00	25.13.00	25.13.00	25.13.00	25.12.00	25.13.00	25.12.00	25.13.00	25.13.00
Q-MAX	504.67	55.49	536.62	536.62	552.17	57.73	586.29	196.02	747.60	723.67

	21	22	23	24 BAIX PRQUE	25	26	27 PEREQUE R. AFT	28 PERQUE	29 RIVR MOUTH
QMAX-DATA	25.13.00	25.13.00	25.12.00	25.12.00	25.13.00	25.12.00	25.12.00	25.13.00	25.13.00
Q-MAX	34.02	33.41	131.58	157.00	133.07	77.64	212.10	914.62	916.20

DESIGN DISCHARGE(CUBATAO RIVER FEB.24'71 FLOOD TYPE,W=1/ 5 /EXISTING CONDITION)

	1 END OF PLT	2	3	4 BFR PILOES	5	6	7	8	9 PILOES R. AFT	10 PILOES
QMAX-DATA	25.14.00	25.17.00	25.12.00	25.12.00	25.13.00	25.13.00	25.13.00	25.12.00	25.12.00	25.12.00
Q-MAX	78.38	70.80	560.14	586.02	50.92	54.15	106.12	194.54	281.69	867.97

	11	12	13	14 IMGRTS BRG	15	16	17 ANCHET BRG	18 HNRY BRDEN	19	20 BFR PERQUE
QMAX-DATA	25.12.00	25.12.00	25.12.00	25.12.00	25.13.00	25.12.00	25.13.00	25.12.00	25.13.00	25.13.00
Q-MAX	751.16	77.32	828.48	828.48	835.25	81.07	878.29	238.09	1055.97	1032.36

	21	22	23	24 BAIX PRQUE	25	26	27 PEREQUE R. AFT	28 PERQUE	29 RIVR MOUTH
QMAX-DATA	25.13.00	25.13.00	25.12.00	25.12.00	25.12.00	25.12.00	25.12.00	25.13.00	25.13.00
Q-MAX	58.18	59.21	182.81	231.65	204.19	116.38	320.57	1301.93	1301.01

DESIGN DISCHARGE(CUBATAO RIVER FEB.24'71 FLOOD TYPE,W=1/ 10/EXISTING CONDITION)

	1 END OF PLT	2	3	4 BFR PILOES	5	6	7	8	9 PILOES R. AFT	10 PILOES
QMAX-DATA	25.13.00	25.15.00	25.12.00	25.12.00	25.13.00	25.13.00	25.13.00	25.12.00	25.12.00	25.12.00
Q-MAX	112.65	101.18	665.62	706.06	67.92	72.23	142.65	232.70	355.73	1061.79

	11	12	13	14 IMGRTS BRG	15	16	17 ANCHET BRG	18 HNRY BRDEN	19	20 BFR PERQUE
QMAX-DATA	25.12.00	25. 9.00	25.12.00	25.12.00	25.13.00	25. 9.00	25.13.00	25.12.00	25.13.00	25.13.00
Q-MAX	931.04	95.26	1022.33	1022.33	1021.77	98.15	1070.41	263.78	1258.28	1230.57

	21	22	23	24 BAIX PRQUE	25	26	27 PEREQUE R. AFT	28 PERQUE	29 RIVR MOUTH
QMAX-DATA	25.13.00	25.13.00	25. 9.00	25.12.00	25.12.00	25.12.00	25.12.00	25.13.00	25.13.00
Q-MAX	75.92	78.32	226.84	283.06	243.03	139.02	382.05	1551.82	1555.28

DESIGN DISCHARGE(CUBATAO RIVER FEB.24'71 FLOOD TYPE,W=1/ 25/EXISTING CONDITION)

	1 END OF PLT	2	3	4 BFR PILOES	5	6	7	8	9 PILOES R. AFT	10 PILOES
QMAX-DATA	25.13.00	25.15.00	25. 9.00	25.12.00	25.13.00	25.13.00	25.13.00	25.12.00	25.12.00	25.12.00
Q-MAX	167.39	149.01	859.18	864.80	90.41	96.14	191.08	280.33	454.72	1319.52

	11	12	13	14 IMGRTS BRG	15	16	17 ANCHET BRG	18 HNRY BRDEN	19	20 BFR PERQUE
QMAX-DATA	25.12.00	25. 9.00	25.12.00	25.12.00	25.13.00	25. 9.00	25.13.00	25. 9.00	25.13.00	25.13.00
Q-MAX	1179.69	126.74	1288.53	1288.53	1274.33	130.80	1329.69	312.20	1529.75	1489.14

	21	22	23	24 BAIX PRQUE	25	26	27 PEREQUE R. AFT	28 PERQUE	29 RIVR MOUTH
QMAX-DATA	25.12.00	25.13.00	25. 9.00	25.12.00	25.13.00	25.12.00	25.12.00	25.13.00	25.13.00
Q-MAX	102.10	103.32	301.61	350.70	293.72	167.31	460.06	1876.66	1876.35

DESIGN DISCHARGE(CUBATAO RIVER FEB.24'71 FLOOD TYPE,W=1/ 50/EXISTING CONDITION)

	1 END OF PLT	2	3	4 BFR PILOES	5	6	7	8	9 PILOES R. AFT	10 PILOES
QMAX-DATA	25.13.00	25.14.00	25. 9.00	25. 9.00	25.12.00	25.12.00	25.13.00	25. 9.00	25.12.00	25.12.00
Q-MAX	213.83	189.56	1002.98	1017.70	109.14	116.06	227.22	327.55	532.13	1521.48

	11	12	13	14 IMGRTS BRG	15	16	17 ANCHET BRG	18 HNRY BRDEN	19	20 BFR PERQUE
QMAX-DATA	25.12.00	25. 9.00	25.12.00	25.12.00	25.13.00	25. 9.00	25.13.00	25. 9.00	25.13.00	25.13.00
Q-MAX	1376.58	149.65	1498.62	1498.62	1474.15	154.87	1534.30	352.93	1743.09	1690.29

	21	22	23	24 BAIX PRQUE	25	26	27 PEREQUE R. AFT	28 PERQUE	29 RIVR MOUTH
QMAX-DATA	25.12.00	25.13.00	25. 9.00	25.12.00	25.13.00	25. 9.00	25.12.00	25.13.00	25.13.00
Q-MAX	123.50	121.65	353.68	403.08	338.11	198.02	518.70	2127.52	2121.04

DESIGN DISCHARGE(CUBATAO RIVER FEB.24'71 FLOOD TYPE,W=1/100/EXISTING CONDITION)

	1 END OF PLT	2	3	4 BFR PILOES	5	6	7	8	9 PILOES R. AFT	10 PILOES
QMAX-DATA	25.13.00	25.14.00	25. 9.00	25. 9.00	25.12.00	25.12.00	25.13.00	25. 9.00	25.12.00	25.12.00
Q-MAX	262.34	236.50	1153.35	1171.62	129.36	137.56	261.38	380.09	609.42	1724.93

	11	12	13	14 IMGRTS BRG	15	16	17 ANCHET BRG	18 HNRY BRDEN	19	20 BFR PERQUE
QMAX-DATA	25.12.00	25. 9.00	25.12.00	25.12.00	25.13.00	25. 9.00	25.13.00	25. 9.00	25.13.00	25.13.00
Q-MAX	1573.53	169.57	1708.44	1708.44	1674.33	176.00	1739.04	389.75	1956.11	1890.09

	21	22	23	24 BAIX PRQUE	25	26	27 PEREQUE R. AFT	28 PERQUE	29 RIVR MOUTH
QMAX-DATA	25.12.00	25.13.00	25. 9.00	25.12.00	25.13.00	25. 9.00	25.12.00	25.13.00	25.13.00
Q-MAX	144.68	138.72	402.52	454.90	391.79	228.44	581.01	2375.84	2366.19

TABLE 2.13 ESTIMATED PROBABLE DISCHARGE OF MOJI RIVER (EXISTING CONDITION)

DESIGN DISCHARGE(MOJI RIVER JAN.22'85 FLOOD TYPE/W=1/ 2 /EXISTING CONDITION)

KOZUI-NO= 1 TYPE-NO= 1 1985. 1.22 - 1985. 1.24
CHITEN-RYURYO

	30	31	32	33	34	35	36	37	38	39
	ULTRAFERTL			BFRE INDIO				INDIO R. AFTR INDIO		
QMAX-DATA	23. 8.00	23. 7.00	23. 8.00	23. 9.00	23. 7.00	23. 8.00	23. 9.00	23. 8.00	23. 9.00	23.10.00
Q-MAX	239.58	28.05	243.42	211.07	27.58	18.24	1.43	19.36	224.34	210.11

CHITEN-RYURYO

	40	41	42	43	44	45	46	47	48	49
		BFRE PICGR						PIACAGUERA AFTR PICGR		
QMAX-DATA	23. 7.00	23.10.00	23. 7.00	23. 7.00	23. 7.00	23. 8.00	23. 7.00	23. 8.00	23.10.00	23.11.00
Q-MAX	30.99	225.20	55.55	23.93	79.48	48.28	16.84	51.56	270.26	234.24

CHITEN-RYURYO

	50	51
		RIVR MOUTH
QMAX-DATA	23. 7.00	23.11.00
Q-MAX	25.95	240.10

DESIGN DISCHARGE(MOJI RIVER JAN.22'85 FLOOD TYPE/W=1/ 5 /EXISTING CONDITION)

KOZUI-NO= 1 TYPE-NO= 1 1985. 1.22 - 1985. 1.24
CHITEN-RYURYO

	30	31	32	33	34	35	36	37	38	39
	ULTRAFERTL			BFRE INDIO				INDIO R. AFTR INDIO		
QMAX-DATA	23. 8.00	23. 7.00	23. 8.00	23. 9.00	23. 7.00	23. 8.00	23. 7.00	23. 8.00	23. 9.00	23.10.00
Q-MAX	620.84	43.74	424.99	331.62	44.20	28.10	2.37	29.88	350.16	326.55

CHITEN-RYURYO

	40	41	42	43	44	45	46	47	48	49
		BFRE PICGR						PIACAGUERA AFTR PICGR		
QMAX-DATA	23. 7.00	23.10.00	23. 7.00	23. 7.00	23. 7.00	23. 8.00	23. 7.00	23. 8.00	23.10.00	23.11.00
Q-MAX	50.12	348.91	90.11	37.65	127.76	77.77	26.52	81.39	416.87	354.51

CHITEN-RYURYO

	50	51
		RIVR MOUTH
QMAX-DATA	23. 7.00	23.11.00
Q-MAX	42.23	361.63

DESIGN DISCHARGE(MOJI RIVER JAN.22'85 FLOOD TYPE/W=1/ 10/EXISTING CONDITION)

KOZUI-NO= 1 TYPE-NO= 1 1985. 1.22 - 1985. 1.24
CHITEN-RYURYO

	30	31	32	33	34	35	36	37	38	39
	ULTRAFERTL			BFRE INDIO				INDIO R. AFTR INDIO		
QMAX-DATA	23. 8.00	23. 7.00	23. 8.00	23. 9.00	23. 7.00	23. 8.00	23. 7.00	23. 8.00	23. 9.00	23.10.00
Q-MAX	570.04	57.17	573.54	430.88	58.20	35.95	3.29	38.18	452.01	412.11

CHITEN-RYURYO

	40	41	42	43	44	45	46	47	48	49
		BFRE PICGR						PIACAGUERA AFTR PICGR		
QMAX-DATA	23. 7.00	23.10.00	23. 7.00	23. 7.00	23. 7.00	23. 8.00	23. 7.00	23. 8.00	23.10.00	23.11.00
Q-MAX	66.10	438.11	118.90	49.36	168.26	102.03	34.78	105.44	518.74	439.17

CHITEN-RYURYO

	50	51
		RIVR MOUTH
QMAX-DATA	23. 7.00	23.11.00
Q-MAX	55.75	446.64

DESIGN DISCHARGE(MOJI RIVER JAN.22'85 FLOOD TYPE/W=1/ 25/EXISTING CONDITION)

KOZUI-NO= 1 TYPE-NO= 1 1985. 1.22 - 1985. 1.24
CHITEN-RYURYO

	30	31	32	33	34	35	36	37	38	39
	ULTRAFERTL			BFRE INDIO				INDIO R. AFTR INDIO		
QMAX-DATA	23. 8.00	23. 7.00	23. 8.00	23. 9.00	23. 7.00	23. 8.00	23. 7.00	23. 8.00	23. 9.00	23.10.00
Q-MAX	788.23	75.65	790.10	566.47	78.54	45.95	4.64	48.78	589.33	521.26

CHITEN-RYURYO

	40	41	42	43	44	45	46	47	48	49
		BFRE PICGR						PIACAGUERA AFTR PICGR		
QMAX-DATA	23. 7.00	23.10.00	23. 7.00	23. 7.00	23. 7.00	23. 8.00	23. 7.00	23. 7.00	23.10.00	23.11.00
Q-MAX	89.53	551.64	161.20	65.90	227.10	134.09	46.45	141.61	646.80	567.13

CHITEN-RYURYO

	50	51
		RIVR MOUTH
QMAX-DATA	23. 7.00	23.11.00
Q-MAX	75.67	554.88

DESIGN DISCHARGE(MOJI RIVER JAN.22'85 FLOOD TYPE/W=1/ 50/EXISTING CONDITION)

KOZUI-NO= 1 TYPE-NO= 1 1985. 1.22 - 1985. 1.24
CHITEN-RYURYO

	30	31	32	33	34	35	36	37	38	39
	ULTRAFERTL			BFRE INDIO				INDIO R. AFTR INDIO		
QMAX-DATA	23. 8.00	23. 7.00	23. 8.00	23. 9.00	23. 7.00	23. 8.00	23. 7.00	23. 7.00	23. 9.00	23. 9.00
Q-MAX	965.02	90.19	965.90	670.39	94.65	55.12	5.77	57.08	693.74	603.56

CHITEN-RYURYO

	40	41	42	43	44	45	46	47	48	49
		BFRE PICGR						PIACAGUERA AFTR PICGR		
QMAX-DATA	23. 7.00	23. 9.00	23. 7.00	23. 7.00	23. 7.00	23. 8.00	23. 7.00	23. 7.00	23.10.00	23.11.00
Q-MAX	108.26	647.79	195.06	78.71	273.77	159.64	55.51	173.62	739.34	625.88

CHITEN-RYURYO

	50	51
		RIVR MOUTH
QMAX-DATA	23. 7.00	23.11.00
Q-MAX	91.65	633.76

DESIGN DISCHARGE(MOJI RIVER JAN.22'85 FLOOD TYPE/W=1/500/EXISTING CONDITION)

KOZUI-NO= 1 TYPE-NO= 1 1985. 1.22 - 1985. 1.24
CHITEN-RYURYO

	30	31	32	33	34	35	36	37	38	39
	ULTRAFERTL			BFRE INDIO				INDIO R. AFTR INDIO		
QMAX-DATA	23. 8.00	23. 7.00	23. 8.00	23. 9.00	23. 7.00	23. 8.00	23. 7.00	23. 7.00	23. 9.00	23.10.00
Q-MAX	1039.87	95.44	1040.51	725.20	101.01	56.55	6.31	62.29	750.16	656.60

CHITEN-RYURYO

	40	41	42	43	44	45	46	47	48	49
		BFRE PICGR						PIACAGUERA AFTR PICGR		
QMAX-DATA	23. 7.00	23. 9.00	23. 7.00	23. 7.00	23. 7.00	23. 8.00	23. 7.00	23. 7.00	23.10.00	23.11.00
Q-MAX	115.78	702.87	208.70	83.53	292.23	170.77	58.92	188.44	815.69	688.05

CHITEN-RYURYO

	50	51
		RIVR MOUTH
QMAX-DATA	23. 7.00	23.11.00
Q-MAX	98.12	696.02

TABLE 2.14 ESTIMATED PROBABLE DISCHARGE OF CUBATÃO RIVER (IMPROVED CONDITION)

DESIGN DISCHARGE (CUBATAO RIVER, FEB.24 1971 FLOOD TYPE, M=1/ 2)

	1 END OF PLT	2	3	4 BFR PILOES	5	6	7	8	9 PILOES R.	10 AFT PILOES
QMAX-DATA	25.14.00	25.18.00	25.12.00	25.12.00	25.15.00	25.15.00	25.15.00	25.12.00	25.12.00	25.12.00
Q-MAX	39.09	37.15	384.46	397.38	28.51	30.10	57.66	129.01	172.72	570.10

	11	12	13	14 IMGRTS BRG	15	16	17 ANCHET BRG	18 HNRY BRDEN	19	20 BFR PERQUE
QMAX-DATA	25.13.00	25.12.00	25.15.00	25.15.00	25.13.00	25.12.00	25.15.00	25.12.00	25.13.00	25.13.00
Q-MAX	504.84	55.49	536.79	536.79	555.26	57.73	589.38	196.02	750.69	724.17

	21	22	23	24 BAIX PRQUE	25	26	27 PEREQUE R.	28 AFT PERQUE	29 RIVR MOUTH
QMAX-DATA	25.13.00	25.13.00	25.12.00	25.12.00	25.13.00	25.12.00	25.12.00	25.13.00	25.13.00
Q-MAX	34.02	33.41	131.58	137.00	135.43	77.64	208.85	915.49	919.87

DESIGN DISCHARGE (CUBATAO RIVER, FEB.24 1971 FLOOD TYPE, M=1/ 5)

	1 END OF PLT	2	3	4 BFR PILOES	5	6	7	8	9 PILOES R.	10 AFT PILOES
QMAX-DATA	25.14.00	25.17.00	25.12.00	25.12.00	25.13.00	25.13.00	25.13.00	25.12.00	25.12.00	25.12.00
Q-MAX	78.18	70.80	560.14	586.08	50.92	54.15	106.12	194.54	281.89	867.97

	11	12	13	14 IMGRTS BRG	15	16	17 ANCHET BRG	18 HNRY BRDEN	19	20 BFR PERQUE
QMAX-DATA	25.12.00	25.12.00	25.12.00	25.12.00	25.13.00	25.12.00	25.13.00	25.12.00	25.13.00	25.13.00
Q-MAX	749.75	77.32	827.07	827.07	848.38	81.07	891.42	238.09	1089.10	1058.42

	21	22	23	24 BAIX PRQUE	25	26	27 PEREQUE R.	28 AFT PERQUE	29 RIVR MOUTH
QMAX-DATA	25.13.00	25.13.00	25.12.00	25.12.00	25.12.00	25.12.00	25.12.00	25.13.00	25.13.00
Q-MAX	58.18	59.21	182.31	231.65	207.29	116.35	323.67	1325.68	1345.52

DESIGN DISCHARGE (CUBATAO RIVER, FEB.24 1971 FLOOD TYPE, M=1/ 10)

	1 END OF PLT	2	3	4 BFR PILOES	5	6	7	8	9 PILOES R.	10 AFT PILOES
QMAX-DATA	25.13.00	25.15.00	25.12.00	25.12.00	25.13.00	25.13.00	25.13.00	25.12.00	25.12.00	25.12.00
Q-MAX	112.65	101.18	665.62	706.06	67.92	72.23	142.65	252.70	355.73	1061.79

	11	12	13	14 IMGRTS BRG	15	16	17 ANCHET BRG	18 HNRY BRDEN	19	20 BFR PERQUE
QMAX-DATA	25.12.00	25. 9.00	25.12.00	25.12.00	25.13.00	25. 9.00	25.13.00	25.12.00	25.13.00	25.13.00
Q-MAX	930.81	95.26	1022.10	1022.10	1041.36	98.15	1089.99	263.78	1277.86	1270.93

	21	22	23	24 BAIX PRQUE	25	26	27 PEREQUE R.	28 AFT PERQUE	29 RIVR MOUTH
QMAX-DATA	25.13.00	25.13.00	25. 9.00	25.12.00	25.12.00	25.12.00	25.12.00	25.13.00	25.13.00
Q-MAX	75.92	78.32	226.84	283.06	256.31	139.62	395.33	1589.28	1617.40

DESIGN DISCHARGE (CUBATAO RIVER, FEB.24 1971 FLOOD TYPE, M=1/ 25)

	1 END OF PLT	2	3	4 BFR PILOES	5	6	7	8	9 PILOES R.	10 AFT PILOES
QMAX-DATA	25.13.00	25.15.00	25. 9.00	25.12.00	25.13.00	25.15.00	25.13.00	25.12.00	25.12.00	25.12.00
Q-MAX	167.39	149.01	839.28	864.80	90.41	96.14	191.08	280.33	454.72	1319.52

	11	12	13	14 IMGRTS BRG	15	16	17 ANCHET BRG	18 HNRY BRDEN	19	20 BFR PERQUE
QMAX-DATA	25.12.00	25. 9.00	25.12.00	25.12.00	25.13.00	25. 9.00	25.13.00	25. 9.00	25.13.00	25.13.00
Q-MAX	1170.49	126.74	1279.33	1279.33	1300.64	130.80	1356.09	512.20	1556.96	1549.08

	21	22	23	24 BAIX PRQUE	25	26	27 PEREQUE R.	28 AFT PERQUE	29 RIVR MOUTH
QMAX-DATA	25.12.00	25.13.00	25. 9.00	25.12.00	25.12.00	25.12.00	25.12.00	25.13.00	25.13.00
Q-MAX	102.10	103.32	501.61	550.79	520.88	167.51	687.99	1932.51	1969.71

DESIGN DISCHARGE (CUBATAO RIVER, FEB.24 1971 FLOOD TYPE, M=1/ 50)

	1 END OF PLT	2	3	4 BFR PILOES	5	6	7	8	9 PILOES R.	10 AFT PILOES
QMAX-DATA	25.13.00	25.14.00	25. 9.00	25. 9.00	25.12.00	25.12.00	25.13.00	25. 9.00	25.12.00	25.12.00
Q-MAX	213.83	189.56	1002.98	1017.70	109.14	116.06	227.22	327.55	532.13	1521.46

	11	12	13	14 IMGRTS BRG	15	16	17 ANCHET BRG	18 HNRY BRDEN	19	20 BFR PERQUE
QMAX-DATA	25.12.00	25. 9.00	25.12.00	25.12.00	25.13.00	25. 9.00	25.13.00	25. 9.00	25.13.00	25.13.00
Q-MAX	1359.74	149.65	1481.78	1481.78	1505.25	154.87	1565.41	592.93	1774.20	1767.27

	21	22	23	24 BAIX PRQUE	25	26	27 PEREQUE R.	28 AFT PERQUE	29 RIVR MOUTH
QMAX-DATA	25.12.00	25.13.00	25. 9.00	25.12.00	25.12.00	25. 9.00	25.12.00	25.13.00	25.13.00
Q-MAX	123.50	121.65	555.68	603.08	569.75	198.02	758.13	2199.57	2242.11

DESIGN DISCHARGE (CUBATAO RIVER, FEB.24 1971 FLOOD TYPE, M=1/100)

	1 END OF PLT	2	3	4 BFR PILOES	5	6	7	8	9 PILOES R.	10 AFT PILOES
QMAX-DATA	25.13.00	25.14.00	25. 9.00	25. 9.00	25.12.00	25.12.00	25.13.00	25. 9.00	25.12.00	25.12.00
Q-MAX	262.54	236.50	1153.35	1171.62	129.36	137.56	261.28	380.09	609.42	1724.93

	11	12	13	14 IMGRTS BRG	15	16	17 ANCHET BRG	18 HNRY BRDEN	19	20 BFR PERQUE
QMAX-DATA	25.12.00	25. 9.00	25.12.00	25.12.00	25.13.00	25. 9.00	25.13.00	25. 9.00	25.13.00	25.13.00
Q-MAX	1552.04	169.57	1686.95	1686.95	1711.10	176.00	1775.81	389.75	1992.88	1988.27

	21	22	23	24 BAIX PRQUE	25	26	27 PEREQUE R.	28 AFT PERQUE	29 RIVR MOUTH
QMAX-DATA	25.12.00	25.13.00	25. 9.00	25.12.00	25.12.00	25. 9.00	25.12.00	25.13.00	25.13.00
Q-MAX	144.66	138.72	402.52	454.90	418.13	229.44	626.98	2467.30	2515.24

TABLE 2.15 ESTIMATED PROBABLE DISCHARGE OF MOJI RIVER
(IMPROVED CONDITION)

DESIGN DISCHARGE (MOJI RIVER, JAN.22-23.1985 FLOOD TYPE, W=1/ 2)

	30 ULTRAFEGTL	31	32	33 BFRE INDIO	34	35	36	37 INDIO R. AFTR INDIO	38	39
QMAX-DATA	23. 8.00	23. 7.00	23. 8.00	23. 9.00	23. 7.00	23. 8.00	23. 9.00	23. 8.00	23. 9.00	23.10.00
Q-MAX	239.58	28.05	243.42	217.75	27.58	18.24	1.43	19.36	231.04	213.26

	40	41 BFRE PICGR	42	43	44	45	46	47 PIACAGUERA AFTR PICGR	48	49
QMAX-DATA	23. 7.00	23.10.00	23. 7.00	23. 7.00	23. 7.00	23. 8.00	23. 7.00	23. 8.00	23.10.00	23.12.00
Q-MAX	30.99	228.35	55.55	23.93	79.48	48.20	16.84	51.58	273.41	213.41

	50	51 RIVR MOUTH
QMAX-DATA	23. 7.00	23.12.00
Q-MAX	25.95	217.15

DESIGN DISCHARGE (MOJI RIVER, JAN.22-23.1985 FLOOD TYPE, W=1/ 5)

	30 ULTRAFEATL	31	32	33 BFRE INDIO	34	35	36	37 INDIO R. AFTR INDIO	38	39
QMAX-DATA	23. 8.00	23. 7.00	23. 8.00	23. 9.00	23. 7.00	23. 8.00	23. 7.00	23. 8.00	23. 9.00	23. 9.00
Q-MAX	420.84	43.74	426.99	358.68	44.20	28.10	2.37	29.88	377.42	351.29

	40	41 BFRE PICGR	42	43	44	45	46	47 PIACAGUERA AFTR PICGR	48	49
QMAX-DATA	23. 7.00	23. 9.00	23. 7.00	23. 7.00	23. 7.00	23. 8.00	23. 7.00	23. 8.00	23. 9.00	23.11.00
Q-MAX	58.12	378.46	90.11	37.65	127.76	77.77	26.52	81.19	442.55	344.33

	50	51 RIVR MOUTH
QMAX-DATA	23. 7.00	23.11.00
Q-MAX	42.23	351.65

DESIGN DISCHARGE (MOJI RIVER, JAN.22-23.1985 FLOOD TYPE, W=1/ 10)

	30 ULTRAFERTL	31	32	33 BFRE INDIO	34	35	36	37 INDIO R. AFTR INDIO	38	39
QMAX-DATA	23. 8.00	23. 7.00	23. 8.00	23. 9.00	23. 7.00	23. 8.00	23. 7.00	23. 8.00	23. 9.00	23. 9.00
Q-MAX	570.04	57.17	573.54	486.15	58.20	35.95	3.29	38.18	487.28	470.30

	40	41 BFRE PICGR	42	43	44	45	46	47 PIACAGUERA AFTR PICGR	48	49
QMAX-DATA	23. 7.00	23. 9.00	23. 7.00	23. 7.00	23. 7.00	23. 8.00	23. 7.00	23. 8.00	23. 9.00	23.11.00
Q-MAX	66.10	503.37	118.70	49.36	168.26	102.03	34.78	105.44	577.88	437.96

	50	51 RIVR MOUTH
QMAX-DATA	23. 7.00	23.11.00
Q-MAX	55.75	445.43

DESIGN DISCHARGE (MOJI RIVER, JAN.22-23.1985 FLOOD TYPE, W=1/ 25)

	30 ULTRAFERTL	31	32	33 BFRE INDIO	34	35	36	37 INDIO R. AFTR INDIO	38	39
QMAX-DATA	23. 8.00	23. 7.00	23. 8.00	23. 9.00	23. 7.00	23. 8.00	23. 7.00	23. 8.00	23. 9.00	23. 9.00
Q-MAX	788.23	75.85	790.10	609.30	76.56	45.95	4.64	48.78	632.15	636.33

	40	41 BFRE PICGR	42	43	44	45	46	47 PIACAGUERA AFTR PICGR	48	49
QMAX-DATA	23. 7.00	23. 9.00	23. 7.00	23. 7.00	23. 7.00	23. 8.00	23. 7.00	23. 7.00	23. 9.00	23.11.00
Q-MAX	89.53	676.08	161.20	65.90	227.10	134.89	46.45	141.41	759.16	551.27

	50	51 RIVR MOUTH
QMAX-DATA	23. 7.00	23.10.00
Q-MAX	75.67	577.52

DESIGN DISCHARGE (MOJI RIVER, JAN.22-23.1985 FLOOD TYPE, W=1/ 50)

	30 ULTRAFERTL	31	32	33 BFRE INDIO	34	35	36	37 INDIO R. AFTR INDIO	38	39
QMAX-DATA	23. 8.00	23. 7.00	23. 8.00	23. 9.00	23. 7.00	23. 8.00	23. 7.00	23. 7.00	23. 9.00	23. 9.00
Q-MAX	965.02	90.19	965.90	716.14	94.65	53.12	5.77	57.08	739.50	765.72

	40	41 BFRE PICGR	42	43	44	45	46	47 PIACAGUERA AFTR PICGR	48	49
QMAX-DATA	23. 7.00	23. 9.00	23. 7.00	23. 7.00	23. 7.00	23. 8.00	23. 7.00	23. 7.00	23. 9.00	23.10.00
Q-MAX	108.26	810.13	195.36	78.71	273.77	159.04	55.51	173.62	896.74	658.24

	50	51 RIVR MOUTH
QMAX-DATA	23. 7.00	23.10.00
Q-MAX	91.65	687.78

DESIGN DISCHARGE (MOJI RIVER, JAN.22-23.1985 FLOOD TYPE, W=1/100)

	30 ULTRAFERTL	31	32	33 BFRE INDIO	34	35	36	37 INDIO R. AFTR INDIO	38	39
QMAX-DATA	23. 8.00	23. 7.00	23. 8.00	23. 9.00	23. 7.00	23. 7.00	23. 7.00	23. 7.00	23. 9.00	23. 9.00
Q-MAX	1039.87	95.44	1040.36	755.29	101.01	55.97	6.31	62.29	778.05	818.77

	40	41 BFRE PICGR	42	43	44	45	46	47 PIACAGUERA AFTR PICGR	48	49
QMAX-DATA	23. 7.00	23. 9.00	23. 7.00	23. 7.00	23. 7.00	23. 8.00	23. 7.00	23. 7.00	23. 9.00	23.10.00
Q-MAX	115.78	863.70	208.70	83.55	292.23	168.65	58.92	188.44	948.95	705.67

	50	51 RIVR MOUTH
QMAX-DATA	23. 7.00	23.10.00
Q-MAX	98.12	739.08

TABLE 2.16 FLOOD TO BE OVERFLOWED FROM RIVERS (CUBATÃO RIVER)

Cubatao River (Mesh No.8)

Unit : m3/sec

Time	Return Period 2	5	10	25	50	100
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	156.8
4	0.0	0.0	0.0	0.0	0.0	58.1
5	0.0	0.0	0.0	0.0	3.5	135.7
6	0.0	0.0	0.0	193.0	373.4	551.7
7	0.0	0.0	58.3	329.8	543.1	756.1
8	0.0	0.0	0.0	0.0	14.8	145.9
9	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0
12	0.0	0.0	0.0	0.0	0.0	0.0
13	0.0	0.0	0.0	0.0	0.0	0.0
14	0.0	0.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0	0.0
18	0.0	0.0	0.0	0.0	0.0	0.0
19	0.0	0.0	0.0	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	0.0	0.0
21	0.0	0.0	0.0	0.0	0.0	0.0
22	0.0	0.0	0.0	0.0	0.0	0.0
23	0.0	0.0	0.0	0.0	0.0	0.0
24	0.0	0.0	0.0	0.0	0.0	0.0
25	0.0	0.0	0.0	0.0	0.0	0.0

Cubatao River (Mesh No.30)

Unit : m3/sec

Time	Return Period 2	5	10	25	50	100
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	126.2	294.8	300.0
4	0.0	0.0	0.0	77.8	220.5	300.0
5	0.0	0.0	0.0	169.8	300.0	300.0
6	0.0	69.7	256.8	300.0	300.0	300.0
7	0.0	156.0	300.0	300.0	300.0	300.0
8	0.0	0.0	14.5	183.6	300.0	300.0
9	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0
12	0.0	0.0	0.0	0.0	0.0	0.0
13	0.0	0.0	0.0	0.0	0.0	0.0
14	0.0	0.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0	0.0
18	0.0	0.0	0.0	0.0	0.0	0.0
19	0.0	0.0	0.0	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	0.0	0.0
21	0.0	0.0	0.0	0.0	0.0	0.0
22	0.0	0.0	0.0	0.0	0.0	0.0
23	0.0	0.0	0.0	0.0	0.0	0.0
24	0.0	0.0	0.0	0.0	0.0	0.0
25	0.0	0.0	0.0	0.0	0.0	0.0

Pereque River (Mesh No.36)

Unit : m3/sec

Time	Return Period 2	5	10	25	50	100
1	0.0	0.0	0.0	14.3	43.8	76.1
2	0.0	0.0	0.0	0.0	0.0	17.3
3	0.0	48.0	106.1	190.0	250.4	305.7
4	0.0	15.2	58.4	103.9	138.7	171.3
5	0.0	33.1	72.3	126.6	169.8	208.3
6	62.1	170.6	232.0	310.1	368.7	431.0
7	40.9	119.4	171.3	237.5	287.2	335.8
8	0.0	9.1	46.9	90.8	118.7	145.0
9	0.0	0.0	0.0	0.0	8.6	26.3
10	0.0	0.0	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0
12	0.0	0.0	0.0	0.0	0.0	0.0
13	0.0	0.0	0.0	0.0	0.0	0.0
14	0.0	0.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0	0.0
18	0.0	0.0	0.0	0.0	0.0	0.0
19	0.0	0.0	0.0	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	0.0	0.0
21	0.0	0.0	0.0	0.0	0.0	0.0
22	0.0	0.0	0.0	0.0	0.0	0.0
23	0.0	0.0	0.0	0.0	0.0	0.0
24	0.0	0.0	0.0	0.0	0.0	0.0
25	0.0	0.0	0.0	0.0	0.0	0.0

TABLE 2.17 FLOOD TO BE OVERFLOWED FROM RIVERS (MOJI RIVER)

Piasaguera River

Time	Rerum Period					
	2	5	10	25	50	100
1	25.36	55.55	81.94	121.41	153.62	168.44
2	31.56	61.39	85.44	117.23	141.06	152.11
3	24.10	44.08	54.51	63.09	66.61	78.73
4	25.06	47.96	60.63	75.17	85.29	101.59
5	11.66	23.01	28.28	34.13	38.12	42.89
6	0.00	2.92	4.18	5.30	5.19	6.50
7	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	2.76
16	0.00	0.00	0.00	0.00	0.74	3.78
17	0.00	0.00	0.00	0.00	0.00	2.31
18	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00

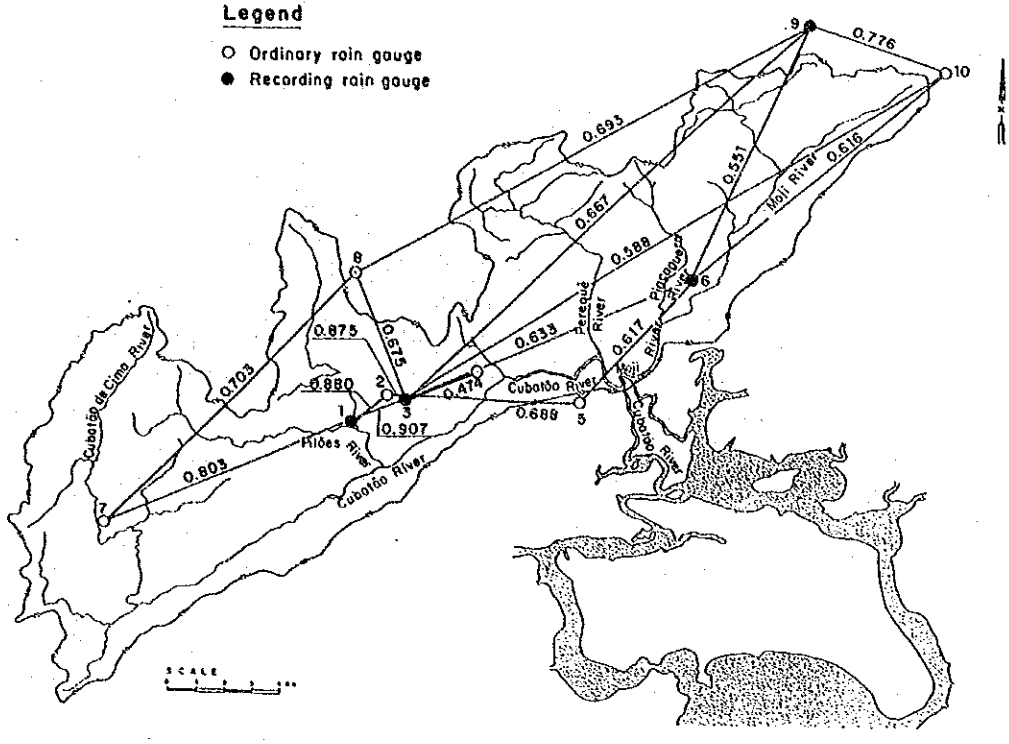
Moji River

Time	Rerum Period					
	2	5	10	25	50	100
1	117.63	314.59	477.21	714.08	905.21	985.31
2	4.68	69.43	109.39	145.40	160.63	182.99
3	52.76	166.30	237.18	318.51	374.06	455.47
4	36.29	124.31	174.02	232.19	273.56	326.51
5	0.00	0.00	0.00	0.00	0.00	2.91
6	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00

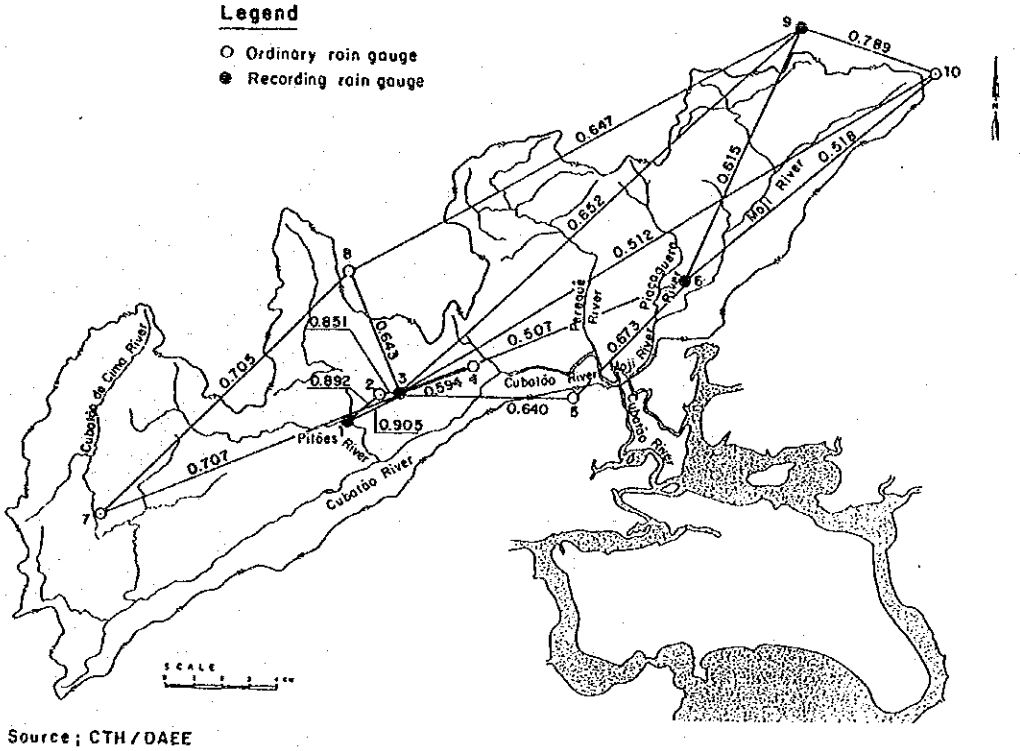
Indio River

Time	Rerum Period					
	2	5	10	25	50	100
1	0.00	8.81	17.62	31.02	42.08	47.28
2	4.36	14.88	23.18	33.78	41.35	44.89
3	0.00	3.54	6.13	7.85	8.36	11.96
4	0.00	7.71	12.23	17.63	21.49	27.47
5	0.00	0.00	0.24	1.89	2.97	4.03
6	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00

CORRELATION COEFFICIENTS
(1 DAY)



CORRELATION COEFFICIENTS
(2 DAY)



Source ; CTH / DAEE

FIG. 2.1
CORRELATION COEFFICIENTS
BETWEEN RAINFALL STATIONS

GOVERNMENT OF FEDERATIVE REPUBLIC OF BRAZIL
THE STUDY ON THE DISASTER PREVENTION AND RESTORATION PROJECT IN SERRA DO MAR, CUBATÃO REGION, STATE OF SÃO PAULO
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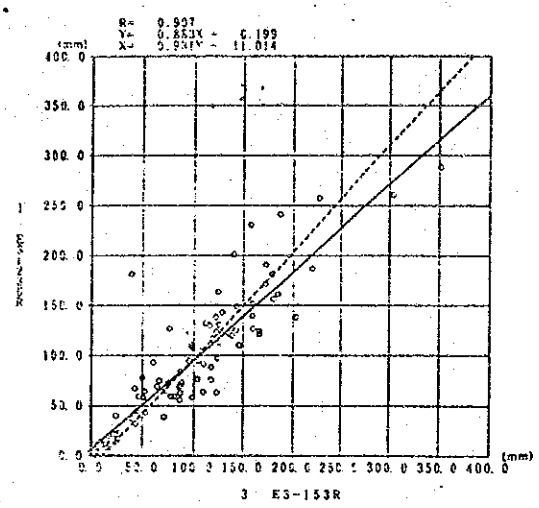
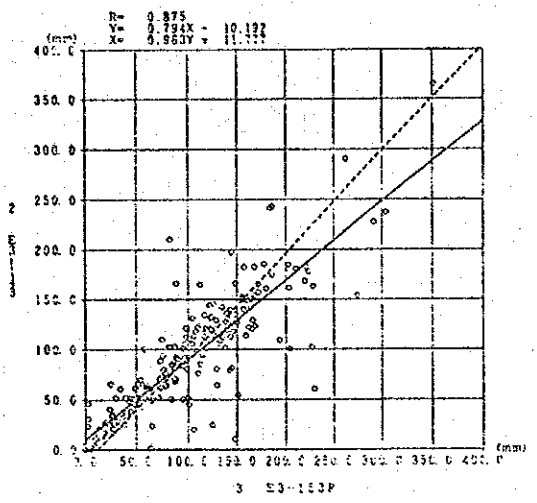
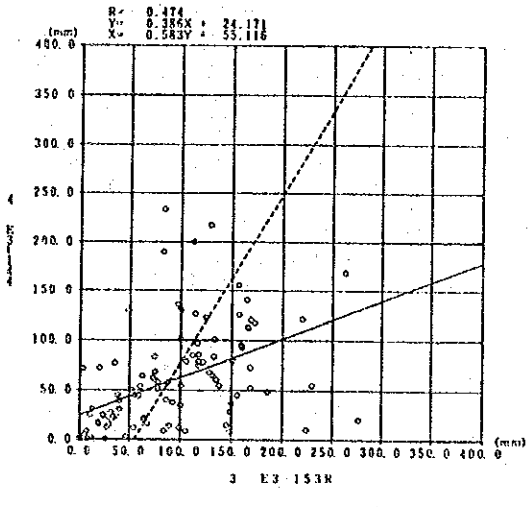
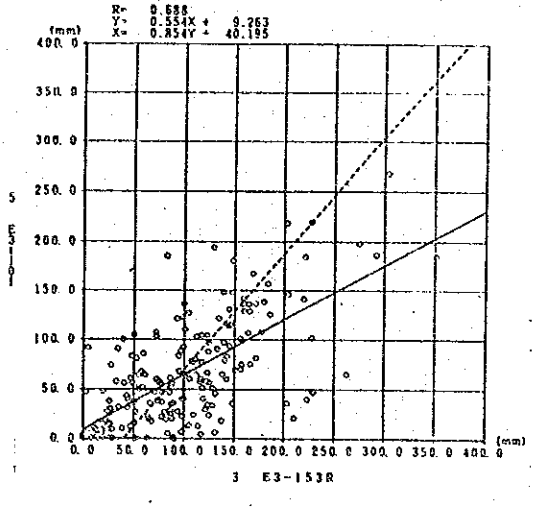
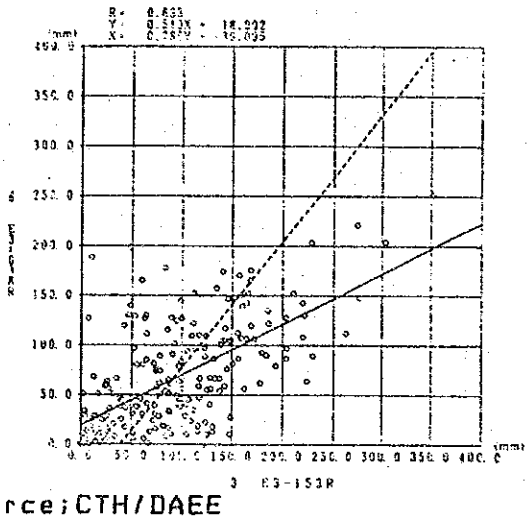
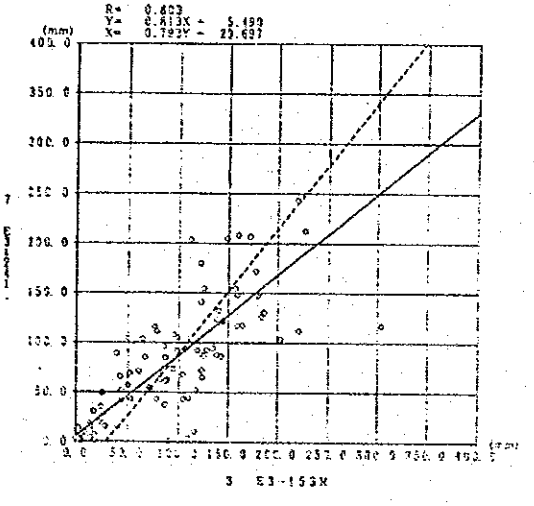








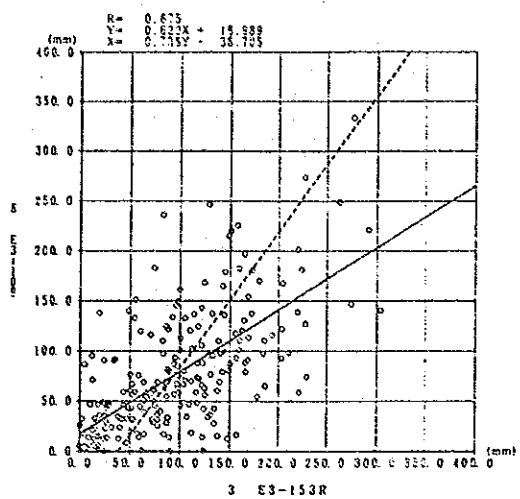




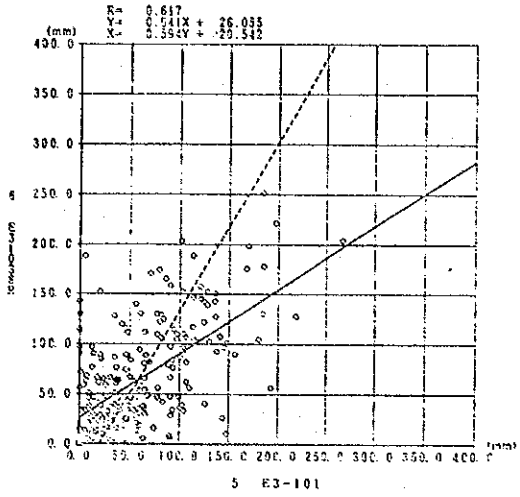
Source; CTH/DAEE

FIG. 2.2
CORRELATION GRAPHS OF 1-DAY RAINFALL (1/2)

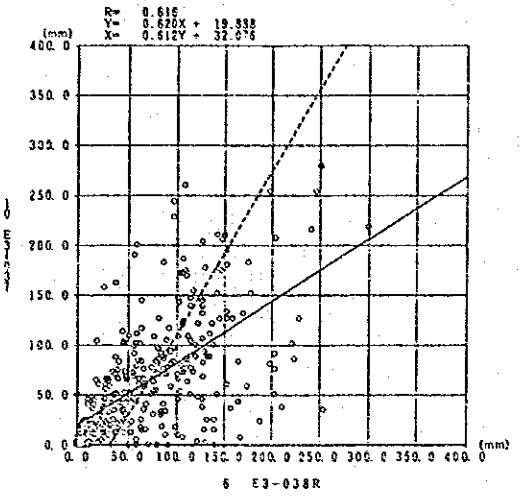
GOVERNMENT OF FEDERATIVE REPUBLIC OF BRAZIL
THE STUDY ON THE DISASTER PREVENTION AND RESTORATION PROJECT IN SERRA DO MAR, CUBATÃO REGION, STATE OF SÃO PAULO
JAPAN INTERNATIONAL COOPERATION AGENCY



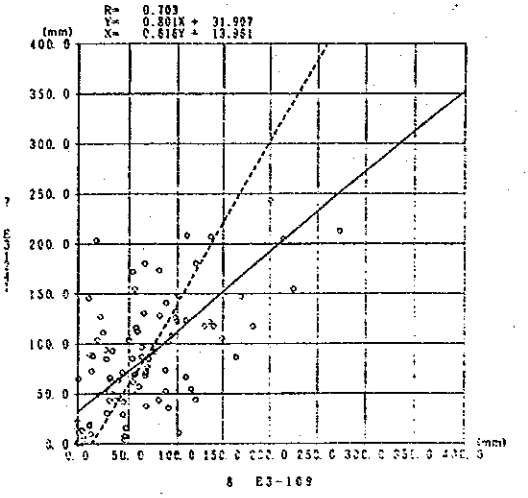
3 E3-153R



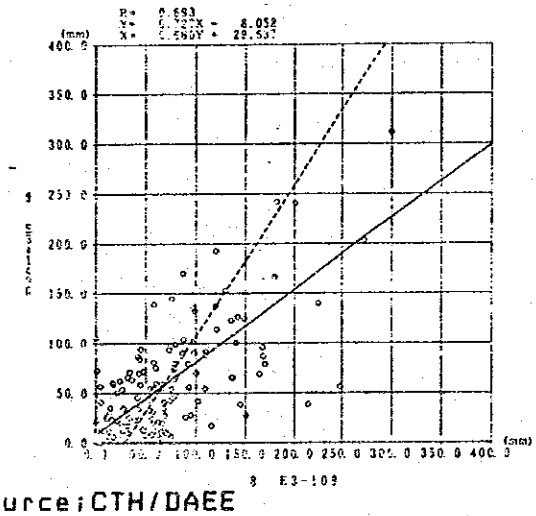
5 E3-101



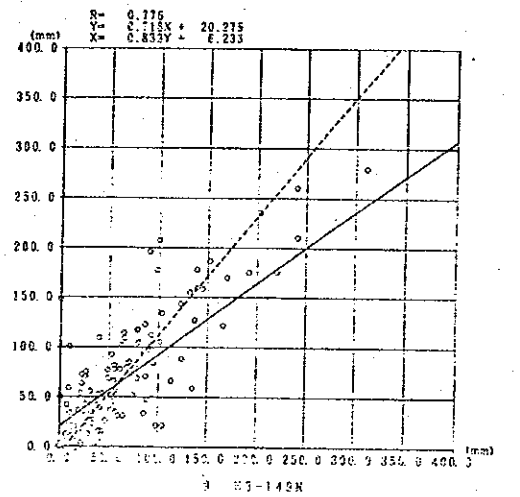
6 E3-038R



8 E3-109



9 E3-109



3 E3-145R

Source; CTH/DAEE

FIG. 2.2
CORRELATION GRAPHS OF 1-DAY RAINFALL (2/2)

GOVERNMENT OF FEDERATIVE REPUBLIC OF BRAZIL

THE STUDY ON THE DISASTER PREVENTION AND RESTORATION PROJECT IN SERRA DO MAR, CUBATÃO REGION, STATE OF SÃO PAULO

JAPAN INTERNATIONAL COOPERATION AGENCY

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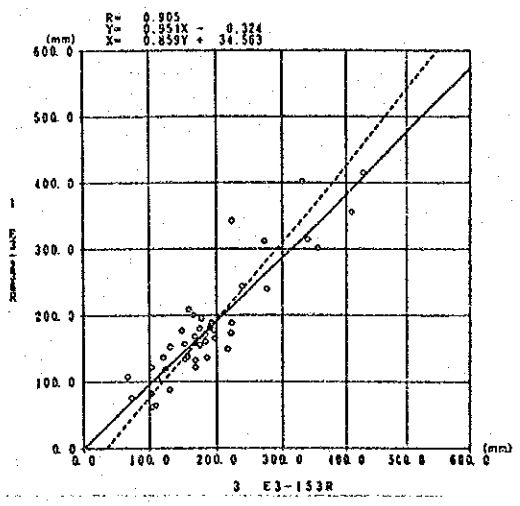
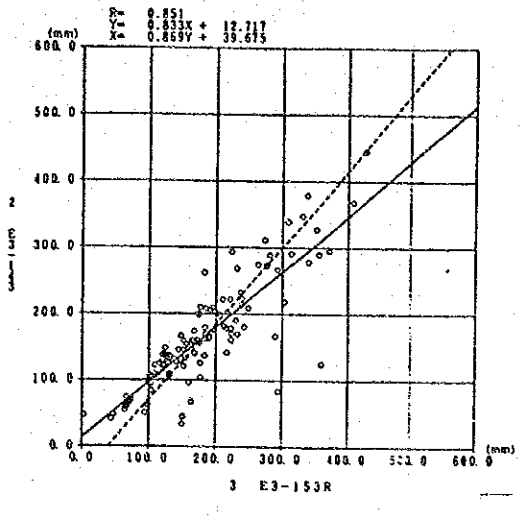
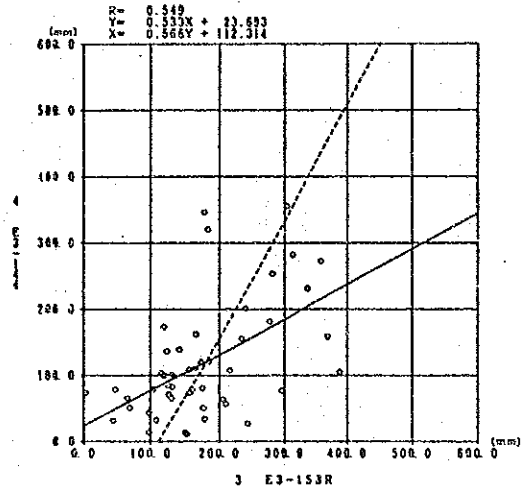
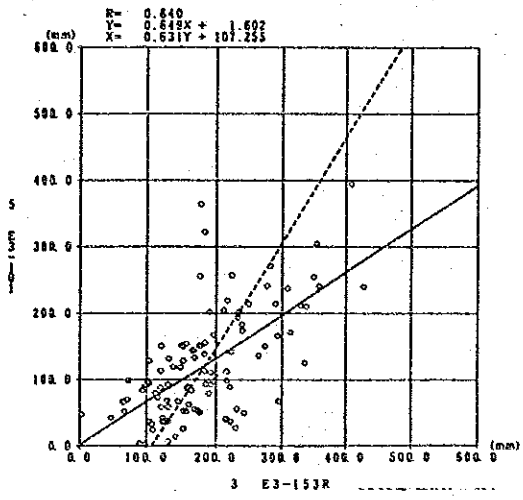
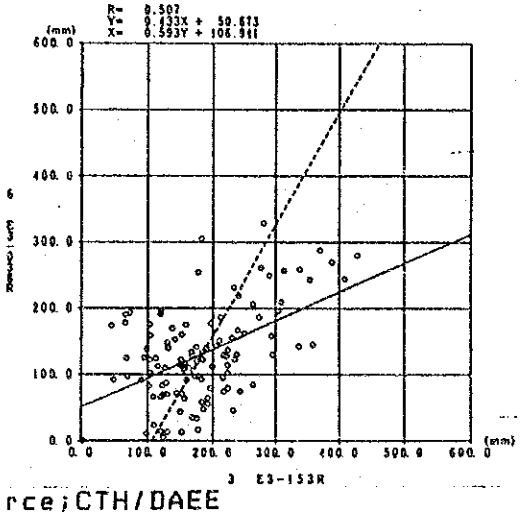
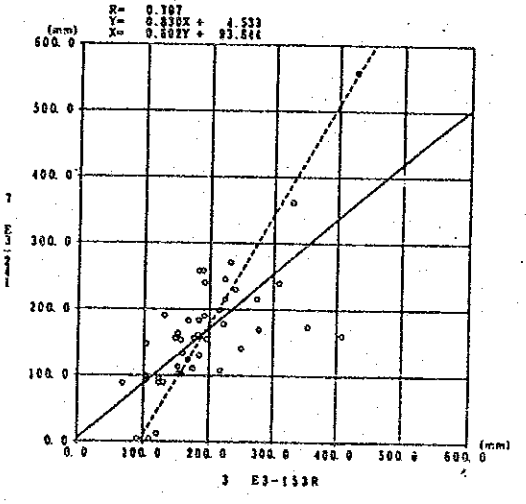








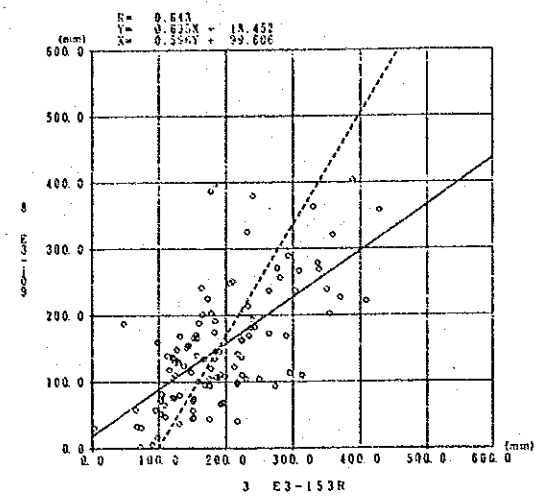




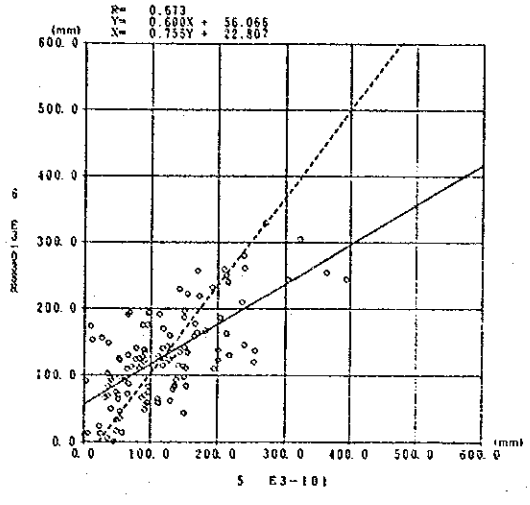
Source; CTH/DAEE

FIG. 2.3
CORRELATION GRAPHS OF 2-DAY RAINFALL (1/2)

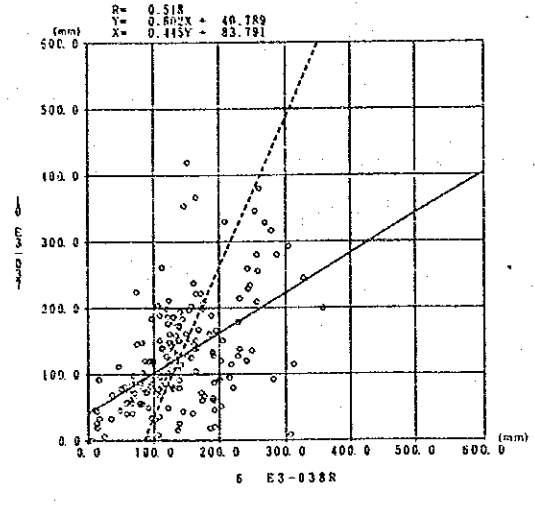
GOVERNMENT OF FEDERATIVE REPUBLIC OF BRAZIL
THE STUDY ON THE DISASTER PREVENTION AND RESTORATION PROJECT IN SERRA DO MAR, CUBATÃO REGION, STATE OF SÃO PAULO
JAPAN INTERNATIONAL COOPERATION AGENCY



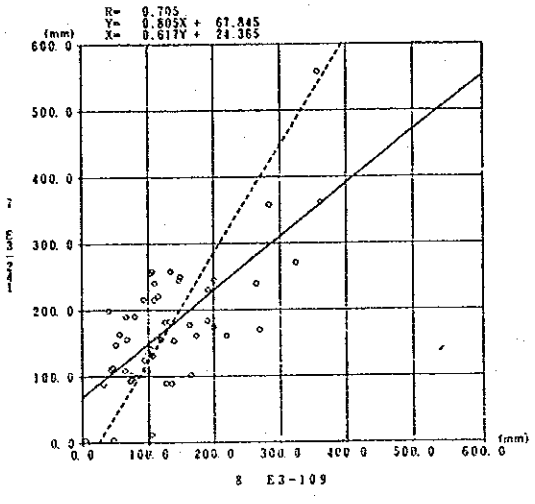
3 E3-153R



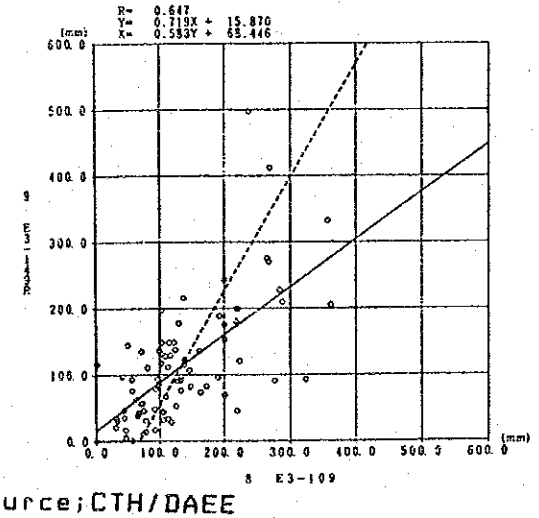
5 E3-101



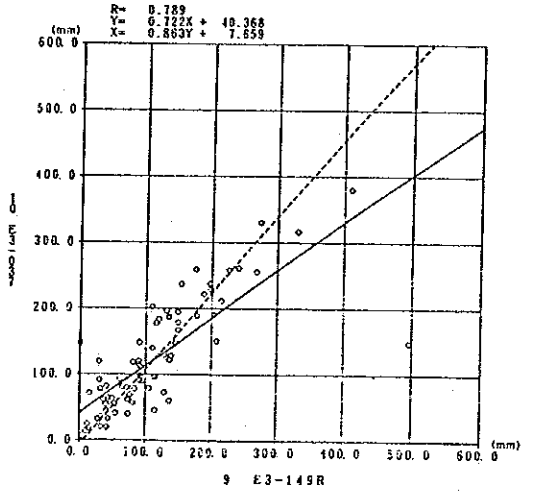
6 E3-038R



8 E3-109



8 E3-109

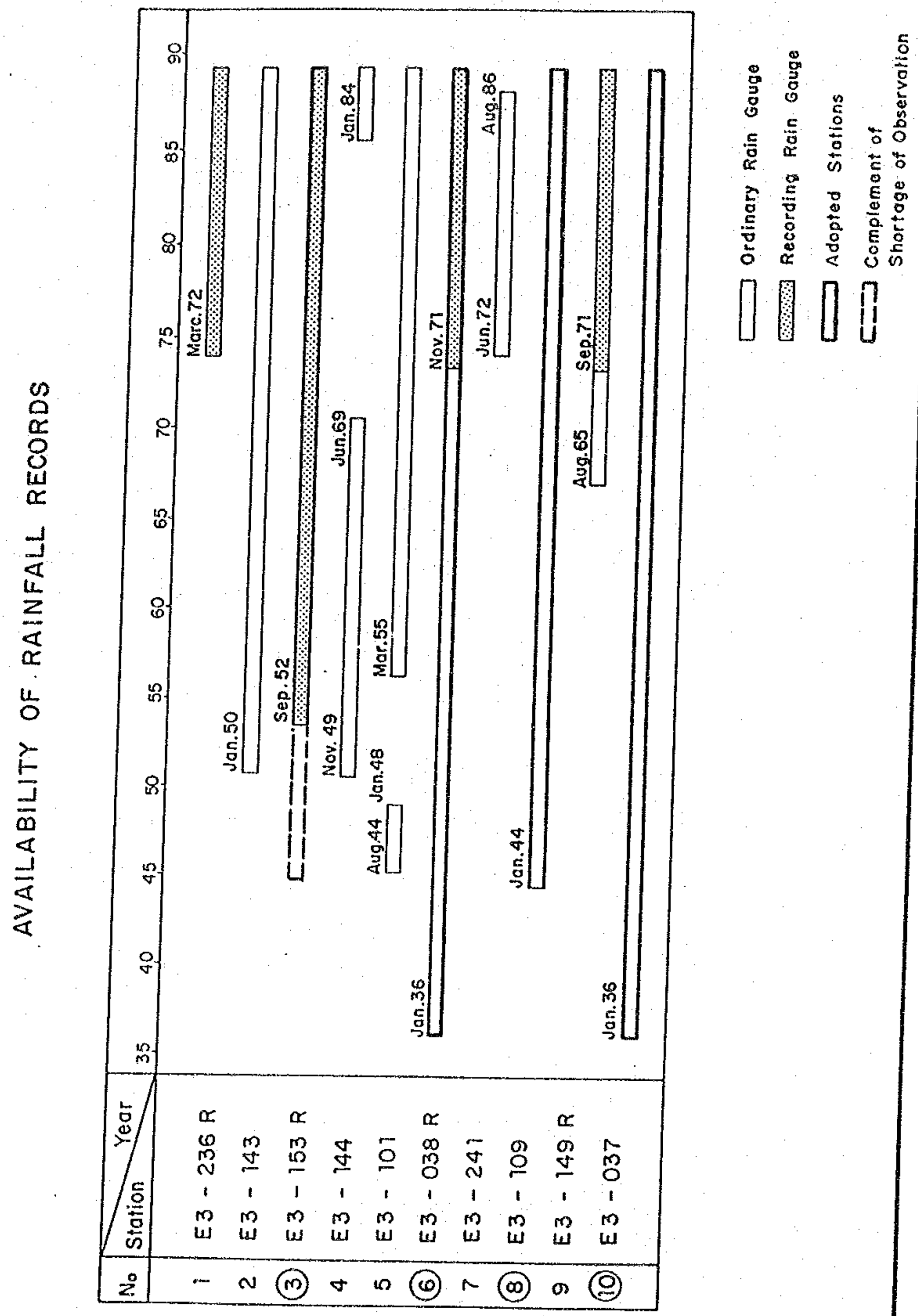


9 E3-149R

Source; CTH/DAEE

FIG. 2.3
CORRELATION GRAPHS OF 2-DAY RAINFALL (2/2)

GOVERNMENT OF FEDERATIVE REPUBLIC OF BRAZIL
THE STUDY ON THE DISASTER PREVENTION AND RESTORATION PROJECT IN SERRA DO MAR, CUBATÃO REGION, STATE OF SÃO PAULO
JAPAN INTERNATIONAL COOPERATION AGENCY



Source: CTH/DAEE

FIG. 2.4
RAINFALL STATION USED FOR
CALCULATION OF BASIN MEAN RAINFALL

GOVERNMENT OF FEDERATIVE REPUBLIC OF BRAZIL
THE STUDY ON THE DISASTER PREVENTION AND RESTORATION PROJECT IN SERRA DO MAR, CUBATÃO REGION, STATE OF SÃO PAULO

JAPAN INTERNATIONAL COOPERATION AGENCY

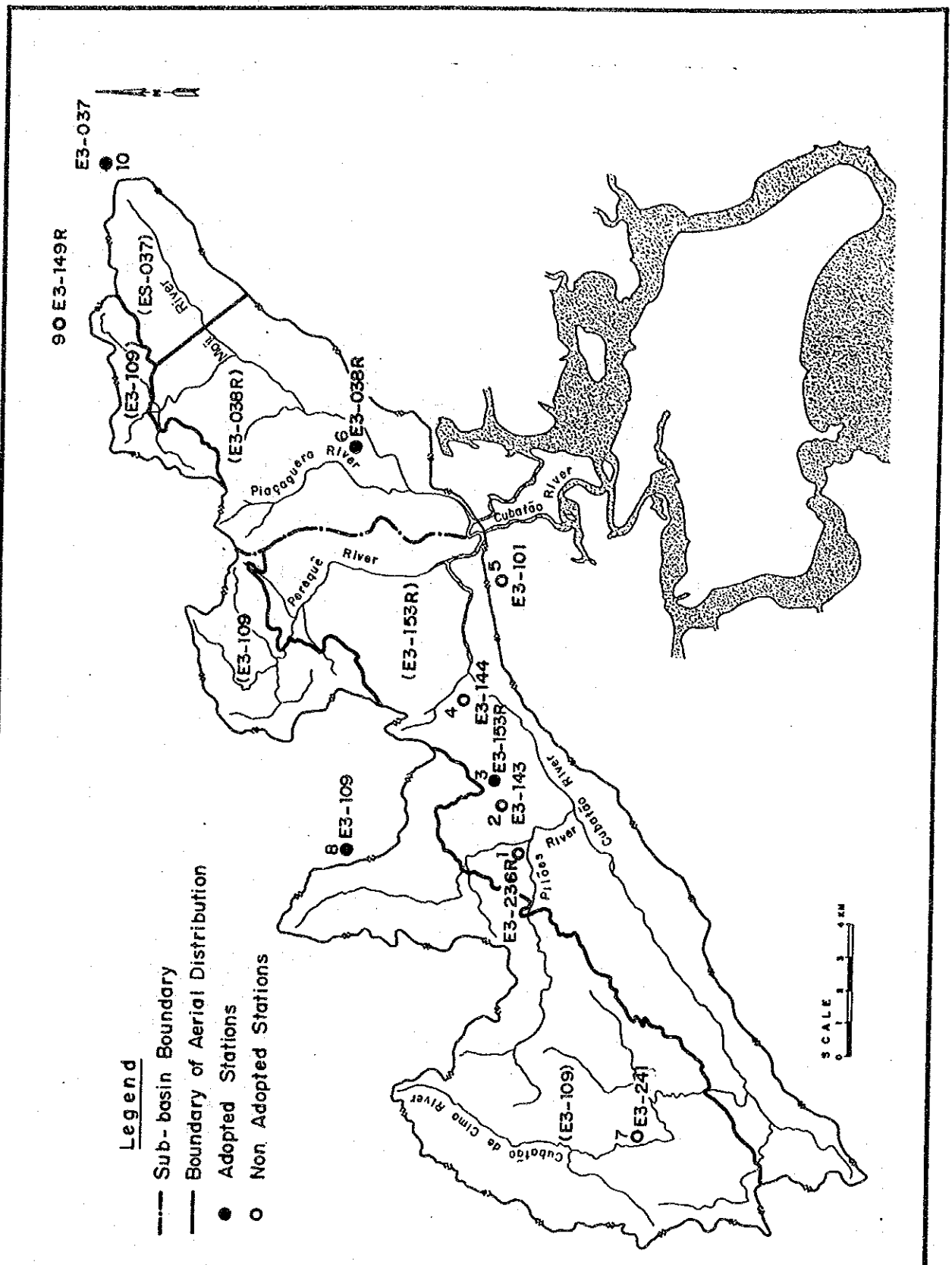


FIG. 2.5
BASIN BOUNDARY CONTROLLED BY RAINFALL STATION

GOVERNMENT OF FEDERATIVE REPUBLIC OF BRAZIL
THE STUDY ON THE DISASTER PREVENTION AND RESTORATION PROJECT IN SERRA DO MAR, CUBATÃO REGION, STATE OF SÃO PAULO
JAPAN INTERNATIONAL COOPERATION AGENCY

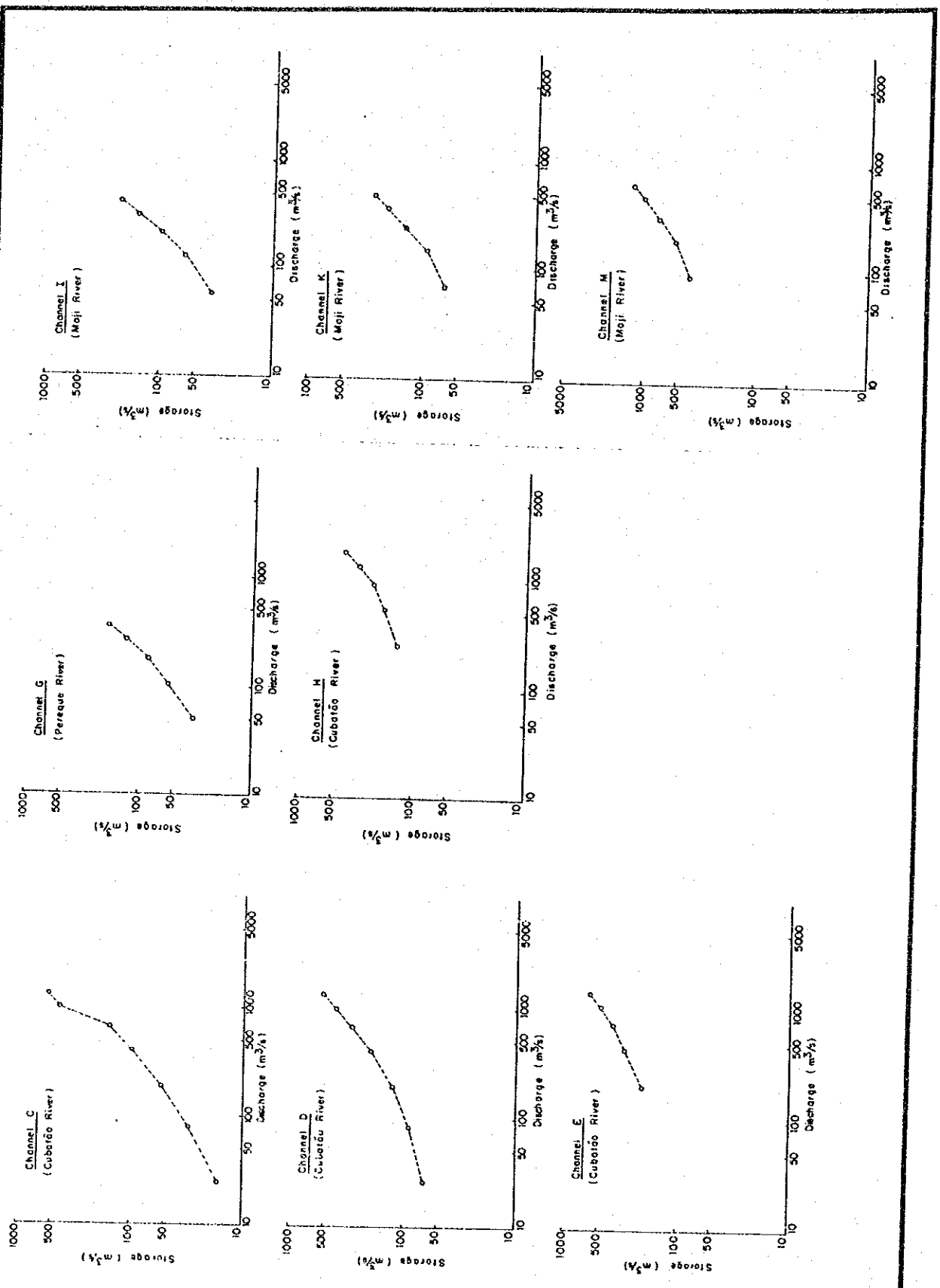


FIG. 2.6
STORAGE-DISCHARGE RELATION OF CHANNELS IN PRESENT CONDITION

GOVERNMENT OF FEDERATIVE REPUBLIC OF BRAZIL
THE STUDY ON THE DISASTER PREVENTION AND RESTORATION PROJECT IN SERRA DO MAR, CUBATÃO REGION, STATE OF SÃO PAULO
JAPAN INTERNATIONAL COOPERATION AGENCY

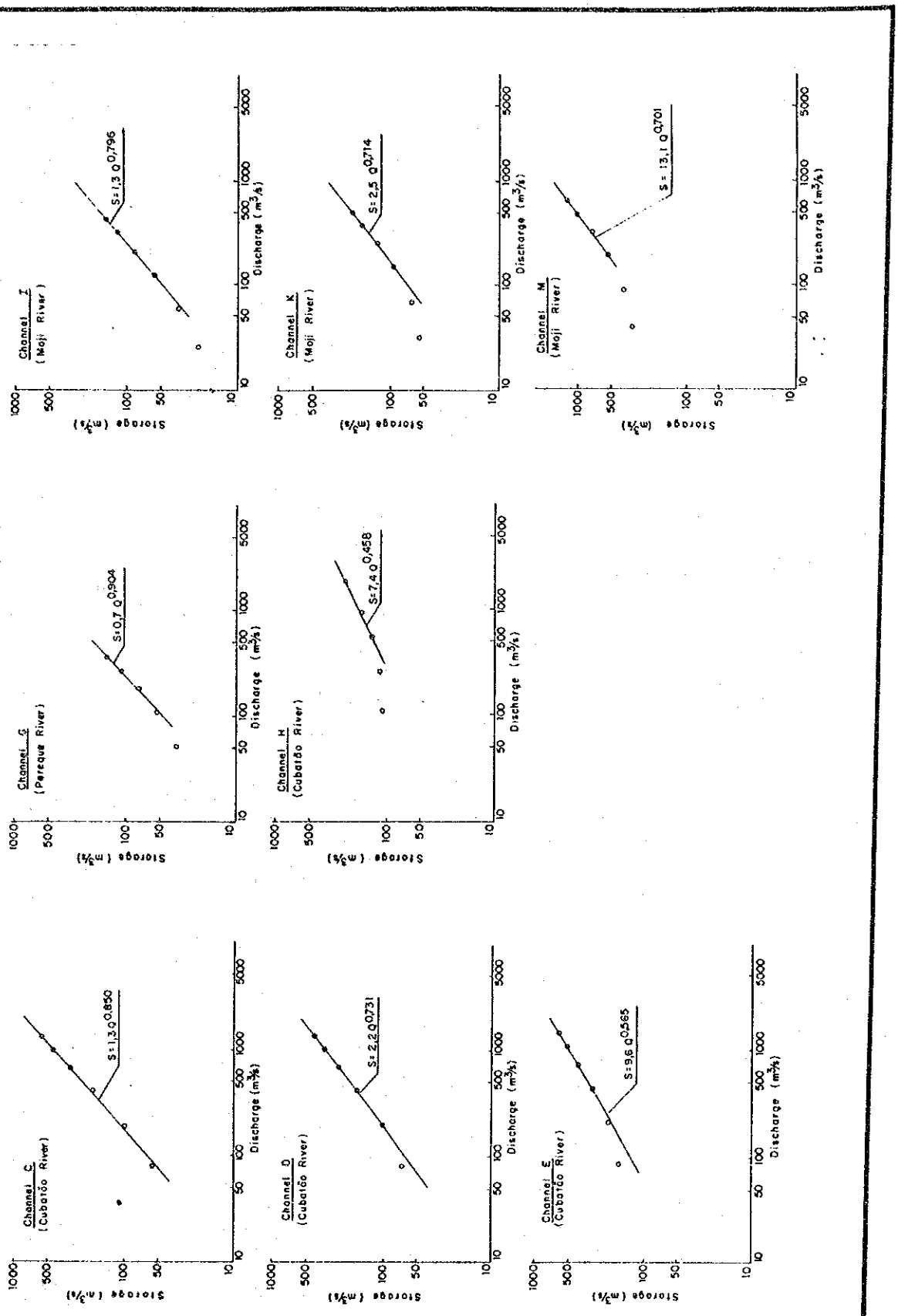


FIG. 2.7
STORAGE-DISCHARGE RELATION OF CHANNELS IN IMPROVED CONDITION

GOVERNMENT OF FEDERATIVE REPUBLIC OF BRAZIL
THE STUDY ON THE DISASTER PREVENTION AND RESTORATION PROJECT IN SERRA DO MAR, CUBATÃO REGION, STATE OF SÃO PAULO
JAPAN INTERNATIONAL COOPERATION AGENCY

TABLE 3.1 LONGITUDINAL PROFILE OF EXISTING CUBATÃO RIVER

Sect. No.	Distance (m)		Deepest Riverbed (EL. m)	River Width (m)	Elevation (EL. m)			
	Single	Accum.			Left Bank	Right Bank	Left Dike	Right Dike
C. 0	0	0	-3.70	80	0.47	0.73		
C. 1	350	350	-4.80	98	1.02	0.66		
C. 2	150	500	-4.70	82	0.91	1.95		
C. 3	230	730	-5.30	127	1.38	1.21		
C. 4	140	870	-6.00	98	2.72	1.38		2.41
C. 5	180	1050	-4.60	85	2.52	1.54		1.93
C. 6	210	1260	-6.20	93	3.200	2.30		3.22
C. 7	190	1450	-5.10	103	3.100	2.50		2.95
C. 8	230	1680	-5.10	90	2.237	2.50		2.91
C. 9	200	1880	-5.30	97	2.86	2.44		2.49
C.10	200	2080	-4.60	97	2.79	2.40		2.98
C.11	190	2270	-3.80	99	3.31	2.70		3.53
C.12	200	2470	-3.80	93	2.91	2.65		3.54
C.13	180	2650	-4.30	90	2.97	5.43		3.57
C.14	240	2890	-4.60	95	6.10	3.94		3.93
C.15	200	3090	-5.50	86	3.88	3.14		3.10
C.16	190	3280	-3.10	85	4.03	3.05		3.86
C.17	270	3550	-3.40	78	3.87	3.44		
C.18	200	3750	-2.70	88	6.22	5.20		
C.19	190	3940	-5.90	73	3.83	3.00		
C.20	200	4140	-4.30	70	6.62	7.17		
C.21	220	4360	-2.20	80	6.09	6.12		
C.22	225	4585	-3.60	72	6.14	6.82		
C.23	240	4825	-2.30	74	7.08	6.96		
C.24	170	4995	-1.40	76	7.22	7.17		
C.25	210	5205	0.00	240	6.784	17.04		
C.26	220	5425	-0.40	230	14.20	6.59		
C.27	160	5585	-0.80	63	23.00	6.13		
C.28	170	5755	0.20	45	8.58	4.36		
C.29	190	5945	1.80	58	6.70	5.25		
C.30	170	6115	1.20	118	18.32	6.09		8.19
C.31	210	6325	0.30	110	9.29	6.45		7.97
C.32	210	6535	0.50	58	14.23	5.31		6.30
C.33	170	6705	0.20	75	5.41	5.67		
C.34	240	6945	1.80	72	6.35	5.20		
C.35	200	7145	2.20	63	7.57	6.16		
C.36	450	7595	1.60	85	7.77	13.06		
C.37	400	7995	2.10	85	9.90	11.337		
C.38	400	8395	3.10	80	6.74	4.79		
C.39	390	8785	3.20	89	11.11	8.74		
C.40	410	9195	5.36	120	10.45	11.91		
C.41	440	9635	7.22	105	17.748	10.39		
C.42	310	9945	8.88	150	26.500	9.45		

(m, IGGSP)

TABLE 3.2 LONGITUDINAL PROFILE OF EXISTING PEREQUE RIVER

Sect. No.	Distance (m) Single	Distance (m) Accum.	Deepest Riverbed (EL.m)	River Width (m)	Elevation (EL. m) Left Bank	Right Bank	Left Dike	Right Dike
PE 0	0	0	-1.40	83	1.64	0.19	3.08	2.432
PE 1	220	220	-2.10	83	2.62	2.18	3.24	2.08
PE 2	150	370	-2.00	110	4.30	2.86	3.94	3.36
PE 3	240	610	-1.80	140	2.65	2.21	4.03	3.31
PE 4	220	830	-0.70	150	5.79	4.24	5.79	4.607
PE 5	210	1040	-0.70	110	5.70	3.31	5.85	7.18
PE 6	200	1240	-0.20	120	4.86	4.15	5.96	7.19
PE 7	170	1410	0.55	110	6.44	4.81	5.49	7.40
PE 8	235	1645	-0.70	115	4.37	5.39	6.54	6.21
PE 9	190	1835	0.21	110	4.11	7.67	7.25	7.79
PE 10	150	1985	3.38	56	6.96	6.42	7.50	
PE 11	250	2235	3.21	70	7.05	6.06	8.73	
PE 12	310	2545	3.86	40	6.49	6.72		
PE 13	170	2715	4.40	50	6.06	6.02		
PE 14	120	2835	4.83	50	6.92	10.87		
PE 15	220	3055	6.40	50	12.72	10.51		
PE 16	175	3230	10.55	60	16.88	16.89		
PE 17	180	3410	16.98	55	19.964	20.753		
PE 18	250	3660	25.59	55	28.488	28.122		

(m, IGGSP)

TABLE 3.3 LONGITUDINAL PROFILE OF EXISTING MOJI RIVER

Sect. No.	Distance (m) Single	Distance (m) Accum.	Deepest Riverbed (EL. m)	River Width (m)	Elevation (EL. m) Left Bank	Elevation (EL. m) Right Bank	Elevation (EL. m) Left Dike	Elevation (EL. m) Right Dike
M. 1		0	-3.80	77	-0.06	0.67		
M. 2	600	600	-3.40	84	1.63	0.55		
M. 3	1090	1690	-2.50	50	2.80	0.77		
M. 4	690	2380	-3.00	45	2.40	0.848		
M. 5	190	2570	-2.50	45	1.91	1.41		
M. 6	160	2730	-3.00	50	2.75	1.91		
M. 7	240	2970	-3.60	102	2.96	2.13		
M. 8	170	3140	-2.40	58	2.12	1.65		
M. 9	290	3430	-3.30	31	2.84	2.11		
M.10	170	3600	-2.30	33	2.48	2.33		
M.11	330	3930	-2.50	35	4.70	4.54		
M.12	230	4160	-1.50	38	1.77	3.51		
M.13	180	4340	-1.61	39	1.99	2.85		
M.14	200	4540	-1.76	35	2.13	5.76		
M.15	210	4750	-1.60	37	3.45	3.10		
M.16	180	4930	-1.37	35	5.33	2.73		
M.17	260	5190	-1.20	30	1.98	3.18		
M.18	190	5380	-1.90	44	3.68	4.02		
M.19	220	5600	-1.36	34	4.36	3.50		
M.20	165	5765	-1.32	57	4.49	4.10		
M.21	210	5975	-1.90	45	5.90	4.29		
M.22	200	6175	-1.39	54	3.98	6.14		
M.23	200	6375	-1.14	65	4.98	5.41		
M.24	220	6595	-0.42	40	4.17	5.31		
M.25	230	6825	4.37	45	7.422	7.31		
M.26	130	6955	2.75	160	7.30	6.89		
M.27	230	7185	2.28	155	6.46	6.40		
M.28	260	7445	2.80	88	9.08	11.45		
M.29	320	7765	4.64	75	17.98	12.11		
M.30	400	8165	7.53	62	19.87	11.43		

(m, IGGSP)

TABLE 3.4 LONGITUDINAL PROFILE OF EXISTING PIAÇAGUERA RIVER

Sect. No.	Distance (m)		Deepest Riverbed (EL. m)	River Width (m)	Elevation (EL. m)	
	Single	Accum.			Left Bank	Right Bank
P. 0	0	0	-1.10	27	0.85	1.00
P. 1	300	300	-1.20	40	3.08	2.84
P. 2	270	570	-1.00	20	2.80	2.63
P. 3	417	987	-0.60	19	2.25	2.36
P. 4	367	1354	0.20	14	2.42	4.36
P. 5	440	1794	0.60	13	3.80	4.37
P. 6	87	1881	1.00	10	3.70	3.12
P. 7	230	2111	1.70	10	2.50	3.23
P. 8	430	2541	4.02	9	4.84	4.98
P. 9	387	2928	7.27	10	7.91	10.14
P.10	197	3125	10.02	22	15.20	12.36
P.11	173	3298	11.64	30	18.70	18.29
P.12	237	3535	16.29	25	18.81	22.47
P.13	197	3732	16.90	40	23.03	27.56
P.14	190	3922	21.00	37	34.26	28.51
P.15	163	4085	41.51	60	54.05	44.05

TABLE 3.5 LONGITUDINAL PROFILE OF EXISTING INDIO RIVER

Sect. No.	Distance (m)		Deepest Riverbed (EL. m)	River Width (m)	Elevation (EL. m)	
	Single	Accum.			Left Bank	Right Bank
Mi.0	0	0	-0.19	25	2.46	2.91
Mi.1	1397	1397	5.47	14	9.35	9.04
Mi.2	900	2297	22.37	14	22.79	23.89
Mi.3	270	2567	31.73	28	27.00	33.20

(m, IGGSP)

TABLE 3.6 ESTIMATED BANKFUL CARRYING CAPACITY OF CHANNEL (PRESENT CONDITION)

CUBATAD RIVER

	Section	Distance(m) Sing.	Accm.	Capacity H(m,IGGSP)	Q(m3/s)
1	C0	0	0	0.64	177
2	C1	160	160	1.25	694
3	C2	150	310	1.37	1,220
4	C3	240	550	1.84	1,032
5	BRG.	120	670	2.40	2,019
6	C4	20	690	0.95	333
7	C5	180	870	2.02	1,215
8	C6	205	1,075	3.20	1,649
9	C7	190	1,265	2.95	1,302
10	C8	185	1,450	2.47	1,045
11	C9	260	1,710	3.18	946
12	C10	190	1,900	2.98	836
13	C11	190	2,090	3.23	899
14	C12	190	2,280	3.54	986
15	C13	200	2,480	3.16	826
16	C14	235	2,715	3.93	1,061
17	BRG.	40	2,755	3.93	1,101
18	C15	180	2,935	3.10	750
19	C16	195	3,130	3.72	942
20	C17	270	3,400	3.15	691
21	C18	205	3,605	4.68	1,177
22	PWEIR	170	3,775	5.50	2,171
23	C19	25	3,800	6.47	1,753
24	C20	195	3,995	6.08	1,740
25	C21	205	4,200	5.93	1,432
26	C22	230	4,430	5.35	1,095
27	C23	240	4,670	5.77	1,104
28	C24	165	4,835	6.78	1,428
29	C25	215	5,050	6.78	1,292
30	C26	225	5,275	6.62	1,308
31	C27	165	5,440	7.56	1,926
32	HENRY	35	5,475	7.56	1,849
33	C28	135	5,610	4.29	516
34	BRG.	150	5,760	4.29	281
35	C29	30	5,790	4.39	306
36	C30	165	5,955	6.00	569
37	C31	210	6,165	5.36	373
38	C32	200	6,365	6.30	499
39	C33	165	6,530	6.08	405
40	SWEIR	120	6,650	5.20	76
41	C34	125	6,775	5.91	158
42	C35	200	6,975	5.67	104
43	C36	450	7,425	8.79	939
44	C37	405	7,830	10.07	1,369
45	C38	425	8,255	6.36	175
46	C39	405	8,660	11.68	1,606
47	C40	420	9,080	12.02	1,639
48	C41	450	9,530	10.89	369
49	C42	315	9,845	12.60	729

HOJI RIVER

	Section	Distance(m) Sing.	Accm.	Capacity H(m,IGGSP)	Q(m3/s)
1	M0	0	0	0.72	90
2	M1	810	810	0.72	80
3	M2	825	1,635	1.46	280
4	M3	1115	2,750	0.98	118
5	M4	670	3,420	0.94	66
6	BRG.	15	3,435	0.94	67
7	M5	175	3,610	1.41	124
8	M6	160	3,770	1.31	105
9	M7	245	4,015	2.20	223
10	M8	165	4,180	1.55	132
11	M9	280	4,460	1.98	190
12	M10	180	4,640	2.41	249
13	BRG.	215	4,855	4.14	807
14	BRG.	120	4,975	4.14	520
15	M11	15	4,990	4.14	458
16	M12	230	5,220	2.46	186
17	M13	180	5,400	3.04	243
18	M14	200	5,600	2.56	176
19	M15	205	5,805	2.69	177
20	M16	180	5,985	3.14	183
21	M17	275	6,260	2.15	94
22	M18	190	6,450	2.51	108
23	M19	220	6,670	3.90	231
24	M20	170	6,840	4.30	248
25	M21	205	7,045	4.36	255
26	M22	215	7,260	4.63	273
27	M23	200	7,460	5.69	388
28	M24	230	7,690	4.17	195
29	BRG.	220	7,910	4.17	196
30	M25	15	7,925	7.41	693
31	M26	125	8,050	5.20	54
32	M27	210	8,260	5.85	115
33	M28	265	8,525	5.37	65
34	M29	325	8,850	11.51	1,059
35	M30	415	9,265	12.83	864

PEREQUE RIVER

	Section	Distance(m) Sing.	Accm.	Capacity H(m,IGGSP)	Q(m3/s)
1	C8	0	0	2.47	1,045
2	PE0	150	150	2.43	160
3	PE1	220	370	2.08	128
4	PE2	150	520	2.47	163
5	PE3	240	760	1.84	105
6	BRG.	135	895	1.84	104
7	PE4	80	975	4.15	303
8	BRG.	55	1,030	4.15	301
9	PE5	155	1,185	5.85	461
10	PE6	205	1,390	5.96	473
11	PE7	170	1,560	5.49	444
12	PE8	235	1,795	6.21	483
13	PE9	185	1,980	7.25	609
14	PE10	140	2,120	7.13	886
15	PE11	255	2,375	6.80	365
16	PE12	315	2,690	9.68	1,098
17	PE13	165	2,855	9.56	793
18	PE14	125	2,980	8.08	471
19	PE15	210	3,190	10.67	673
20	PE16	175	3,365	16.79	862
21	PE17	185	3,550	20.24	400
22	PE18	250	3,800	28.12	379

TABLE 3.7 PROPOSED LONGITUDINAL PROFILE OF CUBATÃO RIVER (1/2)

Longitudinal Data of CUBATAO River (Case C-1)

	Section No.	Distance (m) Single	Distance (m) Accum.	Gradient of River bed	Design Discharge (m3/s)	Design Elevation (m.IGGSP) River Bed	H.W.L.	Dike Crown
-	C.3	0	0	1/2560	2,300	-3.90	4.10	5.30
¦	Railway	110	110	1/2560	2,300	-3.86	4.14	5.34
¦	C.4	30	140	1/2560	2,300	-3.85	4.15	5.35
1	C.5	180	320	1/2560	2,300	-3.78	4.22	5.42
¦	C.6	210	530	1/2560	2,300	-3.70	4.30	5.50
¦	C.7	190	720	1/2560	2,300	-3.63	4.37	5.57
¦	C.8	230	950	1/2560	2,300	-3.54	4.46	5.66
-	Af. Conf.Pereque	100	1,050	1/2560	2,300	-3.51	4.49	5.69
-	Bf. Conf.Pereque	0	1,050	1/2560	1,800	-3.51	4.49	5.69
¦	C.9	100	1,150	1/2560	1,800	-3.47	4.53	5.69
¦	C.10	200	1,350	1/2560	1,800	-3.39	4.61	5.69
¦	C.11	190	1,540	1/2560	1,800	-3.32	4.68	5.69
¦	C.12	200	1,740	1/2560	1,800	-3.25	4.75	5.75
2	C.13	180	1,920	1/2560	1,800	-3.18	4.82	5.82
¦	C.14	240	2,160	1/2560	1,800	-3.09	4.91	5.91
¦	C.15	200	2,360	1/2560	1,800	-3.01	4.99	5.99
¦	C.16	190	2,550	1/2560	1,800	-2.94	5.06	6.06
¦	C.17	270	2,820	1/2560	1,800	-2.84	5.16	6.16
¦	C.18	200	3,020	1/2560	1,800	-2.76	5.24	6.24
-	Weir Dn.	170	3,190	1/2560	1,800	-2.70	5.30	6.30
-	Weir Up.	0	3,190	1/1530	1,800	-1.70	5.30	6.30
¦	C.19	20	3,210	1/1530	1,800	-1.69	5.31	6.31
¦	C.20	200	3,410	1/1530	1,800	-1.56	5.44	6.44
¦	C.21	220	3,630	1/1530	1,800	-1.41	5.59	6.59
¦	C.22	225	3,855	1/1530	1,800	-1.27	5.73	6.73
3	C.23	240	4,095	1/1530	1,800	-1.11	5.89	6.89
¦	C.24	170	4,265	1/1530	1,800	-1.00	6.00	7.00
¦	C.25	210	4,475	1/1530	1,800	-0.86	6.14	7.14
¦	C.26	220	4,695	1/1530	1,800	-0.72	6.28	7.28
¦	C.27	160	4,855	1/1530	1,800	-0.61	6.39	7.39
¦	C.28	170	5,025	1/1530	1,800	-0.50	6.50	7.50
-	Bridge	130	5,155	1/1530	1,800	-0.41	6.59	7.59
-	Bridge	0	5,155	1/1530	1,600	-0.41	6.59	7.59
¦	C.29	60	5,215	1/1530	1,600	-0.38	6.62	7.62
¦	C.30	170	5,385	1/1530	1,600	-0.26	6.74	7.74
4	C.31	210	5,595	1/1530	1,600	-0.13	6.87	7.87
¦	C.32	210	5,805	1/1530	1,600	0.01	7.01	8.01
¦	C.33	170	5,975	1/1530	1,600	0.12	7.12	8.12
-	Weir	120	6,095	1/1530	1,600	0.20	7.20	8.20
	Weir	0	6,095			0.20	7.20	8.20
	C.34	120	6,215					
	C.35	200	6,415					

TABLE 3.7 PROPOSED LONGITUDINAL PROFILE OF CUBATÃO RIVER (2/2)

Longitudinal Data of CUBATAO River (Case C-2(1))

	Section No.	Distance (m) Single	Distance (m) Accum.	Gradient of River bed	Design Discharge (m3/s)	Design Elevation (m,IGGSP) River Bed	H.W.L.	Dike Crown
-	C.3	0	0	1/2560	1,300	-3.90	2.60	3.60
!	Railway	110	110	1/2560	1,300	-3.86	2.64	3.64
!	C.4	30	140	1/2560	1,300	-3.85	2.65	3.65
1	C.5	180	320	1/2560	1,300	-3.78	2.72	3.72
!	C.6	210	530	1/2560	1,300	-3.70	2.80	3.80
!	C.7	190	720	1/2560	1,300	-3.63	2.87	3.87
!	C.8	230	950	1/2560	1,300	-3.54	2.96	3.96
-	Af. Conf.Pereque	100	1,050	1/2560	1,300	-3.51	2.99	3.99
-	Bf. Conf.Pereque	0	1,050	1/2560	850	-3.51	2.99	3.99
!	C.9	100	1,150	1/2560	850	-3.47	3.03	4.03
!	C.10	200	1,350	1/2560	850	-3.39	3.11	4.11
!	C.11	190	1,540	1/2560	850	-3.32	3.18	4.18
!	C.12	200	1,740	1/2560	850	-3.25	3.25	4.25
2	C.13	180	1,920	1/2560	850	-3.18	3.32	4.32
!	C.14	240	2,160	1/2560	850	-3.09	3.41	4.41
!	C.15	200	2,360	1/2560	850	-3.01	3.49	4.49
!	C.16	190	2,550	1/2560	850	-2.94	3.56	4.56
!	C.17	270	2,820	1/2560	850	-2.84	3.66	4.66
!	C.18	200	3,020	1/2560	850	-2.76	3.74	4.74
-	Weir Dn.	170	3,190	1/2560	850	-2.70	3.80	4.80
-	Weir Up.	0	3,190	1/1120	850	-1.00	3.80	4.80
!	C.19	20	3,210	1/1120	850	-1.02	3.78	4.78
!	C.20	200	3,410	1/1120	850	-1.18	3.62	4.62
!	C.21	220	3,630	1/1120	850	-1.36	3.44	4.44
!	C.22	225	3,855	1/1120	850	-1.54	3.26	4.26
3	C.23	240	4,095	1/1120	850	-1.74	3.06	4.06
!	C.24	170	4,265	1/1120	850	-1.88	2.92	3.92
!	C.25	210	4,475	1/1120	850	-2.05	2.75	3.75
!	C.26	220	4,695	1/1120	850	-2.23	2.57	3.57
!	C.27	160	4,855	1/1120	850	-2.36	2.44	3.44
!	C.28	170	5,025	1/1120	850	-2.50	2.30	3.30
-	Bridge	130	5,155	1/1120	850	-2.60	2.20	3.20
-	Bridge	0	5,155	1/1120	500	-2.60	2.20	3.20
!	C.29	60	5,215	1/1120	500	-2.65	2.15	3.15
!	C.30	170	5,385	1/1120	500	-2.79	2.01	3.01
4	C.31	210	5,595	1/1120	500	-2.96	1.84	2.84
!	C.32	210	5,805	1/1120	500	-3.13	1.67	2.67
!	C.33	170	5,975	1/1120	500	-3.27	1.53	2.53
-	Weir	120	6,095	1/1120	500	-3.37	1.43	2.43
	Weir	0				1.60	6.40	7.40
	C.34	120						
	C.35	200						

Longitudinal Data of CUBATAO River (Case C-2(2))

	Section No.	Distance (m) Single	Distance (m) Accum.	Gradient of River bed	Design Discharge (m3/s)	Design Elevation (m,IGGSP) River Bed	H.W.L.	Dike Crown
-	C.3	0	0	1/2560	1,600	-3.90	3.30	4.30
!	Railway	110	110	1/2560	1,600	-3.86	3.34	4.34
!	C.4	30	140	1/2560	1,600	-3.85	3.35	4.35
1	C.5	180	320	1/2560	1,600	-3.78	3.42	4.42
!	C.6	210	530	1/2560	1,600	-3.70	3.50	4.50
!	C.7	190	720	1/2560	1,600	-3.63	3.57	4.57
!	C.8	230	950	1/2560	1,600	-3.54	3.66	4.66
-	Af. Conf.Pereque	100	1,050	1/2560	1,600	-3.51	3.69	4.69
-	Bf. Conf.Pereque	0	1,050	1/2560	1,100	-3.51	3.69	4.69
!	C.9	100	1,150	1/2560	1,100	-3.47	3.73	4.73
!	C.10	200	1,350	1/2560	1,100	-3.39	3.81	4.81
!	C.11	190	1,540	1/2560	1,100	-3.32	3.88	4.88
!	C.12	200	1,740	1/2560	1,100	-3.25	3.95	4.95
2	C.13	180	1,920	1/2560	1,100	-3.18	4.02	5.02
!	C.14	240	2,160	1/2560	1,100	-3.09	4.11	5.11
!	C.15	200	2,360	1/2560	1,100	-3.01	4.19	5.19
!	C.16	190	2,550	1/2560	1,100	-2.94	4.26	5.26
!	C.17	270	2,820	1/2560	1,100	-2.84	4.36	5.36
!	C.18	200	3,020	1/2560	1,100	-2.76	4.44	5.44
-	Weir Dn.	170	3,190	1/2560	1,100	-2.70	4.50	5.50
-	Weir Up.	0	3,190	1/1160	1,100	-1.00	4.50	5.50
!	C.19	20	3,210	1/1160	1,100	-0.98	4.52	5.52
!	C.20	200	3,410	1/1160	1,100	-0.81	4.69	5.69
!	C.21	220	3,630	1/1160	1,100	-0.62	4.88	5.88
!	C.22	225	3,855	1/1160	1,100	-0.43	5.07	6.07
3	C.23	240	4,095	1/1160	1,100	-0.22	5.28	6.28
!	C.24	170	4,265	1/1160	1,100	-0.07	5.43	6.43
!	C.25	210	4,475	1/1160	1,100	0.11	5.61	6.61
!	C.26	220	4,695	1/1160	1,100	0.30	5.80	6.80
!	C.27	160	4,855	1/1160	1,100	0.43	5.93	6.93
!	C.28	170	5,025	1/1160	1,100	0.58	6.08	7.08
-	Bridge	130	5,155	1/1160	1,100	0.69	6.19	7.19
-	Bridge	0	5,155	1/1160	750	0.69	6.19	7.19
!	C.29	60	5,215	1/1160	750	0.74	6.24	7.24
!	C.30	170	5,385	1/1160	750	0.89	6.39	7.39
4	C.31	210	5,595	1/1160	750	1.07	6.57	7.57
!	C.32	210	5,805	1/1160	750	1.25	6.75	7.75
!	C.33	170	5,975	1/1160	750	1.40	6.90	7.90
-	Weir	120	6,095	1/1160	750	1.50	7.00	8.00
	Weir	0	6,095			1.50	7.00	8.00
	C.34	120	6,215					
	C.35	200	6,415					

TABLE 3.8 PROPOSED LONGITUDINAL PROFILE OF PEREQUE RIVER

Longitudinal Data of PEREQUE River (for Case C-1)

Section No.	Distance (m) Single	Distance (m) Accum.	Gradient of River bed	Design Discharge (m3/s)	Design Elevation (m,IGGSP) River Bed	H.W.L.	Dike Crown
Pe.0	0	0	1/1200	500	-2.00	4.50	5.70
Pe.1	220	220	1/1200	500	-1.80	4.50	5.70
Pe.2	150	370	1/1200	500	-1.70	4.50	5.70
Pe.3	240	610	1/1200	500	-1.50	4.50	5.70
Railway Br.	135	745	1/1200	500	-1.40	4.50	5.70

Longitudinal Data of PEREQUE River (for Case C-2(1))

Section No.	Distance (m) Single	Distance (m) Accum.	Gradient of River bed	Design Discharge (m3/s)	Design Elevation (m,IGGSP) River Bed	H.W.L.	Dike Crown
Pe.0	0	0	1/1200	500	-2.00	3.00	4.00
Pe.1	220	220	1/1200	500	-1.80	3.00	4.00
Pe.2	150	370	1/1200	500	-1.70	3.00	4.00
Pe.3	240	610	1/1200	500	-1.50	3.00	4.00
Railway Br.	135	745	1/1200	500	-1.40	3.00	4.00

Longitudinal Data of PEREQUE River (for Case C-2(2))

Section No.	Distance (m) Single	Distance (m) Accum.	Gradient of River bed	Design Discharge (m3/s)	Design Elevation (m,IGGSP) River Bed	H.W.L.	Dike Crown
Pe.0	0	0	1/1200	500	-2.00	3.70	4.70
Pe.1	220	220	1/1200	500	-1.80	3.70	4.70
Pe.2	150	370	1/1200	500	-1.70	3.70	4.70
Pe.3	240	610	1/1200	500	-1.50	3.70	4.70
Railway Br.	135	745	1/1200	500	-1.40	3.70	4.70

TABLE 3.9 PROPOSED LONGITUDINAL PROFILE OF MOJI RIVER

Longitudinal Data of MOJI River (Case M-1)

	Section No.	Distance (m) Single	Distance (m) Accum.	Gradient of River bed	Design Discharge (m3/s)	Design Elevation (m,IGGSP) River Bed	H.W.L.	Dike Crown
-	M.3	0	0	1/2460	1,000			
!	M.4	690	690	1/2460	1,000	-2.20	4.00	5.00
!	M.5	190	880	1/2460	1,000	-2.12	4.08	5.08
!	M.6	160	1,040	1/2460	1,000	-2.06	4.14	5.14
!	M.7	240	1,280	1/2460	1,000	-1.96	4.24	5.24
!	M.8	170	1,450	1/2460	1,000	-1.89	4.31	5.31
!	M.9	290	1,740	1/2460	1,000	-1.77	4.43	5.43
!	M.10	170	1,910	1/2460	1,000	-1.71	4.49	5.49
!	M.11	330	2,240	1/2460	1,000	-1.57	4.63	5.63
!	M.12	230	2,470	1/2460	1,000	-1.48	4.72	5.72
!	M.13	180	2,650	1/2460	1,000	-1.41	4.79	5.79
!	M.14	200	2,850	1/2460	1,000	-1.32	4.88	5.88
!	M.15	210	3,060	1/2460	1,000	-1.24	4.96	5.96
!	M.16	180	3,240	1/2460	1,000	-1.17	5.03	6.03
!	M.17	260	3,500	1/2460	1,000	-1.06	5.14	6.14
-	Flyover Dn.	150	3,650	1/2460	1,000	-1.00	5.20	6.20
-	Flyover Up	0	3,650	1/1850	1,000	-1.00	5.20	6.20
!	M.18	40	3,690	1/1850	1,000	-0.98	5.22	6.22
!	M.19	220	3,910	1/1850	1,000	-0.86	5.34	6.34
!	M.20	165	4,075	1/1850	1,000	-0.77	5.43	6.43
!	M.21	210	4,285	1/1850	1,000	-0.66	5.54	6.54
!	M.22	200	4,485	1/1850	1,000	-0.55	5.65	6.65
!	M.23	200	4,685	1/1850	1,000	-0.44	5.76	6.76
!	M.24	220	4,905	1/1850	1,000	-0.32	5.88	6.88
-	M.25 Weir Dn.	230	5,135	1/1850	1,000	-0.20	6.00	7.00
-	M.25 Weir Up	0	5,135	1/1850	1,000	-0.20	6.00	7.00

Longitudinal Data of MOJI River (Case M-2)

	Section No.	Distance (m) Single	Distance (m) Accum.	Gradient of River bed	Design Discharge (m3/s)	Design Elevation (m,IGGSP) River Bed	H.W.L.	Dike Crown
-	M.3	0	0	1/2340	1,000			
!	P.0	690	690	1/2340	1,000	-2.20	4.00	5.00
!	Railway	250	940	1/2340	1,000	-2.09	4.11	5.11
!	Confluence	130	1,070	1/2340	1,000	-2.04	4.16	5.16
!	Bifurcate	1,125	2,195	1/2340	1,000	-1.56	4.64	5.64
!	M.12	125	2,320	1/2340	1,000	-1.50	4.70	5.70
!	M.13	180	2,500	1/2340	1,000	-1.43	4.77	5.77
!	M.14	200	2,700	1/2340	1,000	-1.34	4.86	5.86
!	M.15	210	2,910	1/2340	1,000	-1.25	4.95	5.95
!	M.16	180	3,090	1/2340	1,000	-1.18	5.02	6.02
!	M.17	260	3,350	1/2340	1,000	-1.06	5.14	6.14
-	Flyover Dn.	150	3,500	1/2340	1,000	-1.00	5.20	6.20
-	Flyover Up	0	3,500	1/1850	1,000	-1.00	5.20	6.20
!	M.18	40	3,540	1/1850	1,000	-0.98	5.22	6.22
!	M.19	220	3,760	1/1850	1,000	-0.86	5.34	6.34
!	M.20	165	3,925	1/1850	1,000	-0.77	5.43	6.43
!	M.21	210	4,135	1/1850	1,000	-0.66	5.54	6.54
!	M.22	200	4,335	1/1850	1,000	-0.55	5.65	6.65
!	M.23	200	4,535	1/1850	1,000	-0.44	5.76	6.76
!	M.24	220	4,755	1/1850	1,000	-0.32	5.88	6.88
-	M.25 Weir Dn.	230	4,985	1/1850	1,000	-0.20	6.00	7.00
-	M.25 Weir Up	0	4,985	1/1850	1,000	-0.20	6.00	7.00

TABLE 3.10 PROPOSED LONGITUDINAL PROFILE OF PIAÇAGUERA AND INDIO RIVER

Longitudinal Data of PIACAGUERA River (Case M-2)

Section No.	Distance (m) Single	Distance (m) Accum.	Gradient of River bed	Design Discharge (m^3/s)	Design Elevation (m,IGGSP) River Bed	H.W.L.	Dike Crown
- P.1+130(Confl.)	0	0	1/2000	250	-2.00	4.20	5.20
1 P.2	190	190	1/2000	250	-1.90	4.20	5.20
¦ P.3	420	610	1/2000	250	-1.70	4.20	5.20
- P.4	370	980	1/2000	250	-1.50	4.20	5.20
2 Railway Br.	610	1,590	1/2000	250	-1.20	4.30	5.20
- Railway Br.	0	1,590	1/ 400	250	-0.20	4.30	5.20
3 3.0k	1030	2,620	1/ 400	250	2.40	6.90	7.50
- 3.0k	0	2,620	1/ 100	250	4.10	8.60	9.20
4 P.10	297	2,917	1/ 100	250	7.10	11.60	12.20
- P.10	0	2,917	1/ 100	250	9.10	13.60	14.20
5 P.12	380	3,297	1/ 100	250	12.90	17.40	18.00

Longitudinal Data of PIACAGUERA River (Case M-1)

Section No.	Distance (m) Single	Distance (m) Accum.	Gradient of River bed	Design Discharge (m^3/s)	Design Elevation (m,IGGSP) River Bed	H.W.L.	Dike Crown
- P.0	0	0	1/2000	250	-2.20	4.00	5.00
¦ P.1(Railway Br.)	250	250	1/2000	250	-2.10	4.00	5.00
1 P.2	320	570	1/2000	250	-1.90	4.00	5.00
¦ P.3	420	990	1/2000	250	-1.70	4.00	5.00
- P.4	370	1,360	1/2000	250	-1.50	4.00	5.00
2 Railway Br.	610	1,970	1/2000	250	-1.20	4.30	5.00
- Railway Br.	0	1,970	1/ 400	250	-0.20	4.30	5.00
3 3.0k	1030	3,000	1/ 400	250	2.40	6.90	7.50
- 3.0k	0	3,000	1/ 100	250	4.10	8.60	9.20
4 P.10	297	3,297	1/ 100	250	7.10	11.60	12.20
- P.10	0	3,297	1/ 100	250	9.10	13.60	14.20
5 P.12	380	3,677	1/ 100	250	12.90	17.40	18.00

Longitudinal Data of INDIO River (for Case-M-1 and M-2)

Section No.	Distance (m) Single	Distance (m) Accum.	Gradient of River bed	Design Discharge (m3/s)	Design Elevation (m,IGGSP) River Bed	H.W.L.	Dike Crown
- Confluence	0	0	-	100	-1.20	5.00	6.00
1 M1.0	180	180	-	100	-0.20	5.00	6.00
1 M1+370	370	550	-	100	1.60	5.00	6.00
¦ M1+520	150	700	-	100	2.20	5.20	6.00
¦ M1+620	100	800	1/500	100	2.40	5.40	6.00
- Railway Br.	370	1,170	1/500	100	2.90	5.90	6.50

TABLE 3.11 PROPOSED LONGITUDINAL PROFILE OF PRIORITY PROJECT (MOJI RIVER)

Section No.	Distance (m) Single	Distance (m) Accum.	Gradient of River bed	Design Discharge (m3/s)	Design Elevation (m,IGGSP) River Bed	H.W.L.	Dike Crown
M.3	0	0	1/2340	600			
Pe.0	690	690	1/2340	600	-2.20	4.00	5.00
Railway	250	940	1/2340	600	-2.09	4.11	5.11
Confluence	130	1,070	1/2340	600	-2.04	4.16	5.16
Bifurcate	1,125	2,195	1/2340	600	-1.56	4.64	5.64
M.12	125	2,320	1/2340	600	-1.50	4.70	5.70
M.13	180	2,500	1/2340	600	-1.43	4.77	5.77
M.14	200	2,700	1/2340	600	-1.34	4.86	5.86
M.15	210	2,910	1/2340	600	-1.25	4.95	5.95
M.16	180	3,090	1/2340	600	-1.18	5.02	6.02
M.17	260	3,350	1/2340	600	-1.06	5.14	6.14
Flyover Dn.	150	3,500	1/2340	600	-1.00	5.20	6.20
Flyover Up	0	3,500	1/1850	600	-1.00	5.20	6.20
M.18	40	3,540	1/1850	600	-0.98	5.22	6.22
M.19	220	3,760	1/1850	600	-0.86	5.34	6.34
M.20	165	3,925	1/1850	600	-0.77	5.43	6.43
M.21	210	4,135	1/1850	600	-0.66	5.54	6.54
M.22	200	4,335	1/1850	600	-0.55	5.65	6.65
M.23	200	4,535	1/1850	600	-0.44	5.76	6.76
M.24	220	4,755	1/1850	600	-0.32	5.88	6.88
M.25 Weir Dn.	230	4,985	1/1850	600	-0.20	6.00	7.00
M.25 Weir Up	0	4,985	1/1850	600	-0.20	6.00	7.00

TABLE 3.12 NON-UNIFORM FLOW CALCULATION (CASE:M-2)

NO.	H	Z	DX	Q	V	A	R	D
M.3	3.700	-2.200	.0	1000.0	2.198	455.0	5.035	1.078
Pe.0	4.050	-1.960	690.0	1000.0	2.145	466.1	5.121	1.083
Rail	4.172	-1.880	250.0	1000.0	2.125	470.6	5.156	1.083
Conf	4.233	-1.830	130.0	1000.0	2.119	471.8	5.165	1.083
Bifu	4.740	-1.450	1125.0	1000.0	2.061	485.1	5.270	1.085
M.12	4.793	-1.400	125.0	1000.0	2.060	485.4	5.272	1.085
M.13	4.870	-1.340	180.0	1000.0	2.053	487.0	5.285	1.086
M.14	4.954	-1.270	200.0	1000.0	2.048	488.4	5.296	1.087
M.15	5.042	-1.200	210.0	1000.0	2.040	490.2	5.310	1.087
M.16	5.117	-1.140	180.0	1000.0	2.033	491.9	5.323	1.087
M.17	5.223	-1.050	260.0	1000.0	2.025	493.7	5.337	1.087
M.18	5.262	-.980	190.0	1000.0	2.227	449.0	5.278	1.079
M.19	5.369	-.860	220.0	1000.0	2.233	447.7	5.269	1.078
M.20	5.449	-.770	165.0	1000.0	2.238	446.8	5.262	1.077
M.21	5.553	-.660	210.0	1000.0	2.241	446.2	5.258	1.077
M.22	5.652	-.550	200.0	1000.0	2.247	445.0	5.249	1.077
M.23	5.751	-.440	200.0	1000.0	2.253	443.9	5.240	1.077
M.24	5.861	-.320	220.0	1000.0	2.259	442.7	5.231	1.077
M25WD	5.977	-.200	230.0	1000.0	2.262	442.1	5.226	1.078

DEFINITION OF CODE

H : Calculated water level (m).
Z : The deepest river bed (m).
DX: Distance between sections (m).
Q : Discharge (m^3/s).
V : Average velocity (m/s).
R : Hydraulic mean depth (m).
D : Correction coefficient.

$$D = \alpha \frac{A^3 \int_0^B \frac{h^3}{n^3} d\xi}{\left(\int_0^B \frac{h}{n}^{5/3} d\xi \right)^3}$$

α : Energy correction coefficient ($\alpha \cong 1.0$)
B : Width of river (m).
h : Water level (m).
n : Coefficient of roughness.

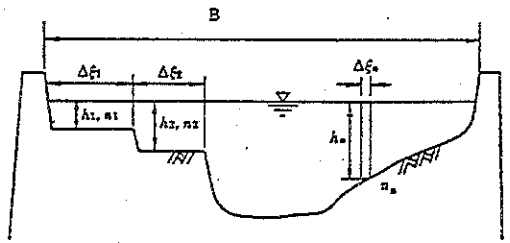


TABLE 3.13 NON-UNIFORM FLOW CALCULATION (CASE:M-2,PRIORITY PROJECT w=1/10)

NO.	H	Z	DX	Q	V	A	R	D
M.3	2.780	-2.560	.0	600.0	.886	677.4	2.490	3.022
+200	2.823	-2.456	200.0	600.0	1.139	526.9	2.699	2.682
+400	2.872	-2.351	200.0	600.0	1.462	410.4	3.014	2.319
P.0	3.007	-2.200	290.0	600.0	1.972	304.3	3.516	1.761
Rail	3.192	-2.090	250.0	600.0	2.333	257.1	3.596	1.449
Conf	3.325	-2.040	130.0	600.0	2.350	255.3	3.692	1.410
+250	3.587	-1.933	250.0	600.0	2.212	271.3	3.787	1.444
+500	3.810	-1.827	250.0	600.0	2.121	282.9	3.835	1.480
+750	4.010	-1.720	250.0	600.0	2.055	292.0	3.853	1.518
+1000	4.202	-1.613	250.0	600.0	1.994	300.8	3.916	1.527
Bifu	4.292	-1.560	125.0	600.0	1.970	304.5	3.941	1.532
M.12	4.501	-1.540	125.0	600.0	1.332	450.5	3.882	1.776
M.13	4.534	-1.600	180.0	600.0	1.453	413.0	3.741	1.923
M.14	4.587	-1.760	200.0	600.0	1.748	343.2	4.050	1.653
M.15	4.677	-1.480	210.0	600.0	1.894	316.7	3.988	1.586
M.16	4.799	-1.380	180.0	600.0	1.783	336.4	4.043	1.696
M.17	4.967	-1.220	260.0	600.0	1.671	359.0	4.119	1.740
M.18	5.051	-1.180	190.0	600.0	1.803	332.8	4.113	1.607
M.19	5.130	-1.320	220.0	600.0	2.107	284.7	4.009	1.445
M.20	5.325	-1.280	165.0	600.0	1.841	325.9	4.170	1.344
M.21	5.371	-1.980	210.0	600.0	2.062	291.0	4.251	1.401
M.22	5.502	-1.380	200.0	600.0	1.996	300.7	4.222	1.442
M.23	5.617	-1.440	200.0	600.0	2.022	296.8	4.242	1.423
M.24	5.874	-.420	220.0	600.0	1.582	379.3	4.268	1.128
M.25	5.785	-.200	230.0	600.0	2.365	253.7	4.246	1.265

DEFINITION OF CODE

H : Calculated water level (m).
Z : The deepest river bed (m).
DX: Distance between sections (m).
Q : Discharge (m^3/s).
V : Average velocity (m/s).
R : Hydraulic mean depth (m).
D : Correction coefficient.

$$D=\alpha\frac{A^2\int_0^B\frac{h^3}{n^3}d\xi}{\left(\int_0^B\frac{h}{n}^{5/3}d\xi\right)^3}$$

α : Energy correction coefficient ($\alpha\fallingdotseq1.0$)
B : Width of river (m).
h : Water level (m).
n : Coefficient of roughness.