

T A B L E S

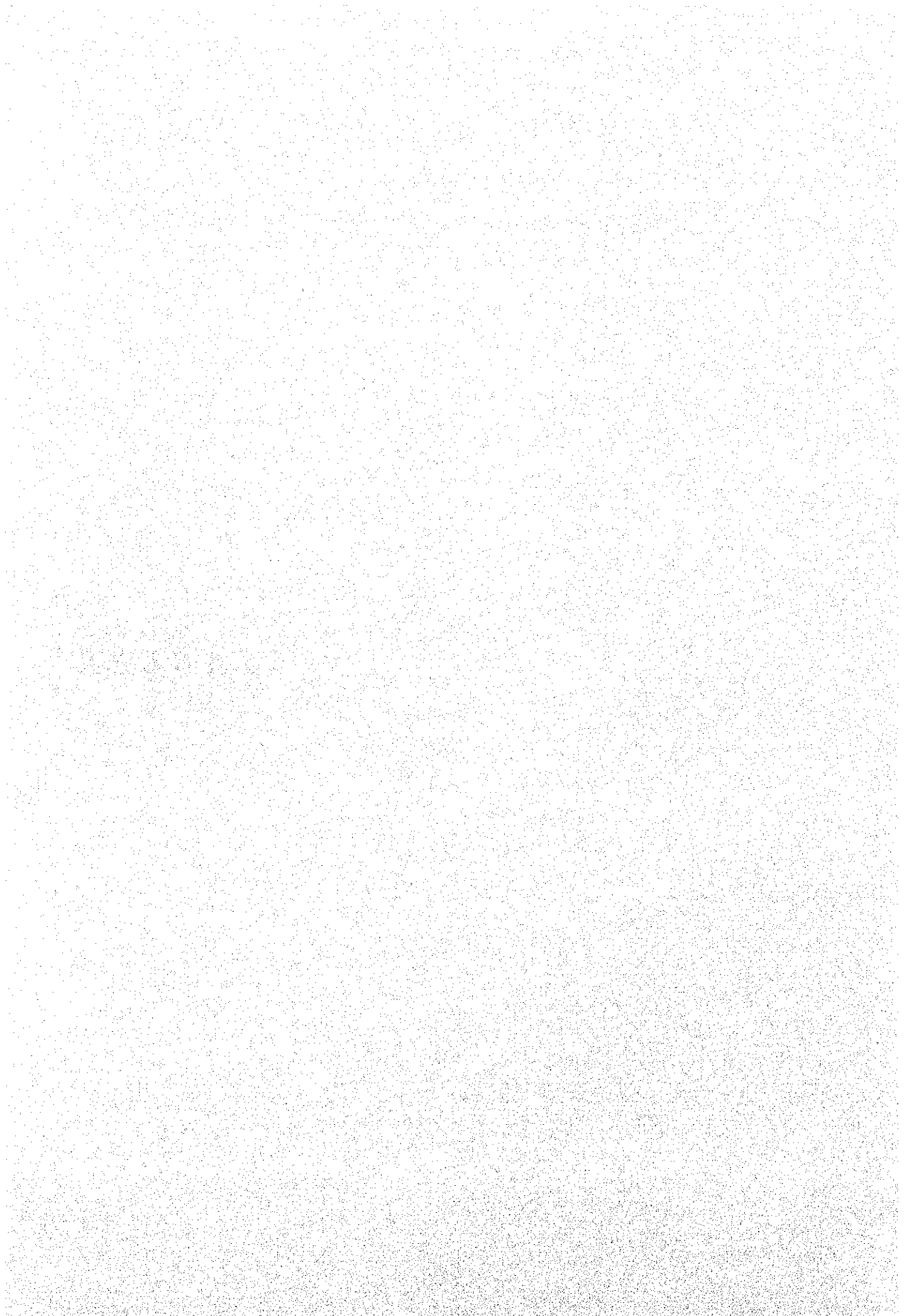


表 2.1 対象都市における最大流量及び月平均流量

No.	City	Station	Mean monthly rainfall distribution												Annual Max. Daily	
			Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Rainfall	Rainfall
1	Laoag	Laoag	4.4	2.2	2.0	19.6	137.9	355.4	392.3	516.3	357.0	115.2	37.9	9.3	1,949.5	510.3
2	Iligan	Tuguegarao	26.5	14.2	26.3	47.2	132.6	177.4	218.4	281.1	194.2	286.3	321.7	98.0	1,823.9	746.0
3	Olongapo	Iba	2.3	4.0	13.0	26.2	330.9	636.1	848.8	1,089.8	556.6	258.4	92.7	33.9	3,892.7	471.8
4	Batangas	Ambulong	20.5	7.3	20.9	40.2	152.4	299.3	339.8	344.9	314.5	263.5	221.0	93.3	2,117.6	765.8
5	Lucena	Tayabas	155.1	72.3	72.3	103.2	227.5	257.9	260.6	172.6	316.1	512.7	519.9	413.7	3,083.9	557.7
6	P.Princesa	P.Princesa	29.1	15.4	28.6	42.8	153.4	203.7	191.6	189.9	221.5	215.2	221.5	132.2	1,644.9	269.3
7	Legaspi	Legaspi	293.2	188.6	157.9	153.4	167.9	255.0	266.0	280.9	271.2	340.5	479.9	475.0	3,329.5	484.6
8	Iloilo	Iloilo	39.9	19.1	27.1	47.7	117.9	255.2	313.2	363.7	266.8	264.1	174.8	64.2	1,953.7	303.0
9	Cebu	Mactan	78.1	62.3	41.5	29.1	54.8	149.9	157.0	136.5	167.3	148.3	131.4	103.8	1,260.0	374.0
10	Tacloban	Tacloban	281.7	204.1	139.6	118.9	142.4	160.8	167.0	135.5	161.5	197.2	279.0	305.3	2,293.0	204.0
11	Ormoc	Merida	143.0	81.9	84.0	75.9	133.7	155.9	253.2	235.2	241.5	303.0	233.3	173.2	2,113.8	259.1
12	Zamboanga	Zamboanga	43.9	44.2	37.7	51.0	94.8	142.3	135.1	128.5	145.1	192.4	108.7	88.1	1,211.8	193.2
13	Davao	Davao City	104.5	97.1	86.7	146.7	183.7	189.6	148.3	174.7	170.5	170.1	129.1	86.3	1,687.3	174.3

Source: PAGASA

表 2.2(1/2) 対象13都市における都市/郊外部の人口及び人口密度：1990年度

City	Urban/Rural Area	Land Area (ha)	1990 Census Population			Density (p./ha)	Number of Households (Families)
			Urban (persons)	Rural (persons)	Total (persons)		
1.	Laoag City	10,750	38,875	44,881	83,756	7.8	16,866
	1 Poblacion (City Proper)	520	37,624	-	37,624	72.4	7,610
	2 Other Urban Area	148	1,251	-	1,251	8.5	246
	3 Rural Area	10,083	-	44,881	44,881	4.5	9,010
2.	Iligan	139,360	22,261	76,859	99,120	0.7	18,891
	1 Poblacion (City Proper)	518	12,419	-	12,419	24.0	2,269
	2 Other Urban Area	1,512	9,842	-	9,842	6.5	1,822
	3 Rural Area	137,330	-	76,859	76,859	0.6	14,800
3.	Olongapo City	10,330	193,327	-	193,327	18.7	42,623
	1 Poblacion (City Proper)	10,330	193,327	-	193,327	18.7	42,623
	2 Other Urban Area	0	-	-	-	-	-
	3 Rural Area	0	-	-	-	-	-
4.	Batangas City	28,300	90,748	94,222	184,970	6.5	35,048
	1 Poblacion (City Proper)	195	19,401	-	19,401	99.5	3,836
	2 Other Urban Area	2,871	71,347	-	71,347	24.9	13,423
	3 Rural Area	25,234	-	94,222	94,222	3.7	17,789
5.	Lucena City	6,850	150,624	-	150,624	22.0	29,240
	1 Poblacion (City Proper)	6,850	150,624	-	150,624	22.0	29,240
	2 Other Urban Area	-	-	-	-	-	-
	3 Rural Area	-	-	-	-	-	-
6.	Puerto Princesa City	210,670	47,917	44,230	92,147	0.4	17,616
	1 Poblacion (City Proper)	1,470	32,040	-	32,040	21.8	5,903
	2 Other Urban Area	1,098	15,877	-	15,877	14.5	3,132
	3 Rural Area	208,102	-	44,230	44,230	0.2	8,581
7.	Legaspi City	15,370	83,226	37,890	121,116	7.9	22,222
	1 Poblacion (City Proper)	3,627	83,226	-	83,226	22.9	15,340
	2 Other Urban Area	-	-	-	-	-	-
	3 Rural Area	11,743	-	37,890	37,890	3.2	6,882
8.	Iloilo City	5,600	309,505	-	309,505	55.3	56,617
	1 Poblacion (City Proper)	5,600	309,505	-	309,505	55.3	56,617
	2 Other Urban Area	-	-	-	-	-	-
	3 Rural Area	-	-	-	-	-	-
9.	Cebu City	28,090	610,417	-	610,417	21.7	114,708
	1 Poblacion (City Proper)	28,090	610,417	-	610,417	21.7	114,708
	2 Other Urban Area	-	-	-	-	-	-
	3 Rural Area	-	-	-	-	-	-

表 2.2(2/2) 対象13都市における都市/郊外部の人口及び人口密度：1990年度

City	Land Area Urban/Rural Area (ha)	1990 Census Population			Density (p./ha)	Number of Households (Families)
		Urban (persons)	Rural (persons)	Total (persons)		
10. Tacloban City	10,090	136,891	-	136,891	13.6	24,897
1 Poblacion (City Proper)	10,090	136,891	-	136,891	13.6	24,897
2 Other Urban Area	-	-	-	-	-	-
3 Rural Area	-	-	-	-	-	-
11. Ormoc City	46,430	58,393	71,063	129,456	2.8	24,895
1 Poblacion (City Proper)	67	14,833	-	14,833	221.4	2,850
2 Other Urban Area	6,842	43,560	-	43,560	6.4	8,235
3 Rural Area	39,521	-	71,063	71,063	1.8	13,810
12. Zamboanga City	141,470	354,814	87,531	442,345	3.1	81,321
1 Poblacion (City Proper)	36,414	354,814	-	354,814	9.7	64,834
2 Other Urban Area	-	-	-	-	-	-
3 Rural Area	105,056	-	87,531	87,531	0.8	16,487
13. Davao City	221,130	624,757	225,190	849,947	3.8	159,976
1 Poblacion (City Proper)	3,690	254,536	-	254,536	69.0	48,358
2 Other Urban Area	12,941	370,221	-	370,221	28.6	69,536
3 Rural Area	204,499	-	225,190	225,190	1.1	42,082

Source : 1) 1990 Census of Population and Housing, Report 2-39A, Ilocos Norte, NSO
 2) 1990 Census of Population and Housing, Report 2-43B, Isabela, NSO
 3) 1990 Census of Population and Housing, Report 2-99C, Zambales, NSO
 4) 1990 Census of Population and Housing, Report 2-71C, Olongapo City, NSO
 5) 1990 Census of Population and Housing, Report 2-13D, Batangas, NSO
 6) 1990 Census of Population and Housing, Report 2-73D, Palawan, NSO
 7) 1990 Census of Population and Housing, Report 2-80D, Quezon, NSO
 8) 1990 Census of Population and Housing, Report 2-5E, Albay, NSO
 9) 1990 Census of Population and Housing, Report 2-41F, Iloilo, NSO
 10) 1990 Census of Population and Housing, Report 2-42F, Iloilo City, NSO
 11) 1990 Census of Population and Housing, Report 2-28G, Cebu, NSO
 12) 1990 Census of Population and Housing, Report 2-29G, Cebu City, NSO
 13) 1990 Census of Population and Housing, Report 2-51H, Leyte, NSO
 14) 1990 Census of Population and Housing, Report 2-102I, Zamboanga del Sur, NSO
 15) 1990 Census of Population and Housing, Report 2-100I, Zamboanga City, NSO
 16) 1990 Census of Population and Housing, Report 2-32K, Davao del Sur, NSO
 17) 1990 Census of Population and Housing, Report 2-33K, Davao City, NSO
 18) 1990 Census Maps, NSO

表 2.3(1/2) リージョン別地域別総生産：1985年～1990年

No.	Region	Gross Regional Domestic Product (in Billion Pesos)					GRDP per Capita(Pesos)		
		1985	1986	1987	1988	1989	1990	1985	1990*1
	Philippines	571.9	608.9	685.1	802.5	922.6	1,066.2	10,461	17,565
NCR.	Metro Manila	169.2	185.4	213.9	256.1	302.6	345.9	24,372	43,524
I.	Ilocos	25.3	29.5	31.7	34.7	39.3	43.8	6,478	10,094
II.	Cagayan Valley	14.8	15.0	16.9	19.2	22.2	25.5	5,864	9,437
III.	Central Luzon	53.2	54.6	59.8	70.1	77.2	94.2	9,743	15,192
IV.	Southern Tagalog	79.6	83.8	93.4	109.9	125.3	147.6	11,222	17,863
V.	Bicol	18.3	18.7	19.8	22.8	26.7	30.9	4,663	7,896
VI.	Western Visayas	42.6	44.5	49.2	57.6	65.0	75.4	8,375	13,978
VII.	Central Visayas	35.7	38.3	43.4	51.8	60.5	70.3	8,500	15,309
VIII.	Eastern Visayas	16.2	16.3	18.2	21.7	25.3	28.5	5,280	9,323
IX.	Western Mindanao	18.7	19.7	21.1	23.9	27.2	31.6	6,539	10,013
XI.	Southern Midanao	44.1	45.9	54.4	62.5	68.6	78.3	11,497	17,550
		Percentage Distribution by Region (%)						Ratio of Region to Country of GRDP/capit	
	Philippines	100.0	100.0	100.0	100.0	100.0	100.0	1.00	1.00
NCR.	Metro Manila	29.6	30.4	31.2	31.9	32.8	32.4	2.33	2.48
I.	Ilocos	4.4	4.9	4.6	4.3	4.3	4.1	0.62	0.57
II.	Cagayan Valley	2.6	2.5	2.5	2.4	2.4	2.4	0.56	0.54
III.	Central Luzon	9.3	9.0	8.7	8.7	8.4	8.8	0.93	0.86
IV.	Southern Tagalog	13.9	13.8	13.6	13.7	13.6	13.8	1.07	1.02
V.	Bicol	3.2	3.1	2.9	2.8	2.9	2.9	0.45	0.45
VI.	Western Visayas	7.5	7.3	7.2	7.2	7.0	7.1	0.80	0.80
VII.	Central Visayas	6.2	6.3	6.3	6.5	6.6	6.6	0.81	0.87
VIII.	Eastern Visayas	2.8	2.7	2.7	2.7	2.7	2.7	0.50	0.53
IX.	Western Mindanao	3.3	3.2	3.1	3.0	2.9	3.0	0.63	0.57
XI.	Southern Midanao	7.7	7.5	7.9	7.8	7.4	7.3	1.10	1.00

Source: 1992 Philippine Statistical Yearbook, October 1992, NSCB

Revised estimates as of October 1991

Note: *1 Applied the 1990 census population

表 2.3(2/2) リージョン別地域別総生産：1985年～1990年

No. Region	Gross Regional Domestic Product (in Billion Pesos)						GRDP per Capita(Pesos)	
	1985	1986	1987	1988	1989	1990	1985	1990*1
Philippines	571.9	591.4	619.7	658.5	697.8	712.7	10,461	11,740
NCR, Metro Manila	169.2	175.2	187.2	204.3	222.9	225.4	24,372	28,364
I. Ilocos	25.3	27.2	27.1	28.1	30.0	30.2	6,478	6,956
II. Cagayan Valley	14.8	15.1	15.5	16.1	16.5	16.7	5,864	6,175
III. Central Luzon	53.2	54.2	57.2	61.5	63.9	68.4	9,743	11,033
IV. Southern Tagalog	79.6	82.9	87.9	92.6	99.2	101.3	11,222	12,265
V. Bicol	18.3	18.4	18.1	19.1	20.3	20.5	4,663	5,247
VI. Western Visayas	42.6	43.8	45.3	47.1	49.2	50.1	8,375	9,284
VII. Central Visayas	35.7	37.5	39.7	43.0	44.9	46.6	8,500	10,149
VIII. Eastern Visayas	16.2	16.0	16.2	17.3	17.8	18.1	5,280	5,910
IX. Western Mindanao	18.7	19.4	19.4	19.8	20.5	21.2	6,539	6,711
XI. Southern Mindanao	44.1	45.7	48.7	49.6	50.8	50.8	11,497	11,401
	Annual Growth Rate (%)						Average Growth Rate of GRDP per Capita: 1990/1985 (%/annum)	
Philippines	-7.3	3.4	4.8	6.3	6.0	2.1	2.3	
NCR, Metro Manila	-9.1	3.5	6.9	9.1	9.1	1.2	3.1	
I. Ilocos	0.3	7.7	-0.4	3.8	6.5	0.7	1.4	
II. Cagayan Valley	-10.4	2.1	2.8	3.9	2.6	0.8	1.0	
III. Central Luzon	-5.7	2.0	5.6	7.4	3.8	7.1	2.5	
IV. Southern Tagalog	-8.4	4.2	6.0	5.3	7.1	2.2	1.8	
V. Bicol	-5.1	0.4	-1.6	6.0	6.0	1.1	2.4	
VI. Western Visayas	-8.2	2.8	3.3	4.0	4.3	1.9	2.1	
VII. Central Visayas	-10.3	5.2	5.9	8.3	4.3	3.9	3.6	
VIII. Eastern Visayas	-7.4	-1.1	1.1	6.6	2.9	1.5	2.3	
IX. Western Mindanao	-7.1	3.4	0.0	2.1	3.9	3.2	0.5	
XI. Southern Mindanao	-4.5	3.6	6.6	1.9	2.4	0.1	-0.2	

Source: 1992 Philippine Statistical Yearbook, October 1992, NSCB

Revised estimates as of October 1991

Note: *1 Applied the 1990 census population

表 2.4 洪水狀況一覽

(1982 - 1992)

URBAN CENTER	MAJOR CAUSES OF FLOOD	MAXIMUM DAILY RAINFALL		FLOOD CONDITIONS			REMARKS
		DATE	DEPTH (mm.)	AREA (ha.)	DEPTH (cm.)	DURATION (hr.)	
1. Laoag	- overbank flow of river - inadequate drainage system	09/09/89	437	210	200	12	
2. Iligan	- overbank flow of river	01/08/86	345	46	60-250	5-48	
3. Olongapo	- overbank flow of river due to volcanic ash siltation - inadequate drainage system	20/06/85	422	26	30-125	2-8	
4. Batangas	- overbank flow of river - inadequate drainage system	24/08/90	284	118	100-120	12	
5. Lucena	- overbank flow of river - inadequate drainage system	14/07/83	254	11	30-120	03-24	
6. Puerto Princesa	- inadequate drainage system	30/09/83	226	19	15-30	1-3	
7. Legaspi	- overbank flow of river due to volcanic ash siltation - inadequate drainage system	14/02/89	254	316	30-100	8-24	
8. Iloilo	- overbank flow of river - inadequate drainage system	05/11/84	256	1,004	30-200	1-24	
9. Cebu	- overbank flow of river - inadequate drainage system	19/12/91	374	187	30-50	1-3	
10. Tacloban	- overbank flow of river - inadequate drainage system	12/03/91	204	79	10-100	6-48	
11. Ormoc	- overbank flow of river - inadequate drainage system	Not Avail.		200	50-300	0.5-1	
12. Zamboanga	- overbank flow of river - inadequate drainage system	29/09/90	193	112	10-210	0.3-24	
13. Davao	- overbank flow of river - inadequate drainage system	08/10/85	150	57	20-150	1-24	

Note:

(1) Source: DPWH District Office/City Engineer's Office (by interview)

(2) Flood Conditions indicated only within the city proper

表 2.5 洪水被害一覽

(1982 - 1992)

Chartered City	Casualty			Population Affected			Homeless		Houses Destroyed		Infra-Structure (Mill. Pesos)	Crops		Private Properties (Mill. Pesos)
	Dead	Injured	Missing	Families	Persons	Families	Persons	Totally	Partially	Livestocks Fisheries (Mill. Pesos)		Livestocks Fisheries (Mill. Pesos)		
1 Laoag City	4	5	-	22,080	98,497	230	1,380	230	4,009	83,282	13,166	7,407		
2 Dagupan, Isabela	12	6	-	10,468	55,508	188	1,128	188	564	11,384	-	-		
3 Olongapo City	18	1	3	3,549	19,126	1,387	8,322	1,387	562	42,830	3,700	2,200		
4 Batangas City	2	-	-	2,429	11,432	1	6	1	-	12,280	-	-		
5 Luccena City	4	4	6	2,877	13,938	1,117	6,702	1,117	1,508	-	-	-		
6 P. Princessa City	37	51	5	44,647	251,442	15,623	93,738	15,623	13,461	15,081	17,106	1,861		
7 Legaspi City	2	10	-	22,011	130,321	4,022	24,132	4,022	17,857	151,198	129,175	16,218		
8 Iloilo City	49	66	7	123,026	638,209	30,091	180,546	30,091	81,078	104,224	0,728	172,881		
9 Cebu City	23	35	-	32,318	188,557	7,951	47,706	7,951	32,318	29,589	309,500	64,300		
10 Tacloban City	4,561	84	1,205	39,691	238,309	3,193	19,158	3,193	12,470	411,959	40,100	108,010		
11 Ormoc City	3	50	-	1,488	8,083	160	960	160	377	57,710	7,656	27,300		
12 Zamboanga City	10	4	-	5,257	13,875	139	834	139	1,551	6,524	-	5,244		

Source: Office of Civil Defence (OCD), DND

表 2.6 既設治水施設

Name of City	Name of River	Flood Control Facilities						
		Dike Type	Length (m)	Revetment/Wall Type	Length (m)	Dredging Length (m)	Super Dike (units)	Others
Laosg	Laosg	--	--	Rb. Conc.	2,754	381	4	closing dike 1,370m cut-off 3,340m
Iigan	Iigan	--	--	Rb. Conc.	100	--	1	
Olongapo	Sta. Rita	--	--	Rb. Conc.	1,284	--	--	
Batangas	Kalumpang	--	--	Rb. Conc.	765	--	--	
Lucena	Tayabas-Iyam	--	--	Rb. Conc.	145	--	--	
	Tayabas-Dunaga	--	--	Rb. Conc.	868	--	--	
	Puerto Princessa	--	--	--	--	--	--	
Legaspi	Yawa	--	--	Rb. Conc.	2,925	--	--	
	Macabalo	--	--	Rb. Conc.	N/A	--	--	
Iloilo	Iaro	--	--	Rb. Conc.	2,585	--	--	
Cebu	Subangdaku	--	--	Rb. Conc.	N/A	1,900	--	
	Lahug	Earth	935	Rb. Conc.	N/A	3,250	--	
	Guadalupe	Boulder	50	Rb. Conc.	N/A	1,500	--	
	Kiritanisan	--	--	Rb. Conc.	N/A	--	--	
	Blacao	--	--	Rb. Conc.	N/A	--	--	
Tacloban	Mangonbrangon	--	--	Rb. Conc.	2,170	1,482	--	
	Abucay	--	--	Rb. Conc.	N/A	--	--	
Ormoc	Anilao	Earth	350	Rb. Conc.	1,073	500	--	
	Malbasag	--	--	Gabion	350	--	--	
Zamboanga	Tunaga	--	--	Rb. Conc.	767	--	--	
	Davao	--	--	Rb. Conc.	460	--	--	
Davao	Davao	--	--	Rb. Conc.	2,316	--	--	

表 2.7 既設排水施設

Name of City	Drainage Facilities (Pipe/channel)									
	City Proper Area (ha)	Drainage Area (ha)	Covering Ratio (%)	Channel (m)	Main (m)	Secondary (m)	Tertiary (m)	Total (m)	Others	
Laogag	520	165	31.7	2,030	2,778	10,340	7,590	22,738		
Ilagan	518	51	9.8		920	100	13,090	14,110		
Olongapo	10,330	30	0.3	3,352	674	3,196		7,222		
Batangas	195	64	32.8		2,270	3,169		5,439		
Lucena	6,850	37	0.5		5,560	1,600		7,160		
Puerto Princesa	1,470	165	11.2		1,930	1,950		3,880		
Legaspi	3,627	73	2.0		4,080	2,925		7,005		
Iloilo	5,600	454	8.1		3,800	24,150		27,950		
Cebu	28,090	319	1.1	2,200	11,200	3,260	39,190	55,850	Diversion L=900m	
Tacloban	10,090	164	1.6	2,600	5,400	3,900	1,700	13,600		
Ormoc	67	44	65.7	580	1,100	1,810		3,490		
Zamboanga	36,414	119	0.3	7,250	1,700	9,540		18,490		
Davao	3,690	876	23.7	15,019	2,790	1,080		18,889		

Covering Ratio = Drainage Service area / City Proper Area x 100 (%)

表 2.8 インベントリ調査総合評価表

Priority Factor	(1) Laoag	(2) Dagupan	(3) Olongapo	(4) Batangas	(5) Lucena	(6) Puerto Princesa	(7) Legaspi	(8) Iloilo	(9) Cebu	(10) Tacloban	(11) Ormoc	(12) Zamboanga	(13) Davao
1. NECESSITY	3	2	2	2	2	1	3	3	2	2	3	2	2
(1) Flood Area	3	1	1	2	1	1	3	3	2	1	3	2	1
(2) Flood Depth	3	3	2	3	2	1	2	3	1	2	3	3	2
(3) Flood Duration	2	3	2	2	3	2	3	3	2	3	1	3	3
(4) Population Affection	2	1	2	1	1	1	3	3	3	3	3	1	1
2. URGENCY	3	3	3	2	3	2	3	2	3	3	3	3	3
(1) River Capacity	3	3	3	3	3	1	3	2	2	3	3	3	3
(2) Drainage Development	3	3	3	2	3	3	3	3	3	3	1	3	3
(3) Casualties	1	1	1	1	1	1	2	1	2	2	3	2	1
3. BENEFIT	1	1	1	1	1	1	1	2	2	3	3	1	1
(1) Total Amount	2	1	1	1	1	1	1	3	3	3	3	2	1
(2) Amount per Capita	1	1	1	1	1	1	1	1	1	1	3	1	1
4. REGIONAL EQUALITY	3	2	3	3	3	2	3	3	3	3	3	3	3
(1) River Project	3	3	3	3	3	1	3	3	3	3	3	3	3
(2) Drainage Project	3	1	3	3	3	2	3	2	2	2	3	3	2
Integrated Evaluation	10	8	9	8	9	6	10	10	10	11	12	9	9

表 4.1 マスタープランにおける河川改修事業費：イロイロ市

Work Items	Unit	Unit Cost (Pesos)	Jaro River		Iloilo River		Mandurao River		Total	
			Quantity	Amount (1000 P)	Quantity	Amount (1000 P)	Quantity	Amount (1000 P)	Quantity	Amount (1000 P)
I. Main Construction Cost				900,521	268,786		147,888		1,317,196	
1. Preparatory Works				74,423	22,214		12,222		108,859	
2. Main Work				744,233	222,138		122,222		1,088,592	
(1) Excavation	m3	83	3,069,000	254,727	0	0	6,225	3,144,000	260,952	
(2) Embankment	m3	79	463,000	36,577	0	0	0	463,000	36,577	
(3) Backfill	m3	132	0	0	63,000	8,316	9,504	135,000	17,820	
(4) Dredging	m3	73	0	0	23,000	1,679	1,460	43,000	3,139	
(5) Revetment	m3	71	0	0	565,000	39,973	17,750	813,000	57,723	
	m3	55	32,000	1,760	420,000	23,100	0	452,000	24,860	
	m	11,900	0	0	0	0	13,090	1,100	13,090	
	m	17,500	10,900	190,750	0	0	0	10,900	190,750	
	m	19,400	1,000	19,400	0	0	0	1,000	19,400	
	m	27,800	1,600	44,480	0	0	50,040	3,400	94,520	
	m	29,400	0	0	300	8,820	0	8,820	8,820	
(6) MFC Protection	m2	150	275,000	41,250	0	0	0	275,000	41,250	
(7) Sodding	m2	19	252,000	4,788	20,000	380	55	274,900	5,223	
(8) Gravel Pavement	m2	105	152,000	15,960	26,000	2,750	567	183,400	19,257	
(9) Concrete Dike	m2	20,000	0	0	4,780	95,600	0	4,780	95,600	
(10) Diversion Works	m	106,800	52	5,554	0	0	0	52	5,554	
a. Lapaz Floodway	m	221,000	44	9,724	0	0	0	44	9,724	
b. Jaro Floodway	m	221,000	68	15,028	0	0	0	68	15,028	
	m	27,100	80	2,168	0	0	0	80	2,168	
c. Groundsill	no.	772,900	2	1,546	0	0	0	2	1,546	
(11) Sluice	no.	1,364,200	0	0	1	1,364	1	1,364	2,728	
Type A1	no.	2,085,500	0	0	1	2,086	0	2,086	4,171	
Type A2	no.	148,700	0	0	2	297	0	297	594	
Type A3	no.	192,500	6	1,155	1	193	0	770	1,348	
Type B1.0x1	no.	385,000	3	578	0	0	0	3	578	
Type B1.0x2	no.	571,500	1	571	0	0	0	1	571	
Type B1.0x3	no.	500	5,900	2,950	0	0	0	5,900	2,950	
(12) Jetty	no.	829,900	1	830	0	0	0	1	830	
(13) Invert Siphon	no.	948,900	2	1,898	0	0	0	2	1,898	
(14) Bridge	m2	22,989	4,000	91,956	1,100	25,288	840	19,311	136,555	
(15) Bridge Protection	m2	5,130	0	0	2,400	12,512	0	2,400	12,512	
3. Miscellaneous Works				81,866	24,435		13,444		119,745	
II. Compensation Cost				457,553	51,909		68,197		577,659	
(1) Land Acquisition	m2	1,052	370,000	389,240	38,000	37,872	36,000	444,000	467,088	
	m2	40	562,000	22,480	0	0	0	562,000	22,480	
	m2	50	94,000	4,700	82,000	4,100	0	176,000	8,800	
	m2	5	125,000	625	0	0	0	125,000	625	
	no.	111,900	362	40,508	70	7,853	271	30,325	78,666	
(2) House Compensation				67,904	16,035		10,804		94,743	
III. Administration Cost				213,897	50,510		34,033		298,440	
(5% of I+II)				1,639,875	387,240		260,923		2,288,037	
IV. Physical Contingency				144,083	43,006		23,662		210,751	
(15% of I+II+III)				1,783,958	430,245		284,585		2,498,788	
Total of I to IV										
V. Engineering Services										
(16% of I to IV)										
Grand Total										

表 4.2 マスタープランにおける河川改修事業費：セブ市

Work Items	Unit	Bulacao		Kinabumasan		Guadalupe		Lahug		Subang Daku		Total	
		Quantity	Amount (1000 P)	Quantity	Amount (1000 P)	Quantity	Amount (1000 P)	Quantity	Amount (1000 P)	Quantity	Amount (1000 P)	Quantity	Amount (1000 P)
I. Main Construction Cost			89,617	166,504	169,813	217,487	245,115						888,536
1. Preparatory Works			7,406	13,761	14,034	17,974	20,257						73,433
2. Main Work			74,064	137,606	140,342	179,742	202,574						734,528
(1) Excavation	m ³	83	297,000	143,000	11,869	27,390	149,600	12,417	374,000	31,042	0	1,293,600	107,369
(2) Embankment	m ³	132	36,000	0	0	0	0	0	0	0	0	36,000	4,752
(3) Retention	m	9,600	1,340	0	0	0	0	0	0	0	0	1,340	12,864
(4) Retaining Wall	m	7,100	0	3,000	21,300	21,087	4,180	29,678	2,950	20,945	0	13,100	95,010
	m	7,300	0	0	0	0	8,000	58,400	0	0	0	8,000	58,400
	m	7,700	0	4,600	35,420	0	0	0	5,000	38,500	0	9,600	73,920
	m	7,900	0	2,800	22,120	0	0	0	3,420	27,018	0	6,220	49,138
	m	8,300	0	0	0	6,400	53,120	0	0	0	0	6,400	53,120
	m ³	2,658	0	2,520	6,698	600	1,595	6,379	5,040	13,596	0	10,566	28,068
(5) Backfill Conc.	m ²	19	39,200	0	0	0	0	0	0	0	0	39,200	745
(5) Sodding	m ²	105	1,670	0	0	0	0	0	0	0	0	15,900	1,670
(6) Gravel Pavement	m	49,900	0	12	599	0	0	0	0	0	0	15,900	1,198
(7) Drops	m	50,700	244	0	0	0	0	0	0	0	0	232	24,133
	m	52,700	0	0	0	0	11	580	0	0	0	11	580
	m	53,300	0	96	5,117	36	1,919	55	2,932	0	0	187	9,967
	m	54,300	0	0	0	18	977	0	0	0	0	18	977
	m ²	22,989	740	1,500	34,484	1,490	34,254	2,140	49,196	2,580	59,312	8,450	194,257
(8) Bridge	no.	20,160,000	0	0	0	0	0	1	20,160	0	0	1	20,160
(9) Bridge for Lahug River Mouth			8,147	15,137	15,438	19,772	22,283						80,776
3. Miscellaneous Works			110,614	279,213	367,239	424,694	547,718						1,729,477
II. Compensation Cost													
(1) Land Acquisition													
Residential A	m ²	5,150	18,000	52,000	267,800	5,300	27,295	19,870	102,331	102,000	525,300	197,170	1,015,426
B	m ²	8,000	0	5,000	40,000	38,130	305,040	0	0	0	0	43,130	345,040
C	m ²	11,100	0	25,700	285,270	0	0	0	0	0	0	25,700	285,270
Farm Land	m ²	170	82,000	0	0	0	0	0	0	0	0	82,000	13,940
	no.	101,900	39	3,974	11,413	144	14,674	170	17,323	220	22,418	685	69,802
(2) House Compensation													
III. Administration Cost													
(5% of I+II)			10,012	22,286	26,853	32,109	39,642						130,901
IV. Physical Contingency													
(1.5% of I+II+III)			31,536	70,200	84,586	101,143	124,871						412,337
Total of I to IV			241,780	538,203	648,490	775,433	957,345						3,161,251
V. Engineering Services													
(1.6% of I to IV)			14,339	26,641	27,170	34,798	39,218						142,166
Grand Total			256,118	564,843	675,660	810,231	996,564						3,303,417

表 4.3 マスタープランにおける河川改修事業費：オルモック市

Work Items	Unit	Unit Cost (Pesos)	Anilao river		Malbasag River		Total	
			Quantity	Amount (1000 P)	Quantity	Amount (1000 P)	Quantity	Amount (1000 P)
I. Main Construction Cost				154,474		104,221		258,695
1. Preparatory Works				12,766		8,613		21,380
2. Main Work				127,664		86,133		213,797
(1) Excavation	m3	81	166,000	13,446	225,000	18,225	391,000	31,671
(2) Embankment	m3	108	38,000	4,104	6,500	702	44,500	4,806
(3) Backfill	m3	71	60,000	4,260	45,000	3,195	105,000	7,455
(4) Revetment	(H=4m, LWC) m	8,100	3,600	29,160	0	0	3,600	29,160
	(H=4m, HWC) m	4,300	3,600	15,480	0	0	3,600	15,480
	(H=3m, LWC) m	7,400	0	0	1,410	10,434	1,410	10,434
	(H=3m, HWC) m	3,600	0	0	1,410	5,076	1,410	5,076
(5) Retaining Wall	H=3.8m m	7,200	0	0	2,190	15,768	2,190	15,768
(6) MFC Protection	m2	148	21,000	3,108	10,225	1,513	31,225	4,621
(7) Sodding	m2	16	16,000	256	6,300	101	22,300	357
(8) Gravel Pavement	m2	66	11,000	726	10,800	713	21,800	1,439
(9) Drops	H=1.0m m	48,300	0	0	35	1,691	35	1,691
	H=1.5m m	50,700	40	2,028	64	3,245	104	5,273
	H=1.75m m	52,000	80	4,160	0	0	80	4,160
(10) Sluice	Type A2 no.	1,352,600	2	2,705	0	0	2	2,705
	Type B0.6 no.	130,700	1	131	4	523	5	654
(11) Slit Dam	Anilao 1 no.	7,530,000	1	7,530	0	0	1	7,530
	Anilao 2 no.	5,670,000	1	5,670	0	0	1	5,670
	Malbasag no.	9,070,000	0	0	1	9,070	1	9,070
(12) Maintenance Road for Slit Dams	m	1,500	800	1,200	600	900	1,400	2,100
(13) Bridge	m2	23,403	1,440	33,700	640	14,978	2,080	48,678
3. Miscellaneous Works				14,043		9,475		23,518
II. Compensation Cost				29,148		25,301		54,450
(1) Land Acquisition	Residential A m2	0	0	0	0	0	0	0
	B m2	280	34,800	9,744	39,700	11,116	74,500	20,860
	C m2	1,000	0	0	0	0	0	0
	Farm Land m2	5	0	0	0	0	0	0
	Forest, Wasteland m2	1	13,400	13	32,700	33	46,100	46
(2) House Compensation	no.	91,900	211	19,391	154	14,153	365	33,544
III. Administration Cost (5% of I+II)				9,181		6,476		15,657
IV. Physical Contingency (15% of I+II+III)				28,920		20,400		49,320
Total of I to IV				221,724		156,398		378,122
V. Engineering Services (16% of I. to IV)				24,716		16,675		41,391
Grand Total				246,439		173,073		419,513

表 4.4 マスタープランにおける排水路改修事業費：イロイロ市

Work Items	Unit	Unit Cost (Peso)	Ingorc Creek (5000 m)		Bo.Obrero Creek (4400 m)		Rizal Creek (620 m)		Total	
			Quantity	Amount (1000 P.)	Quantity	Amount (1000 P.)	Quantity	Amount (1000 P.)		
			Quantity	Amount (1000 P.)	Quantity	Amount (1000 P.)	Quantity	Amount (1000 P.)		
I Main Construction										
1. Preparatory Works										
2. Main Works										
(1) Excavation	m3	83	103,000	8,568	73,000	6,072	2,200	183	178,200	14,823
(2) Revetment	m2	1,400	10,200	14,280	10,400	14,560	700	980	21,300	29,820
(3) Concrete	m3	12,700	0	0	800	10,160	440	5,588	1,240	15,748
(4) Bridge	m2	23,000	860	19,780	240	5,520	0	0	1,100	25,300
Total Amount of Works				42,628		36,312		6,751		85,691
3. Miscellaneous Works (10% of 1+2)										
Total of I				51,579		43,938		8,169		103,686
II Compensation										
(1) Land	m2		46,000	8,400	8,500	6,825	0	0	54,500	28,094
(2) House	no.	111,900	17	1,902	57	6,378	41	4,588	115	15,225
Total of II				10,302		13,203		4,588		28,094
III Administration (5% of I+II)										
Total of III				3,094		2,857		638		6,589
IV Physical Contingency (15% of I+II+III)										
Total of IV				9,746		9,000		2,009		20,755
Total of I, II, III, and IV				74,722		68,998		15,404		159,123
V Engineering Services (16% of I)										
Total of V				8,253		7,030		1,307		16,590
Grand Total				82,975		76,028		16,711		175,713

表 4.5(1/2) マスタープランにおける排水路改修事業費：セブ市

CEBU CITY (1/5.1/3)

Work Items	Unit	Unit Cost (Peso)	Mabolo Creek (1930 m)		Lahug Tributary (1680 m)		Tinago Creek (1220 m)		Pahina Central M.D. (1100 m)		Calamba Drainage Area M.D. (830 m)	
			Quantity	Amount (1000 P.)	Quantity	Amount (1000 P.)	Quantity	Amount (1000 P.)	Quantity	Amount (1000 P.)	Quantity	Amount (1000 P.)
I Main Construction				1,711		1,385		2,813		3,886		2,191
1. Preparatory Works												
2. Main Works												
(1) Excavation	m3	83	19,968	1,661	4,121	343	10,846	902	3,465	288	2,490	207
(2) Revetment	m2	1,400	10,375	14,525	8,910	12,474	10,699	14,979	0	0	0	0
(3) Concrete	m3	12,700	0	0	0	0	820	10,414	3,037	38,574	1,709	21,706
(4) Bridge	m2	23,000	40	920	45	1,035	80	1,840	0	0	0	0
Total Amount of Works				17,106		13,852		28,135		38,862		21,913
3. Miscellaneous Works (10% of 1+2)				1,882		1,524		3,095		4,275		2,410
Total of I				20,699		16,760		34,043		47,023		26,514
II Compensation												
(1) Land	m2		24,170	124,476	6,428	47,064	5,950	30,643	0	0	0	0
(2) House	no.	101,900	9	966	10	1,040	2	238	0	0	0	0
III Administration (5% of I+II)				7,307		3,243		3,246		2,351		1,326
IV Physical Contingency (15% of I+II+III)				23,017		10,216		10,225		7,406		4,176
Total of I, II, III, and IV				176,464		78,323		78,395		56,780		32,016
V Engineering Services (16% of I)				3,312		2,682		5,447		7,524		4,242
Grand Total				179,776		81,004		83,842		64,304		36,258

表 4.5(2/2) マスタープランにおける排水路改修事業費：セブ市

CEBU CITY (1/5.1/3)

Work Items	Unit	Unit Cost (Peso)	Sta. Teresita (530 m)		Basak-san Nicolas (860 m)		Sto. Niho Creek (1200 m)		Barangsy Inayawan (1500 m)		Total
			Quantity	Amount (1000 P.)	Quantity	Amount (1000 P.)	Quantity	Amount (1000 P.)	Quantity	Amount (1000 P.)	
I Main Construction				3,075		2,184		804		19,304	
1. Preparatory Works											
2. Main Works											
(1) Excavation	m3	83	2,625	218	4,485	373	23,441	1,950	13,221	1,100	84,662
(2) Revetment	m2	1,400	0	0	0	3,691	6,861	5,168	6,861	9,605	40,536
(3) Concrete	m3	12,700	2,404	30,532	1,690	21,468	0	0	0	0	9,661
(4) Bridge	m2	23,000	0	0	0	0	40	920	80	1,840	285
Total Amount of Works				30,750		21,841		8,037		12,544	193,041
3. Miscellaneous Works (10% of 1+2)				3,383		2,403		884		1,380	21,234
Total of I				37,208		26,428		9,725		15,179	233,579
II Compensation											
(1) Land	m2		0	0	0	0	13,200	67,980	19,000	97,850	371,542
(2) House	no.	101,900	0	0	0	0	5	527	7	759	368,012
III Administration (5% of I+II)				1,860		1,321		3,912		5,689	30,256
IV Physical Contingency (15% of I+II+III)				5,860		4,162		12,322		17,922	95,307
Total of I, II, III, and IV				44,929		31,912		94,466		137,399	730,683
V Engineering Services (16% of I)				5,953		4,228		1,556		2,429	37,373
Grand Total				50,882		36,140		96,022		139,828	768,056

表 4.6 マスタープランにおける排水路改修事業費：オルモック市

OROMOC CITY (1/5,1/3)

Work Items	Unit	Unit Cost (Peso)	Lotao Creek (1200 m)		City Proper Creek (630 m)		Total
			Quantity	Amount (1000 P.)	Quantity	Amount (1000 P.)	
I Main Construction				589		665	1,254
1. Preparatory Works							
2. Main Works							
(1) Excavation	m3	77	5,700	437	646	49	6,346
(2) Revetment	m2	1,400	2,300	3,220	2,043	2,860	4,343
(3) Concrete	m3	12,700	150	1,905	0	0	1,905
(4) Bridge	m2	23,400	14	328	160	3,744	174
Total Amount of Works				5,889		6,653	12,542
3. Miscellaneous Works (10% of I+2)				648		732	1,380
Total of I				7,126		8,050	15,176
II Compensation							
(1) Land	m2		4,000	4	2,583	723	2,565
(2) House	no.	91,900	13	1,195	7	643	727
III Administration (5% of I+II)				416		471	887
IV Physical Contingency (15% of I+II+III)				1,311		1,483	2,794
Total of I, II, III, and IV				10,052		11,371	21,423
V Engineering Services (16% of I)				1,140		1,288	2,428
Grand Total				11,192		12,659	23,851

表 4.7(1/2) マスタープランにおける排水路改修事業費：タクロバン市

TACLOBAN CITY (1/5,1/3)

Work Items	Unit	Abucay River (1700 m)		Naga-naga Creek (1000 m)		Mangonbangon River (4000 m)		Langhas Lirang Creek (3750 m)		Sagkahan Creek (380 m)		
		Quantity	Amount (1000 P.)	Quantity	Amount (1000 P.)	Quantity	Amount (1000 P.)	Quantity	Amount (1000 P.)	Quantity	Amount (1000 P.)	
I Main Construction												
1. Preparatory Works			184		118		3,295		4,471		268	
2. Main Works												
(1) Excavation	m3	77	438	3,240	248	40,670	3,116	74,450	5,704	474	36	
(2) Revetment	m2	1,368	0	0	0	20,102	27,495	26,464	36,196	1,247	1,705	
(3) Concrete	m3	12,700	0	0	0	0	0	0	0	0	0	
(4) Bridge	m2	23,403	60	1,404	40	936	100	2,340	120	2,808	40	936
Total Amount of Works			1,842		1,184		32,951		44,709		2,678	
3. Miscellaneous Works (10% of 1+2)			203		130		3,625		4,918		295	
Total of I			2,229		1,433		39,871		54,097		3,240	
II Compensation												
(1) Land	m2	19,720	1,919	1,800	192	40,570	31,782	52,000	16,201	1,330	1,397	
(2) House	no.	4	400	0	40	66	6,095	35	3,252	3	266	
III Administration (5% of I+II)			227		83		3,887		3,678		245	
IV Physical Contingency (15% of I+II+III) Total of I,II,III, and IV			716		262		12,245		11,584		772	
V Engineering Services (16% of I)			5,491		2,010		93,881		88,813		5,919	
			357		229		6,379		8,656		518	
Grand Total			5,848		2,239		100,260		97,468		6,438	

表 4.7(2/2) マスタープランにおける排水路改修事業費：タクロバン市

TACLOBAN CITY (1/5,1/3)

Work Items	Unit	Unit Cost (Peso)	Picasan Creek (1600 m)		Burayan River (3500 m)		Total
			Quantity	Amount (1000 P.)	Quantity	Amount (1000 P.)	
I Main Construction				1,933		4,383	14,652
1. Preparatory Works							
2. Main Works							
(1) Excavation	m3	77	11,268	863	47,300	3,624	183,114
(2) Revetment	m2	1,368	12,132	16,594	28,709	39,267	121,257
(3) Concrete	m3	12,700	0	0	0	0	0
(4) Bridge	m2	23,403	80	1,872	40	936	11,233
Total Amount of Works				19,329		43,827	146,519
3. Miscellaneous Works (10% of I+2)				2,126		4,821	16,117
Total of I				23,388		53,030	177,288
II Compensation							85,441
(1) Land	m2		16,220	9,603	53,220	10,112	184,860
(2) House	no.	91,900	22	2,056	23	2,126	155
III Administration (5% of I+II)				1,752		3,263	13,136
IV Physical Contingency (15% of I+II+III)				5,520		10,280	41,380
Total of I, II, III, and IV				42,320		78,812	317,246
V Engineering Services (16% of I)				3,742		8,485	28,366
Grand Total				46,062		87,297	345,612

表 4.8 經濟的内部收益率一覽表

Item	Flood Control Work		Drainage Improvement	Entire City Project
	Entire River	River Basin		
(Unit: %)				
I. Under Future Conditions				
1. Iloilo City	22.0	-	12.7	21.4
Jaro River		21.3	-	-
Iloilo & Mandurriao River		23.9	-	-
2. Cebu City	19.9	-	26.5	21.2
Bulacao River		26.1	-	-
Kinalumsan River		22.6	-	-
Guadalupe River		22.8	-	-
Lahug River		19.8	-	-
Sabang Daku River		14.2	-	-
3. Ormoc City	29.1	-	11.9	28.3
Anilao & Malbasag River		29.1	-	-
4. Tacloban City	-	-	27.8	27.8
II. Under Present Conditions				
1. Iloilo City	14.0	-	5.6	13.5
Jaro River		13.7	-	-
Iloilo & Mandurriao River		14.9	-	-
2. Cebu City	10.5	-	14.8	11.3
Bulacao River		14.7	-	-
Kinalumsan River		12.5	-	-
Guadalupe River		12.9	-	-
Lahug River		10.5	-	-
Sabang Daku River		5.9	-	-
3. Ormoc City	21.5	-	5.9	21.3
Anilao & Malbasag River		21.5	-	-
4. Tacloban City	-	-	20.2	20.2

表 4.9 治水事業の環境影響マトリックス：イロイロ市

MAJOR ACTIVITIES (which may cause IMPACTS)		ENVIRONMENTAL FACTORS													
		Physico-Chemical				Ecological			Socio-Economic						
Project Stage	Activities	Surface Water	Ground Water	Topography	Air, Noise & Offensive Odor	Terrestrial Species	Aquatic Species	Aesthetic Aspects	Economic Activities	Land Use	Demography & Manpower	Transportation	Housing & Community Infrastructure	Health & Social Services	Life Style & Community
Pre-Construction	Right-of-Way Acquisition								-	--			--		--
	Initial Site Clearing					-		-							
Construction	Labor Mobilization								+		-		-	-	-
	Channel Improvement	--			---	-	--	--	-	-	+	-	-	--	
	Floodways		-		-	-	-	--	+	--	+	-	-	--	
	Replacement (Bridge, etc.)	--			--		--	--	+		+	--	-		--
	Drainage Channel Improvement	-			---		-	--	+	-	+	-	-	-	
	Drainage Diversion		-		---	-		--	+	--	+	--	-		
Operation	River Channel	+++		+	++	+	+	+++	+++	+++		++	+++	+++	++
	Floodway	+++		-		-	-	--	+++	+++		++	+++	+++	++
	Drainage	+++		-	+++		+	+++	+++	+++		++	+++	+++	++

Note: + : Positive (Beneficial) Impact - : Negative (Adverse) Impact

Impact Categories: + or - : Possible but Minor Impact
 ++ or -- : Minor to Moderate Impact
 +++ or --- : Moderate to Major Impact

表 4.10 治水事業の環境影響マトリックス：セブ市

MAJOR ACTIVITIES (which may cause IMPACTS)		ENVIRONMENTAL FACTORS													
		Physico-Chemical				Ecological			Socio-Economic						
Project Stage	Activities	Surface Water	Ground Water	Topography	Air, Noise & Offensive Odor	Terrestrial Species	Aquatic Species	Aesthetic Aspects	Economic Activities	Land Use	Demography & Manpower	Transportation	Housing & Community Infrastructure	Health & Social Services	Life Style & Community
Pre-Construction	Right-of-Way Acquisition								-	-			-		-
	Initial Site Clearing					-									
Construction	Labor Mobilization								+		-		-	-	-
	Channel Improvement	-			-	-	-	-	+		+	-	-	-	-
	Replacement (Bridge, etc.)	-			-	-	-	-	+		+	-	-	-	-
	Drainage Channel Improvement	-			-	-	-	-	+		+	-	-	-	-
Operation	River Channel	+++		+	+++	+	+	+++	+++	+++		++	+++	+++	++
	Drainage	+++	--		+++			+++	+++	+++		+++	+++	+++	+++

Note: + : Positive (Beneficial) Impact - : Negative (Adverse) Impact

Impact Categories: + ○× - : Possible but Minor Impact
 ++ ○× -- : Minor to Moderate Impact
 +++ ○× --- : Moderate to Major Impact

表 4.11 治水事業の環境影響マトリックス：オルモック市

MAJOR ACTIVITIES (which may cause IMPACTS)		ENVIRONMENTAL FACTORS													
		Physico-Chemical				Ecological			Socio-Economic						
Project Stage	Activities	Surface Water	Ground Water	Topography	Air, Noise & Offensive Odor	Terrestrial Species	Aquatic Species	Aesthetic Aspects	Economic Activities	Land Use	Demography & Manpower	Transportation	Housing & Community Infrastructure	Health & Social Services	Life Style & Community
Pre-Construction	Right-of-Way Acquisition								-	--			--		--
	Initial Site Clearing					-		-							
Construction	Labor Mobilization								+		--		-	-	--
	Channel Improvement	--			--	--	-	--	-	-	+	-	-	-	
	Slit Dam					--	-	--	+	-	+				
	Replacement (Bridge, etc.)	--			--		-	--	+		+	--	-		--
	Drainage Channel Improvement				--		-	-	+	-	+	-	-	-	
Operation	River Channel	+++		++		++	+	+++	+++	+++		+	+++	++	++
	Drainage	+++			++		+	++	+++	+++		++	+++	+++	++

Note: + : Positive (Beneficial) Impact - : Negative (Adverse) Impact

Impact Categories: + or - : Possible but Minor Impact
 ++ or -- : Minor to Moderate Impact
 +++ or --- : Moderate to Major Impact

表 4.12 治水事業の環境影響マトリックス：タクロバン市

MAJOR ACTIVITIES (which may cause IMPACTS)		ENVIRONMENTAL							FACTORS						
		Physico-Chemical				Ecological			Socio-Economic						
Project Stage	Activities	Surface Water	Ground Water	Topography	Air, Noise & Offensive Odor	Terrestrial Species	Aquatic Species	Aesthetic Aspects	Economic Activities	Land Use	Demography & Manpower	Transportation	Housing & Community Infrastructure	Health & Social Services	Life Style & Community
Pre-Construction	Right-of-Way Acquisition								-	--			---		--
	Initial Site Clearing					-									
Construction	Labor Mobilization								+		--		-	-	--
	Replacement (Bridge, etc.)	-			--		-	--	+		+	--	-		--
	Drainage Channel Improvement	--			--		-	--	+		+	--	--	-	
Operation	Drainage	+++	-	-	++		+	+++	+++	+++		++	+++	+++	++

Note: + : Positive (Beneficial) Impact - : Negative (Adverse) Impact

Impact Categories: + ○x - : Possible but Minor Impact
 ++ ○x -- : Minor to Moderate Impact
 +++ ○x --- : Moderate to Major Impact

表 5.1 緊急治水事業の支出計画

Unit: million peso

	Iloilo		Ormoc			Total
	River	Drainage	Total	River	Drainage	
I. Main Construction Cost	747.9	101.0	848.9	226.3	6.7	233.0
II Compensation Cost	232.0	22.8	254.8	44.4	0.7	45.1
III Administration Cost	49.0	6.2	55.2	13.5	0.4	13.9
IV Contingency						
for Main con. & Admi.	119.5	16.1	135.6	36.0	1.1	37.1
for Compen.	34.8	3.4	38.2	6.7	0.1	6.8
V Engineering Services						
for Detail Design	74.8	10.1	84.9	22.6	0.7	23.3
for Construction	44.9	6.1	51.0	13.6	0.4	14.0
Total	1,302.9	165.7	1,468.6	363.1	10.1	373.2

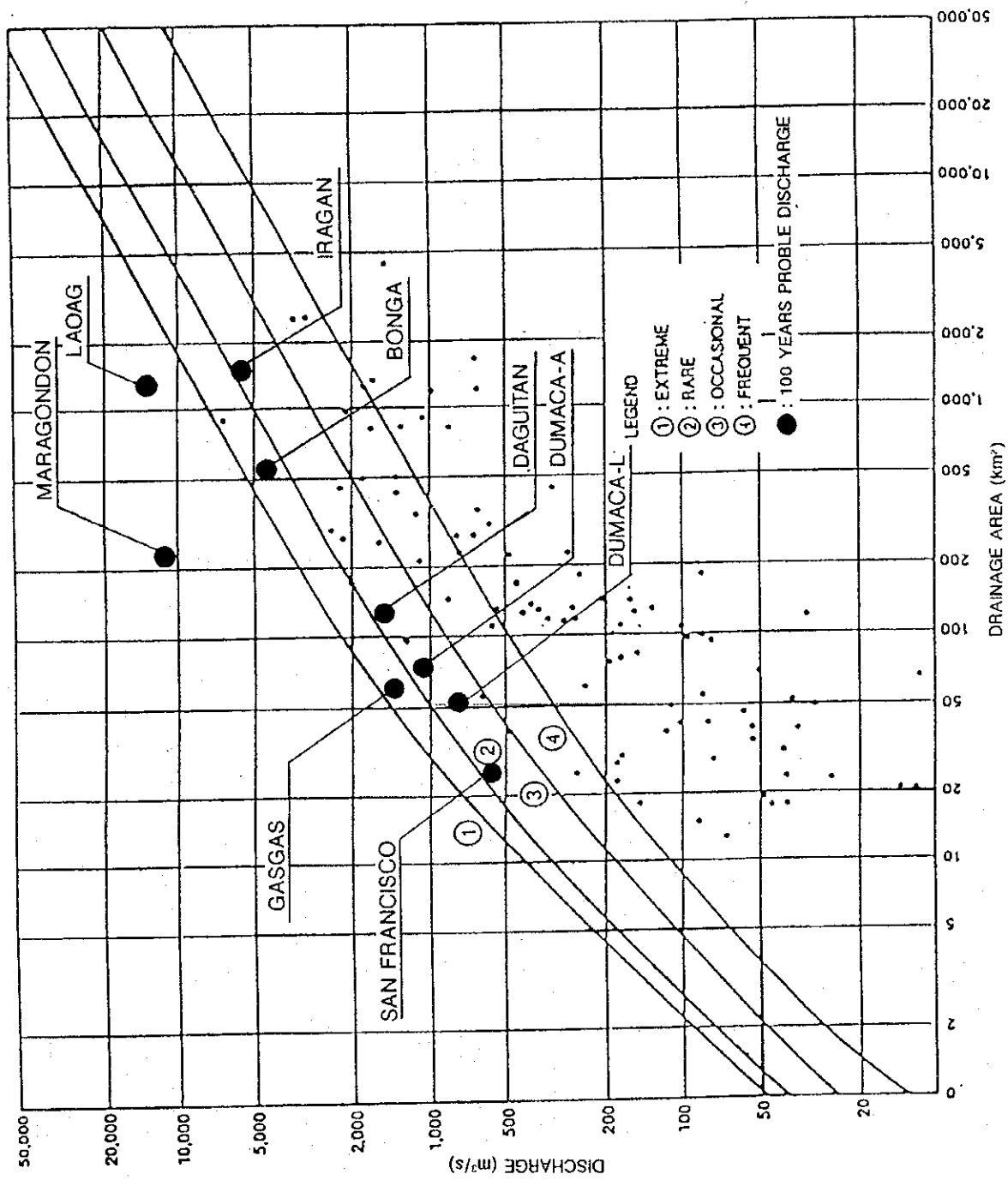
Iloilo City	1st year	2nd year	3rd year	4th year	5th year	6th year	Total
	D/D	Compensation		Construction			
I. Main Construction Cost				249.3	299.8	299.8	848.9
II Compensation Cost		127.4	127.4	0.0	0.0	0.0	254.8
III Administration Cost				16.3	19.4	19.4	55.1
IV Contingency		19.1	19.1	39.8	47.9	47.9	173.8
V Engineering Services	85.0			15.0	18.0	18.0	136.0
Total	85.0	146.5	146.5	320.4	385.1	385.1	1,468.6

note: Construction work for river is 3 years and for drainage is last 2 years.

Ormoc City	1st year	2nd year	3rd year	4th year	5th year	Total
	D/D	Compensation		Construction		
I. Main Construction Cost				113.2	120.0	233.2
II Compensation Cost		22.6	22.6	0.0	0.0	45.2
III Administration Cost				7.0	7.0	14.0
IV Contingency		3.4	3.4	18.0	19.0	43.8
V Engineering Services	23.0			7.0	7.0	37.0
Total	23.0	26.0	26.0	145.2	153.0	373.2

note: Construction work for river is 2 years and for drainage is last year.

FIGURES



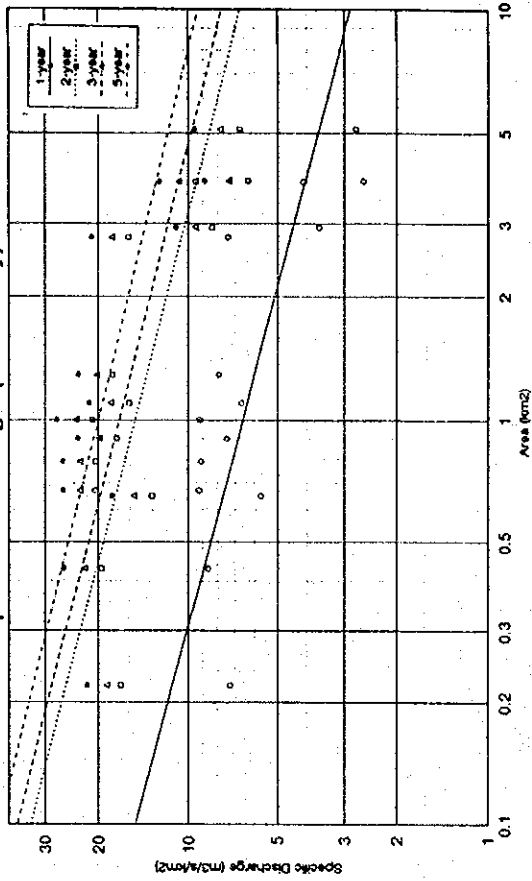
THE STUDY ON THE FLOOD CONTROL FOR RIVERS
IN THE SELECTED URBAN CENTERS

JAPAN INTERNATIONAL COOPERATION AGENCY

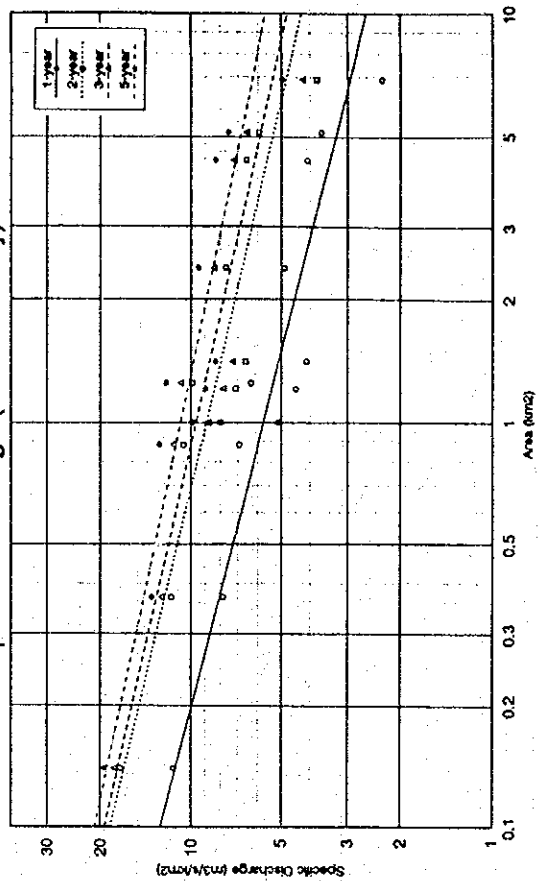
図 2.1

フィリピン国における流出量と
流域面積の関係

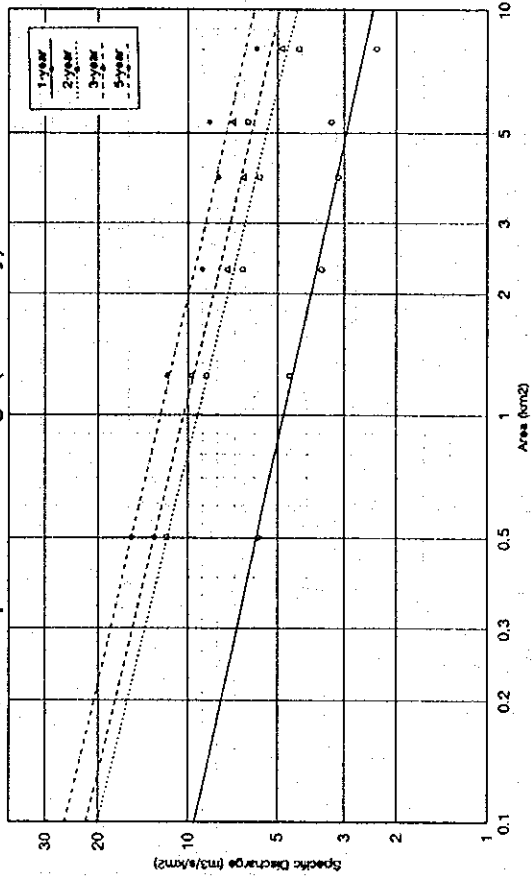
Specific Discharge (Cebu City)



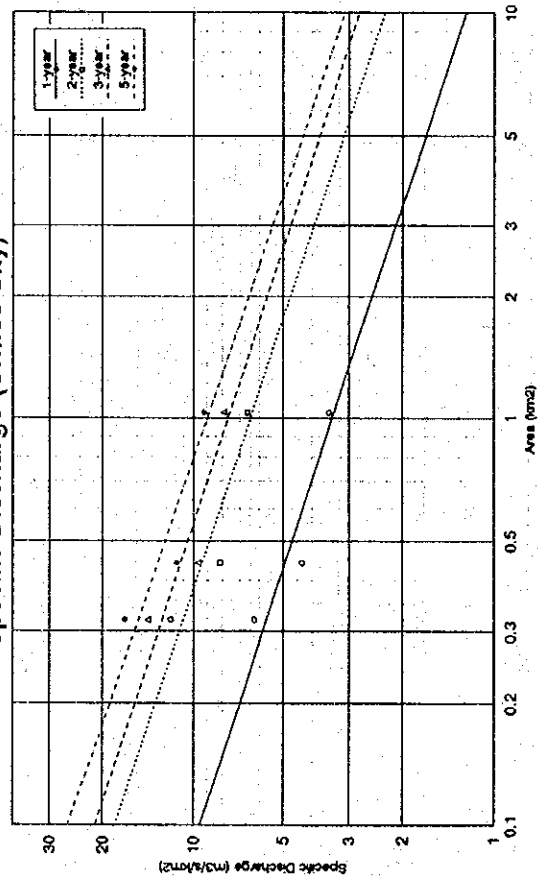
Specific Discharge (Tacloban City)



Specific Discharge (Iloilo City)

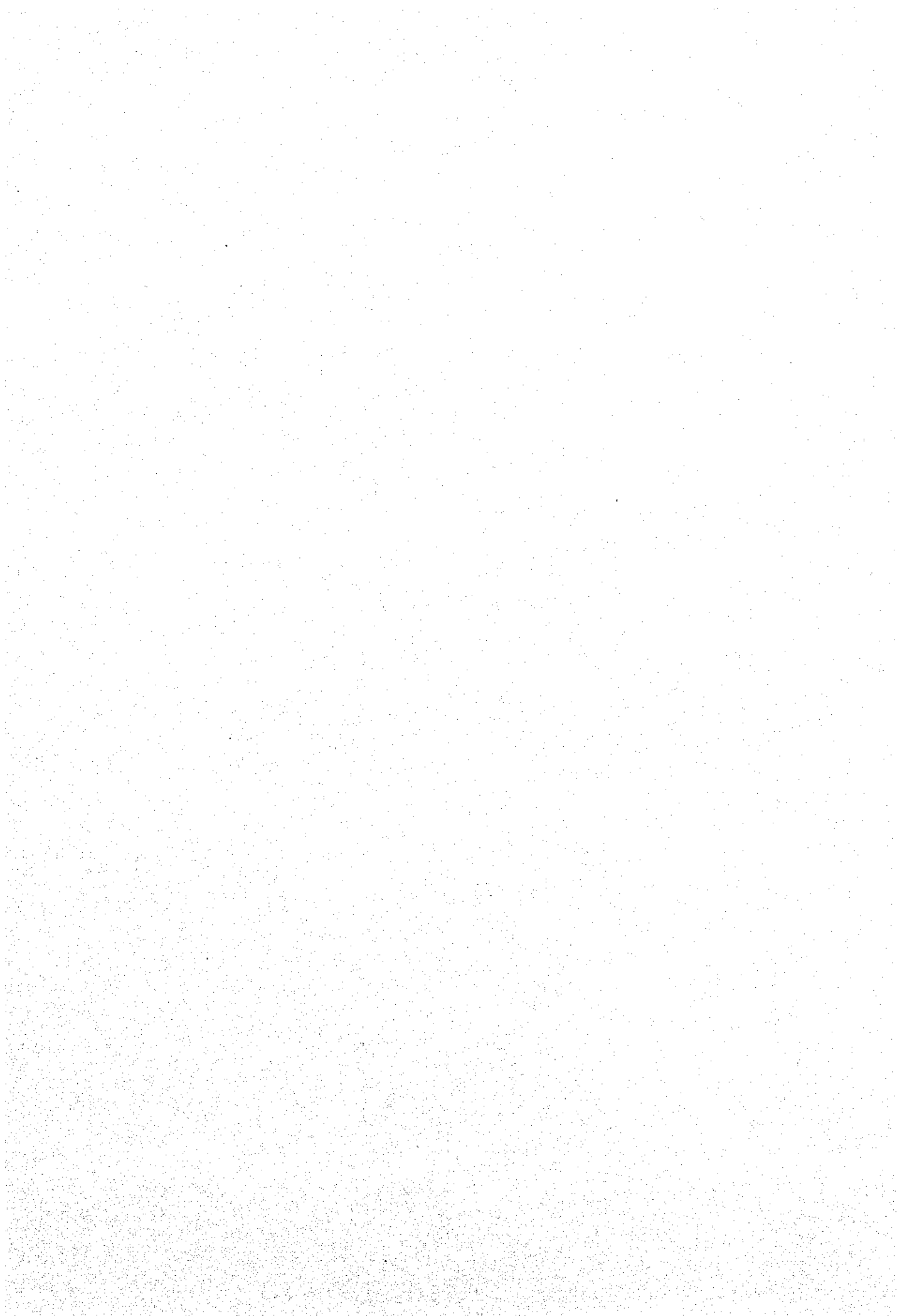


Specific Discharge (Ormoc City)

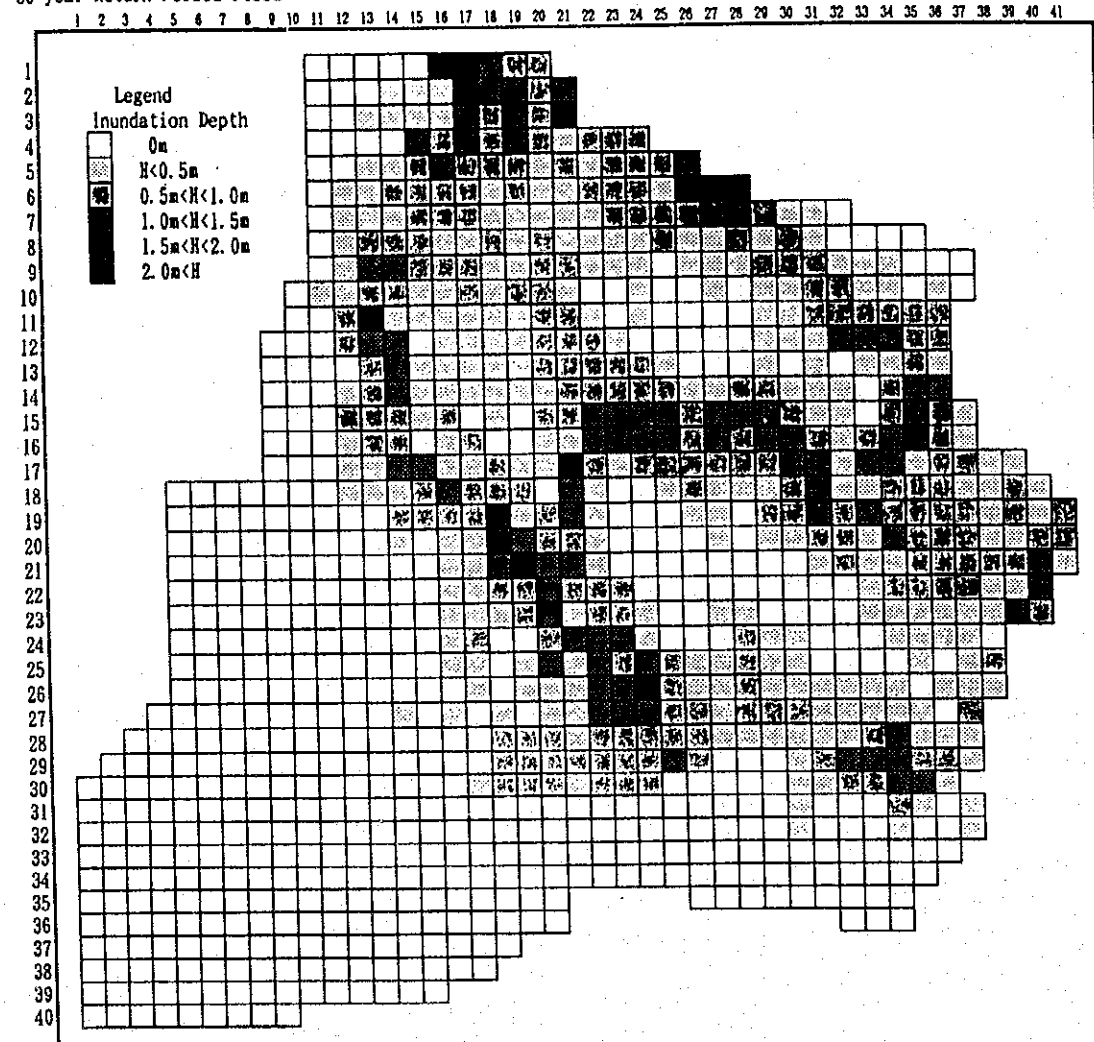


THE STUDY ON THE FLOOD CONTROL FOR RIVERS
IN THE SELECTED URBAN CENTERS
JAPAN INTERNATIONAL COOPERATION AGENCY

3.1 各流域の比流量

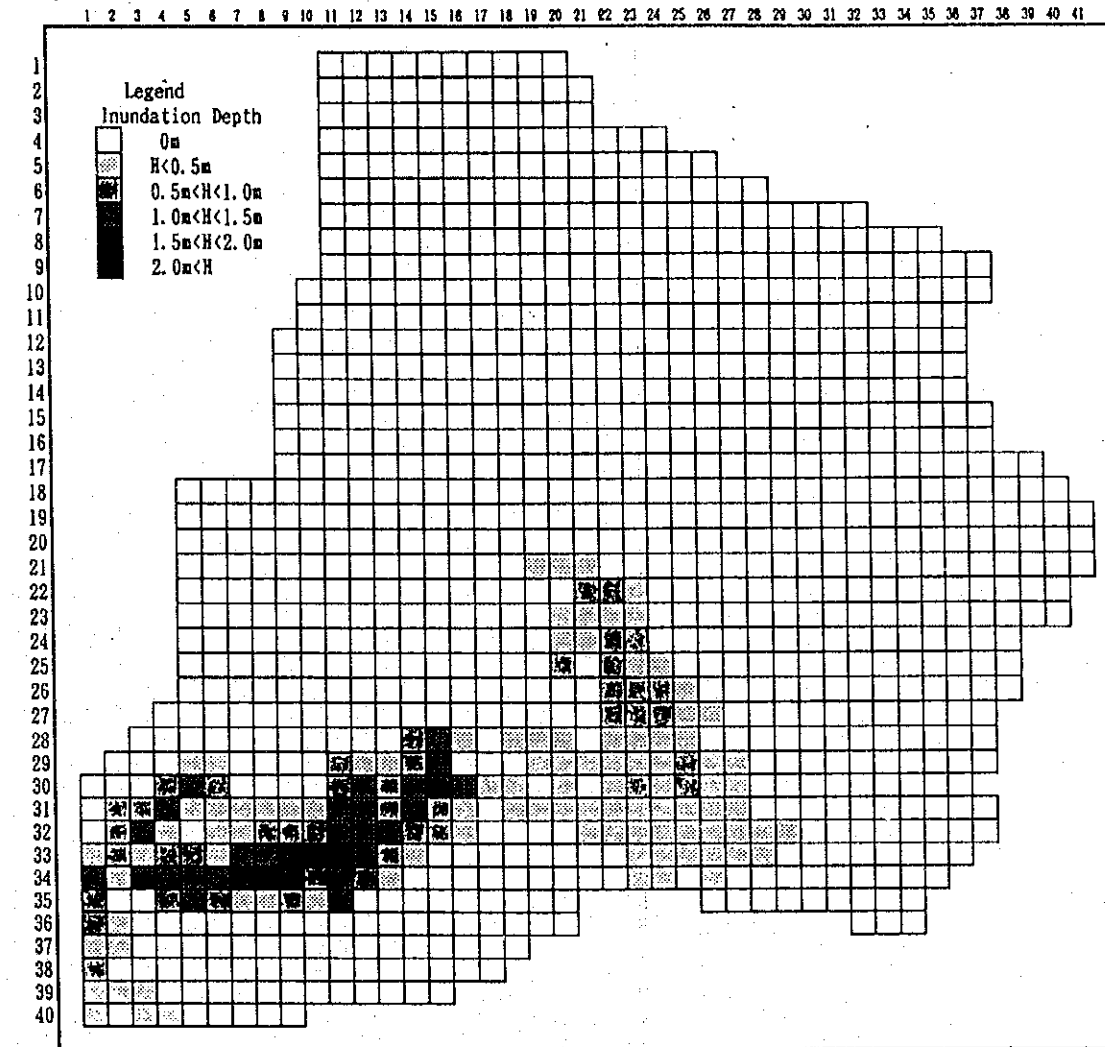


Iloilo City (Jaro River)
50-year Return Period Flood



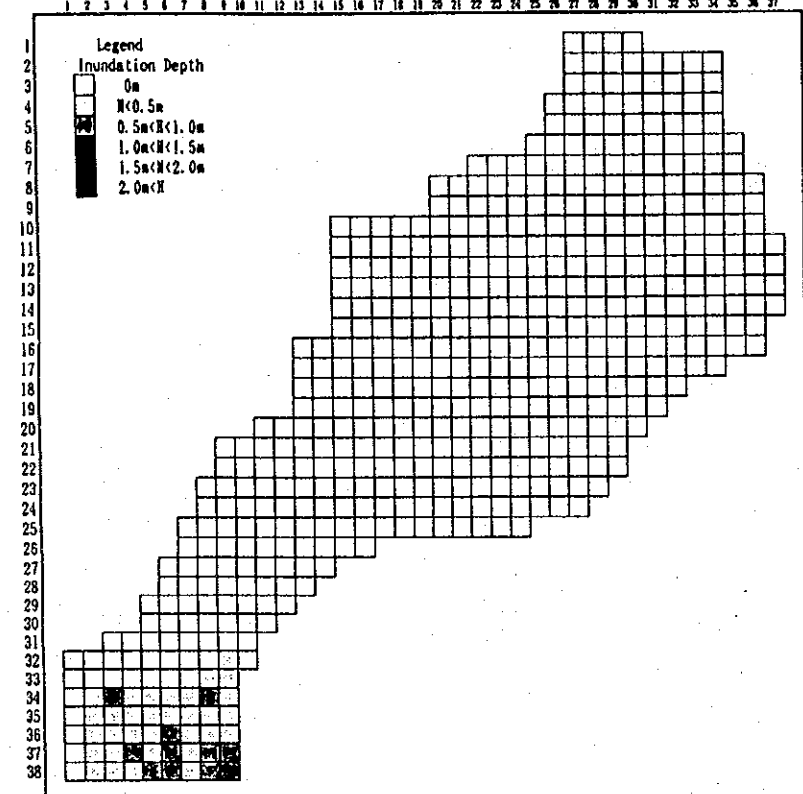
Note
□: Mesh unit (250m x 250m)

Iloilo City (Iloilo River)
50-year Return Period Flood



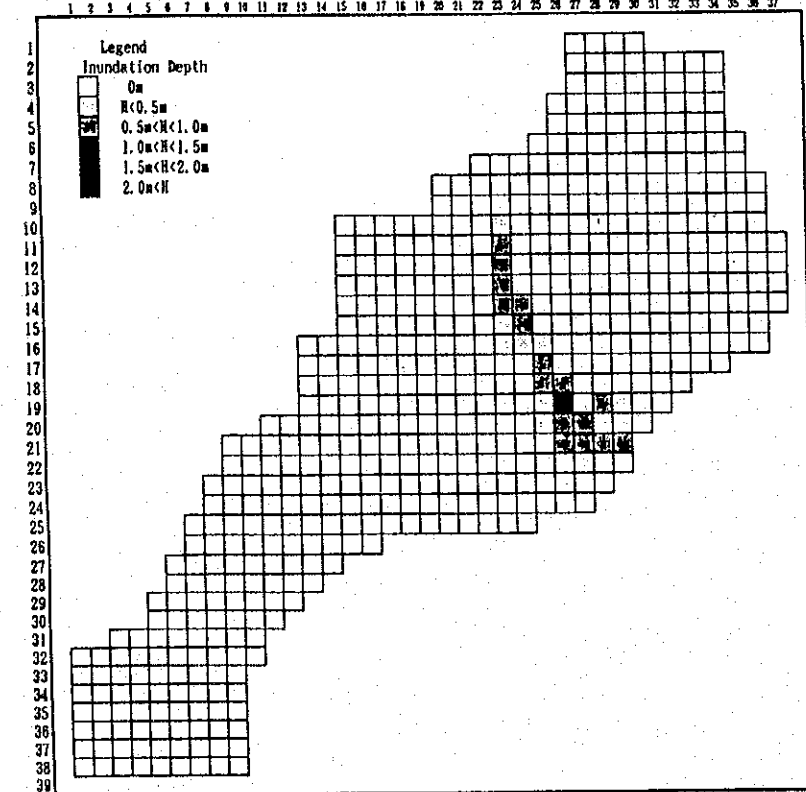
Note
□: Mesh unit (250m x 250m)

Cebu City (Bulacao River)
50-year Return Period Flood



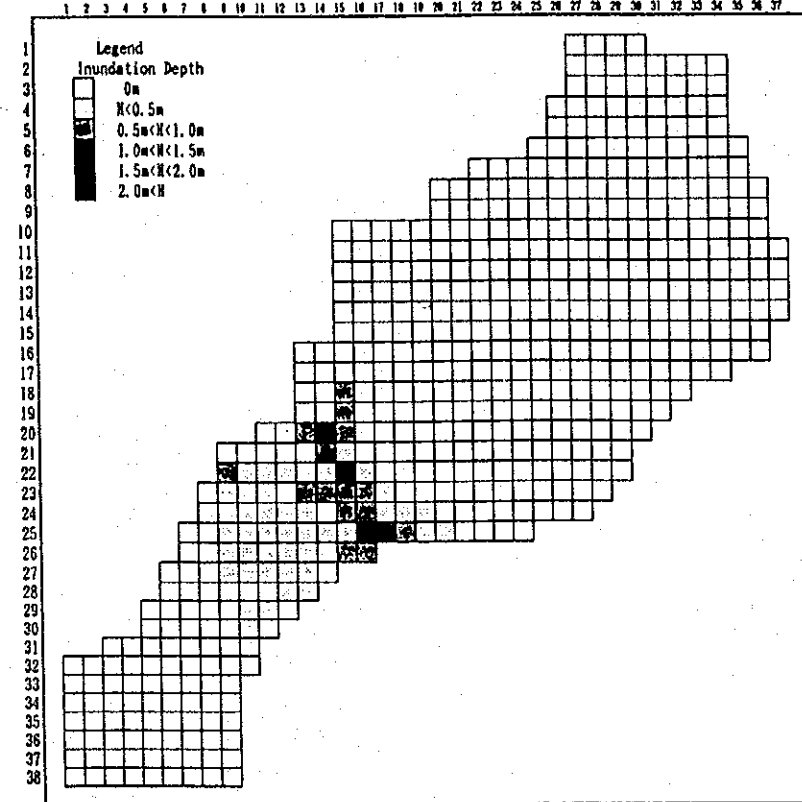
Note
□: Mesh unit (250m x 250m)

Cebu City (Lahug River)
50-year Return Period Flood



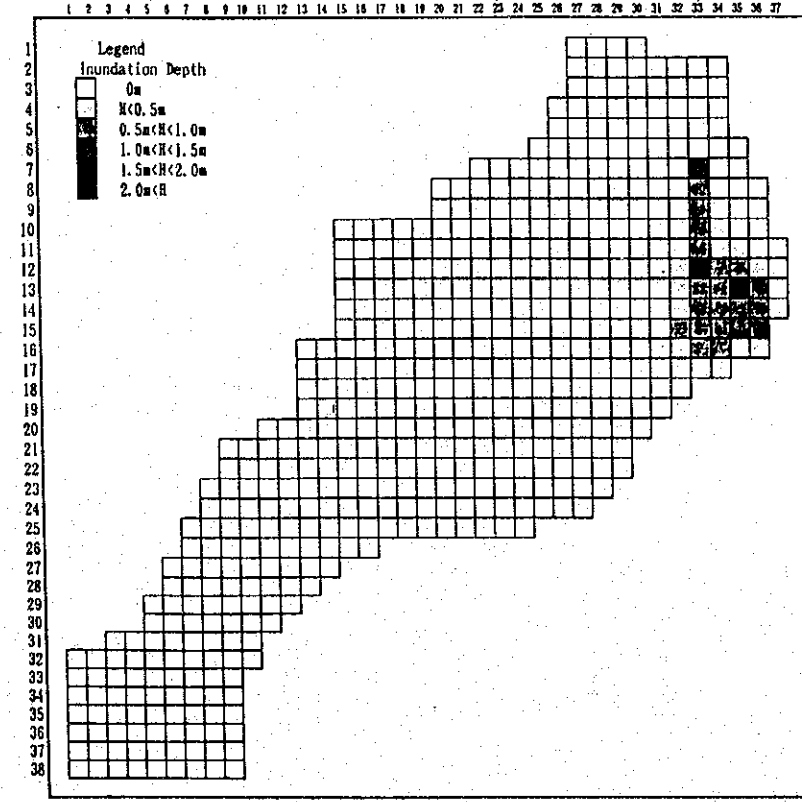
Note
□: Mesh unit (250m x 250m)

Cebu City (Kinalusan River)
50-year Return Period Flood



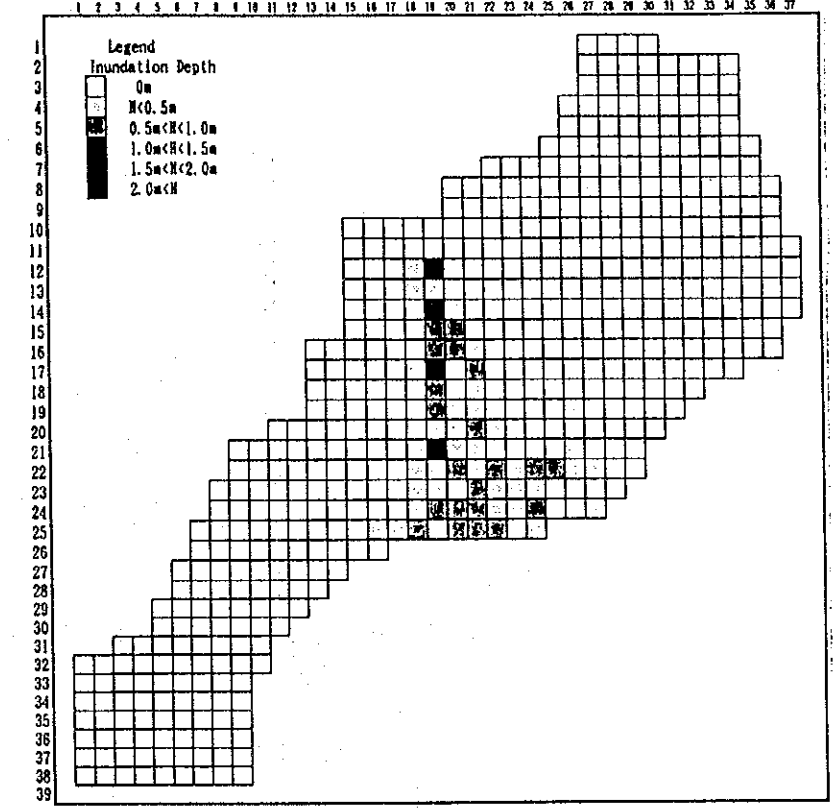
Note
□: Mesh unit (250m x 250m)

Cebu City (Subang Daku River)
50-year Return Period Flood



Note
□: Mesh unit (250m x 250m)

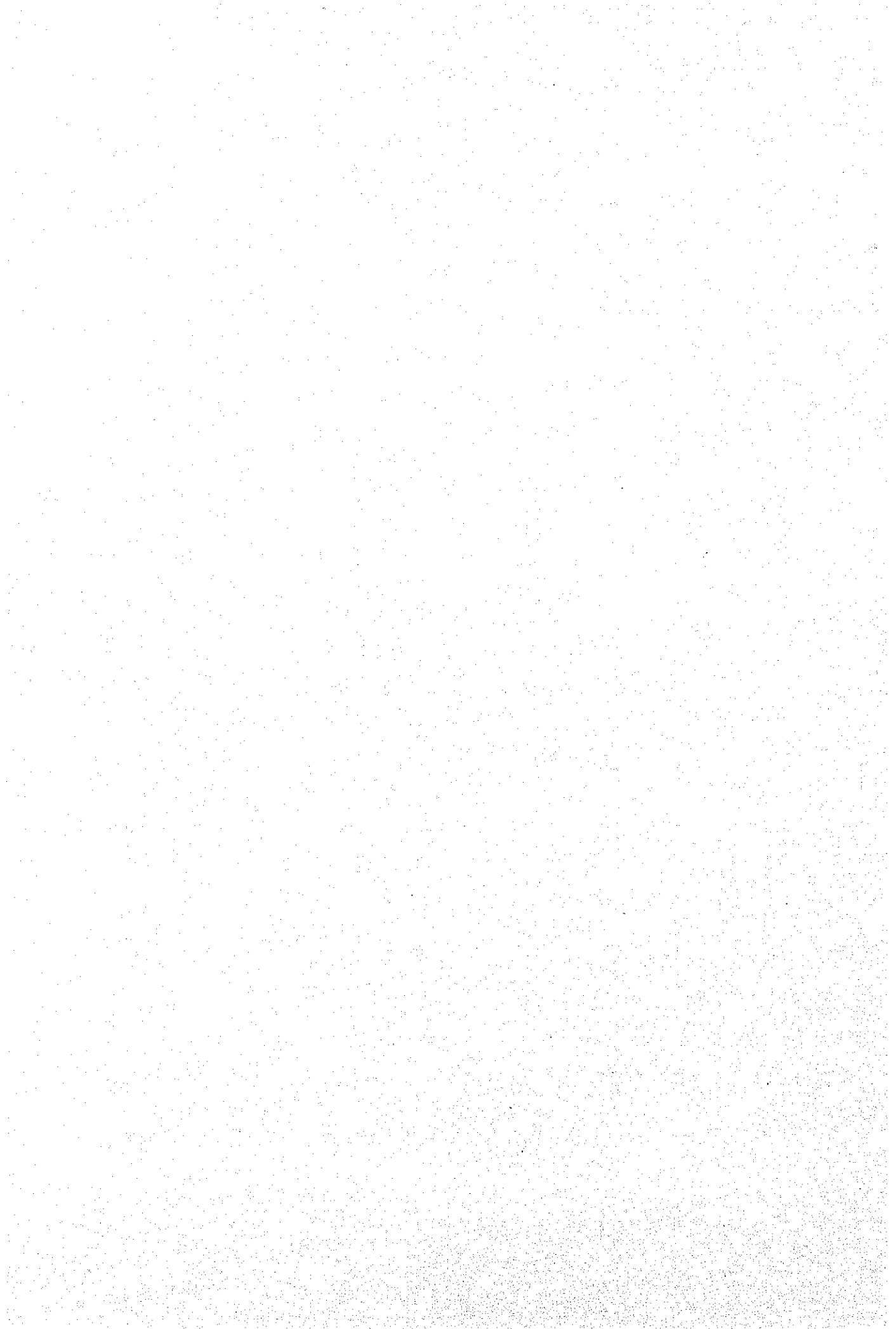
Cebu City (Guadalupe River)
50-year Return Period Flood



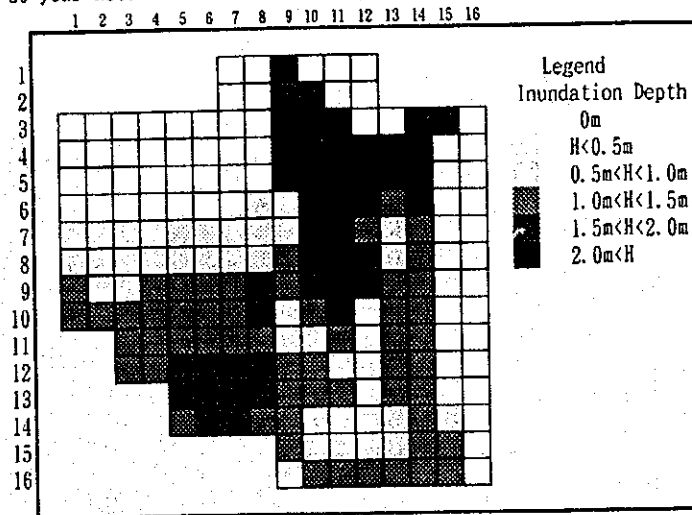
Note
□: Mesh unit (250m x 250m)

THE STUDY ON THE FLOOD CONTROL FOR RIVERS
IN THE SELECTED URBAN CENTERS
JAPAN INTERNATIONAL COOPERATION AGENCY

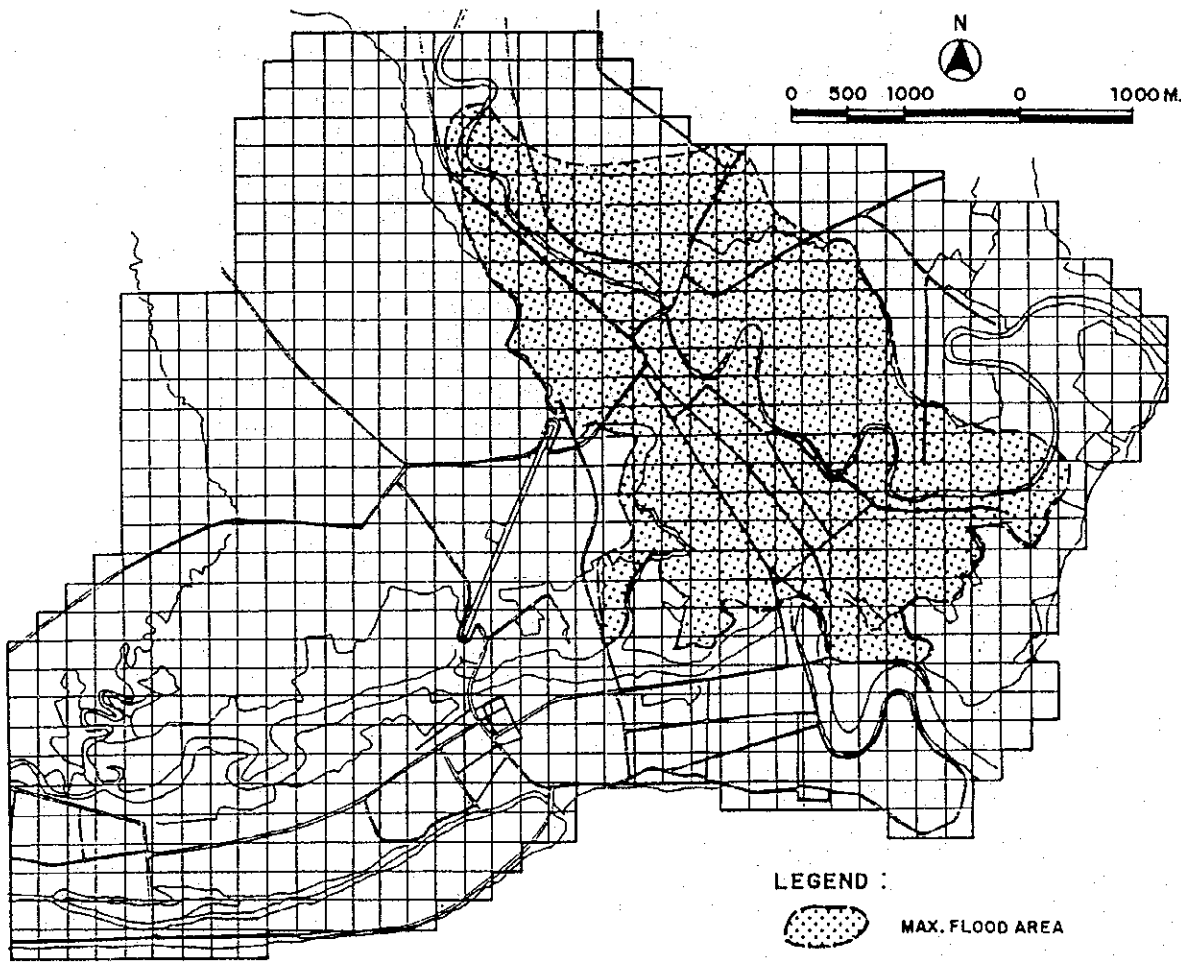
図 3.2(2/3) 50年確率洪水に対する氾濫面積
と湛水深: セブ市

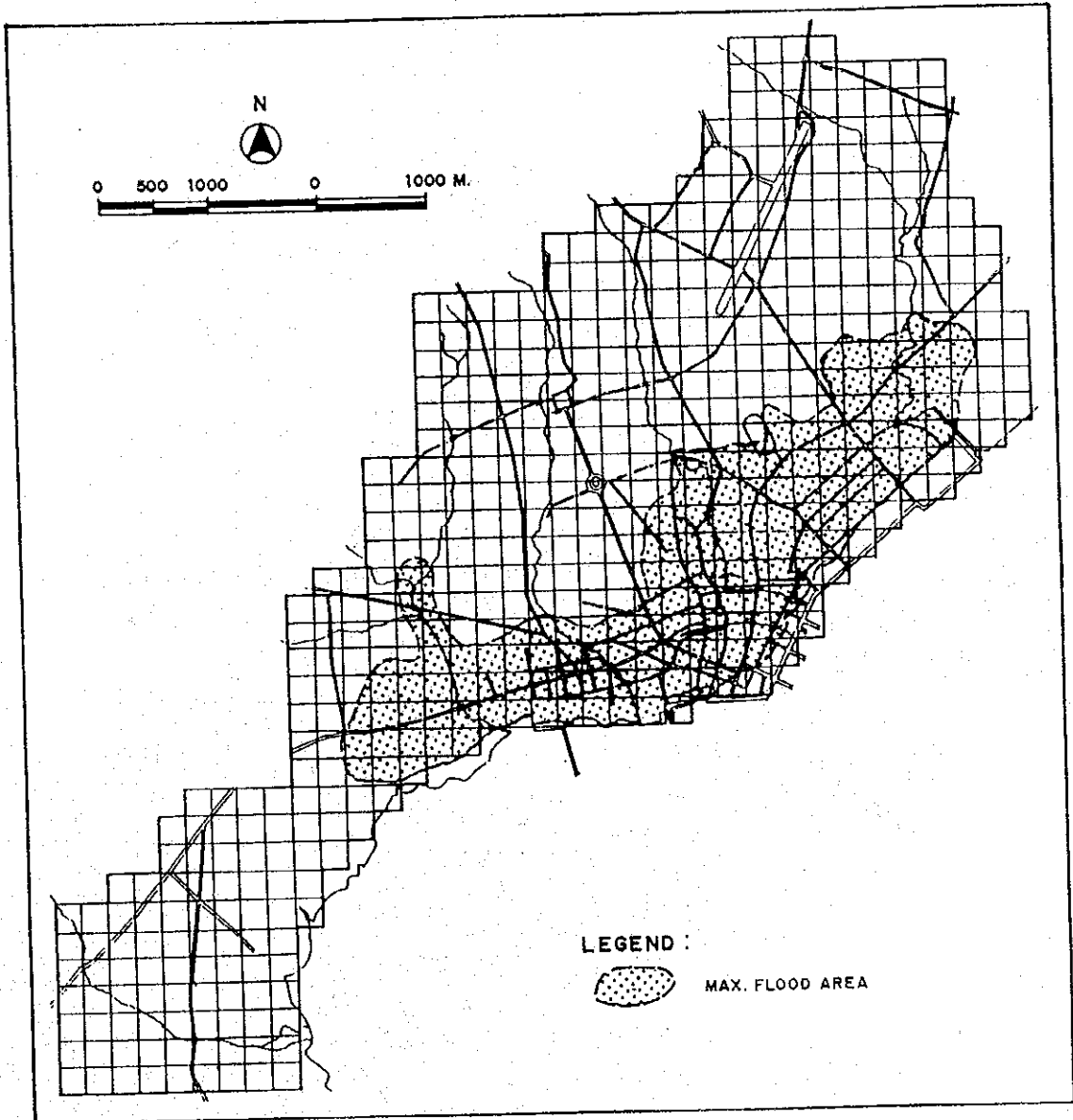


Ormoc City (Anilao and Maibasag Rivers)
50-year Return Period Flood



Note
□: Mesh unit (125m x 125m)



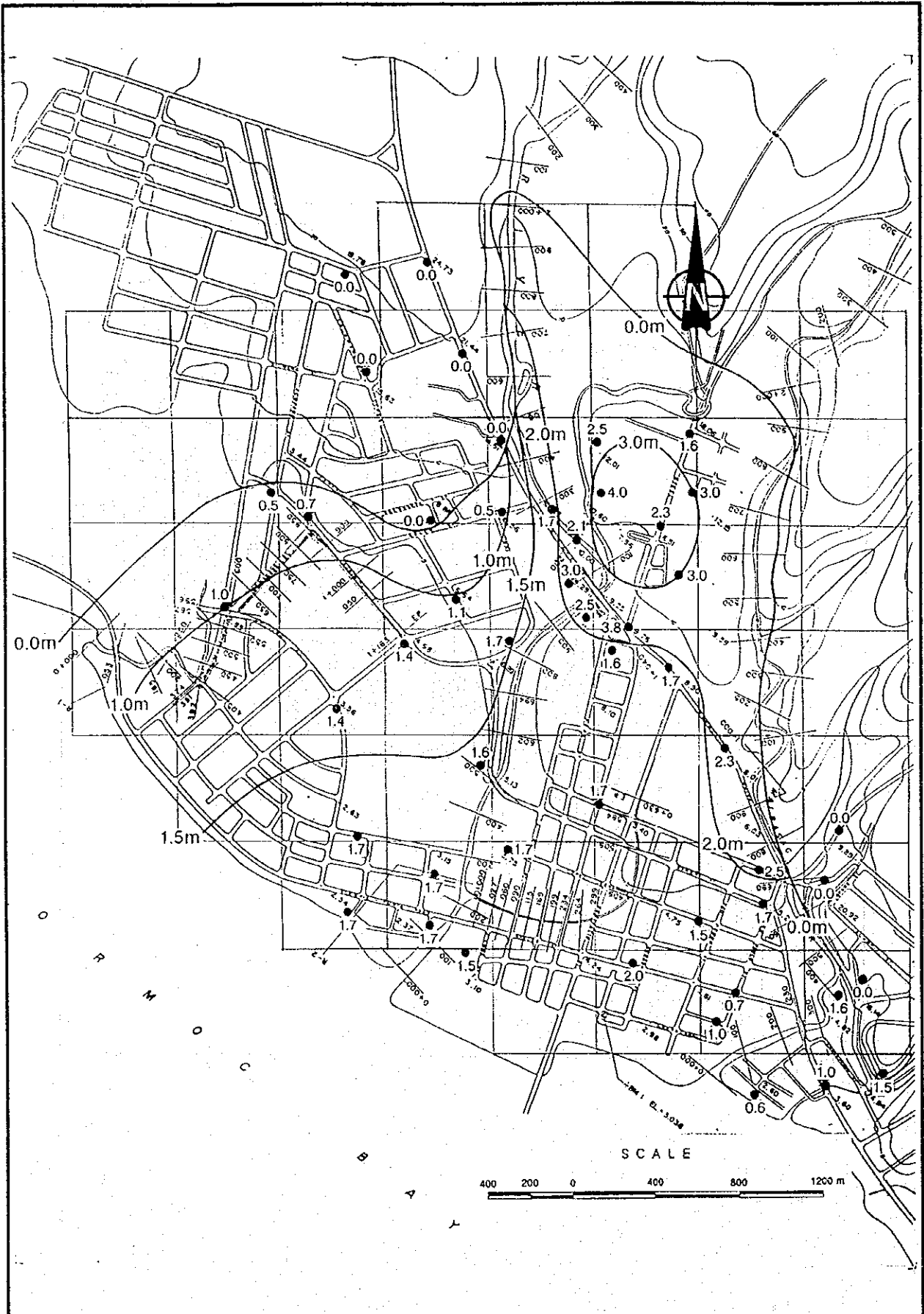


THE STUDY ON THE FLOOD CONTROL FOR RIVERS
IN THE SELECTED URBAN CENTERS

JAPAN INTERNATIONAL COOPERATION AGENCY

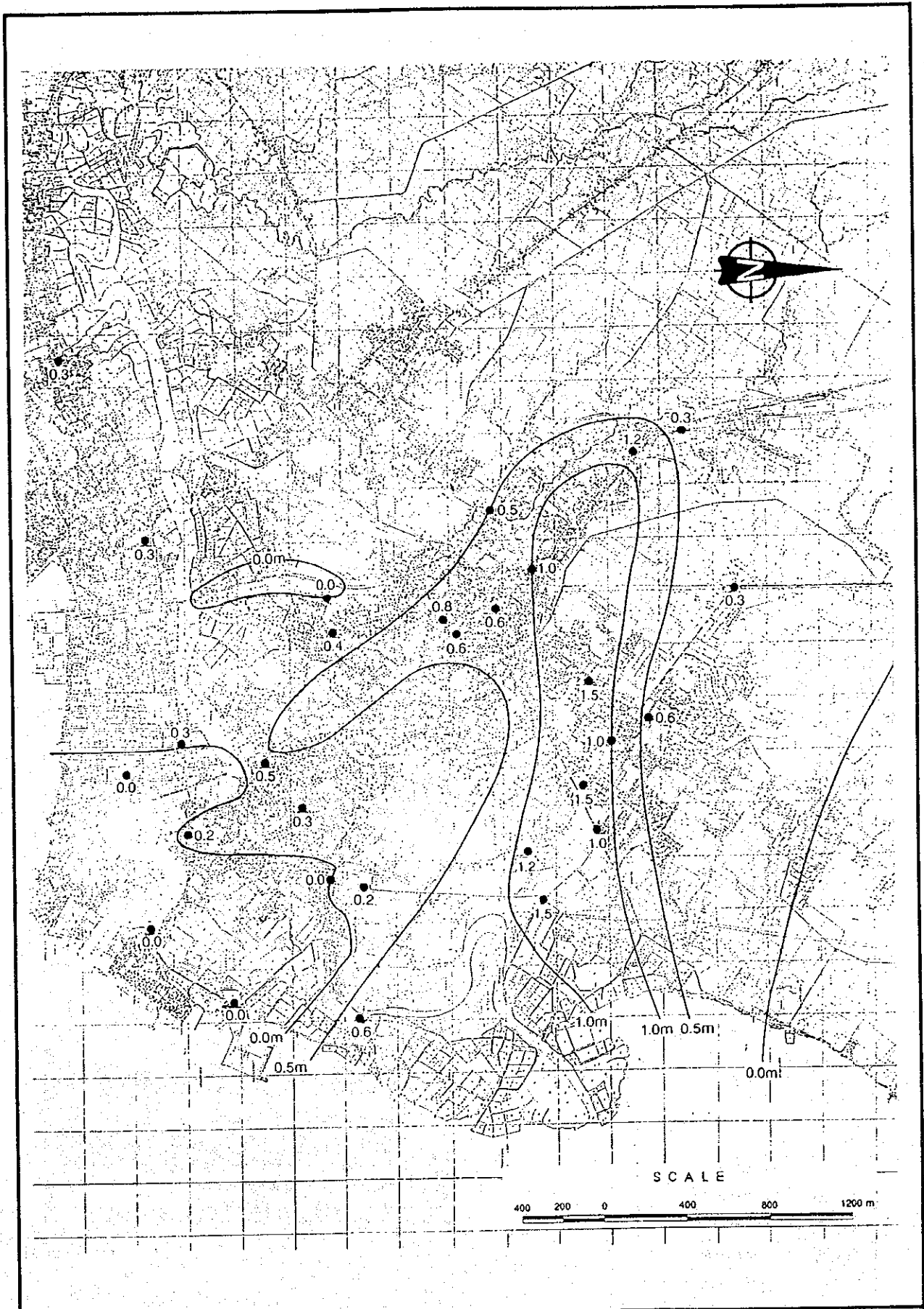
図 3.4

既応最大洪水被害発生地域
：セブ市



THE STUDY ON THE FLOOD CONTROL FOR RIVERS
 IN THE SELECTED URBAN CENTERS
 JAPAN INTERNATIONAL COOPERATION AGENCY

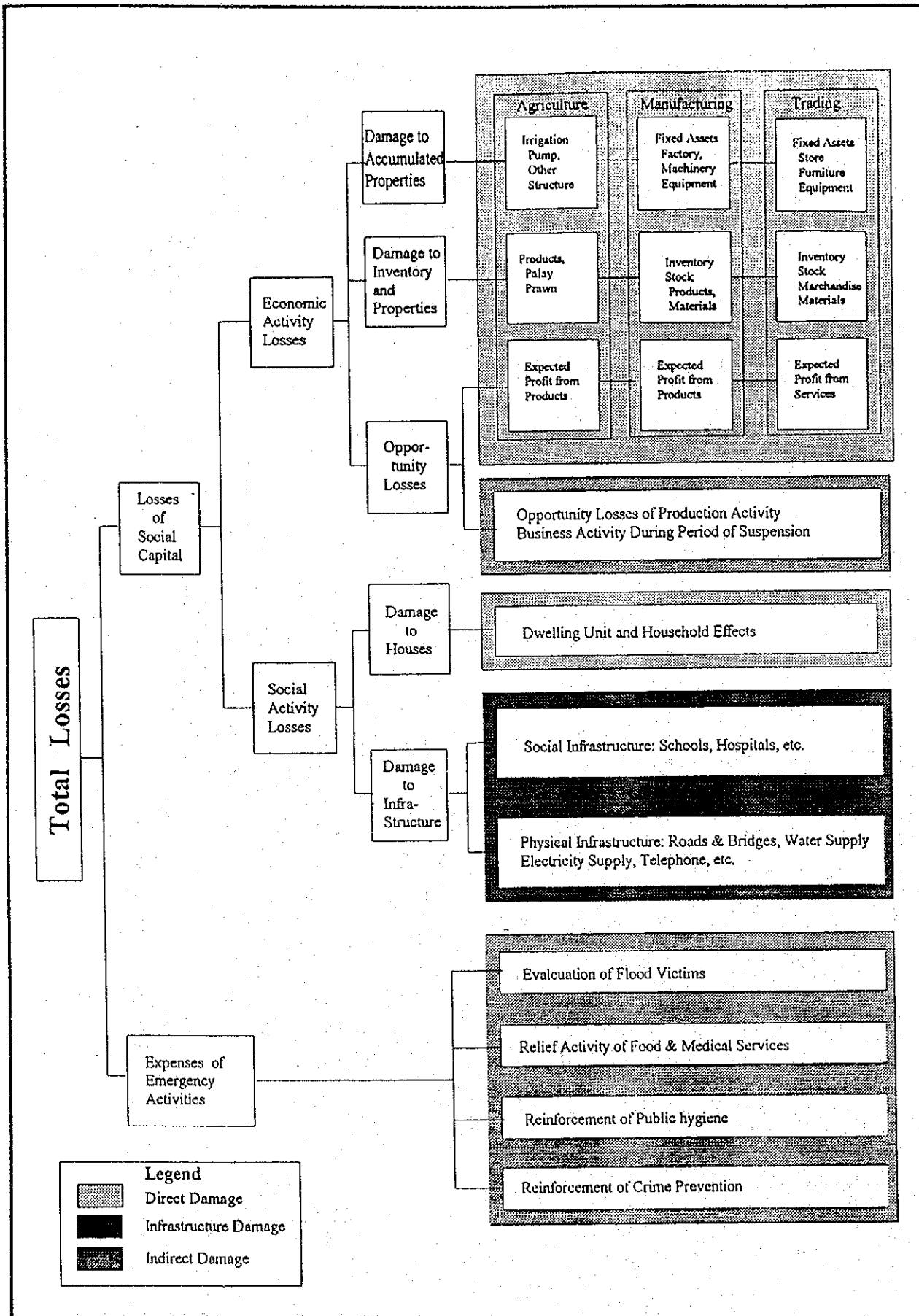
図 3.5 既応最大洪水被害発生地域
 : オルモック市.

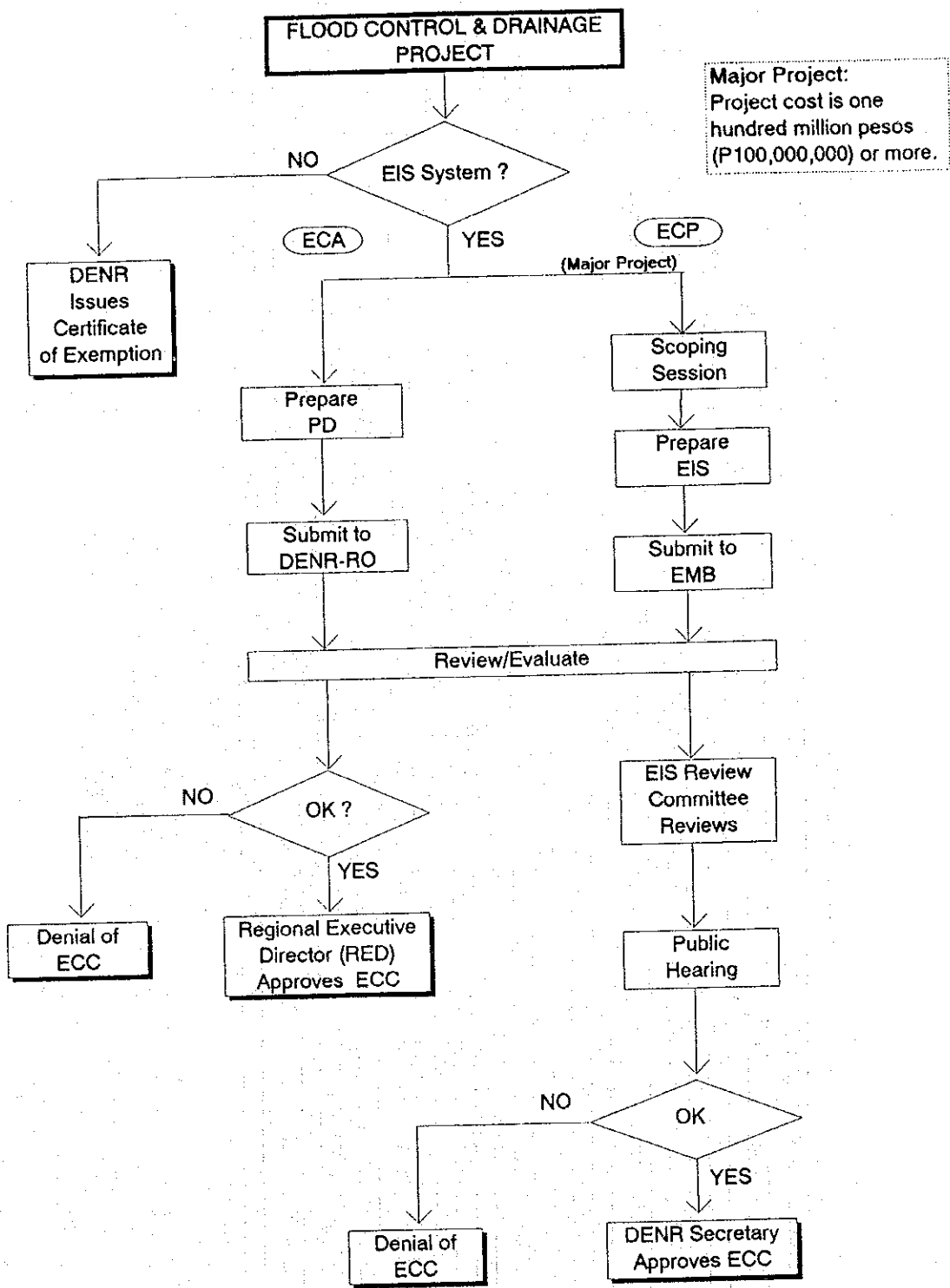


THE STUDY ON THE FLOOD CONTROL FOR RIVERS
 IN THE SELECTED URBAN CENTERS
 JAPAN INTERNATIONAL COOPERATION AGENCY

図 3.6

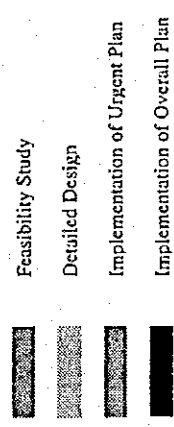
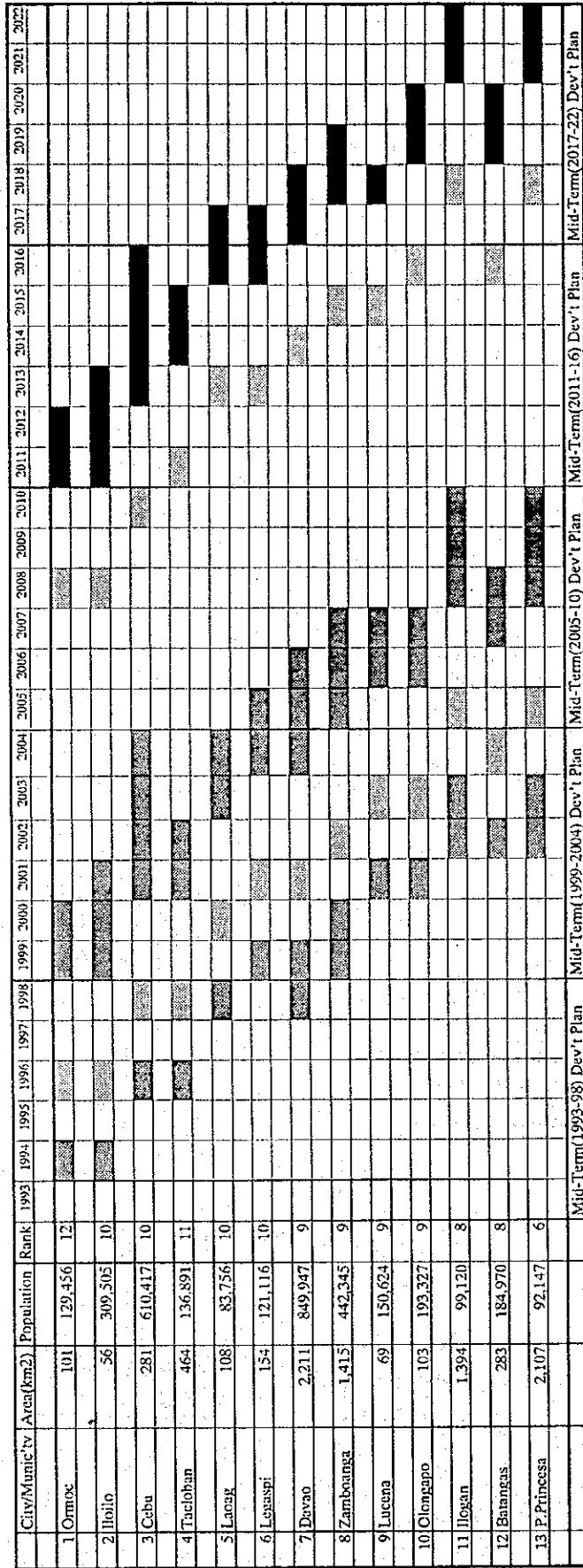
1994年7月29日 洪水氾濫地域
 イロイロ市





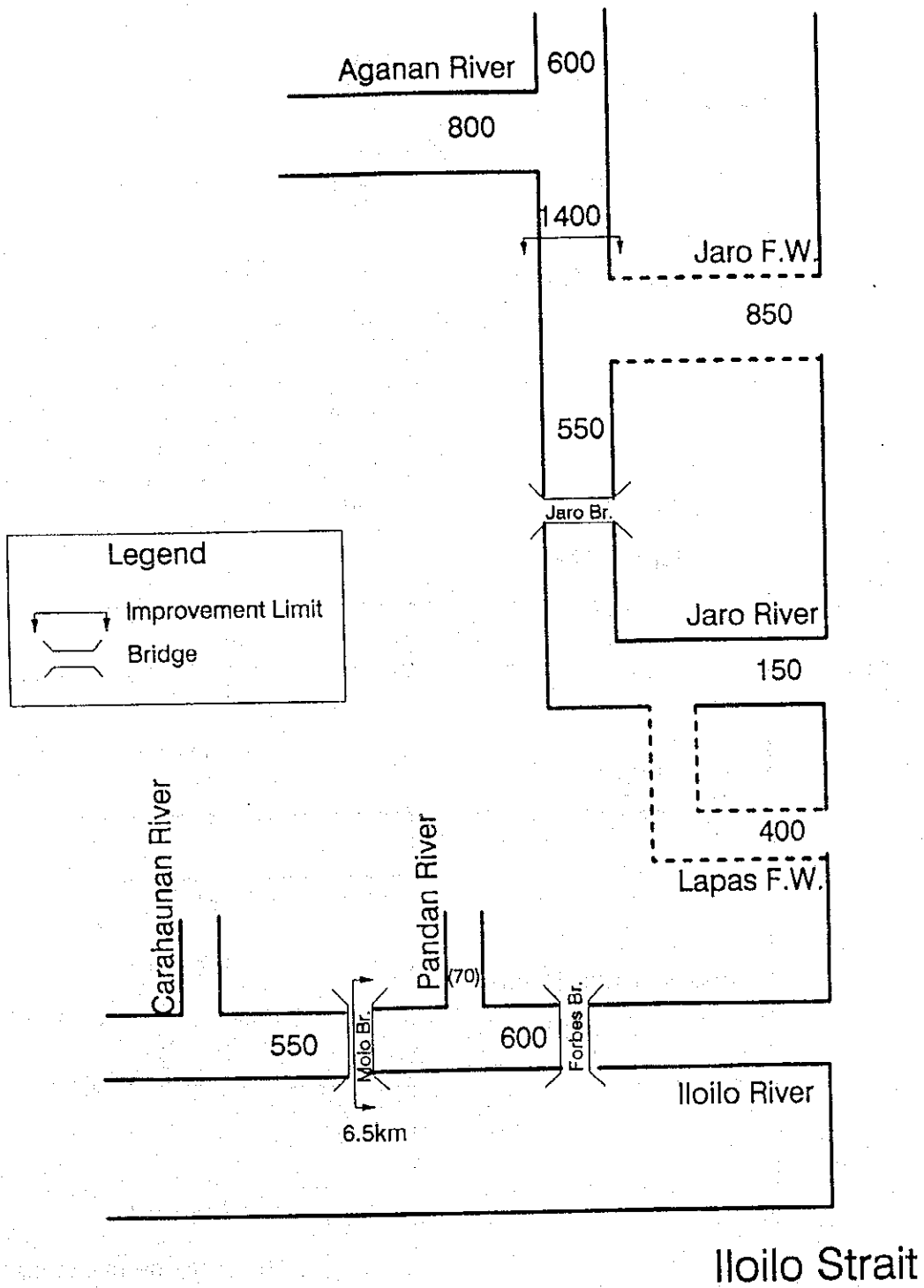
Major Project:
Project cost is one hundred million pesos (P100,000,000) or more.

OVERALL PROJECT IMPLEMENTATION PLAN FOR 13 URBAN CENTERS



THE STUDY ON THE FLOOD CONTROL FOR RIVERS
IN THE SELECTED URBAN CENTERS
JAPAN INTERNATIONAL COOPERATION AGENCY

図 4.1 特定13都市 全体事業実施計画

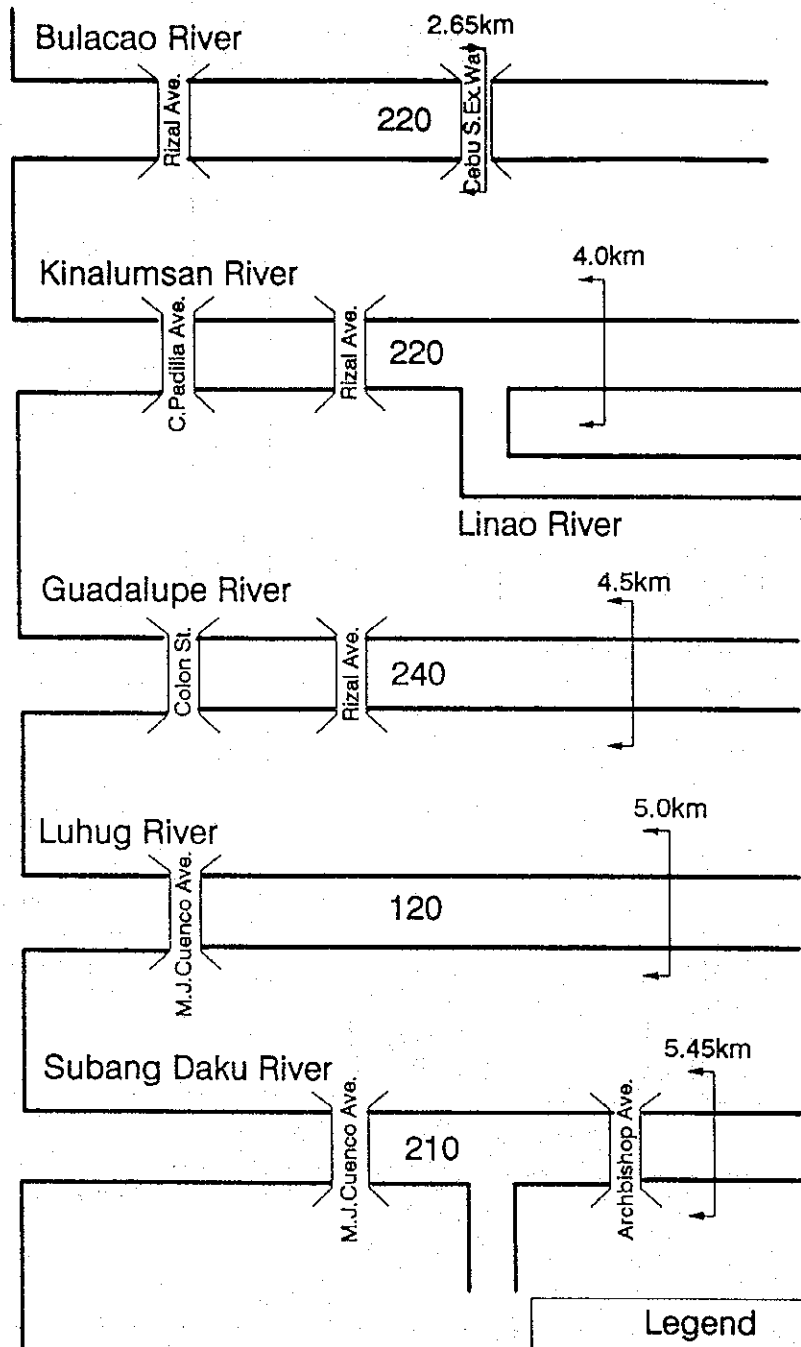


Note: 1. Unit: m³/s
 2. The Figures show probable Flood Discharge of 50-Year Return Period
 3. (.) shows probable Flood Discharge of 20-Year Return Period

THE STUDY ON THE FLOOD CONTROL FOR RIVERS IN THE SELECTED URBAN CENTERS
 JAPAN INTERNATIONAL COOPERATION AGENCY

図 4.2 計画流量配分図：イロイロ市

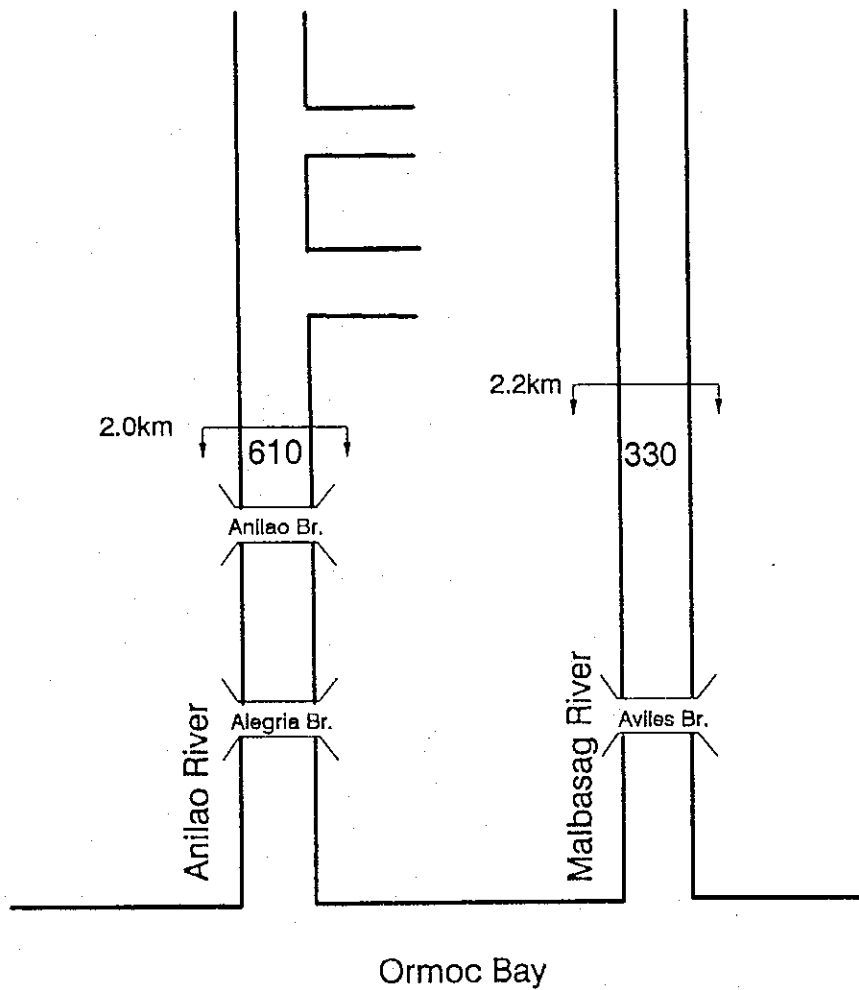
Bohol Strait



Legend

- Improvement Limit
- Bridge

Note: 1. Unit: m³/s
 2. The Figures show probable Flood Discharge of 50-Year Return Period



Legend	
	Improvement Limit
	Bridge

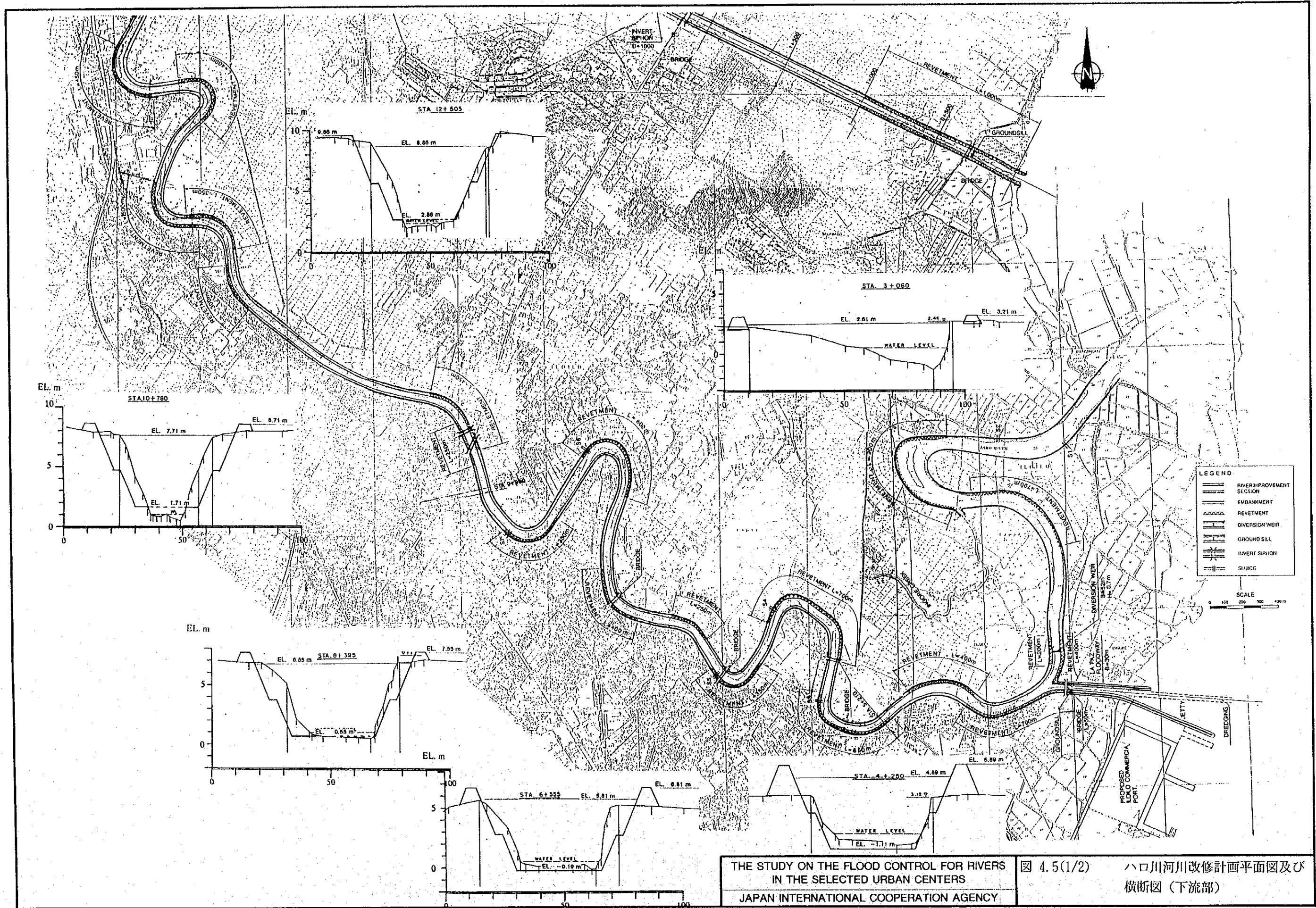
Note: 1. Unit: m³/s

2. The Figures show probable Flood Discharge of 50-Year Return Period

THE STUDY ON THE FLOOD CONTROL FOR RIVERS
IN THE SELECTED URBAN CENTERS

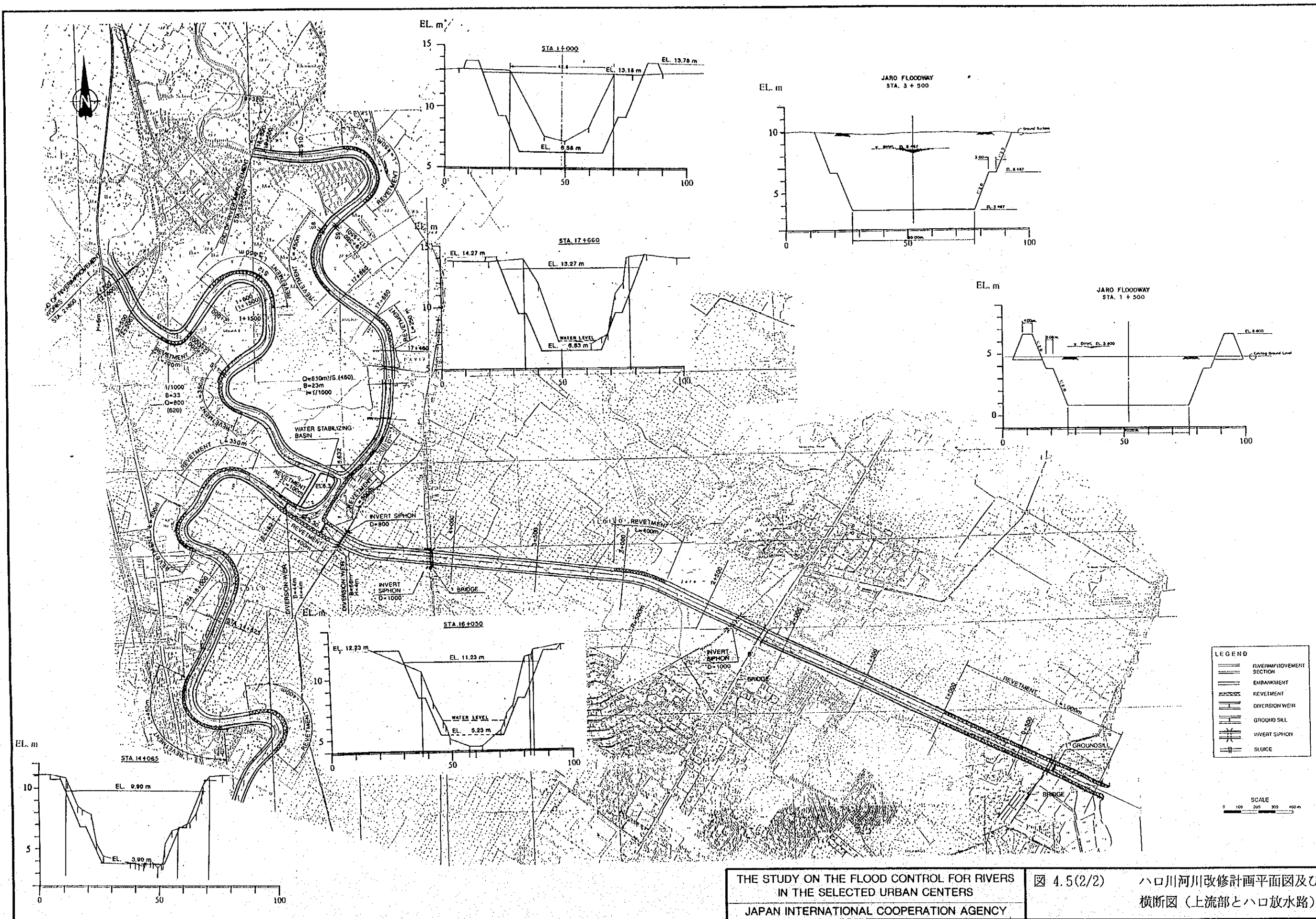
JAPAN INTERNATIONAL COOPERATION AGENCY

図 4.4 計画流量配分図：オルモック市



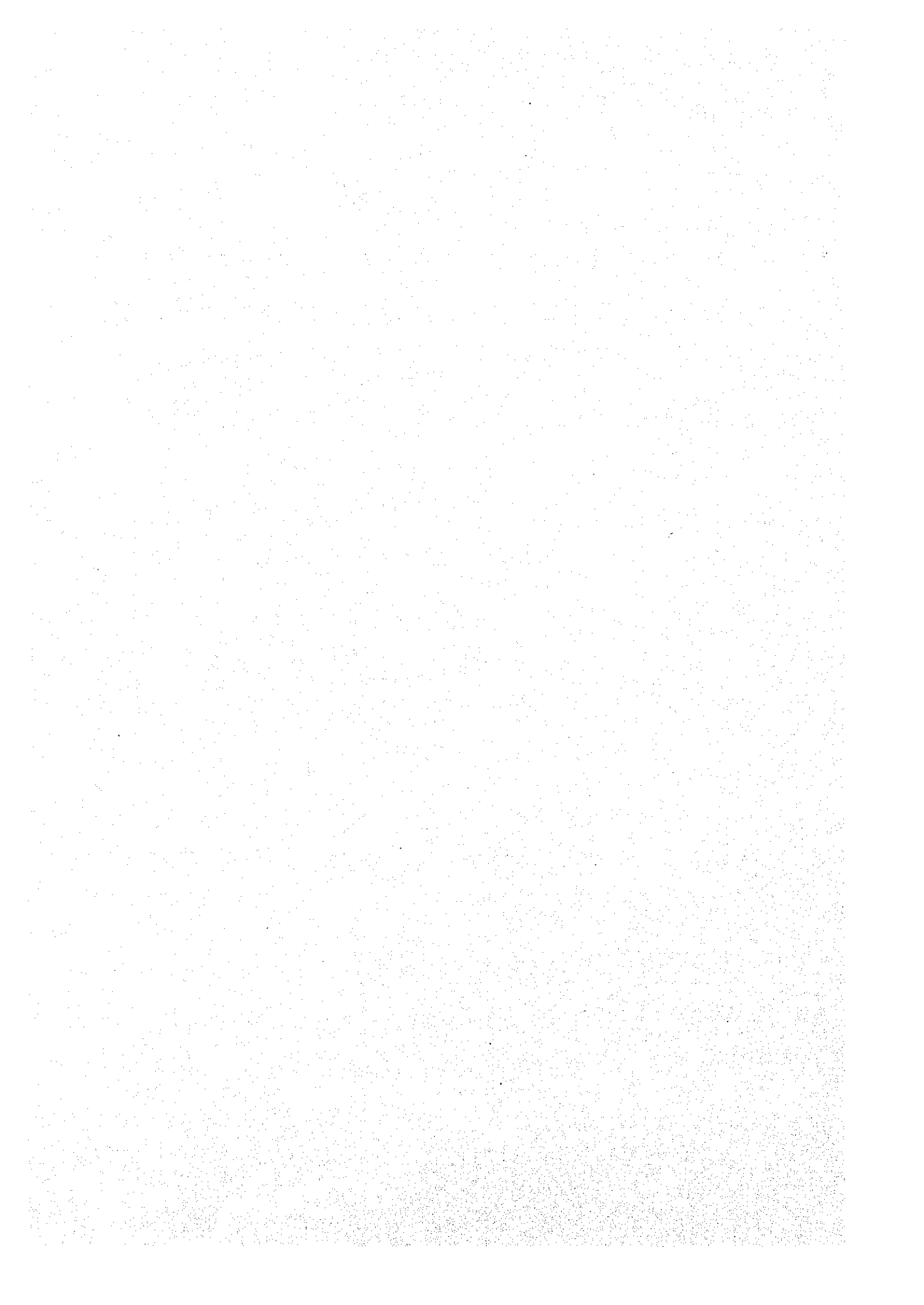
THE STUDY ON THE FLOOD CONTROL FOR RIVERS
IN THE SELECTED URBAN CENTERS
JAPAN INTERNATIONAL COOPERATION AGENCY

図 4.5(1/2) ハロ川河川改修計画平面図及び横断面図(下流部)

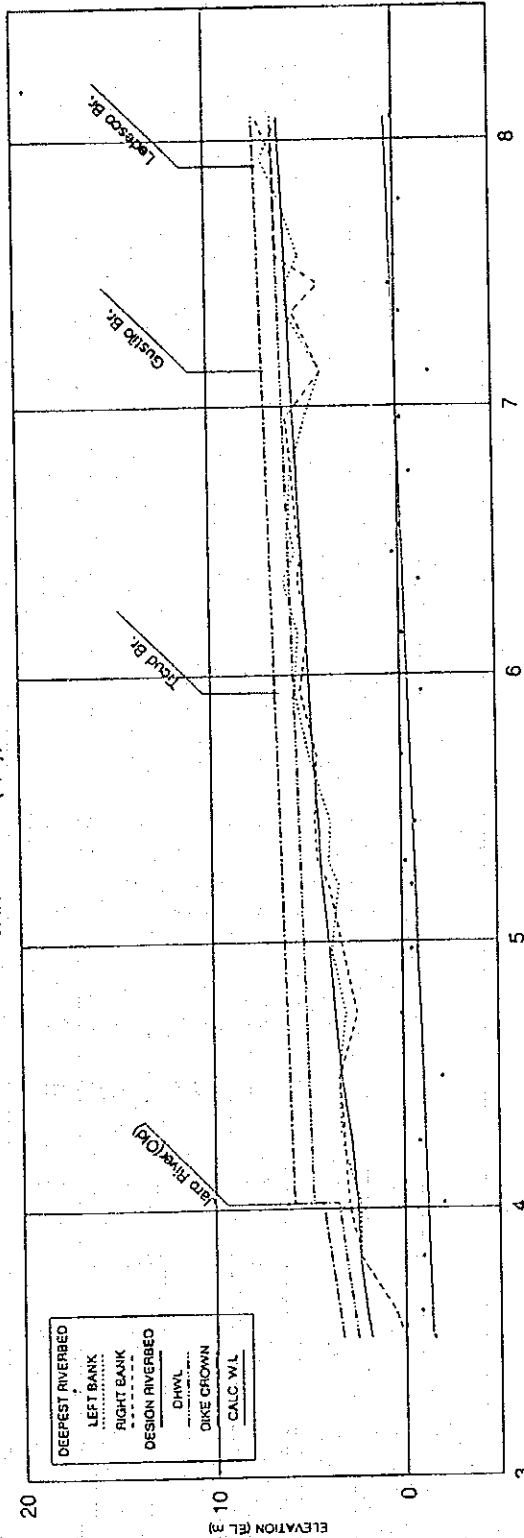


THE STUDY ON THE FLOOD CONTROL FOR RIVERS
IN THE SELECTED URBAN CENTERS
JAPAN INTERNATIONAL COOPERATION AGENCY

図 4.5(2/2) ハロ川河川改修計画平面図及び
横断面図(上流部とハロ放水路)



LONGITUDINAL PROFILE
JARO RIVER (1/3), ILOILO CITY

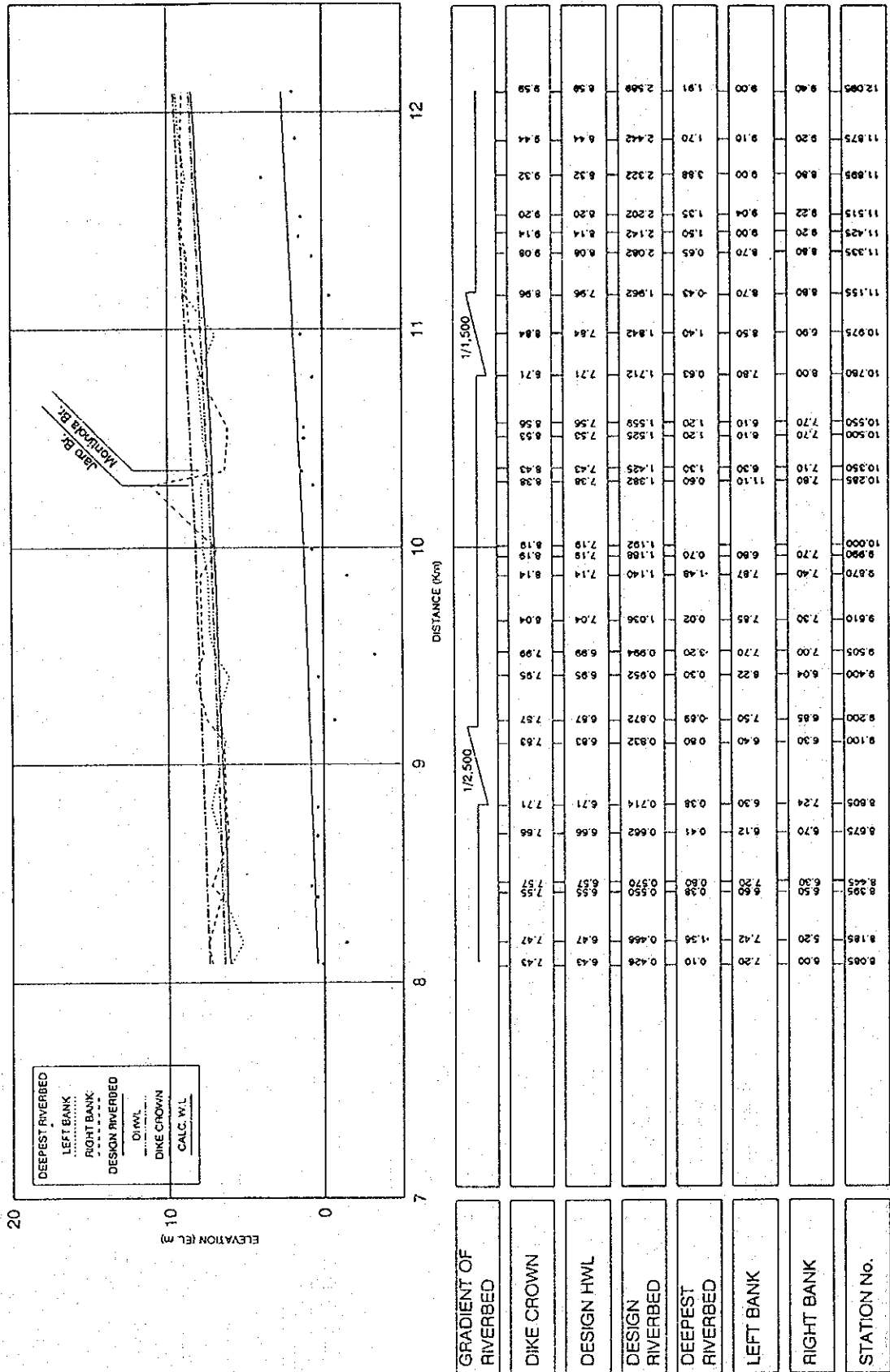


STATION No.	RIGHT BANK	LEFT BANK	DEEPEST RIVERBED	DESIGN RIVERBED	DESIGN HWL	DIKE CROWN	GRADIENT OF RIVERBED
3.520	0.00	0.00	-1.49	-1.400	2.50	3.30	
3.620	0.50	0.50	-0.81	-1.300	2.70	3.50	
3.820	2.30	2.30	-0.94	-1.200	3.10	3.90	
4.020	2.30	2.91	-2.04	-1.200	3.50	4.30	
4.250	3.28	3.12	-0.77	-1.108	4.89	5.89	
4.480	3.42	3.36	-1.88	-1.012	4.99	5.99	
4.730	3.00	2.40	0.10	-0.916	5.08	6.08	
4.970	3.71	3.11	-0.46	-0.820	5.18	6.18	
5.210	3.30	3.81	-0.51	-0.724	5.28	6.28	
5.300	3.80	4.40	-0.20	-0.688	5.31	6.31	
5.450	3.70	4.50	-0.72	-0.628	5.37	6.37	
5.700	4.80	4.40	-0.08	-0.528	5.47	6.47	
5.840	5.50	5.20	-1.10	-0.432	5.57	6.57	
6.155	5.30	4.80	-0.15	-0.346	5.65	6.65	
6.355	6.02	5.27	-1.05	-0.266	5.73	6.73	
6.455	5.40	5.10	-0.30	-0.226	5.77	6.77	
6.555	5.71	5.30	-0.03	-0.186	5.81	6.81	
6.755	5.60	5.51	-0.82	-0.106	5.89	6.89	
6.955	4.80	5.80	-0.20	-0.026	5.97	6.97	
7.130	3.84	3.92	-1.67	0.044	6.04	7.04	
7.355	5.73	5.40	-0.23	0.134	6.13	7.13	
7.460	5.70	4.00	0.30	0.176	6.18	7.18	
7.565	5.00	6.20	0.00	0.218	6.22	7.22	
7.775	6.00	6.30	-0.33	0.302	6.30	7.30	
7.930	7.00	6.30	0.00	0.364	6.36	7.36	
8.085	8.00	7.20	0.10	0.426	6.43	7.43	

THE STUDY ON THE FLOOD CONTROL FOR RIVERS
IN THE SELECTED URBAN CENTERS
JAPAN INTERNATIONAL COOPERATION AGENCY

図 4.6(1/7) ハロ川計画縦断図
(ラ. パス放水路-ハロ川 Sta. 8.085)

LONGITUDINAL PROFILE
JARO RIVER (2/3), ILOILO CITY



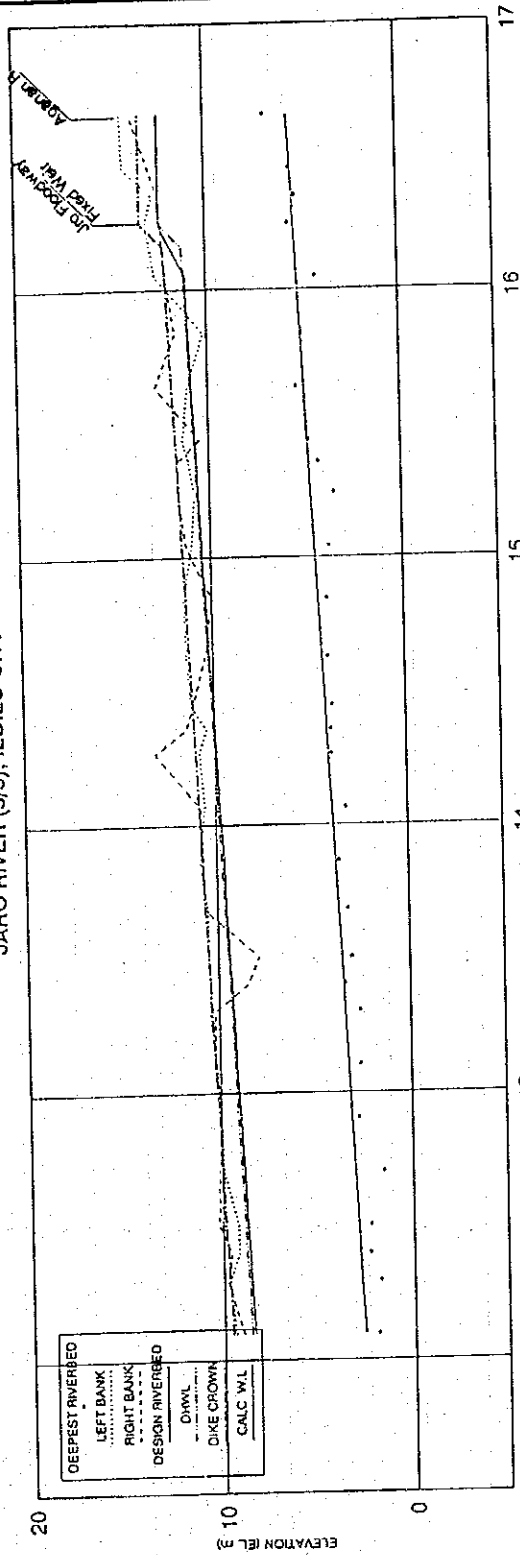
THE STUDY ON THE FLOOD CONTROL FOR RIVERS
IN THE SELECTED URBAN CENTERS

JAPAN INTERNATIONAL COOPERATION AGENCY

図 4.6(2/7)

ハロ川計画縦断面図
(ハロ川 Sta. 8.085~ Sta. 12.095)

LONGITUDINAL PROFILE
JARO RIVER (3/3), ILOILO CITY

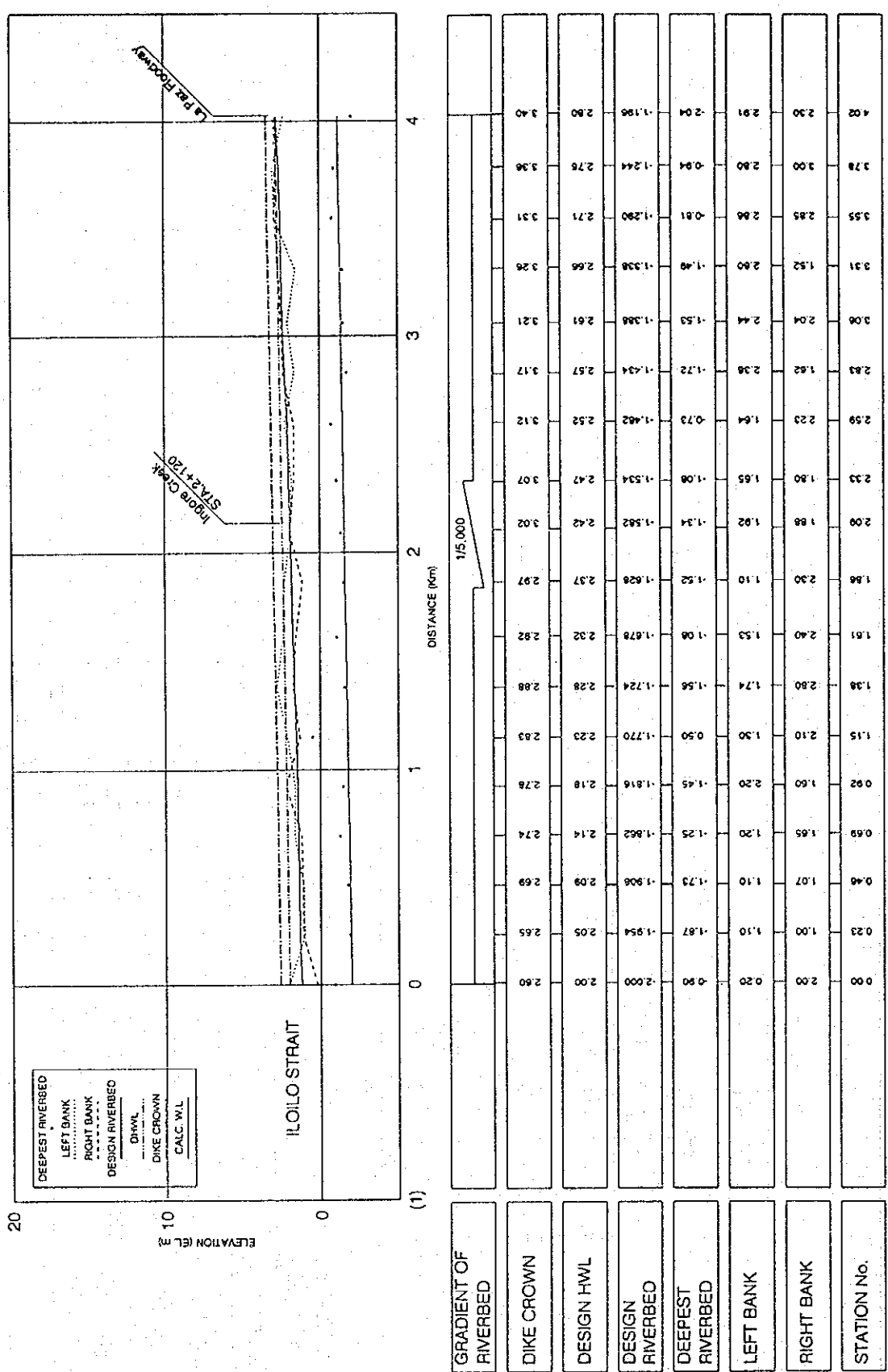


STATION No.	RIGHT BANK	LEFT BANK	DEEPEST RIVERBED	DESIGN RIVERBED	DESIGN HWL	DIKE CROWN	GRADIENT OF RIVERBED
12.095	9.40	9.00	9.00	2.580	8.59	9.59	9.59
12.295	9.70	9.50	2.722	2.722	8.72	9.72	9.72
12.400	9.20	9.00	2.792	2.792	8.79	9.79	9.79
12.505	9.21	10.20	2.802	2.802	8.86	9.86	9.86
12.705	9.90	10.10	2.995	2.995	9.00	10.00	10.00
12.905	10.00	10.00	3.129	3.129	9.13	10.13	10.13
13.105	10.20	10.21	3.262	3.262	9.26	10.26	10.26
13.305	10.51	10.21	3.395	3.395	9.40	10.40	10.40
13.405	10.40	8.50	3.462	3.462	9.46	10.46	10.46
13.505	10.50	7.90	3.529	3.529	9.53	10.53	10.53
13.685	10.50	10.70	3.649	3.649	9.65	10.65	10.65
13.865	10.90	10.70	3.769	3.769	9.77	10.77	10.77
14.065	10.53	10.60	3.902	3.902	9.90	10.90	10.90
14.265	10.80	13.20	4.035	4.035	11.04	11.04	11.04
14.355	10.40	11.50	4.095	4.095	11.10	11.10	11.10
14.445	11.20	11.10	4.155	4.155	11.16	11.16	11.16
14.625	11.40	10.40	4.275	4.275	11.28	11.28	11.28
14.845	11.50	10.00	4.422	4.422	11.42	11.42	11.42
15.000	11.00	11.30	4.525	4.525	11.53	11.53	11.53
15.040	11.00	11.30	4.552	4.552	11.55	11.55	11.55
15.240	10.80	11.70	4.685	4.685	11.69	11.69	11.69
15.335	11.10	11.70	4.762	4.762	11.76	11.76	11.76
15.435	11.40	10.50	4.815	4.815	11.82	11.82	11.82
15.635	11.10	12.80	4.949	4.949	11.95	11.95	11.95
15.835	10.20	11.70	5.082	5.082	12.08	12.08	12.08
16.050	12.70	12.20	5.225	5.225	12.23	12.23	12.23
16.102	12.70	12.20	5.225	5.225	12.23	12.23	12.23
16.250	13.20	12.40	5.359	5.359	12.30	12.30	12.30
16.355	12.80	12.50	5.429	5.429	12.50	12.50	12.50
16.460	12.80	12.50	5.429	5.429	12.50	12.50	12.50
16.660	14.30	13.00	5.632	5.632	13.50	13.50	13.50

THE STUDY ON THE FLOOD CONTROL FOR RIVERS
IN THE SELECTED URBAN CENTERS
JAPAN INTERNATIONAL COOPERATION AGENCY

☒ 4.6(3/7) ハロ川計画縦断面図
(ハロ川 Sta. 12.095 ~ Sta. 16.660)

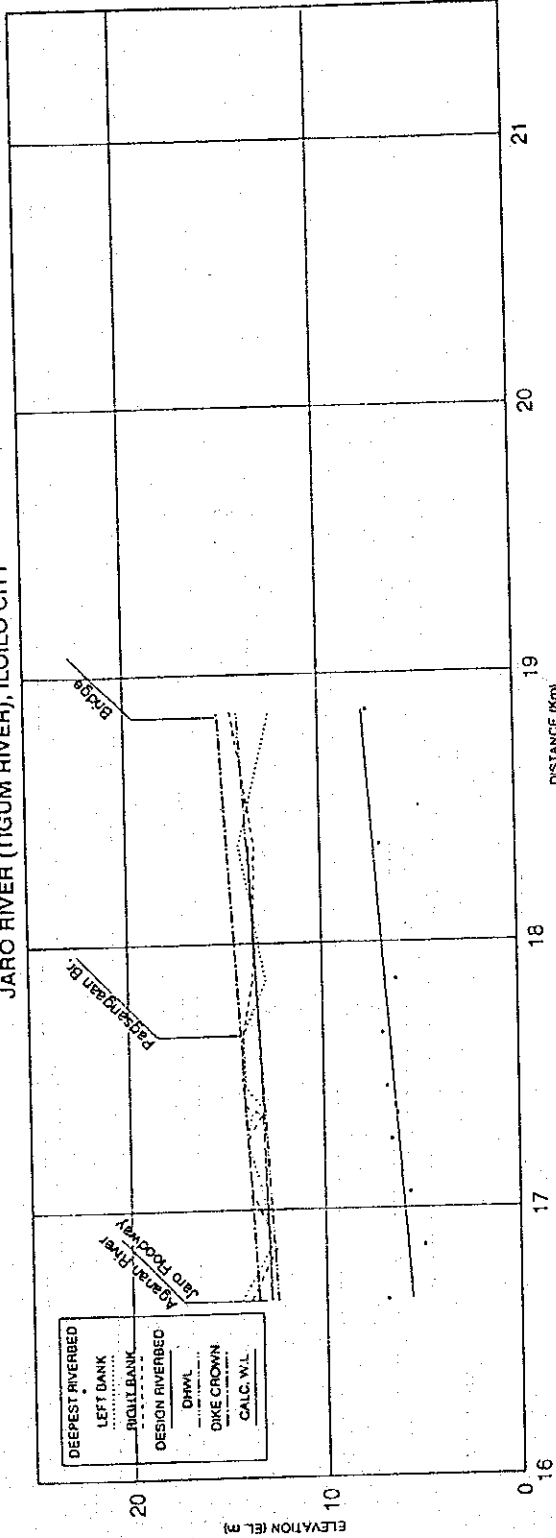
LONGITUDINAL PROFILE
JARO RIVER (RIVER MOUSE-LA PAZ FW), ILOILO CITY



THE STUDY ON THE FLOOD CONTROL FOR RIVERS
IN THE SELECTED URBAN CENTERS
JAPAN INTERNATIONAL COOPERATION AGENCY

図 4.6(4/7) ハロ川計画縦断面図
(ハロ川 Sta. 0.000 ~ Sta. 4.020)

LONGITUDINAL PROFILE
JARO RIVER (TIGUM RIVER), ILOILO CITY

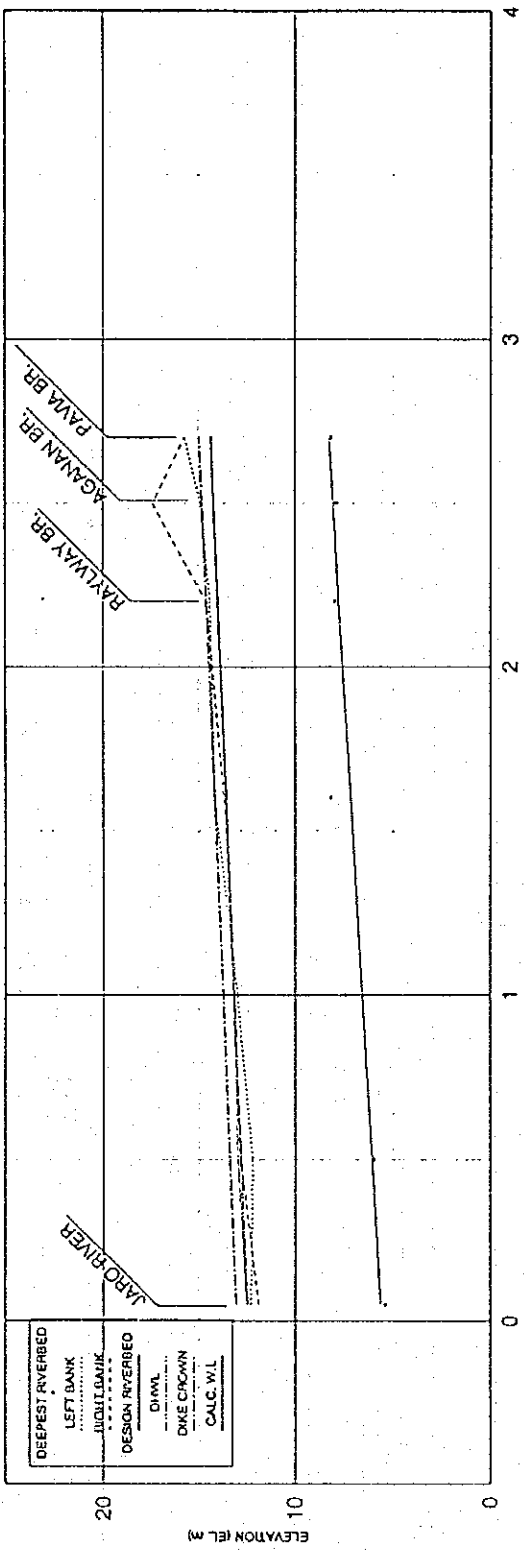


STATION No.	RIGHT BANK	LEFT BANK	DEEPEST RIVERBED	DESIGN RIVERBED	DESIGN HWL	DIKE CROWN	GRADIENT OF RIVERBED
10.00	14.4	13.9	8.9	5.032	12.50	13.50	
10.66	12.6	12.5	5.0	5.032	12.65	13.65	
11.00	13.2	13.7	5.7	6.032	12.81	13.81	
12.00	14.0	14.0	6.6	6.232	12.96	13.96	
12.36	13.7	13.8	6.6	6.232	13.04	14.04	
12.50	13.2	13.2	6.6	6.232	13.06	14.06	
12.56	14.0	14.2	6.8	6.432	13.12	14.12	
12.66	14.1	14.1	7.0	6.632	13.27	14.27	1/1,000
12.86	12.9	13.6	6.9	6.832	13.42	14.42	
13.00	14.2	13.4	7.0	7.032	13.61	14.61	
13.06	14.2	13.4	7.0	7.032	13.61	14.61	
13.19	14.5	14.5	7.6	7.632	14.19	15.19	
13.86	12.5	12.5	14.5	14.5	14.19	15.19	

THE STUDY ON THE FLOOD CONTROL FOR RIVERS
IN THE SELECTED URBAN CENTERS
JAPAN INTERNATIONAL COOPERATION AGENCY

図 4.6(5/7) ハロ川計画縦断面図
(ティグム川)

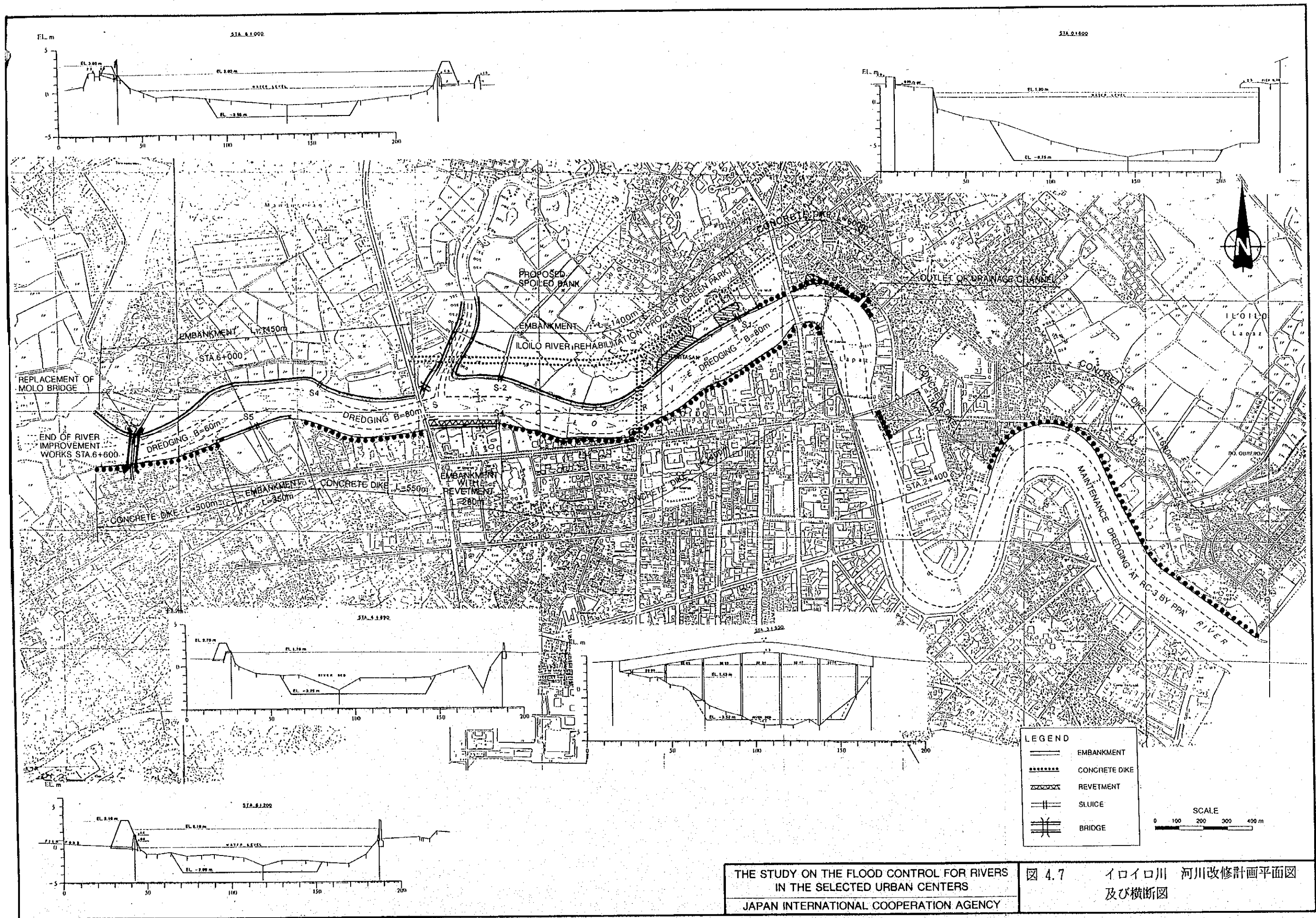
LONGITUDINAL PROFILE
JARO RIVER (AGANAN RIVER), ILOILO CITY



GRADIENT OF RIVERBED	DIKE CROWN	DESIGN HWL	DESIGN RIVERBED	DEEPEST RIVERBED	LEFT BANK	RIGHT BANK	STATION No.
13.10	13.42	12.82	5.82	5.4	12.3	12.3	0.05
13.78	13.78	13.18	6.582	7.5	13.2	13.0	1.00
14.21	14.21	13.61	7.182	6.2	13.7	14.2	1.60
14.04	14.04	14.04	7.782	8.0	14.6	14.4	2.20
14.85	14.85	14.25	8.082	7.8	17.4	14.8	2.50
14.99	14.99	14.30	8.282	8.2	15.7	15.7	2.70

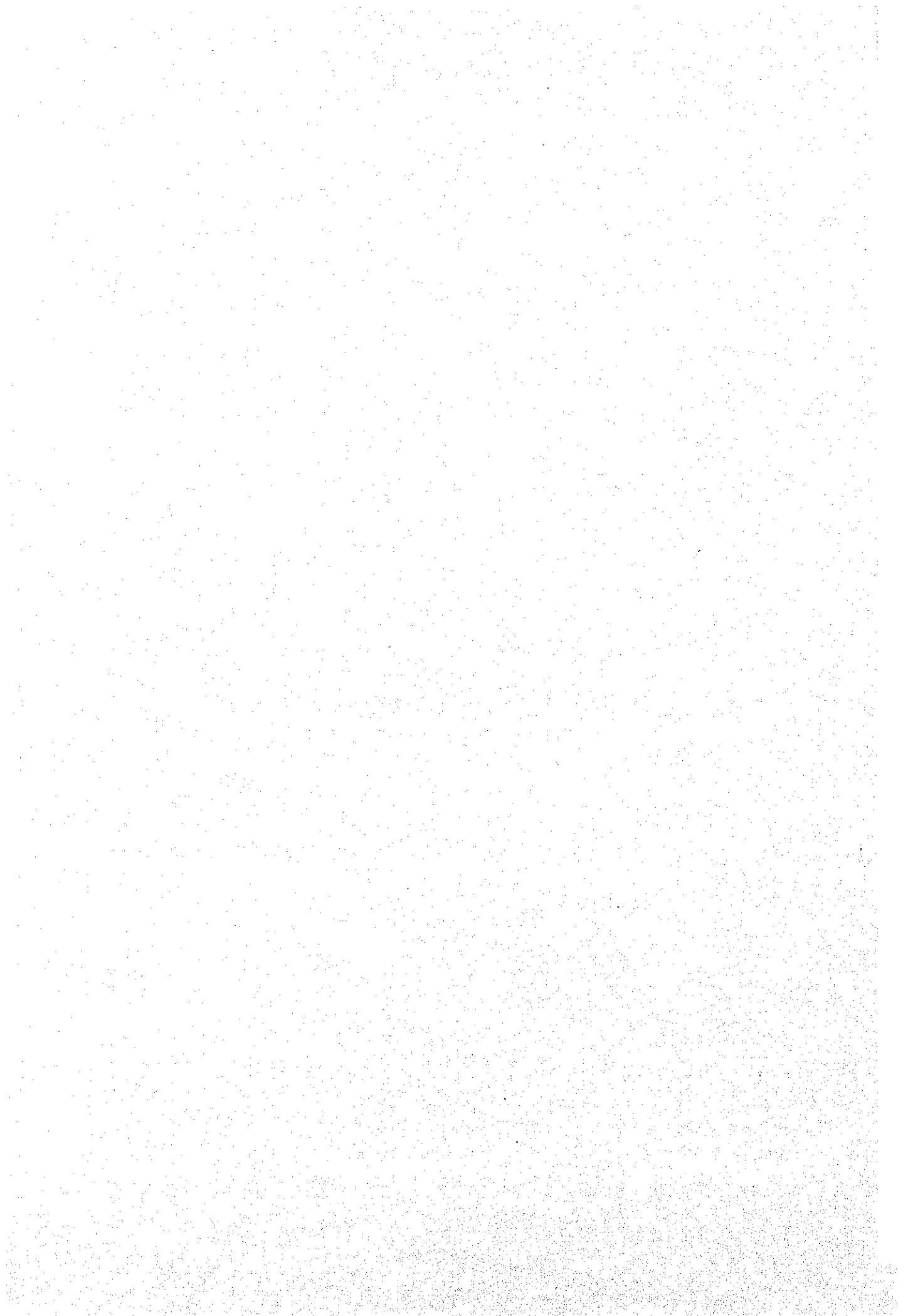
THE STUDY ON THE FLOOD CONTROL FOR RIVERS
IN THE SELECTED URBAN CENTERS
JAPAN INTERNATIONAL COOPERATION AGENCY

図 4.6(6/7) ハロ川計画縦断図 (アガナン川)

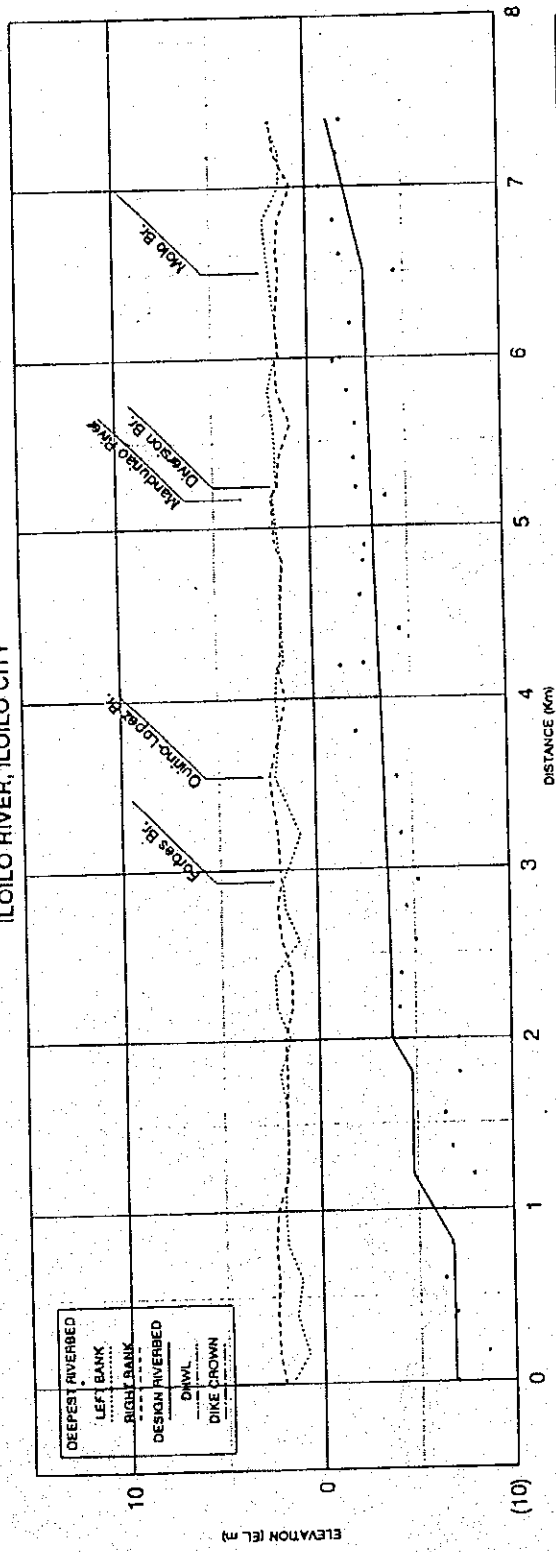


THE STUDY ON THE FLOOD CONTROL FOR RIVERS
IN THE SELECTED URBAN CENTERS
JAPAN INTERNATIONAL COOPERATION AGENCY

図 4.7 イロイロ川 河川改修計画平面図
及び横断図



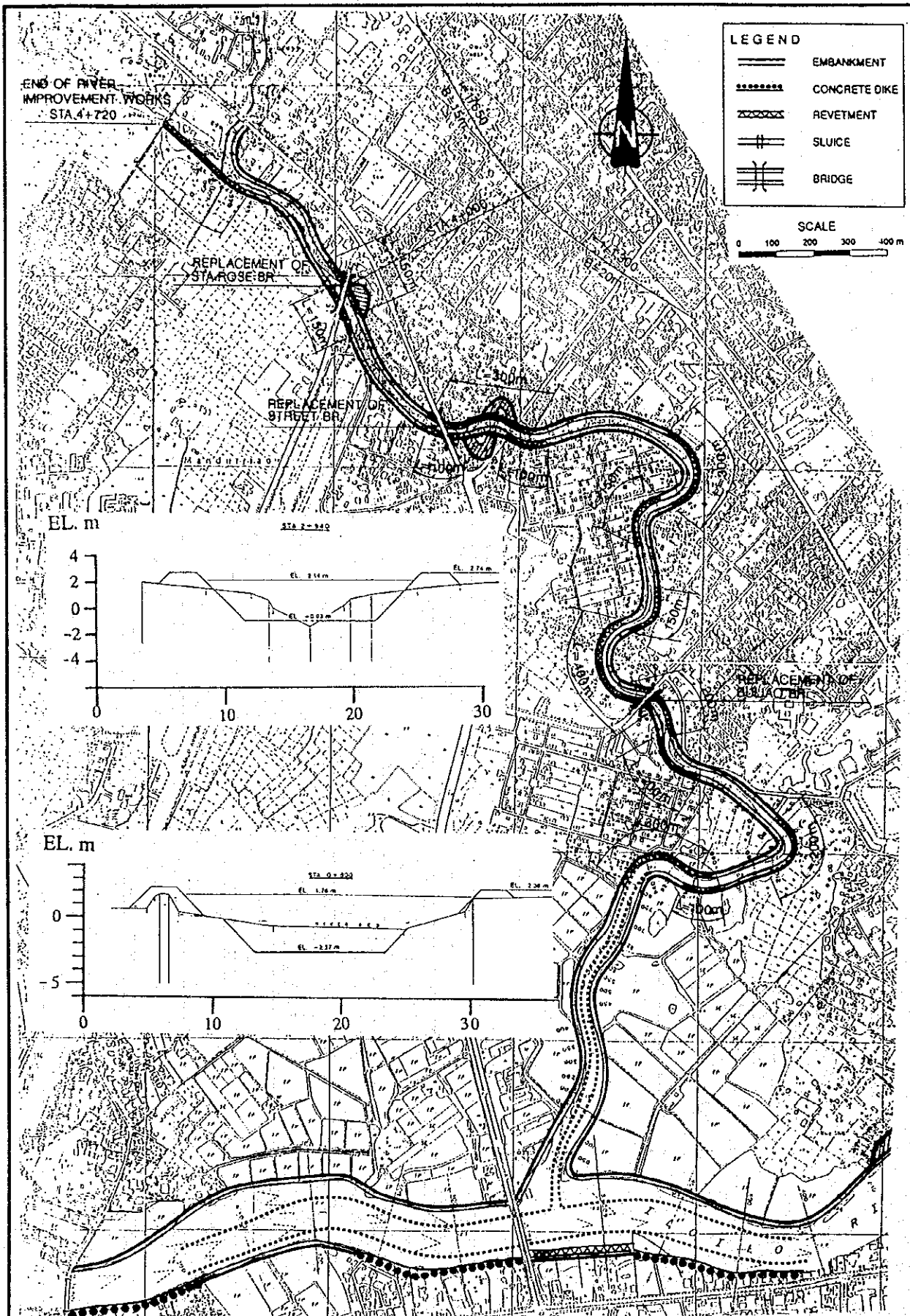
LONGITUDINAL PROFILE
ILOILO RIVER, ILOILO CITY



STATION No.	RIGHT BANK	LEFT BANK	DEEPEST RIVERBED	DESIGN RIVERBED	DESIGN HWL	DIKE CROWN	GRADIENT OF RIVERBED
0.000	1.70	0.78	2.32	0.80	0.750	1.200	2.200
0.125	0.78	1.36	2.27	0.80	0.750	1.200	2.200
0.400	1.07	2.30	4.34	0.750	0.750	1.200	2.200
0.600	1.79	2.40	0.89	0.750	0.750	1.200	2.200
0.800	1.79	2.40	0.89	0.750	0.750	1.200	2.200
1.000	1.90	2.30	0.30	0.750	0.750	1.200	2.200
1.200	1.83	1.70	-7.92	0.750	1.200	2.200	2.200
1.360	1.70	1.70	-0.79	0.750	1.200	2.200	2.200
1.555	1.71	1.74	-6.42	0.750	1.200	2.200	2.200
1.800	2.09	1.70	-7.22	0.750	1.200	2.200	2.200
2.000	1.50	1.80	-7.20	0.750	1.200	2.200	2.200
2.180	2.20	1.40	-4.17	0.750	1.200	2.200	2.200
2.380	2.30	1.40	-4.28	0.750	1.200	2.200	2.200
2.571	0.98	1.90	-0.05	-0.711	1.239	2.239	2.278
2.772	1.70	2.10	-4.58	-0.872	1.278	2.278	2.308
2.827	1.60	1.90	-0.20	-0.641	1.308	2.308	2.364
3.200	0.80	2.03	-4.40	-0.586	1.364	2.364	2.430
3.530	2.10	2.43	-4.20	-0.520	1.430	2.430	2.484
3.800	1.90	1.90	-2.10	-0.468	1.464	2.484	2.524
4.000	2.00	1.50	-0.20	-0.328	1.524	2.524	2.562
4.200	1.91	1.56	-0.20	-0.388	1.564	2.564	2.584
4.400	1.80	1.70	-4.50	-0.346	1.604	2.504	2.604
4.600	1.70	1.60	-2.50	-0.306	1.644	2.644	2.702
4.800	1.55	1.46	-2.70	-0.266	1.684	2.684	2.760
4.890	1.70	1.80	-3.90	-0.180	1.760	2.760	2.777
5.190	1.98	1.80	-2.07	-0.180	1.760	2.760	2.777
5.290	1.80	1.72	-2.80	-0.180	1.760	2.760	2.777
5.400	1.80	1.60	-2.30	-0.146	1.833	2.833	2.833
5.600	1.68	0.88	-2.40	-0.108	1.900	2.900	2.900
5.800	2.10	1.63	-2.00	-0.068	1.967	2.967	2.967
6.000	1.90	1.58	-1.70	-0.027	2.033	3.033	3.033
6.200	1.70	1.71	-2.20	-0.086	2.100	3.100	3.200
6.500	2.00	1.50	-4.50	-2.926	2.200	3.200	3.233
6.600	2.10	1.60	-1.70	-2.726	2.233	3.233	3.300
6.800	1.38	0.78	-1.40	-2.326	2.300	3.300	3.367
7.000	1.38	0.78	-0.74	-1.926	2.367	3.367	3.433
7.200	1.38	1.69	-1.80	-1.526	2.433	3.433	3.500
7.400	2.00	1.38	-1.80	-1.126	2.500	3.500	

THE STUDY ON THE FLOOD CONTROL FOR RIVERS
IN THE SELECTED URBAN CENTERS
JAPAN INTERNATIONAL COOPERATION AGENCY

図 4.8 イロイロ川 計画縦断面図



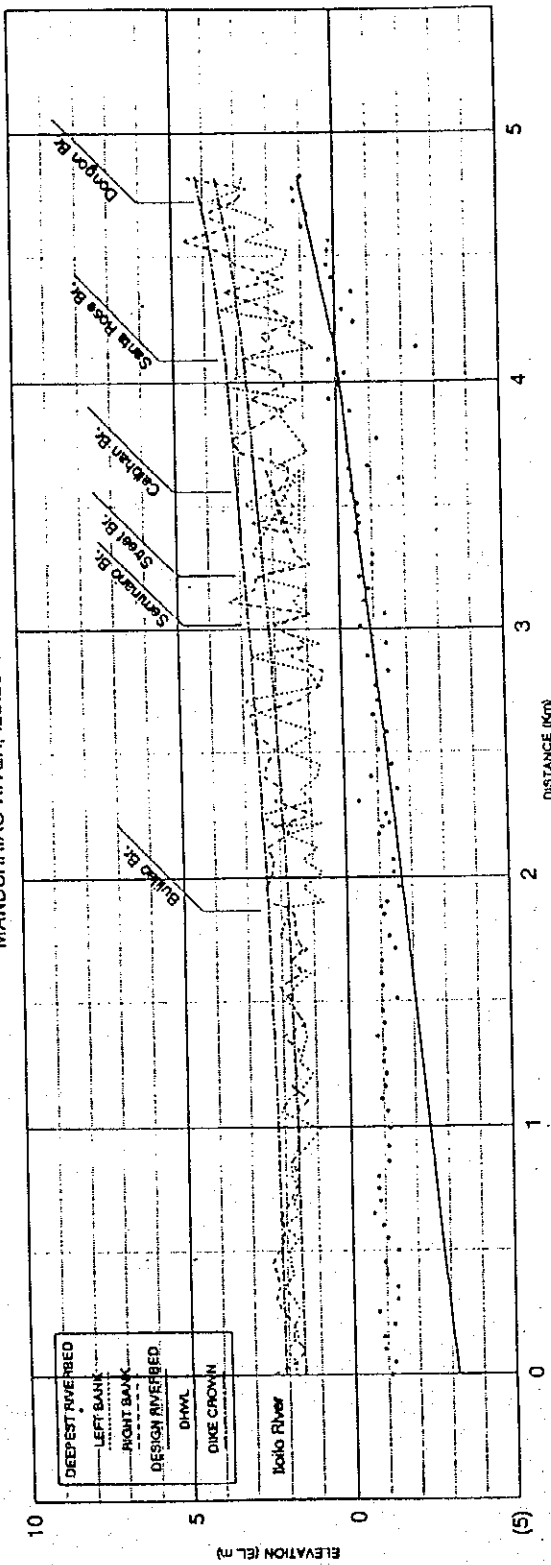
THE STUDY ON THE FLOOD CONTROL FOR RIVERS
IN THE SELECTED URBAN CENTERS

JAPAN INTERNATIONAL COOPERATION AGENCY

図 4.9

マンドリアオ川 河川改修計画
平面図及び横断面図

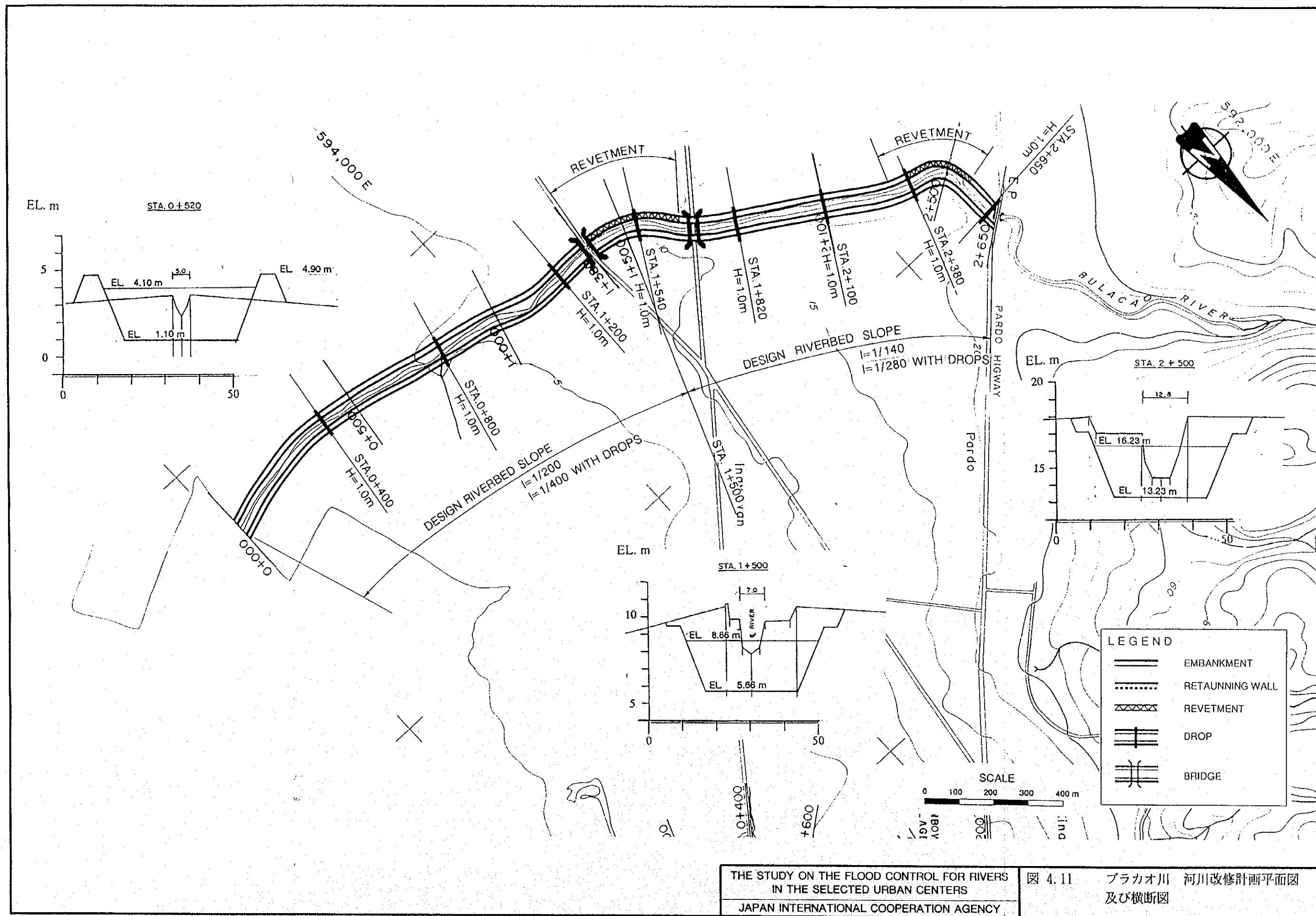
LONGITUDINAL PROFILE
MANDURRIAO RIVER, ILOILO CITY



STATION No.	RIGHT BANK	LEFT BANK	DEEPEST RIVERBED	DESIGN RIVERBED	DESIGN HWL	DIKE CROWN	GRADIENT OF RIVERBED
0.00	1.80	2.50	-1.10	-1.10	3.18	2.10	2.10
0.10	2.08	1.46	-0.80	-0.80	3.11	2.11	2.11
0.20	1.80	1.50	-1.20	-1.20	3.04	2.12	2.12
0.30	1.78	2.34	-1.32	-1.32	2.98	2.13	2.13
0.40	1.80	2.30	-1.00	-1.00	2.88	2.14	2.14
0.50	1.81	2.22	-1.37	-1.37	2.81	2.15	2.15
0.60	1.80	2.10	-0.90	-0.90	2.73	2.17	2.17
0.70	1.77	1.87	-0.83	-0.83	2.65	2.18	2.18
0.80	1.80	1.50	-1.11	-1.11	2.48	2.20	2.20
0.90	1.95	1.61	-1.01	-1.01	2.40	2.21	2.21
1.00	1.80	1.58	-1.18	-1.18	2.43	2.21	2.21
1.10	1.88	1.26	-0.92	-0.92	2.34	2.23	2.23
1.20	1.11	1.57	-1.08	-1.08	2.28	2.25	2.25
1.30	1.38	1.52	-1.04	-1.04	2.18	2.27	2.27
1.40	1.35	1.32	-1.05	-1.05	2.11	2.29	2.29
1.50	1.88	1.79	-1.46	-1.46	2.03	2.31	2.31
1.60	1.13	1.36	-0.99	-0.99	1.95	2.33	2.33
1.70	1.19	1.35	-1.42	-1.42	1.87	2.35	2.35
1.80	1.80	2.24	-1.42	-1.42	1.84	2.40	2.40
1.90	1.80	1.80	-1.00	-1.00	1.74	2.38	2.38
2.00	0.84	2.36	-1.55	-1.55	1.66	2.46	2.46
2.10	2.10	2.20	-1.10	-1.10	1.50	2.48	2.48
2.20	2.30	1.87	-1.31	-1.31	1.48	2.49	2.49
2.30	1.40	2.40	-0.70	-0.70	1.33	2.53	2.53
2.40	1.80	2.50	-0.80	-0.80	1.28	2.58	2.58
2.50	2.60	2.11	-0.43	-0.43	1.42	2.52	2.52
2.60	2.60	2.40	-1.40	-1.40	1.69	2.48	2.48
2.70	2.30	2.10	-1.10	-1.10	1.82	2.56	2.56
2.80	2.30	2.30	-0.80	-0.80	1.94	2.58	2.58
2.90	2.60	2.50	-0.80	-0.80	1.89	2.59	2.59
3.00	2.51	1.79	-1.26	-1.26	1.82	2.58	2.58
3.10	2.58	2.67	-1.30	-1.30	1.21	2.62	2.62
3.20	2.71	2.85	-1.04	-1.04	1.11	2.66	2.66
3.30	2.83	1.91	-1.30	-1.30	1.01	2.70	2.70
3.40	2.84	0.82	-1.05	-1.05	0.93	2.74	2.74
3.50	2.91	2.30	-0.70	-0.70	0.80	2.77	2.77
3.60	3.11	1.40	-0.40	-0.40	0.83	2.83	2.83
3.70	3.21	1.80	-0.80	-0.80	0.80	2.83	2.83
3.80	3.30	2.60	-1.30	-1.30	0.84	2.84	2.84
3.90	3.36	1.80	-0.40	-0.40	0.98	2.84	2.84
4.00	3.35	1.17	-0.51	-0.51	0.50	2.88	2.88
4.10	3.51	2.82	-1.36	-1.36	0.49	2.45	2.45
4.20	3.82	1.01	-1.50	-1.50	0.41	2.51	2.51
4.30	3.72	0.88	-0.30	-0.30	0.33	2.57	2.57
4.40	3.82	0.00	0.00	0.00	0.25	2.62	2.62
4.50	3.93	1.19	0.21	0.21	0.17	2.68	2.68
4.60	4.04	2.78	-0.26	-0.26	0.08	2.74	2.74
4.70	4.06	2.90	-0.04	-0.04	0.20	2.77	2.77
4.80	4.14	0.85	1.88	1.88	0.03	2.82	2.82
4.90	4.24	1.31	-2.44	-2.44	0.19	2.92	2.92
5.00	4.28	0.65	1.90	1.90	0.20	2.97	2.97
5.10	4.32	1.40	0.09	0.09	0.46	3.10	3.10
5.20	4.42	2.37	-0.20	-0.20	0.82	3.20	3.20
5.30	4.52	1.78	0.98	0.98	0.76	3.33	3.33
5.40	4.62	3.80	1.20	1.20	0.93	3.48	3.48
5.50	4.72	3.00	0.20	0.20	1.08	3.64	3.64

THE STUDY ON THE FLOOD CONTROL FOR RIVERS
IN THE SELECTED URBAN CENTERS
JAPAN INTERNATIONAL COOPERATION AGENCY

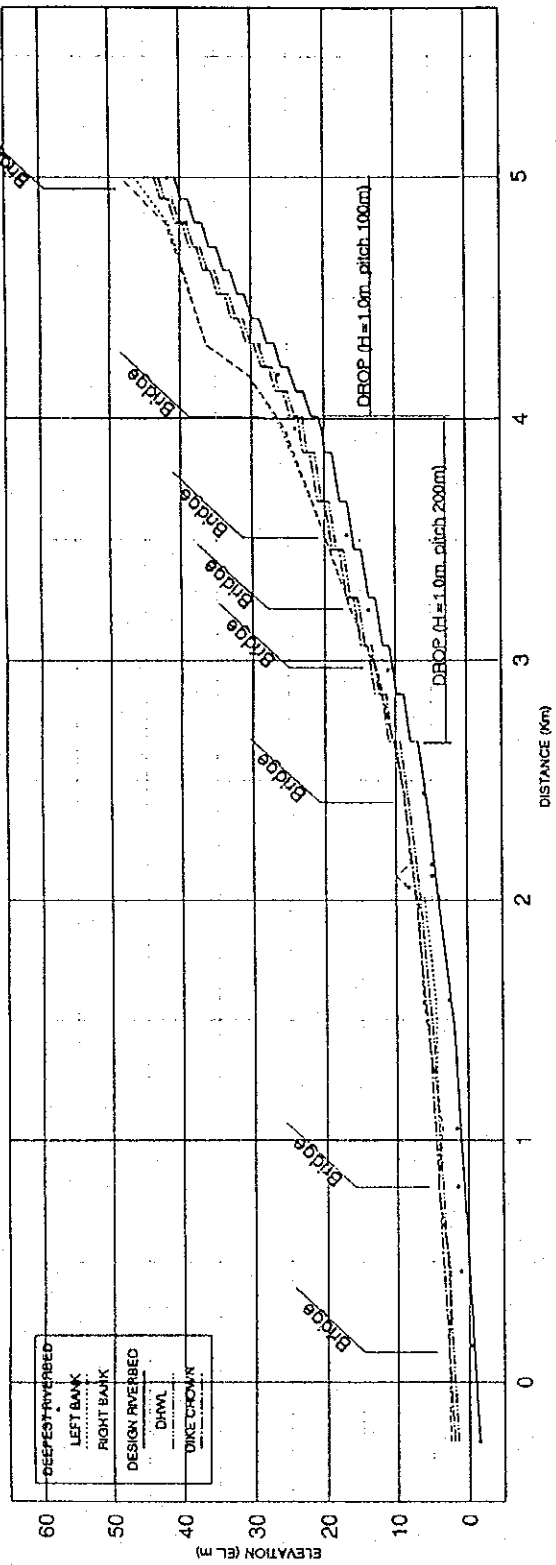
4.10 マンドリアオ川
計画縦断面図



THE STUDY ON THE FLOOD CONTROL FOR RIVERS
IN THE SELECTED URBAN CENTERS
JAPAN INTERNATIONAL COOPERATION AGENCY

図 4.11 プラカオ川 河川改修計画平面図
及び横断面図

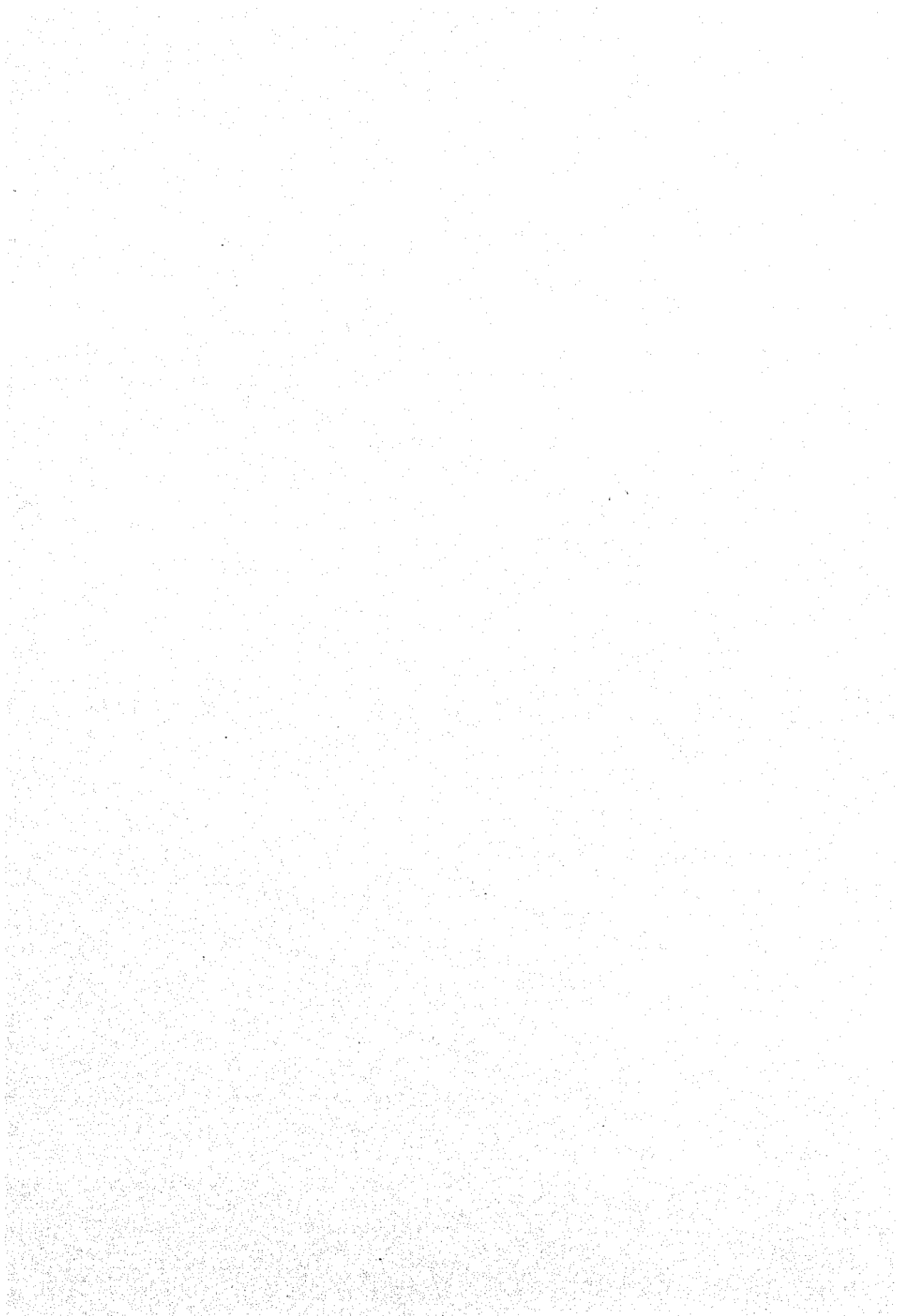
LONGITUDINAL PROFILE
SUBBANG DAKU RIVER, CEBU CITY

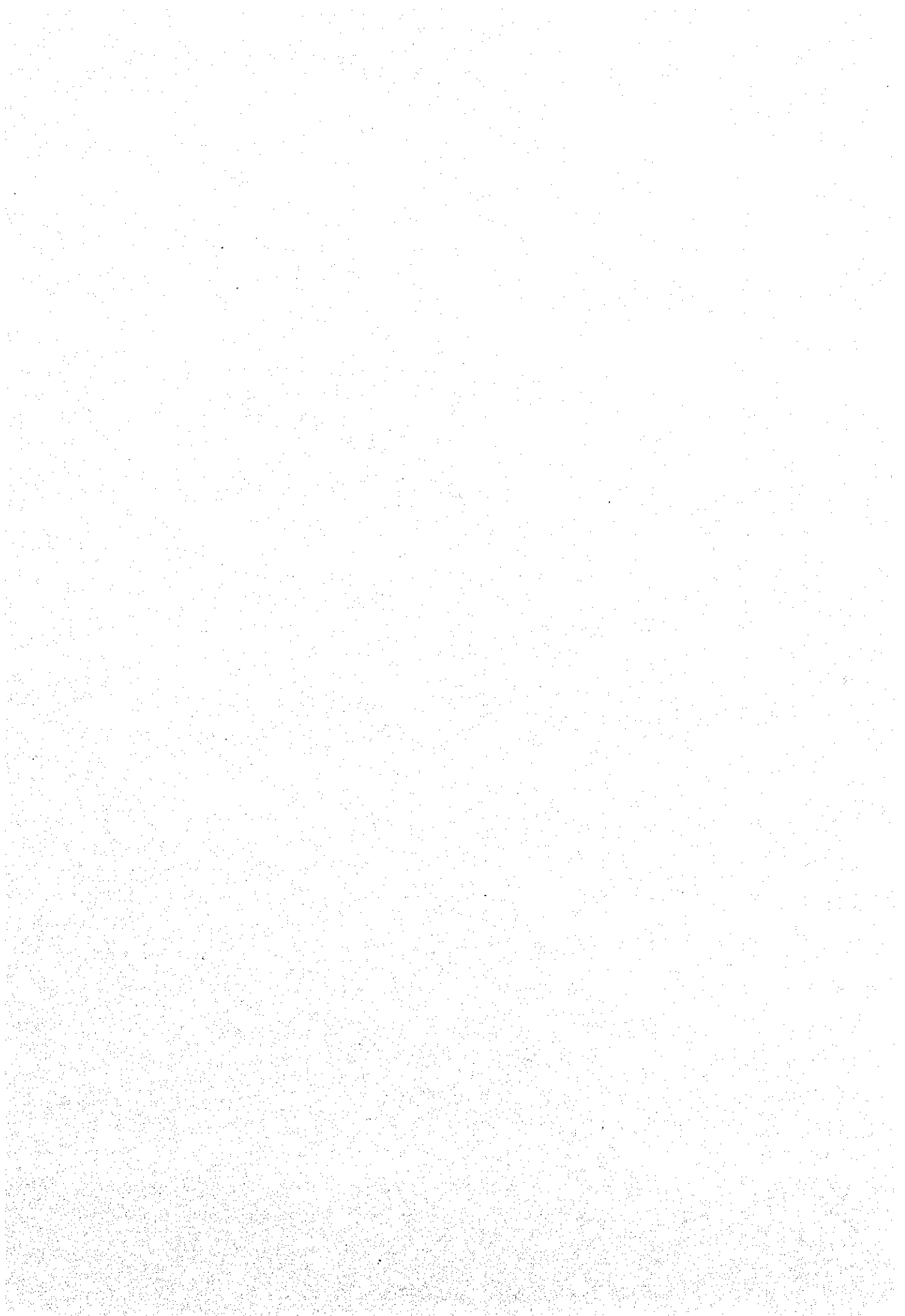


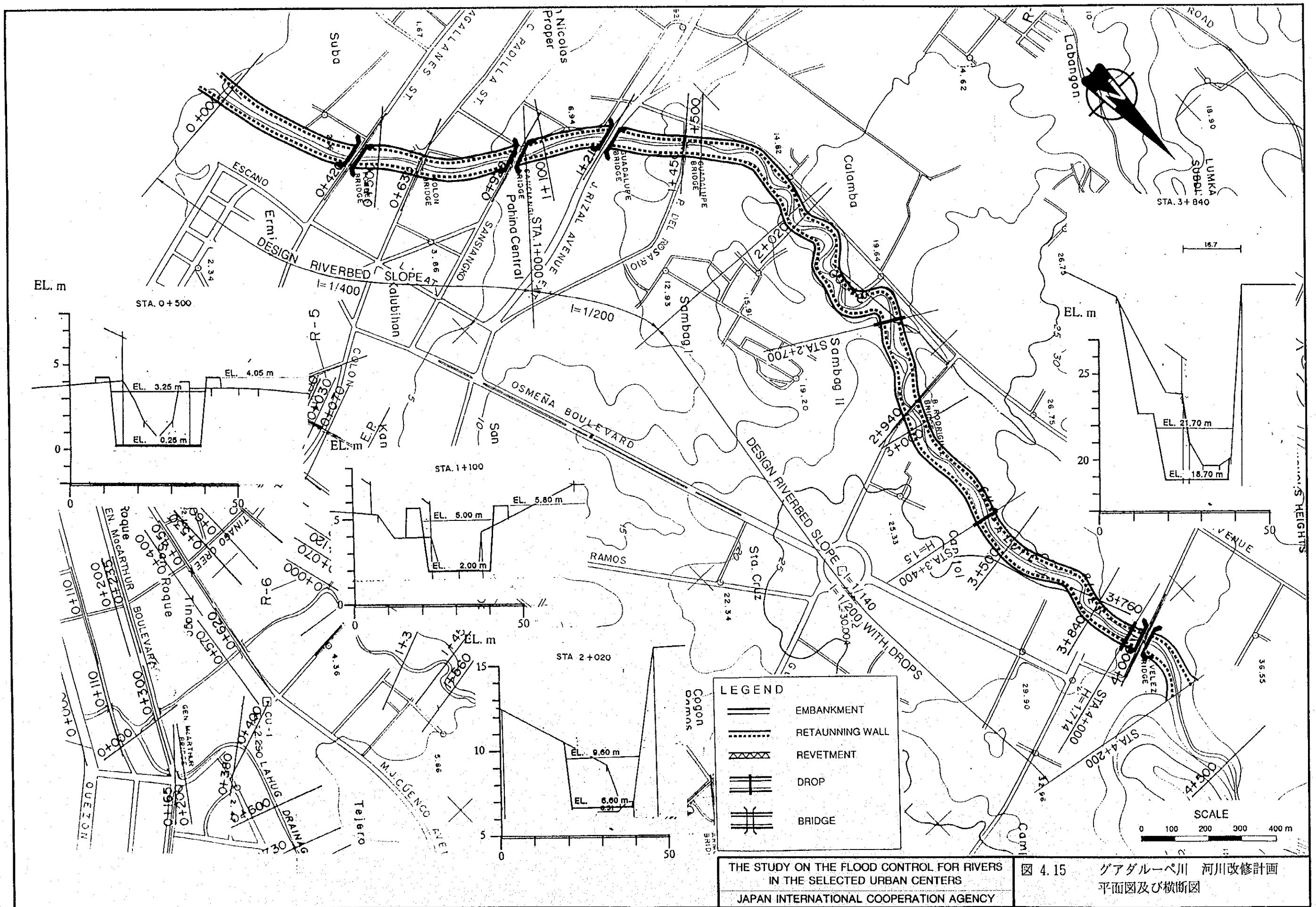
STATION No.	RIGHT BANK	LEFT BANK	DEEPEST RIVERBED	DESIGN RIVERBED	DESIGN HWL	DIKE CROWN	GRADIENT OF RIVERBED
0.250	2.700	2.800	2.800	2.800	2.700	2.700	1.500
0.300	2.500	2.700	2.700	2.700	2.700	2.700	1.500
0.460	2.500	2.700	2.700	2.700	2.700	2.700	1.500
0.810	4.210	4.210	4.210	4.210	4.210	4.210	1.500
1.050	4.100	3.800	3.800	3.800	4.100	4.100	1.500
1.460	4.500	3.900	3.900	3.900	4.500	4.500	1.500
1.580	5.000	5.000	5.000	5.000	5.000	5.000	1.500
2.010	6.000	6.900	6.900	6.900	6.000	6.000	1.500
2.148	10.000	10.000	10.000	10.000	10.000	10.000	1.500
2.445	8.700	8.700	8.700	8.700	8.700	8.700	1.500
2.460	8.700	8.700	8.700	8.700	8.700	8.700	1.500
2.660	8.700	8.700	8.700	8.700	8.700	8.700	1.500
2.860	12.800	12.800	12.800	12.800	12.800	12.800	1.500
2.960	12.800	12.800	12.800	12.800	12.800	12.800	1.500
3.000	12.800	12.800	12.800	12.800	12.800	12.800	1.500
3.210	16.400	16.400	16.400	16.400	16.400	16.400	1.500
3.260	16.400	16.400	16.400	16.400	16.400	16.400	1.500
3.260	16.400	16.400	16.400	16.400	16.400	16.400	1.500
3.460	20.000	20.000	20.000	20.000	20.000	20.000	1.500
3.520	20.000	20.000	20.000	20.000	20.000	20.000	1.500
3.660	25.000	25.000	25.000	25.000	25.000	25.000	1.500
3.660	25.000	25.000	25.000	25.000	25.000	25.000	1.500
3.810	29.900	29.900	29.900	29.900	29.900	29.900	1.500
4.110	30.400	30.400	30.400	30.400	30.400	30.400	1.500
4.180	30.400	30.400	30.400	30.400	30.400	30.400	1.500
4.210	30.400	30.400	30.400	30.400	30.400	30.400	1.500
4.300	36.200	36.200	36.200	36.200	36.200	36.200	1.500
4.410	36.200	36.200	36.200	36.200	36.200	36.200	1.500
4.410	36.200	36.200	36.200	36.200	36.200	36.200	1.500
4.510	36.200	36.200	36.200	36.200	36.200	36.200	1.500
4.610	36.200	36.200	36.200	36.200	36.200	36.200	1.500
4.710	36.200	36.200	36.200	36.200	36.200	36.200	1.500
4.810	42.000	42.000	42.000	42.000	42.000	42.000	1.500
4.910	42.000	42.000	42.000	42.000	42.000	42.000	1.500
5.000	48.400	48.400	48.400	48.400	48.400	48.400	1.500

THE STUDY ON THE FLOOD CONTROL FOR RIVERS
IN THE SELECTED URBAN CENTERS
JAPAN INTERNATIONAL COOPERATION AGENCY

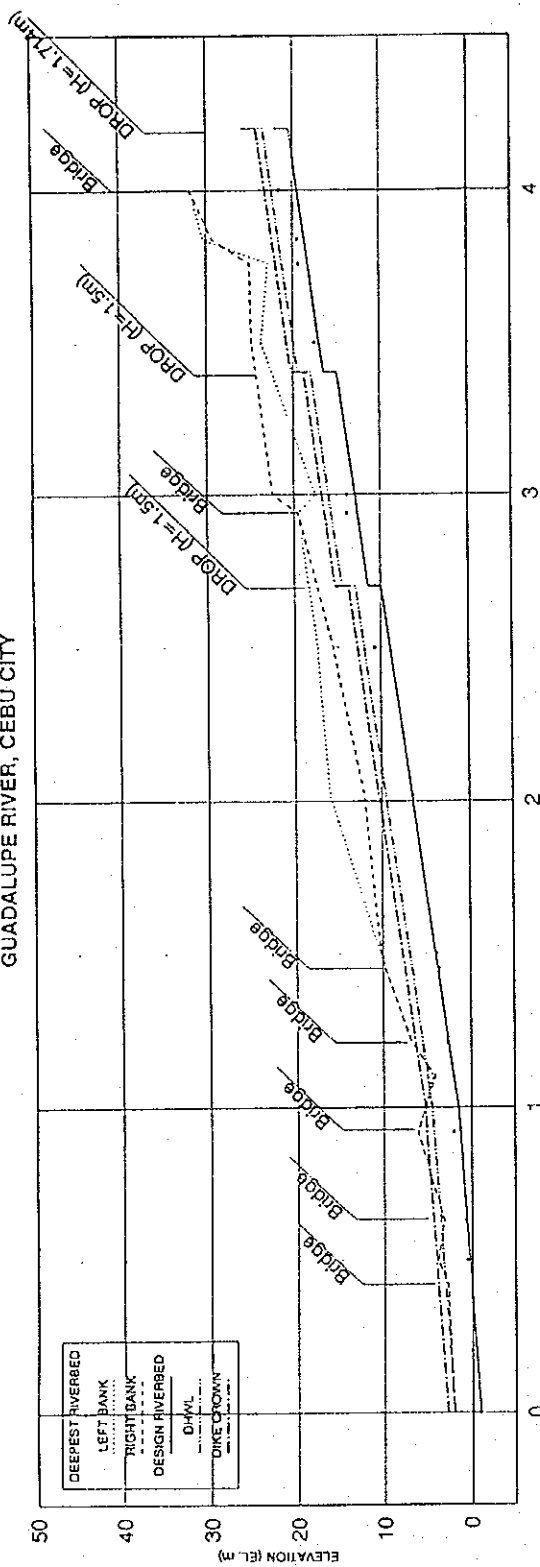
図 4.12
ブラカオ川 計画縦断面図







LONGITUDINAL PROFILE
GUADALUPE RIVER, CEBU CITY



STATION No.	RIGHT BANK	LEFT BANK	DEEPEST RIVERBED	DESIGN RIVERBED	DESIGN HWL	DIKE CROWN	GRADIENT OF RIVERBED
0.00	2.00	2.00	0.970	-1.000	2.00	2.80	
0.420	2.700	2.700	0.000	0.050	3.050	3.850	
0.500	3.800	3.800	0.500	0.250	3.250	4.050	
0.630	3.150	3.150	0.330	0.575	3.575	4.075	
0.820	6.100	6.100	2.000	1.300	4.300	5.100	
1.000	4.300	4.300	2.000	1.500	4.500	5.300	
1.100	4.300	4.300	2.000	2.000	5.000	5.800	
1.210	6.800	6.800	2.660	2.550	5.550	6.350	
1.500	8.700	9.700	3.590	3.750	6.750	7.550	1/200
1.550	10.300	10.300	4.000	4.000	7.000	7.800	
2.000	16.000	16.000	6.510	6.500	9.500	10.300	
2.500	17.300	15.500	10.800	9.000	12.000	12.800	
2.700	19.500	19.500	13.910	11.500	13.800	15.300	
2.840	19.500	19.500	13.910	12.700	15.700	16.500	
3.000	17.500	22.500	13.900	12.000	16.000	16.800	1/140
3.400	23.700	24.800	17.570	17.000	20.000	20.300	1/280 with Drops
3.500	29.300	29.300	18.470	18.300	21.700	22.500	
3.760	22.800	25.000	18.370	18.300	21.300	22.100	
3.840	30.300	30.300	18.470	18.700	21.700	22.500	
4.000	31.800	31.800	21.800	18.500	22.500	23.300	
4.200	31.800	31.800	21.800	20.500	25.214	26.014	

THE STUDY ON THE FLOOD CONTROL FOR RIVERS
IN THE SELECTED URBAN CENTERS

JAPAN INTERNATIONAL COOPERATION AGENCY

図 4.16 グアダルーペ川 計画縦断面図

