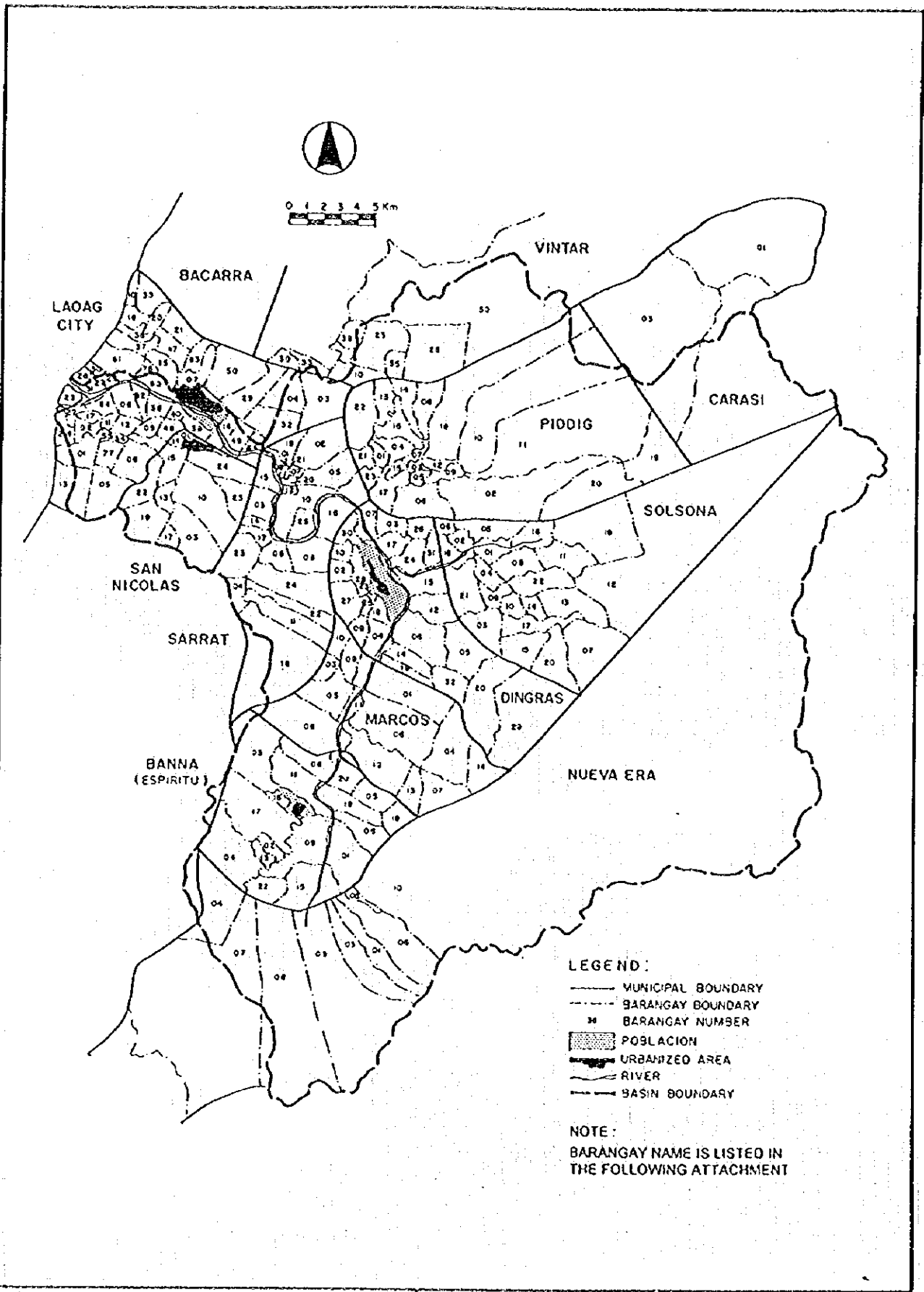


Sub-Basin	Topographic Components	Area	Remarks (Major Tributaries)
Upper Basin	Mountains/Hills	633.9 km ²	Cura R., Labugaon R., Solsona R., Madongan R., Papa R., Bongo R.
	Alluvial Fan	201.1 km ²	
	Total	835.0 km ²	
Middle South Basin	Hills	109.0 km ²	Magalis C., Suyo C.
	Alluvial Plain	51.0 km ²	
	Total	160.0 km ²	
Middle North Basin	Mountains/Hills	135.5 km ²	Guisit R.
	Alluvial Plain	42.8 km ²	
	Total	178.3 km ²	
Lower Basin	Hills	57.2 km ²	
	Alluvial Plain	101.6 km ²	
	Total	158.8 km ²	
Whole Basin	Mountains/Hills	935.6 km ²	(70.2 %)
	Alluvial Fan	201.1 km ²	(15.1 %)
	Alluvial Plain	195.4 km ²	(14.7 %)
	Total	1332.1 km ²	

THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

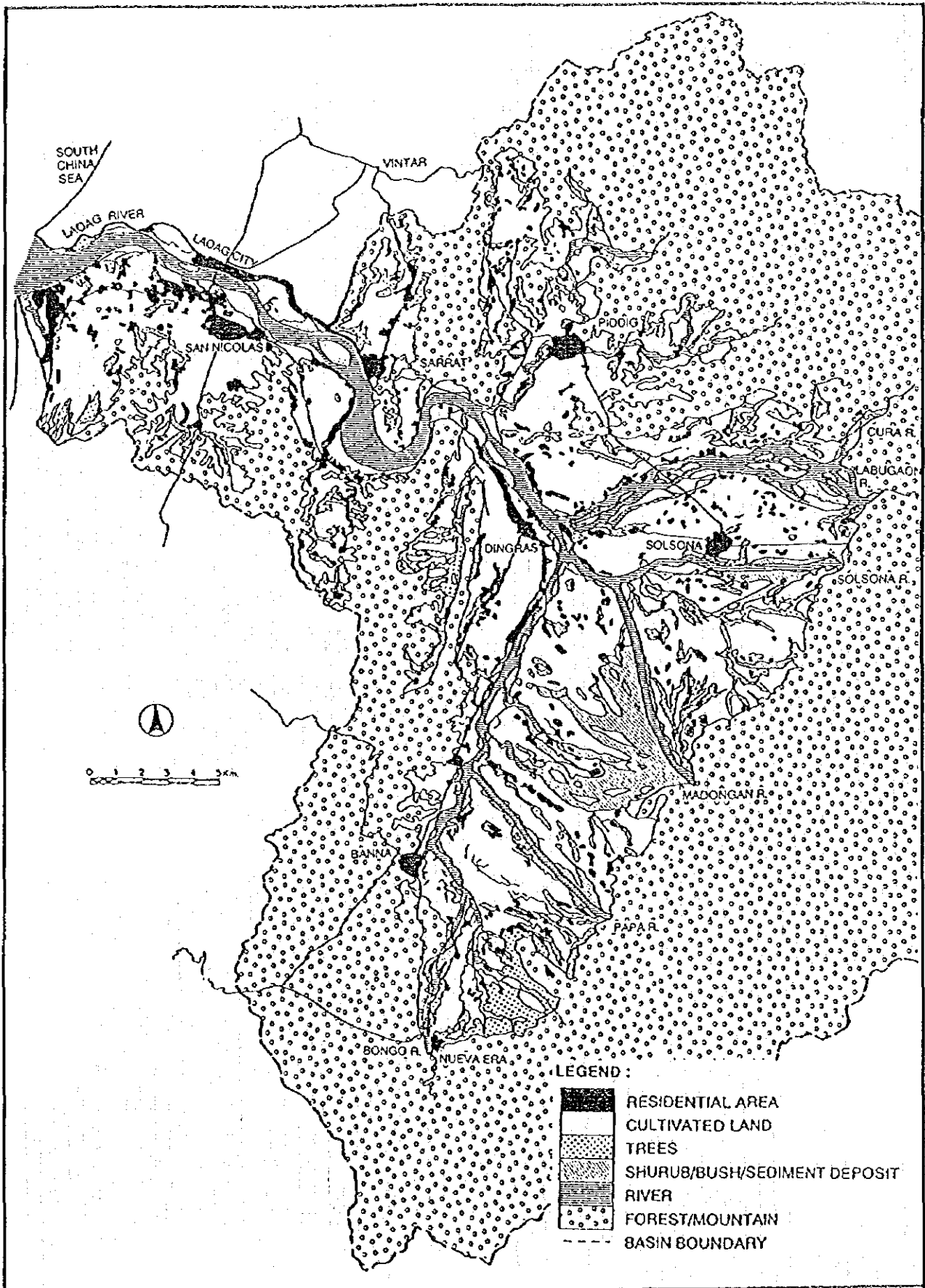
図2.1
ラオアグ川流域の基本構成



THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

図2.2
流域関連自治体とその区域

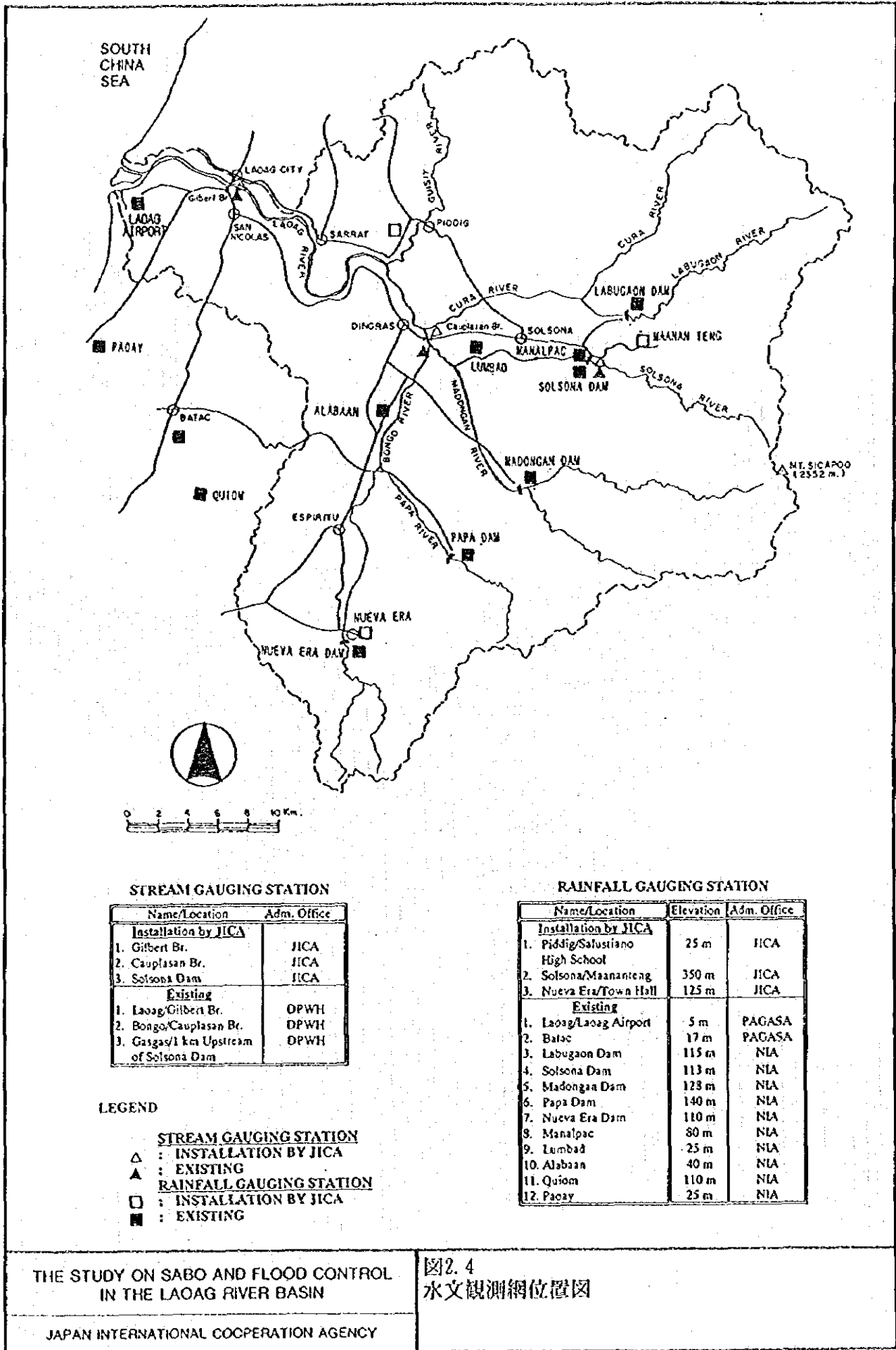
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THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

図2.3
土地利用現況

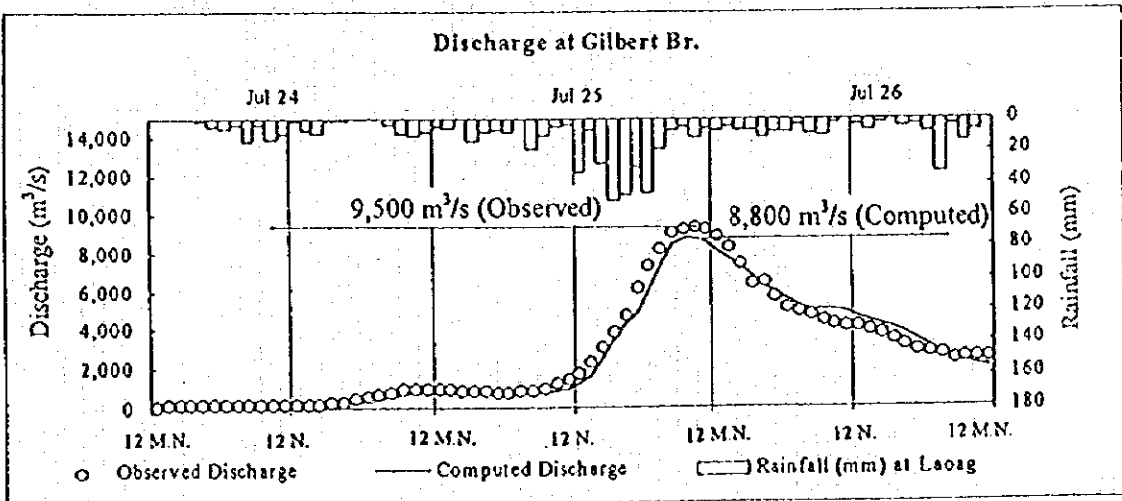
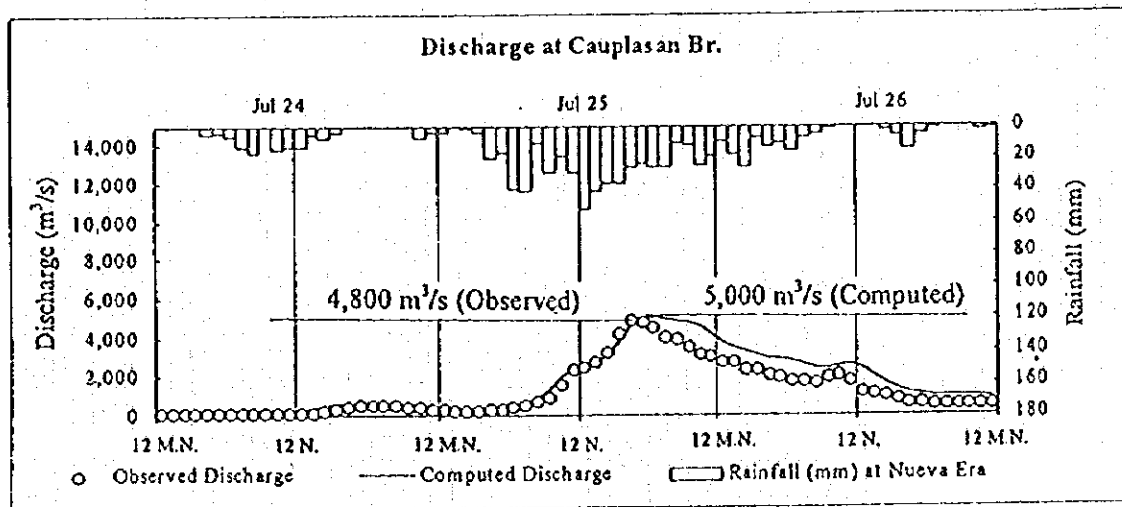
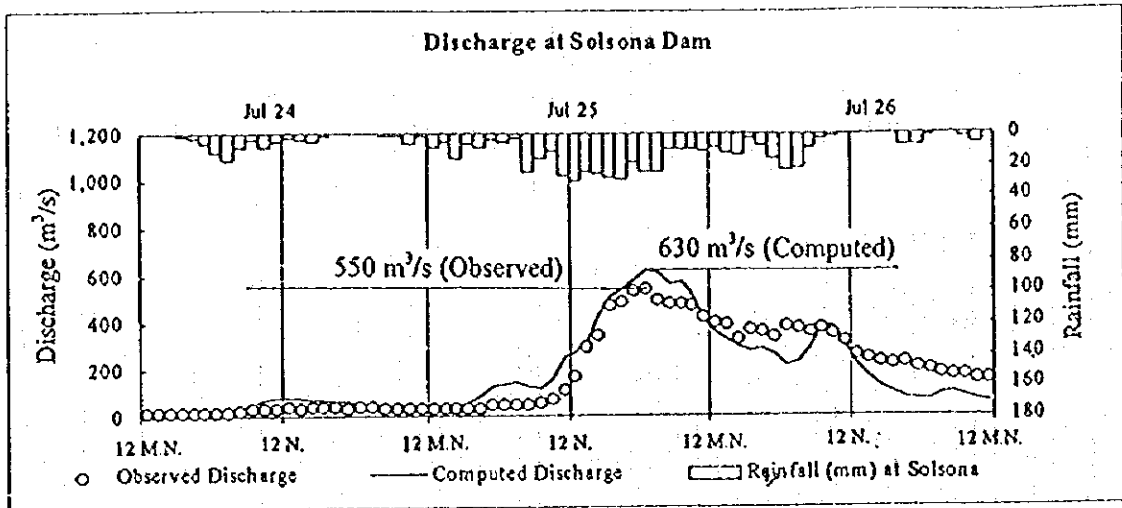
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THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

图2.4
水文观测网位置图

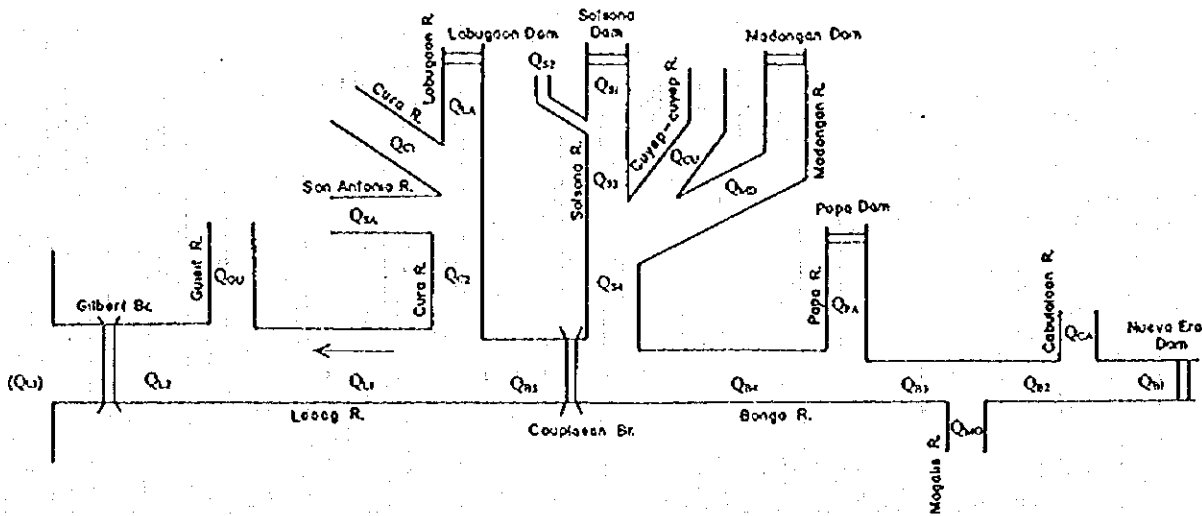
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THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

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図2.5
台風グロリン(1996年)における実績洪水波形と
再現結果



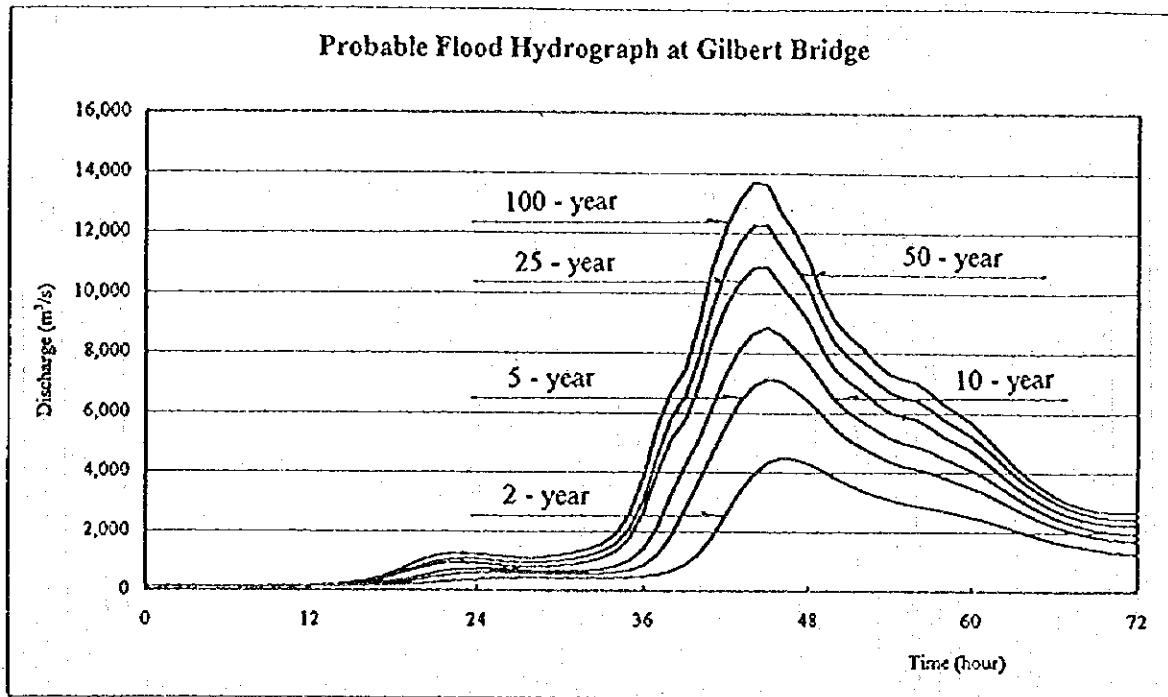
	Probable Flood Discharge (m ³ /s)					
	2-year	5-year	10-year	25-year	50-year	100-year
Q _{B1}	340	510	620	750	830	920
Q _{CA}	190	300	360	440	490	540
Q _{B2}	520	790	960	1,160	1,300	1,440
Q _{MO}	280	450	540	660	740	820
Q _{B3}	860	1,340	1,640	2,000	2,240	2,480
Q _{PA}	310	470	570	690	770	850
Q _{B4}	1,380	2,150	2,630	3,220	3,620	4,020
Q _{MD}	880	1,320	1,610	1,970	2,220	2,470
Q _{S1}	460	690	840	1,030	1,150	1,280
Q _{S2}	40	70	90	120	130	150
Q _{S3}	490	760	920	1,120	1,250	1,390
Q _{CU}	170	290	360	460	530	590
Q _{S4}	1,500	2,330	2,860	3,490	3,920	4,360
Q _{B5}	2,810	4,390	5,400	6,500	7,000	8,200
Q _{CI}	380	580	700	850	960	1,060
Q _{LA}	560	850	1,020	1,260	1,410	1,570
Q _{SA}	130	190	230	280	310	350
Q _{C2}	1,050	1,580	1,930	2,360	2,650	2,940
Q _{L1}	3,760	5,800	7,100	8,700	9,800	10,900
Q _{OU}	470	840	1,080	1,390	1,590	1,800
Q _{L2}	4,500	7,200	8,900	10,900	12,300	13,700
Q _{L3}	4,580	7,300	9,100	11,200	12,700	14,200

* : (Q_{L3}) is flood discharge at river mouth

THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

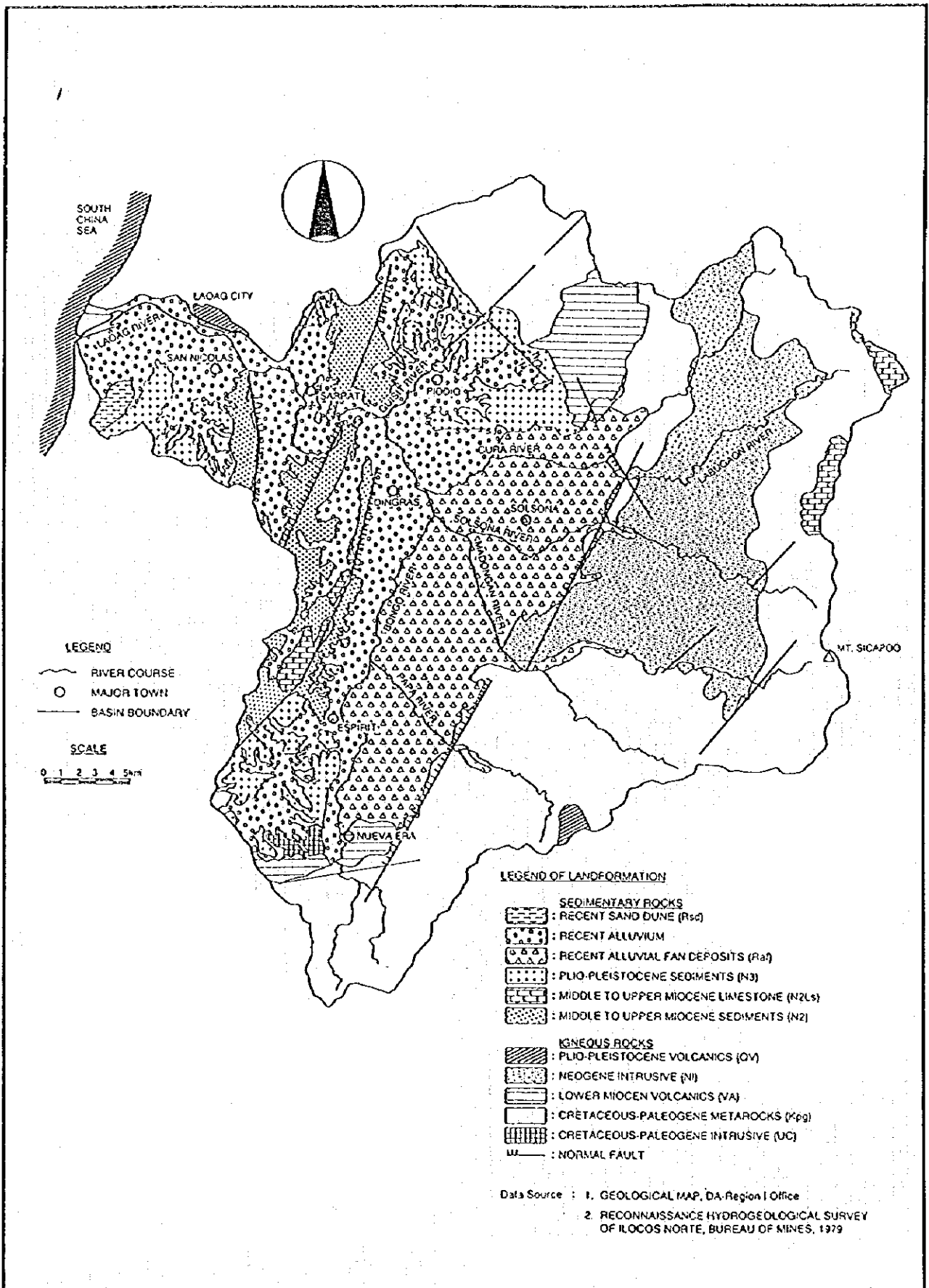
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図2.6
確率洪水流量



Probable Maximum Flood Discharge at Gilbert Bridge

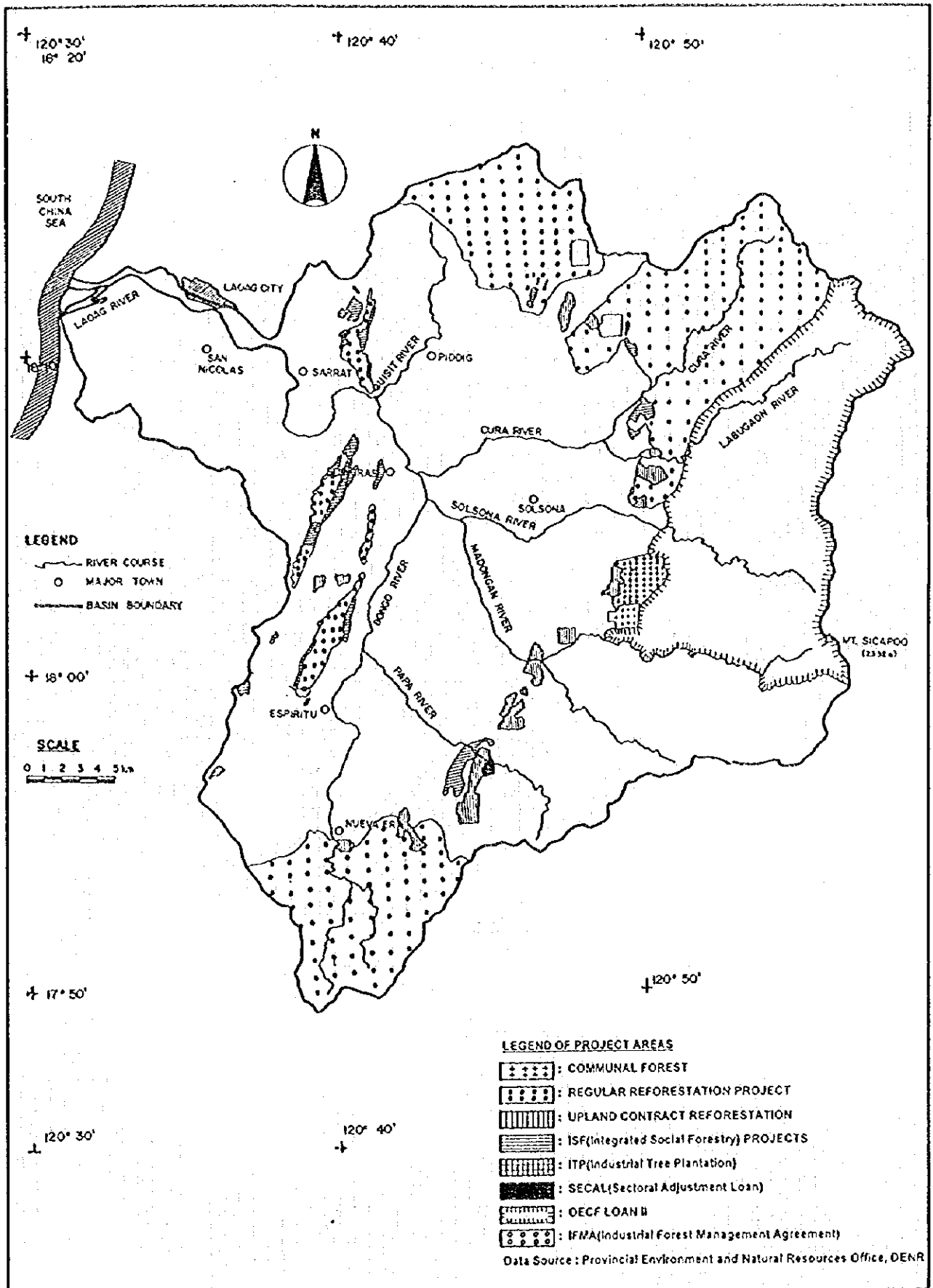
Return Period	Water Level	Flood Discharge
2 - year	6.85 m	4,500 m ³ /s
5 - year	8.29 m	7,200 m ³ /s
10 - year	9.06 m	8,900 m ³ /s
25 - year	9.90 m	10,900 m ³ /s
50 - year	10.44 m	12,300 m ³ /s
100 - year	10.94 m	13,700 m ³ /s



THE STUDY ON SABO AND FLOOD CONTROL
 IN THE LAOAG RIVER BASIN

图2.8
 地質分布

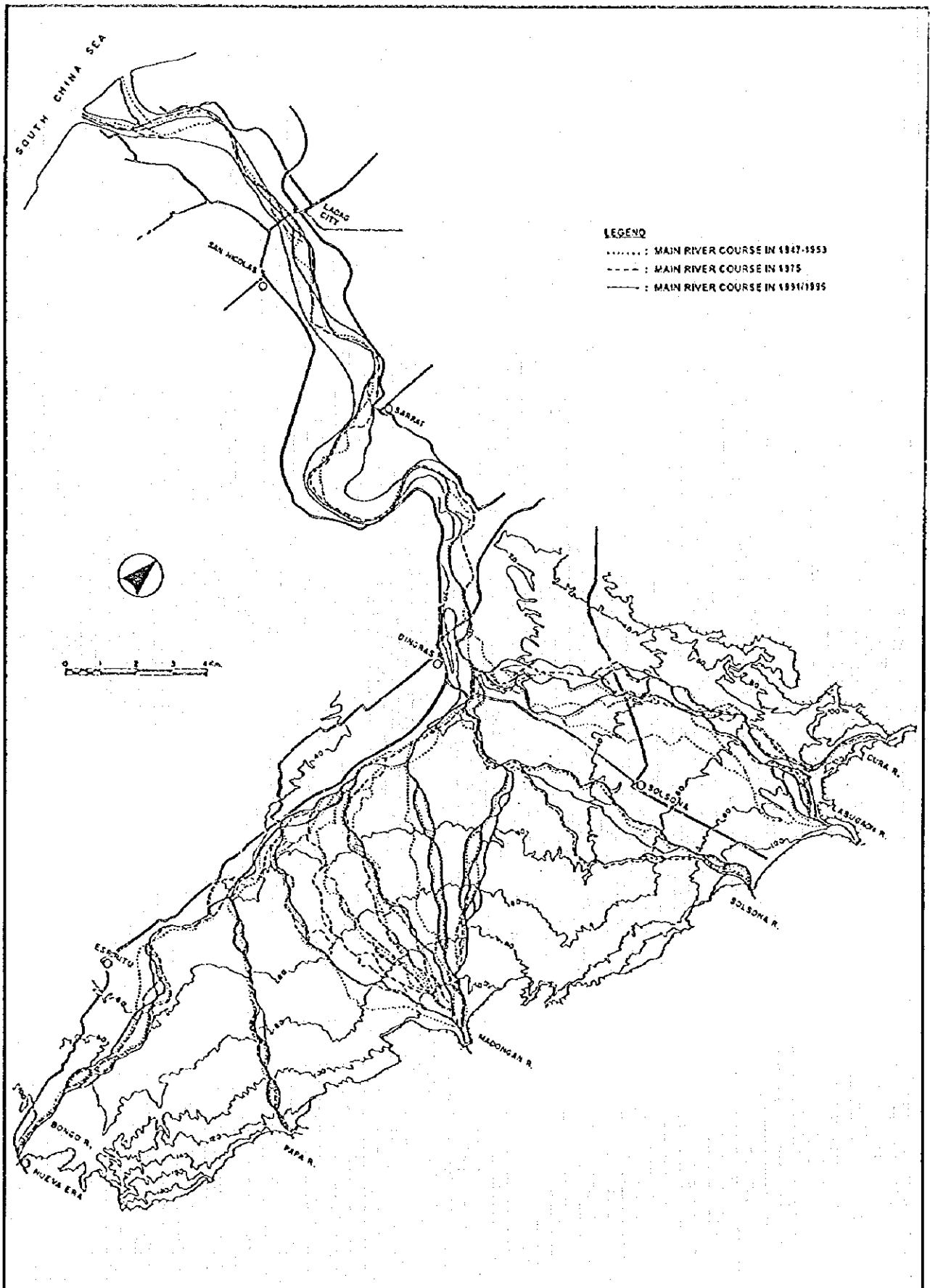
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THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

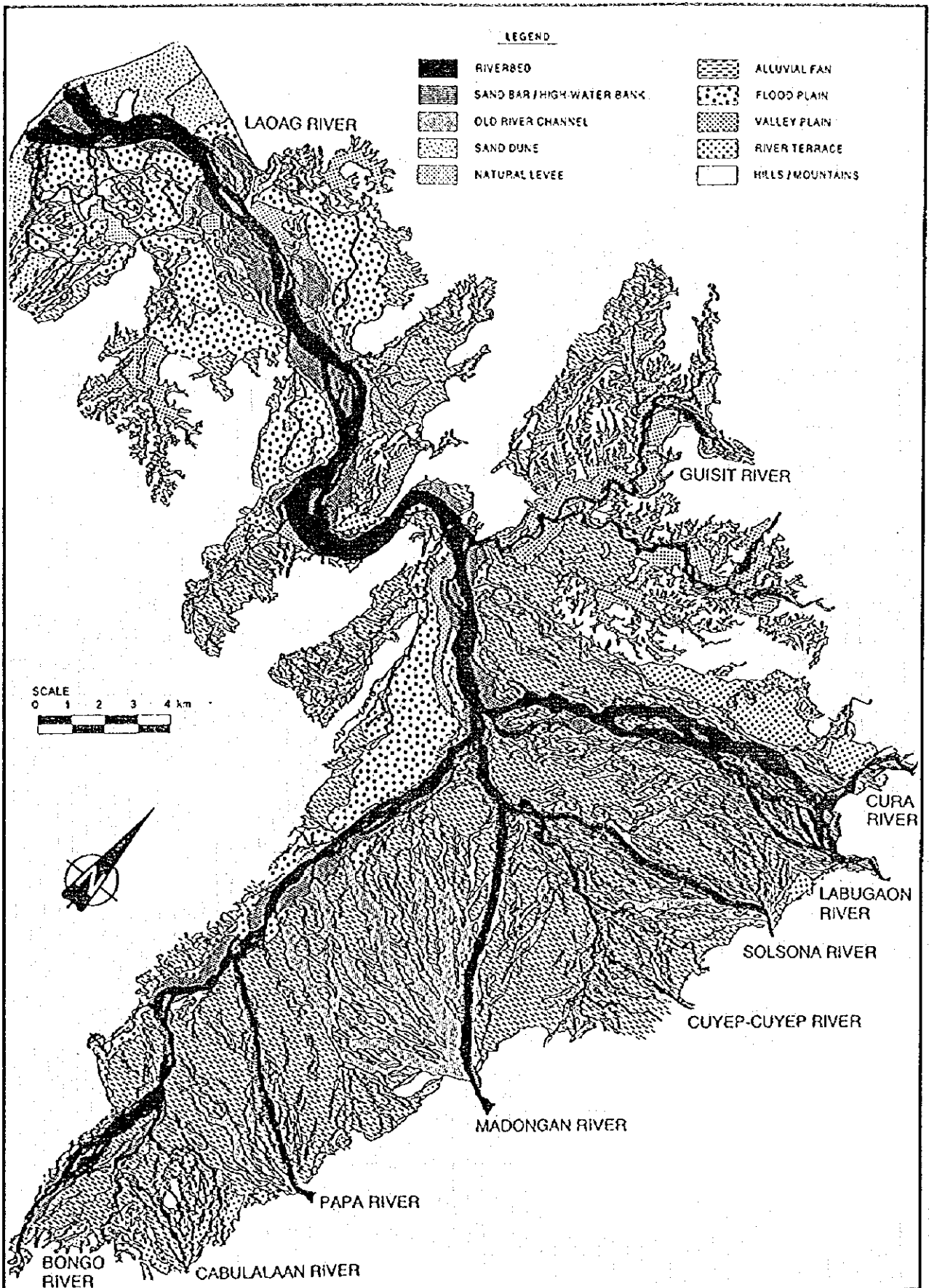
図2.9
植林事業



THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

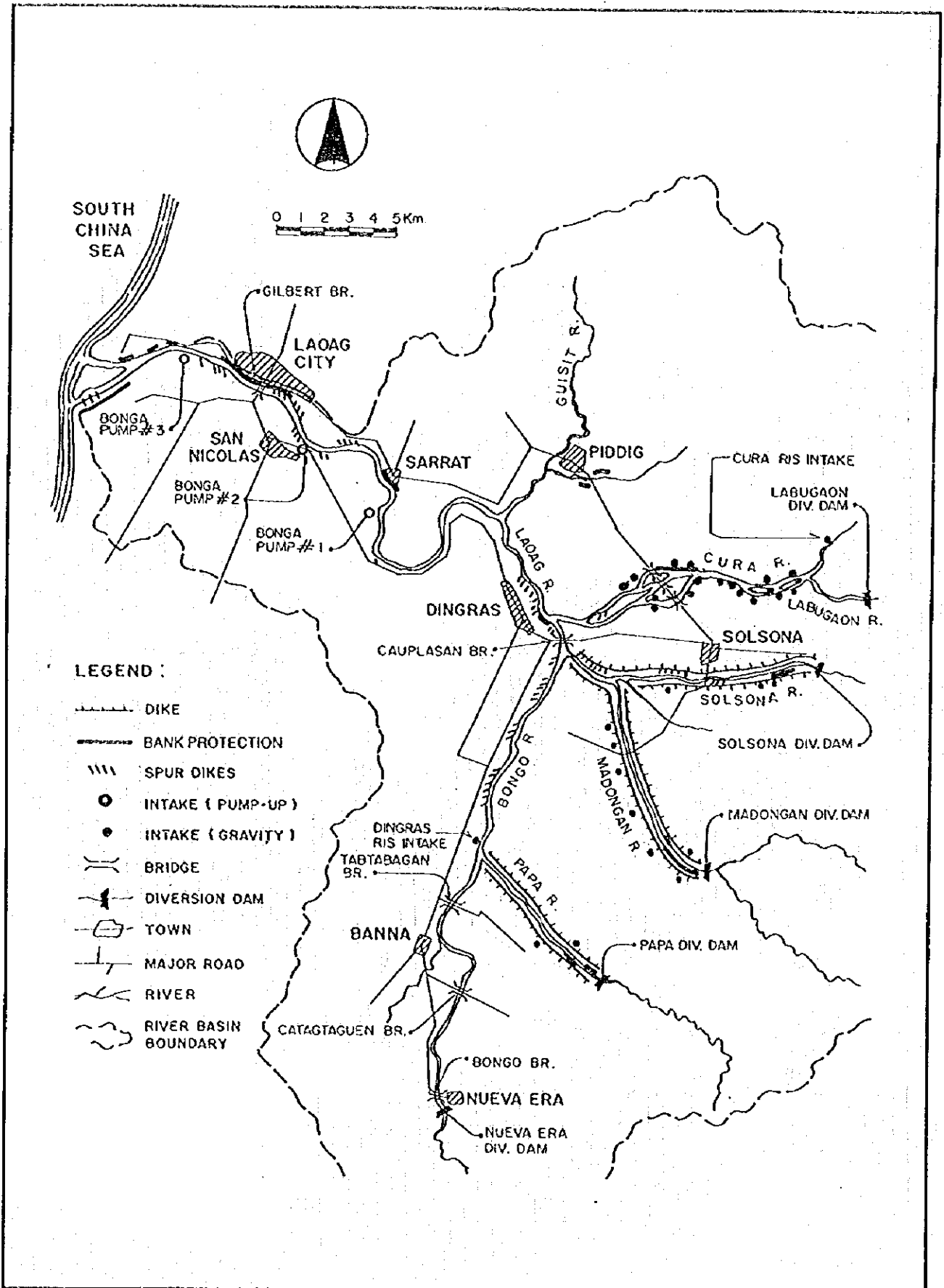
図2. 10
ラオアグ川の流路変遷



THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

图2.11
河川地形分類

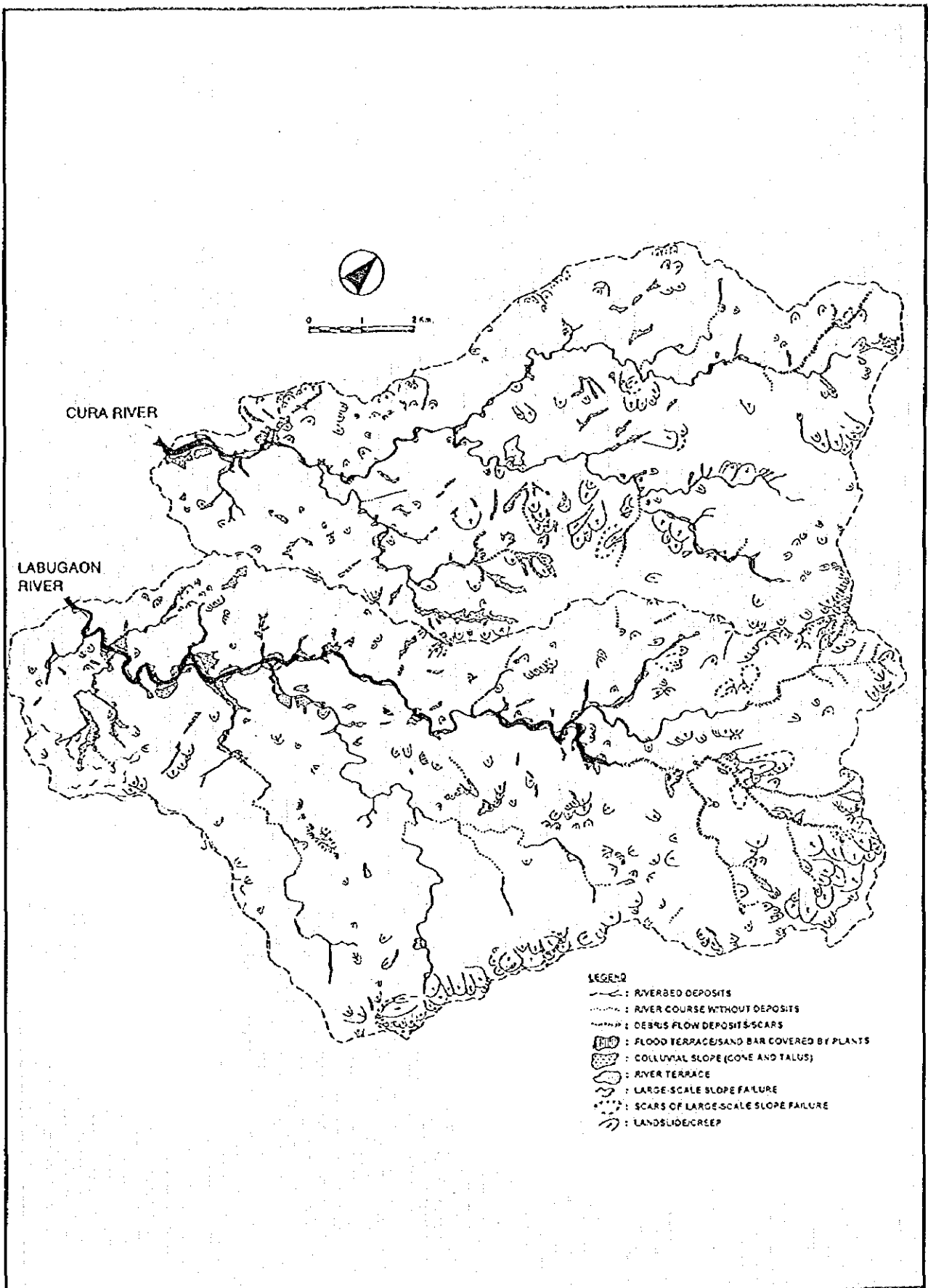
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THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

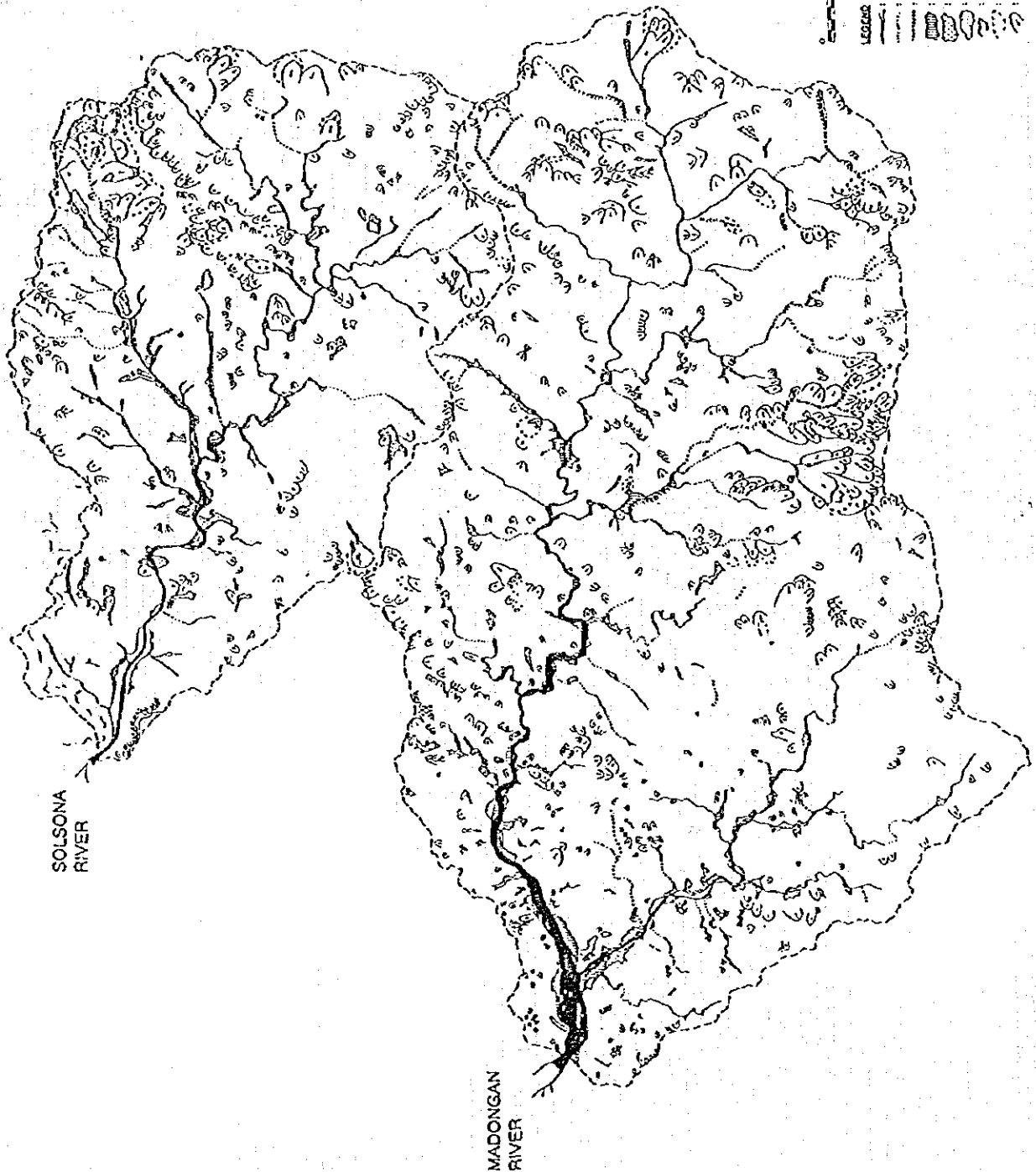
図2.12
現況河川構造物



THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

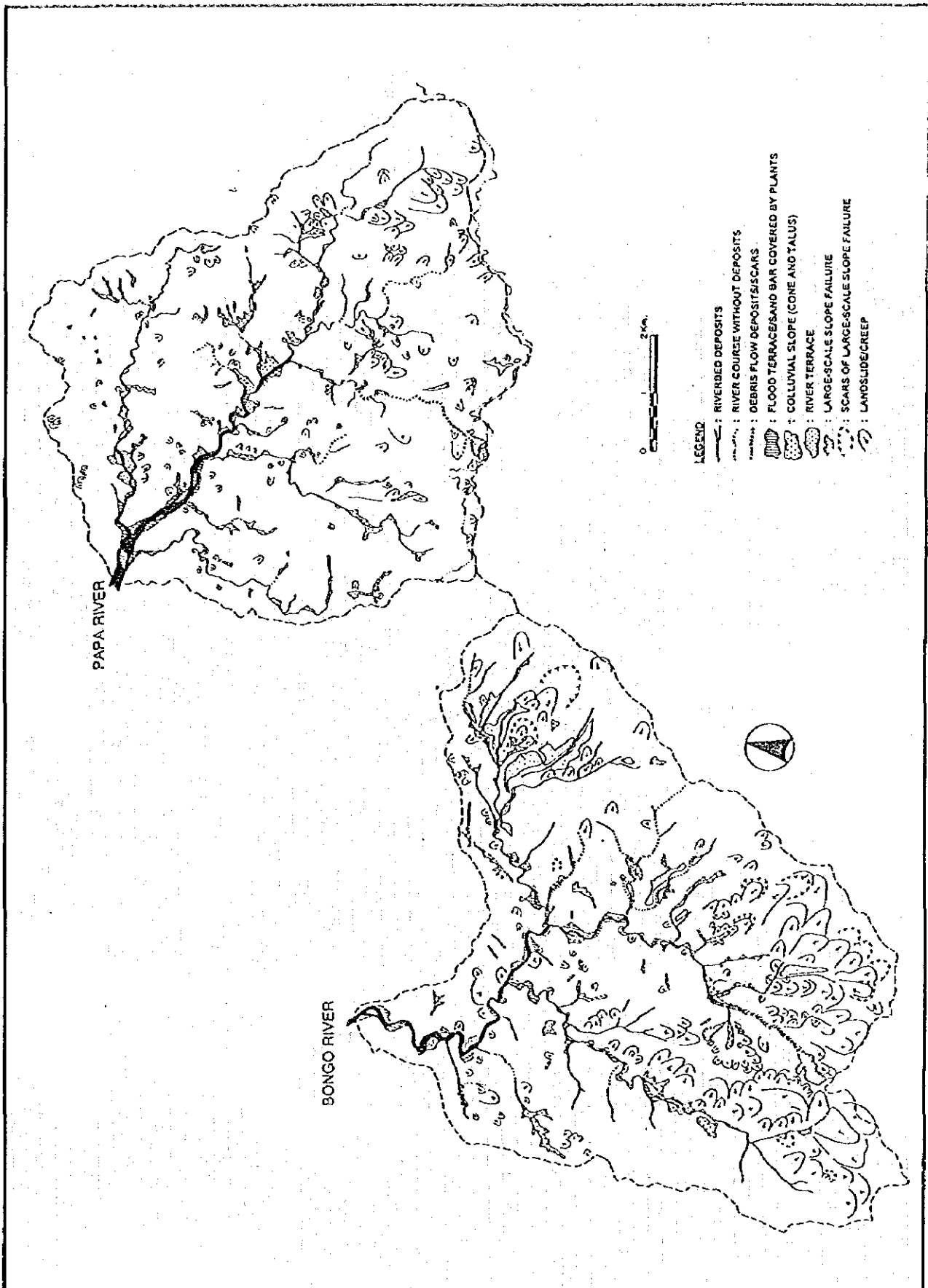
図2.13 (I)
水源山地の微地形分類
(クラ、ラブガオン川流域)



THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

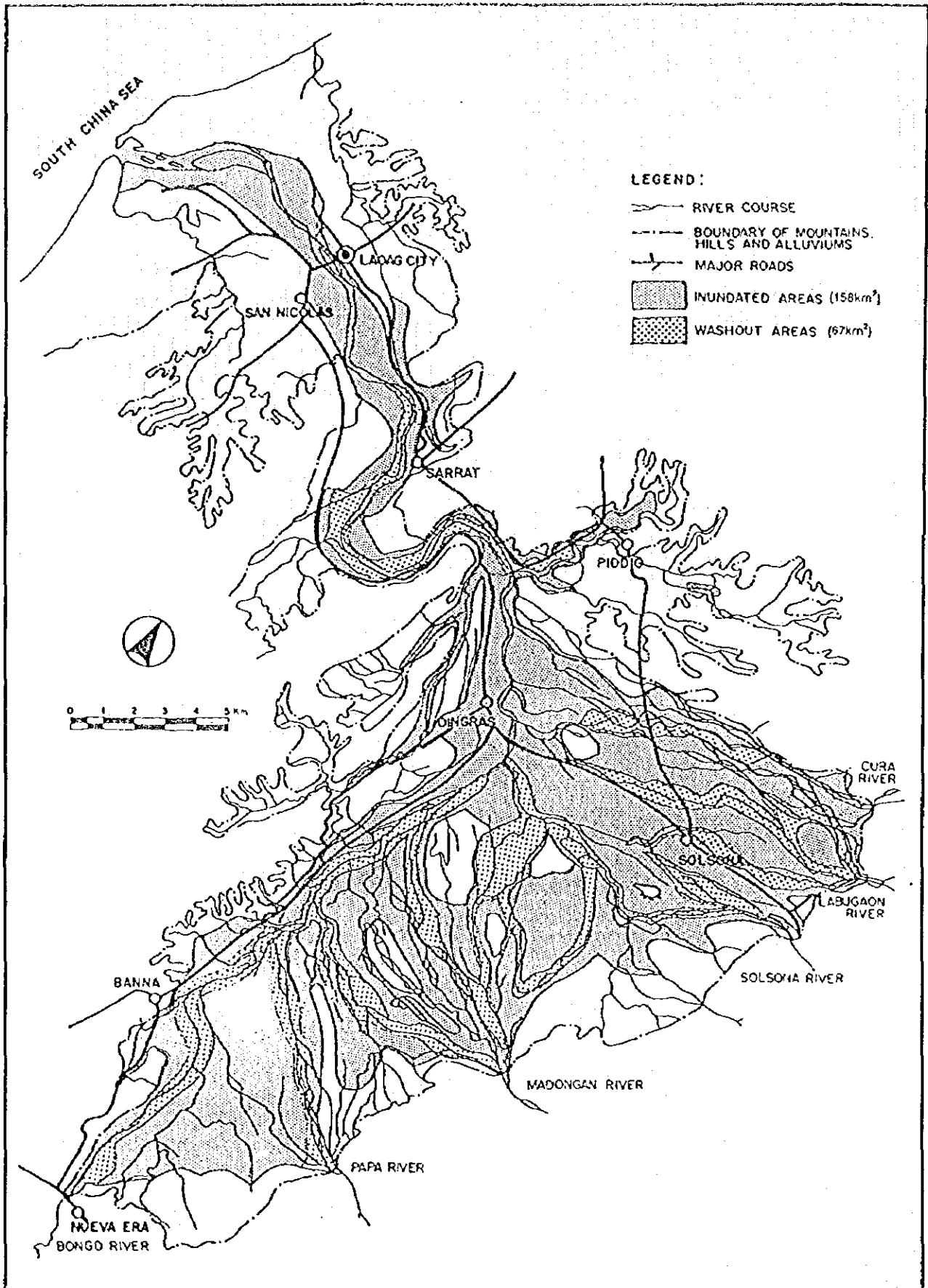
図2.13(2)
水源山地の微地形分類
(ソルソナ、マドンガン川流域)



THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

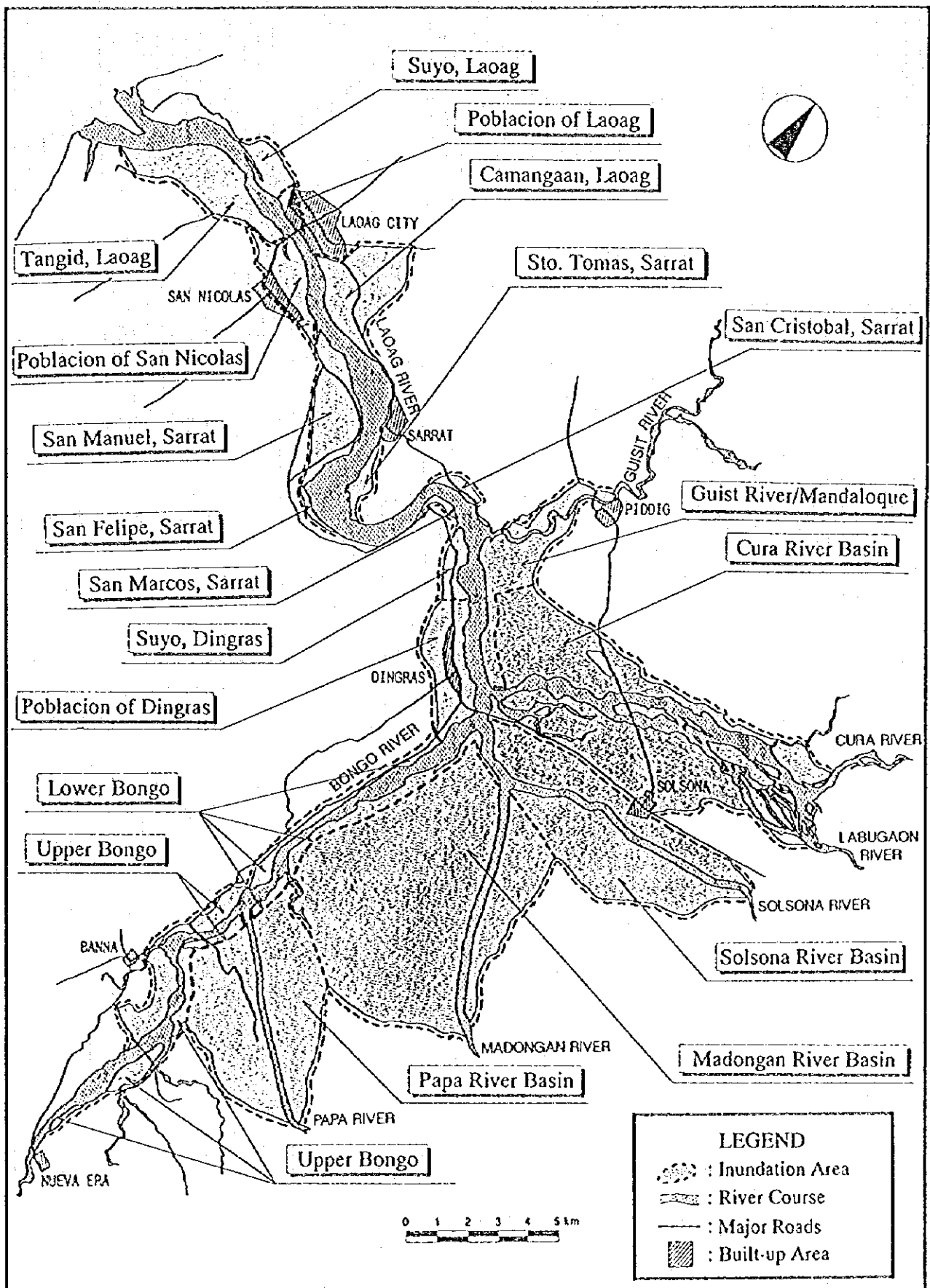
図2.13(3)
水源山地の微地形分類
(パパ、ボンゴ川流域)



THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

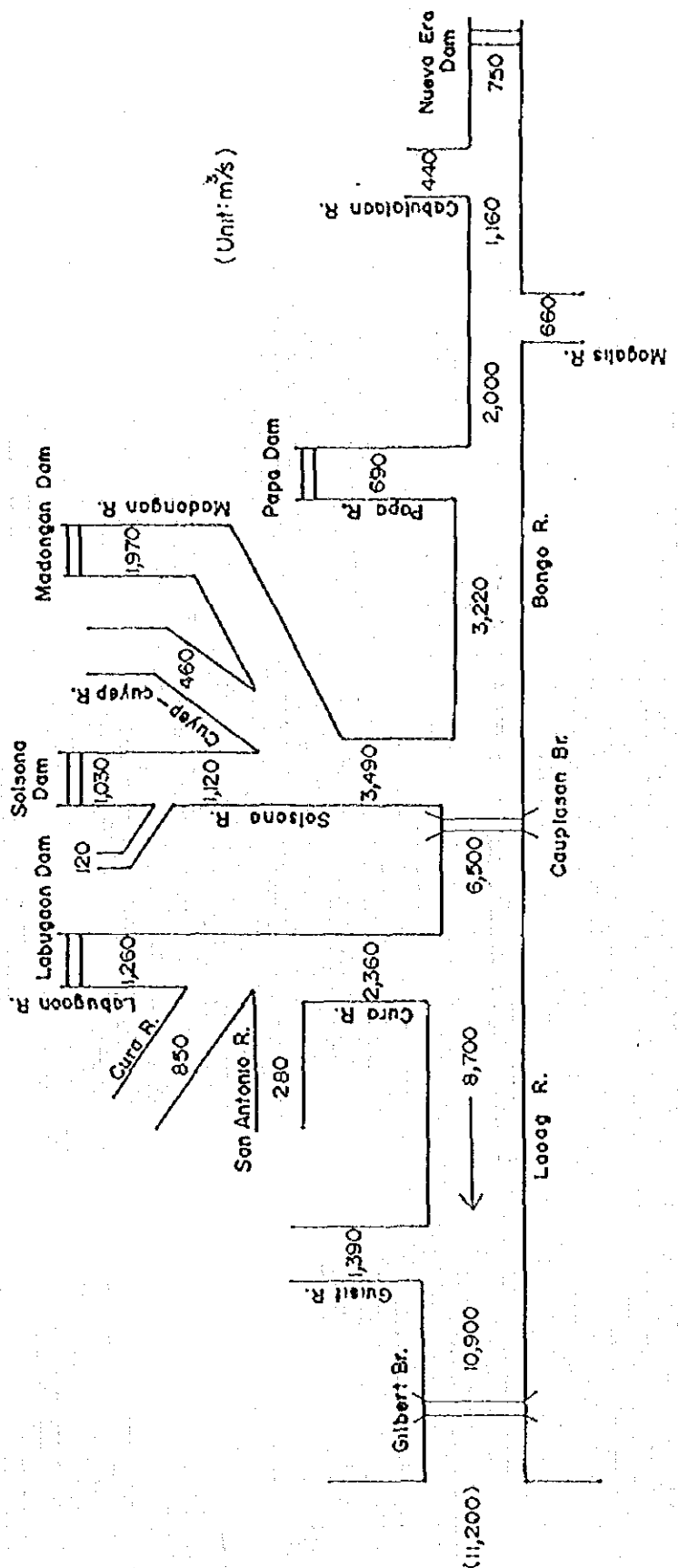
图2.14
既往最大浸水区域



THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

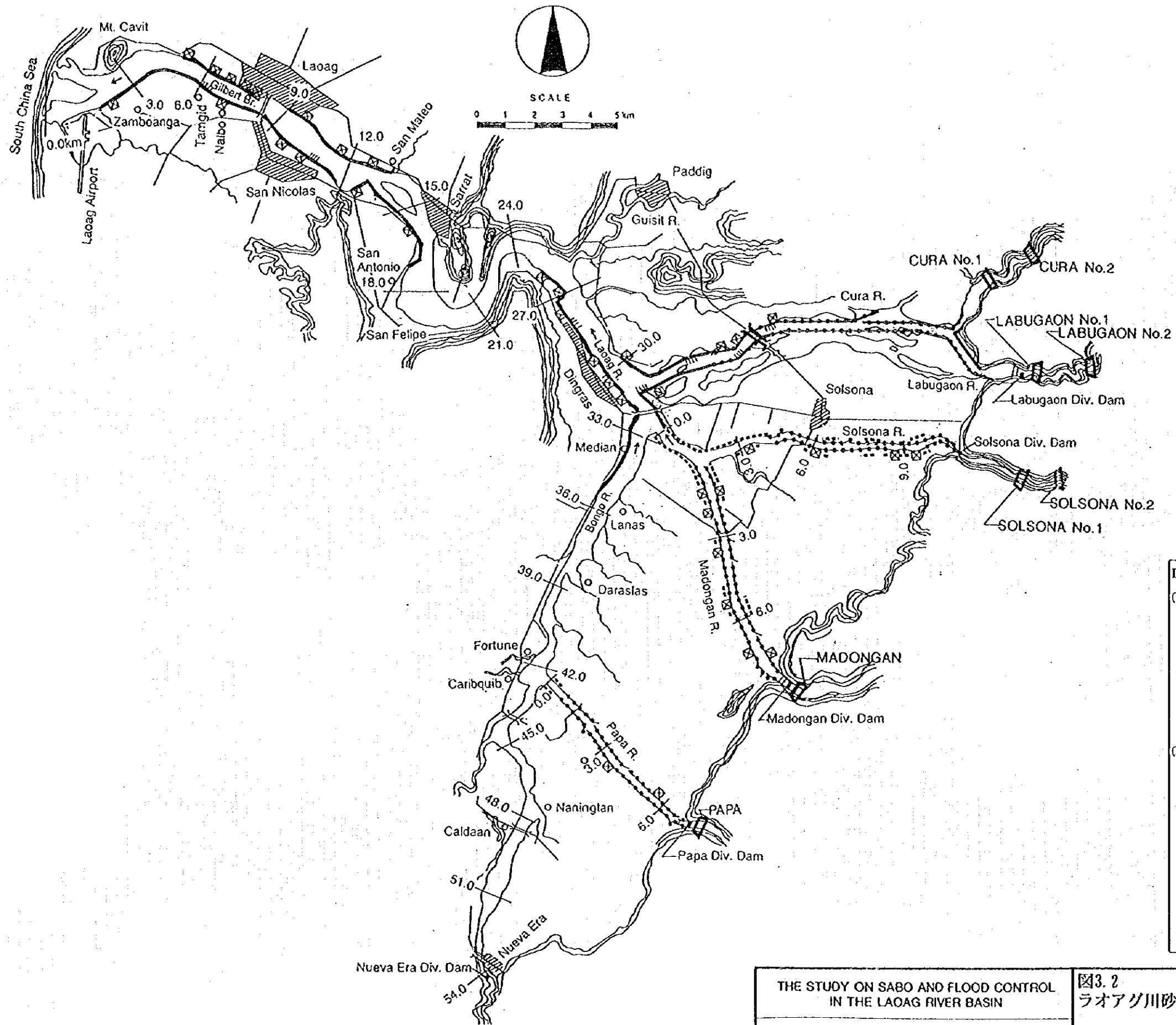
図2.15
25年確率洪水による浸水予想区域



THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

図3.1
計画洪水流量配分図 (25年確率)



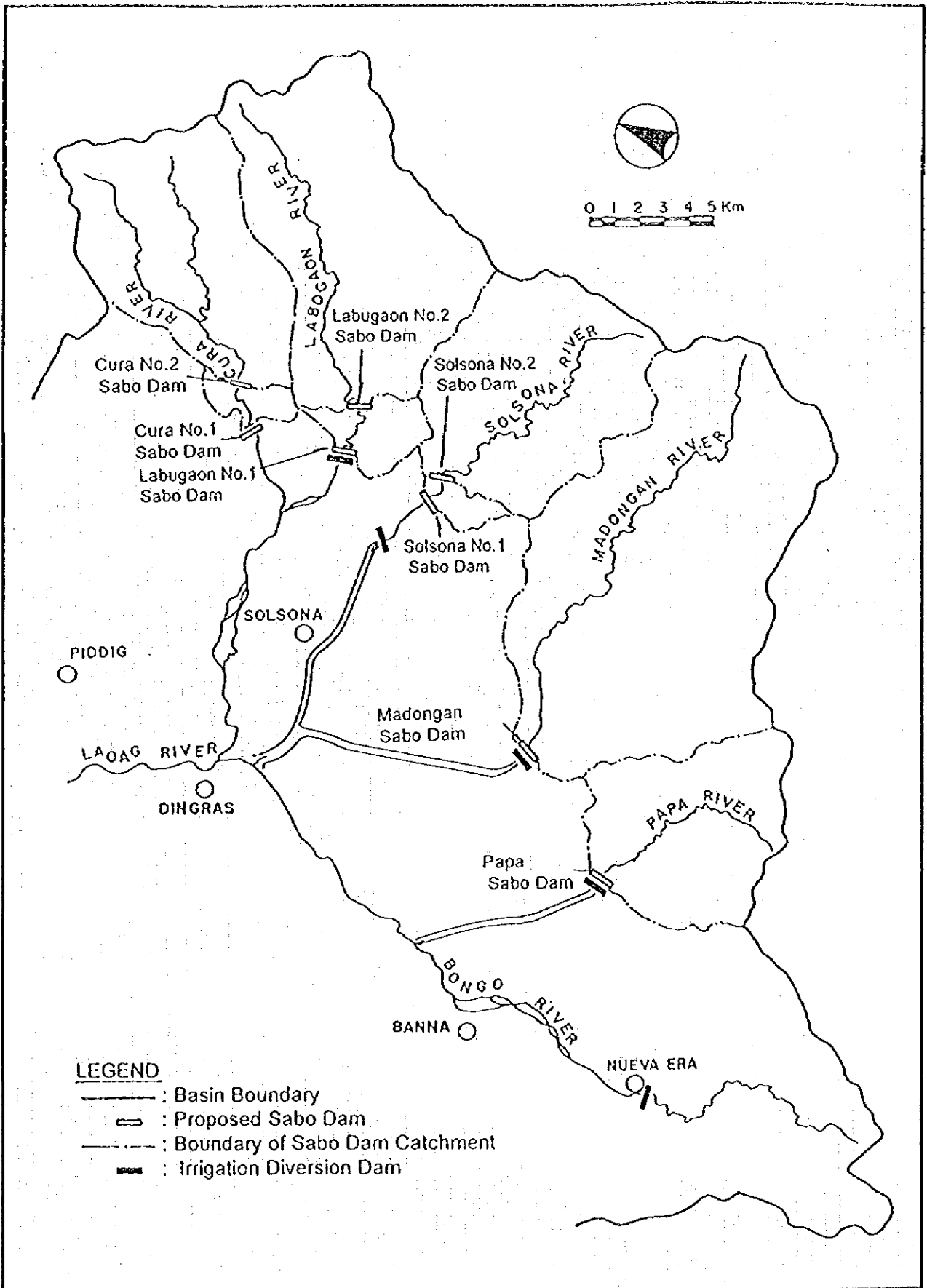
LEGEND:

(Existing)	
	: River
	: Mountain
	: Road
	: Bridge
	: Town
	: Village
(Proposed)	
	: Sabo Dam
	: Dike
	: Heightening of Existing Dike
	: Bank Protection for Existing Dike
	: Bank Protection for New Dike
	: Sluiceway
	: Spurdike
	: Groundsill
	: Bridge Extension
	: Reconstruction

THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

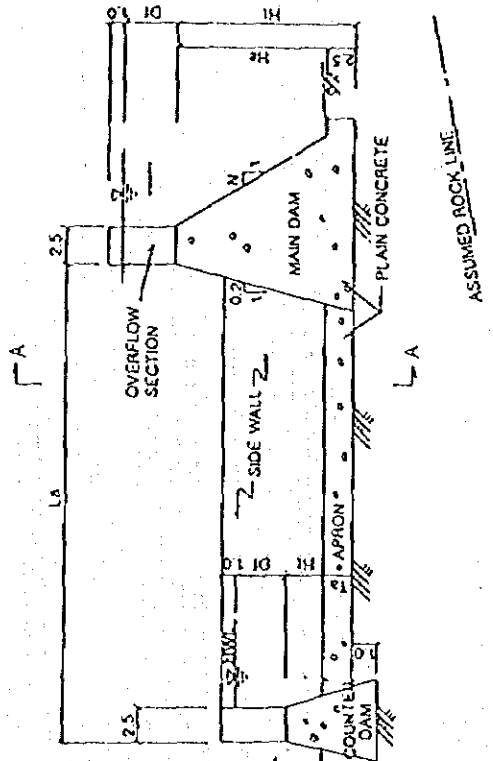
図3.2
ラオアグ川砂防・洪水防衛マスタープランの構成



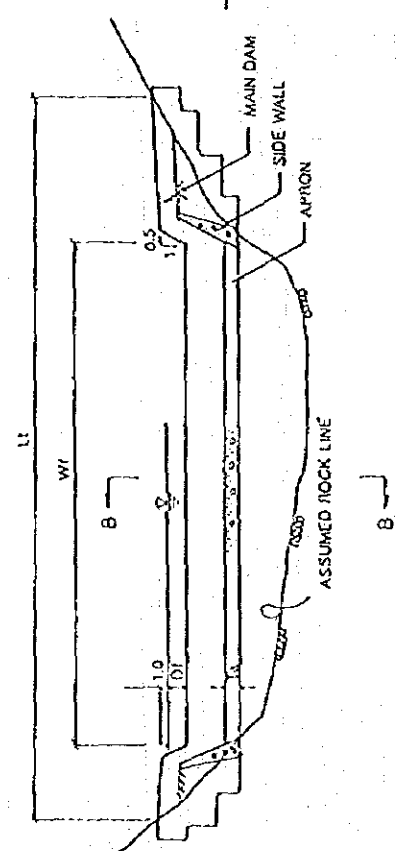
THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

図3.3
砂防ダム計画位置図

JAPAN INTERNATIONAL COOPERATION AGENCY



LONGITUDINAL SECTION B-B



ELEVATION A-A

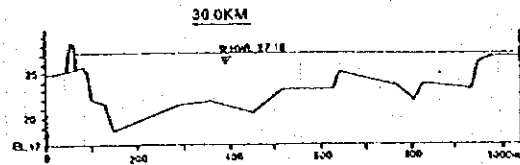
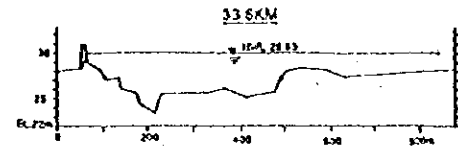
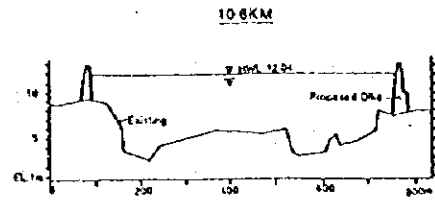
MAJOR DIMENSIONS OF OPTIMUM SABO DAMS

Name of Dam	Main Dam			Slope (down-stream)	Slope (up-stream)	Top Length l_t (m)	Apron Length l_a (m)	Apron Thickness T_a (m)	Counter-dam Effective Height l_{cs} (m)	Hydraulic Conditions		
	Effective Height l_{fe} (m)	Total Height l_t (m)	Crown Width w_c (m)							Design Discharge (m ³ /s)	Overflow Depth DF (m)	Overflow Width w_f (m)
Cura No.1	6.5	9.0	2.5	0.20	0.55	170	18	1.1	1.7	1,080	2.8	150
Cura No.2	4.5	7.0	2.5	0.20	0.60	70	20	1.8	1.9	1,000	5.3	50
Labugon No.1	10.0	12.5	2.5	0.20	0.80	100	30	2.0	2.8	1,580	4.9	90
Labugon No.2	7.0	9.5	2.5	0.20	0.60	160	21	1.4	2.0	1,430	3.6	130
Solsona No.1	10.0	12.5	2.5	0.20	0.80	30	40	2.0	4.8	1,140	9.7	20
Solsona No.2	10.0	12.5	2.5	0.20	0.75	90	40	2.0	4.5	1,080	9.4	20
Madungay No.1	7.0	9.5	2.5	0.20	0.70	120	26	2.1	2.5	2,390	4	100
Yapa No.1	7.0	9.5	2.5	0.20	0.50	210	17	0.9	1.5	820	1.9	200

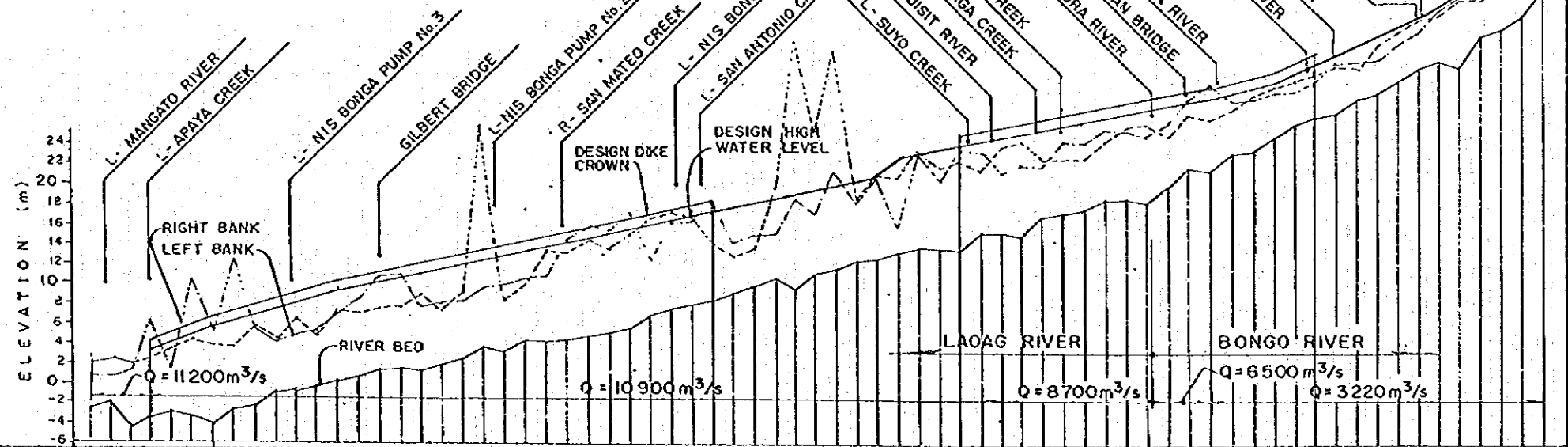
THE STUDY ON SABO AND FLOOD CONTROL IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

図3.4 砂防ダム計画諸元



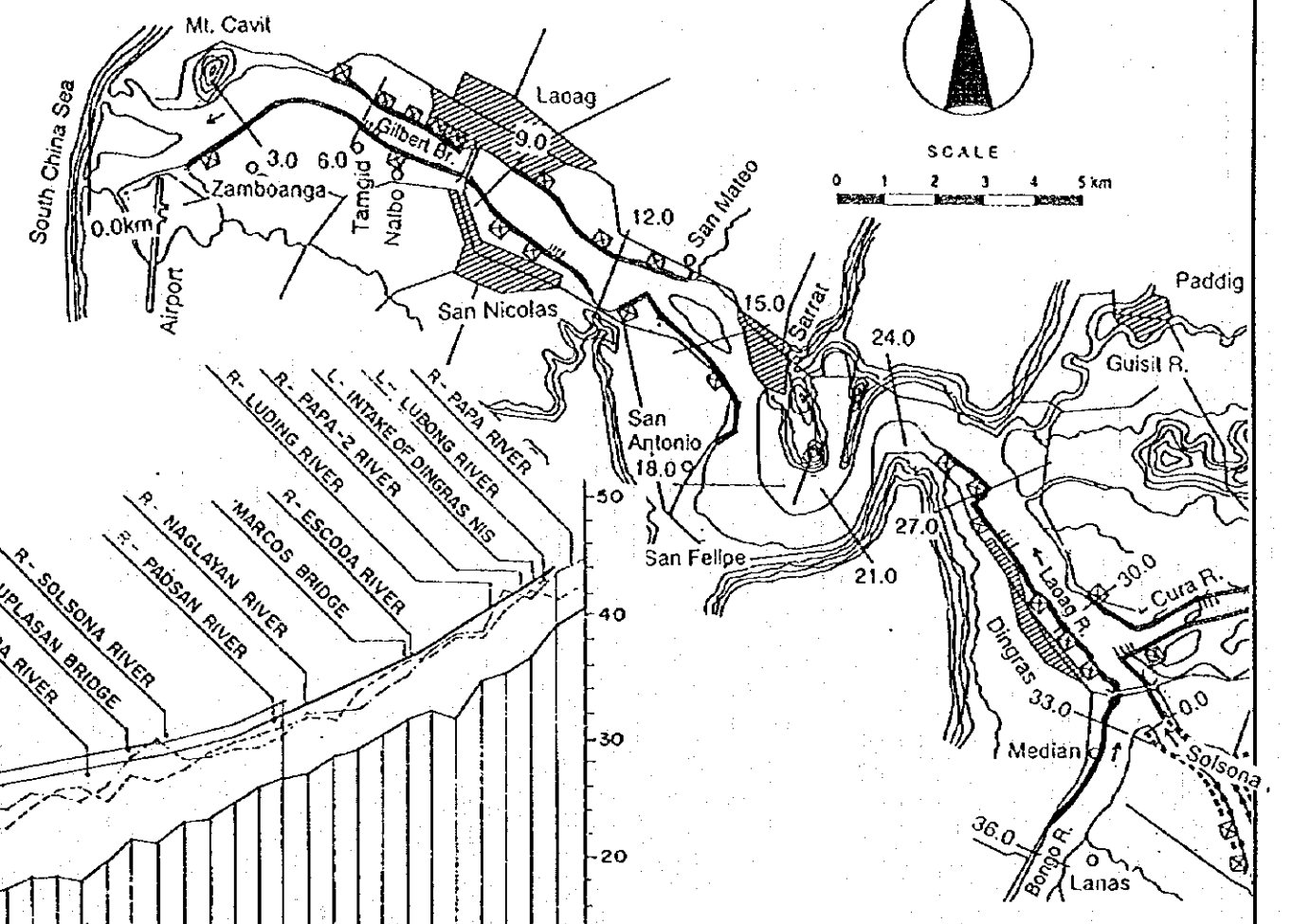
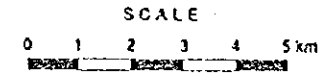
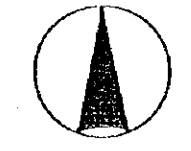
CROSS SECTION



GRADIENT OF H. W. L.	1/750	1/1020	1/1316		1/343	1/1540	1/1100	1/657	1/495
DESIGN DIKE CROWN EL. (m)	3.4	6.84	H.W.L. + 1.0m		H.W.L. + 1.0m	29.74	31.36	33.20	41.95
DESIGN HIGH WATER LEVEL (m)	3.4	6.84	10.30	11.58	12.86	14.14	15.42	16.70	17.98
RIGHT BANK ELEVATION (m)	3.82	0.79	1.43	2.07	2.71	3.35	3.99	4.63	5.27
LEFT BANK ELEVATION (m)	2.12	2.86	3.60	4.34	5.08	5.82	6.56	7.30	8.04
RIVER BED ELEVATION (m)	-3.01	-1.99	-1.50	-2.61	-3.72	-4.83	-5.94	-7.05	-8.16
CUMMULATIVE DISTANCE (m)	0	600	1200	1800	2400	3000	3600	4200	4800
DISTANCE (m)	0	600	1200	1800	2400	3000	3600	4200	4800

DISTANCE BETWEEN SECTIONS = 600 METERS ON CENTERS

LONGITUDINAL PROFILE



LEGEND:

(Proposed)

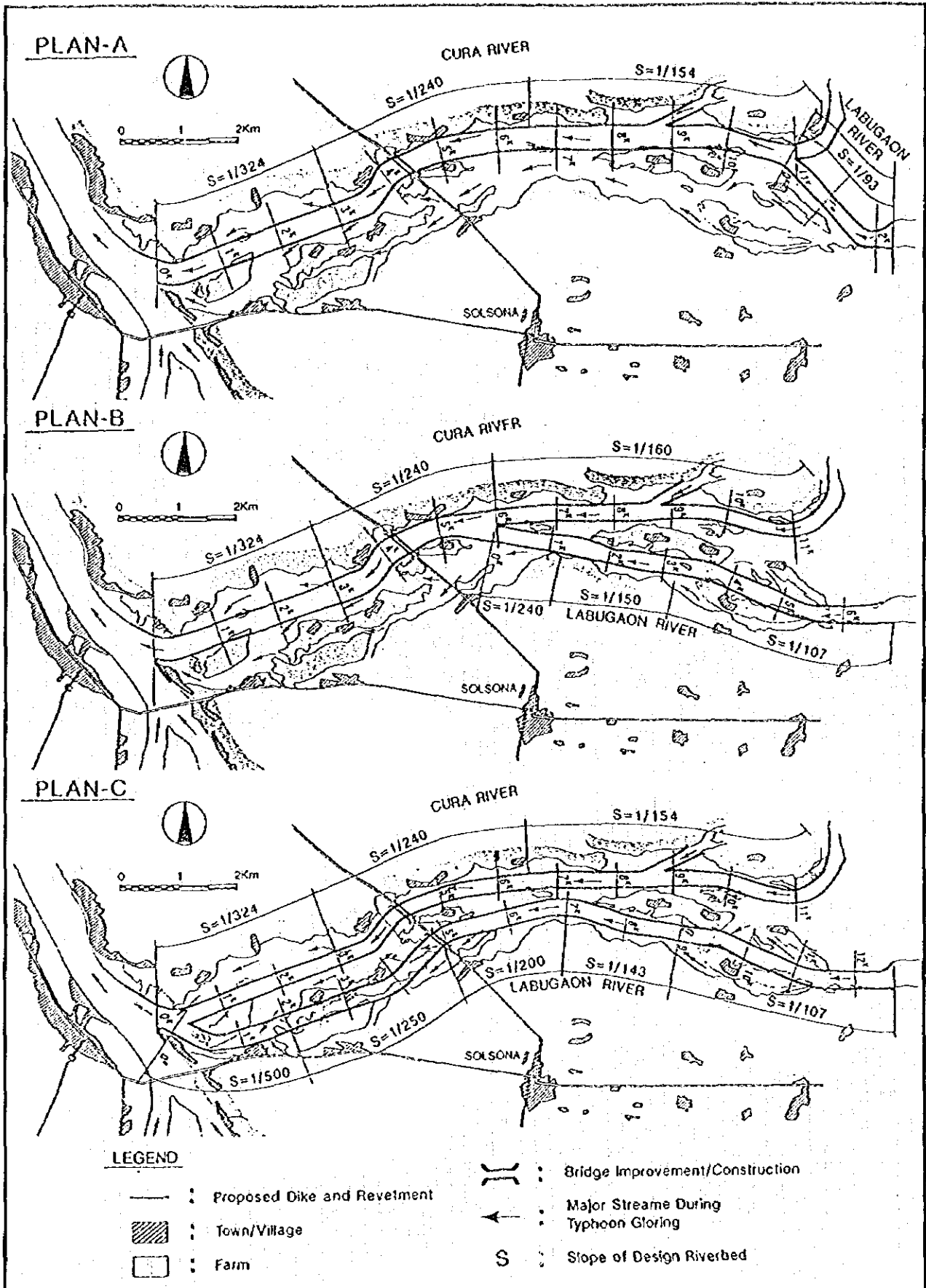
- : Dike
- : Sluiceway
- : Spurdike

PLAN

THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

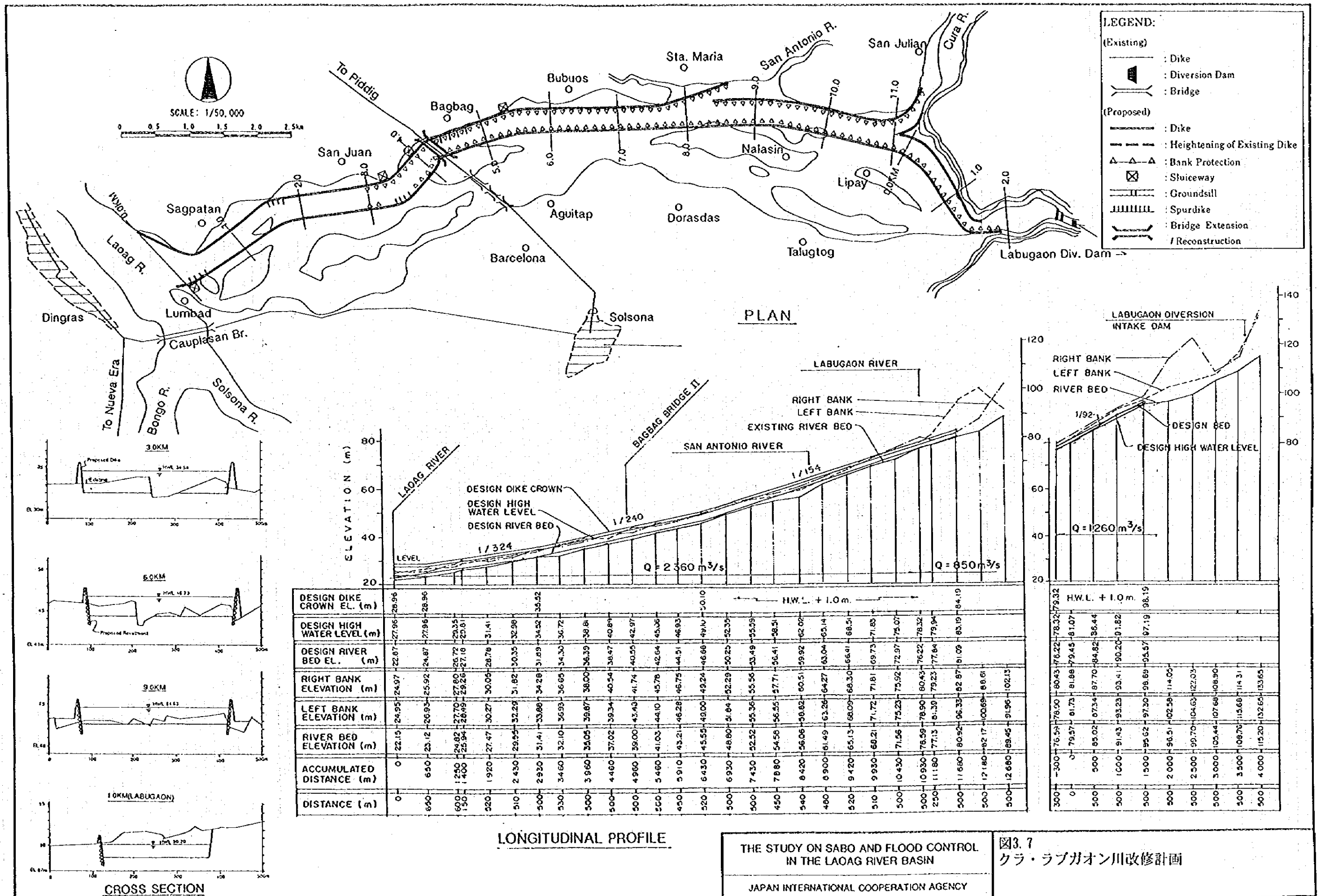
図3.5
ラオアグ・ボンゴ川河川改修計画



THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

図3.6
クラ・ラブガオン川改修の代替案



- LEGEND:**
- (Existing)
- : Dike
 - : Diversion Dam
 - : Bridge
- (Proposed)
- : Dike
 - : Heightening of Existing Dike
 - : Bank Protection
 - : Sticeway
 - : Groundsill
 - : Spurdike
 - : Bridge Extension
 - : Reconstruction

DESIGN DIKE CROWN EL. (m)	DESIGN HIGH WATER LEVEL (m)	DESIGN RIVER BED EL. (m)	RIGHT BANK ELEVATION (m)	LEFT BANK ELEVATION (m)	RIVER BED ELEVATION (m)	ACCUMULATED DISTANCE (m)	DISTANCE (m)
28.96	27.96	22.67	24.97	24.95	22.15	0	0
28.96	27.96	24.87	25.92	26.93	23.12	650	650
28.35	27.35	25.72	27.60	27.70	24.82	1250	600
23.61	23.61	21.10	25.49	25.94	25.94	1400	150
31.41	31.41	28.78	30.05	30.27	27.47	1920	520
32.98	32.98	30.35	31.82	32.29	29.55	2430	510
34.52	34.52	31.89	34.28	33.80	31.41	2950	500
36.72	36.72	34.30	36.69	36.99	32.10	3460	500
40.89	40.89	36.39	38.00	39.67	35.05	3960	500
42.97	42.97	38.47	40.54	39.34	37.02	4460	500
45.06	45.06	40.55	41.74	43.43	39.00	4960	500
46.93	46.93	42.64	45.78	44.10	41.03	5460	500
50.10	50.10	44.51	46.75	46.28	43.21	5910	450
52.35	52.35	46.68	49.24	48.00	45.55	6430	520
55.59	55.59	50.25	52.29	51.84	48.80	6930	500
58.51	58.51	53.49	55.56	55.36	52.52	7430	500
62.07	62.07	56.41	57.71	56.55	54.56	7880	450
65.14	65.14	59.92	60.51	58.82	56.06	8420	540
68.51	68.51	63.04	64.27	63.26	61.49	8900	480
71.83	71.83	66.61	68.30	66.09	65.13	9420	520
75.07	75.07	70.73	71.81	69.73	68.21	9930	510
78.32	78.32	75.27	75.92	73.23	71.56	10430	500
81.94	81.94	79.22	80.43	76.22	75.59	10930	500
84.19	84.19	83.41	83.23	81.39	77.13	11430	250
87.19	87.19	87.09	82.87	80.92	80.92	11680	500
89.61	89.61	90.69	82.17	80.69	82.17	12180	500
102.13	102.13	91.96	89.45	89.45	89.45	12680	500
79.32	79.32	76.22	80.43	78.00	76.53	-300	300
81.07	81.07	79.45	81.88	79.57	79.57	0	0
86.44	86.44	84.82	87.70	85.02	85.02	500	500
91.82	91.82	90.20	93.41	91.43	91.43	1000	500
97.19	97.19	95.57	98.69	95.62	95.62	1500	500
104.05	104.05	102.58	104.63	102.58	102.58	2000	500
108.03	108.03	104.63	104.63	104.63	104.63	2500	500
108.90	108.90	107.68	108.90	105.44	105.44	3000	500
114.31	114.31	111.68	114.31	109.70	109.70	3500	500
133.65	133.65	132.65	133.65	115.20	115.20	4000	500

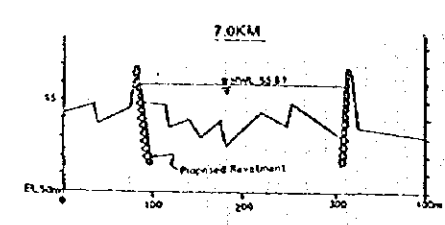
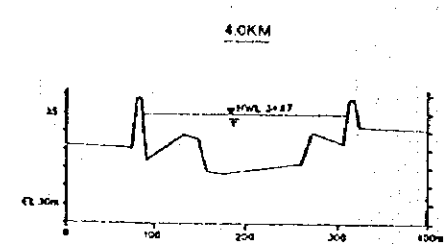
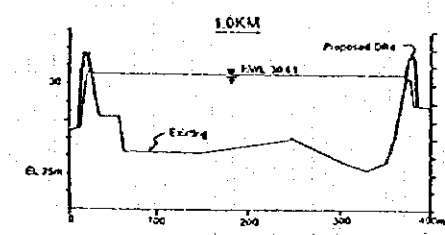
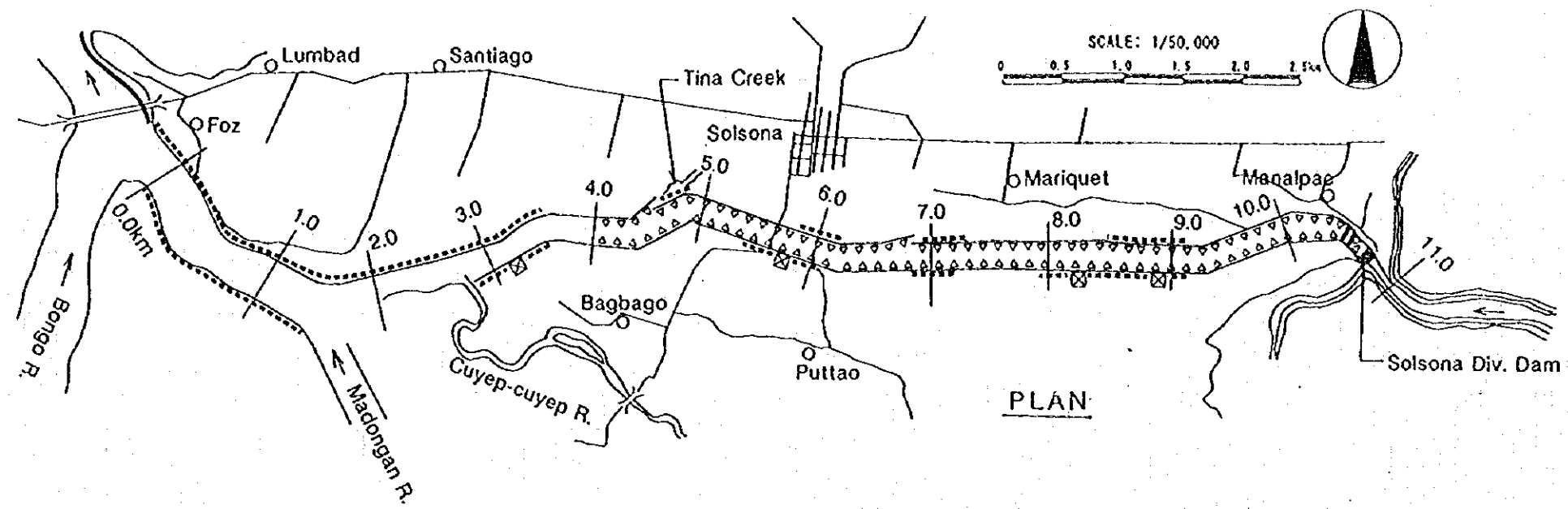
LONGITUDINAL PROFILE

THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

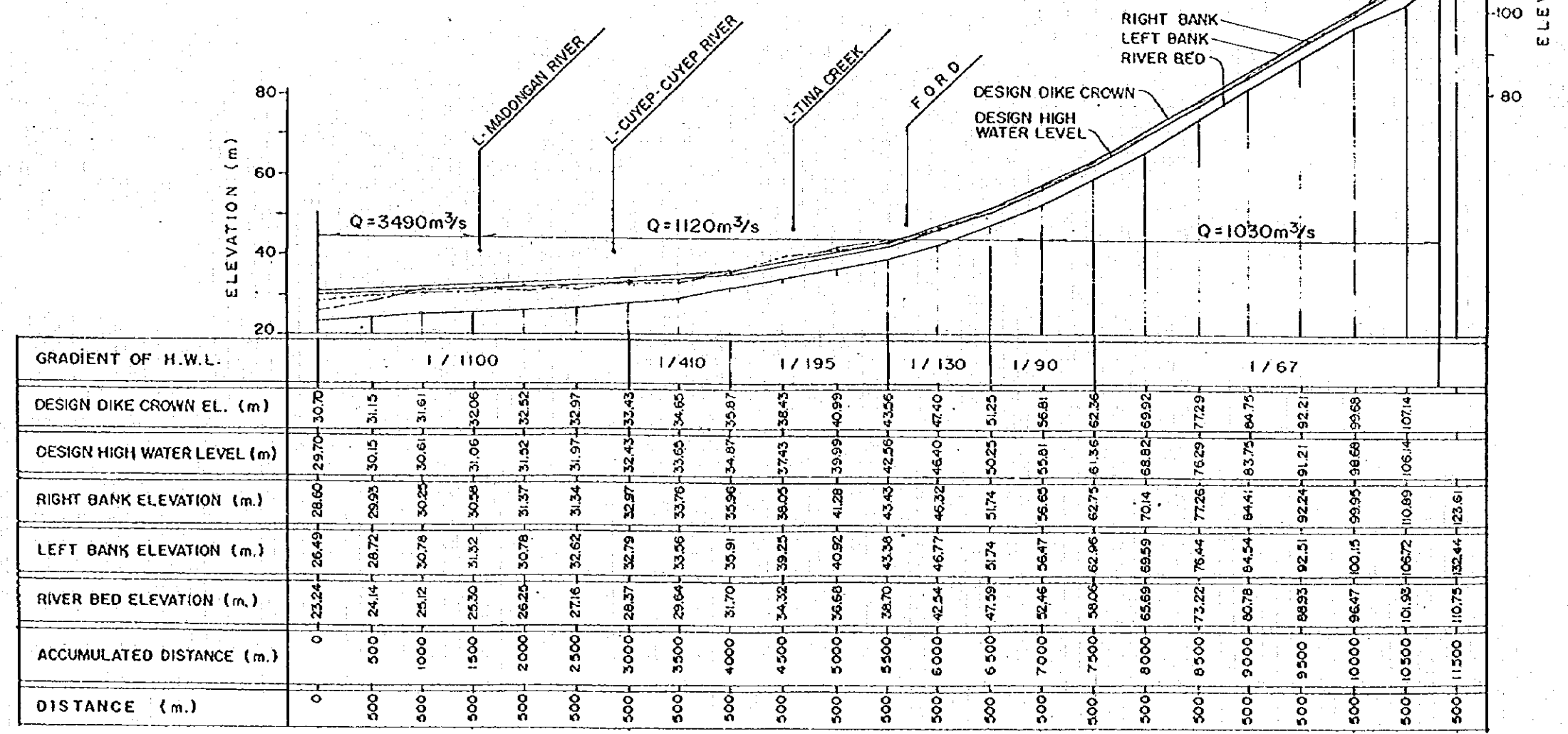
JAPAN INTERNATIONAL COOPERATION AGENCY

図3.7 クラ・ラプガオン川改修計画

- LEGEND:**
- (Existing)
- : Dike
 - ▬ : Diversion Dam
 - : Bridge
- (Proposed)
- : Dike
 - ▬ : Heightening of Existing Dike
 - △ : Bank Protection
 - ⊠ : Sluiceway
 - : Groundsill
 - ▬ : Spurdike
 - : Bridge Extension
 - : Reconstruction



CROSS SECTION

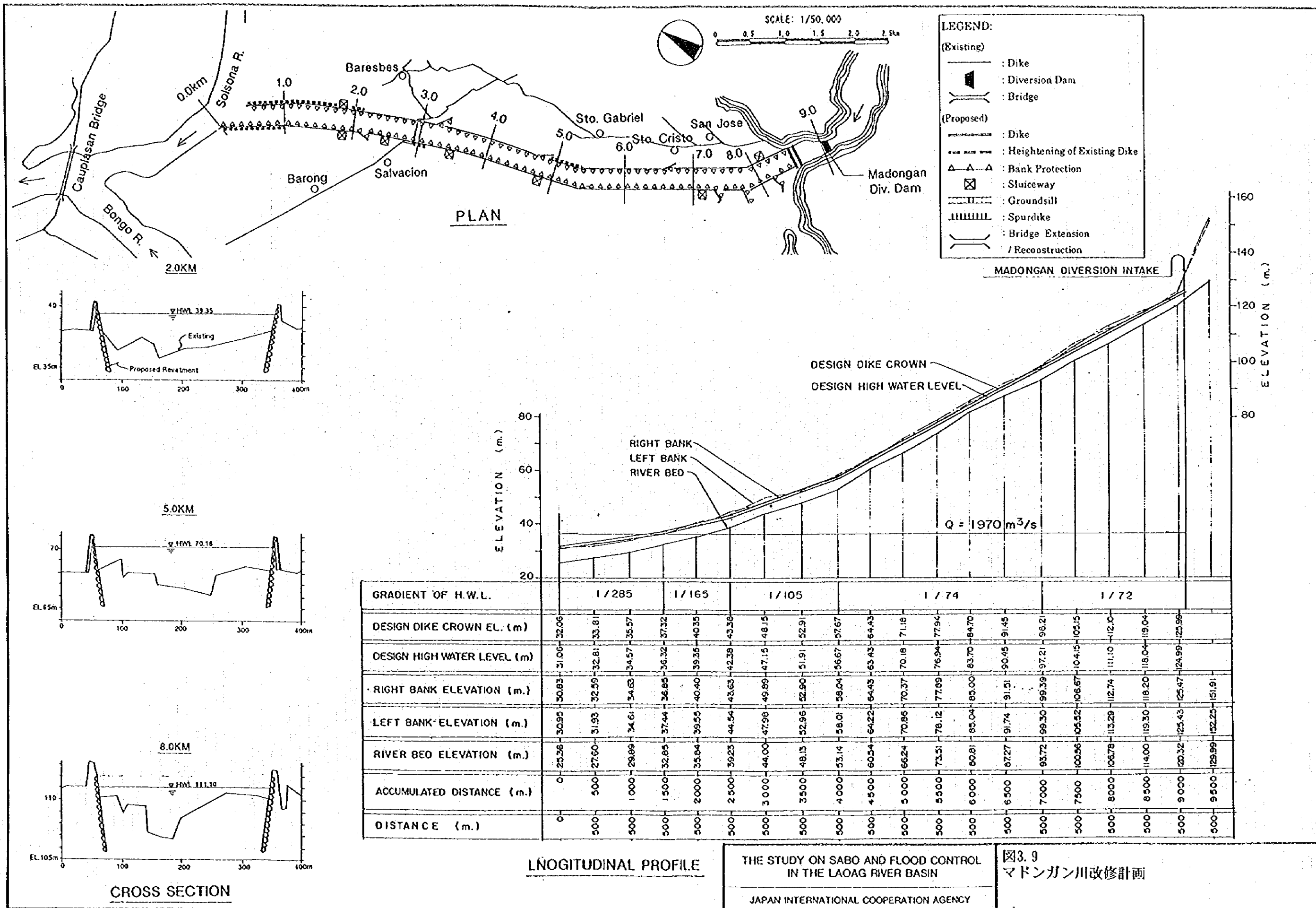


LONGITUDINAL PROFILE

THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

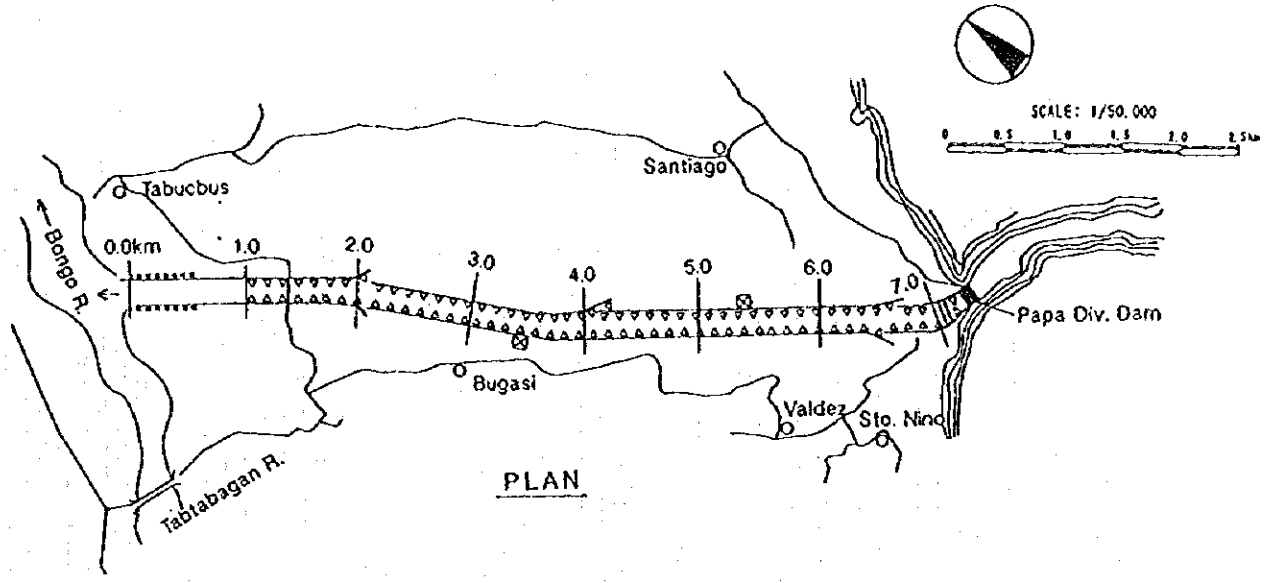
図3.8
ソルソナ川改修計画



THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

図3.9
マドンガン川改修計画



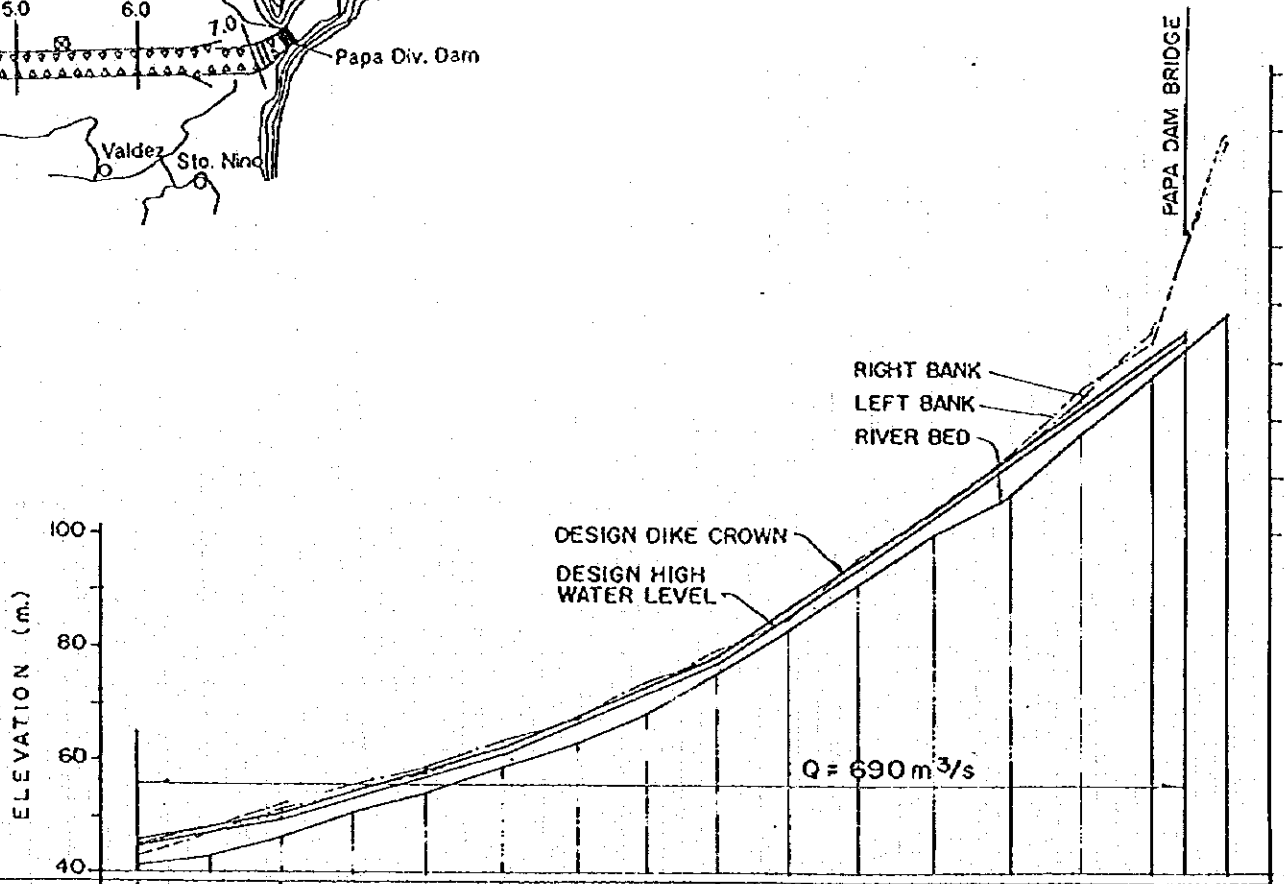
LEGEND:

(Existing)

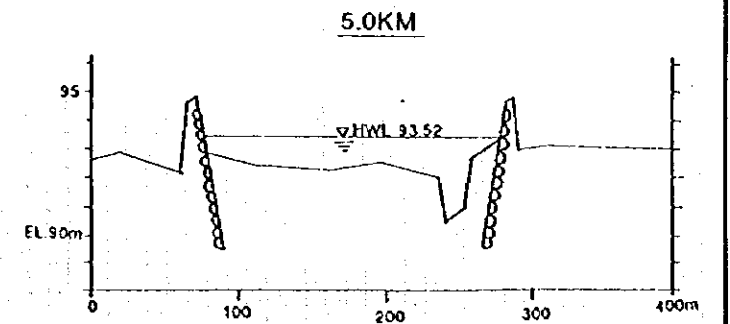
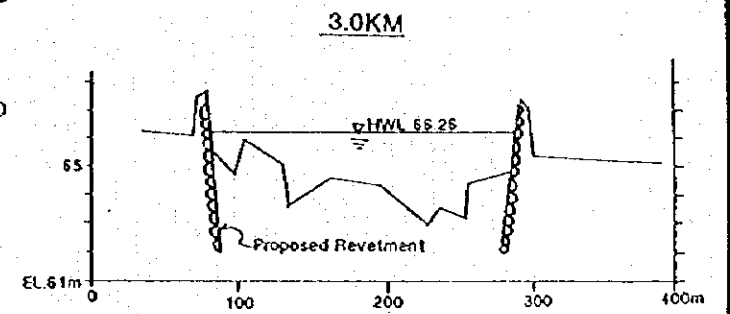
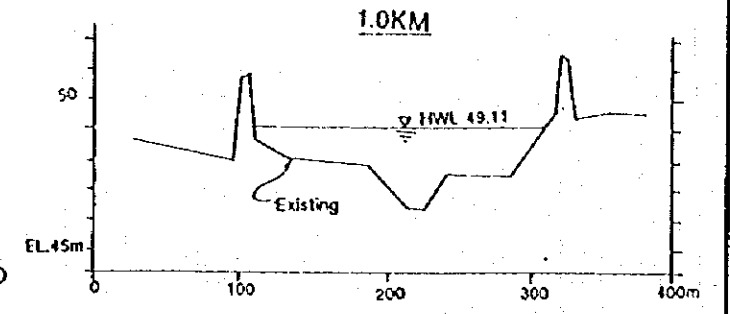
- : Dike
- ▬ : Diversion Dam
- : Bridge

(Proposed)

- - - : Dike
- - - : Heightening of Existing Dike
- △△△ : Bank Protection
- ⊗ : Sluiceway
- : Groundsill
- ||||| : Spurdike
- : Bridge Extension
- : Reconstruction



GRADIENT OF H.W.L.	1/230		1/128		1/92		1/61		1/55						
DESIGN DIKE CROWN EL. (m)	45.76	47.93	50.11	54.01	56.92	61.93	67.26	72.70	78.13	86.33	94.92	103.62	112.71	121.90	130.29
DESIGN HIGH WATER LEVEL (m)	44.76	46.93	49.11	53.01	57.92	60.83	66.26	71.70	77.13	85.33	93.92	102.62	111.71	120.80	129.89
RIGHT BANK ELEVATION (m)	45.12	47.86	51.59	55.14	58.53	62.77	67.64	73.65	78.54	86.64	94.85	103.58	113.21	123.65	134.56
LEFT BANK ELEVATION (m)	42.89	47.26	50.82	54.79	58.09	62.27	67.75	72.91	79.65	84.99	94.92	103.65	113.77	125.11	133.16
RIVER BED ELEVATION (m)	41.00	43.31	46.21	50.65	54.30	58.70	63.10	68.49	75.08	82.87	90.50	99.95	106.29	117.78	127.30
ACCUMULATED DISTANCE (m)	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000
DISTANCE (m)	0	500	500	500	500	500	500	500	500	500	500	500	500	500	500



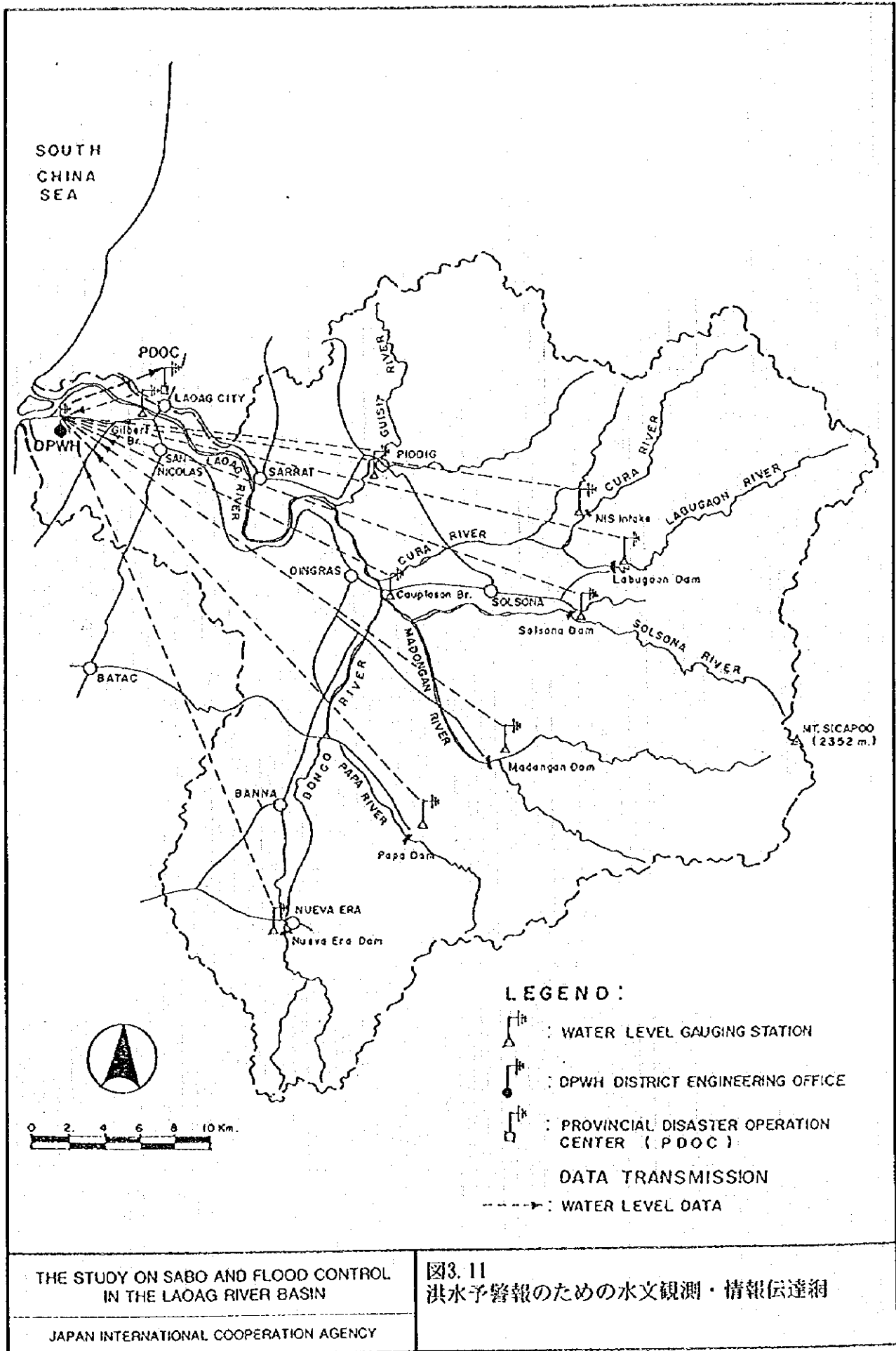
CROSS SECTION

LONGITUDINAL PROFILE

THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

図3.10
ババ川改修計画



THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

図3.11
洪水予警報のための水文観測・情報伝達網

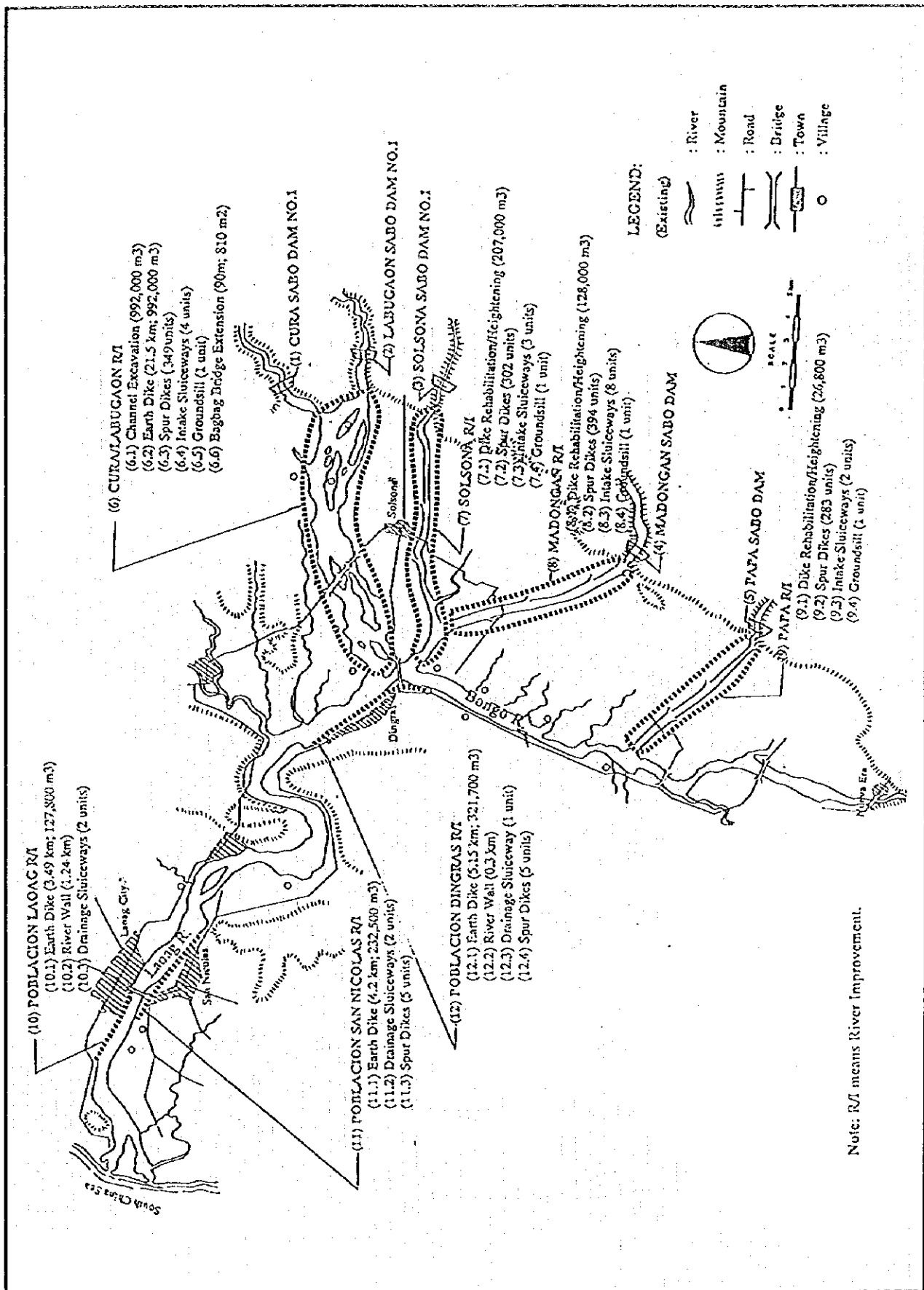
Work Items	Dike Length / Dam Volume	Year		1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
		M/P	F/S														
1. Engineering Services				D/O			SV										
2. Construction																	
(1) R/I at Tangid, Laoag	6.45 km																
(2) R/I at Suyo, Laoag	2.10 km																
(3) R/I at Poblacion, Laoag	1.50 km																
(4) R/I at Camangaan, Laoag	4.00 km																
(5) R/I at Poblacion, San Nicolas	3.00 km																
(6) R/I at San Manuel, Sarrat	3.60 km																
(7) R/I at Suvo, Dingras	3.70 km																
(8) R/I at Poblacion, Dingras	5.60 km																
(9) Cura/Labugaon River																	
1) Cura Sabo Dam No. 1	18,400 m ³																
2) Cura Sabo Dam No. 2	5,900 m ³																
3) Labugaon Sabo Dam No. 1	18,500 m ³																
4) Labugaon Sabo Dam No. 2	15,400 m ³																
5) R/I	21.90 km																
(10) Solsona River																	
1) Solsona Sabo Dam No. 1	9,600 m ³																
2) Solsona Sabo Dam No. 2	11,900 m ³																
3) R/I	13.70 km																
(11) Madongan River																	
1) Madongan Sabo Dam	16,000 m ³																
2) R/I	17.50 km																
(12) Papa River																	
1) Papa Sabo Dam	16,100 m ³																
2) R/I	12.40 km																
Construction Phase						Phase 1						Phase 2					Phase 3

Notes: R/I: River Improvement
M/P: Master Plan Study
F/S: Feasibility Study
D/D: Detailed Design
S/Y: Supervision

THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

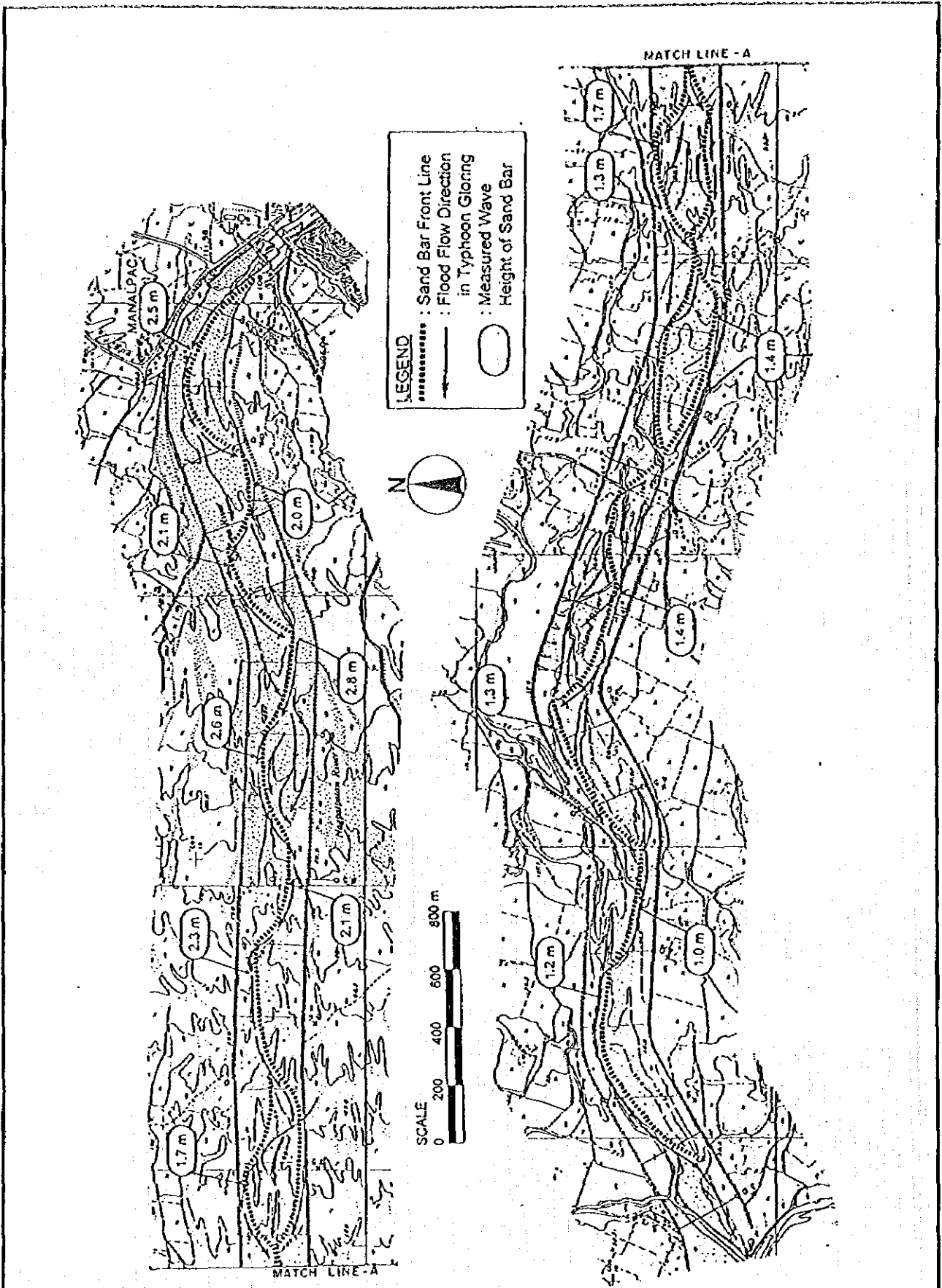
図3.12
マスタープランの実施計画



THE STUDY ON SABO AND FLOOD CONTROL
 IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

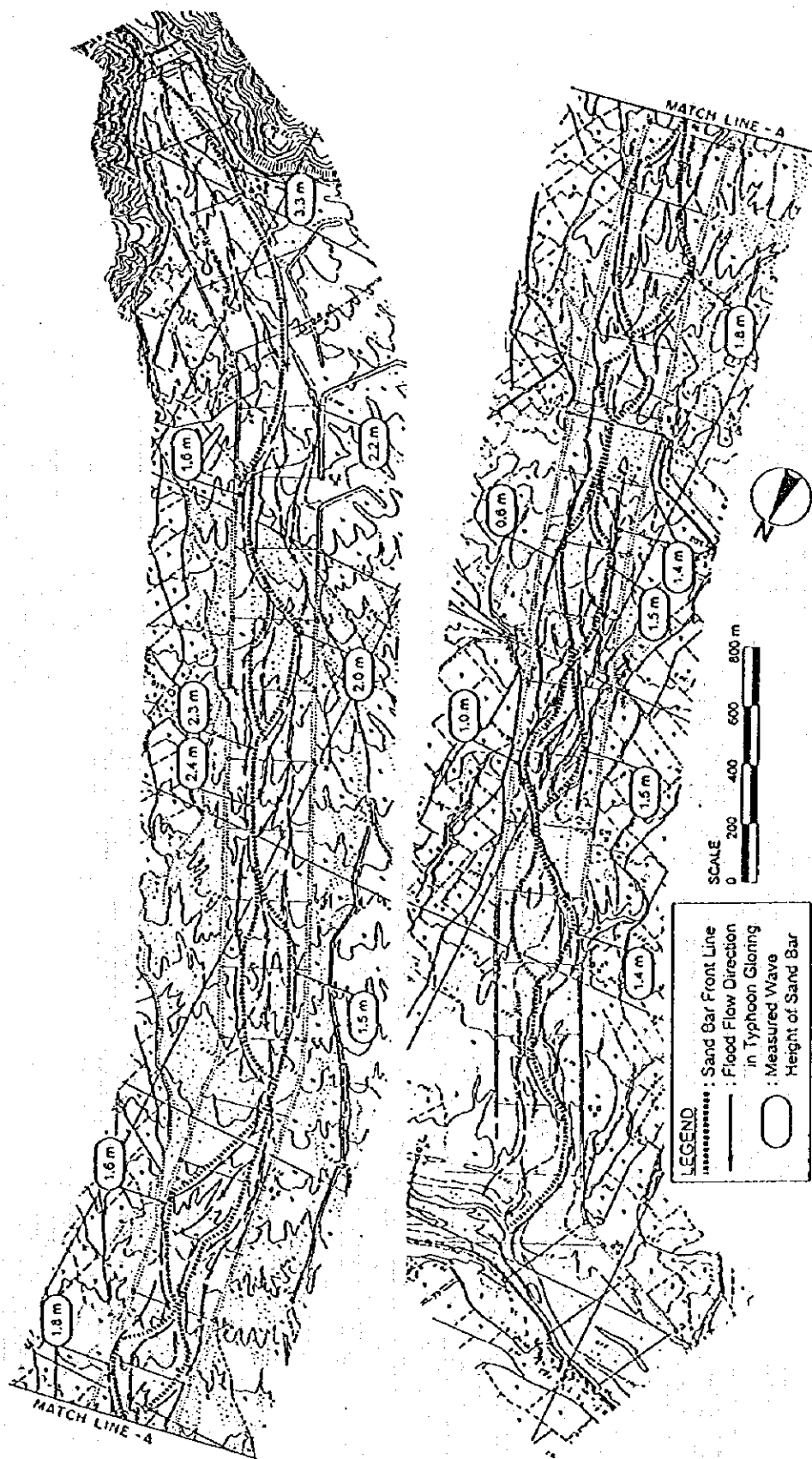
図4.1
 緊急計画概要図



THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

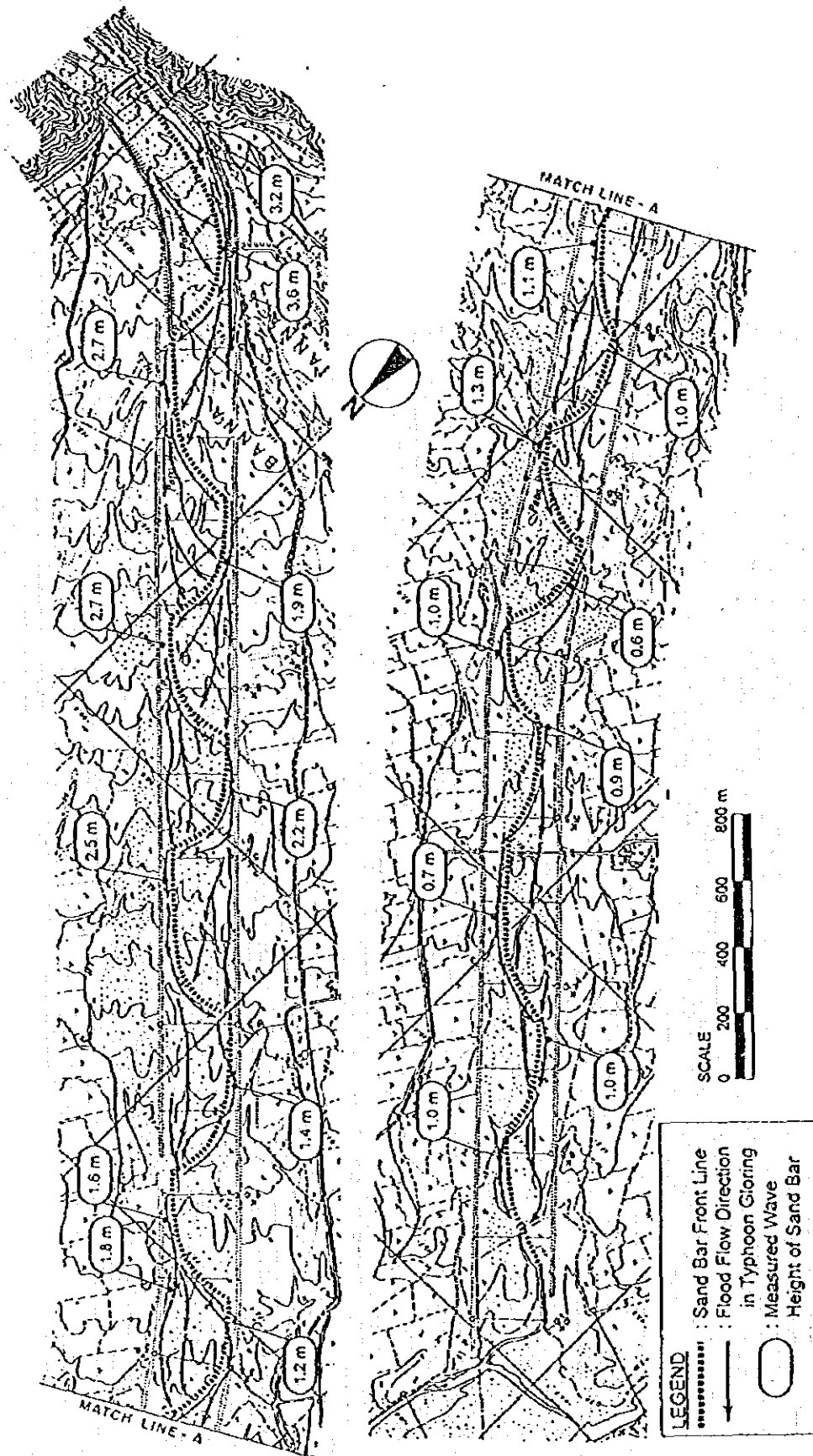
図4.2(1)
砂礫堆とその波高 (ソルソナ川)



THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

図4. 2 (2)
砂礫堆とその波高 (マドンガン川)

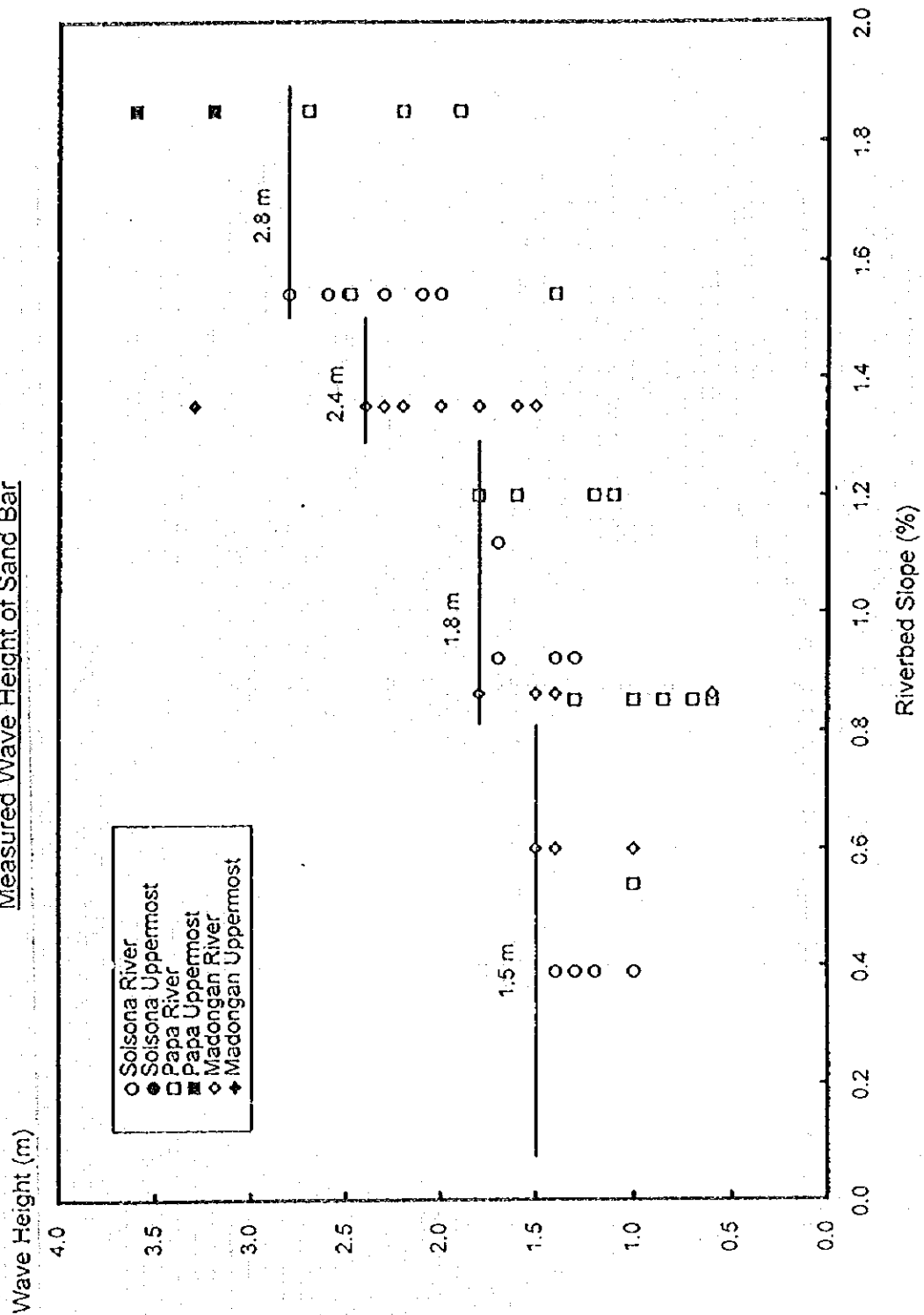


THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

図4. 2 (3)
砂礫堆とその波高 (ババ川)

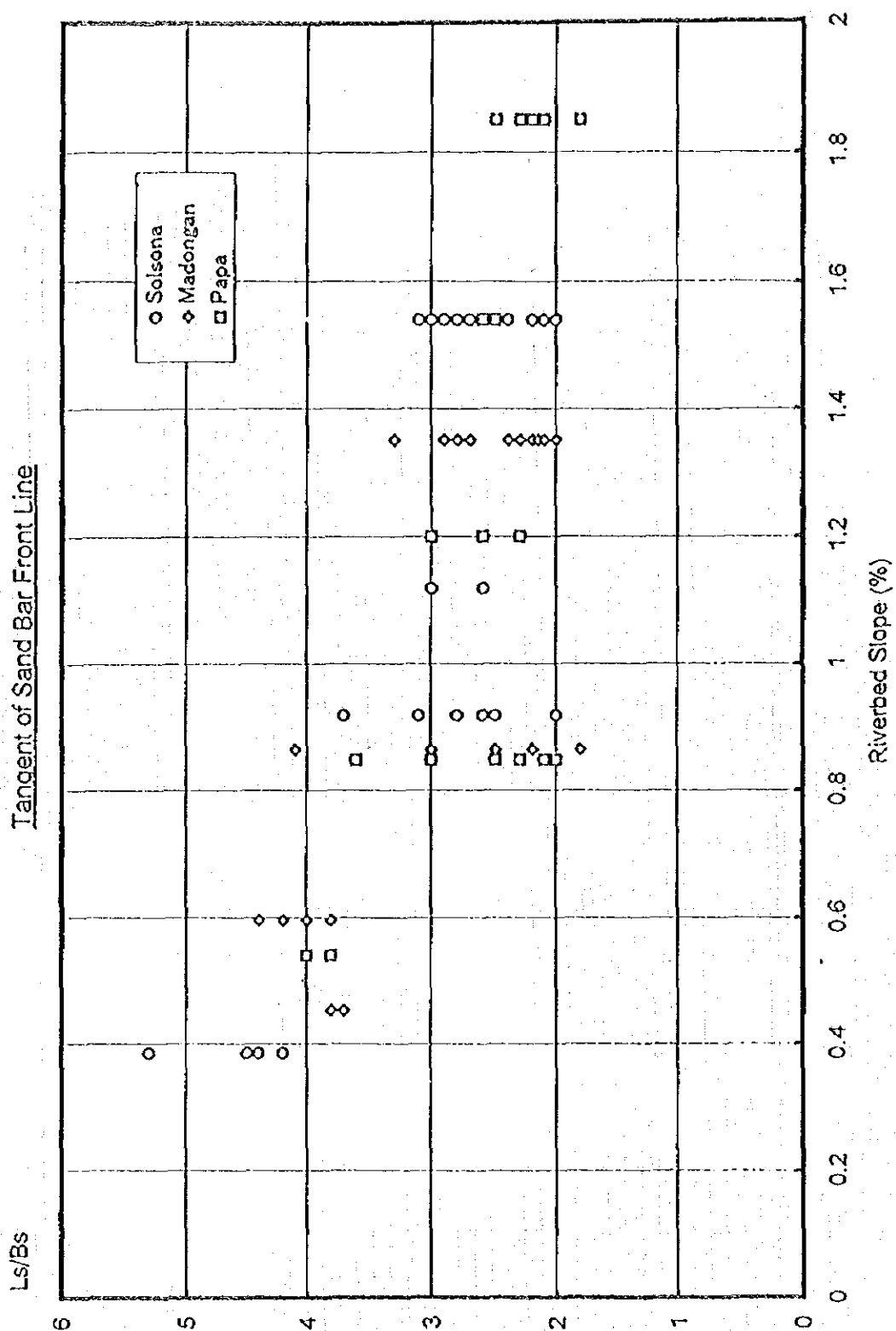
Measured Wave Height of Sand Bar



THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

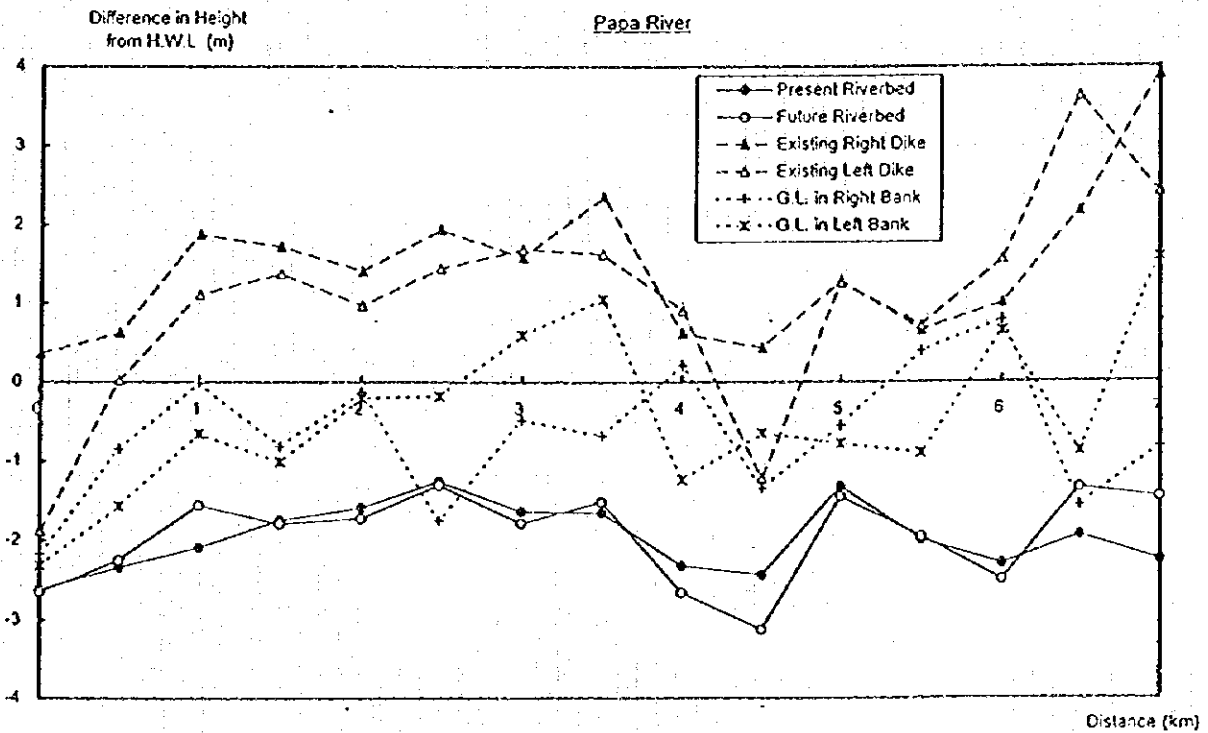
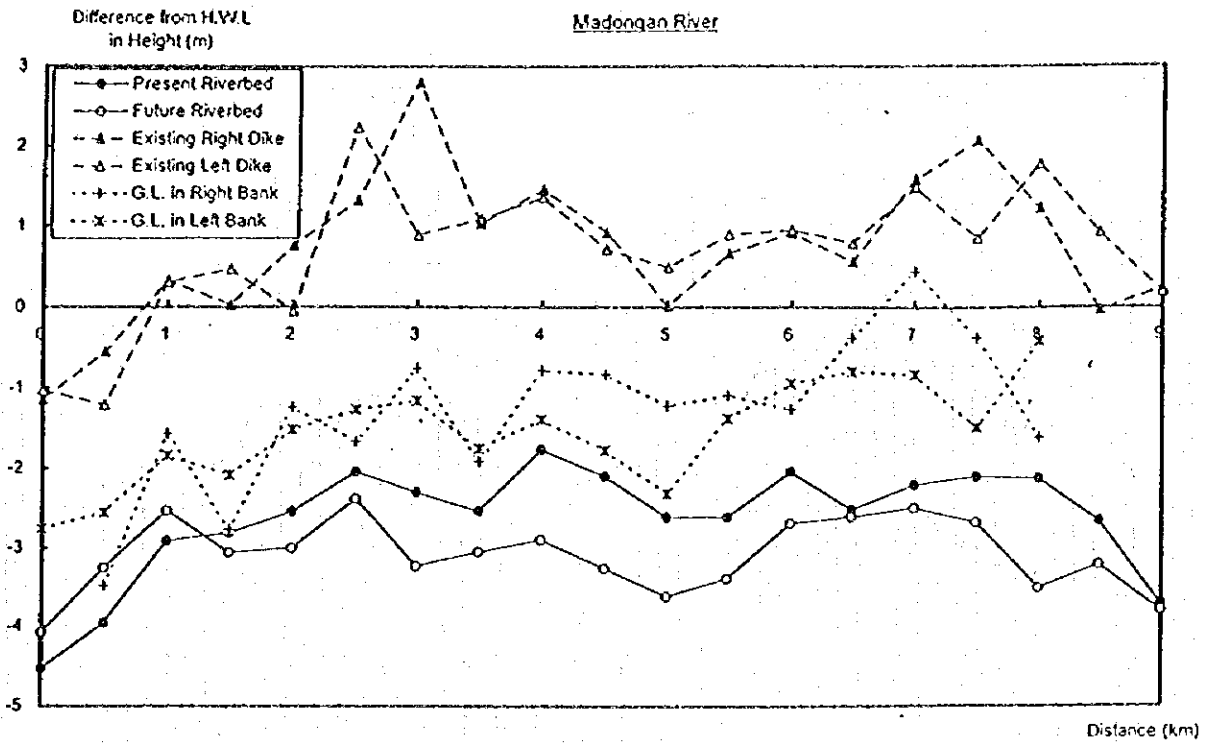
図 4.3
砂礫堆波高と河床勾配の関係



THE STUDY ON SABO AND FLOOD CONTROL
 IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

図4.4
 砂礫堆前縁線の入射角 (Ls/Bs)



THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

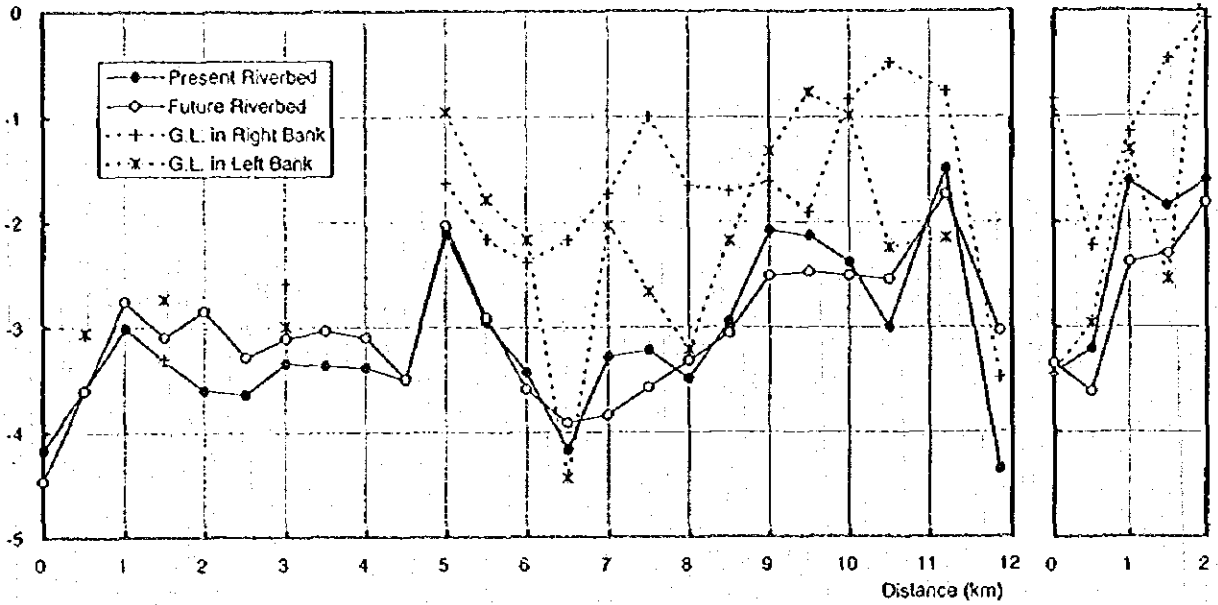
図4.5(1)

河床高, 現況堤防高, 堤内地盤高の計画高水位からの比高 (クラ・ラブガオン川, ソルソナ川)

Difference from H.W.L. in Height (m)

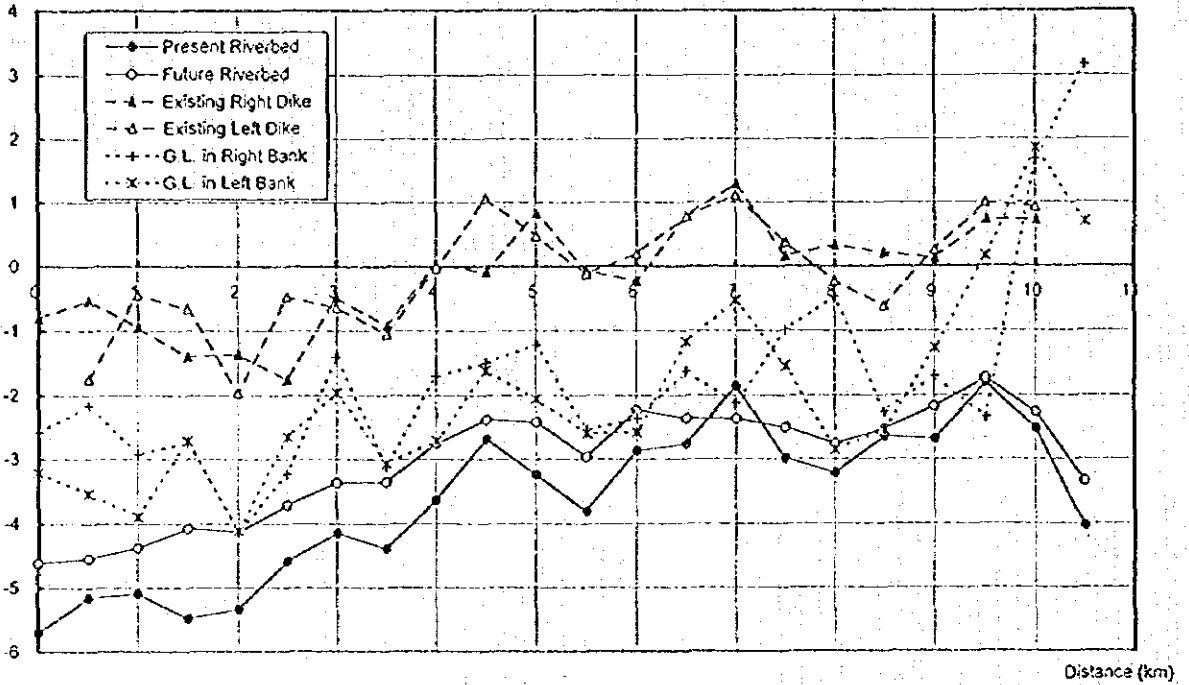
Cura River

Labugaon River



Difference in Height from H.W.L. (m)

Solsona River



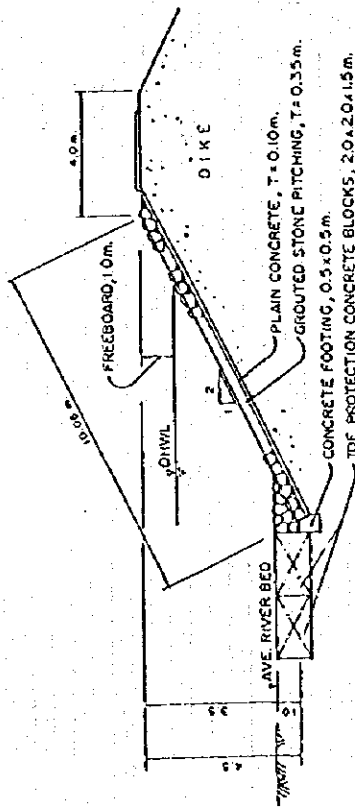
THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

図4.5(2)

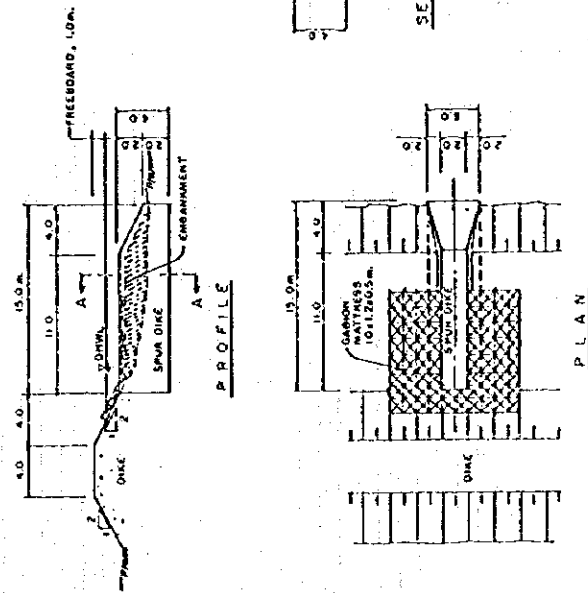
河床高, 現況堤防高, 堤内地盤高の計画高水位からの比高 (マドンガン川, パバ川)

(1) REVETMENT

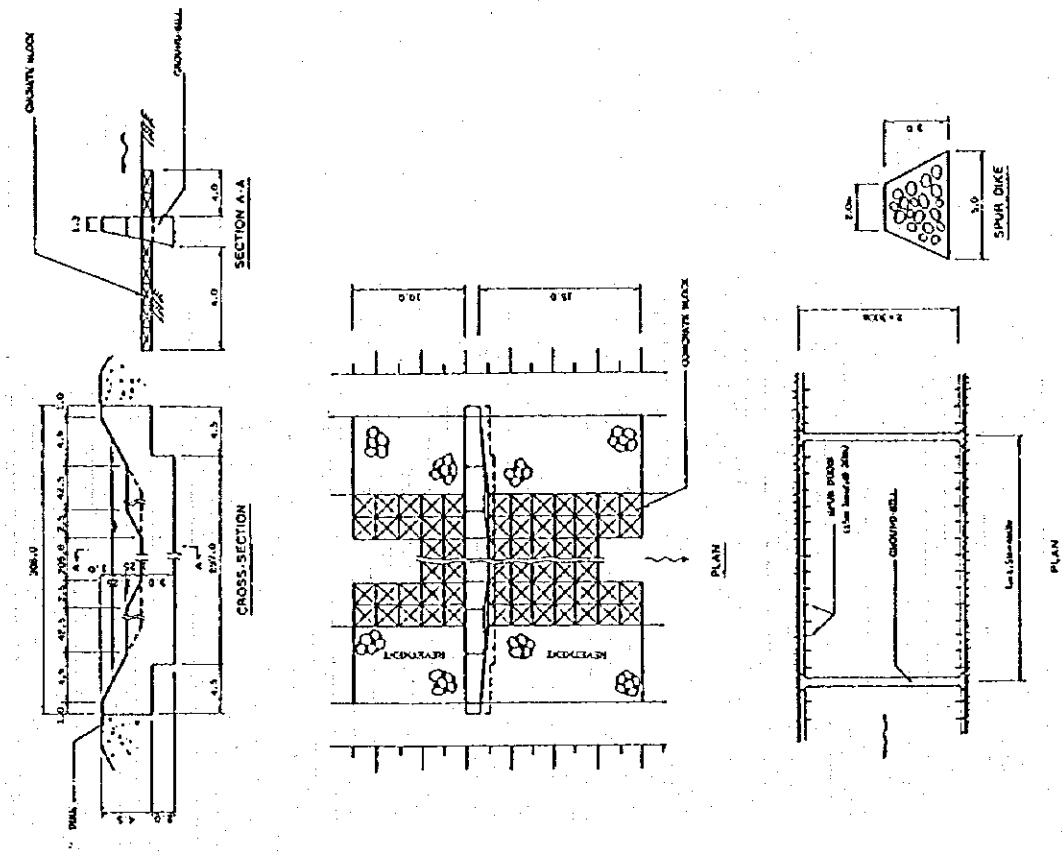


TYPICAL SECTION

(2) SPUR DIKE



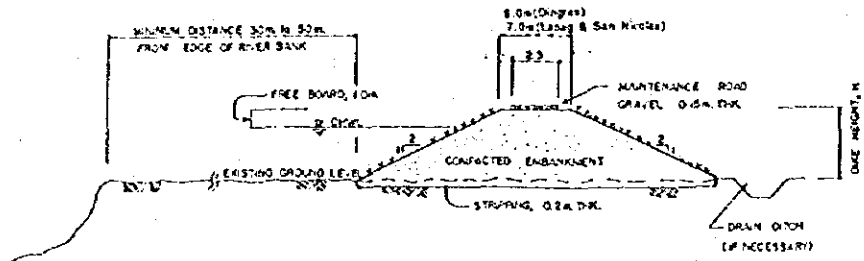
(3) GROUND-SILL WITH SMALL SPUR DIKES



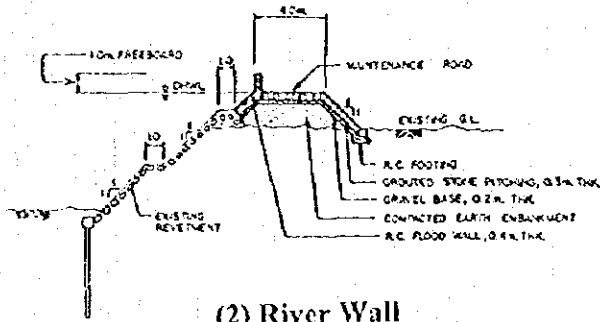
THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

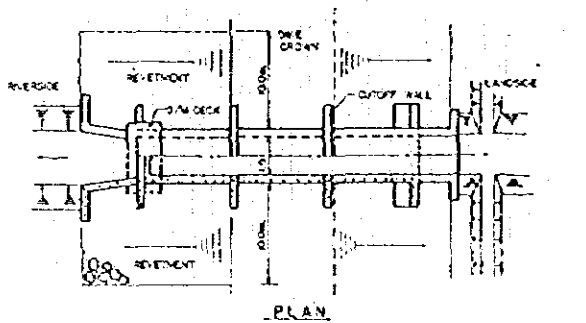
図4.6
扇状地河川改修の代替構造物



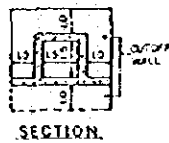
(1) Earth Dike



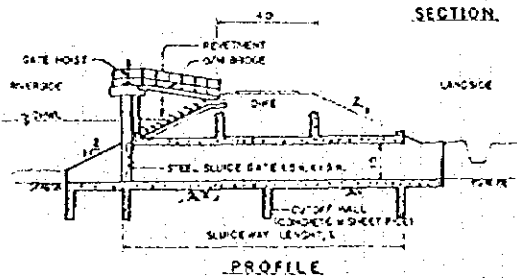
(2) River Wall



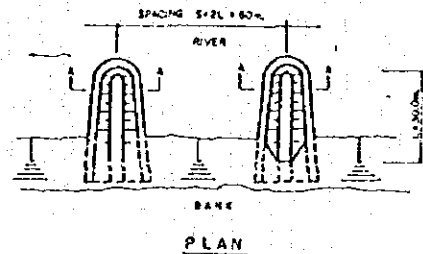
PLAN



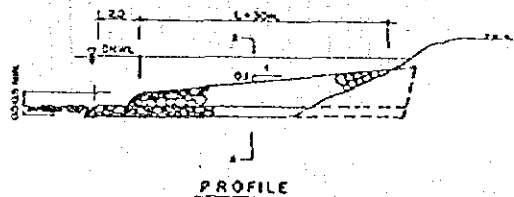
SECTION



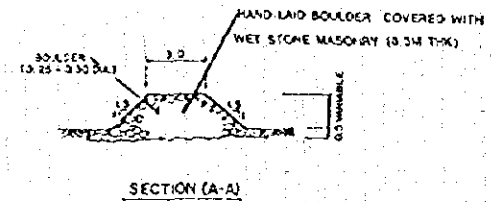
PROFILE



PLAN



PROFILE



SECTION (A-A)

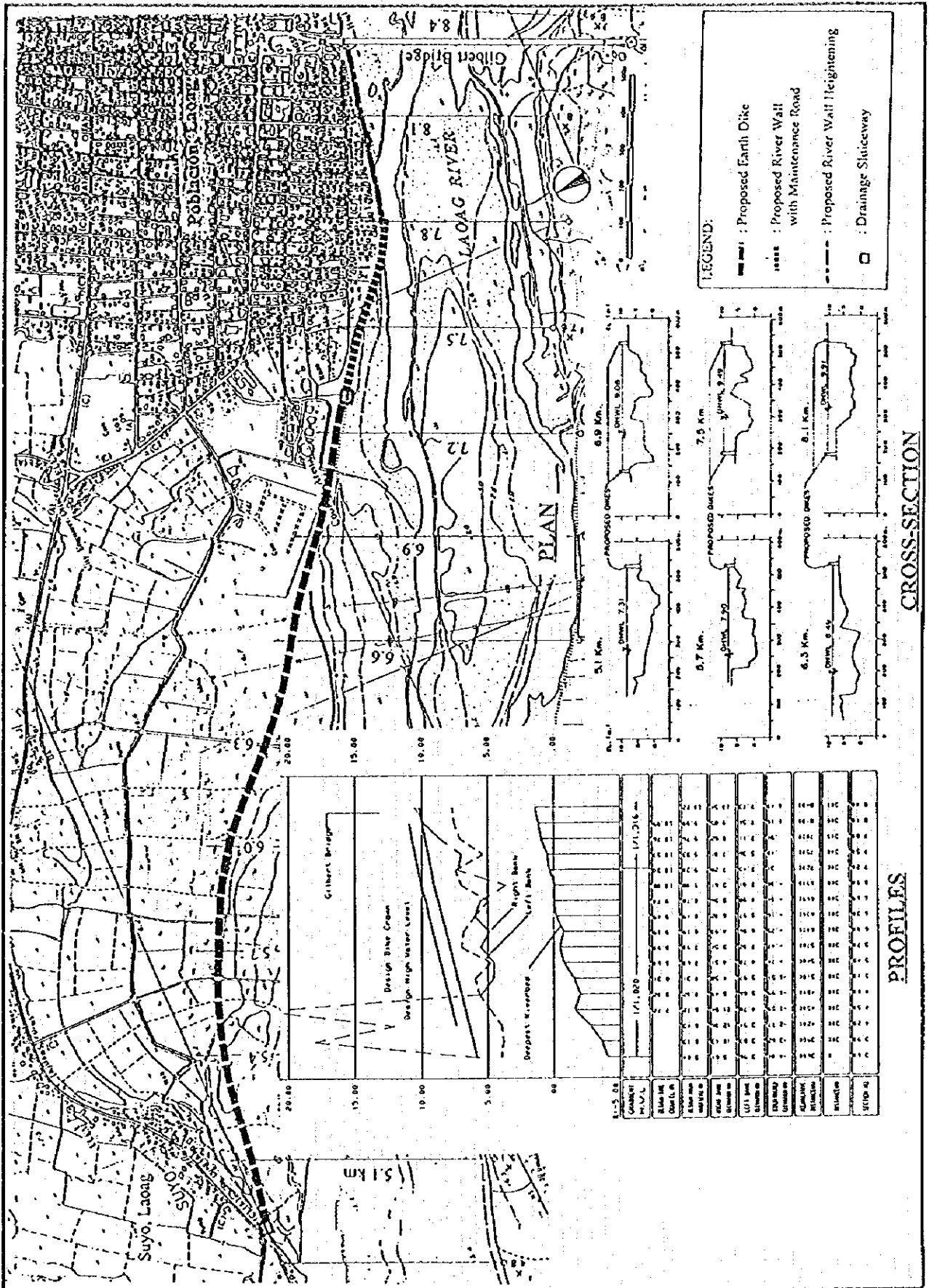
(3) Drainage Sluiceway

(4) Boulder Spur Dike

THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

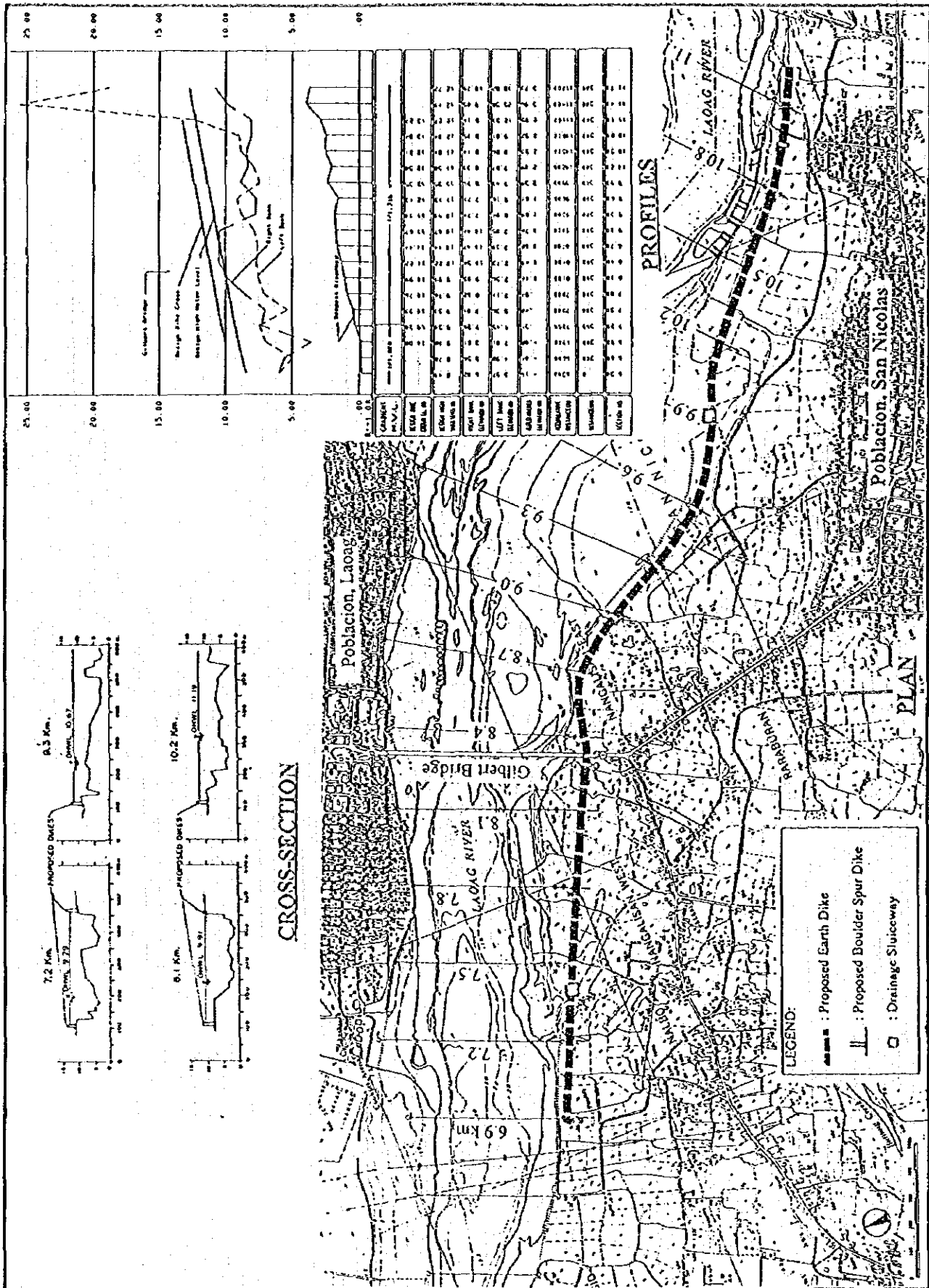
図4.7
ラオアグ・ボンゴ川改修における適用構造物



THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

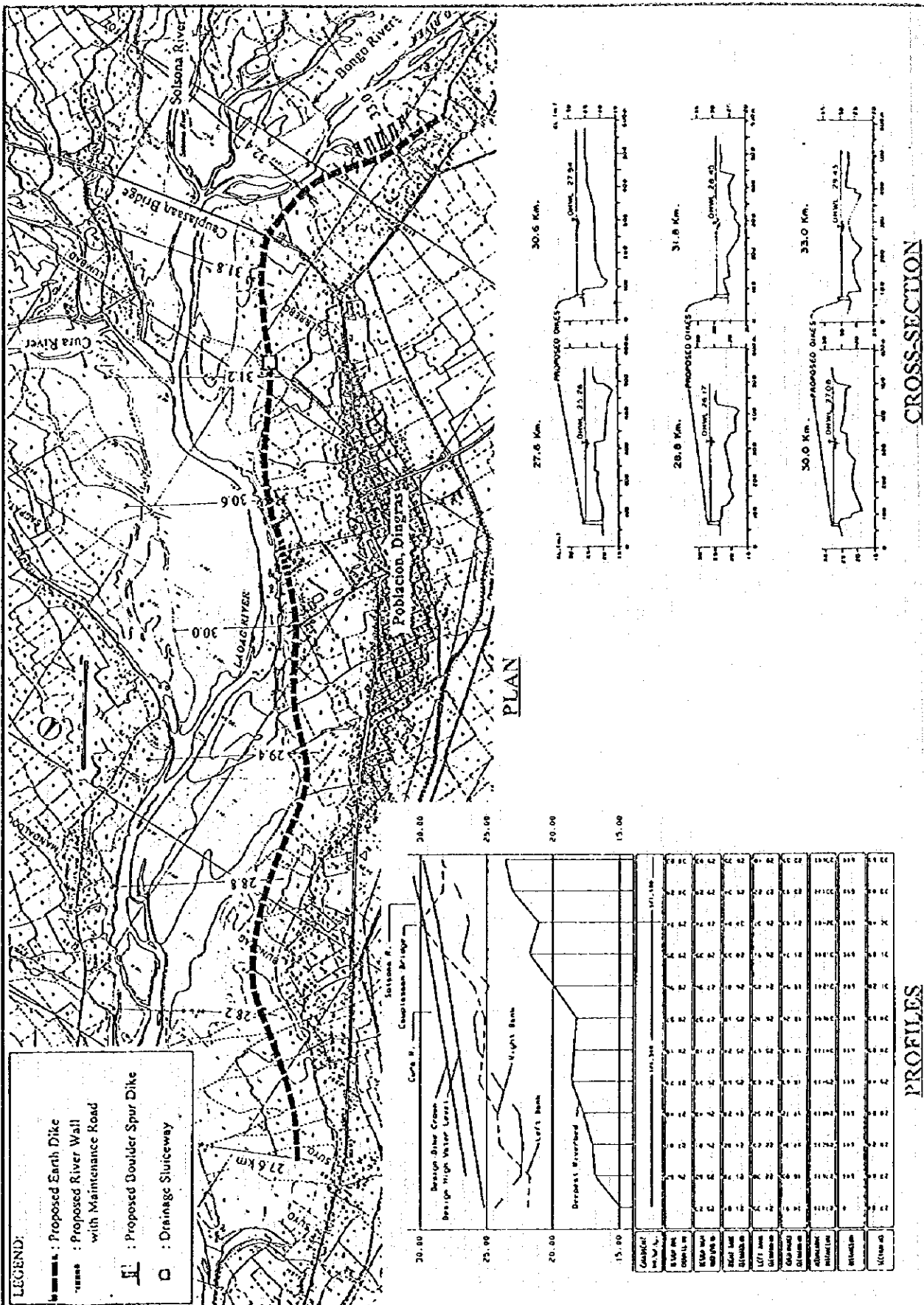
図4.8
ラオアグ市街地防護のための河川改修計画



THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

図4.9
サンニコラス市街地防護のための河川改修計画

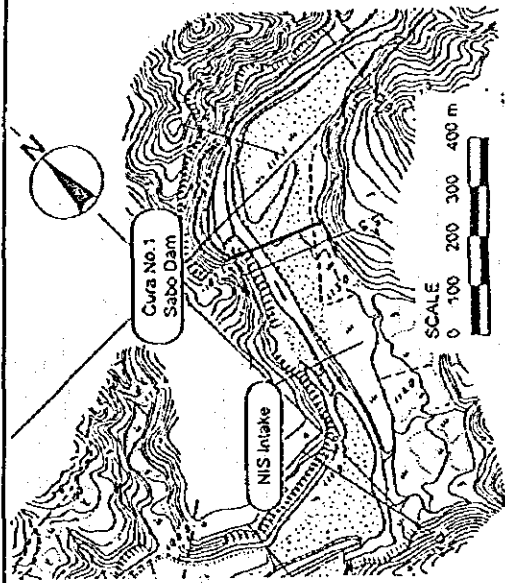
JAPAN INTERNATIONAL COOPERATION AGENCY



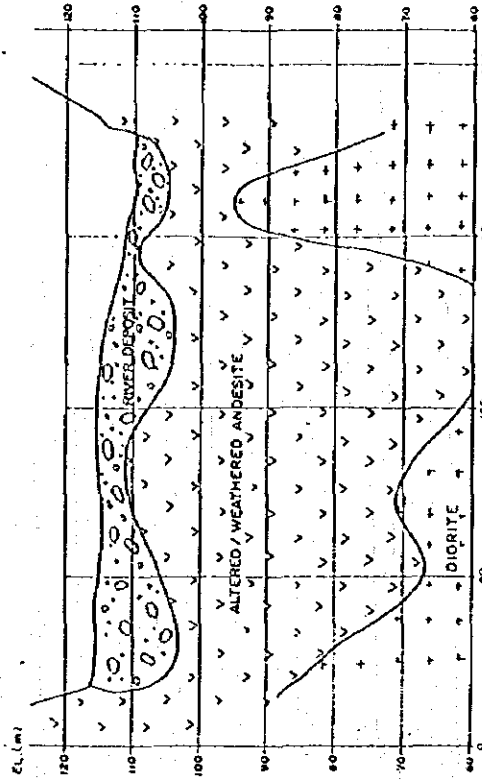
THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

図4.10
ディングラス市街地防護のための河川改修計画

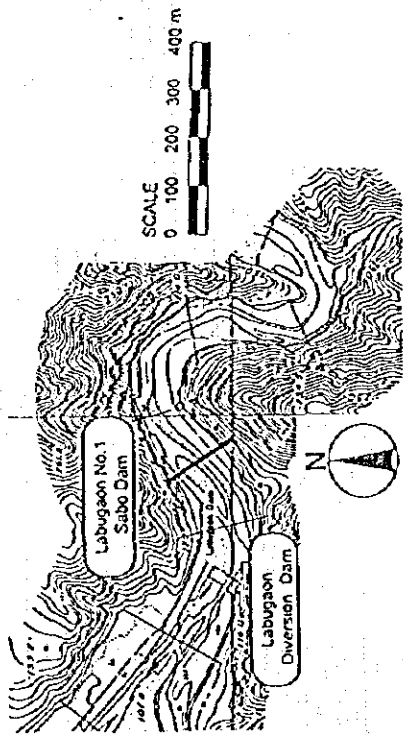


LOCATION

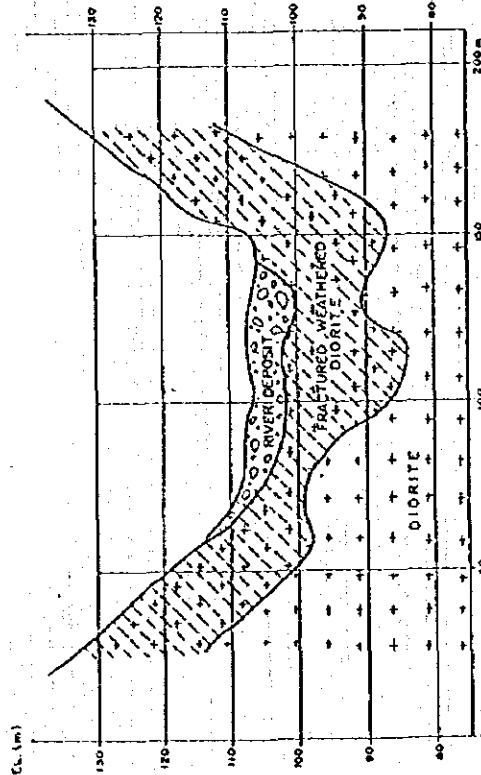


GEOLOGICAL SECTION

(1) Cura Dabo Dam No.1



LOCATION



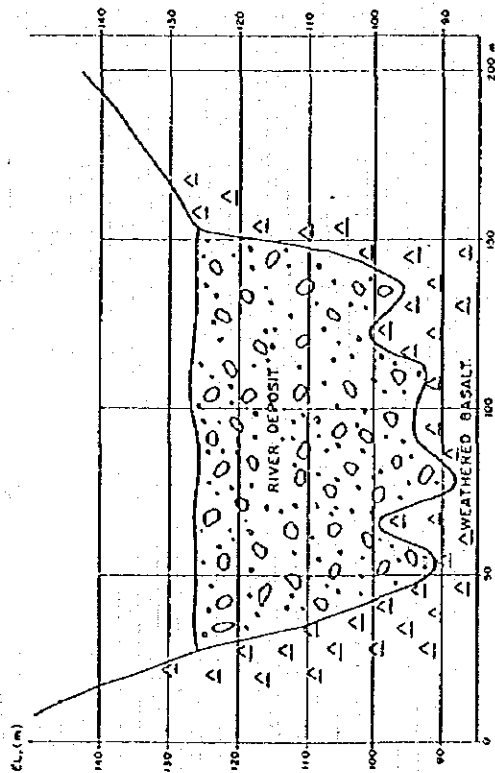
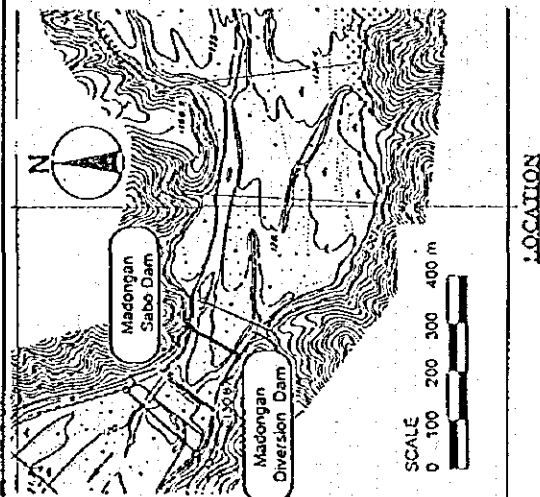
GEOLOGICAL SECTION

(2) Labugaon Sabo Dam No.1

THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

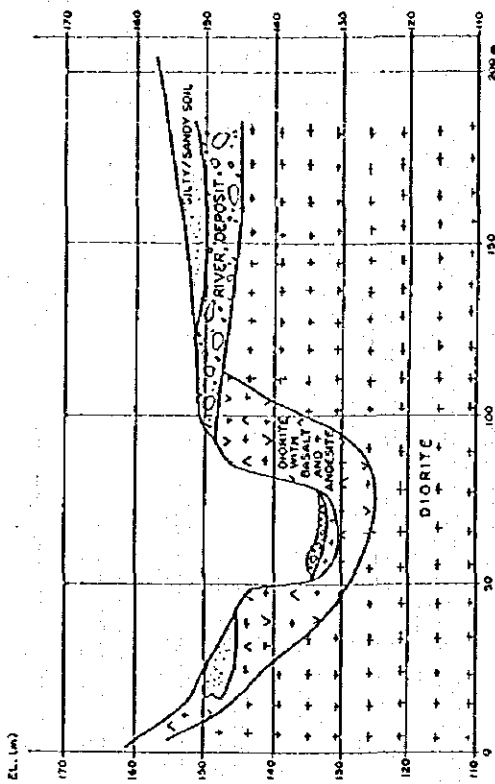
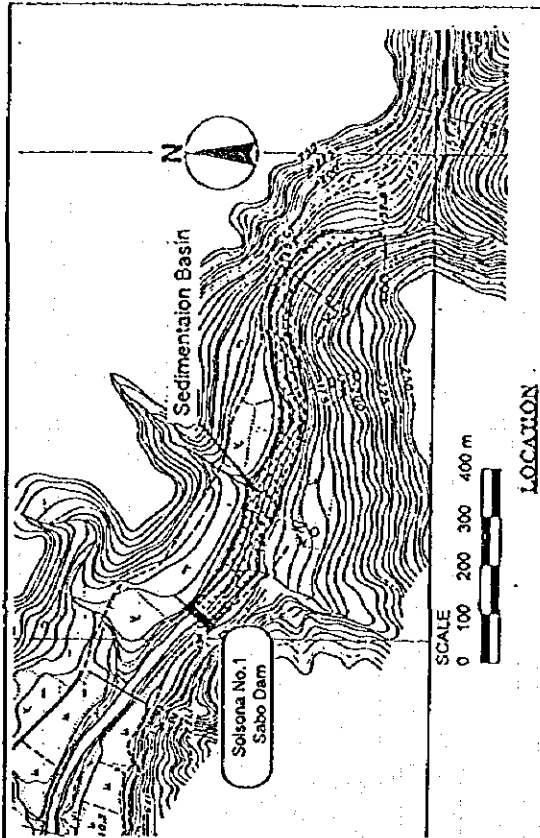
JAPAN INTERNATIONAL COOPERATION AGENCY

図4.11 (1)
砂防ダムサイトの地質
(クラNo 1, ラブガオンNo 1 砂防ダム)



GEOLOGICAL SECTION

(4) Madonggan Sabo Dam



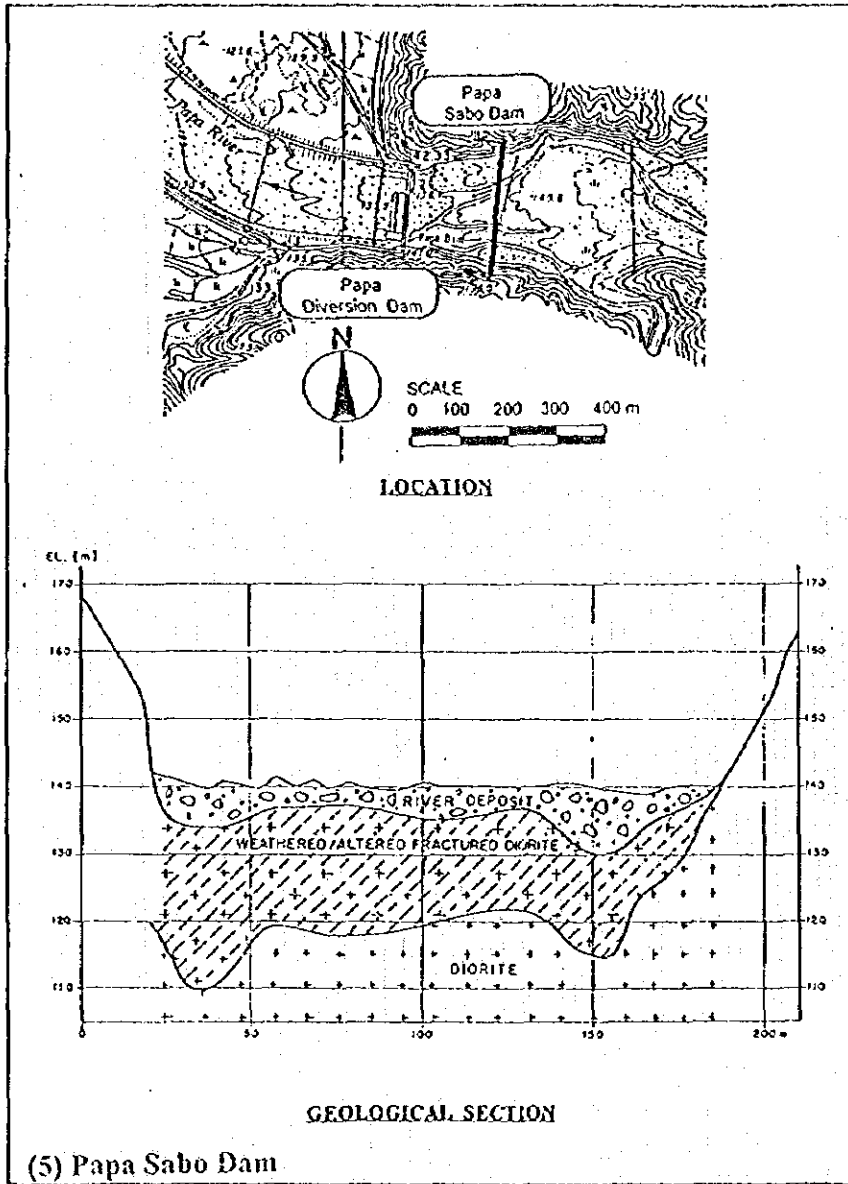
GEOLOGICAL SECTION

(3) Solsona Sabo Dam No.1

THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

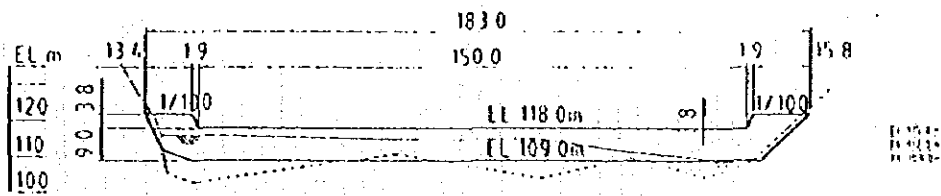
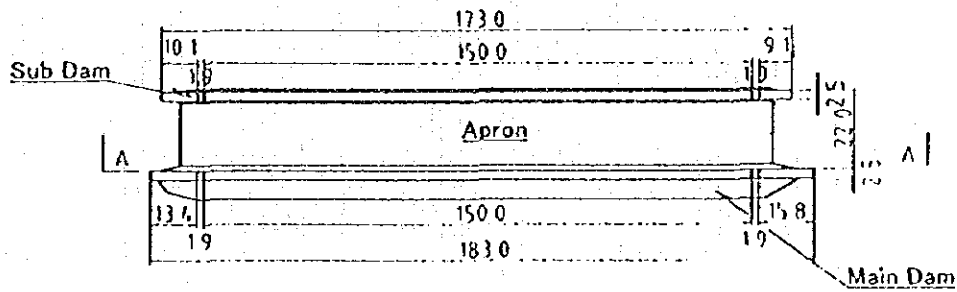
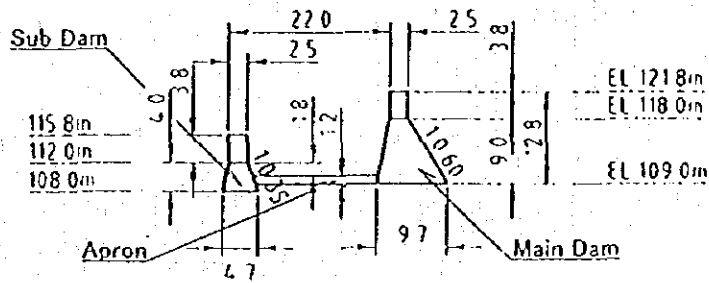
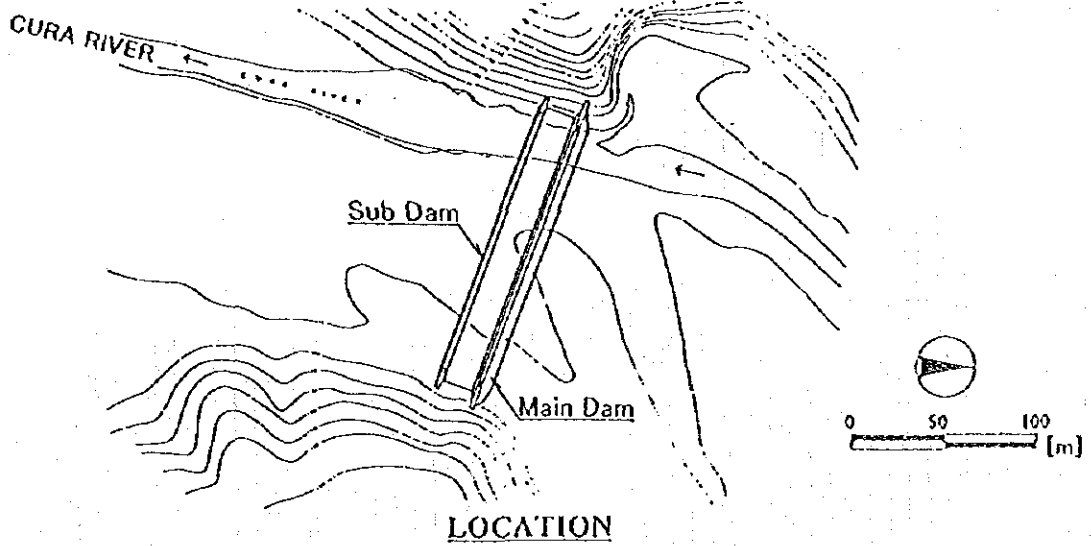
図4.11(2)
砂防ダムサイトの地質
(ソルソナNo.1, マドンガン砂防ダム)



THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

図4.11(3)
砂防ダムサイトの地質
(パパ砂防ダム)



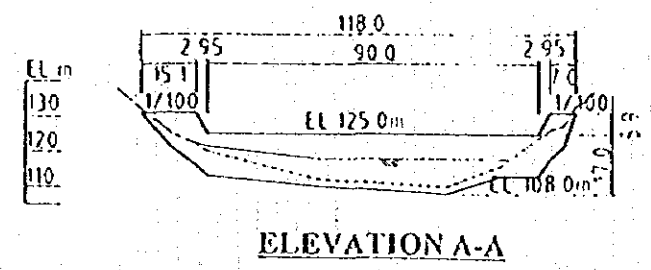
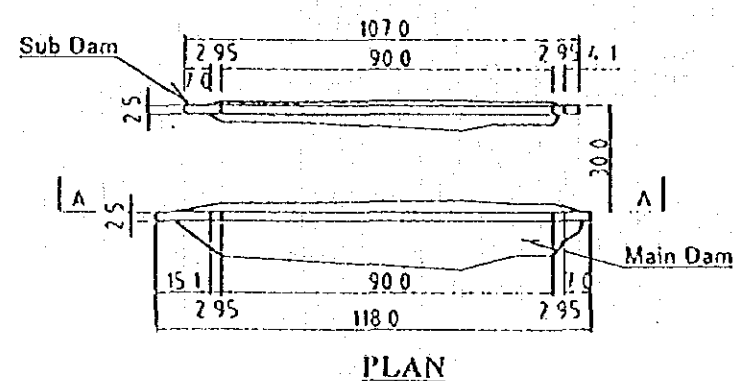
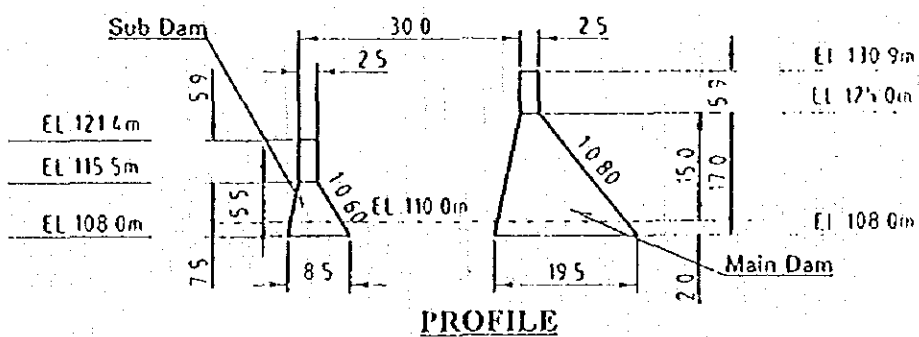
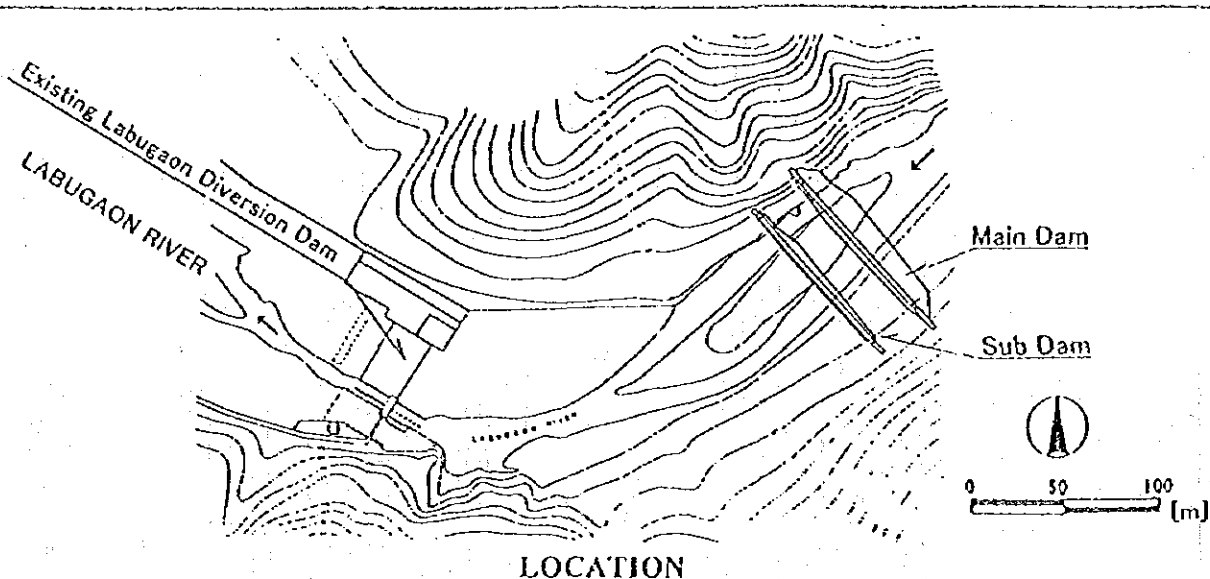
ELEVATION A-A

(Unit : in meter)

THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

図4.12 (I)
砂防ダム概略設計 (クラNo 1 砂防ダム)

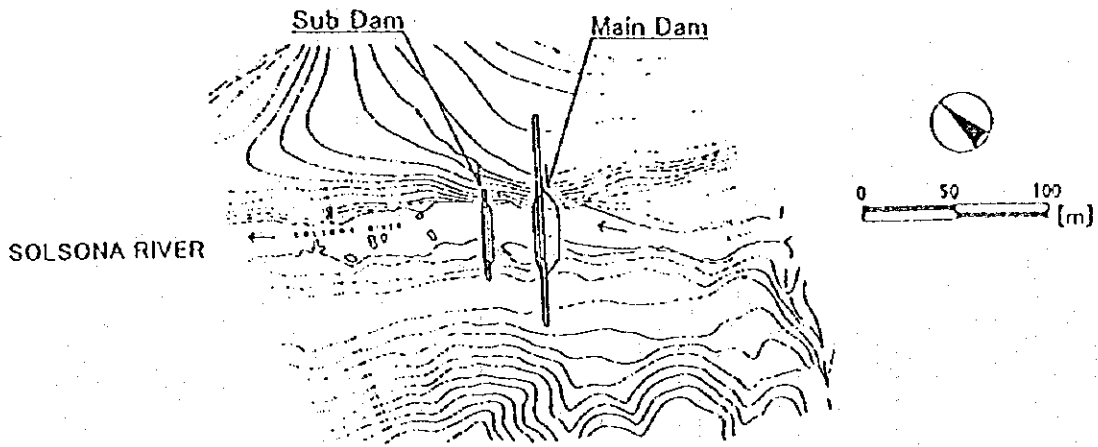


(Unit : in meter)

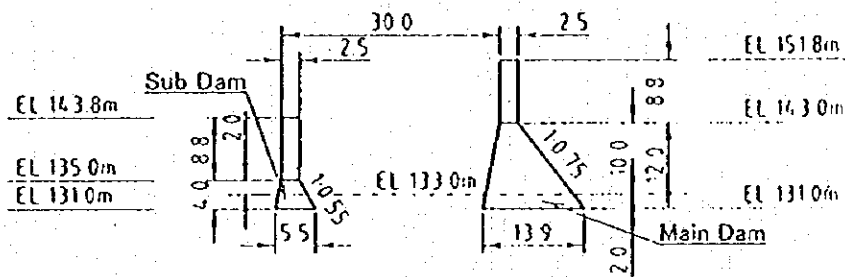
THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

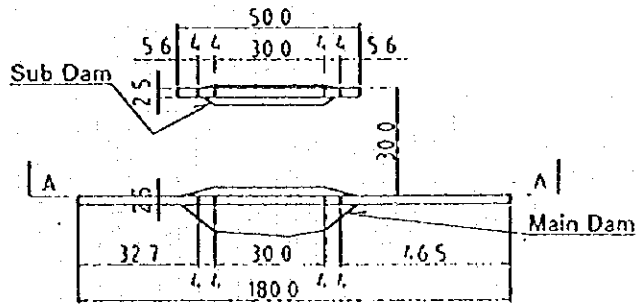
図4.12(2)
砂防ダム概略設計 (ラブガオンNo.1 砂防ダム)



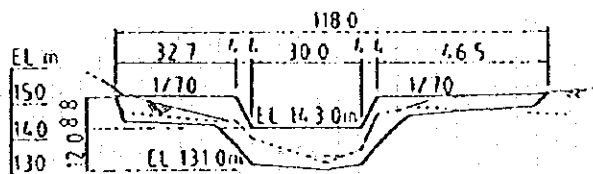
LOCATION



PROFILE



PLAN



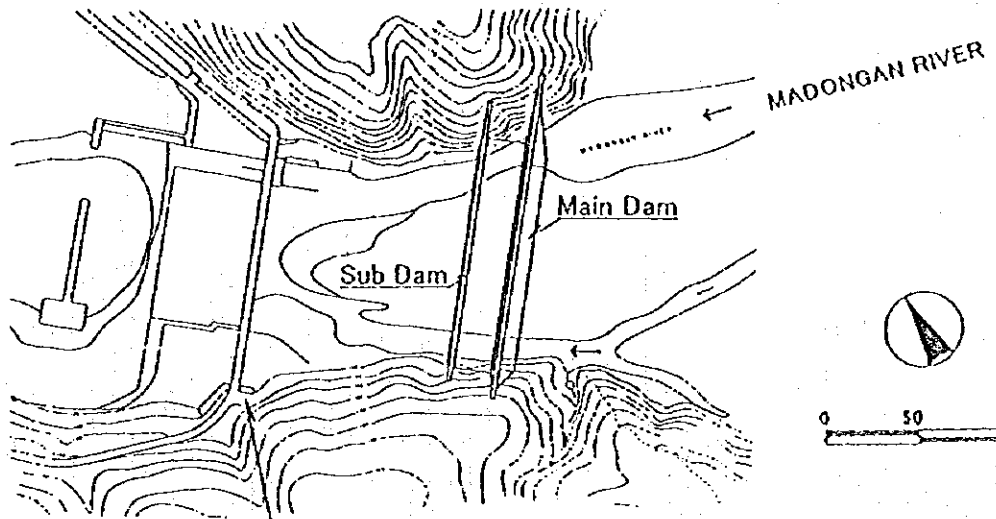
ELEVATION A-A

(Unit : in meter)

THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

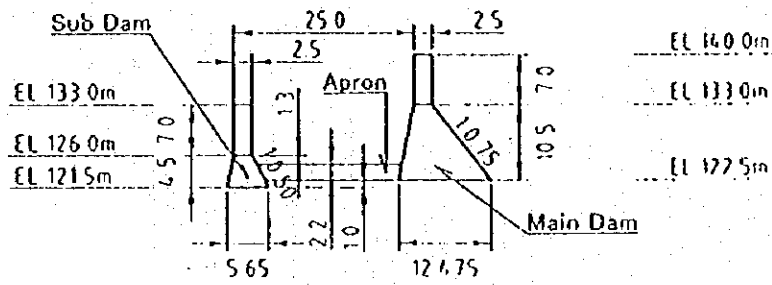
JAPAN INTERNATIONAL COOPERATION AGENCY

図4.12(3)
砂防ダム概略設計 (ソルソナNo.1砂防ダム)

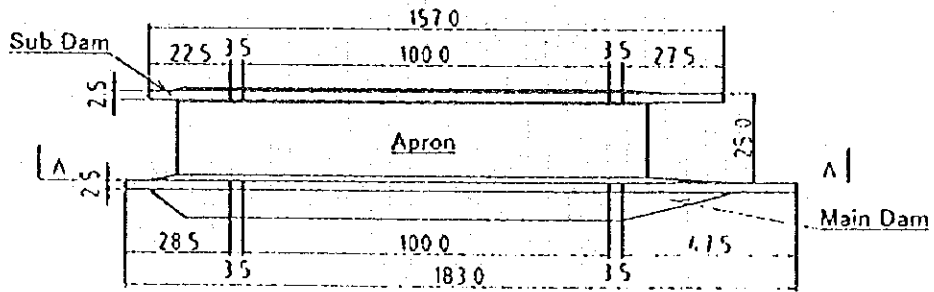


Existing Madongan Diversion Dam

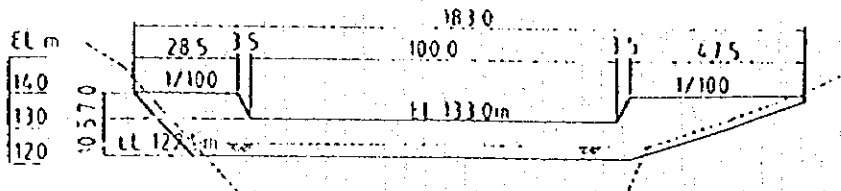
LOCATION



PROFILE



PLAN



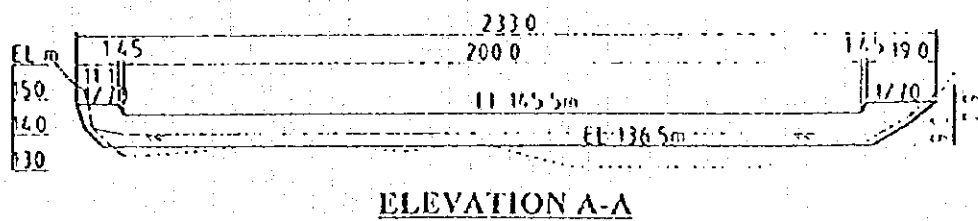
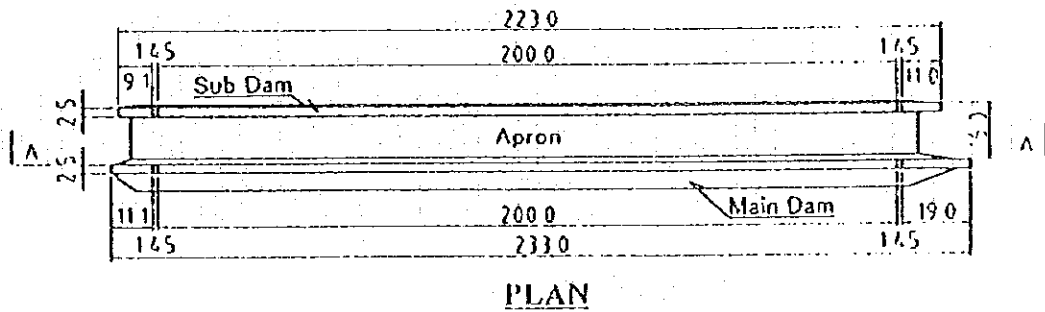
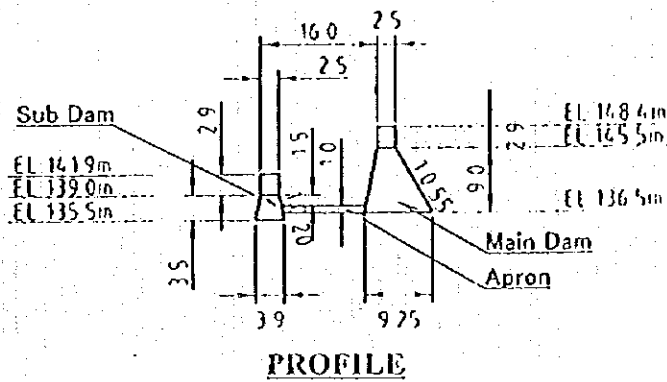
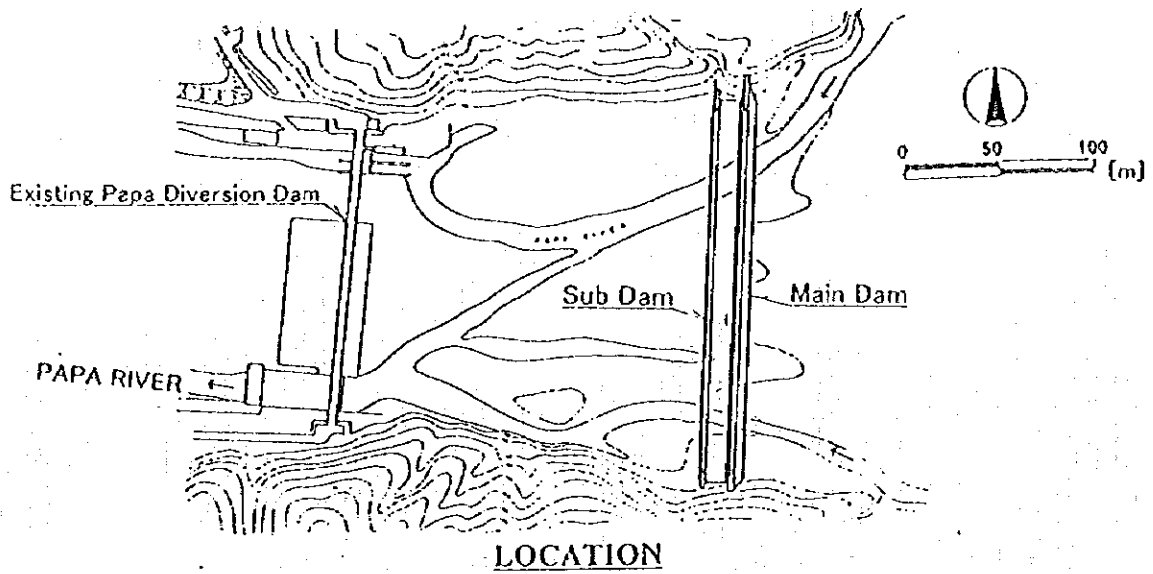
ELEVATION A-A

(Unit : in meter)

THE STUDY ON SABO AND FLOOD CONTROL
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図4.12(4)
砂防ダム概略設計 (マドンガン砂防ダム)



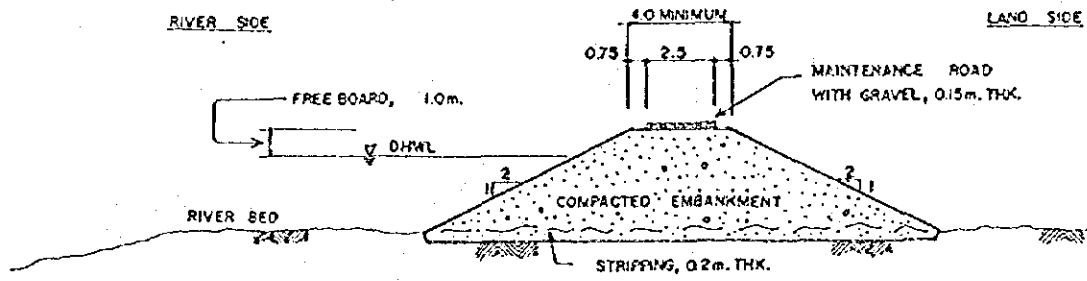
(Unit : in meter)

THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

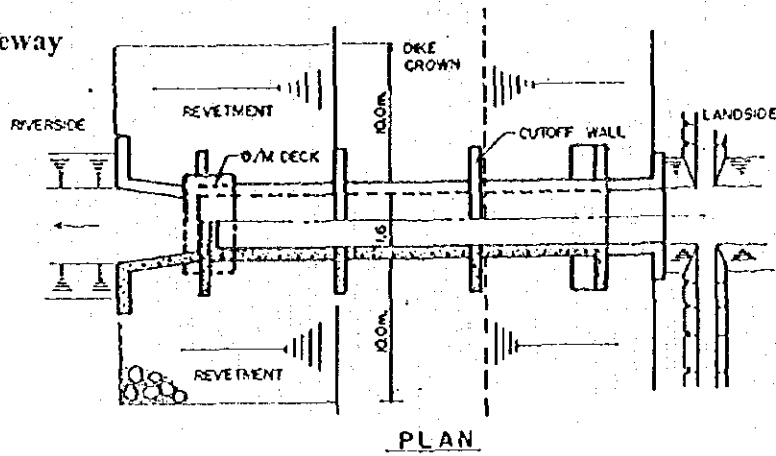
JAPAN INTERNATIONAL COOPERATION AGENCY

図4.12(5)
砂防ダム概略設計 (パパ砂防ダム)

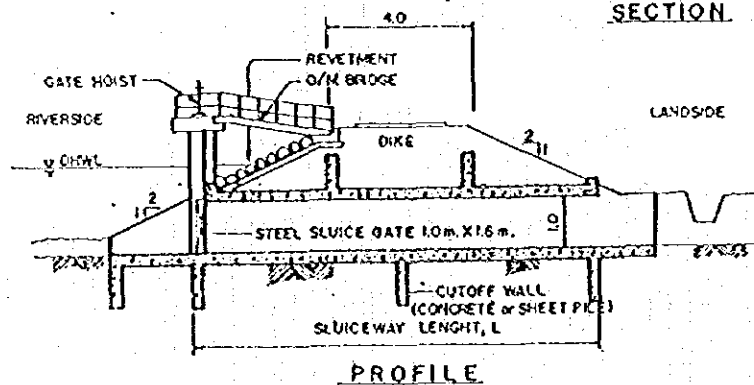
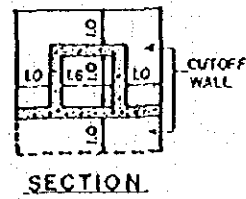
(1) Dike



(2) Intake Sluiceway



TYPE	NO. OF BOX
A	1
B	2

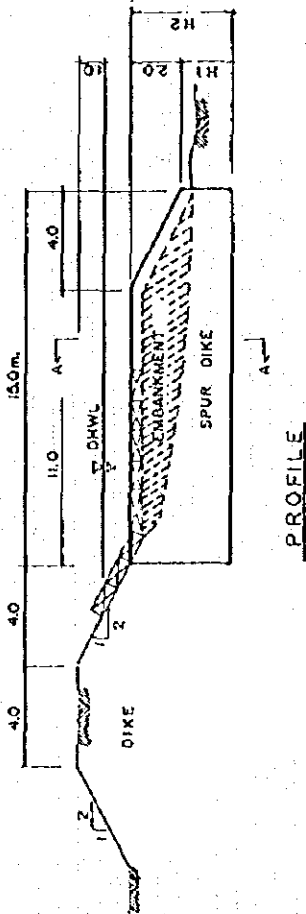


THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

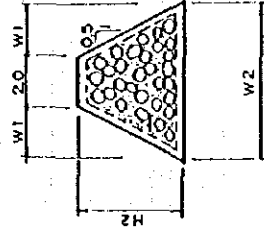
JAPAN INTERNATIONAL COOPERATION AGENCY

図4.13(1)
扇状地河川改修における適用構造物

(3) Stone Concrete Spur Dike

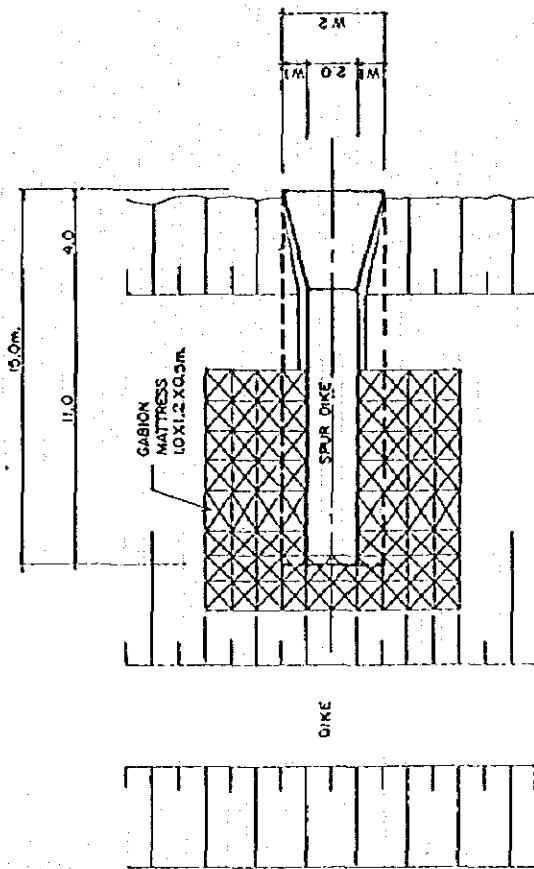


PROFILE



SECTION A-A

TYPE	H1	H2	W1	W2
A	1.20	3.20	1.60	5.20
B	1.50	3.50	1.75	5.50
C	2.00	4.00	2.00	6.00
D	2.30	4.30	2.15	6.30



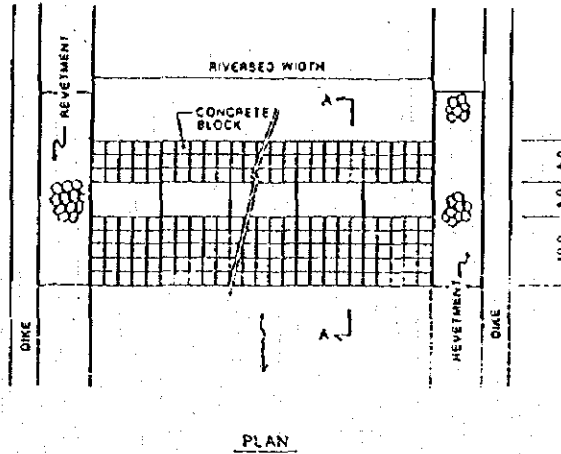
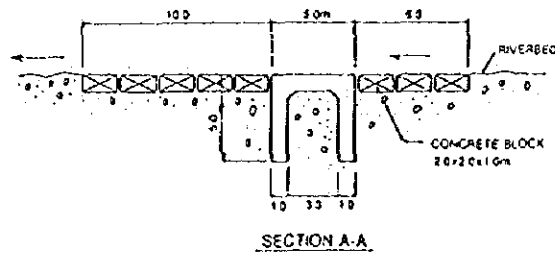
PLAN

THE STUDY ON SABO AND FLOOD CONTROL
IN THE LAOAG RIVER BASIN

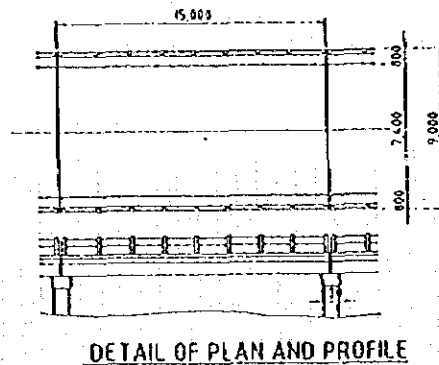
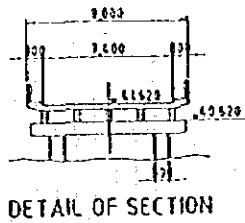
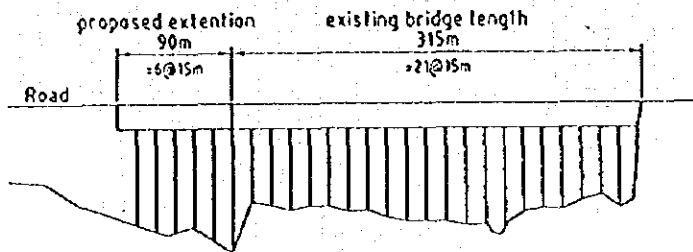
JAPAN INTERNATIONAL COOPERATION AGENCY

図4.13(2)
扇状地河川改修における適用構造物

(4) Groundsill



(5) Bagbag Br. Extension



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IN THE LAOAG RIVER BASIN

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図4.13(3)
扇状地河川改修における適用構造物