

# *Tables*

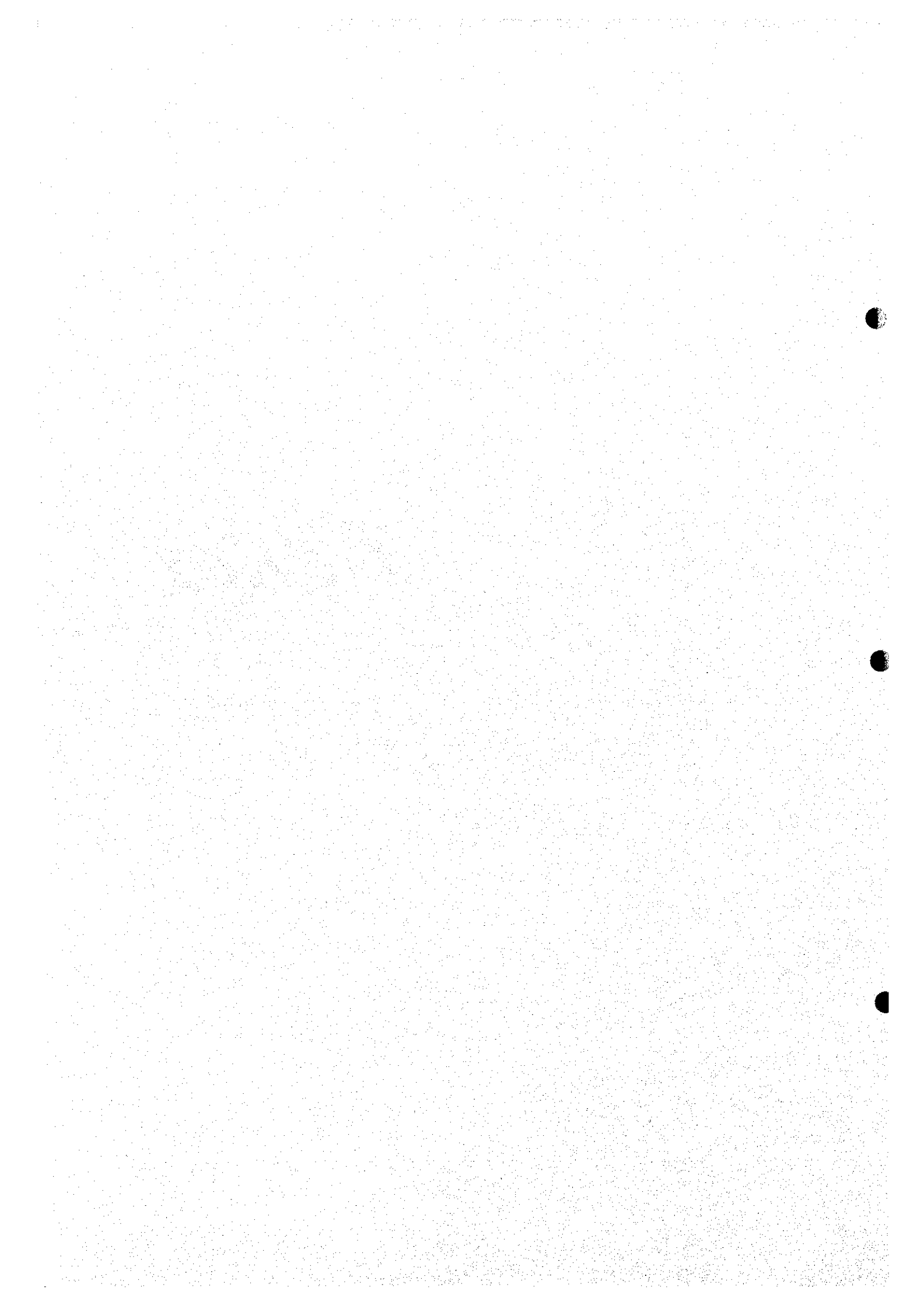


















Table 2.1.2 CATCHMENT AREA OF SUBBASIN

No.	Name of Subbasin	Area (km <sup>2</sup> )
1	Bhumipol Dam Basin	26,386
2	Wang River Basin	11,708
3	Ping River Residual Basin	9,632
4	Kaeng Sua Ten Dam	3,583
5	Sukhothai Residual Basin Y.4	14,148
6	Yom River Residual Basin	6,989
7	Sirikit Dam Basin	13,130
8	Kwae Noi Dam	4,254
9	Phisanulok Residual Basin N.5A	7,902
10	Nan River Residual Basin	9,291
11	Bung Boraphet Basin	3,546
12	Chainat Residual Basin	7,910
13	Pasak Dam	12,929
14	Pasak River Residual Basin	2,277
15	North East Delta	6,010
16	West Delta	9,943
17	Central Delta	6,780
18	South East Delta	6,380
	Total	162,798

Table 2.1.3 BASIN MEAN RAINFALL (1952 TO 1996)

Unit : (mm)

Subbasin No. / Catchment	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Total	Subbasin Included
1	46.4	148.0	124.1	139.1	188.0	208.7	119.7	36.3	10.8	7.3	5.3	13.6	1,047.4	
2	58.5	156.8	125.5	132.8	195.4	212.6	115.1	28.8	7.8	5.5	7.6	18.5	1,065.0	
3	45.6	157.2	125.7	117.2	145.8	233.8	162.8	39.0	4.0	5.5	11.6	20.1	1,068.3	
4	88.8	163.5	117.9	179.2	251.5	207.0	96.9	23.1	8.1	8.3	7.0	22.8	1,174.1	
5	55.9	166.5	137.2	152.1	215.7	228.2	113.8	22.1	5.9	5.8	8.2	19.5	1,131.0	
6	45.5	155.0	135.3	149.2	194.5	227.2	126.8	21.3	3.7	7.4	12.0	23.7	1,101.4	
7	83.3	162.4	146.1	200.6	264.6	200.6	69.9	16.7	7.0	7.6	11.1	29.4	1,199.2	
8	78.3	192.5	189.0	202.5	273.7	265.3	83.4	15.8	3.2	6.4	19.4	37.2	1,366.6	
9	60.3	176.2	163.5	172.9	235.1	242.8	102.5	19.1	4.3	6.0	12.8	26.6	1,221.9	
10	62.6	165.1	164.7	177.4	223.7	258.1	121.3	25.8	3.8	6.0	16.0	32.7	1,257.2	
11	65.6	144.7	126.2	136.3	177.9	233.8	129.8	25.5	4.4	7.6	16.3	34.3	1,102.2	
12	57.1	139.9	113.5	128.3	160.3	255.6	160.7	35.1	4.0	6.7	12.7	33.3	1,107.4	
13	71.9	151.9	143.0	153.0	200.9	242.6	102.0	16.2	3.7	5.9	16.2	42.7	1,150.2	
14	74.5	154.2	178.9	186.4	222.9	283.6	155.4	34.9	6.7	5.8	17.5	36.3	1,357.2	
15	53.7	134.5	124.2	136.9	158.7	252.3	143.8	27.8	5.5	5.6	11.4	27.2	1,081.6	
16	45.0	114.2	97.0	110.5	126.5	245.3	174.8	34.9	5.3	4.0	8.1	20.9	986.6	
17	48.6	122.8	107.6	122.3	143.9	254.0	172.7	33.1	5.4	5.2	10.8	23.9	1,050.2	
18	59.7	147.0	144.4	157.7	185.4	279.0	176.0	34.2	6.9	6.3	15.0	22.3	1,233.9	
Ping R.	49.2	152.0	124.8	133.2	181.3	214.7	127.3	35.0	8.7	6.5	7.2	16.1	1,055.9	1 to 3
Yom R.	57.7	162.8	133.9	155.2	214.9	224.8	115.0	22.0	5.6	6.6	9.1	21.1	1,128.9	4 to 6
Nan R.	71.8	170.0	160.3	188.2	248.0	233.7	92.8	19.6	5.1	6.7	13.8	30.6	1,240.6	7 to 10
Pasak	72.3	152.2	148.4	158.0	204.2	248.8	110.0	19.0	4.1	5.9	16.4	41.8	1,181.2	13 to 14
Nakhon Sawan Area	59.7	141.4	117.4	130.8	165.8	248.9	151.2	32.2	4.1	6.9	13.8	33.6	1,105.8	11 to 12
C.2	58.7	159.8	138.0	155.4	209.6	223.5	113.8	27.0	6.7	6.6	10.0	22.4	1,131.5	1 to 11
C.13	58.6	158.5	136.3	153.6	206.3	225.7	117.0	27.5	6.6	6.6	10.2	23.1	1,129.9	1 to 12
Lower Central Plain	50.9	127.6	115.5	129.1	150.1	256.2	168.2	32.8	5.7	5.1	10.9	23.2	1,075.2	15 to 18
Entire Basin	58.5	152.4	133.7	149.6	196.0	233.3	125.5	27.7	6.2	6.3	10.9	24.9	1,124.9	1 to 18

Table 2.1.4 PROBABLE SIX MONTH RAINFALL (JULY TO DECEMBER)

Area	Subbasin Nos.	Probable Six Month Rainfall by Return Period (mm)					
		2-yr	5-yr	10-yr	25-yr	50-yr	100-yr
Ping River Basin	1 to 3	730	770	820	860	890	920
Yom River Basin	4 to 6	750	830	880	960	1,020	1,060
Nan River Basin	7 to 10	800	870	930	1,000	1,050	1,110
Pasak River Basin	11 to 12	750	830	890	950	1,000	1,050
Nakhon Sawan Area	13 to 14	750	850	920	1,020	1,080	1,150
Lower Central Plain	15 to 18	730	860	950	1,070	1,150	1,230
Entire Basin	1 to 18	750	810	850	900	940	970





Table 2.2.2 RUNOFF RATIO AT PRINCIPAL STATIONS

River	Station	Catchment Area (km <sup>2</sup> )	Data Period	Runoff Ratio	
				6 months (Jul. to Dec.)	12 months (Apr. to Mar.)
Ping River	Bhumipol Dam P.7A	26,386	1975 to 1995	0.27	0.21
		42,700	1963 to 1995	0.16	0.17
Yom River	Y.17	21,415	1967 to 1995	0.18	0.13
Nan River	Sirikit Dam N.14A	13,130	1974 to 1995	0.45	0.34
		33,182	1972 to 1981 & 1991 to 1995	0.29	0.25
Pasak River	S.9	14,374	1974 to 1995	0.20	0.14
Chao Phraya River	C.2	110,569	1956 to 1995	0.20	0.18

Table 2.3.1 WATER LEVEL STATIONS ON LOWER CHAO PHRAYA RIVER

Station	River	Distance from River Mouth	Managing Org.	Observation Period
Bangkok Bar	Chao Phraya	-	PAT	1940 to date
Pom Phrachul	Do	0 km	PAT	1940 to date
Pak Nam	Do	7 km	PAT	1940 to date
Pra Pha Daeng	Do	18 km	PAT	1940 to date
Bangkok Port	Do	27 km	PAT	1940 to date
Sathu Pradit	Do	37 km	PAT	1976 to date
C.4 (Memorial Br.)	Do	48 km	RID	1914 to date
Hydrographic Dept.	Do	49 km	RTN	1940 to date
C.12 (Samsen)	Do	55 km	RID	1942 to date
C.22 (Pak Krat)	Do	72 km	RID	1953 to date
C.31 (Pathum Thani)	Do	87 km	RID	1984 to date
Bansai	Do	111 km	PAT	1940 to date
Samut Sakhon	Tha Chin	1 km	HD	1977 to date

Table 2.3.2 OBSERVED ANNUAL MAXIMUM WATER LEVELS ALONG LOWER CHAO PHRAYA RIVER  
(Before adjustment of land subsidence and gauge movement)

Year	Pom Phrachul	Pak Nam	Phra Pradaeng	Bangkok Port	Sathu Pradit	Memorial Bridge (C.4)	Sam Sen (C.12)	Pak Kret (C.22)
1914						1.46		
1915						1.50		
1916						1.56		
1917						1.87		
1918						1.53		
1919						1.17		
1920						1.43		
1921						1.40		
1922						1.57		
1923						1.37		
1924						1.53		
1925						1.35		
1926						1.50		
1927						1.44		
1928						1.43		
1929						1.54		
1930						1.57		
1931						1.45		
1932						1.52		
1933						1.61		
1934						1.54		
1935						1.65		
1936						1.45		
1937						1.59		
1938						1.69		
1939						1.68		
1940	1.60	1.56	1.50	1.49		1.50		
1941	1.53	1.59	1.55	1.54		1.45		
1942	1.61	1.66	1.73	1.80		2.27	2.60	
1943	1.71	1.61	1.54	1.69		1.55	1.61	
1944	1.80	1.69	1.62	1.71		1.68	1.60	
1945	1.75	1.62	1.65	1.64		1.58	1.65	
1946	1.81	1.74	1.67	1.65		1.75	1.61	
1947	1.89	1.82	1.75	1.66		1.59	1.60	
1948	1.64	1.62	1.70	1.65		1.64	1.60	
1949	1.88	1.87	1.90	1.86		1.84	1.88	
1950	1.73	1.74	1.80	1.74		1.75	1.80	
1951	1.80	1.73	1.80	1.75		1.76	1.95	
1952	1.78	1.65	2.02	1.73		1.68	1.99	
1953	1.65	1.60	1.70	1.75		1.65	1.60	1.75
1954	1.69	1.70	1.57	1.73		1.70	1.73	1.77
1955	1.59	1.66	1.65	1.72		1.64	1.70	1.77
1956	1.60	1.64	1.58	1.66		1.66	1.97	1.90
1957	1.62	1.60	1.61	1.61		1.65	1.60	1.77
1958	1.70	1.62	1.59	1.41		1.36	1.38	1.77
1959	1.77	1.70	1.61	1.66		1.73	1.73	2.02
1960	1.62	1.53	1.54	1.59		1.58	1.60	1.89
1961	1.67	1.58	1.64	1.66		1.69	1.72	1.90
1962	1.60	1.56	1.58	1.58		1.69	1.72	1.90
1963	1.63	1.81	1.63	1.64		1.70	1.68	1.85
1964	1.73	1.66	1.65	1.74		1.75	1.77	2.12
1965	1.77	1.65	1.59	1.61		1.43	1.45	1.59
1966	1.84	1.74	1.62	1.67		1.62	1.62	1.74
1967	1.85	1.60	1.57	1.56		1.60	1.49	1.42
1968	1.82	1.70	1.59	1.60		1.41	1.73	1.16
1969	1.90	1.80	1.62	1.61		1.62	1.63	1.78
1970	2.20	2.04	1.93	1.89		1.86	1.84	2.03
1971	1.85	1.76	1.65	1.68		1.65	1.58	1.84
1972	2.01	1.85	1.70	1.86		1.60	1.63	1.60
1973	1.93	1.82	1.66	1.70		1.69	1.72	1.74
1974	1.95	1.75	1.64	1.76		1.79	1.81	1.37
1975	2.04	1.90	1.87	1.90		2.05	2.08	2.26
1976	2.07	1.81	1.80	1.73	1.56	1.78	1.81	1.82
1977	1.89	1.81	1.80	1.65	1.61	1.62	1.66	1.60
1978	2.04	2.01	1.93	1.93	1.96	2.05	2.15	2.22
1979	1.92	1.75	1.68	1.68	1.66	1.64	1.69	1.52
1980	2.05	1.95	1.88	1.88	1.88	1.99	2.05	2.21
1981	2.12	2.04	1.90	1.90	1.83	1.58	1.64	1.60
1982	2.09	2.06	1.94	1.94	1.77	1.49	1.60	1.50
1983	2.23	2.10	2.10	2.10	2.01	1.93	2.04	2.17
1984	2.10	2.02	2.02	2.02	1.80	1.46	1.50	1.34
1985	2.24	2.17	2.07	2.07	1.95	1.78	1.80	1.68
1986	2.28	2.17	2.00	2.00	1.78	1.44	1.55	1.40
1987	2.33	2.12	2.05	2.05	1.80	1.50	1.55	1.56
1988	2.19	2.13	2.11	2.11	1.95	1.75	1.80	1.88
1989	2.26	2.16	2.06	2.06	1.84	1.48	1.48	1.48
1990	2.26	2.11	2.09	2.09	1.88	1.67	1.70	1.70
1991	2.33	2.20	2.09	2.09	1.83	1.56	1.43	1.37
1992	2.25	2.14	2.05	2.05	1.80	1.39	1.46	1.38
1993	2.16	2.20	2.02	2.02	1.75	1.15	1.36	1.61
1994	2.30	2.15	2.11	2.11	1.73	1.64	1.84	1.94
1995	2.52	2.28	2.43	2.43	2.28	2.06	2.38	2.65
1996	2.45	2.38	2.34	2.42	2.20	1.99	2.14	2.34
Max.	2.52	2.38	2.43	2.43	2.28	2.27	2.60	2.65
Ave.	1.92	1.84	1.80	1.80	1.85	1.62	1.73	1.77
Min.	1.53	1.53	1.50	1.41	1.56	1.15	1.36	1.16



Table 2.3.3 SUMMARY OF FIRST ORDER LEVELING

Station	Managing Org.	Gage Elevation (m MSL)		Difference (m)	Measured Level
		By this Survey	By Managing Org.		
Pom Phrachul	PAT	3.0096	3.60	-0.5904	Top of gage casing
Pak Nam	PAT	1.5770	2.08	-0.5030	Top of gagecasing <sup>&lt;1</sup>
Pra Pha Daeng	PAT	2.8876	3.40	-0.5133	Top of gage casing
Bangkok Port	PAT	1.9112	2.38	-0.4208	Top of gage casing
Sathu Pradit	PAT	2.2041	2.51	-0.2959	Top of gage casing
C.4 (Memorial Bridge)	RID	2.1274	2.00	0.1274 <sup>&lt;2</sup>	Top of staff gage
Hydrographic Dept. <sup>&lt;3</sup>	RTN	2.3672	2.3629	0.0043	BM near port of HD
C.12 (Samsen)	RID	2.9102	3.00	-0.0898	Top of staff gage
C.22 (Pak Kret)	RID	2.8731	3.00	-0.1269	Top of staff gage

<1 : Base level of added casing

<2 : This result shows that the past gauge lifting was excessive.

<3 : The leveling survey result can not be applied for adjustment of old data because this station is a temporary station made in 1997.

Table 2.3.4 ANNUAL CORRECTION VALUES OF OBSERVED WATERLEVELS AFFECTED BY LAND SUBSIDENCE

Year	Pom Phracul	Pak Nam	Phra Padaeng	Bangkok Port	Sathu Pradit	Memorial Bridge (C.4)			RID Samsen (C.12)			RID Pak Krat (C.22)		
	Land Subs.	Land Subs.	Land Subs.	Land Subs.	Land Subs.	Land Subs.	Gauge Adj.	Sum	Land Subs.	Gauge Adj.	Sum	Land Subs.	Gauge Adj.	Sum
1965	0.000	0.000	0.000	0.000		0.000		0.000	0.000		0.000	0.000		0.000
1966	-0.018	-0.016	-0.016	-0.015		-0.005		-0.005	-0.016		-0.016	-0.008		-0.008
1967	-0.037	-0.031	-0.032	-0.029		-0.009		-0.009	-0.031		-0.031	-0.016		-0.016
1968	-0.055	-0.047	-0.048	-0.044		-0.014		-0.014	-0.047		-0.047	-0.023		-0.023
1969	-0.074	-0.063	-0.064	-0.059		-0.019		-0.019	-0.062		-0.062	-0.031		-0.031
1970	-0.092	-0.079	-0.080	-0.073		-0.024		-0.024	-0.078		-0.078	-0.039		-0.039
1971	-0.111	-0.094	-0.096	-0.088		-0.028		-0.028	-0.094		-0.094	-0.047		-0.047
1972	-0.129	-0.110	-0.112	-0.103		-0.033		-0.033	-0.109		-0.109	-0.054		-0.054
1973	-0.148	-0.126	-0.128	-0.117		-0.038		-0.038	-0.125		-0.125	-0.062		-0.062
1974	-0.166	-0.141	-0.144	-0.132		-0.042		-0.042	-0.140		-0.140	-0.070		-0.070
1975	-0.184	-0.157	-0.160	-0.147		-0.047		-0.047	-0.156		-0.156	-0.078		-0.078
1976	-0.203	-0.173	-0.176	-0.161	0.000	-0.052		-0.052	-0.172		-0.172	-0.086		-0.086
1977	-0.221	-0.189	-0.192	-0.176	-0.015	-0.057		-0.057	-0.187		-0.187	-0.093		-0.093
1978	-0.240	-0.204	-0.208	-0.191	-0.029	-0.061		-0.061	-0.203		-0.203	-0.101		-0.101
1979	-0.258	-0.220	-0.224	-0.205	-0.044	-0.066		-0.066	-0.218		-0.218	-0.109		-0.109
1980	-0.277	-0.236	-0.240	-0.220	-0.058	-0.071		-0.071	-0.234	0.110	-0.124	-0.117		-0.117
1981	-0.295	-0.252	-0.256	-0.235	-0.073	-0.076	0.198	0.123	-0.250	0.300	0.051	-0.125	0.150	0.026
1982	-0.313	-0.267	-0.272	-0.249	-0.087	-0.080	0.198	0.118	-0.265	0.300	0.035	-0.132	0.150	0.018
1983	-0.332	-0.283	-0.288	-0.264	-0.102	-0.085	0.198	0.113	-0.281	0.300	0.019	-0.140	0.150	0.010
1984	-0.350	-0.299	-0.304	-0.278	-0.117	-0.090	0.198	0.108	-0.296	0.300	0.004	-0.148	0.150	0.002
1985	-0.369	-0.314	-0.320	-0.293	-0.131	-0.094	0.198	0.104	-0.312	0.300	-0.012	-0.156	0.150	-0.006
1986	-0.387	-0.330	-0.336	-0.308	-0.146	-0.099	0.278	0.179	-0.327	0.410	0.083	-0.163	0.122	-0.041
1987	-0.406	-0.346	-0.352	-0.322	-0.160	-0.104	0.278	0.174	-0.343	0.410	0.067	-0.171	0.122	-0.049
1988	-0.424	-0.362	-0.368	-0.337	-0.175	-0.109	0.278	0.169	-0.359	0.410	0.051	-0.179	0.122	-0.057
1989	-0.443	-0.377	-0.384	-0.352	-0.189	-0.113	0.278	0.165	-0.374	0.410	0.036	-0.187	0.122	-0.065
1990	-0.461	-0.393	-0.400	-0.366	-0.204	-0.118	0.278	0.160	-0.390	0.410	0.020	-0.195	0.122	-0.073
1991	-0.479	-0.409	-0.416	-0.381	-0.219	-0.123	0.278	0.155	-0.405	0.410	0.005	-0.202	0.122	-0.080
1992	-0.498	-0.424	-0.432	-0.396	-0.233	-0.127	0.278	0.151	-0.421	0.410	-0.011	-0.210	0.122	-0.088
1993	-0.516	-0.440	-0.448	-0.410	-0.248	-0.132	0.278	0.146	-0.437	0.410	-0.027	-0.218	0.122	-0.096
1994	-0.535	-0.456	-0.464	-0.425	-0.262	-0.137	0.278	0.141	-0.452	0.410	-0.042	-0.226	0.122	-0.104
1995	-0.553	-0.472	-0.480	-0.440	-0.277	-0.142	0.278	0.136	-0.468	0.410	-0.058	-0.233	0.122	-0.111
1996	-0.572	-0.487	-0.496	-0.454	-0.291	-0.146	0.278	0.132	-0.483	0.410	-0.073	-0.241	0.122	-0.119
1997	-0.590	-0.503	-0.512	-0.469	-0.306	-0.151	0.278	0.127	-0.499	0.410	-0.089	-0.249	0.122	-0.127

Table 2.3.5 ADJUSTED ANNUAL MAXIMUM WATER LEVELS ALONG LOWER CHAO PHRAYA RIVER  
(After adjustment of land subsidence and guage movement)

Year	Pom Phrachul	Pak Nam	Phra Pradaeng	Bangkok Port	Sathu Pradit	Memorial Bridge (C.4)	Sam Sen (C.12)	Pak Kret (C.22)
1914						1.46		
1915						1.50		
1916						1.56		
1917						1.87		
1918						1.53		
1919						1.17		
1920						1.43		
1921						1.40		
1922						1.57		
1923						1.37		
1924						1.53		
1925						1.35		
1926						1.50		
1927						1.44		
1928						1.43		
1929						1.54		
1930						1.57		
1931						1.45		
1932						1.52		
1933						1.61		
1934						1.54		
1935						1.65		
1936						1.45		
1937						1.59		
1938						1.69		
1939						1.68		
1940	1.60	1.56	1.50	1.49		1.50		
1941	1.53	1.59	1.55	1.54		1.45		
1942	1.61	1.66	1.73	1.80		2.27	2.60	
1943	1.71	1.61	1.54	1.69		1.55	1.61	
1944	1.80	1.69	1.62	1.71		1.68	1.60	
1945	1.75	1.62	1.65	1.64		1.58	1.65	
1946	1.81	1.74	1.67	1.65		1.75	1.61	
1947	1.89	1.82	1.75	1.66		1.59	1.60	
1948	1.64	1.62	1.70	1.65		1.64	1.60	
1949	1.88	1.87	1.90	1.86		1.84	1.88	
1950	1.73	1.74	1.80	1.74		1.75	1.80	
1951	1.80	1.73	1.80	1.75		1.76	1.95	
1952	1.78	1.65	2.02	1.73		1.68	1.99	
1953	1.65	1.60	1.70	1.75		1.65	1.60	1.75
1954	1.69	1.70	1.57	1.73		1.70	1.73	1.77
1955	1.59	1.66	1.65	1.72		1.64	1.70	1.77
1956	1.60	1.64	1.58	1.66		1.66	1.97	1.90
1957	1.62	1.60	1.61	1.61		1.65	1.60	1.77
1958	1.70	1.62	1.59	1.41		1.36	1.38	1.77
1959	1.77	1.70	1.61	1.66		1.73	1.73	2.02
1960	1.62	1.53	1.54	1.59		1.58	1.60	1.89
1961	1.67	1.58	1.64	1.66		1.69	1.72	1.90
1962	1.60	1.56	1.58	1.58		1.69	1.72	1.90
1963	1.63	1.81	1.63	1.64		1.70	1.68	1.85
1964	1.73	1.66	1.65	1.74		1.75	1.77	2.12
1965	1.77	1.65	1.59	1.61		1.43	1.45	1.59
1966	1.82	1.72	1.60	1.66		1.62	1.60	1.73
1967	1.81	1.57	1.54	1.53		1.59	1.46	1.40
1968	1.76	1.65	1.54	1.56		1.40	1.68	1.14
1969	1.83	1.74	1.56	1.55		1.60	1.57	1.75
1970	2.11	1.96	1.85	1.82		1.84	1.76	1.99
1971	1.74	1.67	1.55	1.59		1.62	1.49	1.79
1972	1.88	1.74	1.59	1.76		1.57	1.52	1.55
1973	1.78	1.69	1.53	1.58		1.65	1.60	1.68
1974	1.78	1.61	1.50	1.63		1.75	1.67	1.30
1975	1.86	1.74	1.71	1.75		2.00	1.92	2.18
1976	1.87	1.64	1.62	1.57	1.56	1.73	1.64	1.73
1977	1.67	1.62	1.61	1.47	1.60	1.56	1.47	1.51
1978	1.80	1.81	1.72	1.74	1.93	1.99	1.95	2.12
1979	1.66	1.53	1.46	1.47	1.62	1.57	1.47	1.41
1980	1.77	1.71	1.64	1.66	1.82	1.92	1.93	2.09
1981	1.83	1.79	1.64	1.67	1.76	1.70	1.69	1.63
1982	1.78	1.79	1.67	1.69	1.68	1.61	1.63	1.52
1983	1.90	1.82	1.81	1.84	1.91	2.04	2.06	2.18
1984	1.75	1.72	1.72	1.74	1.68	1.57	1.50	1.34
1985	1.87	1.86	1.75	1.78	1.82	1.88	1.79	1.67
1986	1.89	1.84	1.66	1.69	1.63	1.62	1.63	1.36
1987	1.92	1.77	1.70	1.73	1.64	1.67	1.62	1.51
1988	1.77	1.77	1.74	1.77	1.78	1.92	1.85	1.82
1989	1.82	1.78	1.68	1.71	1.65	1.64	1.52	1.42
1990	1.80	1.72	1.69	1.72	1.68	1.83	1.72	1.63
1991	1.85	1.79	1.67	1.71	1.61	1.72	1.43	1.29
1992	1.75	1.72	1.62	1.65	1.57	1.54	1.45	1.29
1993	1.64	1.76	1.57	1.61	1.50	1.30	1.33	1.51
1994	1.77	1.69	1.65	1.68	1.47	1.78	1.80	1.84
1995	1.97	1.81	1.95	1.99	2.00	2.20	2.32	2.54
1996	1.88	1.89	1.84	1.84	1.91	2.12	2.07	2.22
Max.	2.11	1.96	2.02	1.99	2.00	2.27	2.60	2.54
Avc.	1.76	1.70	1.66	1.68	1.71	1.64	1.70	1.73
Min.	1.53	1.53	1.46	1.41	1.47	1.17	1.33	1.14

Table 2.3.6 MONTHLY MAXIMUM TIDE LEVEL AT POM PHRACHUL STATION (AFTER ADJUSTMENT)  
Unit : (m MSL)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Max	Annual Mean	Annual Min
1940	1.53	1.38	1.43	1.48	1.36	1.42	1.35	1.53	1.36	1.46	1.54	1.60	1.60	1.45	1.35
1941	1.44	1.40	1.40	1.41	1.44	1.33	1.47	1.46	1.24	1.33	1.53	1.48	1.53	1.41	1.24
1942	1.42	1.50	1.34	1.33	1.44	1.58	1.42	1.46	1.33	1.51	1.61	1.57	1.61	1.46	1.33
1943	1.56	1.42	1.39	1.50	1.71	1.44	1.32	1.33	1.35	1.52	1.52	1.58	1.71	1.47	1.32
1944	1.50	1.50	1.45	1.35	1.39	1.50	1.38	1.53	1.44	1.58	1.73	1.80	1.80	1.51	1.35
1945	1.59	1.60	1.40	1.59	1.41	1.75	1.60	1.55	1.52	1.49	1.49	1.44	1.75	1.54	1.40
1946	1.50	1.59	1.23	1.32	1.47	1.58	1.62	1.57	1.41	1.49	1.65	1.60	1.65	1.50	1.23
1947	1.66	1.81	1.58	1.32	1.45	1.47	1.53	1.62	1.45	1.58	1.61	1.72	1.81	1.57	1.32
1948	1.89	1.62	1.55	1.30	1.53	1.52	1.58	1.57	1.41	1.38	1.64	1.50	1.89	1.54	1.30
1949	1.64	1.43	1.36	1.49	1.44	1.49	1.50	1.48	1.36	1.62	1.88	1.70	1.88	1.53	1.36
1950	1.65	1.63	1.57	1.50	1.43	1.53	1.47	1.48	1.40	1.53	1.72	1.73	1.73	1.55	1.40
1951	1.66	1.67	1.61	1.38	1.59	1.52	1.52	1.47	1.50	1.40	1.65	1.80	1.80	1.56	1.38
1952	1.73	1.73	1.52	1.36	1.48	1.40	1.71	1.32	1.44	1.74	1.67	1.70	1.74	1.57	1.32
1953	1.78	1.63	1.41	1.54	1.52	1.44	1.58	1.41	1.32	1.31	1.56	1.53	1.78	1.50	1.31
1954	1.65	1.48	1.43	1.51	1.49			1.39		1.69	1.60	1.68	1.69	1.55	1.39
1955	1.45	1.60	1.45	1.59	1.42	1.38	1.30	1.30	1.23	1.42	1.56	1.57	1.60	1.44	1.23
1956	1.42	1.30	1.29	1.28	1.37	1.34	1.36	1.42	1.29	1.53	1.60	1.53	1.60	1.39	1.28
1957	1.46	1.59	1.38		1.26	1.48	1.34	1.30	1.30	1.62	1.62	1.40	1.62	1.43	1.26
1958	1.60	1.53	1.53	1.46	1.50	1.34	1.40	1.42	1.40	1.42	1.56	1.52	1.60	1.47	1.34
1959	1.70	1.55	1.32	1.42	1.33	1.52	1.40	1.42	1.32	1.55	1.65	1.77	1.77	1.50	1.32
1960	1.48	1.42	1.29	1.36	1.56	1.44	1.40	1.43	1.47	1.60	1.59	1.62	1.62	1.47	1.29
1961	1.42	1.60	1.54	1.34	1.43	1.37	1.42	1.56	1.39	1.54	1.64	1.65	1.65	1.49	1.34
1962	1.67	1.54	1.56	1.42	1.50	1.51	1.61	1.50	1.50	1.63	1.60	1.55	1.67	1.55	1.42
1963	1.47	1.48	1.28	1.48	1.42	1.62	1.50	1.56	1.36	1.63	1.52	1.50	1.63	1.49	1.28
1964	1.46	1.67	1.64	1.48	1.60	1.59	1.52	1.54	1.46	1.57	1.73	1.64	1.73	1.58	1.46
1965	1.58	1.50	1.47	1.48	1.48	1.56	1.49	1.54	1.50	1.59	1.53	1.77	1.77	1.54	1.47
1966	1.61	1.58	1.42	1.43	1.45	1.54	1.58	1.64	1.58	1.53	1.67	1.82	1.82	1.57	1.42
1967	1.70	1.51	1.66	1.55	1.44	1.47	1.35	1.43	1.60	1.60	1.60	1.81	1.81	1.56	1.35
1968	1.71	1.74	1.54	1.70	1.54	1.46	1.42	1.52	1.31	1.74	1.58	1.76	1.76	1.59	1.31
1969	1.82	1.64	1.62	1.54	1.54	1.69	1.62	1.62	1.37	1.49	1.59	1.83	1.83	1.61	1.37
1970	1.81	1.76	1.55	1.51	1.54	1.75	1.71	1.63	1.54	1.52	1.91	2.11	2.11	1.69	1.51
1971	1.65	1.56	1.48	1.43	1.61	1.47	1.43	1.33	1.40	1.49	1.67	1.74	1.74	1.52	1.33
1972	1.65	1.54	1.49	1.54	1.41	1.56	1.38	1.53	1.50	1.74	1.88	1.85	1.88	1.59	1.38
1973	1.75	1.53	1.49	1.56	1.55	1.59	1.64	1.53	1.37	1.65	1.63	1.78	1.78	1.59	1.37
1974	1.58	1.75	1.49	1.46	1.53	1.50	1.49	1.43	1.52	1.64	1.78	1.75	1.78	1.58	1.43
1975	1.64	1.64	1.58	1.55	1.60	1.46	1.51	1.43	1.43	1.60	1.86	1.78	1.86	1.59	1.43
1976	1.49	1.49	1.45	1.53	1.55	1.50	1.87	1.53	1.41	1.57	1.68	1.63	1.87	1.56	1.41
1977	1.60	1.56	1.53	1.52	1.59	1.45	1.40	1.40	1.55	1.52	1.56	1.67	1.67	1.53	1.40
1978	1.69	1.47	1.43	1.51	1.50	1.77	1.64	1.45	1.59	1.80	1.58	1.58	1.80	1.58	1.43
1979	1.58	1.70	1.40	1.41	1.56	1.56	1.65	1.39	1.45	1.51	1.62	1.60	1.70	1.54	1.39
1980	1.64	1.50	1.38	1.52	1.42	1.36	1.46	1.48	1.44	1.42	1.63	1.77	1.77	1.51	1.36
1981	1.59	1.45	1.47	1.46	1.61	1.49	1.53	1.51	1.49	1.48	1.83	1.82	1.83	1.56	1.45
1982	1.73	1.63	1.57	1.63	1.72	1.59	1.49	1.65	1.66	1.64	1.76	1.78	1.78	1.65	1.49
1983	1.78	1.72	1.55	1.54	1.58	1.81	1.59	1.74	1.71	1.77	1.83	1.90	1.90	1.71	1.54
1984	1.80	1.80	1.72	1.19	1.66	1.66	1.59	1.67	1.50	1.64	1.74	1.75	1.80	1.64	1.19
1985	1.71	1.68	1.71	1.60	1.63	1.80	1.58	1.53	1.67	1.65	1.87	1.87	1.87	1.69	1.53
1986	1.69	1.81	1.62	1.66	1.87	1.62	1.76	1.53	1.46	1.45	1.81	1.89	1.89	1.68	1.45
1987	1.86	1.74	1.58	1.56	1.72	1.64	1.55	1.68	1.45	1.79	1.81	1.92	1.92	1.70	1.45
1988	1.86	1.77	1.58	1.65	1.78	1.77	1.74	1.74	1.66	1.68	1.74	1.68	1.86	1.72	1.58
1989	1.75	1.68	1.72	1.53	1.56	1.65	1.61	1.59	1.52	1.70	1.81	1.76	1.81	1.65	1.52
1990	1.78	1.71	1.50	1.76	1.69	1.61	1.46	1.40	1.61	1.69	1.65	1.72	1.78	1.63	1.40
1991	1.78	1.58	1.77	1.60	1.66	1.58	1.50	1.51	1.52	1.85	1.80	1.77	1.85	1.66	1.50
1992	1.67	1.59	1.45	1.53	1.58	1.61	1.61	1.56	1.45	1.74	1.74	1.70	1.74	1.60	1.45
1993	1.73	1.49	1.50	1.63	1.60	1.52	1.48	1.54	1.46	1.61	1.61	1.70	1.73	1.58	1.46
1994	1.62	1.63	1.57	1.62	1.55	1.62	1.65	1.53	1.49	1.65	1.72	1.62	1.72	1.60	1.49
1995	1.72	1.75	1.65	1.68	1.63	1.66	1.69	1.67	1.61	1.97	1.83	1.72	1.97	1.71	1.61
1996	1.64	1.73	1.45	1.62	1.60	1.67	1.48	1.77	1.48	1.77	1.88	1.74	1.88	1.65	1.45
Max	1.89	1.81	1.77	1.76	1.87	1.81	1.87	1.77	1.71	1.97	1.91	2.11	2.11	1.72	1.61
Mean	1.64	1.59	1.50	1.49	1.53	1.55	1.52	1.51	1.46	1.59	1.68	1.70	1.77	1.56	1.39
Min	1.42	1.30	1.23	1.19	1.26	1.33	1.30	1.30	1.23	1.31	1.49	1.40	1.53	1.39	1.19

Table 2.3.7 MONTHLY MEAN TIDE LEVEL AT POM PHRACHUL STATION (AFTER ADJUSTMENT)

Unit : (m MSL)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Max	Annual Mean	Annual Min
1940	-0.06	0.15	0.10	0.09	-0.05	-0.08	-0.08	0.06	0.00	0.10	0.15	0.13	0.15	0.04	-0.08
1941	0.09	0.13	0.14	0.10	0.02	-0.13	-0.08	0.01	-0.09	0.04	0.15	0.15	0.15	0.04	-0.13
1942	0.12	0.14	0.14	0.01	0.10	0.01	0.02	0.01	0.03	0.21	0.20	0.31	0.31	0.11	0.01
1943	0.17	0.15	0.06	0.03	0.11	-0.07	-0.04	-0.07	-0.06	0.08	0.13	0.13	0.17	0.05	-0.07
1944	0.18	0.25	0.23	0.09	0.02	-0.07	-0.12	-0.03	0.04	0.19	0.28	0.25	0.28	0.11	-0.12
1945	0.19	0.24	0.17	0.08	0.06	0.06	0.03	0.15	0.01	0.04	0.11	0.08	0.24	0.10	0.01
1946	0.08	0.10	0.07	0.11	0.15	0.03	0.04	0.01	0.04	0.21	0.19	0.16	0.21	0.10	0.01
1947	0.24	0.28	0.19	0.18	0.01	-0.03	0.04	0.06	0.08	0.18	0.29	0.27	0.29	0.15	-0.03
1948	0.28	0.23	0.23	0.06	0.01	-0.07	-0.01	0.00	0.04	0.08	0.29	0.19	0.29	0.11	-0.07
1949	0.23	0.14	0.11	0.19	0.04	-0.13	-0.12	0.01	0.05	0.15	0.27	0.26	0.27	0.10	-0.13
1950	0.12	0.22	0.20	0.19	0.04	-0.06	-0.05	0.00	0.08	-0.20	0.29	0.21	0.29	0.09	-0.20
1951	0.17	0.20	0.22	0.12	0.02	-0.03	-0.06	0.00	0.16	0.18	0.29	0.27	0.29	0.13	-0.06
1952	0.24	0.34	0.20	0.17	0.04	-0.06	-0.02	-0.02	0.02	0.20	0.37	0.31	0.37	0.15	-0.06
1953	0.30	0.28	0.18	0.19	0.06	0.03	0.04	-0.01	0.05	0.15	0.22	0.19	0.30	0.14	-0.01
1954	0.17	0.19	0.20	0.05	-0.02	-0.09	-0.07	-0.02	0.14	0.29	0.25	0.30	0.30	0.11	-0.09
1955	0.26	0.24	0.24	0.13	0.06	-0.05	-0.14	-0.08	-0.02	0.12	0.72	0.12	0.72	0.13	-0.14
1956	0.13	0.08	0.08	-0.05	-0.11	-0.15	-0.12	-0.07	0.00	0.21	0.25	0.08	0.25	0.03	-0.15
1957	0.03	0.22	0.18	0.08	0.09	-0.16	-0.08	-0.10	0.09	0.18	0.29	0.18	0.29	0.08	-0.16
1958	0.32	0.26	0.17	0.15	0.03	0.00	-0.03	0.01	0.01	0.16	0.18	0.17	0.32	0.12	-0.03
1959	0.26	0.20	0.23	0.08	0.03	-0.14	-0.09	-0.02	0.08	0.24	0.31	0.24	0.31	0.12	-0.14
1960	0.25	0.33	0.14	0.17	0.09	-0.06	-0.01	0.01	0.02	0.20	0.20	0.26	0.33	0.13	-0.06
1961	0.22	0.29	0.20	0.14	0.07	-0.05	-0.02	0.03	0.06	0.16	0.33	0.32	0.33	0.15	-0.05
1962	0.37	0.26	0.26	0.18	0.10	-0.03	-0.02	0.04	0.05	0.22	0.30	0.22	0.37	0.16	-0.03
1963	0.23	0.27	0.23	0.15	0.06	-0.09	-0.01	0.05	0.09	0.24	0.23	0.23	0.27	0.14	-0.09
1964	0.32	0.43	0.29	0.19	0.08	0.00	0.02	-0.05	0.07	-0.21	-0.30	0.28	0.43	0.10	-0.30
1965	0.22	0.22	0.28	0.19	0.10	0.05	0.02	0.18	0.15	0.21	-0.22	0.28	0.28	0.14	-0.22
1966	0.23	0.25	0.19	0.18	0.01	0.00	0.02	0.12	0.14	0.21	-0.30	0.28	0.28	0.11	-0.30
1967	0.31	0.35	0.30	0.20	0.12	0.04	-0.04	-0.01	0.16	0.28	0.38	0.40	0.40	0.21	-0.04
1968	0.34	0.41	0.33	0.28	0.01	0.11	-0.09	-0.08	-0.03	0.22	0.31	0.37	0.41	0.18	-0.09
1969	0.28	0.33	0.30	0.22	0.13	0.06	0.06	-0.03	0.05	0.23	0.37	0.30	0.37	0.19	-0.03
1970	0.31	0.30	0.30	0.22	0.12	0.05	0.03	0.06	0.12	0.22	0.36	0.29	0.36	0.20	0.03
1971	0.30	0.21	0.31	0.18	0.08	-0.07	-0.04	-0.04	0.11	0.20	0.24	0.31	0.31	0.15	-0.07
1972	0.27	0.26	0.26	0.19	0.01	-0.04	-0.01	0.08	0.13	0.23	0.29	0.31	0.31	0.17	-0.04
1973	0.25	0.25	0.28	0.16	0.11	0.11	-0.03	0.03	0.06	0.28	0.31	0.34	0.34	0.18	-0.03
1974	0.29	0.35	0.29	0.18	0.13	-0.01	-0.05	-0.04	0.13	0.11	0.33	0.31	0.35	0.17	-0.05
1975	0.24	0.27	0.11	0.19	0.13	0.02	0.01	0.06	0.17	0.20	0.37	0.34	0.37	0.18	0.01
1976	0.24	0.25	0.27	0.21	0.10	0.02	0.05	-0.48	0.09	0.21	0.20	0.26	0.27	0.12	-0.48
1977	0.26	0.35	0.26	0.18	0.08	-0.04	0.01	0.07	0.14	0.19	0.25	0.27	0.35	0.17	-0.04
1978	0.25	0.34	0.26	0.18	0.16	0.05	0.03	-0.02	0.13	0.33	0.31	0.30	0.34	0.19	-0.02
1979	0.24	0.27	0.25	0.18	0.07	0.08	0.04	0.05	0.15	0.30	0.30	0.26	0.30	0.18	0.04
1980	0.22	0.28	0.17	0.15	0.07	-0.13	-0.14	-0.03	0.11	0.20	0.32	0.36	0.36	0.13	-0.14
1981	0.24	0.20	0.21	0.19	0.15	0.03	0.09	0.03	0.06	0.05	0.47	0.47	0.47	0.18	0.03
1982	0.38	0.40	0.30	0.35	0.24	0.16	0.18	0.15	0.19	0.33	0.40	0.43	0.43	0.29	0.15
1983	0.37	0.31	0.32	0.27	0.20	0.08	0.05	0.22	0.25	0.34	0.50	0.51	0.51	0.29	0.05
1984	0.44	0.46	0.39	0.27	0.22	0.10	0.14	0.13	0.20	0.22	0.39	0.38	0.46	0.28	0.10
1985	0.37	0.33	0.42	0.23	0.20	0.07	0.07	0.07	0.19	0.30	0.38	0.37	0.42	0.25	0.07
1986	0.31	0.27	0.25	0.18	0.21	0.16	0.09	0.05	0.16	0.25	0.34	0.33	0.34	0.22	0.05
1987	0.38	0.38	0.24	0.21	0.16	0.15	0.01	0.06	0.04	0.26	0.32	0.42	0.42	0.22	0.01
1988	0.39	0.38	0.29	0.32	0.21	0.11	0.12	0.21	0.16	0.21	0.37	0.41	0.41	0.26	0.11
1989	0.39	0.33	0.31	0.10	0.07	0.05	0.11	0.07	0.17	0.30	0.39	0.31	0.39	0.21	0.05
1990	0.40	0.40	0.24	0.18	0.19	0.05	-0.01	0.00	0.17	0.22	0.23	0.37	0.40	0.20	-0.01
1991	0.29	0.25	0.35	0.23	0.22	0.05	0.04	0.15	0.16	0.32	0.39	0.35	0.39	0.23	0.04
1992	0.31	0.27	0.26	0.21	0.13	0.03	0.04	-0.01	0.07	0.23	0.35	0.21	0.35	0.18	-0.01
1993	0.36	0.24	0.27	0.19	0.14	0.00	0.01	0.04	0.12	0.27	0.32	0.32	0.36	0.19	0.00
1994	0.32	0.25	0.36	0.22	0.09	0.11	0.16	0.12	0.14	0.30	0.31	0.31	0.36	0.22	0.09
1995	0.40	0.40	0.40	0.31	0.20	0.10	0.18	0.20	0.24	0.35	0.43	0.37	0.43	0.30	0.10
1996									0.19	0.34	0.36	0.35			
Max	0.44	0.46	0.42	0.35	0.24	0.16	0.18	0.22	0.25	0.35	0.72	0.51	0.72	0.30	0.15
Mean	0.26	0.27	0.24	0.17	0.09	0.00	0.00	0.02	0.09	0.20	0.28	0.28	0.34	0.16	-0.05
Min	-0.06	0.08	0.06	-0.05	-0.11	-0.16	-0.14	-0.48	-0.09	-0.21	-0.30	0.08	0.15	0.03	-0.48

Table 2.3.8 MONTHLY MINIMUM TIDE LEVEL AT POM PHRACHUL STATION (AFTER ADJUSTMENT)  
Unit : (m MSL)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Max	Annual Mean	Annual Min
1940	-1.48	-1.46	-1.26	-1.35	-1.48	-1.40	-1.36	-1.33	-1.20	-1.07	-1.34	-1.41	-1.07	-1.35	-1.48
1941	-1.43	-1.30	-1.15	-1.31	-1.44	-1.43	-1.42	-1.22	-1.25	-1.28	-1.25	-1.36	-1.15	-1.32	-1.44
1942	-1.43	-1.41	-1.15	-1.34	-1.41	-1.32	-1.31	-1.22	-1.03	-0.71	-0.95	-1.36	-0.71	-1.22	-1.43
1943	-1.38	-1.46	-1.42	-1.42	-1.40	-1.41	-1.47	-1.36	-1.34	-1.15	-1.30	-1.47	-1.15	-1.38	-1.47
1944	-1.47	-1.28	-1.18	-1.38	-1.56	-1.42	-1.56	-1.48	-1.26	-1.19	-1.08	-1.36	-1.08	-1.35	-1.56
1945	-1.46	-1.32	-1.26	-1.32	-1.35	-1.36	-1.31	-1.25	-1.20	-1.27	-1.28	-1.54	-1.20	-1.33	-1.54
1946	-1.46	-1.40	-1.42	-1.28	-1.36	-1.43	-1.44	-1.34	-1.21	-1.12	-1.36	-1.50	-1.12	-1.36	-1.50
1947	-1.40	-1.40	-1.29	-1.34	-1.48	-1.47	-1.48	-1.31	-1.25	-1.19	-1.30	-1.40	-1.19	-1.36	-1.48
1948	-1.39	-1.32	-1.20	-1.42	-1.50	-1.52	-1.44	-1.38	-1.29	-1.18	-1.16	-1.39	-1.16	-1.35	-1.52
1949	-1.44	-1.50	-1.33	-1.28	-1.44	-1.64	-1.58	-1.39	-1.27	-1.13	-1.17	-1.18	-1.13	-1.36	-1.64
1950	-1.58	-1.51	-1.34	-1.37	-1.50	-1.55	-1.54	-1.43	-1.32	-1.16	-1.16	-1.41	-1.16	-1.41	-1.58
1951	-1.50	-1.41	-1.36	-1.48	-1.53	-1.50	-1.51	-1.31	-1.21	-1.19	-1.06	-1.04	-1.04	-1.34	-1.53
1952	-1.50	-1.31	-1.28	-1.36	-1.50	-1.52	-1.47	-1.30	-1.30	-1.20	-1.08	-1.24	-1.08	-1.34	-1.52
1953	-1.37	-1.39	-1.22	-1.47	-1.51	-1.57	-1.48	-1.52	-1.40	-1.37	-1.28	-1.44	-1.22	-1.42	-1.57
1954	-1.48	-1.51	-1.38	-1.52	-1.43	-1.62	-1.68	-1.58		-1.18	-1.37	-1.50	-1.18	-1.48	-1.68
1955	-1.53	-1.36	-1.26	-1.43	-1.60	-1.61	-1.65	-1.57	-1.42	-1.33		-1.68	-1.26	-1.49	-1.68
1956	-1.57	-1.50	-1.46	-1.62	-1.72	-1.68	-1.79	-1.59	-1.44	-1.24	-1.32	-1.62	-1.24	-1.55	-1.79
1957	-1.70	-1.50	-1.30	-1.46	-1.68	-1.72	-1.68	-1.55	-1.16	-1.22	-1.22	-1.51	-1.16	-1.48	-1.72
1958	-1.36	-1.24	-1.20	-1.44	-1.52	-1.56	-1.62	-1.41	-1.40	-1.50	-1.46	-1.44	-1.20	-1.43	-1.62
1959	-1.38	-1.40	-1.35	-1.58	-1.62	-1.73	-1.66	-1.56	-1.25	-1.20	-1.16	-1.44	-1.16	-1.44	-1.73
1960	-1.36	-1.20	-1.20	-1.42	-1.49	-1.70	-1.61	-1.42	-1.36	-1.26	-1.52	-1.45	-1.20	-1.42	-1.70
1961	-1.36	-1.28	-1.27	-1.42	-1.62	-1.64	-1.64	-1.44	-1.32	-1.25	-1.13	-1.40	-1.13	-1.40	-1.64
1962	-1.44	-1.50	-1.10	-1.30	-1.50	-1.63	-1.62	-1.55	-1.37	-1.14	-1.15	-1.64	-1.10	-1.41	-1.64
1963	-1.46	-1.26	-1.28	-1.48	-1.66	-1.67	-1.66	-1.43	-1.46	-1.12	-1.21	-1.61	-1.12	-1.44	-1.67
1964	-1.46	-1.22	-1.27	-1.36	-1.55	-1.63	-1.66	-1.77	-1.50	-1.23	-1.13	-1.51	-1.13	-1.44	-1.77
1965	-1.58	-1.48	-1.27	-1.36	-1.50	-1.56	-1.58	-1.41	-1.26	-1.42	-1.54	-1.54	-1.26	-1.46	-1.58
1966	-1.50	-1.46	-1.42	-1.46	-1.66	-1.66	-1.63	-1.51	-1.29	-1.26	-1.50	-1.52	-1.26	-1.49	-1.66
1967	-1.47	-1.36	-1.38	-1.47	-1.64	-1.66	-1.70	-1.66	-1.42	-1.37	-1.48	-1.46	-1.36	-1.50	-1.70
1968	-1.42	-1.30	-1.29	-1.38	-1.63	-1.66	-1.78	-1.64	-1.65	-1.44	-1.50	-1.54	-1.29	-1.51	-1.78
1969	-1.52	-1.41	-1.25	-1.47	-1.55	-1.59	-1.62	-1.54	-1.47	-1.40	-1.47	-1.57	-1.25	-1.49	-1.62
1970	-1.46	-1.31	-1.33	-1.52	-1.61	-1.63	-1.63	-1.59	-1.31	-1.30	-1.44	-1.45	-1.30	-1.47	-1.63
1971	-1.50	-1.35	-1.43	-1.63	-1.65	-1.74	-1.72	-1.66	-1.49	-1.55	-1.59	-1.24	-1.24	-1.55	-1.74
1972	-1.27	-1.24	-1.26	-1.47	-1.73	-1.65	-1.72	-1.45	-1.43	-1.48	-1.47	-1.54	-1.24	-1.47	-1.73
1973	-1.61	-1.45	-1.35	-1.51	-1.68	-1.67	-1.73	-1.59	-1.60	-1.52	-1.58	-1.43	-1.35	-1.56	-1.73
1974	-1.59	-1.41	-1.37	-1.14	-1.87	-1.77	-1.79	-1.59	-1.44	-1.76	-1.40	-1.48	-1.14	-1.55	-1.87
1975	-1.60	-1.39	-1.60	-1.72	-1.67	-1.75	-1.73	-1.62	-1.30	-1.28	-1.18	-1.46	-1.18	-1.53	-1.75
1976	-1.55	-1.37	-1.32	-1.55	-1.63	-1.82	-1.66	-1.47	-1.41	-1.50	-1.41	-1.49	-1.32	-1.52	-1.82
1977	-1.46	-1.24	-1.22	-1.50	-1.64	-1.76	-1.72	-1.66	-1.21	-1.46	-1.47	-1.54	-1.21	-1.49	-1.76
1978	-1.52	-1.43	-1.34	-1.56	-1.78	-1.64	-1.62	-1.56	-1.37	-1.24	-1.40	-1.46	-1.24	-1.49	-1.78
1979	-1.54	-1.50	-1.16	-1.45	-1.78	-1.58	-1.61	-1.64	-1.42	-1.45	-1.44	-1.50	-1.16	-1.50	-1.78
1980	-1.54	-1.42	-1.33	-1.46	-1.79	-1.81	-1.84	-1.61	-1.32	-1.26	-1.37	-1.38	-1.26	-1.51	-1.84
1981	-1.57	-1.54	-1.21	-1.38	-1.53	-1.66	-1.80	-1.70	-1.41	-1.47	-1.19	-1.32	-1.19	-1.48	-1.80
1982	-1.34	-1.36	-1.25	-1.45	-1.38	-1.81	-1.49	-1.37	-1.33	-1.23	-1.38	-1.35	-1.23	-1.40	-1.81
1983	-1.52	-1.40	-1.21	-1.39	-1.56	-1.73	-1.68	-1.47	-1.43	-0.42	-1.01	-1.17	-0.42	-1.33	-1.73
1984	-1.46	-1.40	-1.23	-1.46	-1.55	-1.58	-1.60	-1.53	-1.41	-1.76	-1.42	-1.36	-1.23	-1.48	-1.76
1985	-1.49	-1.42	-1.21	-1.51	-1.60	-1.60	-1.62	-1.60	-1.38	-1.47	-1.43	-1.47	-1.21	-1.48	-1.62
1986	-1.52	-1.40	-1.59	-1.57	-1.62	-1.71	-1.61	-1.64	-1.41	-1.48	-1.49	-1.56	-1.40	-1.55	-1.71
1987	-1.53	-1.29	-1.53	-1.48	-1.58	-1.70	-1.75	-1.59	-1.66	-1.47	-1.54	-1.47	-1.29	-1.54	-1.75
1988	-1.46	-1.40	-1.43	-1.47	-1.58	-1.78	-1.81	-1.53	-1.50	-1.52	-1.60	-1.60	-1.40	-1.56	-1.81
1989	-1.58	-1.39	-1.30	-1.71	-1.75	-1.72	-1.75	-1.68	-1.38	-1.58	-1.48	-1.57	-1.30	-1.58	-1.75
1990	-1.40	-1.21	-1.64	-1.62	-1.73	-1.81	-1.72	-1.66	-1.47	-1.52	-1.65	-1.82	-1.21	-1.61	-1.82
1991	-1.58	-1.59	-1.28	-1.53	-1.65	-1.76	-1.80	-1.56	-1.46	-1.44	-1.54	-1.54	-1.28	-1.56	-1.80
1992	-1.58	-1.43	-1.31	-1.51	-1.79	-1.78	-1.65	-1.62	-1.46	-1.73	-1.46	-1.67	-1.31	-1.58	-1.79
1993	-1.50	-1.51	-1.40	-1.51	-1.64	-1.79	-1.74	-1.50	-1.54	-1.61	-1.92	-1.61	-1.40	-1.60	-1.92
1994	-1.65	-1.41	-1.39	-1.54	-1.77	-1.85	-1.65	-1.53	-1.45	-1.35	-1.53	-1.53	-1.35	-1.56	-1.85
1995	-1.45	-1.15	-1.07	-1.43	-1.64	-1.67	-1.61	-1.59	-1.32	-1.20	-1.29	-1.38	-1.07	-1.40	-1.67
1996	-1.56	-1.27	-1.15	-1.26	-1.57	-1.57	-1.70	-1.62	-1.18	-1.31	-1.29	-1.44	-1.15	-1.41	-1.70
Max	-1.27	-1.15	-1.07	-1.14	-1.35	-1.32	-1.31	-1.22	-1.03	-0.42	-0.95	-1.04	-0.42	-1.22	-1.43
Mean	-1.49	-1.38	-1.31	-1.45	-1.59	-1.64	-1.63	-1.51	-1.36	-1.32	-1.36	-1.46	-1.19	-1.46	-1.68
Min	-1.70	-1.59	-1.64	-1.72	-1.87	-1.85	-1.84	-1.77	-1.66	-1.76	-1.92	-1.82	-1.40	-1.61	-1.92



Table 3.3.1 (1/2) SUMMARY OF MODEL CALIBRATION

(1) Upper Basin (Upstream of Nakhon Sawan)

Station	Location	1995		1996	
		Discharge	Water Level	Discharge	Water Level
Y.4	Sukhothai	Hydrograph shape well reproduced, but flows underestimated by 50 m <sup>3</sup> /s.	Peaks water levels match well, recession too high, overdamped slightly.	Hydrograph shape well reproduced, but flow underestimated by 50 m <sup>3</sup> /s.	Peak water levels match well, recession too high, overdamped slightly.
Y.17		Peak match well, but flows either side of peak are overestimated.	Peak water level is im too high, water levels either side of peak too low.	Peak arrives slightly too late, pre peak discharge underestimated by 200 m <sup>3</sup> /s.	Peak water level matches, but pre and post peak levels up to 2.5 m too low.
N.5A	Pitsanulok	Good match	Good match	Peak overestimated by 100 m <sup>3</sup> /s	Good match
N.7	Pichit	Peaks overestimated by 200 m <sup>3</sup> /s, pre and post-peak discharges underestimated by 200-500 m <sup>3</sup> /s.	Peak water levels underestimated by 0.5m. Pre and post peak water levels underestimated.	Peak overestimated by 100 m <sup>3</sup> /s, pre and post-peak discharges underestimated by 200-500 m <sup>3</sup> /s.	Peak water levels underestimated by 0.5m. Pre and post peak water levels underestimated by up to 3m.
C.2	Nakhon Sawan	Peak discharge underestimated by 800 m <sup>3</sup> /s. Pre peak flow overestimated by upto 500 m <sup>3</sup> /s.	Boundary Condition	Peak discharge occurs much too early, additional flood storage Ping-Nan confluence is needed.	Boundary Condition

Table 3.3.1 (2/2) SUMMARY OF MODEL CALIBRATION

Station	Location	1995		1996	
		Discharge	Water Level	Discharge	Water Level
C.2	Nakhon Sawan	Boundary Condition	Peak simulated by 1.0 m too low.	Boundary Condition	Peak simulated by 0.5 m too low, other levels up to 1.0m too low.
C.13	Chainat	Good match	Good match	Peaks underestimated by 500m <sup>3</sup> /s owing to water balance.	Peak underestimated by 1.0m too low.
C.7A	Ang Thong	Shape of simulation differs from observed. (Rating curve is wrong?)	Low flows up to 1.0m too high.	Peak flows underestimated by 700 m <sup>3</sup> /s owing to water imbalance upstream.	Low flows up to 1.0m too high, peak 0.7m too low.
S.5 (Pasak River)	Ayuthaya	No DATA	Water levels consistently around 0.5 m higher than observed. (Datum should be checked.)	No Data	No Data
Bang Sai	Bang Sai	No DATA	Peak and pre-peak water levels consistently around 0.3 m too high.	No DATA	Good match
C.22	Pak Kret	No DATA	Slightly high at end of September and slightly low at end of October.	No DATA	Recession slightly too fast.
C.4	Bangkok (Memorial Br.)	No DATA	Good Match	No DATA	Good Match

Table 4.1.1 SIMULATION CONDITION FOR FUTURE DEVELOPMENT

No.	Case	Basin Condition	Model Modification	Remarks
1	Urban development by providing ring levee with drainage pump	Urban areas presented in Fig. 4.1.1 are protected by ring dikes and drainage pumps. The protected urban areas are shown in Fig. 4.1.1.	<ul style="list-style-type: none"> <li>River channels where a ring levee is provided are narrowed, and spillage is not allowed over the levee.</li> <li>Urban areas enclosed by ring dikes are protected free from flooding.</li> <li>To express increase of runoff by urbanization, runoff ratio of the urban areas is increased to about 0.5 from the calibrated ones of 0.1 to 0.3.</li> <li>Runoff from the urban areas is directly drained into the rivers by pumps.</li> </ul>	
2	Change of agricultural cultivation in combination with urban Development	In addition to the condition of Case1, future land use is assumed as shown in Sector III.	<ul style="list-style-type: none"> <li>Fruits areas in lower delta are encircled with 1 m high embankment.</li> <li>To express increase of runoff by urbanization, runoff ratio of urban areas is doubled to about 0.5 from the calibrated ones of 0.1 to 0.3.</li> </ul>	
3	Land subsidence in combination with urban development and change of agricultural cultivation	In addition to the condition of Case2, future land subsidence is assumed as shown in Fig. 4.1.2	<ul style="list-style-type: none"> <li>Ground elevations (DEM) are modified based on Fig. 4.1.2.</li> <li>Cross sections and elevation-area-volume relation are also regenerated.</li> </ul>	
4	Construction of dam in combination with urban development, change of agricultural cultivation and land subsidence	In addition to the condition of Case3, three new dams (Kaeng Sua Ten, Kwae Noi and Pasak) are operated by the conventional way. Spill from Sirikit dam reservoir in 1995 is avoided by using a newly added conduit.	<ul style="list-style-type: none"> <li>Yom and Pasak River channels are extended to Kaeng Sua Ten and Pasak Dam respectively to include the two dams in the model. Kwae Noi River channel from Kwae Noi Dam to Nan River is added to the model.</li> <li>Dam outflow based on the conventional way is given as the boundary condition at Sirikit, Kaeng Sua Ten, Kwae Noi and Pasak dams as shown in Fig. 4.4.3. As for Bhumipol Dam, actual outflow is given.</li> </ul>	
5	Construction of loop cut in combination with urban development, change of agricultural cultivation, land subsidence and construction of dam	This is a case for the future condition in the target year, 2018. In addition to the condition of Case4, a loop cut channel is provided near Bangkok Port. Moreover, 338 m <sup>3</sup> /s of agricultural drainage pumps by Mahaachai-Senamchai and Cholahan Phichit 2 Projects are provided.	<ul style="list-style-type: none"> <li>A 65 m wide channel is added to the model to allow short cut flow at the loop stretch near Bangkok Port.</li> <li>In addition to the existing pump capacity of 640 m<sup>3</sup>/s, pumps of 338 m<sup>3</sup>/s are integrated to the model.</li> </ul>	Future Basin Condition in 2018
6	Large scale development of agricultural area in combination with urban development	This is a case of extreme land development. 2,700 km <sup>2</sup> area (Fig.4.1.4) which is now playing as a natural retarding area is assumed to be reclaimed for development.	<ul style="list-style-type: none"> <li>Link channels connecting with the development area are all removed not to allow any spillage to the area.</li> <li>Runoff generated in the area is drained into the rivers directly.</li> </ul>	

Table 4.1.2 SUMMARY OF SIMULATION RESULT FOR FUTURE DEVELOPMENT

(1) Simulated Maximum Water Level

Case No.	Case	Year	(m MSL)												
			Sukhothai Y.4	Sam Ngam Y.17	Phitsanulok N.5A	Pichit N.7	Bung Boraphet	Nakhon Sawan C.2	Chainat C.13	Ang Thong C.7A	Ayutthaya C.34	Bangrai	Pak Kret C.22	Sam Sen C.12	Mem. Bridge C.4
1	Preset Condition	1995	49.71	39.19	46.12	37.27	26.95	26.08	17.08	7.79	5.25	3.78	2.51	2.32	2.20
2	Urban Development (Ring Levee + Drainage Pump)	1995	50.27	39.22	46.17	37.33	27.36	26.07	17.07	7.97	5.63	4.19	3.08	2.80	2.57
3	Change of Agricultural Cultivation + Case2	1995	50.27	39.23	46.17	37.34	27.36	26.07	17.07	7.97	5.63	4.19	3.08	2.81	2.57
4	Land Subsidence + Case3	1995	50.27	39.22	46.17	37.34	27.36	26.07	17.07	7.97	5.63	4.19	3.08	2.81	2.56
5	Construction of Dams + Case4	1995	50.22	38.37	45.38	37.10	27.05	25.74	16.77	7.91	5.58	4.14	3.04	2.77	2.53
6	Future Condition (Loopcut + Case5)	1995	50.22	38.37	45.38	37.10	27.05	25.74	16.77	7.92	5.55	4.04	2.90	2.62	2.45
7	Large Scale Agricultural Development + Case2	1995	50.27	39.22	46.17	37.16	27.36	25.97	17.22	8.64	6.15	4.57	3.45	3.13	2.83

(2) Simulated Maximum Discharge

Case No.	Case	Year	(m <sup>3</sup> /s)												
			Sukhothai Y.4	Sam Ngam Y.17	Phitsanulok N.5A	Pichit N.7	Nakhon Sawan C.2	Chainat C.13	Ang Thong C.7A	Ayutthaya C.34	Bangrai	Pak Kret C.22	Sam Sen C.12	Mem. Bridge C.4	Rama VI Barrage
1	Preset Condition	1995	350	1,360	1,960	2,070	4,600	4,440	2,910	1,210	4,150	3,540	4,250	4,350	1,320
2	Urban Development (Ring Levee + Drainage Pump)	1995	300	1,380	1,940	2,050	4,430	4,310	2,610	1,410	4,070	4,370	4,450	4,490	1,320
3	Change of Agricultural Cultivation + Case2	1995	300	1,380	1,940	2,050	4,430	4,310	2,610	1,410	4,070	4,370	4,460	4,490	1,320
4	Land Subsidence + Case3	1995	300	1,380	1,940	2,050	4,430	4,310	2,610	1,410	4,070	4,370	4,460	4,490	1,320
5	Construction of Dams + Case4	1995	290	1,000	1,660	2,020	4,110	3,890	2,550	1,400	4,000	4,320	4,400	4,440	1,340
6	Future Condition (Loopcut + Case5)	1995	290	1,000	1,660	2,020	4,110	3,890	2,570	1,410	3,980	4,350	4,450	4,490	1,340
7	Large Scale Agricultural Development + Case2	1995	300	1,380	1,940	2,050	4,430	4,520	3,080	1,800	4,570	4,840	4,910	4,940	1,310

(3) Simulated Inundation Area

Case No.	Case	Year	Upper Central Plain	Nakhon Sawan Area	Lower Central Plain			Total	
					Higher Delta	Lower Delta			
						BMA Area*	Others		Sub-total
1	Preset Condition	1995	3,777	555	4,609	0	4,650	4,650	13,591
2	Urban Development (Ring Levee + Drainage Pump)	1995	3,905	570	4,639	133	3,554	3,687	12,668
3	Change of Agricultural Cultivation + Case2	1995	3,908	572	4,729	134	3,603	3,737	12,812
4	Land Subsidence + Case3	1995	3,908	572	4,740	134	3,630	3,764	12,850
5	Construction of Dams + Case4	1995	3,490	492	4,514	133	3,020	3,153	11,516
6	Future Condition (Loopcut + Case5)	1995	3,490	492	4,344	66	2,436	2,502	10,762
7	Large Scale Agricultural Development + Case2	1995	3,905	570	3,883	588	3,769	4,357	12,128

\* : BMA Area to be protected by ring dikes (East Bank = 650 km<sup>2</sup>, West Bank = 240 m<sup>2</sup>)

(4) Simulated Inundation Volume

Case No.	Case	Year	Upper Central Plain	Nakhon Sawan Area	Lower Central Plain			Total	
					Upper Delta	Lower Delta			
						BMA Area*	Others		Sub-total
1	Preset Condition	1995	5,109	1,311	7,038	0	2,488	2,488	15,946
2	Urban Development (Ring Levee + Drainage Pump)	1995	5,578	1,332	7,100	189	1,807	1,996	16,006
3	Change of Agricultural Cultivation + Case2	1995	5,638	1,355	7,120	193	1,828	2,021	16,134
4	Land Subsidence + Case3	1995	5,638	1,355	7,165	193	1,862	2,055	16,213
5	Construction of Dams + Case4	1995	4,804	1,244	6,724	193	1,784	1,977	14,749
6	Future Condition (Loopcut + Case5)	1995	4,804	1,244	6,659	46	1,352	1,398	14,105
7	Large Scale Agricultural Development + Case2	1995	5,657	1,410	5,534	1,430	1,874	3,304	15,905

\* : BMA Area to be protected by ring dikes (East Bank = 650 km<sup>2</sup>, West Bank = 240 m<sup>2</sup>)

Table 4.1.3 COMPARISON OF SIMULATION RESULT FOR URBAN DEVELOPMENT

(1) Water Level

Case	Extent of Ring Dike on Lower Chao Phraya R.		Maximum Water Level (m MSL)			
	Stretch	(km)	Bang Sai	Pak Kret C.22	Samsen C.12	Memorial Bridge C.4
Present Condition	None	0	3.78	2.51	2.32	2.20
Urban Development with Ring Levee and Drainage Pump	Samut Prakan to Nontha Buri	70	3.85	2.70	2.51	2.41
	Samut Prakan to Pathum Thani	90	4.19	3.08	2.81	2.57

(2) Discharge

Case	Extent of Ring Dike on Lower Chao Phraya R.		Maximum Daily Mean Discharge (m <sup>3</sup> /s MSI.)			
	Stretch	(km)	Bang Sai	Pak Kret C.22	Samsen C.12	Memorial Bridge C.4
Present Condition	None	0	4,140	3,400	3,670	3,670
Urban Development with Ring Levee and Drainage Pump	Samut Prakan to Nontha Buri	70	4,100	3,720	3,720	3,710
	Samut Prakan to Pathum Thani	90	4,080	3,960	3,970	3,970

Table 4.1.4 (1/4) SUMMARY OF 45 YEAR RUN IN FUTURE BASIN CONDITION

Year	Sukhotahi	Sam Ngam	Phitsanulok	Pichit	Bung Boraphet	Nakhon Sawan	Chainat	Ang Thong	Ayutthaya	Bang Sai	Pak Kret	Sam Sen	Mem. Bridge
	Y.4	Y.17	N.5A	N.7		C.2	C.13	C.7A	C.34		C.22	C.12	C.4
1952	50.42	37.56	43.60	34.82	25.08	23.86	14.97	7.03	4.18	2.72	2.15	2.07	2.02
1953	50.10	36.39	41.53	34.25	24.75	24.11	14.19	6.69	3.90	2.54	1.90	1.78	1.74
1954	50.37	37.71	44.13	36.59	26.60	25.41	16.36	7.70	5.31	3.81	2.64	2.35	2.18
1955	50.11	37.06	42.70	34.63	25.25	24.40	14.55	6.87	4.13	2.68	1.94	1.80	1.75
1956	50.43	38.54	44.53	36.71	25.05	24.80	15.97	7.48	4.55	3.04	2.21	2.01	1.92
1957	50.15	37.36	43.23	35.46	25.15	24.20	15.49	7.33	4.85	3.47	2.45	2.18	2.07
1958	49.88	36.01	43.01	36.04	25.30	24.18	14.68	6.91	4.23	2.74	1.91	1.76	1.72
1959	50.26	37.76	44.88	36.12	26.06	25.03	16.07	7.60	5.26	3.80	2.67	2.37	2.16
1960	49.94	36.69	43.30	34.40	24.50	23.39	13.93	6.53	3.74	2.42	1.86	1.79	1.78
1961	50.34	38.11	45.93	36.72	25.86	24.88	15.62	7.33	4.44	2.94	2.15	1.99	1.90
1962	50.30	38.14	42.60	35.65	26.46	25.32	16.38	7.72	5.15	3.63	2.63	2.36	2.19
1963	50.15	36.84	40.09	33.55	25.77	24.83	15.37	7.29	4.90	3.50	2.49	2.23	2.10
1964	50.55	37.97	44.16	36.58	26.80	25.57	16.75	7.84	5.37	3.85	2.64	2.33	2.13
1965	49.48	35.67	41.50	33.05	24.65	23.08	12.89	6.04	3.33	2.11	1.78	1.72	1.68
1966	49.87	36.76	41.42	35.02	25.62	24.71	15.13	7.19	4.38	2.93	2.07	1.92	1.87
1967	50.41	37.85	42.96	35.77	25.50	24.63	14.31	6.76	3.80	2.36	1.87	1.79	1.78
1968	46.41	33.80	39.46	32.44	24.55	22.40	11.91	5.19	2.48	1.47	1.35	1.43	1.52
1969	50.06	36.80	40.26	34.94	25.81	24.86	15.45	7.35	4.76	3.28	2.22	2.00	1.89
1970	50.48	38.75	44.60	36.52	26.35	25.25	16.17	7.59	4.79	3.32	2.34	2.12	1.99
1971	50.26	37.77	41.61	33.65	25.45	24.56	14.49	6.76	3.80	2.36	1.87	1.83	1.83
1972	49.42	35.43	39.28	31.01	24.70	23.18	13.72	6.55	3.75	2.43	2.00	1.94	1.92
1973	50.55	38.77	41.39	34.41	25.83	24.87	14.98	7.09	4.19	2.74	2.06	1.95	1.90
1974	50.29	37.51	40.84	32.02	25.56	23.63	14.57	6.85	3.91	2.54	2.07	1.98	1.94
1975	50.53	38.80	45.25	36.81	26.68	25.47	16.37	7.79	5.31	3.78	2.63	2.39	2.23
1976	50.28	38.12	43.64	35.85	26.01	25.00	15.14	7.22	4.62	3.17	2.22	2.02	1.94
1977	50.07	36.73	42.22	34.59	25.00	24.21	14.15	6.60	3.95	2.49	1.87	1.81	1.79
1978	50.41	38.00	44.96	36.88	26.84	25.59	16.61	7.86	5.59	4.05	2.87	2.60	2.43
1979	49.01	34.47	40.00	31.65	24.65	23.23	13.51	6.33	3.31	2.02	1.83	1.79	1.77
1980	50.57	38.75	45.78	36.85	26.82	25.59	16.54	7.84	5.44	3.92	2.72	2.40	2.17
1981	50.18	37.22	42.08	34.20	25.75	23.44	13.33	6.16	3.22	2.05	1.82	1.78	1.76
1982	49.47	35.73	40.66	34.26	24.95	23.57	13.48	6.32	3.73	2.45	1.87	1.80	1.79
1983	50.12	37.08	42.18	34.46	25.69	24.78	16.27	7.68	5.38	3.95	2.85	2.57	2.33
1984	50.09	36.42	40.81	33.09	24.70	23.06	12.02	5.57	3.46	2.25	1.87	1.82	1.81
1985	50.31	36.69	44.65	36.57	25.62	24.71	14.48	6.93	4.48	3.11	2.28	2.10	2.01
1986	49.92	35.50	40.03	32.28	24.55	22.86	12.70	5.78	2.94	1.69	1.57	1.59	1.65
1987	50.40	38.02	41.19	33.79	25.05	24.22	14.78	7.01	4.84	3.45	2.47	2.24	2.12
1988	49.95	35.81	40.74	32.20	25.25	24.45	15.75	7.33	4.44	3.03	2.24	2.07	1.99
1989	49.69	36.07	39.19	30.92	24.95	23.83	13.84	6.53	3.51	2.19	1.88	1.84	1.84
1990	48.75	34.67	38.96	32.25	24.75	23.29	14.16	6.68	4.17	2.81	2.06	1.97	1.93
1991	49.48	35.36	39.23	33.62	24.80	23.16	12.83	5.84	3.50	2.22	1.89	1.84	1.82
1992	50.11	36.33	40.63	32.71	25.00	23.73	14.53	6.83	3.88	2.42	1.91	1.87	1.85
1993	49.73	35.49	38.12	30.94	24.65	23.05	13.01	5.91	2.91	1.68	1.45	1.47	1.51
1994	50.28	37.79	45.03	36.85	25.80	24.84	15.17	7.19	4.50	3.06	2.23	2.06	1.98
1995	50.22	38.37	45.38	37.10	27.05	25.74	16.77	7.92	5.55	4.04	2.90	2.62	2.45
1996	50.07	37.01	45.30	36.55	26.22	25.15	16.36	7.70	5.35	3.83	2.72	2.47	2.27
MAX.	50.57	38.80	45.93	37.10	27.05	25.74	16.77	7.92	5.59	4.05	2.90	2.62	2.45
AVE.	50.00	36.97	42.29	34.55	25.50	24.31	14.79	6.95	4.30	2.90	2.17	2.02	1.94
MIN.	46.41	33.80	38.12	30.92	24.50	22.40	11.91	5.19	2.48	1.47	1.35	1.43	1.51



Table 4.1.4 (2/4) SUMMARY OF 45 YEAR RUN IN FUTURE BASIN CONDITION

(2) Simulated Maximum Discharge

Year	B. Phasai	Sukhotahi	Sam Ngam	Phitsanulok	Pichit	Nakhon Sawan	Chainat	Ang Thong	Ayuthaya	Bang Sai	Pak Kret	Sam Sen	Mem. Bridge	Rama VI
	P.17	Y.4	Y.17	N.5A	N.7	C.2	C.13	C.7A	C.34		C.22	C.12	C.4	Barrage
1952	570	300	750	1,230	1,240	2,160	2,360	1,890	1,070	2,810	3,200	3,290	3,360	590
1953	1,430	290	470	810	1,010	2,330	2,010	1,640	990	2,670	3,100	3,190	3,240	810
1954	1,900	290	800	1,340	1,850	3,680	3,250	2,410	1,320	3,790	4,140	4,230	4,270	1,280
1955	1,140	280	620	1,040	1,180	2,510	2,160	1,760	1,040	2,830	3,210	3,300	3,340	880
1956	670	300	1,080	1,420	1,790	2,870	2,920	2,250	1,230	3,080	3,450	3,540	3,580	770
1957	730	290	700	1,120	1,310	2,330	2,620	2,090	1,140	3,290	3,810	3,910	3,990	970
1958	710	260	390	1,090	1,700	2,360	2,220	1,790	1,030	2,910	3,240	3,320	3,360	860
1959	2,860	290	810	1,540	1,610	3,170	3,000	2,300	1,230	3,710	4,100	4,200	4,270	1,290
1960	1,190	260	530	1,180	1,130	1,970	1,900	1,540	950	2,440	3,060	3,150	3,200	500
1961	950	300	930	1,890	1,850	2,990	2,690	2,110	1,180	3,040	3,400	3,470	3,510	720
1962	1,640	290	930	980	1,430	3,540	3,290	2,420	1,330	3,580	3,980	4,090	4,150	940
1963	1,590	280	560	580	830	2,910	2,550	2,020	1,120	3,430	3,860	3,940	4,000	1,240
1964	1,740	300	880	1,320	1,770	3,870	3,860	2,580	1,370	3,860	4,110	4,190	4,230	1,240
1965	990	230	330	830	830	1,850	1,480	1,230	850	2,180	2,780	2,880	2,940	740
1966	940	260	550	770	1,190	2,770	2,450	1,940	1,140	3,030	3,410	3,490	3,530	830
1967	1,430	290	840	1,060	1,550	2,700	2,060	1,650	1,030	2,560	3,000	3,080	3,120	400
1968	550	60	130	490	710	1,600	1,140	950	680	1,640	2,210	2,340	2,410	130
1969	1,610	280	550	600	1,160	2,950	2,600	2,040	1,160	3,320	3,640	3,710	3,740	980
1970	1,480	300	1,160	1,450	1,750	3,450	3,150	2,310	1,270	3,310	3,670	3,750	3,790	820
1971	2,080	290	810	840	920	2,640	2,140	1,720	1,040	2,540	3,010	3,080	3,110	460
1972	1,160	210	290	470	500	1,890	1,800	1,510	960	2,500	3,070	3,160	3,200	780
1973	2,080	300	1,180	790	1,020	2,970	2,370	1,880	1,110	2,830	3,270	3,370	3,430	420
1974	1,030	290	740	720	680	2,060	2,170	1,760	1,040	2,590	3,120	3,220	3,280	390
1975	1,420	300	1,170	1,640	1,870	3,760	3,270	2,400	1,340	3,820	4,030	4,100	4,130	990
1976	1,580	290	930	1,210	1,450	3,130	2,440	1,940	1,120	3,210	3,570	3,650	3,680	770
1977	1,240	280	540	930	1,080	2,390	1,990	1,610	980	2,730	3,100	3,170	3,210	760
1978	1,600	300	880	1,540	1,870	3,910	3,690	2,520	1,350	4,080	4,330	4,390	4,420	1,730
1979	1,070	190	190	580	580	1,900	1,720	1,400	920	2,180	2,630	2,780	2,830	220
1980	1,610	300	1,160	1,840	1,940	3,880	3,600	2,490	1,350	3,900	4,180	4,270	4,320	1,200
1981	1,070	280	660	910	990	2,010	1,650	1,350	870	2,190	2,680	2,790	2,840	650
1982	730	220	340	650	1,040	2,080	1,710	1,390	920	2,580	3,040	3,120	3,160	890
1983	1,600	280	620	940	1,100	2,840	3,150	2,360	1,240	3,770	4,210	4,320	4,370	1,290
1984	640	280	470	700	820	1,860	1,170	980	710	2,400	2,860	2,970	3,010	940
1985	1,110	290	530	1,470	1,870	2,770	2,130	1,700	1,060	3,120	3,510	3,600	3,630	1,170
1986	800	270	300	570	680	1,770	1,410	1,160	790	1,920	2,420	2,520	2,560	470
1987	1,520	290	890	750	900	2,380	2,270	1,820	1,050	3,400	3,770	3,860	3,900	1,300
1988	2,820	260	350	700	680	2,530	2,770	2,150	1,200	3,030	3,510	3,590	3,630	670
1989	1,630	230	390	460	500	2,180	1,860	1,500	980	2,320	2,870	2,950	2,980	250
1990	1,000	170	210	430	640	1,920	1,990	1,620	960	2,850	3,360	3,460	3,500	1,290
1991	640	220	280	440	880	1,900	1,460	1,200	800	2,420	2,870	2,970	3,020	790
1992	1,240	280	450	670	730	2,120	2,160	1,730	1,040	2,600	3,030	3,140	3,200	440
1993	770	250	300	320	450	1,850	1,530	1,270	820	1,880	2,400	2,530	2,580	120
1994	870	290	820	1,550	1,880	2,930	2,450	1,950	1,110	3,120	3,480	3,580	3,620	760
1995	1,500	290	1,000	1,660	2,020	4,110	3,890	2,570	1,410	3,980	4,350	4,450	4,490	1,340
1996	2,440	270	600	1,660	1,740	3,320	3,270	2,410	1,240	3,840	4,110	4,210	4,250	1,220
MAX.	2,860	300	1,180	1,890	2,020	4,110	3,890	2,580	1,400	4,080	4,330	4,420	4,460	1,730
AVE.	1,320	270	650	1,000	1,220	2,650	2,390	1,850	1,080	2,960	3,380	3,470	3,520	830
MIN.	550	60	130	320	450	1,600	1,140	950	680	1,640	2,210	2,340	2,410	120

Table 4.1.4 (3/4) SUMMARY OF 45 YEAR RUN IN FUTURE BASIN CONDITION

(3) Simulated Inundation Area							(Million m <sup>3</sup> )
Year	Upper Central Plain	Nakhon Sawan Area	Lower Central Plain				Total
			Higher Delta	Lower Delta			
				BMA Area*	Others	Sub-total	
1952	2,285	216	3,027	0	2,780	2,780	8,309
1953	1,951	270	2,807	0	1,920	1,920	6,949
1954	3,026	422	3,615	0	2,338	2,338	9,401
1955	2,193	284	2,949	0	2,134	2,134	7,561
1956	3,107	300	3,634	0	2,535	2,535	9,576
1957	2,248	277	4,741	0	4,028	4,028	11,294
1958	1,634	257	2,862	0	2,034	2,034	6,787
1959	2,745	376	4,413	0	3,113	3,113	10,648
1960	1,747	231	3,025	0	3,141	3,141	8,144
1961	3,071	316	2,756	0	1,718	1,718	7,860
1962	2,974	407	4,471	0	3,050	3,050	10,902
1963	2,255	337	3,760	0	3,280	3,280	9,633
1964	3,212	451	3,964	0	1,980	1,980	9,607
1965	1,290	215	2,674	0	2,413	2,413	6,592
1966	2,103	291	3,497	0	2,170	2,170	8,061
1967	2,630	299	2,464	0	1,469	1,469	6,862
1968	1,141	180	1,954	0	1,484	1,484	4,758
1969	2,280	339	3,462	0	2,423	2,423	8,506
1970	3,386	395	3,412	0	2,242	2,242	9,435
1971	2,442	308	2,721	0	1,978	1,978	7,449
1972	1,283	231	3,445	0	2,722	2,722	7,680
1973	3,159	347	2,695	0	1,933	1,933	8,133
1974	2,142	238	3,410	0	2,673	2,673	8,463
1975	3,527	415	3,834	0	1,974	1,974	9,749
1976	2,857	356	3,404	0	2,349	2,349	8,966
1977	2,085	266	2,312	0	1,336	1,336	6,000
1978	3,207	453	4,024	60	1,997	1,997	9,740
1979	1,245	212	2,159	0	1,273	1,273	4,888
1980	3,689	451	3,973	0	2,301	2,301	10,414
1981	1,979	216	2,628	0	1,531	1,531	6,355
1982	1,324	205	2,191	0	1,283	1,283	5,003
1983	2,305	337	4,361	48	3,651	3,651	10,701
1984	1,740	192	2,195	0	1,582	1,582	5,709
1985	2,396	290	2,660	0	1,722	1,722	7,068
1986	1,127	175	2,228	0	2,221	2,221	5,751
1987	2,507	286	2,738	0	1,670	1,670	7,200
1988	1,617	307	3,315	0	2,556	2,556	7,795
1989	1,398	251	2,336	0	1,605	1,605	5,589
1990	1,259	217	3,380	0	2,906	2,906	7,762
1991	1,276	190	2,158	0	1,362	1,362	4,987
1992	1,798	239	2,646	0	2,045	2,045	6,728
1993	1,251	198	1,884	0	1,306	1,306	4,640
1994	2,714	307	2,587	0	1,330	1,330	6,937
1995	3,490	492	4,344	66	2,436	2,502	10,827
1996	2,687	393	3,222	1	1,780	1,780	8,083
Min.	1,127	175	1,884	0	1,273	1,273	4,640
Ave.	2,262	299	3,119	4	2,173	2,174	7,856
Max	3,689	492	4,741	66	4,028	4,028	11,294

\* : BMA Area to be protected by ring dikes (East Bank = 650 km<sup>2</sup>, West Bank = 240 m<sup>2</sup>)

Table 4.1.4 (4/4) SUMMARY OF 45 YEAR RUN IN FUTURE BASIN CONDITION

(4) Simulated Inundation Volume

(Million m3)

Year	Upper Central Plain	Nakhon Sawan Area	Lower Central Plain				Total
			Higher Delta	Lower Delta			
				BMA Area*	Others	Sub-total	
1952	2,696	389	3,040	0	1,118	1,118	7,244
1953	2,181	575	2,774	0	645	645	6,175
1954	4,134	1,088	4,932	0	822	822	10,976
1955	2,515	573	3,054	0	749	749	6,891
1956	4,382	593	4,169	0	1,005	1,005	10,150
1957	2,575	502	5,501	0	2,208	2,208	10,785
1958	1,364	474	2,988	0	671	671	5,497
1959	3,663	946	5,488	0	1,445	1,445	11,543
1960	1,666	479	2,525	0	1,262	1,262	5,932
1961	4,202	670	3,485	0	613	613	8,971
1962	4,140	996	5,592	0	1,308	1,308	12,036
1963	2,770	772	4,149	0	1,443	1,443	9,134
1964	4,611	1,197	5,751	0	770	770	12,329
1965	1,029	424	2,250	0	851	851	4,555
1966	2,144	582	3,778	0	918	918	7,421
1967	3,360	660	2,542	0	617	617	7,180
1968	845	333	1,335	0	550	550	3,063
1969	2,787	783	3,944	0	1,082	1,082	8,596
1970	5,109	944	4,407	0	968	968	11,428
1971	3,190	755	2,878	0	748	748	7,572
1972	1,051	467	3,040	0	1,085	1,085	5,643
1973	4,866	860	3,039	0	788	788	9,553
1974	2,557	473	3,169	0	1,356	1,356	7,555
1975	5,296	1,039	5,167	0	872	872	12,373
1976	3,871	819	3,784	0	974	974	9,448
1977	2,335	553	2,446	0	523	523	5,858
1978	4,619	1,191	6,123	32	820	852	12,784
1979	1,018	429	1,860	0	472	472	3,778
1980	5,696	1,192	5,432	0	959	959	13,279
1981	2,350	459	2,860	0	657	657	6,325
1982	1,090	400	2,300	0	548	548	4,337
1983	2,798	769	5,415	23	1,703	1,726	10,707
1984	1,863	378	1,906	0	625	625	4,771
1985	2,776	601	3,174	0	676	676	7,226
1986	889	332	1,813	0	805	805	3,840
1987	3,354	631	3,270	0	675	675	7,930
1988	1,734	766	3,684	0	1,197	1,197	7,382
1989	1,346	571	2,216	0	566	566	4,700
1990	1,027	434	3,061	0	1,231	1,231	5,753
1991	1,038	376	1,926	0	561	561	3,900
1992	1,948	495	2,617	0	824	824	5,884
1993	985	387	1,590	0	466	466	3,427
1994	3,458	640	3,230	0	535	535	7,862
1995	4,804	1,244	6,659	46	1,352	1,398	14,105
1996	3,480	1,002	4,379	2	757	759	9,620
Min.	845	332	1,335	0	466	466	3,063
Ave.	2,791	672	3,528	2	907	909	7,900
Max	5,696	1,244	6,659	46	2,208	2,208	14,105

\* : BMA Area to be protected by ring dikes (East Bank = 650 km2, West Bank = 240 m2)

Table 4.1.5 PROBABLE DISCHARGE IN FUTURE BASIN CONDITION

River	Station	Probable Discharge by Return Period (m <sup>3</sup> /s)					
		2-yr	5-yr	10-yr	25-yr	50-yr	100-yr
Ping	P.17(B.Phasai)	1,250	1,800	2,150	2,630	2,950	3,300
Yom	Y.4(Sukhothai)	280	290	295	300	305	310
	Y.17(Sam Ngam)	610	910	1,110	1,170	1,180	1,190
Nan	N.5A(Pitsanulok)	940	1,480	1,630	1,780	1,900	2,000
	N.7(Pichit)	1,220	1,840	1,900	1,970	2,020	2,080
Chao Phraya	C.2(Nakhon Sawan)	2,520	3,320	3,810	4,000	4,100	4,200
	C.13(Chainat)	2,300	3,100	3,400	3,700	3,960	4,150
	C.7A(Ang Thong)	1,800	2,360	2,480	2,560	2,670	2,720
	C.34(Ayutthaya)	1,050	1,250	1,350	1,400	1,440	1,470
	Bang Sai	2,900	3,600	3,850	3,980	4,070	4,170
Pasak	RamaIV Barrage	820	1,100	1,250	1,400	1,630	1,770

Table 4.2.1 SIMULATION CONDITION FOR APPLICABLE MEASURE

No.	Case Modification of Dam Operation Rule	Basin Condition	Model Modification from Future Basin Condition
1	Dam Operation Rule	Three cases of modified operation rule are applied to four dams, Sirikit, Kaeng Sua Ten, Kwae Noi and Pasak to increase their flood control capacities by sacrificing the main purposes of irrigation and power generation to some extent.	<ul style="list-style-type: none"> <li>Dam outflow based on the modified rule is given as the boundary condition at the four dams (Fig. 4.1.4).</li> </ul>
2	River Improvement from Pathum Thani to Nan and Yom Rivers	River Improvement by diking is made along the rivers from Nan and Yom to Pathum Thani shown in Fig. 4.2.1 according to the return period.	<ul style="list-style-type: none"> <li>Bed levels of link channels crossing the river improvement stretches are raised as high as the design discharge (Fig. 4.2.1 ) can be accommodated within the river.</li> </ul>
3	River Improvement From Pathum Thani to Chainat	River Improvement by diking is made along the rivers from Chainat to Pathum Thani shown in Fig. 4.2.1 according to the return period.	<ul style="list-style-type: none"> <li>Bed levels of link channels on the river improvement stretches are raised as high as the design discharge (Fig. 4.2.1 ) can be accommodated within the river.</li> </ul>
4	Pasak-Raphipat-Sea Diversion	A flood channel is provided from Rama VI barrage on Pasak River to the sea along Pasak-Raphipat Canal.	<ul style="list-style-type: none"> <li>A diversion channel is provided from Rama VI barrage to the sea.</li> <li>Discharge on Pasak river is compulsorily diverted into the diversion channel as much as the channel can receive upto its capacity, leaving 80 m<sup>3</sup>/s of river maintenance flow on the river.</li> </ul>
5	Chainat-Pasak-Raphipat-Sea Diversion	A flood channel is provided along Chainat-Pasak and Pasak-Raphipat Canals to the sea.	<ul style="list-style-type: none"> <li>A diversion channel is provided along Chainat-Pasak and Pasak-Raphipat Canals from Chao Phraya River to the sea.</li> <li>Discharge on Chao Phraya river is compulsorily diverted into the diversion channel as much as the channel can receive upto its capacity, leaving 80 m<sup>3</sup>/s of river maintenance flow on the river.</li> </ul>
6	Ayuthaya-East-Sea-Diversion	A flood channel is provided from Ayuthaya to the sea, crossing the East Bank.	<ul style="list-style-type: none"> <li>A diversion channel is provided from Chao Phraya River to the sea.</li> <li>Discharge on Chao Phraya river is compulsorily diverted into the diversion channel as much as the channel can receive upto its capacity, leaving 80 m<sup>3</sup>/s of river maintenance flow on the river.</li> </ul>

Table 4.2.2 (1/2) SUMMARY OF 45 YEAR RUN IN FULL CONFINEMENT CONDITION

(I) Simulated Maximum Water Level

Year	Sukhotaihi	Sam Ngam	Phitsanulok	Pichit	Bung Boraphet	Nakhon Sawan	Chainat	Ang Thong	Ayutthaya	Bang Sai	Pak Kret	Sam Sen	Mem. Bridge
	Y.4	Y.17	N.5A	N.7		C.2	C.13	C.7A	C.34		C.22	C.12	C.4
1952	60.35	41.23	44.38	36.71	26.85	25.67	15.93	7.58	4.41	2.79	2.07	1.99	2.01
1953	54.13	37.70	41.66	35.08	26.82	24.93	15.26	7.31	4.56	3.00	2.00	1.82	1.72
1954	57.63	40.10	45.36	38.01	28.61	27.60	17.44	8.95	6.53	5.02	3.68	3.19	2.69
1955	54.10	38.11	43.05	36.12	26.35	25.28	15.59	7.51	4.78	3.23	2.07	1.79	1.65
1956	61.54	42.06	45.44	38.76	27.05	27.29	17.23	8.70	6.09	4.47	3.07	2.64	2.23
1957	55.80	38.89	43.44	36.50	26.79	25.18	16.36	8.06	5.70	4.20	2.94	2.57	2.27
1958	52.25	36.95	43.98	37.57	27.29	25.44	16.05	7.75	5.06	3.49	2.31	1.99	1.79
1959	56.11	39.34	45.66	38.05	26.83	26.66	16.96	8.59	6.28	4.79	3.52	3.07	2.67
1960	52.37	37.50	43.74	35.86	25.08	23.67	13.70	6.44	3.70	2.40	1.87	1.77	1.71
1961	57.38	39.93	47.93	39.85	26.76	26.55	16.54	8.10	5.08	3.41	2.27	2.00	1.84
1962	55.57	39.57	43.09	37.28	28.10	26.74	16.85	8.50	6.08	4.59	3.32	2.93	2.56
1963	54.67	38.66	40.25	34.41	27.65	26.09	16.38	8.12	5.87	4.40	3.09	2.69	2.33
1964	60.11	41.85	45.24	38.69	28.69	28.47	18.07	9.42	7.01	5.56	4.34	3.81	3.21
1965	50.36	35.89	42.00	34.26	25.84	23.03	12.88	6.12	3.44	2.16	1.78	1.67	1.61
1966	51.78	37.70	41.72	36.23	27.49	25.24	15.21	7.43	4.84	3.37	2.29	2.09	1.92
1967	57.71	40.55	43.74	37.70	26.89	27.26	16.97	8.55	5.81	4.08	2.83	2.50	2.21
1968	46.46	34.24	39.59	33.37	25.58	22.75	12.43	5.48	2.61	1.46	1.39	1.42	1.47
1969	53.45	38.09	40.50	36.16	27.40	26.38	16.37	8.18	5.78	4.16	2.81	2.46	2.13
1970	59.76	41.15	46.24	39.27	26.95	27.19	16.88	8.49	5.86	4.21	2.84	2.49	2.20
1971	55.77	39.30	42.12	34.94	26.22	26.18	16.41	8.02	5.04	3.37	2.29	2.04	1.84
1972	50.11	36.63	39.39	31.65	25.91	23.95	14.04	6.80	3.95	2.61	2.05	2.00	1.96
1973	60.68	41.79	41.76	35.70	26.66	27.72	17.21	8.81	6.11	4.42	2.95	2.51	2.12
1974	56.65	39.52	41.20	33.19	25.98	24.05	14.39	6.87	3.94	2.56	2.06	1.96	1.86
1975	59.76	41.53	46.83	39.85	28.09	27.72	17.37	8.84	6.04	4.38	2.97	2.58	2.27
1976	55.38	39.32	43.88	37.14	26.79	26.49	16.51	8.15	5.44	3.85	2.59	2.29	2.05
1977	53.55	38.46	42.63	35.73	25.99	25.57	15.37	7.42	4.28	2.80	2.08	1.97	1.88
1978	57.77	40.43	46.18	39.23	28.25	27.87	17.86	9.52	7.90	6.71	5.68	5.07	4.26
1979	49.34	35.14	40.17	32.35	25.52	23.71	14.02	6.67	3.58	2.11	1.81	1.83	1.82
1980	60.67	41.74	47.70	39.87	27.67	27.65	17.31	8.83	6.02	4.42	3.11	2.68	2.34
1981	54.23	38.93	42.33	35.20	25.78	24.97	15.09	7.18	4.03	2.52	1.97	1.89	1.81
1982	50.00	36.71	40.92	35.54	26.53	24.35	14.39	6.88	4.06	2.69	1.95	1.79	1.73
1983	53.86	38.29	42.63	35.80	26.96	26.07	17.05	8.68	6.38	4.94	3.74	3.27	2.85
1984	53.33	38.00	40.97	34.05	26.01	23.77	12.85	6.15	3.77	2.47	1.98	1.89	1.85
1985	55.99	39.48	46.22	39.30	27.40	26.70	16.74	8.43	5.93	4.32	2.98	2.63	2.31
1986	52.37	37.10	40.12	32.94	25.57	23.57	13.50	6.33	3.31	1.93	1.61	1.63	1.63
1987	57.69	40.40	41.43	34.88	26.71	26.42	16.71	8.37	6.14	4.66	3.35	2.94	2.58
1988	52.48	37.67	41.02	33.05	26.64	25.90	16.54	8.17	5.42	3.89	2.74	2.49	2.28
1989	50.85	37.43	39.31	31.54	25.66	24.86	14.94	7.25	4.15	2.65	2.09	1.97	1.86
1990	48.98	34.99	39.02	32.75	26.02	23.48	14.15	6.76	4.19	2.80	2.01	1.91	1.85
1991	50.27	36.62	39.37	34.60	25.89	23.94	13.71	6.41	3.60	2.25	1.90	1.86	1.83
1992	54.03	38.18	40.82	33.43	25.56	24.20	14.05	6.60	3.54	2.18	1.77	1.73	1.70
1993	51.30	36.58	38.17	31.23	25.71	23.46	13.47	6.23	3.12	1.72	1.47	1.48	1.48
1994	56.24	39.49	45.67	38.60	26.74	26.76	16.55	8.20	5.50	3.85	2.54	2.26	2.05
1995	55.17	39.54	46.06	39.01	28.27	27.72	17.69	9.15	6.95	5.55	4.38	3.87	3.29
1996	53.11	38.18	45.91	38.42	26.73	27.49	17.43	8.95	6.46	4.94	3.63	3.17	2.71
MAX.	61.54	42.06	47.93	39.87	28.69	28.47	18.07	9.52	7.90	6.71	5.68	5.07	4.26
AVE.	54.69	38.69	42.86	36.00	26.72	25.69	15.74	7.75	5.07	3.60	2.64	2.37	2.14
MIN.	46.46	34.24	38.17	31.23	25.08	22.75	12.43	5.48	2.61	1.46	1.39	1.42	1.47



Table 4.2.2 (2/2) SUMMARY OF 45 YEAR RUN IN FULL CONFINEMENT CONDITION

(2) Simulated Maximum Discharge

Year	Sukhotahi	Sam Ngam	Phitsanulok	Pichit	Nakhon Sawan	Chainat	Ang Thong	Ayutthaya	Bang Sai	Pak Kret	Sam Sen	Mem. Bridge	Rama VI
	Y.4	Y.17	N.5A	N.7	C.2	C.13	C.7A	C.34		C.22	C.12	C.4	Barrage
1952	2,040	2,100	1,410	1,410	3,250	2,890	2,180	1,330	3,030	3,320	3,400	3,440	590
1953	810	730	830	1,030	2,750	2,500	1,950	1,190	3,250	3,460	3,560	3,610	810
1954	1,420	1,540	1,680	1,840	4,750	4,570	3,190	2,040	5,580	5,690	5,730	5,750	1,450
1955	790	830	1,100	1,250	2,980	2,670	2,050	1,270	3,370	3,690	3,760	3,790	880
1956	2,330	2,520	1,640	2,140	4,490	4,450	3,020	1,890	4,770	4,930	4,980	5,020	770
1957	1,110	1,080	1,160	1,330	2,840	3,250	2,420	1,490	4,160	4,560	4,690	4,790	970
1958	520	550	1,300	1,670	3,060	2,980	2,240	1,380	3,620	3,850	3,960	4,000	860
1959	1,130	1,230	1,750	1,890	3,920	4,070	2,840	1,780	5,150	5,310	5,420	5,490	1,490
1960	530	660	1,270	1,230	2,100	1,800	1,460	920	2,430	3,080	3,190	3,270	500
1961	1,380	1,470	2,700	2,760	3,890	3,520	2,570	1,590	3,590	3,800	3,890	3,930	720
1962	1,010	1,310	1,040	1,560	4,010	3,870	2,770	1,750	4,760	5,060	5,150	5,210	940
1963	880	980	600	870	3,520	3,270	2,410	1,510	4,500	4,840	4,890	4,940	1,310
1964	1,910	2,370	1,590	2,130	5,550	5,360	3,670	2,410	6,440	6,560	6,580	6,610	1,340
1965	300	350	910	910	1,850	1,480	1,210	860	2,270	2,880	2,970	3,050	740
1966	460	700	810	1,250	2,950	2,470	1,910	1,250	3,440	3,800	3,890	3,940	830
1967	1,410	1,740	1,190	1,710	4,470	4,150	2,820	1,850	4,290	4,380	4,500	4,540	400
1968	60	160	500	740	1,740	1,330	1,080	730	1,760	2,240	2,380	2,490	130
1969	680	820	620	1,190	3,730	3,560	2,400	1,590	4,330	4,550	4,630	4,660	980
1970	1,880	2,050	1,930	2,420	4,410	3,900	2,790	1,810	4,390	4,610	4,680	4,730	820
1971	1,060	1,200	930	1,020	3,580	3,360	2,490	1,550	3,530	3,790	3,880	3,920	460
1972	270	470	480	520	2,220	1,940	1,580	1,050	2,670	3,280	3,370	3,410	780
1973	2,080	2,360	860	1,080	4,890	4,430	2,990	2,000	4,700	4,810	4,880	4,920	430
1974	1,250	1,300	770	740	2,290	2,100	1,680	1,070	2,640	3,190	3,310	3,360	390
1975	1,850	2,210	2,160	2,680	4,880	4,500	3,130	2,020	4,630	4,760	4,800	4,820	990
1976	980	1,210	1,240	1,520	3,830	3,720	2,530	1,630	3,940	4,130	4,220	4,250	770
1977	700	910	1,030	1,190	3,180	2,560	1,980	1,280	2,980	3,330	3,470	3,530	760
1978	1,430	1,680	1,900	2,400	5,000	5,110	3,580	2,290	8,580	8,370	8,400	8,410	4,000
1979	210	250	600	600	2,100	1,940	1,540	1,020	2,380	2,750	2,890	2,940	220
1980	2,080	2,340	2,600	2,740	4,820	4,450	3,070	2,030	4,570	4,830	4,890	4,940	1,240
1981	790	1,070	950	1,050	2,780	2,420	1,890	1,170	2,710	3,110	3,240	3,290	650
1982	260	480	680	1,110	2,410	2,100	1,650	1,090	2,840	3,280	3,360	3,410	890
1983	740	880	1,020	1,180	3,420	3,900	2,840	1,840	5,230	5,580	5,650	5,700	1,470
1984	670	790	720	850	2,160	1,470	1,190	840	2,600	3,110	3,190	3,240	940
1985	1,100	1,280	1,940	2,460	3,980	3,750	2,650	1,750	4,550	4,640	4,760	4,800	1,190
1986	540	580	580	690	2,060	1,720	1,390	920	2,180	2,630	2,730	2,760	470
1987	1,410	1,670	790	960	3,760	3,720	2,670	1,640	4,970	5,150	5,220	5,250	1,490
1988	540	700	740	720	3,340	3,520	2,560	1,620	3,880	4,280	4,390	4,430	670
1989	340	620	470	520	2,700	2,340	1,820	1,220	2,820	3,260	3,350	3,380	250
1990	180	240	430	640	2,000	1,990	1,620	1,000	2,900	3,410	3,520	3,570	1,390
1991	280	470	450	920	2,230	1,810	1,450	950	2,510	2,900	3,020	3,080	790
1992	770	850	690	760	2,280	1,950	1,550	1,010	2,450	2,880	2,970	3,030	440
1993	400	480	320	460	2,010	1,710	1,390	890	2,030	2,500	2,630	2,710	120
1994	1,150	1,280	1,730	2,120	4,050	3,520	2,570	1,630	3,970	4,230	4,300	4,350	760
1995	950	1,280	1,870	2,280	4,850	4,880	3,400	2,170	6,420	6,510	6,560	6,590	1,750
1996	620	840	1,820	2,040	4,660	4,550	3,170	2,040	5,450	5,530	5,600	5,620	1,280
MAX.	2,330	2,520	2,700	2,760	5,550	5,360	3,670	2,410	8,580	8,370	8,400	8,410	4,000
AVE.	962	1,125	1,151	1,391	3,372	3,146	2,297	1,475	3,850	4,152	4,241	4,288	914
MIN.	60	160	320	460	1,740	1,330	1,080	730	1,760	2,240	2,380	2,490	120

Table 4.2.3 PROBABLE UNDER FULL CONFINEMENT CONDITION

River	Station	Probable Discharge(m <sup>3</sup> /s)					
		2yr	5yr	10yr	25yr	50yr	100yr
Ping	P.17(B.Phisai)	1,230	1,830	2,150	2,650	3,000	3,350
Yom	Y.4(Sukhothai)	870	1,400	1,750	2,490	2,550	2,880
	Y.17(Sam Ngam)	1,080	1,620	2,000	2,520	2,870	3,220
Nan	N.5A(Pitsanulok)	1,080	1,640	2,010	2,530	2,870	3,200
	N.7(Pichit)	1,270	1,900	2,320	2,860	3,230	3,610
Chao Phraya	C.2(Nakhon Sawan)	3,400	4,600	4,900	5,150	5,350	5,500
	C.13(Chainat)	3,250	4,350	4,680	5,100	5,400	5,700
	C.7A(Ang Thong)	2,340	2,950	3,250	3,600	3,900	4,200
	C.34(Ayutthaya)	1,560	1,770	2,120	2,300	2,500	2,650
	Bang Sai	3,960	5,040	6,000	7,150	8,000	8,700
Pasak	RamaIV Barrage	900	1,260	1,490	1,830	2,080	2,280

Table 4.2.4 MAGNITUDE OF REPRESENTATIVE THREE FLOODS

Area	Item	1983 Flood			1995 Flood			1996 Flood		
		Estimated Value		Return Period (yr)	Estimated Value		Return Period (yr)	Estimated Value		Return Period (yr)
		Quantity	Unit		Quantity	Unit		Quantity	Unit	
Upper Central Plain	July to Dec. Rainfall*1	900	mm	8	1,111	mm	100	841	mm	6
	P.17 Discharge	1,603	m <sup>3</sup> /s	4	1,495	m <sup>3</sup> /s	3	2,436	m <sup>3</sup> /s	18
	Y.4 Discharge	283	m <sup>3</sup> /s	2	286	m <sup>3</sup> /s	2	273	m <sup>3</sup> /s	1.8
	Y.17 Discharge	622	m <sup>3</sup> /s	2	1,003	m <sup>3</sup> /s	7	604	m <sup>3</sup> /s	2
	N.5A Discharge	936	m <sup>3</sup> /s	2	1,663	m <sup>3</sup> /s	11	1,657	m <sup>3</sup> /s	11
	N.7 Discharge	1,101	m <sup>3</sup> /s	1.8	2,023	m <sup>3</sup> /s	50	1,736	m <sup>3</sup> /s	4
Nakhon Sawan Area	July to Dec. Rainfall*2	1,116	mm	60	866	mm	8	740	mm	2
	C.2 Discharge	2,836	m <sup>3</sup> /s	3	4,110	m <sup>3</sup> /s	50	3,319	m <sup>3</sup> /s	5
Higher Delta of Lower Central Plain	July to Dec. Rainfall *3	1,119	mm	35	810	mm	4	623	mm	1.2
	C.13 Discharge	3,154	m <sup>3</sup> /s	6	3,891	m <sup>3</sup> /s	38	3,269	m <sup>3</sup> /s	6
	C.7A Discharge	2,358	m <sup>3</sup> /s	5	2,573	m <sup>3</sup> /s	27	2,406	m <sup>3</sup> /s	6
	C.34 Discharge	1,236	m <sup>3</sup> /s	4	1,404	m <sup>3</sup> /s	27	1,242	m <sup>3</sup> /s	5
	Rama IV Discharge	1,289	m <sup>3</sup> /s	12	1,337	m <sup>3</sup> /s	15	1,215	m <sup>3</sup> /s	8
Lower Delta of Lower Central Plain	July to Dec. Rainfall *3	1,119	mm	35	810	mm	4	623	mm	1.2
	Bang Sai Discharge	3,768	m <sup>3</sup> /s	7	3,972	m <sup>3</sup> /s	23	3,837	m <sup>3</sup> /s	9
	C.22 Water Level	2.85	m MSL	23	2.90	m MSL	32	2.72	m MSL	10
	C.12 Water Level	2.57	m MSL	23	2.62	m MSL	30	2.47	m MSL	11
	C.4 Water Level	2.33	m MSL	20	2.45	m MSL	35	2.27	m MSL	11
Total	July to Dec. Rainfall*4	919	mm	30	903	mm	25	750	mm	2

\*1: Average rainfall of Nan River Basin (Sub-basins No. 7 to 10)

\*2: Average rainfall of subbasins No.11 o 12

\*3: Average rainfall of Lower Cenral Plain (Sub-basins No. 15 to 18)

\*4: Average rainfall of Entire Basin (Sub-basins No. 1 to 18)

Table 4.2.5 (1/6) SUMMARY OF SIMULATION RESULTS FOR APPLICABLE MEASURES

(1) MODIFICATION OF DAM OPERATION

(1) Simulated Maximum Water Level

(m MSL)

Case	Year	Sukhothai Y.4	Sam Ngam Y.17	Phitsanulok N.5A	Pichit N.7	Bung Boraphet	Nakhon Sawan C.2	Chainat C.13	Ang Thong C.7A	Ayutthay a C.34	Bangsai	Pak Kret C.22	Sam Sen C.12	Mem. Bridge C.4
Case-1: V=7,400 mil m <sup>3</sup>	1995	50.22	38.40	45.21	37.00	26.96	25.68	16.74	7.90	5.53	4.02	2.88	2.59	2.43
Case-2: V=10,700 mil m <sup>3</sup>	1995	50.22	38.36	45.09	36.98	26.82	25.59	16.71	7.88	5.52	4.02	2.88	2.58	2.42
Case-3: V=14,600 mil m <sup>3</sup>	1995	50.22	38.28	45.04	36.70	26.75	25.54	16.65	7.85	5.50	3.99	2.86	2.57	2.41
Case-1: V=7,400 mil m <sup>3</sup>	1983	50.12	37.09	42.00	34.29	25.66	24.76	16.25	7.66	5.37	3.93	2.83	2.54	2.31
Case-2: V=10,700 mil m <sup>3</sup>	1983	50.12	37.09	41.98	34.27	25.65	24.75	16.25	7.66	5.36	3.93	2.83	2.53	2.31
Case-3: V=14,600 mil m <sup>3</sup>	1983	50.12	37.09	41.96	34.25	25.64	24.75	16.24	7.65	5.36	3.92	2.82	2.52	2.31
Case-1: V=7,400 mil m <sup>3</sup>	1996	50.07	37.03	45.06	36.43	26.14	25.09	16.32	7.67	5.28	3.76	2.66	2.43	2.24
Case-2: V=10,700 mil m <sup>3</sup>	1996	50.07	37.03	45.04	36.42	26.13	25.09	16.31	7.67	5.25	3.73	2.64	2.41	2.22
Case-3: V=14,600 mil m <sup>3</sup>	1996	50.07	37.03	45.01	36.40	26.13	25.08	16.31	7.66	5.21	3.69	2.62	2.39	2.21

(2) Simulated Maximum Discharge

(m<sup>3</sup>/s)

Case	Year	Sukhothai Y.4	Sam Ngam Y.17	Phitsanulok N.5A	Pichit N.7	Nakhon Sawan C.2	Chainat C.13	Ang Thong C.7A	Ayutthay a C.34	Bangsai	Pak Kret C.22	Sam Sen C.12	Mem. Bridge C.4	Rama VI Barrage
Case-1: V=7,400 mil m <sup>3</sup>	1995	290	1,010	1,610	1,970	4,020	3,860	2,570	1,400	3,960	4,310	4,410	4,450	1,310
Case-2: V=10,700 mil m <sup>3</sup>	1995	290	1,000	1,580	1,960	3,890	3,800	2,550	1,390	3,950	4,310	4,400	4,440	1,300
Case-3: V=14,600 mil m <sup>3</sup>	1995	280	970	1,570	1,790	3,820	3,720	2,540	1,390	3,920	4,280	4,370	4,410	1,290
Case-1: V=7,400 mil m <sup>3</sup>	1983	280	620	910	1,060	2,810	3,180	2,350	1,230	3,760	4,200	4,310	4,360	1,250
Case-2: V=10,700 mil m <sup>3</sup>	1983	280	620	910	1,050	2,800	3,170	2,350	1,230	3,750	4,200	4,300	4,360	1,240
Case-3: V=14,600 mil m <sup>3</sup>	1983	280	630	900	1,050	2,800	3,170	2,350	1,230	3,750	4,190	4,300	4,360	1,230
Case-1: V=7,400 mil m <sup>3</sup>	1996	270	610	1,590	1,690	3,250	3,210	2,390	1,240	3,770	4,040	4,140	4,180	1,150
Case-2: V=10,700 mil m <sup>3</sup>	1996	270	610	1,580	1,680	3,240	3,210	2,380	1,240	3,740	4,010	4,110	4,150	1,120
Case-3: V=14,600 mil m <sup>3</sup>	1996	270	610	1,570	1,680	3,230	3,200	2,380	1,250	3,710	3,980	4,080	4,120	1,090

(3) Simulated Inundation Area

(km<sup>2</sup>)

Case	Year	Upper Central Plain	Nakhon Sawan Area	Lower Central Plain				Total
				Higer Delta	Lower Delta		Sub-total	
					BMA Area*	Others		
Case-1: V=7,400 mil m <sup>3</sup>	1995	3,372	460	4,250	64	2,436	2,500	10,581
Case-2: V=10,700 mil m <sup>3</sup>	1995	3,348	450	4,179	62	2,399	2,461	10,437
Case-3: V=14,600 mil m <sup>3</sup>	1995	3,245	446	4,131	60	2,380	2,440	10,262
Case-1: V=7,400 mil m <sup>3</sup>	1983	2,228	330	4,343	0	3,651	3,651	10,553
Case-2: V=10,700 mil m <sup>3</sup>	1983	2,226	330	4,329	0	3,651	3,651	10,535
Case-3: V=14,600 mil m <sup>3</sup>	1983	2,223	329	4,325	0	3,651	3,651	10,528
Case-1: V=7,400 mil m <sup>3</sup>	1996	2,591	382	3,001	0	1,784	1,784	7,758
Case-2: V=10,700 mil m <sup>3</sup>	1996	2,589	381	2,977	0	1,784	1,784	7,732
Case-3: V=14,600 mil m <sup>3</sup>	1996	2,587	381	2,966	0	1,784	1,784	7,719

\* : BMA Area to be protected by ring dikes (East Bank = 650 km<sup>2</sup>, West Bank = 240 km<sup>2</sup>)

(4) Simulated Inundation Volume

(million m<sup>3</sup>)

Case	Year	Upper Central Plain	Nakhon Sawan Area	Lower Central Plain				Total
				Higer Delta	Lower Delta		Sub-total	
					BMA Area*	Others		
Case-1: V=7,400 mil m <sup>3</sup>	1995	4,625	1,210	6,525	42	1,340	1,382	13,742
Case-2: V=10,700 mil m <sup>3</sup>	1995	4,525	1,170	6,300	38	1,323	1,361	13,356
Case-3: V=14,600 mil m <sup>3</sup>	1995	4,403	1,149	6,153	34	1,313	1,347	13,052
Case-1: V=7,400 mil m <sup>3</sup>	1983	2,773	753	5,386	0	1,701	1,701	10,614
Case-2: V=10,700 mil m <sup>3</sup>	1983	2,770	752	5,372	0	1,698	1,698	10,592
Case-3: V=14,600 mil m <sup>3</sup>	1983	2,767	750	5,358	0	1,696	1,696	10,571
Case-1: V=7,400 mil m <sup>3</sup>	1996	3,380	965	4,235	0	753	753	9,332
Case-2: V=10,700 mil m <sup>3</sup>	1996	3,374	963	4,213	0	751	751	9,301
Case-3: V=14,600 mil m <sup>3</sup>	1996	3,372	962	4,188	0	749	749	9,271

\* : BMA Area to be protected by ring dikes (East Bank = 650 km<sup>2</sup>, West Bank = 240 km<sup>2</sup>)

Table 4.2.5 (2/6) SUMMARY OF SIMULATION RESULTS FOR APPLICABLE MEASURES

(II) RIVER IMPROVEMENT FROM PATHUM THIANI TO NAN AND YOM

(1) Simulated Maximum Water Level

Case	Year	(m MSL)												
		Sukhothai Y.4	Sam Ngam Y.17	Phitsanulok N.5A	Pichit N.7	Bung Boraphet	Nakhon Sawan C.2	Chainat C.13	Ang Thong C.7A	Ayuthaya C.34	Bangsai	Pak Kret C.22	Sam Sen C.12	Mem. Bridge C.4
2-year Return Period	1995	55.08	39.42	46.06	38.71	27.41	26.53	16.91	8.21	5.94	4.50	3.31	2.97	2.65
3-year Return Period	1995	55.17	39.54	46.06	38.93	27.95	27.01	17.08	8.55	6.34	4.92	3.73	3.33	2.94
5-year Return Period	1995	55.17	39.54	46.06	38.96	28.25	27.07	17.15	8.64	6.45	5.04	3.87	3.46	3.03
2-year Return Period	1983	53.86	38.29	42.63	35.80	26.56	26.07	16.21	8.07	5.77	4.32	3.15	2.81	2.54
3-year Return Period	1983	53.86	38.29	42.63	35.80	26.80	26.07	16.25	8.16	5.87	4.45	3.27	2.91	2.60
5-year Return Period	1983	53.86	38.29	42.63	35.81	26.80	26.07	16.39	8.33	6.02	4.60	3.42	3.04	2.68
2-year Return Period	1996	53.11	38.18	45.91	38.31	26.93	26.08	16.40	7.86	5.58	4.04	2.84	2.57	2.34
3-year Return Period	1996	53.11	38.18	45.91	38.41	27.34	26.45	16.69	8.16	5.89	4.40	3.12	2.80	2.51
5-year Return Period	1996	53.11	38.18	45.91	38.42	27.35	27.24	17.05	8.34	5.90	4.42	3.15	2.83	2.54

(2) Simulated Maximum Discharge

Case	Year	(m <sup>3</sup> /s)												
		Sukhothai Y.4	Sam Ngam Y.17	Phitsanulok N.5A	Pichit N.7	Nakhon Sawan C.2	Chainat C.13	Ang Thong C.7A	Ayuthaya C.34	Bangsai	Pak Kret C.22	Sam Sen C.12	Mem. Bridge C.4	Rama VI Barrage
2-year Return Period	1995	930	1,230	1,870	2,280	4,250	4,280	2,940	1,620	4,570	4,900	4,980	5,020	1,210
3-year Return Period	1995	950	1,280	1,870	2,280	4,290	4,320	3,160	1,790	5,200	5,470	5,550	5,580	1,450
5-year Return Period	1995	950	1,280	1,870	2,280	4,350	4,390	3,280	1,850	5,400	5,660	5,730	5,760	1,620
2-year Return Period	1983	740	880	1,020	1,180	3,420	3,610	2,660	1,530	4,250	4,690	4,790	4,840	1,180
3-year Return Period	1983	740	880	1,020	1,180	3,420	3,660	2,730	1,580	4,410	4,830	4,920	4,980	1,390
5-year Return Period	1983	740	880	1,020	1,180	3,420	3,930	2,840	1,660	4,620	5,030	5,110	5,170	1,460
2-year Return Period	1996	620	840	1,820	2,030	3,520	3,940	2,510	1,440	4,070	4,320	4,410	4,440	1,120
3-year Return Period	1996	620	840	1,820	2,040	3,920	4,020	2,740	1,560	4,530	4,730	4,810	4,840	1,270
5-year Return Period	1996	620	840	1,820	2,040	4,150	4,250	2,960	1,690	4,550	4,750	4,830	4,850	1,280

(3) Simulated Inundation Area

Case	Year	Upper Central Plain	Nakhon Sawan Area	Lower Central Plain				Total
				Higher Delta	Lower Delta			
					BMA Area	Others	Sub-total	
2-year Return Period	1995	2,872	443	4,259	239	2,417	2,656	10,230
3-year Return Period	1995	2,725	446	4,259	726	2,400	3,126	10,556
5-year Return Period	1995	2,516	443	4,230	981	2,389	3,370	10,559
2-year Return Period	1983	1,856	330	4,083	159	3,651	3,810	10,079
3-year Return Period	1983	1,816	321	3,623	212	3,651	3,863	9,623
5-year Return Period	1983	1,708	314	3,389	239	3,651	3,890	9,301
2-year Return Period	1996	2,220	385	2,765	18	1,780	1,798	7,169
3-year Return Period	1996	2,160	378	2,427	126	1,780	1,906	6,872
5-year Return Period	1996	2,110	370	2,203	132	1,780	1,912	6,595

\* : BMA Area to be protected by ring dikes (East Bank = 650 km<sup>2</sup>, West Bank = 240 km<sup>2</sup>)

(4) Simulated Inundation Volume

Case	Year	Upper Central Plain	Nakhon Sawan Area	Lower Central Plain				Total
				Higher Delta	Lower Delta			
					BMA Area	Others	Sub-total	
2-year Return Period	1995	4,029	1,128	6,228	598	1,239	1,837	13,222
3-year Return Period	1995	3,629	1,139	6,199	1,720	1,220	2,940	13,966
5-year Return Period	1995	3,046	1,128	6,163	2,215	1,195	3,410	13,747
2-year Return Period	1983	1,907	755	4,523	299	1,703	2,002	9,186
3-year Return Period	1983	1,849	736	3,824	496	1,703	2,198	8,607
5-year Return Period	1983	1,656	727	3,400	622	1,703	2,325	8,108
2-year Return Period	1996	2,576	985	3,425	15	757	772	7,758
3-year Return Period	1996	2,494	970	2,983	185	757	942	7,389
5-year Return Period	1996	2,372	960	2,049	192	757	949	6,330

\* : BMA Area to be protected by ring dikes (East Bank = 650 km<sup>2</sup>, West Bank = 240 km<sup>2</sup>)

Table 4.2.5 (3/6) SUMMARY OF SIMULATION RESULTS FOR APPLICABLE MEASURES

(III) RIVER IMPROVEMENT FROM PATHUM THANI TO CHAINAT

(1) Simulated Maximum Water Level

Case	Year	(m MSL)												
		Sukhothai Y.4	Sam Ngam Y.17	Phitsanulok N.5A	Pichit N.7	Bung Boraphet	Nakhon Sawan C.2	Chainat C.13	Ang Thong C.7A	Ayutthaya C.34	Bangsai	Pak Kret C.22	Sam Sen C.12	Mem. Bridge C.4
5-year Return Period	1995	50.22	38.37	45.38	37.10	27.05	25.74	16.78	8.08	5.79	4.33	3.13	2.81	2.52
10-year Return Period	1995	50.22	38.37	45.38	37.10	27.05	25.74	16.84	8.30	6.02	4.58	3.37	3.01	2.67
25-year Return Period	1995	50.22	38.37	45.38	37.10	27.05	25.74	16.87	8.44	6.12	4.69	3.48	3.11	2.75
5-year Return Period	1983	50.12	37.08	42.18	34.46	25.69	24.78	16.27	7.76	5.52	4.07	2.94	2.63	2.39
10-year Return Period	1983	50.12	37.08	42.18	34.46	25.69	24.78	16.28	7.81	5.57	4.11	2.97	2.66	2.42
25-year Return Period	1983	50.12	37.08	42.18	34.46	25.69	24.78	16.28	7.82	5.57	4.12	2.97	2.66	2.42
5-year Return Period	1996	50.07	37.01	45.30	36.55	26.22	25.15	16.37	7.79	5.54	4.01	2.84	2.57	2.34
10-year Return Period	1996	50.07	37.01	45.30	36.55	26.22	25.15	16.38	7.88	5.64	4.10	2.91	2.63	2.38
25-year Return Period	1996	50.07	37.01	45.30	36.55	26.22	25.15	16.38	7.89	5.64	4.10	2.92	2.63	2.38

(2) Simulated Maximum Discharge

Case	Year	(m <sup>3</sup> /s)													
		Sukhothai Y.4	Sam Ngam Y.17	Phitsanulok N.5A	Pichit N.7	Nakhon Sawan	Chainat C.13	Ang Thong C.7A	Ayutthaya C.34	Bangsai	Pak Kret C.22	Sam Sen C.12	Mem. Bridge C.4	Rama VI Barrage	
5-year Return Period	1995	290	1,000	1,660	2,020	4,110	3,890	2,650	1,500	4,350	4,690	4,770	4,810	1,460	
10-year Return Period	1995	290	1,000	1,660	2,020	4,110	3,890	2,770	1,630	4,690	5,000	5,080	5,110	1,600	
25-year Return Period	1995	290	1,000	1,660	2,020	4,110	3,890	2,860	1,710	4,860	5,150	5,230	5,260	1,730	
5-year Return Period	1983	280	620	940	1,100	2,840	3,160	2,410	1,310	3,980	4,430	4,530	4,590	1,460	
10-year Return Period	1983	280	620	940	1,100	2,840	3,160	2,410	1,310	3,980	4,430	4,530	4,590	1,460	
25-year Return Period	1983	280	620	940	1,100	2,840	3,160	2,410	1,310	3,980	4,430	4,530	4,590	1,470	
5-year Return Period	1996	270	600	1,660	1,740	3,320	3,550	2,450	1,280	4,050	4,290	4,390	4,430	1,270	
10-year Return Period	1996	270	600	1,660	1,740	3,320	3,550	2,490	1,330	4,150	4,390	4,480	4,520	1,280	
25-year Return Period	1996	270	600	1,660	1,740	3,320	3,550	2,490	1,330	4,160	4,400	4,490	4,530	1,280	

(3) Simulated Inundation Area

Case	Year	Upper Central Plain	Nakhon Sawan Area	Lower Central Plain				Total
				Higher Delta	Lower Delta			
					BMA Area	Others	Sub-total	
5-year Return Period	1995	3,490	492	4,122	146	2,343	2,489	10,593
10-year Return Period	1995	3,490	492	3,841	276	2,213	2,489	10,312
25-year Return Period	1995	3,490	492	3,568	466	2,292	2,758	10,308
5-year Return Period	1983	2,305	337	3,923	80	3,210	3,290	9,855
10-year Return Period	1983	2,305	337	3,533	82	3,902	3,984	10,159
25-year Return Period	1983	2,305	337	3,219	91	3,902	3,993	9,854
5-year Return Period	1996	2,687	393	2,599	5	1,767	1,767	7,446
10-year Return Period	1996	2,687	393	2,322	50	1,767	1,817	7,219
25-year Return Period	1996	2,687	393	1,820	50	1,767	1,817	6,717

\* : BMA Area to be protected by ring dikes (East Bank = 650 km<sup>2</sup>, West Bank = 240 km<sup>2</sup>)

(4) Simulated Inundation Volume

Case	Year	Upper Central Plain	Nakhon Sawan Area	Lower Central Plain				Total
				Higher Delta	Lower Delta			
					BMA Area	Others	Sub-total	
5-year Return Period	1995	4,804	1,244	6,251	250	1,253	1,503	13,802
10-year Return Period	1995	4,804	1,244	5,985	753	1,162	1,915	13,948
25-year Return Period	1995	4,804	1,244	5,845	1,191	1,206	2,397	14,290
5-year Return Period	1983	2,798	769	4,324	63	1,609	1,672	9,363
10-year Return Period	1983	2,798	769	3,633	68	1,990	2,058	9,258
25-year Return Period	1983	2,798	769	3,233	90	1,994	2,084	8,884
5-year Return Period	1996	3,480	1,002	3,688	11	753	764	8,934
10-year Return Period	1996	3,480	1,002	2,423	26	753	778	7,683
25-year Return Period	1996	3,480	1,002	1,799	26	756	782	7,063

\* : BMA Area to be protected by ring dikes (East Bank = 650 km<sup>2</sup>, West Bank = 240 km<sup>2</sup>)

Table 4.2.5 (4/6) SUMMARY OF SIMULATION RESULTS FOR APPLICABLE MEASURES

(IV) PASAK-RAPHIPAT-SEA DIVERSION

(1) Simulated Maximum Water Level

Case	Year	(m MSL)													
		Sukhothai Y.4	Sam Ngam Y.17	Phitsanulok N.5A	Pichit N.7	Bung Boraphet	Nakhon Sawan C.2	Chainat C.13	Ang Thong C.7A	Ayutthaya C.34	Bangsai	Pak Kret C.22	Sam Sen C.12	Mem. Bridge C.4	
Q = 500 m <sup>3</sup> /s	1995	50.22	38.37	45.38	37.10	27.05	25.74	16.77	7.90	5.33	3.83	2.74	2.47	2.33	
Q = 1,000 m <sup>3</sup> /s	1995	50.22	38.37	45.38	37.10	27.05	25.74	16.77	7.89	4.99	3.47	2.53	2.39	2.32	
Q = 1,500 m <sup>3</sup> /s	1995	50.22	38.37	45.38	37.10	27.05	25.74	16.77	7.88	4.88	3.31	2.53	2.39	2.32	
Q = 500 m <sup>3</sup> /s	1983	50.12	37.08	42.18	34.46	25.69	24.78	16.27	7.63	4.99	3.56	2.57	2.32	2.15	
Q = 1,000 m <sup>3</sup> /s	1983	50.12	37.08	42.18	34.46	25.69	24.78	16.27	7.60	4.55	3.12	2.33	2.17	2.09	
Q = 1,500 m <sup>3</sup> /s	1983	50.12	37.08	42.18	34.46	25.69	24.78	16.27	7.60	4.47	3.06	2.32	2.17	2.09	
Q = 500 m <sup>3</sup> /s	1996	50.07	37.01	45.30	36.55	26.22	25.15	16.36	7.66	4.95	3.42	2.47	2.27	2.13	
Q = 1,000 m <sup>3</sup> /s	1996	50.07	37.01	45.30	36.55	26.22	25.15	16.36	7.63	4.52	2.92	2.22	2.12	2.09	
Q = 1,500 m <sup>3</sup> /s	1996	50.07	37.01	45.30	36.55	26.22	25.15	16.36	7.62	4.36	2.81	2.17	2.12	2.09	

(2) Simulated Maximum Discharge

Case	Year	(m <sup>3</sup> /s)													
		Sukhothai Y.4	Sam Ngam Y.17	Phitsanulok N.5A	Pichit N.7	Nakhon Sawan C.2	Chainat C.13	Ang Thong C.7A	Ayutthaya C.34	Bangsai	Pak Kret C.22	Sam Sen C.12	Mem. Bridge C.4	Rama VI Barrage	
Q = 500 m <sup>3</sup> /s	1995	290	1,000	1,660	2,020	4,110	3,890	2,580	1,430	3,750	4,090	4,200	4,250	1,050	
Q = 1,000 m <sup>3</sup> /s	1995	290	1,000	1,660	2,020	4,110	3,890	2,580	1,430	3,450	3,760	3,760	3,920	710	
Q = 1,500 m <sup>3</sup> /s	1995	290	1,000	1,660	2,020	4,110	3,890	2,590	1,430	3,320	3,670	3,760	3,800	250	
Q = 500 m <sup>3</sup> /s	1983	280	620	940	1,100	2,840	3,150	2,360	1,270	3,370	3,830	3,940	4,000	950	
Q = 1,000 m <sup>3</sup> /s	1983	280	620	940	1,100	2,840	3,150	2,360	1,300	2,910	3,530	3,620	3,680	460	
Q = 1,500 m <sup>3</sup> /s	1983	280	620	940	1,100	2,840	3,150	2,360	1,300	2,870	3,500	3,590	3,640	30	
Q = 500 m <sup>3</sup> /s	1996	270	600	1,660	1,740	3,320	3,270	2,410	1,280	3,450	3,760	3,850	3,900	760	
Q = 1,000 m <sup>3</sup> /s	1996	270	600	1,660	1,740	3,320	3,270	2,410	1,300	3,030	3,370	3,470	3,510	280	
Q = 1,500 m <sup>3</sup> /s	1996	270	600	1,660	1,740	3,320	3,270	2,410	1,310	2,860	3,310	3,410	3,450	20	

(3) Simulated Inundation Area

Case	Year	Upper Central Plain	Nakhon Sawan Area	Lower Central Plain				Total
				Higher Delta	Lower Delta			
					BMA Area	Others	Sub-total	
Q = 500 m <sup>3</sup> /s	1995	3,490	492	4,143	2	2,303	2,305	10,430
Q = 1,000 m <sup>3</sup> /s	1995	3,490	492	4,092	0	2,289	2,289	10,363
Q = 1,500 m <sup>3</sup> /s	1995	3,490	492	4,072	0	2,279	2,279	10,333
Q = 500 m <sup>3</sup> /s	1983	2,305	337	4,158	0	3,567	3,567	10,367
Q = 1,000 m <sup>3</sup> /s	1983	2,305	337	4,106	0	3,544	3,544	10,292
Q = 1,500 m <sup>3</sup> /s	1983	2,305	337	4,094	0	3,521	3,521	10,257
Q = 500 m <sup>3</sup> /s	1996	2,687	393	2,993	0	1,684	1,684	7,758
Q = 1,000 m <sup>3</sup> /s	1996	2,687	393	2,906	0	1,683	1,683	7,669
Q = 1,500 m <sup>3</sup> /s	1996	2,687	393	2,902	0	1,683	1,683	7,665

\* : BMA Area to be protected by ring dikes (East Bank = 650 km<sup>2</sup>, West Bank = 240 km<sup>2</sup>)

(4) Simulated Inundation Volume

Case	Year	Upper Central Plain	Nakhon Sawan Area	Lower Central Plain				Total
				Higher Delta	Lower Delta			
					BMA Area	Others	Sub-total	
Q = 500 m <sup>3</sup> /s	1995	4,804	1,244	6,288	5	1,207	1,212	13,548
Q = 1,000 m <sup>3</sup> /s	1995	4,804	1,244	6,168	0	1,193	1,193	13,409
Q = 1,500 m <sup>3</sup> /s	1995	4,804	1,244	6,081	0	1,189	1,189	13,318
Q = 500 m <sup>3</sup> /s	1983	2,798	769	5,137	0	1,976	1,976	10,680
Q = 1,000 m <sup>3</sup> /s	1983	2,798	769	4,942	0	1,962	1,962	10,471
Q = 1,500 m <sup>3</sup> /s	1983	2,798	769	4,832	0	1,960	1,960	10,359
Q = 500 m <sup>3</sup> /s	1996	3,480	1,002	4,223	0	688	688	9,393
Q = 1,000 m <sup>3</sup> /s	1996	3,480	1,002	4,082	0	672	672	9,236
Q = 1,500 m <sup>3</sup> /s	1996	3,480	1,002	4,022	0	670	670	9,174

\* : BMA Area to be protected by ring dikes (East Bank = 650 km<sup>2</sup>, West Bank = 240 km<sup>2</sup>)

Table 4.2.5 (5/6) SUMMARY OF SIMULATION RESULTS FOR APPLICABLE MEASURES

(V) CHAINAT-PASAK-RAPHIPAT-SEA DIVERSION

(1) Simulated Maximum Water Level

Case	Year	(m MSL)												
		Sukhothai Y.4	Sam Ngam Y.17	Phitsanulok N.5A	Pichit N.7	Bung Boraphet	Nakhon Sawan C.2	Chainat C.13	Ang Thong C.7A	Ayutthaya C.34	Bangsai	Pak Kret C.22	Sam Sen C.12	Mem. Bridge C.4
Q = 500 m <sup>3</sup> /s	1995	50.22	38.37	45.38	37.10	27.04	25.73	16.49	7.79	5.36	3.88	2.78	2.51	2.35
Q = 1,000 m <sup>3</sup> /s	1995	50.22	38.37	45.38	37.10	27.03	25.72	16.17	7.57	5.07	3.65	2.63	2.38	2.24
Q = 1,500 m <sup>3</sup> /s	1995	50.22	38.37	45.38	37.10	27.03	25.71	15.27	7.20	4.62	3.25	2.38	2.18	2.13
Q = 500 m <sup>3</sup> /s	1983	50.12	37.08	42.18	34.46	25.68	24.77	15.53	7.34	4.94	3.57	2.56	2.32	2.18
Q = 1,000 m <sup>3</sup> /s	1983	50.12	37.08	42.18	34.46	25.67	24.76	14.55	6.93	4.57	3.25	2.37	2.20	2.09
Q = 1,500 m <sup>3</sup> /s	1983	50.12	37.08	42.18	34.46	25.66	24.75	13.44	6.42	4.14	2.91	2.19	2.07	1.99
Q = 500 m <sup>3</sup> /s	1996	50.07	37.01	45.30	36.55	26.22	25.14	15.91	7.48	5.02	3.54	2.53	2.31	2.14
Q = 1,000 m <sup>3</sup> /s	1996	50.07	37.01	45.30	36.55	26.21	25.13	15.01	7.09	4.59	3.16	2.33	2.16	2.05
Q = 1,500 m <sup>3</sup> /s	1996	50.07	37.01	45.30	36.55	26.21	25.13	13.92	6.57	4.11	2.75	2.15	2.05	1.96

(2) Simulated Maximum Discharge

Case	Year	(m <sup>3</sup> /s)													
		Sukhothai Y.4	Sam Ngam Y.17	Phitsanulok N.5A	Pichit N.7	Nakhon Sawan C.2	Chainat C.13	Ang Thong C.7A	Ayutthaya C.34	Bangsai	Pak Kret C.22	Sam Sen C.12	Mem. Bridge C.4	Rama VI Barrage	
Q = 500 m <sup>3</sup> /s	1995	290	1,000	1,660	2,020	4,110	3,660	2,480	1,370	3,790	4,160	4,260	4,300	1,220	
Q = 1,000 m <sup>3</sup> /s	1995	290	1,000	1,660	2,020	4,110	3,080	2,320	1,250	3,540	3,920	4,020	4,060	1,110	
Q = 1,500 m <sup>3</sup> /s	1995	290	1,000	1,660	2,020	4,120	2,500	1,990	1,130	3,170	3,600	3,690	3,740	1,000	
Q = 500 m <sup>3</sup> /s	1983	280	620	940	1,100	2,830	2,640	2,080	1,140	3,370	3,850	3,960	4,020	1,130	
Q = 1,000 m <sup>3</sup> /s	1983	280	620	940	1,100	2,820	2,160	1,750	1,010	3,090	3,610	3,720	3,780	1,050	
Q = 1,500 m <sup>3</sup> /s	1983	280	620	940	1,100	2,820	1,700	1,410	880	2,730	3,370	3,470	3,540	950	
Q = 500 m <sup>3</sup> /s	1996	270	600	1,660	1,740	3,320	2,860	2,220	1,170	3,570	3,920	4,020	4,050	1,080	
Q = 1,000 m <sup>3</sup> /s	1996	270	600	1,660	1,740	3,320	2,380	1,900	1,060	3,220	3,620	3,710	3,750	1,000	
Q = 1,500 m <sup>3</sup> /s	1996	270	600	1,660	1,740	3,320	1,890	1,540	930	2,860	3,300	3,400	3,440	900	

(3) Simulated Inundation Area

Case	Year	Upper Central Plain	Nakhon Sawan Area	Lower Central Plain				Total
				Higher Delta	Lower Delta		Sub-total	
					BMA Area	Others		
Q = 500 m <sup>3</sup> /s	1995	3,490	442	4,034	4	2,314	2,318	10,284
Q = 1,000 m <sup>3</sup> /s	1995	3,490	402	3,645	0	2,256	2,256	9,793
Q = 1,500 m <sup>3</sup> /s	1995	3,490	469	3,322	0	2,198	2,198	9,479
Q = 500 m <sup>3</sup> /s	1983	2,305	317	4,116	0	3,904	3,904	10,642
Q = 1,000 m <sup>3</sup> /s	1983	2,305	312	3,949	0	3,902	3,902	10,468
Q = 1,500 m <sup>3</sup> /s	1983	2,305	305	3,849	0	3,902	3,902	10,361
Q = 500 m <sup>3</sup> /s	1996	2,687	373	2,768	0	1,682	1,682	7,510
Q = 1,000 m <sup>3</sup> /s	1996	2,687	370	2,615	0	1,669	1,669	7,341
Q = 1,500 m <sup>3</sup> /s	1996	2,687	365	2,418	0	1,667	1,667	7,138

\* : BMA Area to be protected by ring dikes (East Bank = 650 km<sup>2</sup>, West Bank = 240 km<sup>2</sup>)

(4) Simulated Inundation Volume

Case	Year	Upper Central Plain	Nakhon Sawan Area	Lower Central Plain				Total
				Higher Delta	Lower Delta		Sub-total	
					BMA Area	Others		
Q = 500 m <sup>3</sup> /s	1995	4,804	1,244	5,631	10	1,203	1,213	12,892
Q = 1,000 m <sup>3</sup> /s	1995	4,804	1,244	4,652	0	1,173	1,173	11,873
Q = 1,500 m <sup>3</sup> /s	1995	4,804	1,244	3,776	0	1,056	1,056	10,850
Q = 500 m <sup>3</sup> /s	1983	2,798	721	4,684	0	1,974	1,974	10,177
Q = 1,000 m <sup>3</sup> /s	1983	2,798	698	3,999	0	1,962	1,962	9,456
Q = 1,500 m <sup>3</sup> /s	1983	2,798	677	3,428	0	1,948	1,948	8,850
Q = 500 m <sup>3</sup> /s	1996	3,480	956	3,770	0	690	690	8,896
Q = 1,000 m <sup>3</sup> /s	1996	3,480	934	3,222	0	672	672	8,308
Q = 1,500 m <sup>3</sup> /s	1996	3,480	919	2,587	0	659	659	7,645

\* : BMA Area to be protected by ring dikes (East Bank = 650 km<sup>2</sup>, West Bank = 240 km<sup>2</sup>)



Table 4.2.5 (6/6) SUMMARY OF SIMULATION RESULTS FOR APPLICABLE MEASURES

(VI) AYUTTHAYA-EAST-SEA DIVERSION

(1) Simulated Maximum Water Level

Case	Year	(m AMSL)												
		Sukhothai Y.4	Sam Ngam Y.17	Phitsanulok N.5A	Pichit N.7	Bung Boraphet	Nakhon Sawan C.2	Chainat C.13	Ang Thong C.7A	Ayutthaya C.34	Bangsai	Pak Kret C.22	Sam Sen C.12	Mem. Bridge C.4
Q = 500 m <sup>3</sup> /s	1995	50.22	38.37	45.38	37.10	27.05	25.74	16.77	7.90	5.36	3.65	2.62	2.38	2.31
Q = 1,000 m <sup>3</sup> /s	1995	50.22	38.37	45.38	37.10	27.05	25.74	16.77	7.89	5.16	3.19	2.35	2.22	2.19
Q = 1,500 m <sup>3</sup> /s	1995	50.22	38.37	45.38	37.10	27.05	25.74	16.77	7.88	4.96	2.68	2.12	2.10	2.10
Q = 500 m <sup>3</sup> /s	1983	50.12	37.08	42.18	34.46	25.69	24.78	16.27	7.64	5.14	3.50	2.53	2.28	2.14
Q = 1,000 m <sup>3</sup> /s	1983	50.12	37.08	42.18	34.46	25.69	24.78	16.27	7.63	4.93	3.07	2.27	2.11	2.02
Q = 1,500 m <sup>3</sup> /s	1983	50.12	37.08	42.18	34.46	25.69	24.78	16.27	7.61	4.74	2.59	2.02	1.95	1.89
Q = 500 m <sup>3</sup> /s	1996	50.07	37.01	45.30	36.55	26.22	25.15	16.36	7.67	5.11	3.36	2.45	2.25	2.12
Q = 1,000 m <sup>3</sup> /s	1996	50.07	37.01	45.30	36.55	26.22	25.15	16.36	7.66	4.89	2.88	2.21	2.09	2.00
Q = 1,500 m <sup>3</sup> /s	1996	50.07	37.01	45.30	36.55	26.22	25.15	16.36	7.64	4.70	2.38	2.01	1.96	1.89

(2) Simulated Maximum Discharge

Case	Year	(m <sup>3</sup> /s)												
		Sukhothai Y.4	Sam Ngam Y.17	Phitsanulok N.5A	Pichit N.7	Nakhon Sawan C.2	Chainat C.13	Ang Thong C.7A	Ayutthaya C.34	Bangsai	Pak Kret C.22	Sam Sen C.12	Mem. Bridge C.4	Rama VI Barrage
Q = 500 m <sup>3</sup> /s	1995	290	1,000	1,660	2,020	4,110	3,890	2,580	1,420	3,550	3,940	4,040	4,080	1,340
Q = 1,000 m <sup>3</sup> /s	1995	290	1,000	1,660	2,020	4,110	3,890	2,580	1,440	3,130	3,580	3,670	3,720	1,340
Q = 1,500 m <sup>3</sup> /s	1995	290	1,000	1,660	2,020	4,110	3,890	2,590	1,450	2,670	3,190	3,290	3,340	1,340
Q = 500 m <sup>3</sup> /s	1983	280	620	940	1,100	2,840	3,150	2,360	1,260	3,320	3,790	3,900	3,960	1,290
Q = 1,000 m <sup>3</sup> /s	1983	280	620	940	1,100	2,840	3,150	2,360	1,280	2,880	3,460	3,560	3,620	1,290
Q = 1,500 m <sup>3</sup> /s	1983	280	620	940	1,100	2,840	3,150	2,370	1,290	2,410	3,090	3,200	3,260	1,290
Q = 500 m <sup>3</sup> /s	1996	270	600	1,660	1,740	3,320	3,270	2,410	1,270	3,380	3,720	3,820	3,850	1,220
Q = 1,000 m <sup>3</sup> /s	1996	270	600	1,660	1,740	3,320	3,270	2,410	1,280	2,950	3,360	3,450	3,490	1,220
Q = 1,500 m <sup>3</sup> /s	1996	270	600	1,660	1,740	3,320	3,270	2,410	1,290	2,480	2,980	3,080	3,120	1,220

(3) Simulated Inundation Area

Case	Year	Upper Central Plain	Nakhon Sawan Area	Lower Central Plain (km <sup>2</sup> )				Total
				Higher Delta	Lower Delta			
					BMA Area	Others	Sub-total	
Q = 500 m <sup>3</sup> /s	1995	3,490	492	4,238	2	2,324	2,326	10,546
Q = 1,000 m <sup>3</sup> /s	1995	3,490	492	4,197	0	2,213	2,213	10,392
Q = 1,500 m <sup>3</sup> /s	1995	3,490	492	4,181	0	2,028	2,028	10,191
Q = 500 m <sup>3</sup> /s	1983	2,305	337	4,327	0	3,583	3,583	10,532
Q = 1,000 m <sup>3</sup> /s	1983	2,305	337	4,244	0	3,411	3,411	10,297
Q = 1,500 m <sup>3</sup> /s	1983	2,305	337	4,203	0	3,301	3,301	10,146
Q = 500 m <sup>3</sup> /s	1996	2,687	393	3,046	0	1,732	1,732	7,858
Q = 1,000 m <sup>3</sup> /s	1996	2,687	393	3,013	0	1,421	1,421	7,514
Q = 1,500 m <sup>3</sup> /s	1996	2,687	393	3,000	0	1,318	1,318	7,398

\* : BMA Area to be protected by ring dikes (East Bank = 650 km<sup>2</sup>, West Bank = 240 km<sup>2</sup>)

(4) Simulated Inundation Volume

Case	Year	Upper Central Plain	Nakhon Sawan Area	Lower Central Plain (million m <sup>3</sup> )				Total
				Higher Delta	Lower Delta			
					BMA Area	Others	Sub-total	
Q = 500 m <sup>3</sup> /s	1995	4,804	1,244	6,396	4	1,203	1,207	13,651
Q = 1,000 m <sup>3</sup> /s	1995	4,804	1,244	6,272	0	1,123	1,123	13,443
Q = 1,500 m <sup>3</sup> /s	1995	4,804	1,244	6,167	0	1,058	1,058	13,273
Q = 500 m <sup>3</sup> /s	1983	2,798	769	5,314	0	1,620	1,620	10,501
Q = 1,000 m <sup>3</sup> /s	1983	2,798	769	5,175	0	1,541	1,541	10,283
Q = 1,500 m <sup>3</sup> /s	1983	2,798	769	5,118	0	1,478	1,478	10,163
Q = 500 m <sup>3</sup> /s	1996	3,480	1,002	4,318	0	722	722	9,522
Q = 1,000 m <sup>3</sup> /s	1996	3,480	1,002	4,274	0	699	699	9,455
Q = 1,500 m <sup>3</sup> /s	1996	3,480	1,002	4,235	0	652	652	9,369

\* : BMA Area to be protected by ring dikes (East Bank = 650 km<sup>2</sup>, West Bank = 240 km<sup>2</sup>)