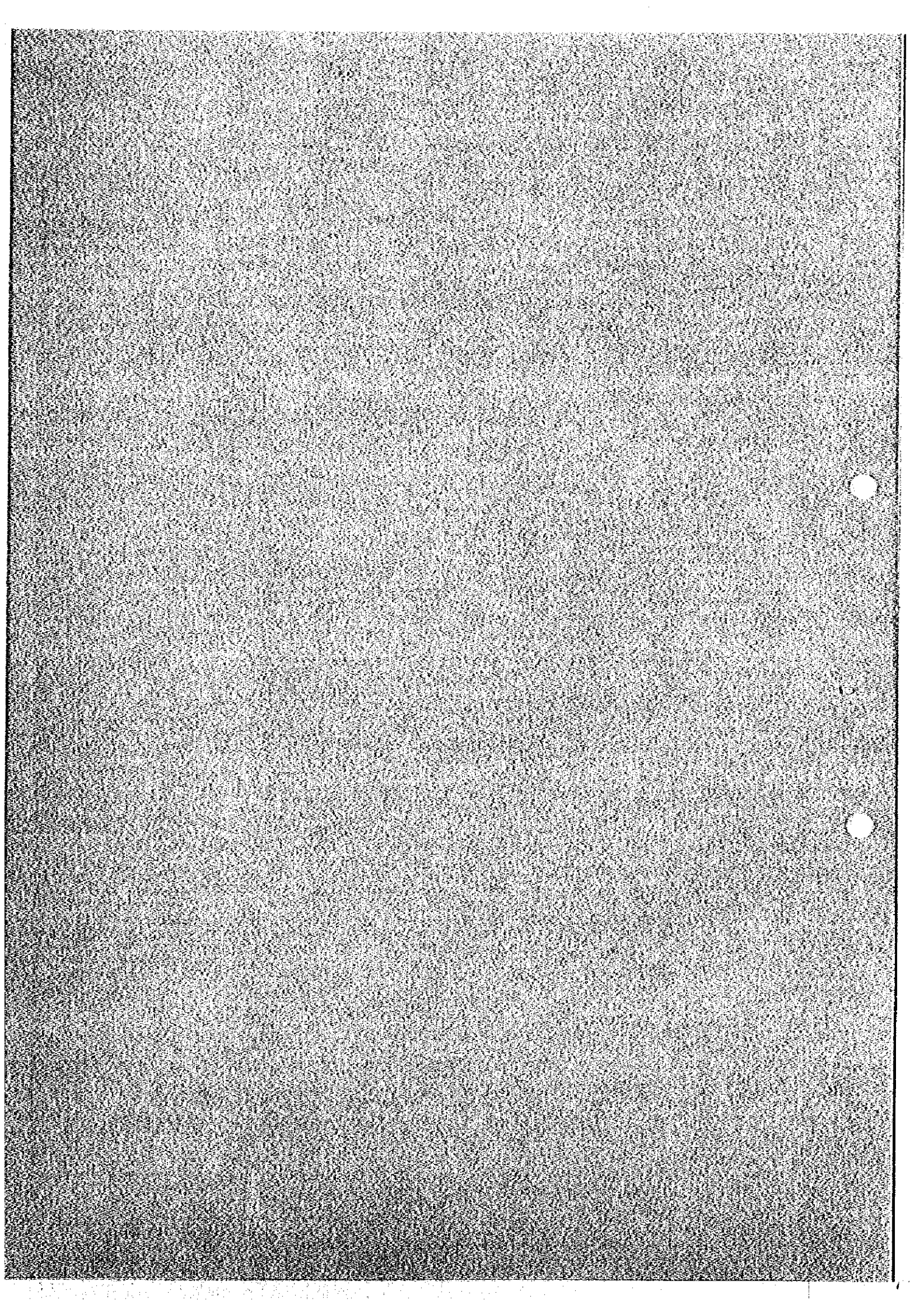


FIGURES



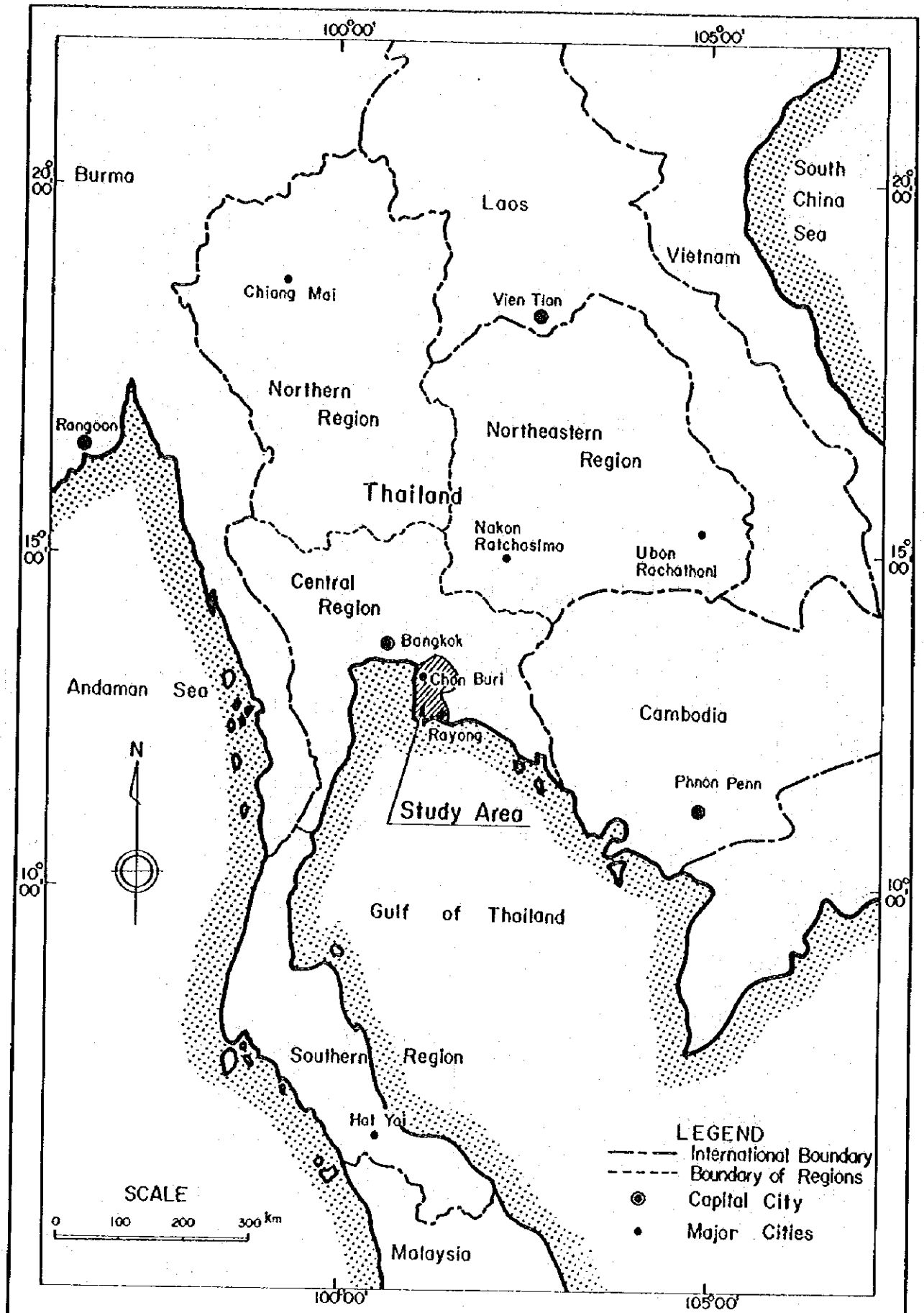


Fig.1 Map of Thailand

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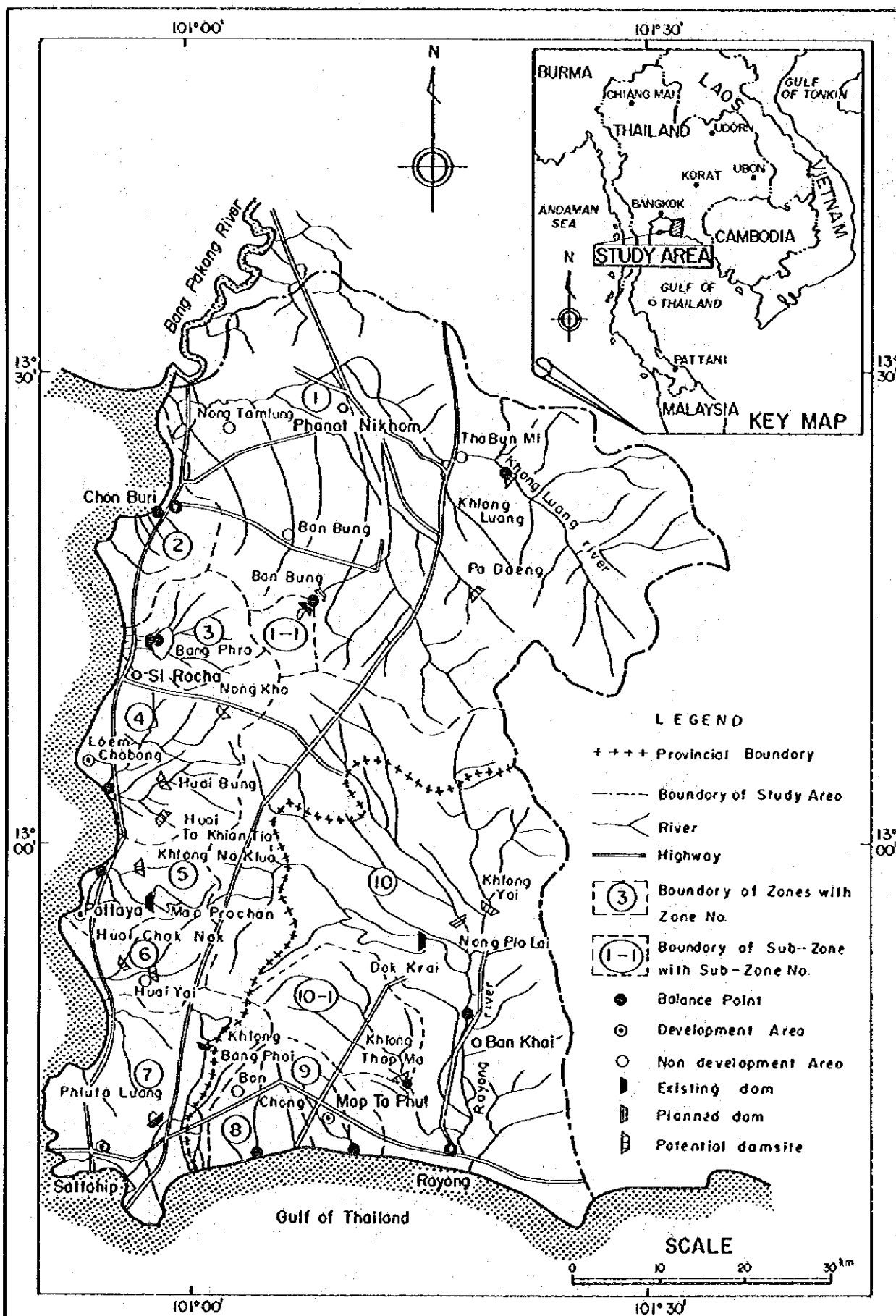
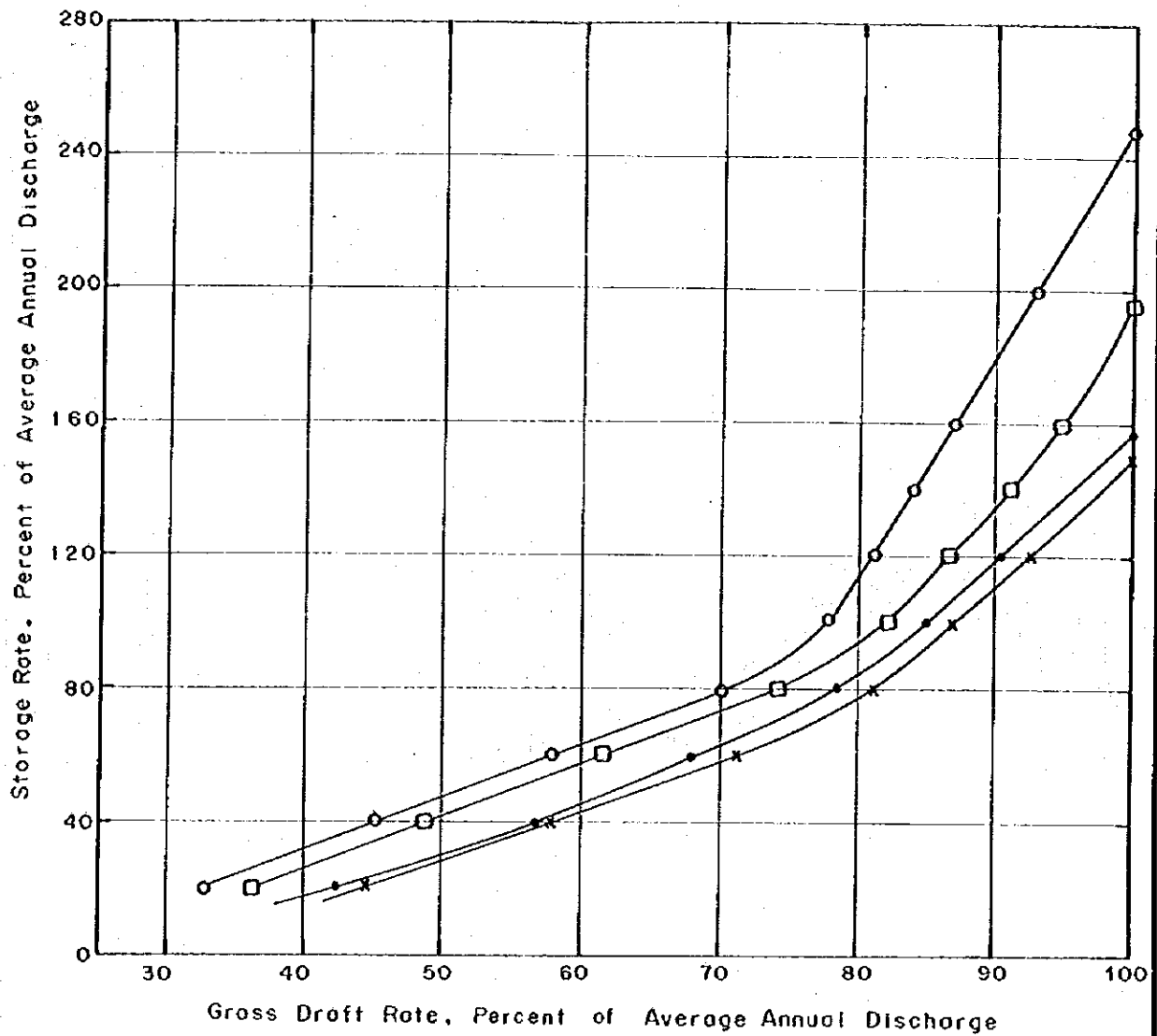


Fig. 2 Map of Study Area

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LEGEND

- ——— ● Dok Kral reservoir, applicable to all existing reservoirs, Khlong Thap Mo and all potential reservoirs, except Po Doeng
- x ——— x Nong Plo Loi reservoir
- ——— ○ Khlong Luang reservoir, applicable to Pa Daeng
- ——— □ Khlong Yai reservoir

Fig. 3 Storage - Draft Curve

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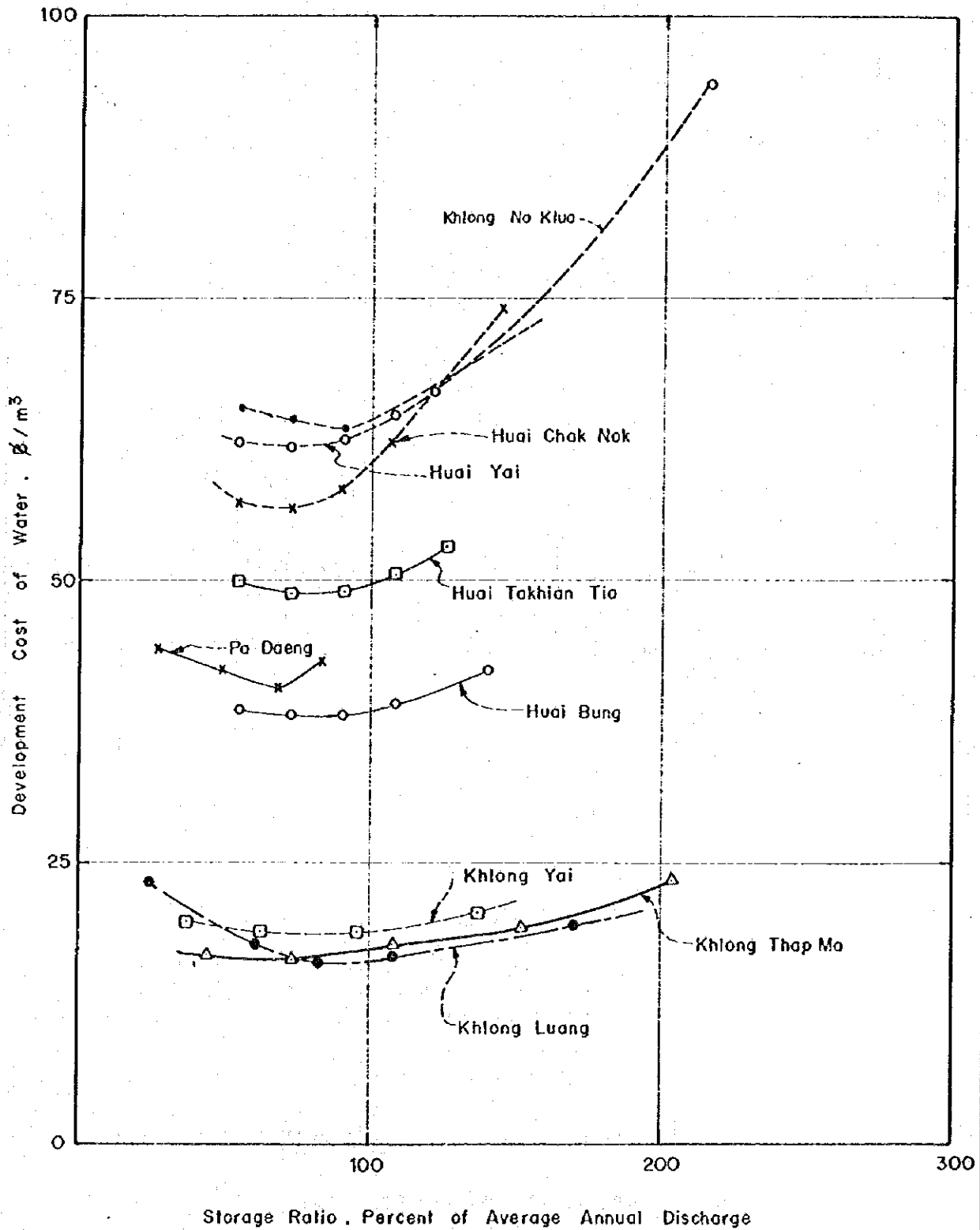


Fig. 4 Relation between Storage Ratio and Development Cost of Water

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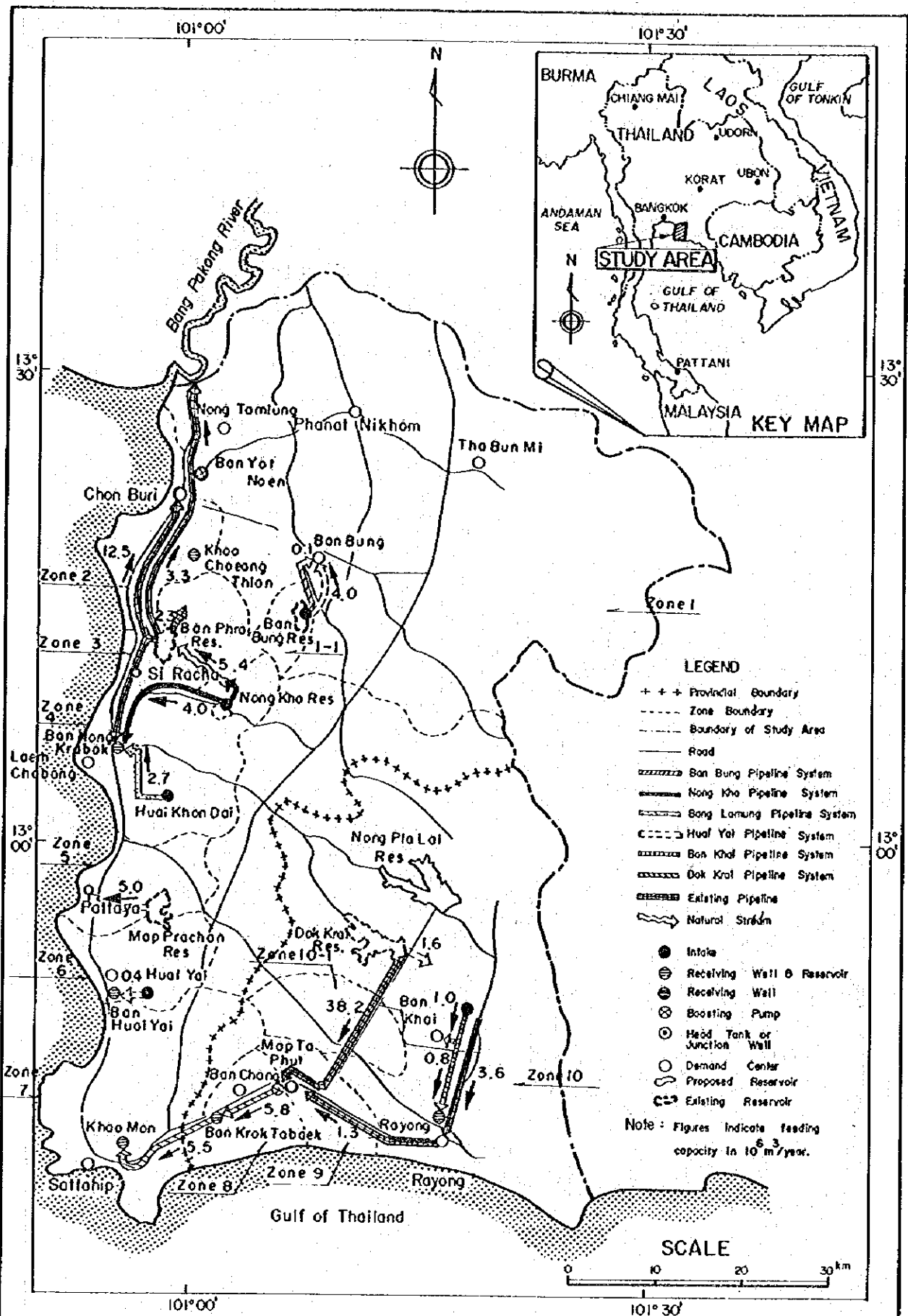


Fig. 5 General Layout of Proposed Development Plan for 1986

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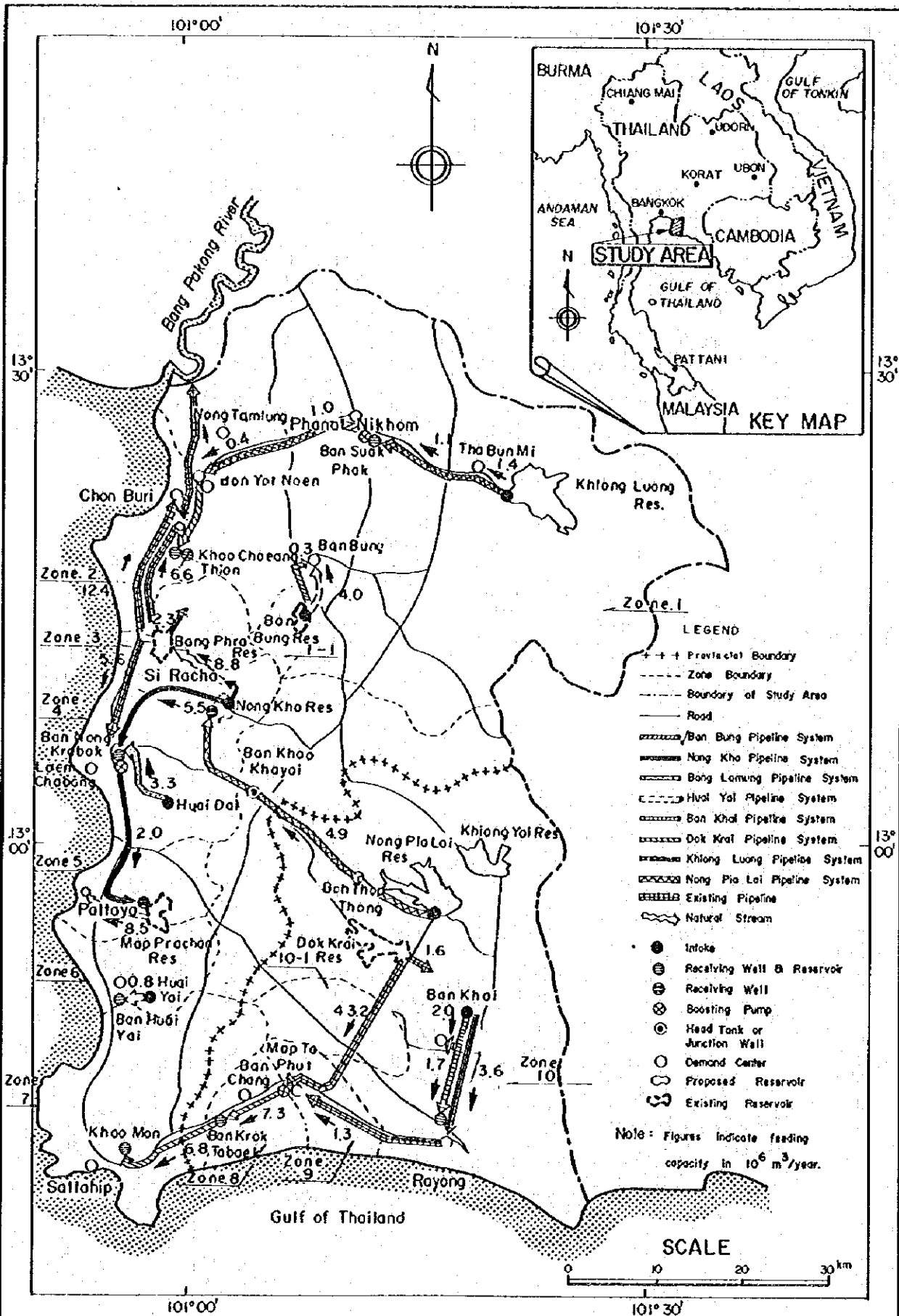


Fig. 6 General Layout of Proposed Development Plan for 1991

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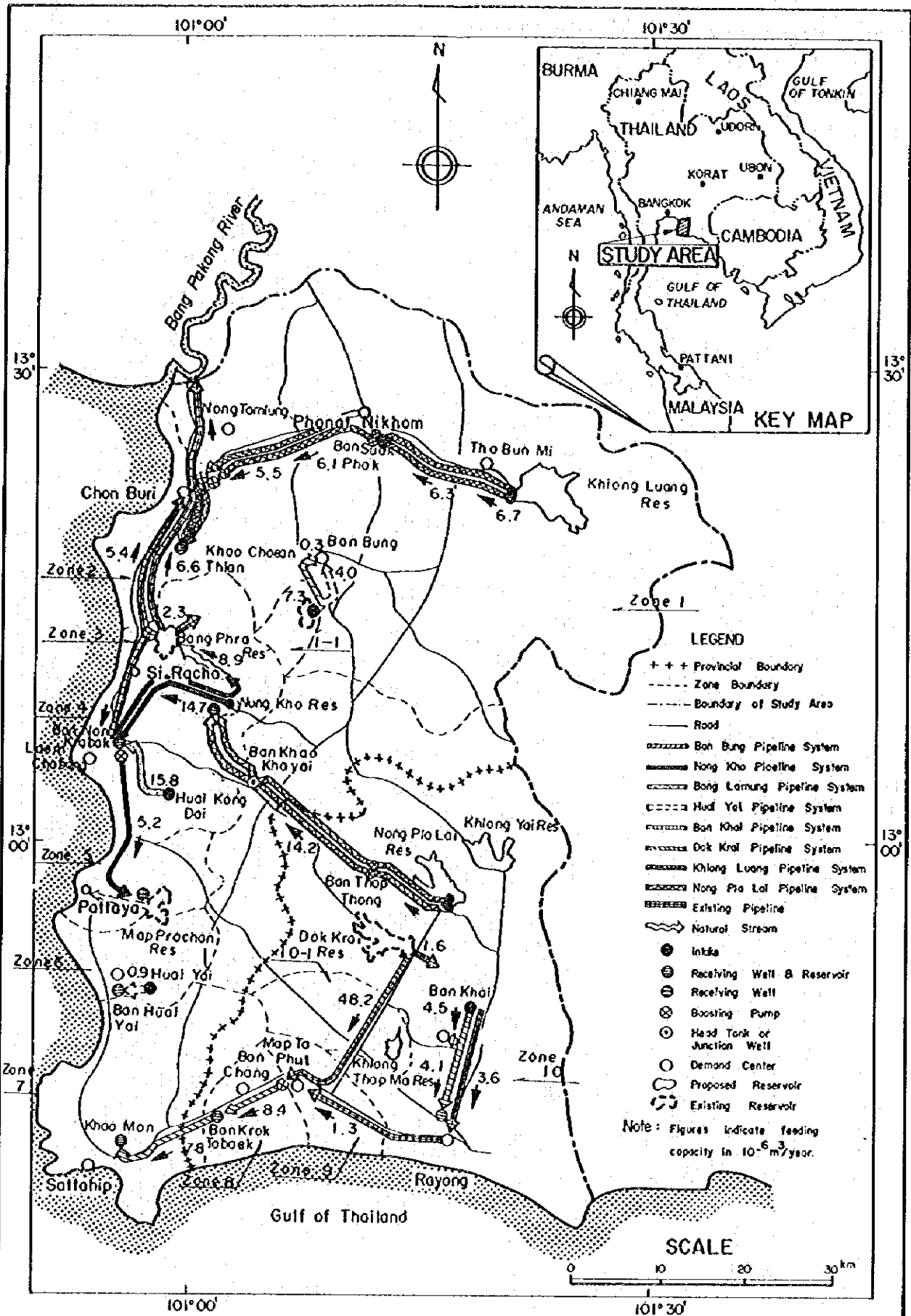


Fig. 7 General Layout of Proposed Development Plan for 1996

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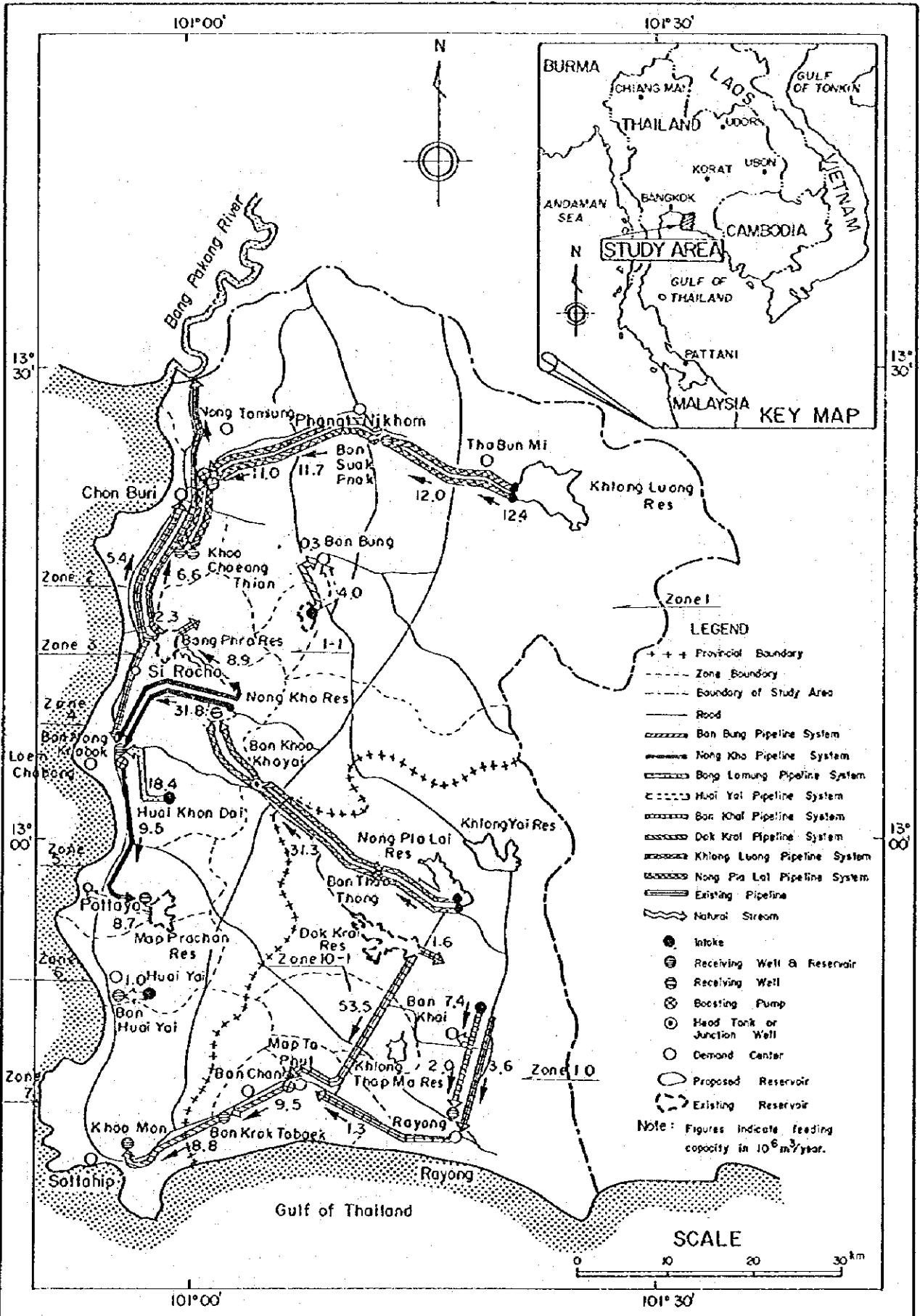


Fig. 8 General Layout of Proposed Development Plan for 2001

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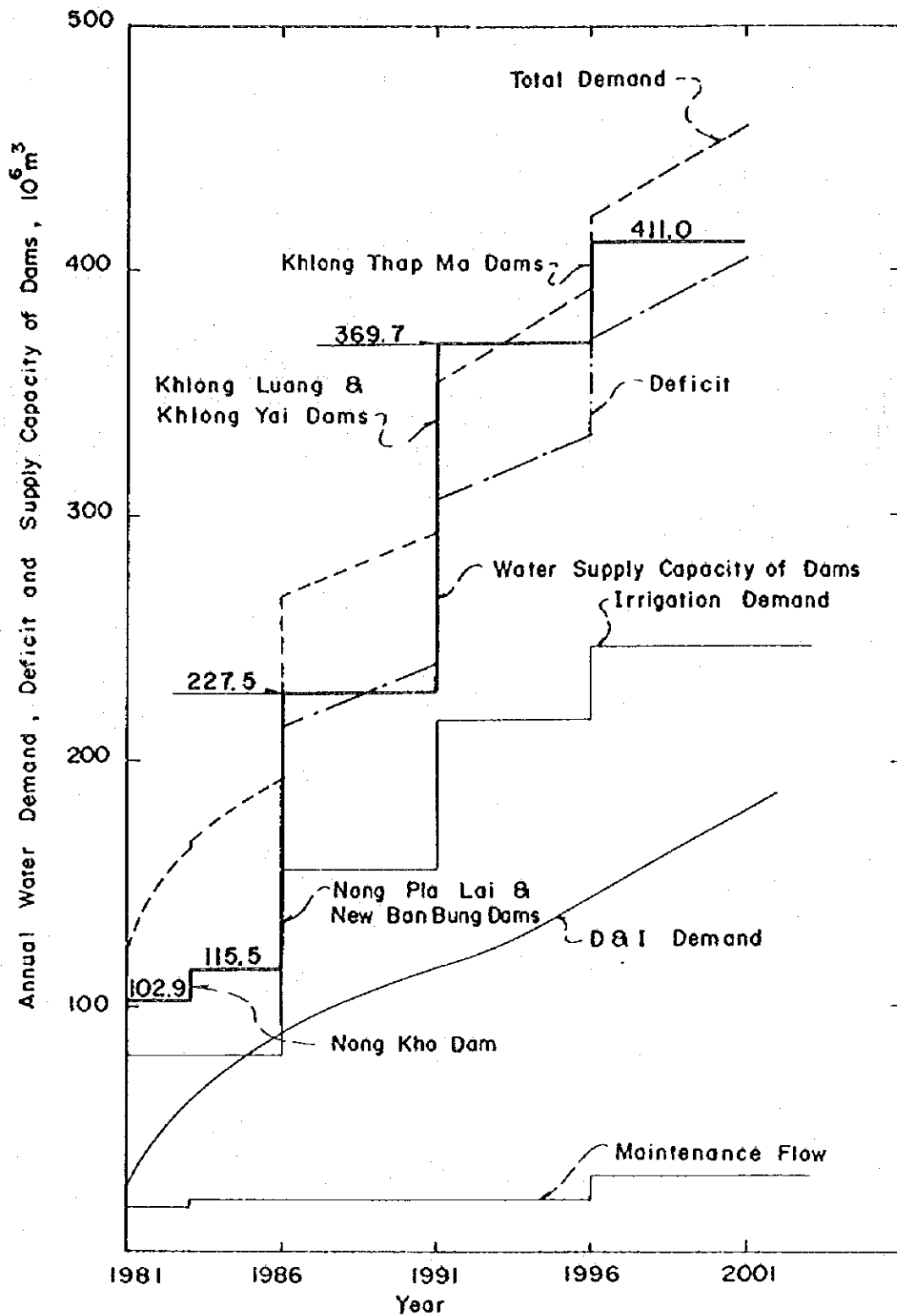


Fig. 9 Relationship among Water Demand, Deficit and Water Supply Capacity of Dams

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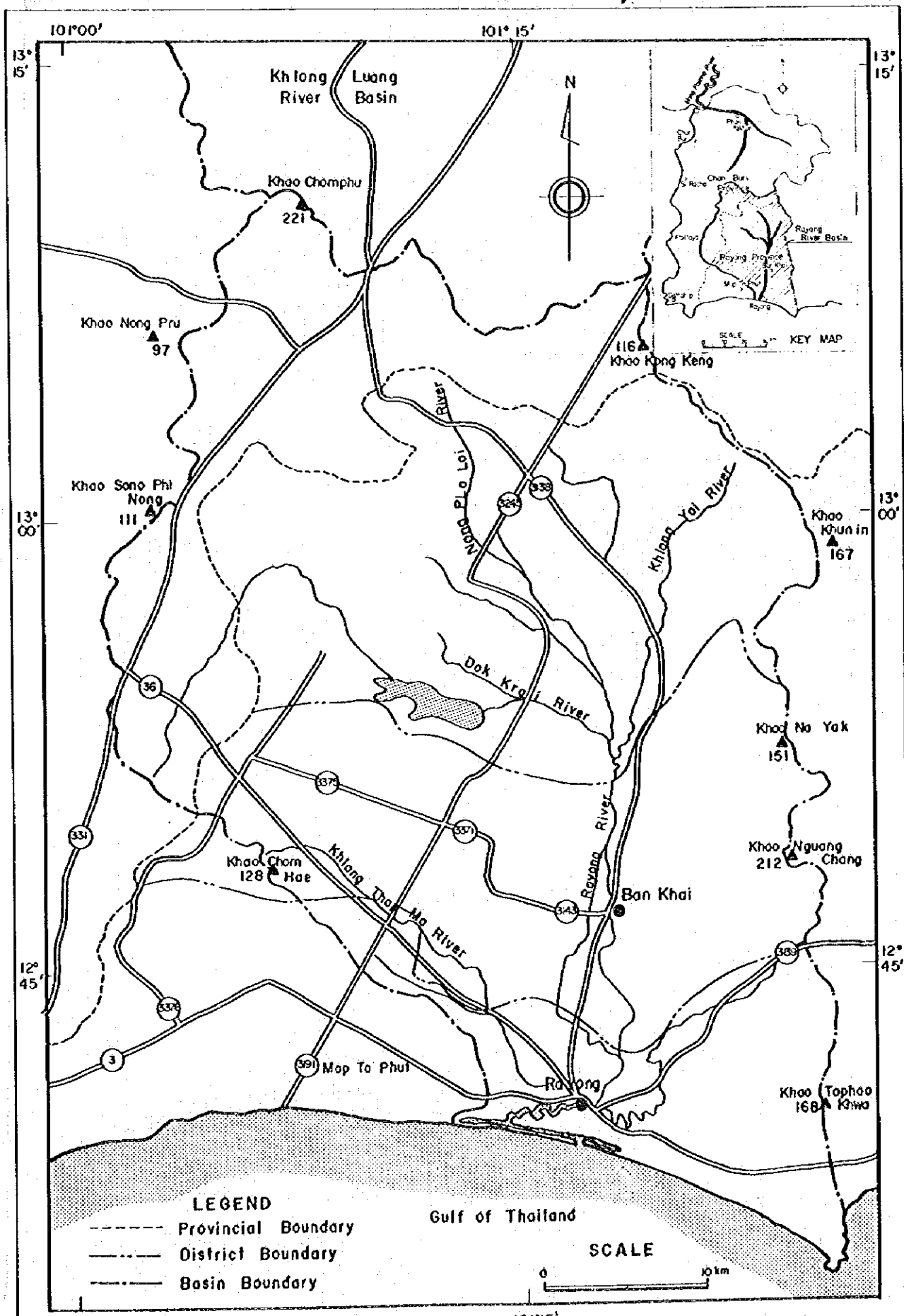
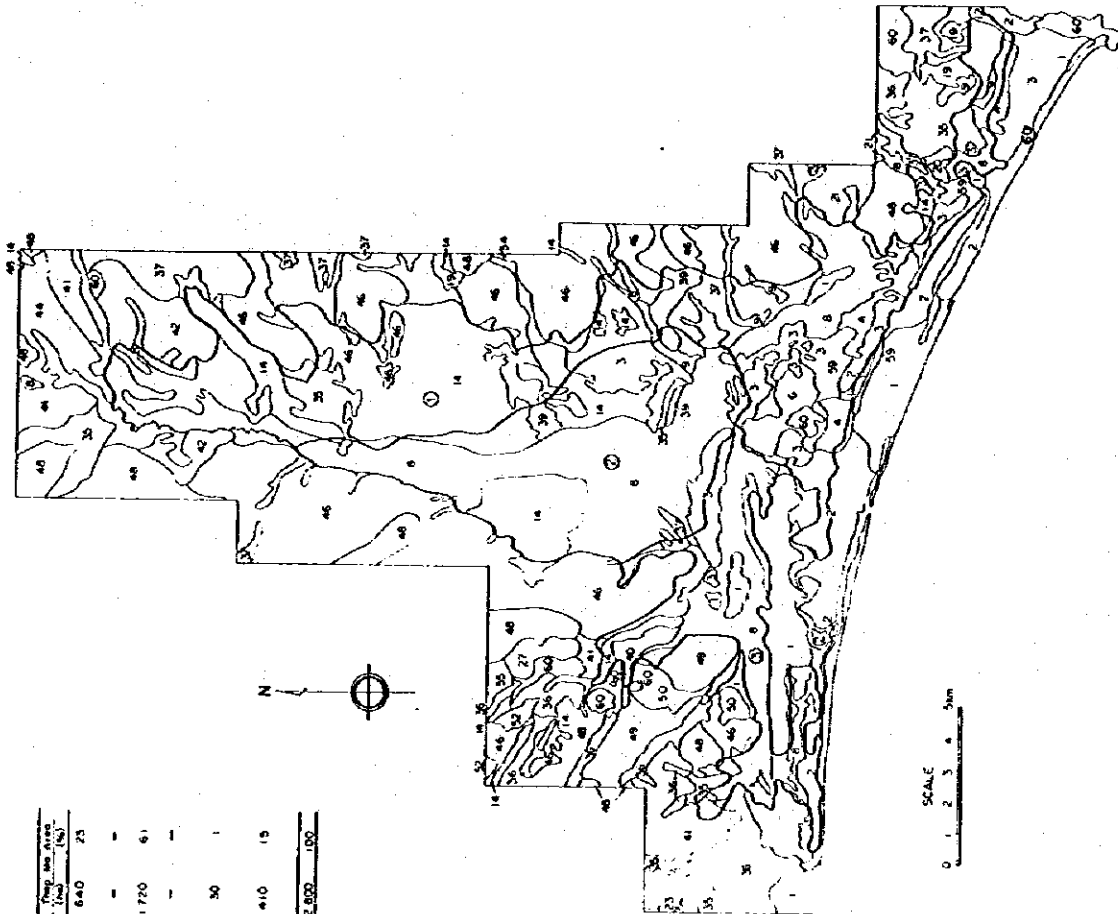


Fig.10 Map of Rayong River Basin

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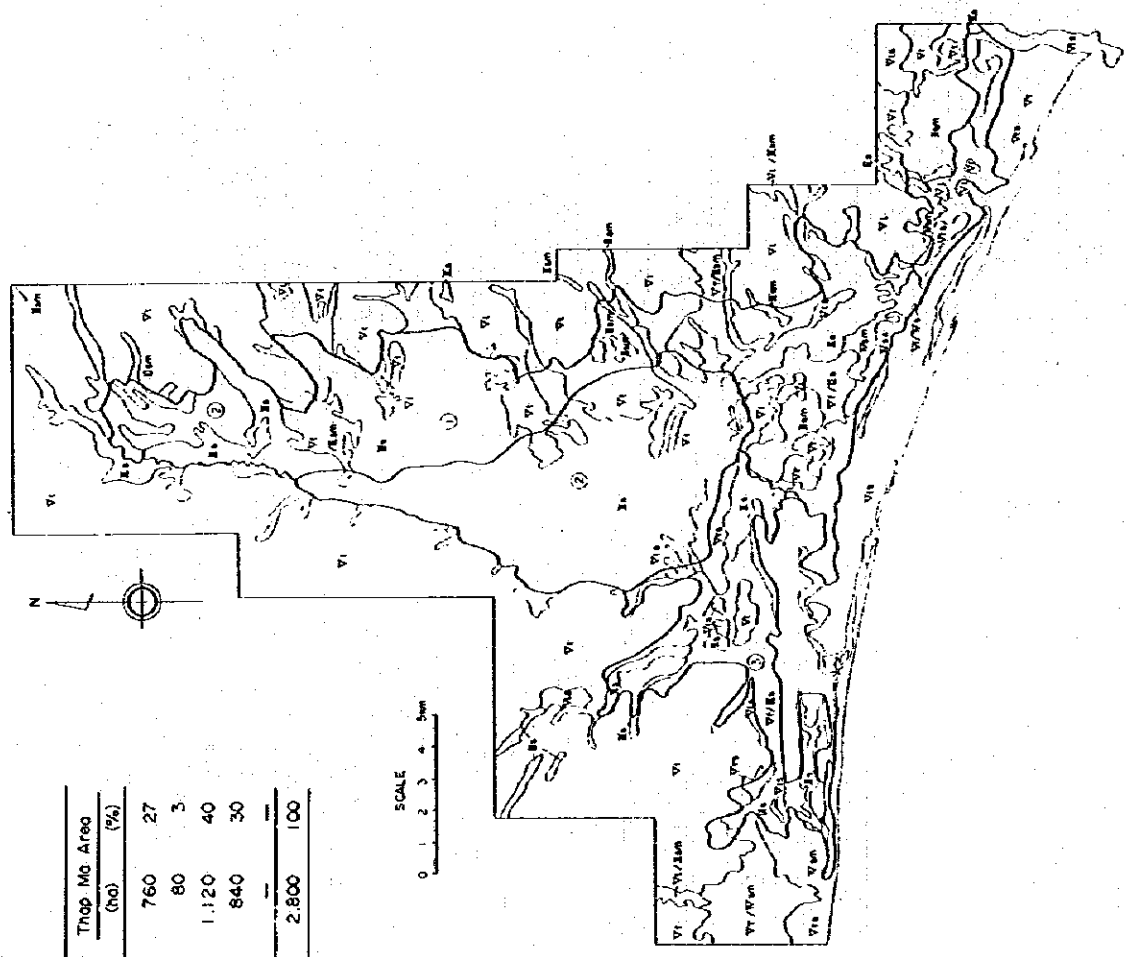


Topography	Metrals	Soil Series No. Associated			Soil Area (Ha)	Soil Area Extension Area (%)	Soil Area Existing Area (%)	Total Area (Ha)
		1	2	3				
Soil Series No. Associated	1 2 3	7 470	16	1 350	17	420	6 640	23
Soil Area (Ha)		300	-	300	3	-	-	-
Area (Ha)		6 9 12 14	12 480	30	4 280	48	4 810	89
Area (Ha)		19 20 21 27 34	770	2	30	-	-	-
Area (Ha)		36 37	4 680	11	1 040	12	30	30
Area (Ha)		38 40 41 42 43	16 590	39	1 780	20	140	3
Area (Ha)		44 45 46 47 50	30 31 32 60	-	-	-	-	-
Total			2 290	100	9 000	100	2 400	100

- ① Ban Khe Extension Area
- ② Ban Khai Existing Area
- ③ Khong Thap Mo Area

Fig. II Soil Map of the Rayong Area

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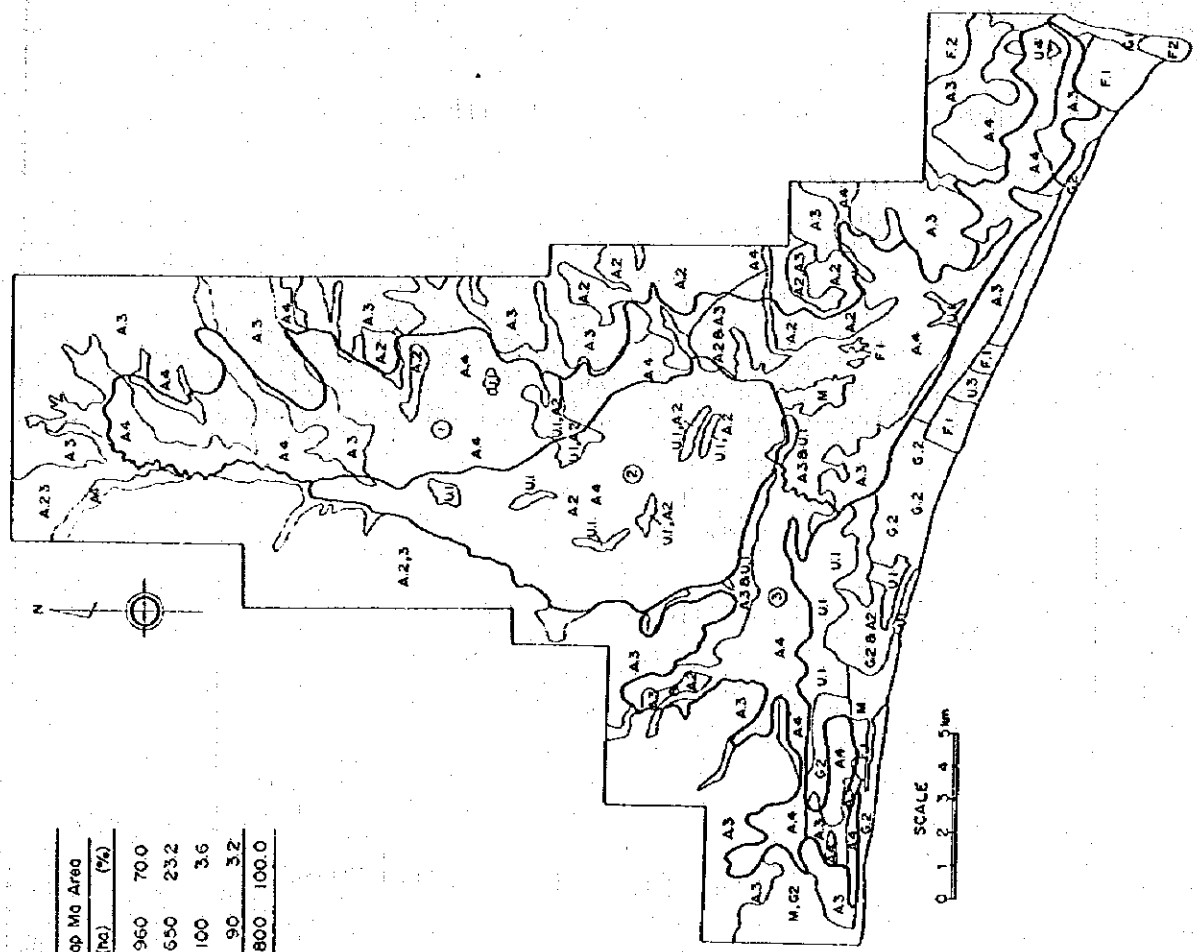


Capability Class	Study Area	Bon Khai Extension Area (ha)	Bon Khai Extension Area (%)	Bon Khai Existing Area (ha)	Bon Khai Existing Area (%)	Thap Ma Area (ha)	Thap Ma Area (%)
III	12,460	4,620	51	4,700	87	760	27
IV	580	420	5	—	—	80	3
V	26,070	2,760	3.1	630	12	1,120	40
V/III	2,190	1,040	12	70	1	840	30
V/IV	990	140	—	—	—	—	—
Total	42,290	9,000	100	5,400	100	2,800	100

- ① Bon Khai Extension Area
- ② Bon Khai Existing Area
- ③ Khlong Thap Ma Area

Fig.12 Land Capability Map for Paddy of the Rayong Area

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Land Use	Ban Khai Extension Area		Ban Khai Existing Area		Thop Ma Area	
	(ha)	(%)	(ha)	(%)	(ha)	(%)
Rice Field	6,310	70.1	4,800	88.9	1,960	70.0
Upland Crop Field	1,900	21.1	100	1.9	650	23.2
Perennial Crop	580	6.4	-	-	100	3.6
Others	210	2.4	500	9.2	90	3.2
Total	9,000	100.0	5,400	100.0	2,800	100.0

- ① Ban Khai Extension Area
- ② Ban Khai Existing Area
- ③ Khlong Thop Ma Area

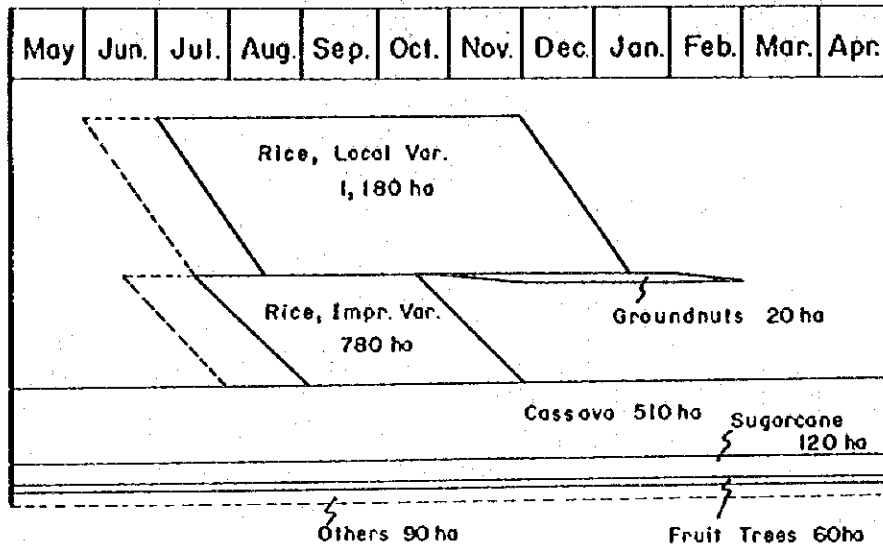
LEGEND

Class	Subclass	Map Symbol
Urban area	Residential and commercial (institutions)	U 1
		U 3
Agricultural land	Perennial crop	A 2
	Field crop	A 3
Grassland	Ready field	A 4
	Unimproved grassland	G 2
Forest	Lowland and piedmont forest	F 1
	Hill and mountain	F 2
Marsh and Swamp		M

Fig.13 Present Land Use Map of the Rayong Area

Khlong Thap Ma Irrigation Scheme

Present



Proposed

(Cropping Intensity : 170%)

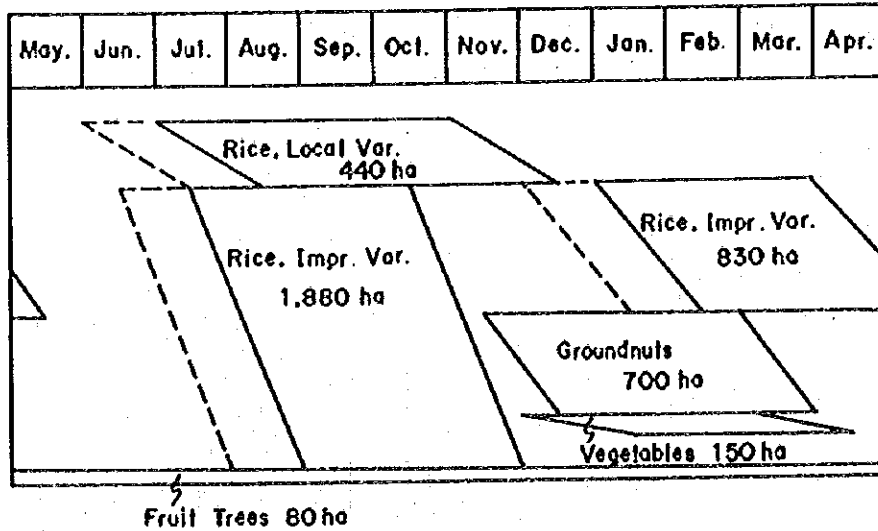


Fig. 14 Present and Proposed Cropping Patterns

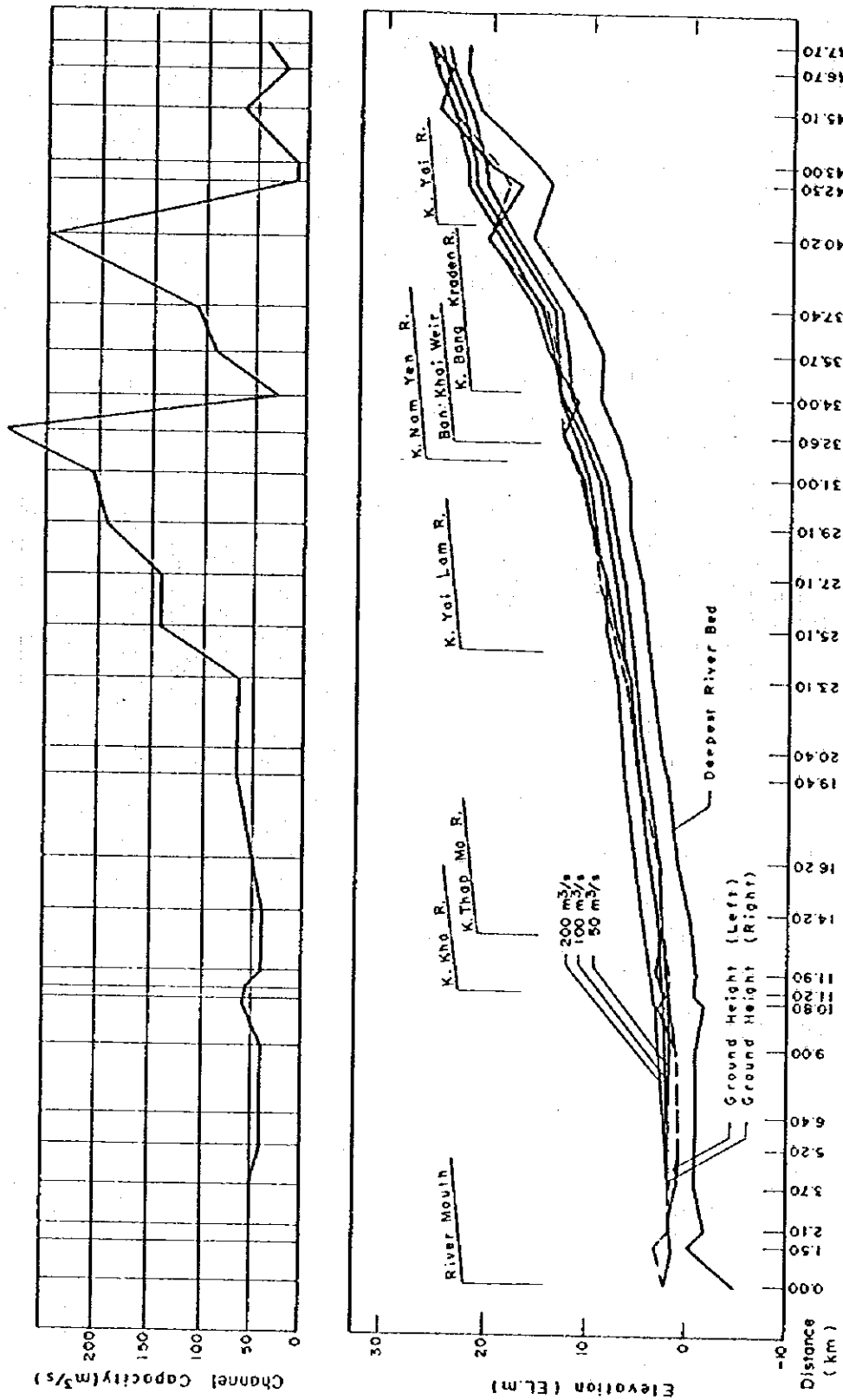


Fig.15 Longitudinal Profile and Channel Capacity of Rayong River

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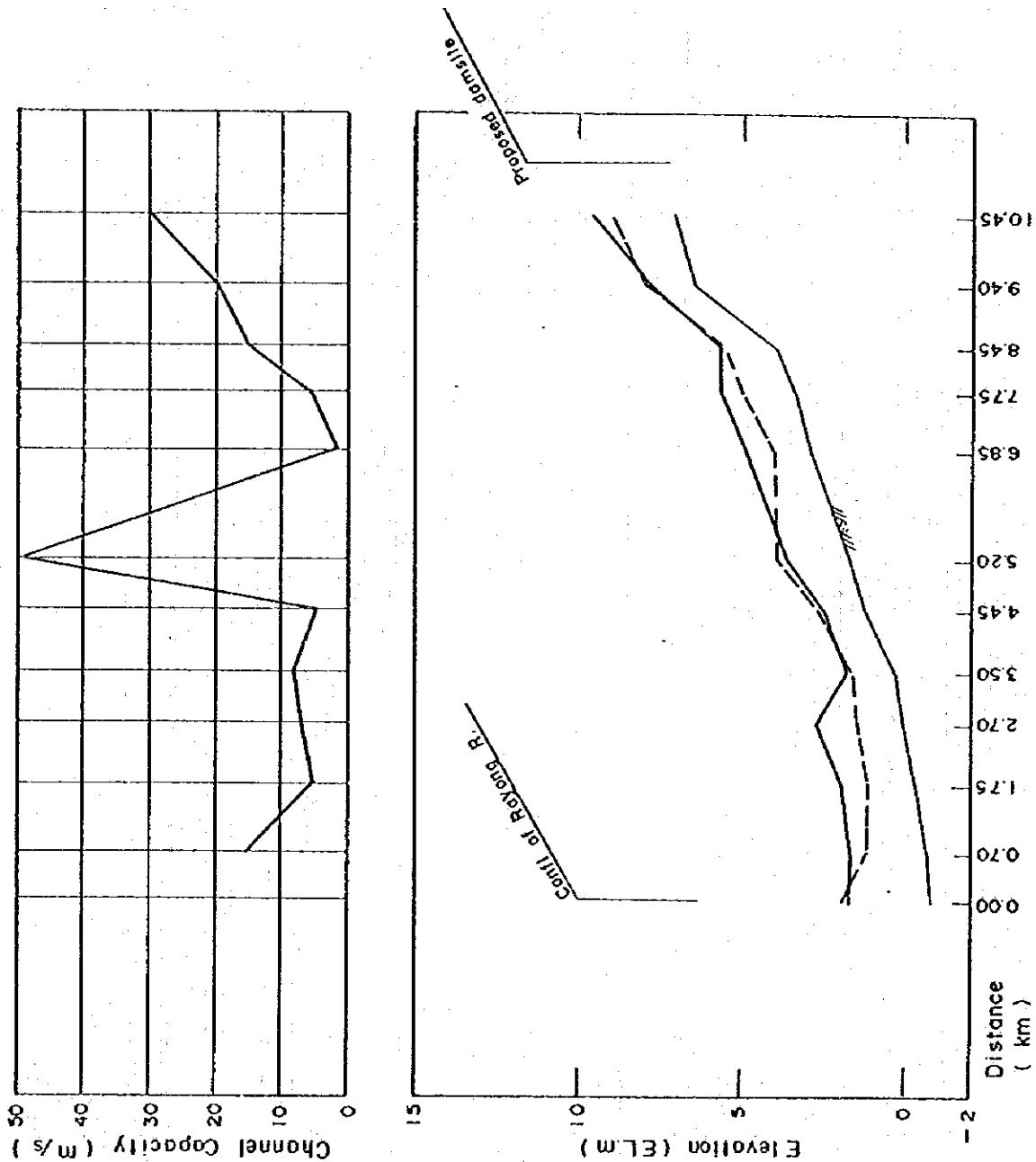


Fig. 16 Longitudinal Profile and Channel Capacity of Khlong Thap Ma River

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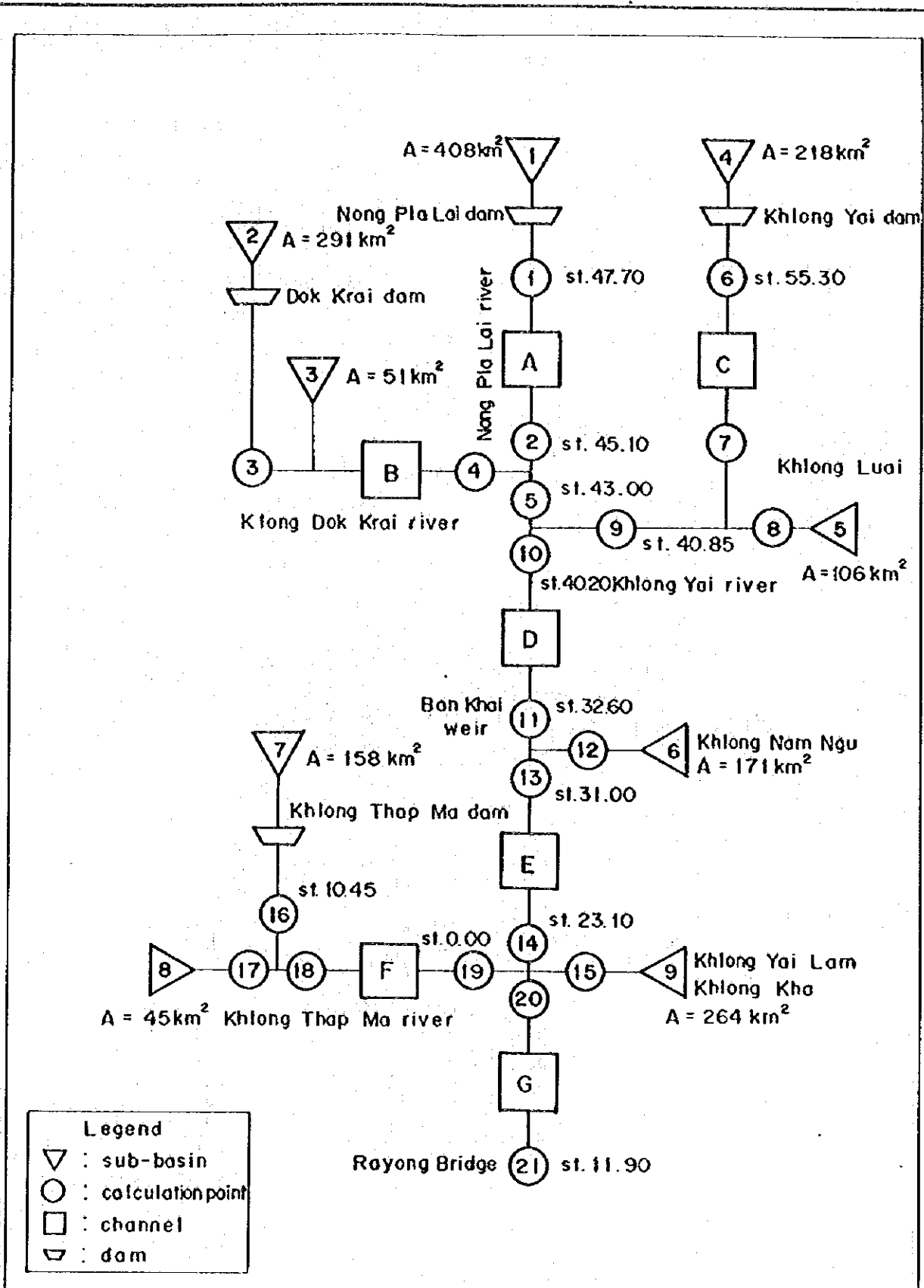


Fig. 17 Runoff Calculation Model Diagram, Rayong River Basin

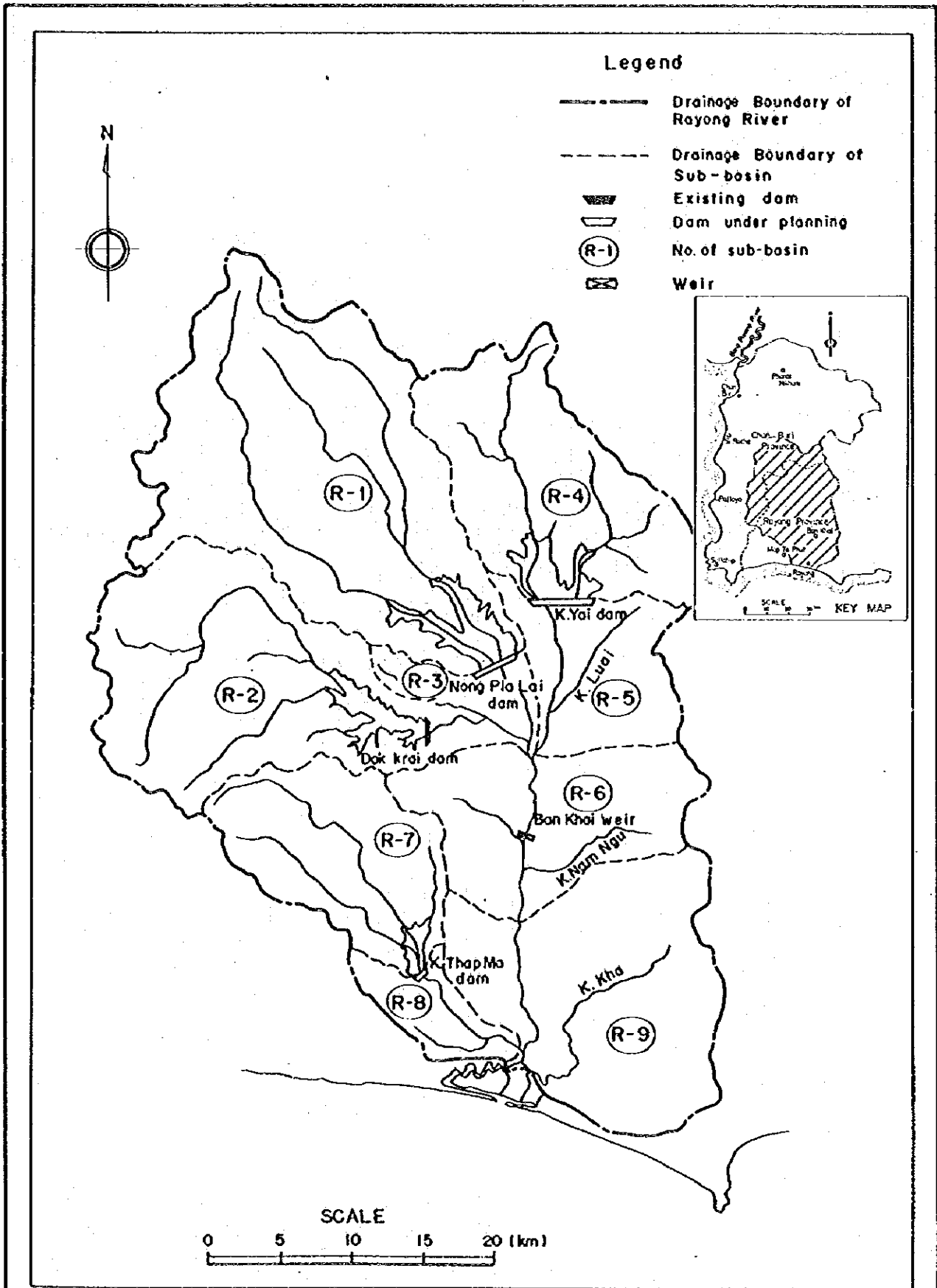


Fig.18 Sub-basins of Rayong River Basin for Runoff Analysis

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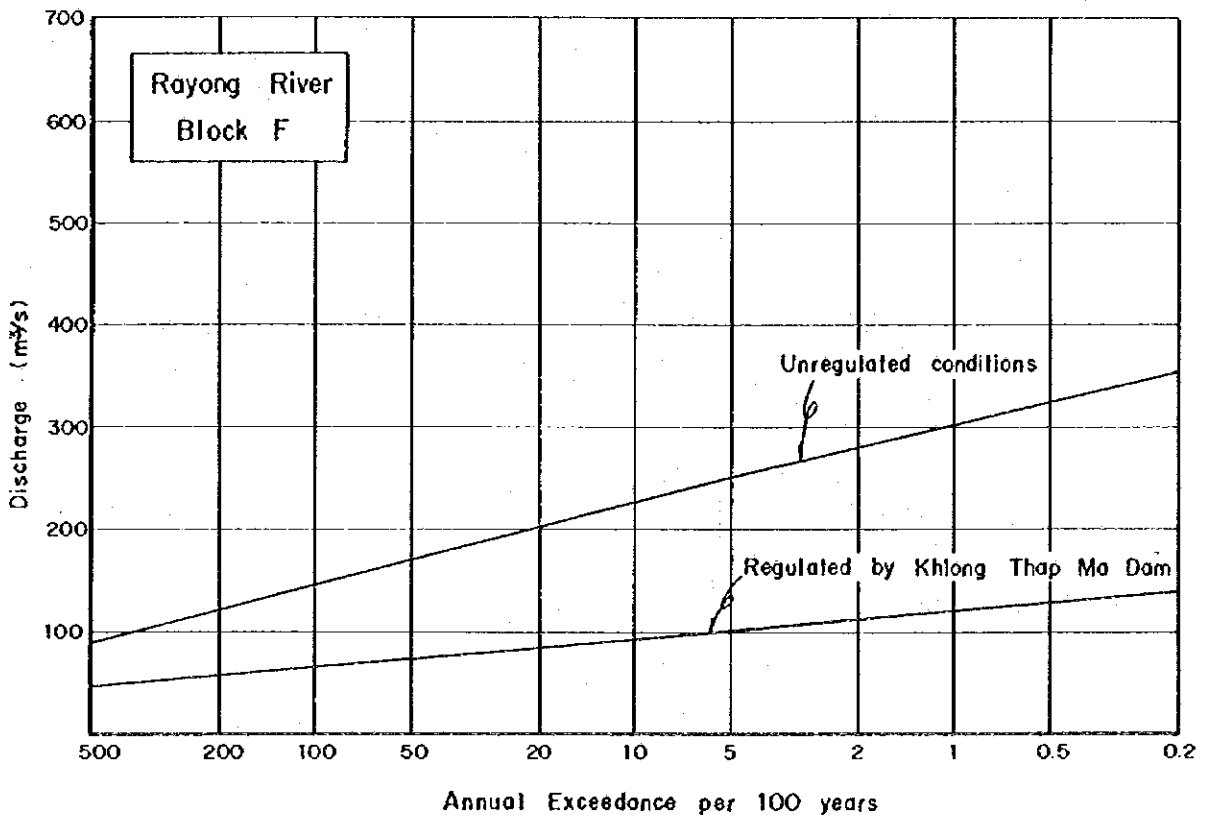
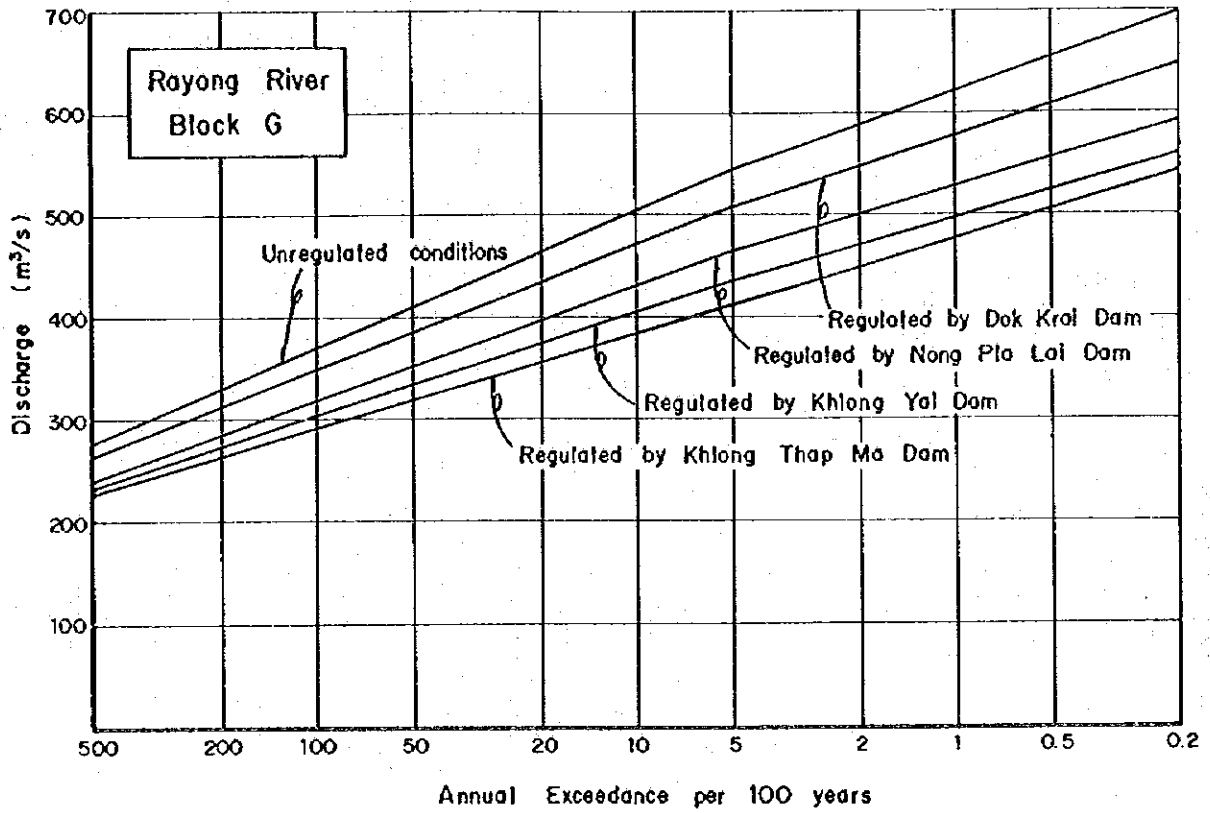


Fig.19 Flood Frequency Curve of
Khlong Thap Ma River

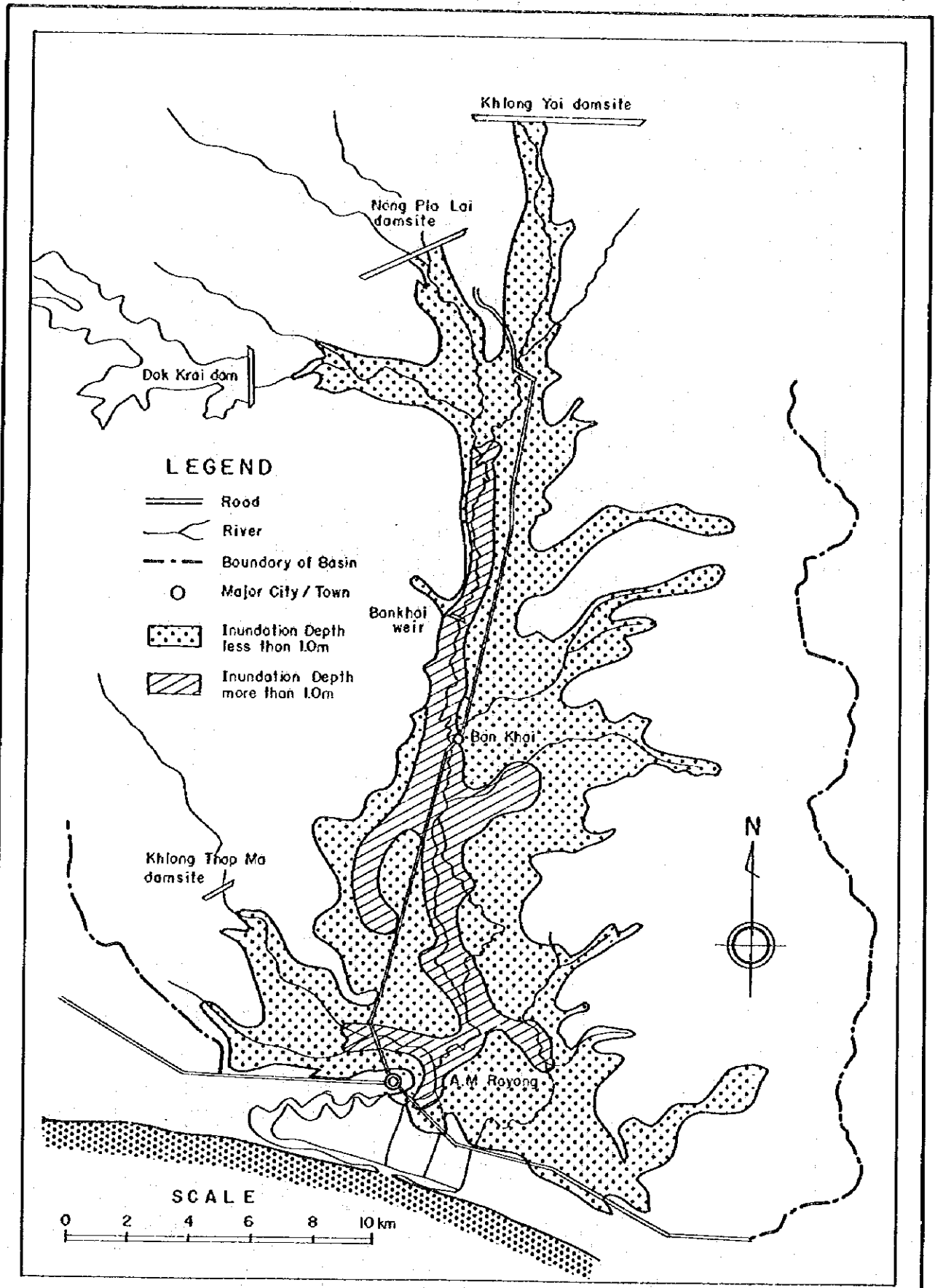


Fig.20 Inundation Area of Rayong River Basin (1974)

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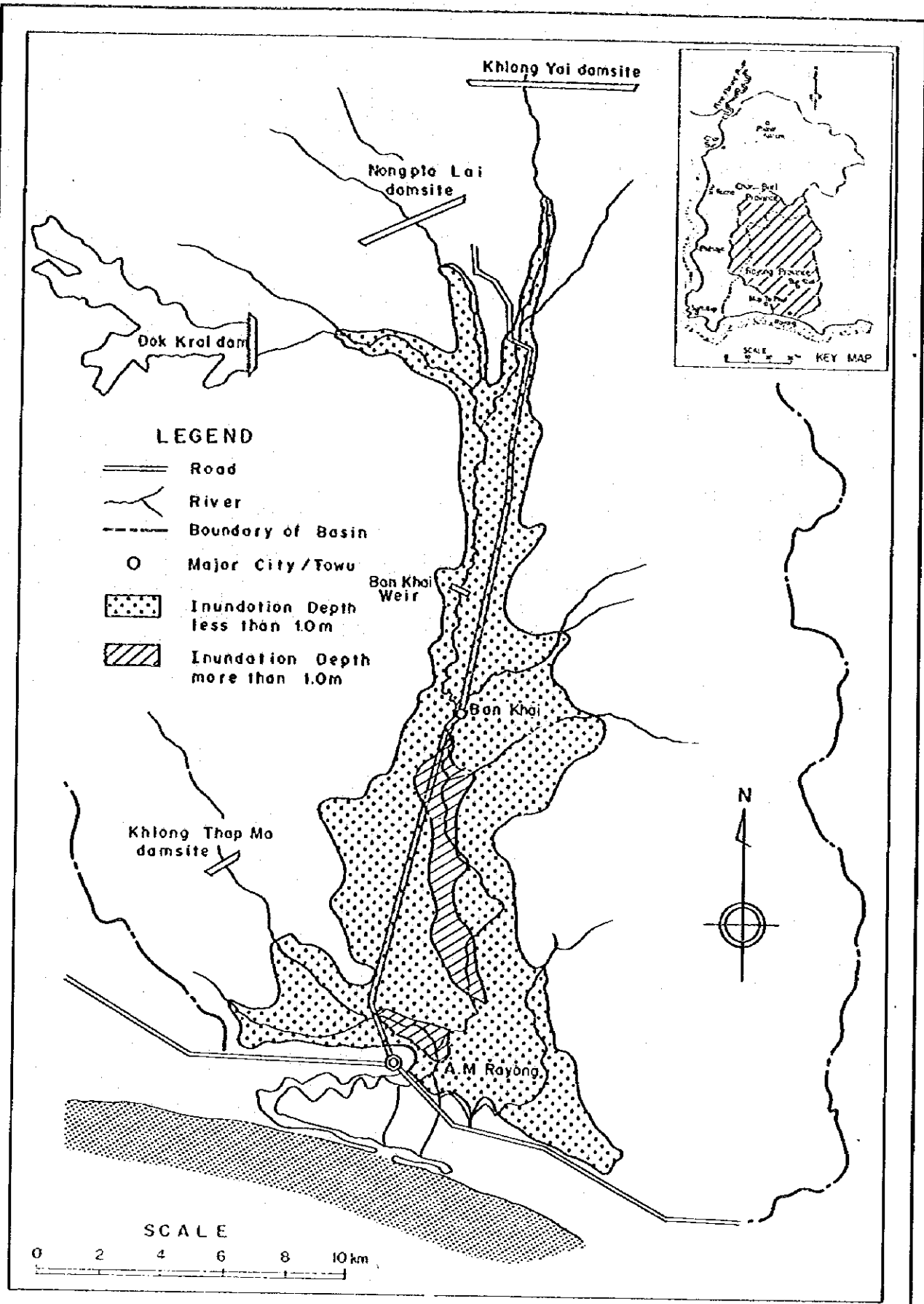


Fig.21 Inundation Area of Rayong River Basin (1981)

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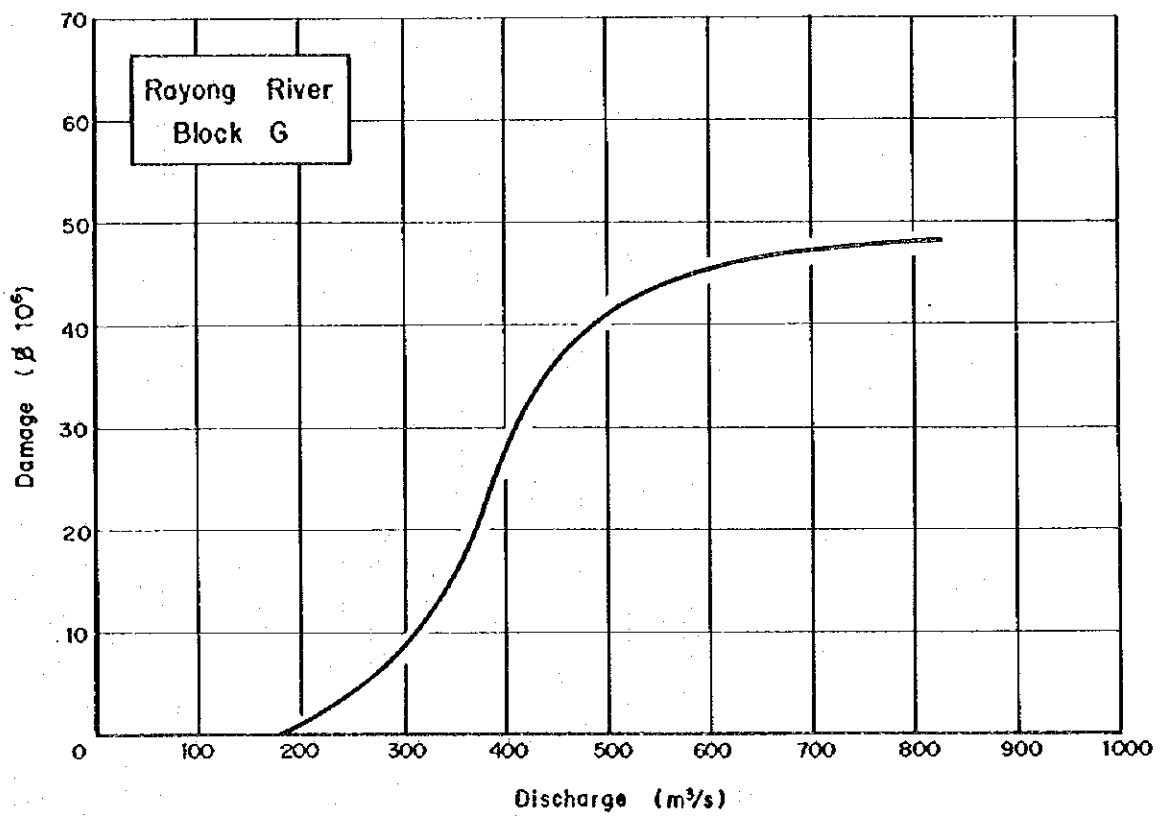
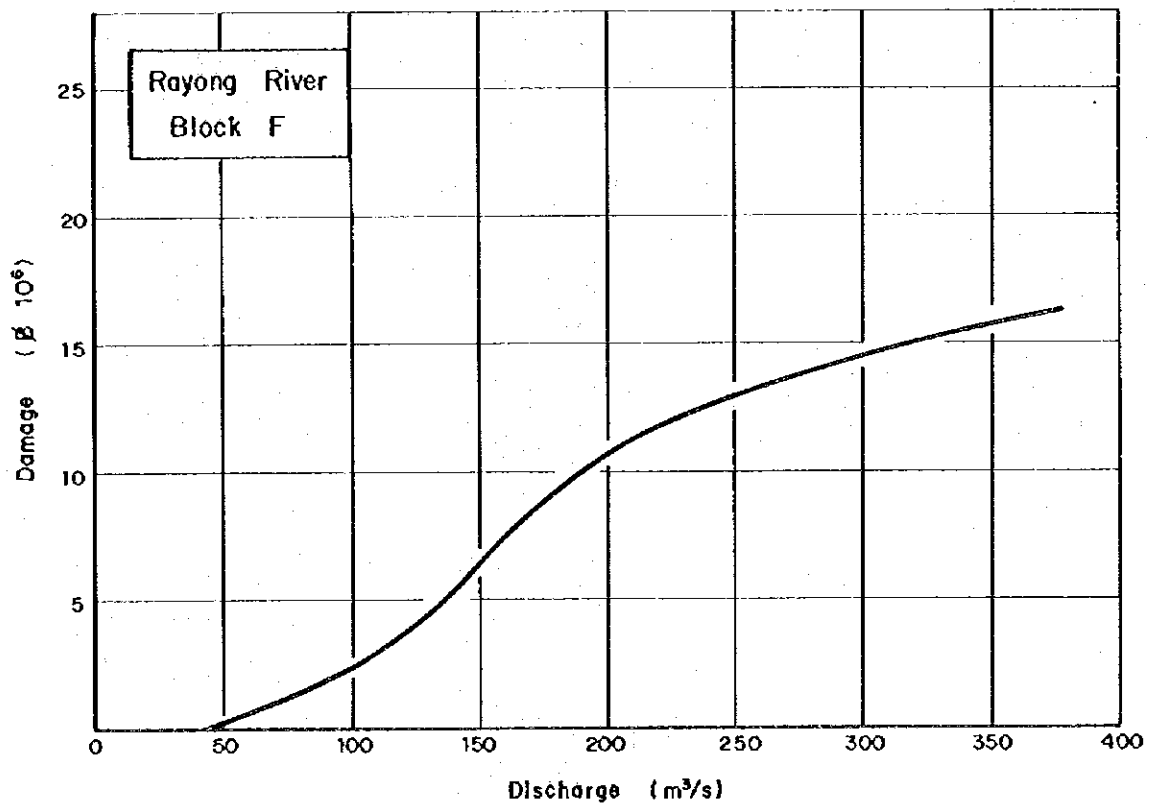
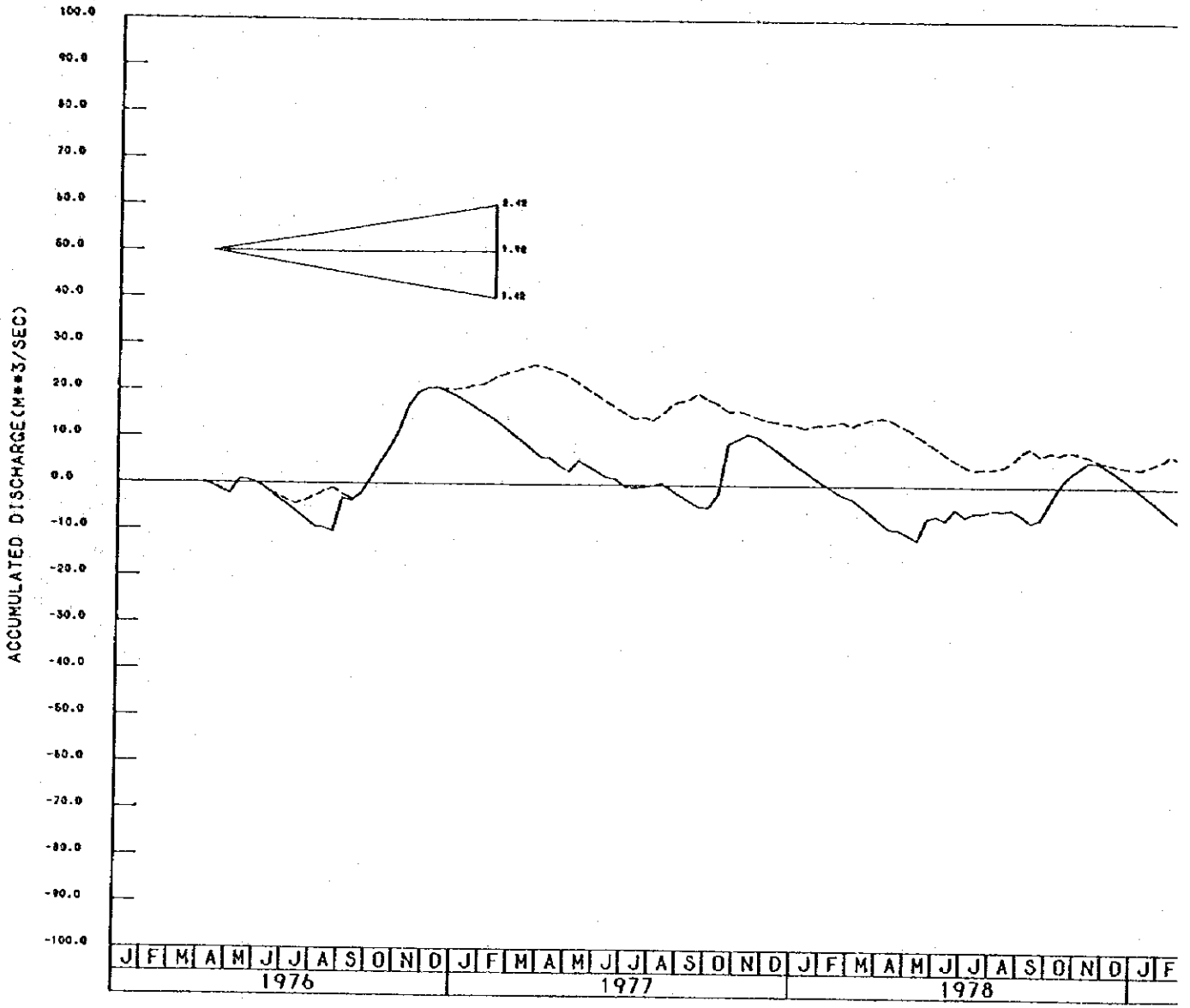


Fig.22 Flood Damage Curve of Khlong Thap Ma River

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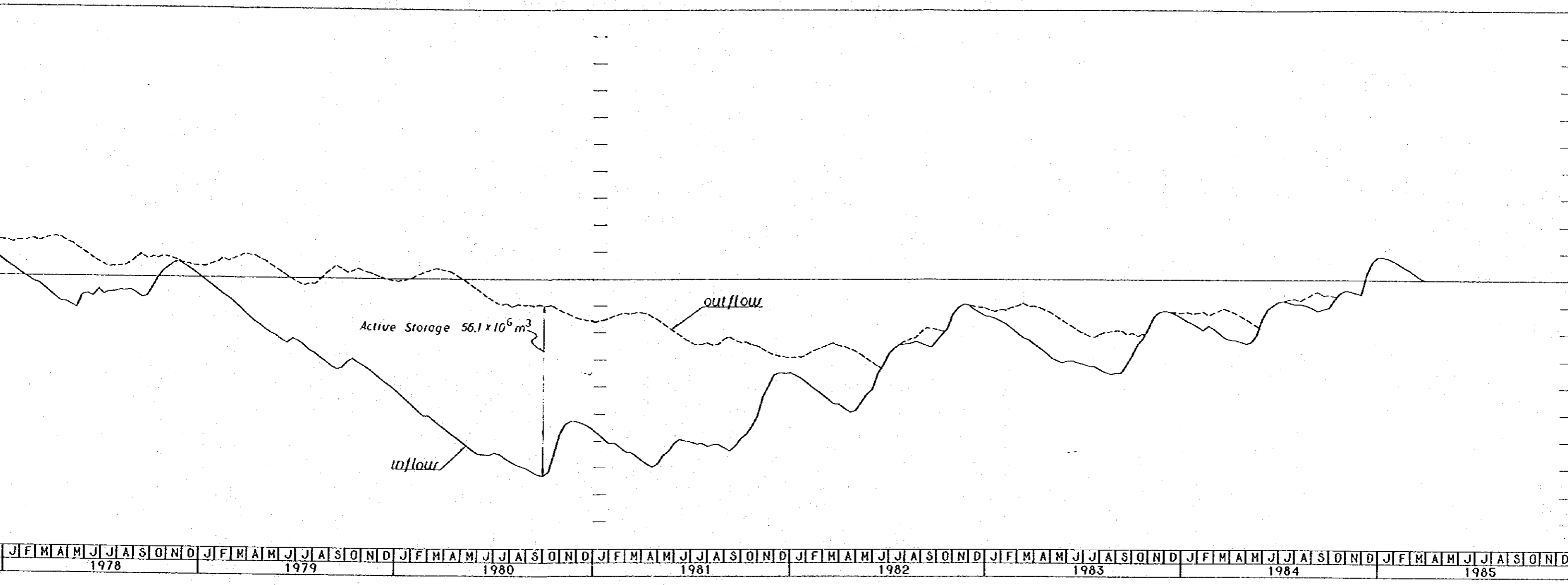


Fig.23 Mass Curve of Inflow and Outflow at Khlong Thap Ma Dam

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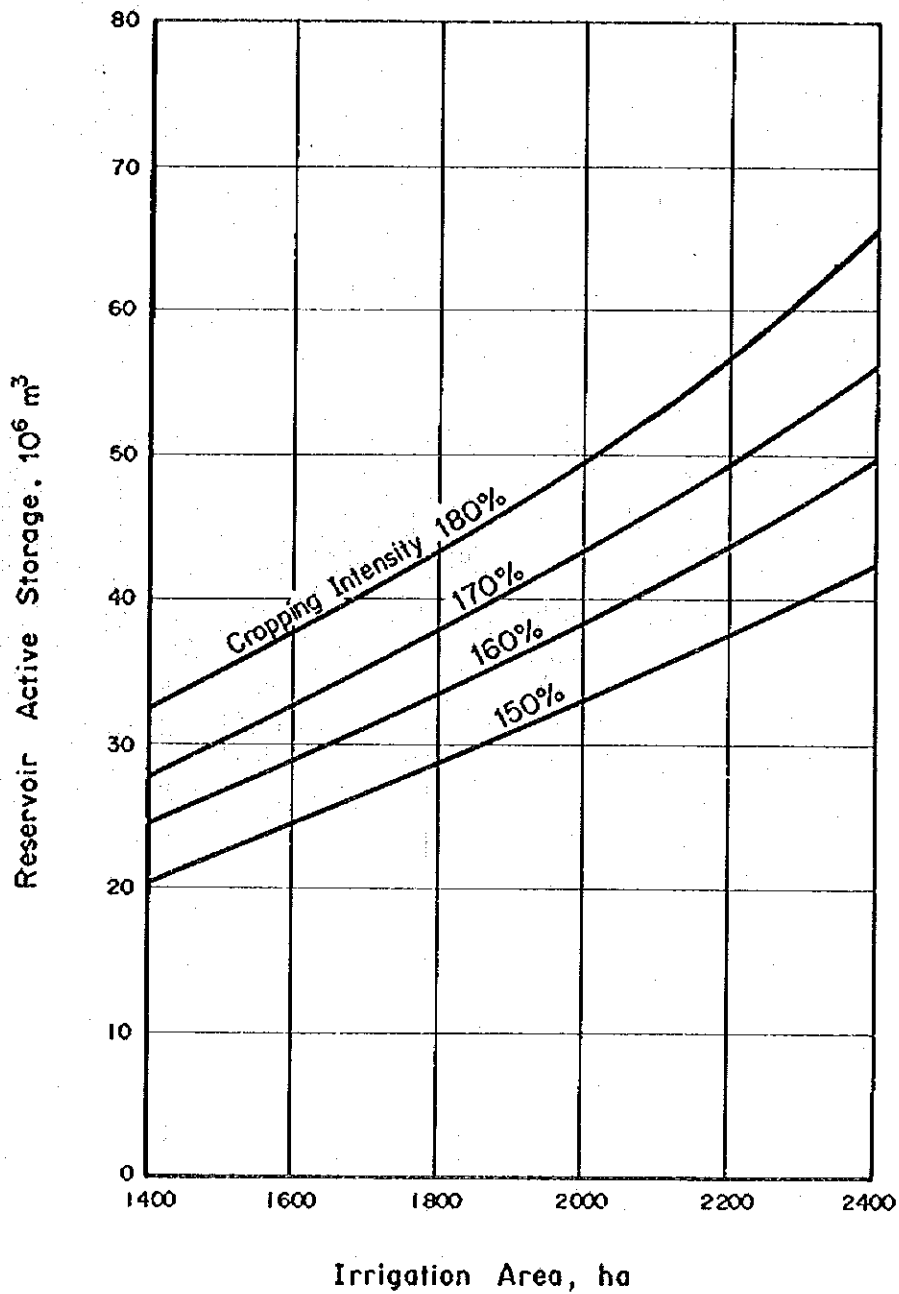


Fig.24 Relationship between Irrigation Area, Cropping Intensity and Reservoir Active Storage Capacity, Khlong Thap Ma Dam Scheme

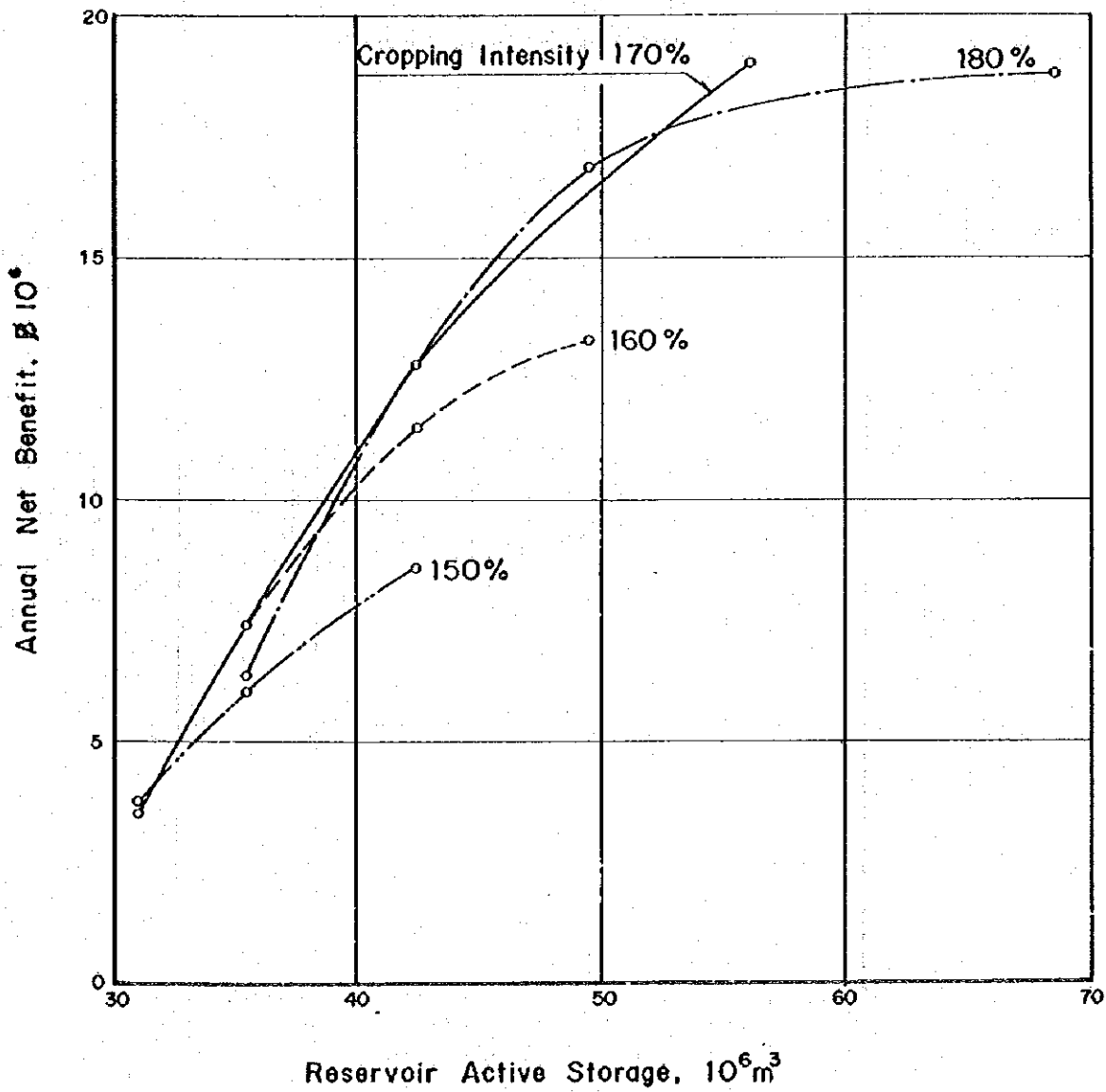


Fig. 25 Economic Comparison of Alternatives, Khlong Tap Ma Dam Scheme

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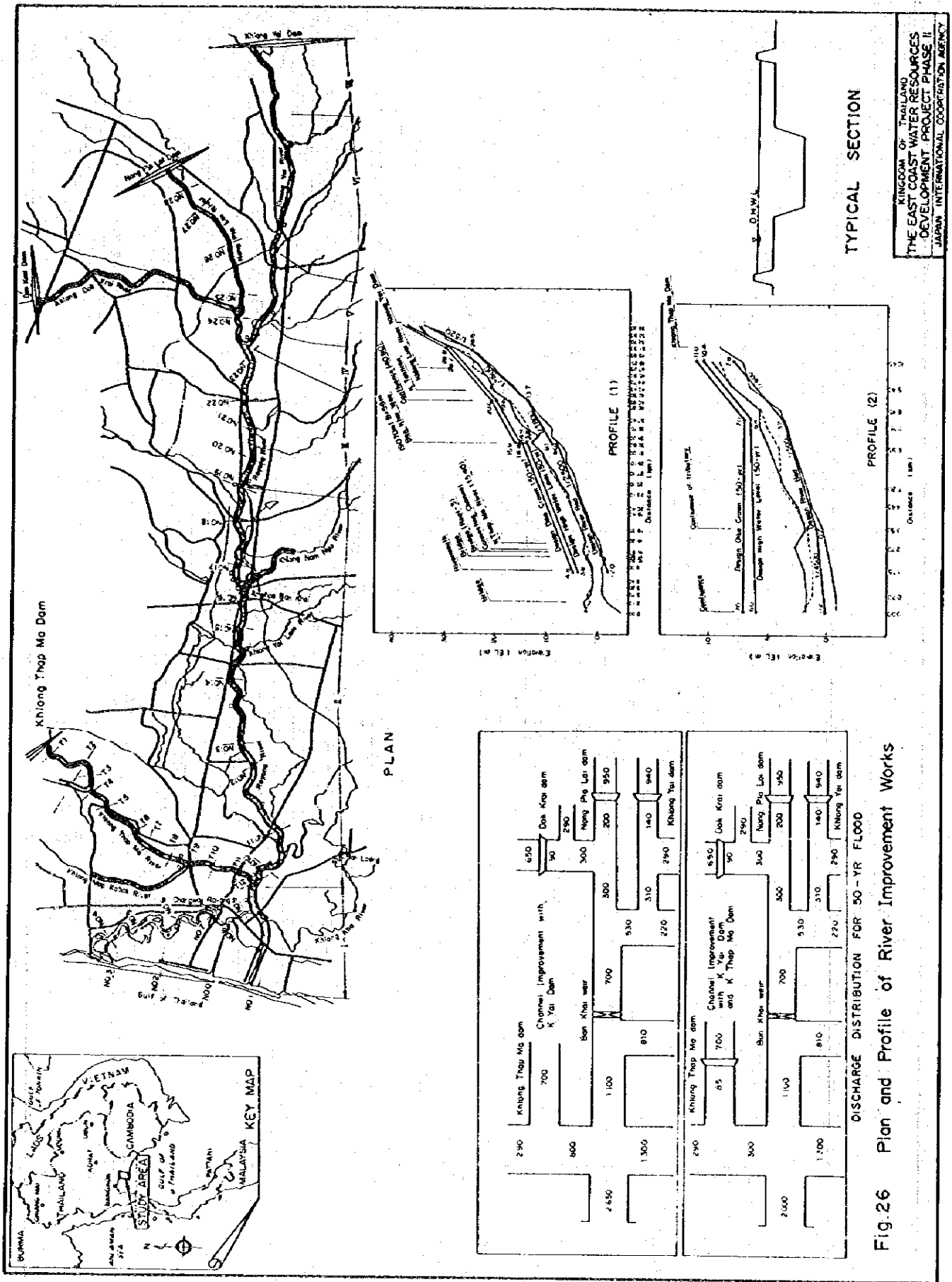


Fig.26 Plan and Profile of River Improvement Works

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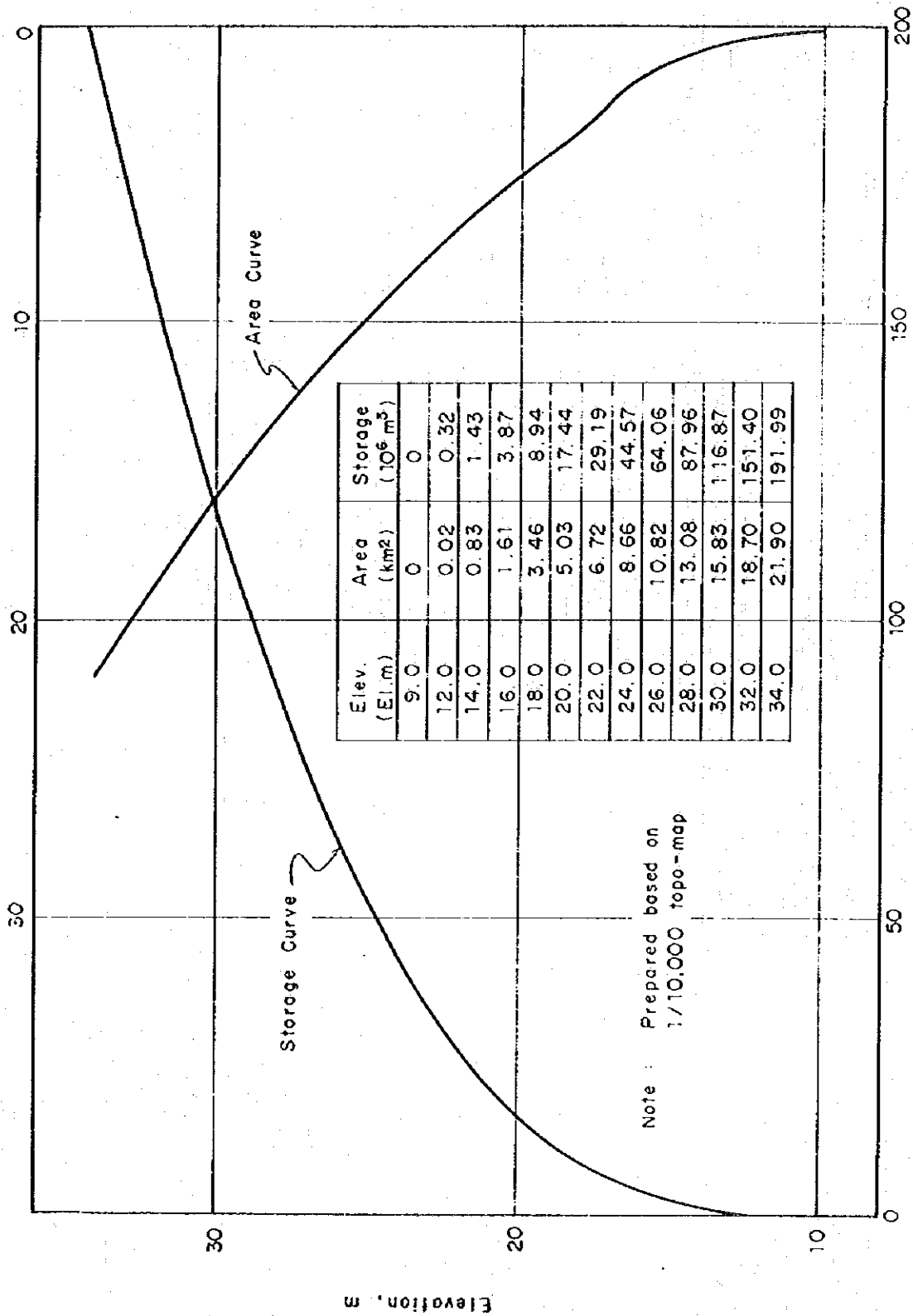


Fig. 27 Area-Storage Curve,
Khlong Thap Ma Reservoir

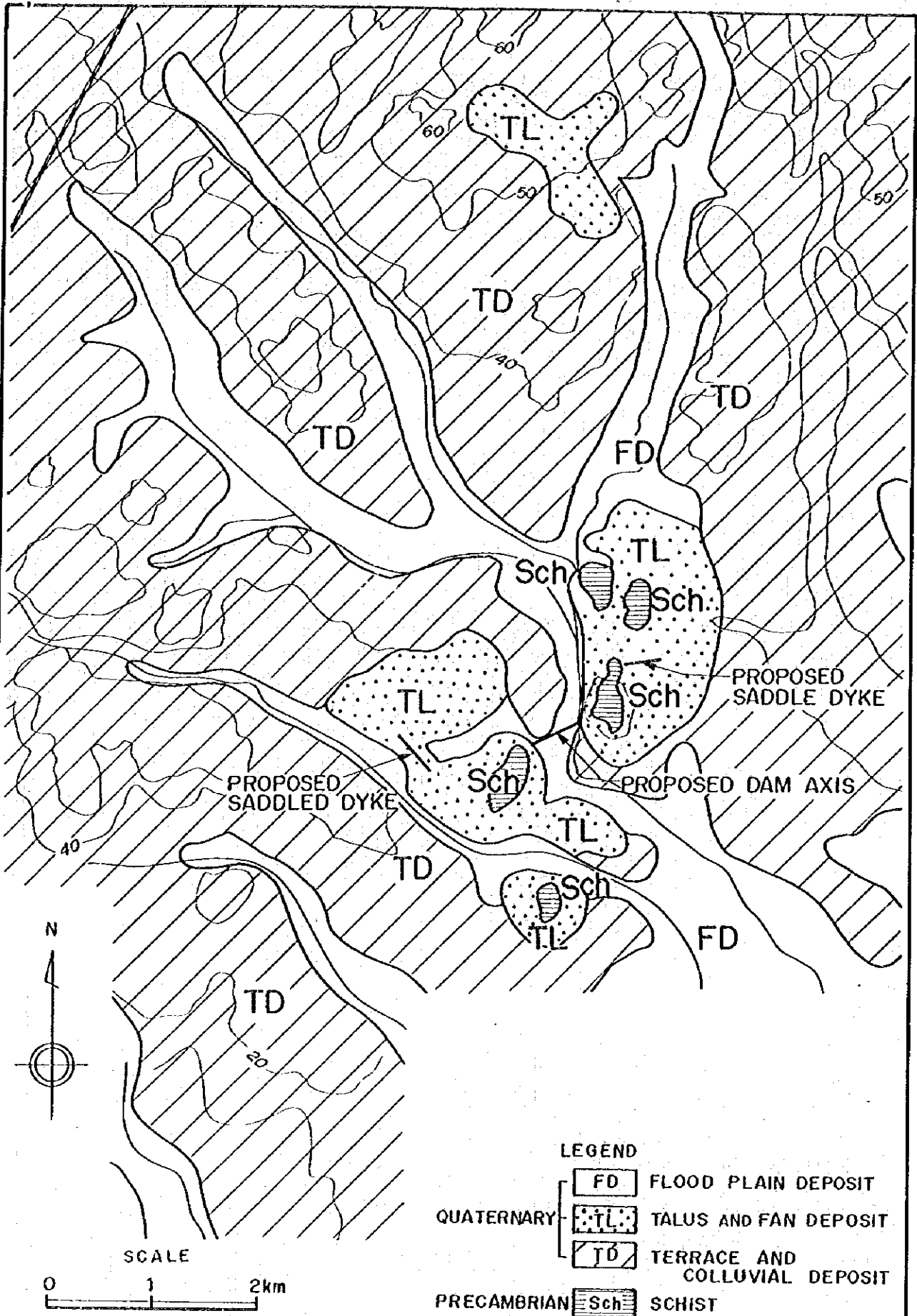


Fig. 28 Geological Map of Khlung Thap Ma Reservoir Area

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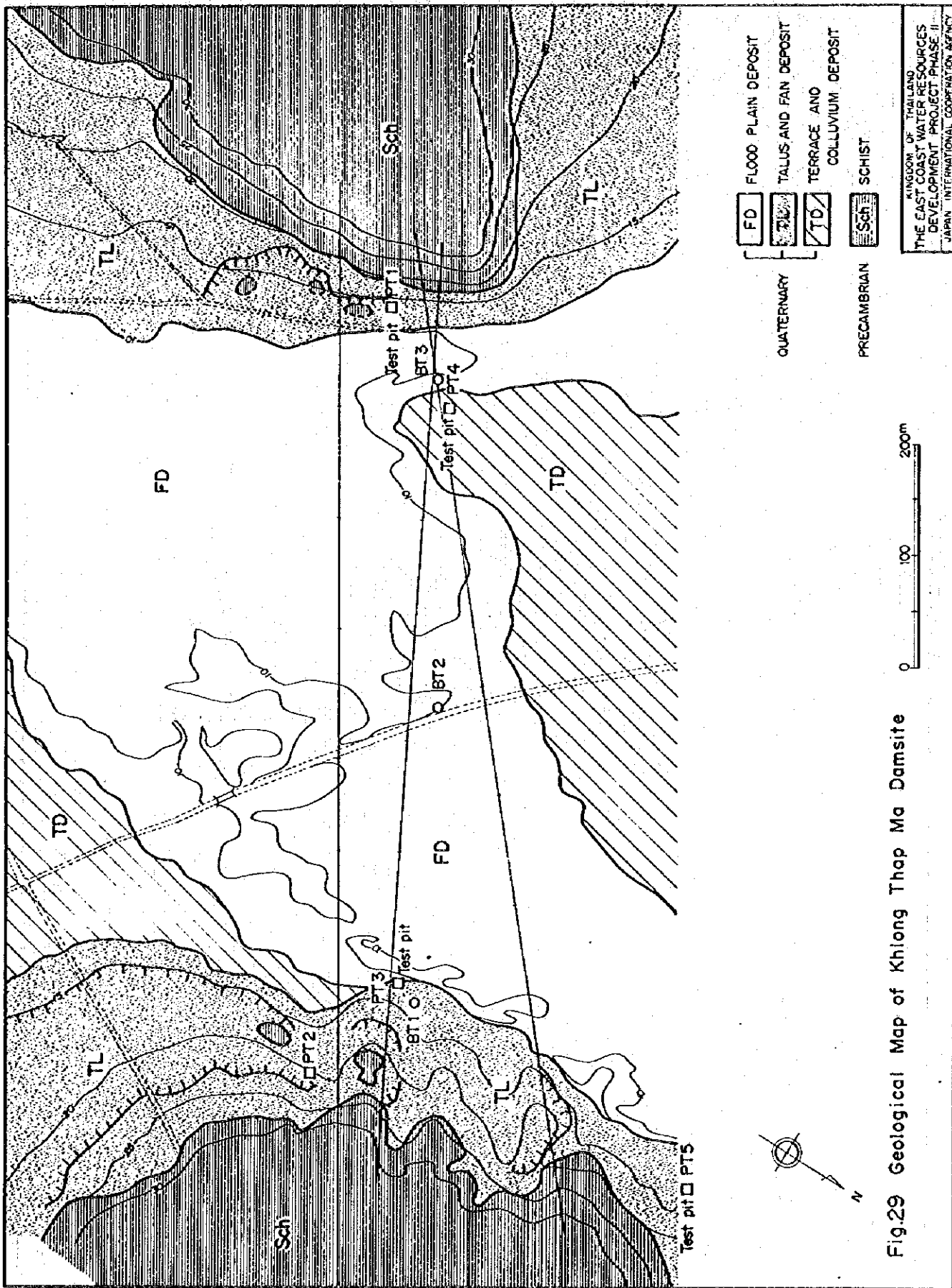


Fig.29 Geological Map of Khlong Thap Ma Damsite

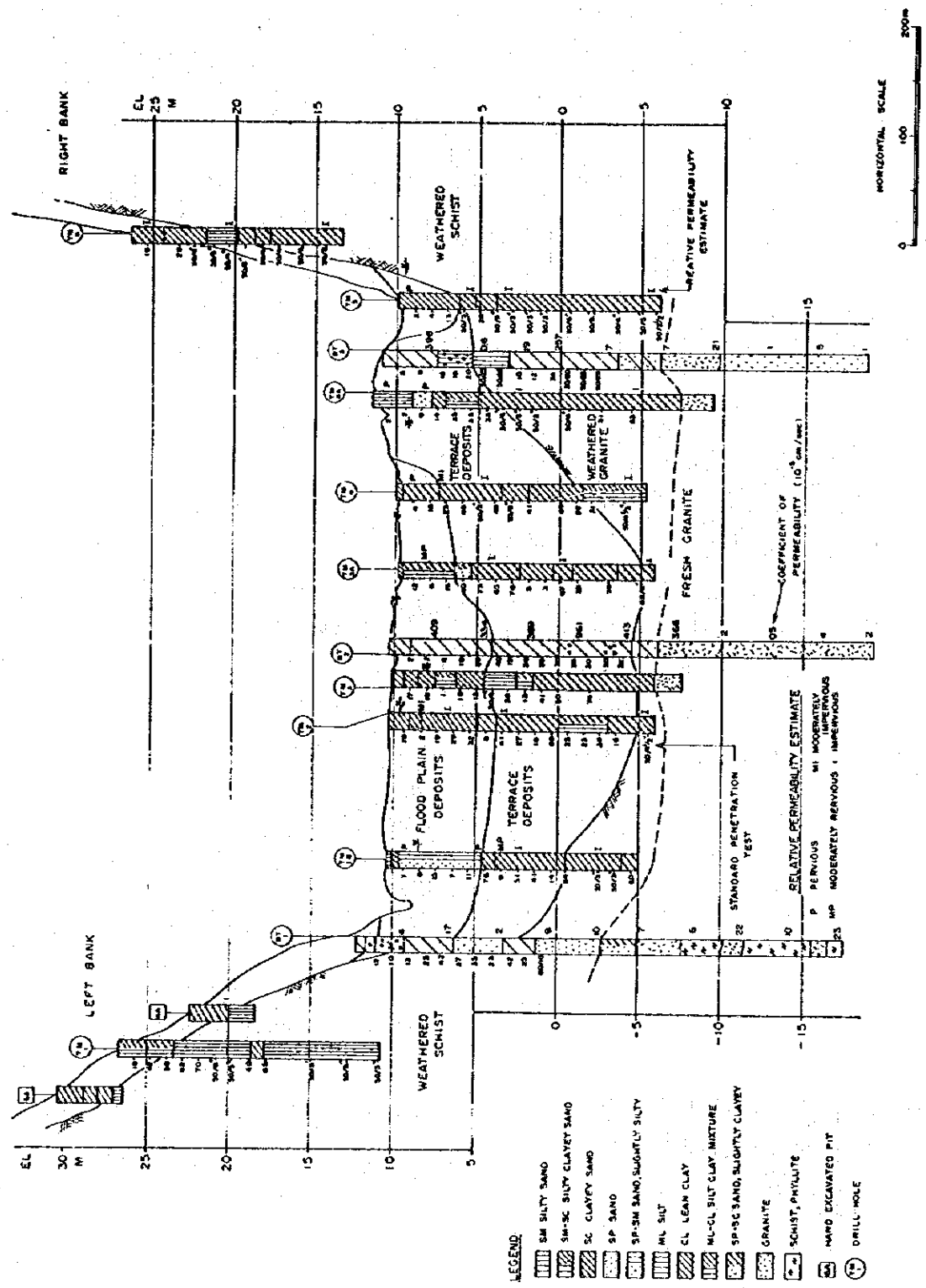
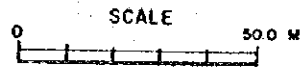
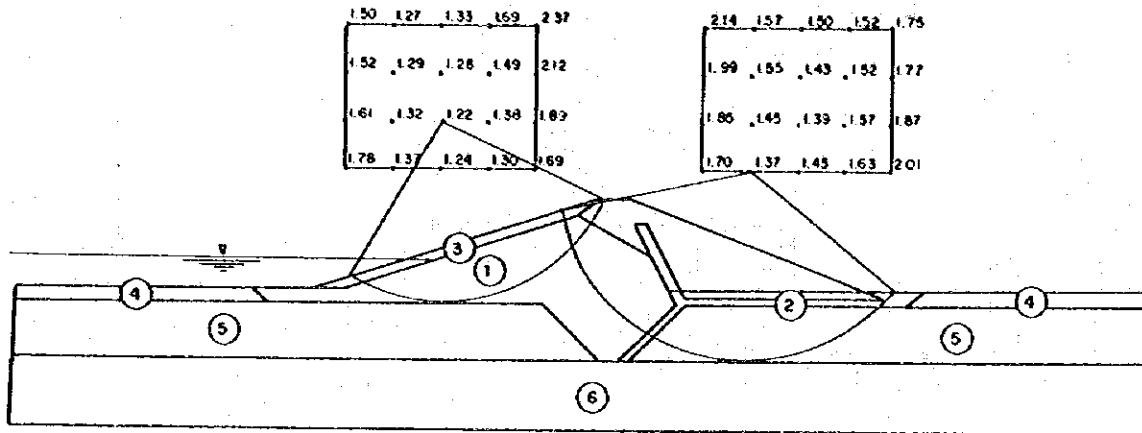


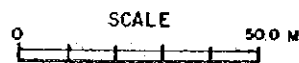
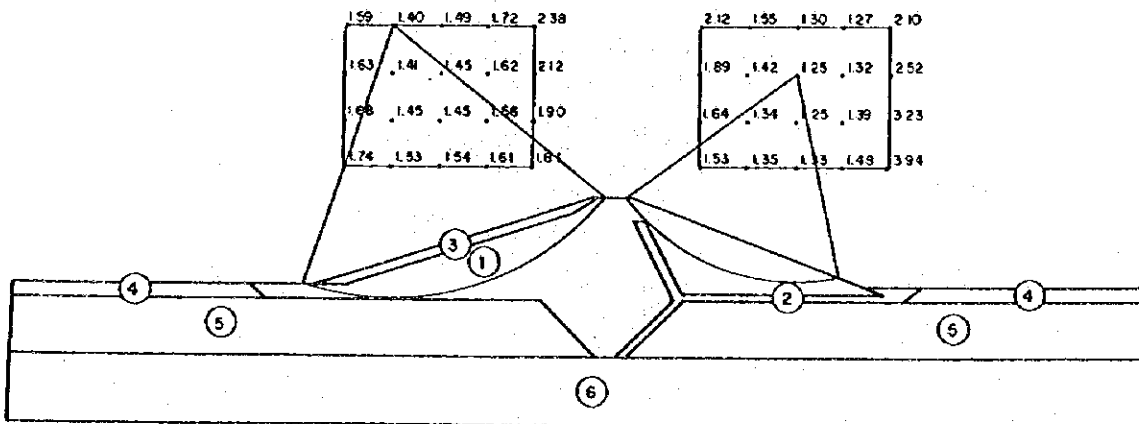
Fig.30 Geological Profile of Khlong Thap Ma Dam site



MATERIAL	COHESION (T/M ²)	FRICTION (DEG)	W(WET) (T/M ³)	W(SAT) (T/M ³)	W(SUB) (T/M ³)
1	1.00	30.00	1.97	2.08	1.08
2	0.00	35.00	1.85	2.15	1.15
3	0.00	40.00	1.90	2.15	1.15
4	2.00	25.00	1.80	1.85	0.85
5	2.00	28.00	1.85	1.94	0.94
6	10.00	35.00	2.10	2.30	1.30
ACCELERATION OF EARTHQUAKE					0.050

(Low Water Surface)

MINIMUM SAFETY FACTOR (SEISMIC)		
	UP STREAM SIDE	DOWN STREAM SIDE
NORMAL	—	—
SEISMIC	1.216	1.371



MATERIAL	COHESION (T/M ²)	FRICTION (DEG)	W(WET) (T/M ³)	W(SAT) (T/M ³)	W(SUB) (T/M ³)
1	1.00	30.00	1.97	2.08	1.08
2	0.00	35.00	1.85	2.15	1.15
3	0.00	40.00	1.90	2.15	1.15
4	2.00	25.00	1.80	1.85	0.85
5	2.00	28.00	1.85	1.94	0.94
6	10.00	35.00	2.10	2.30	1.30

(Reservoir Empty After Completion)

MINIMUM SAFETY FACTOR (NORMAL)		
	UP STREAM SIDE	DOWN STREAM SIDE
NORMAL	1.397	1.246
SEISMIC	—	—

Fig. 31 Stability Analysis

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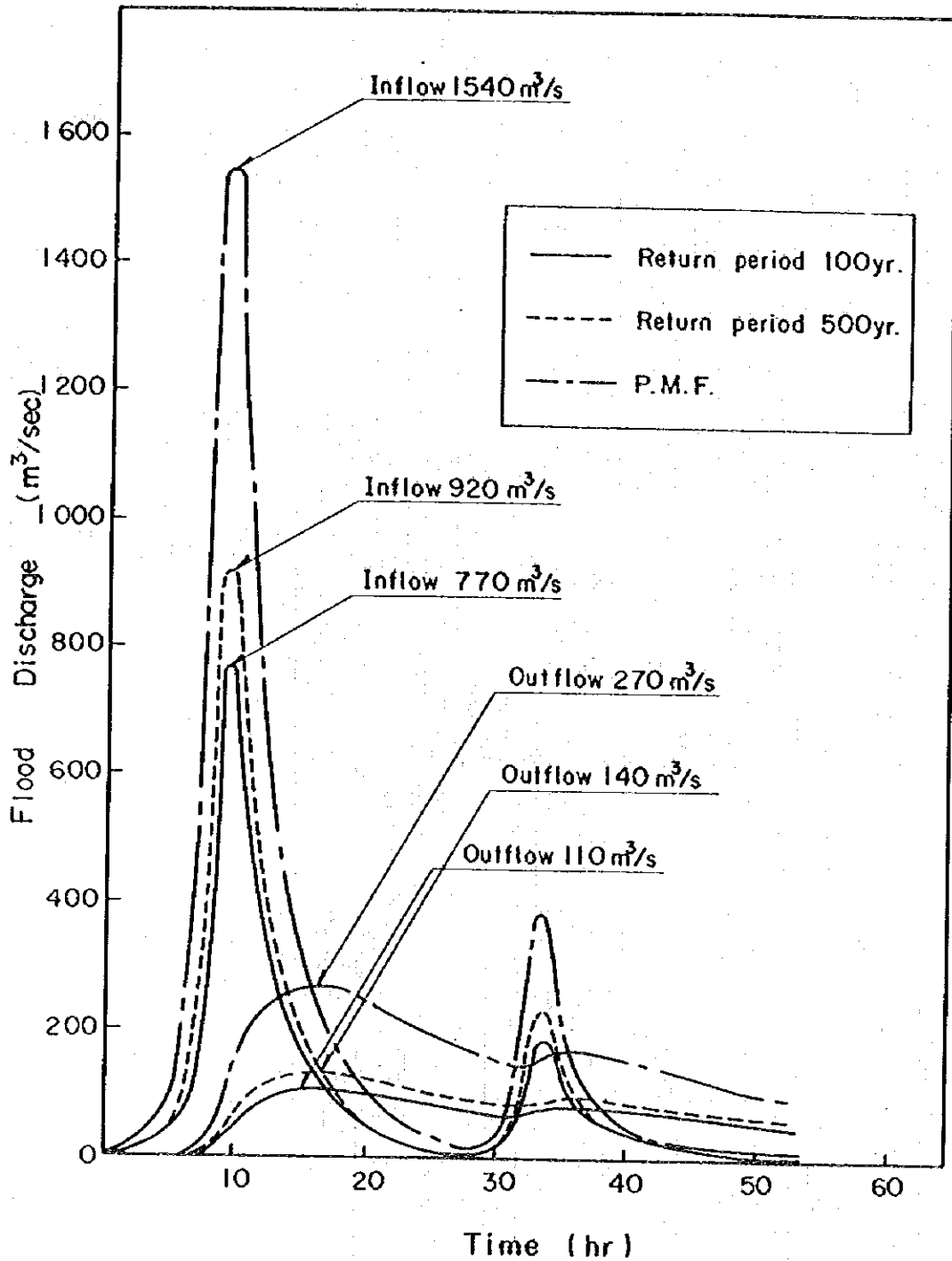


Fig. 32 Flood Routing, Khlong Thap Mo Dam

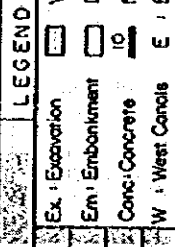
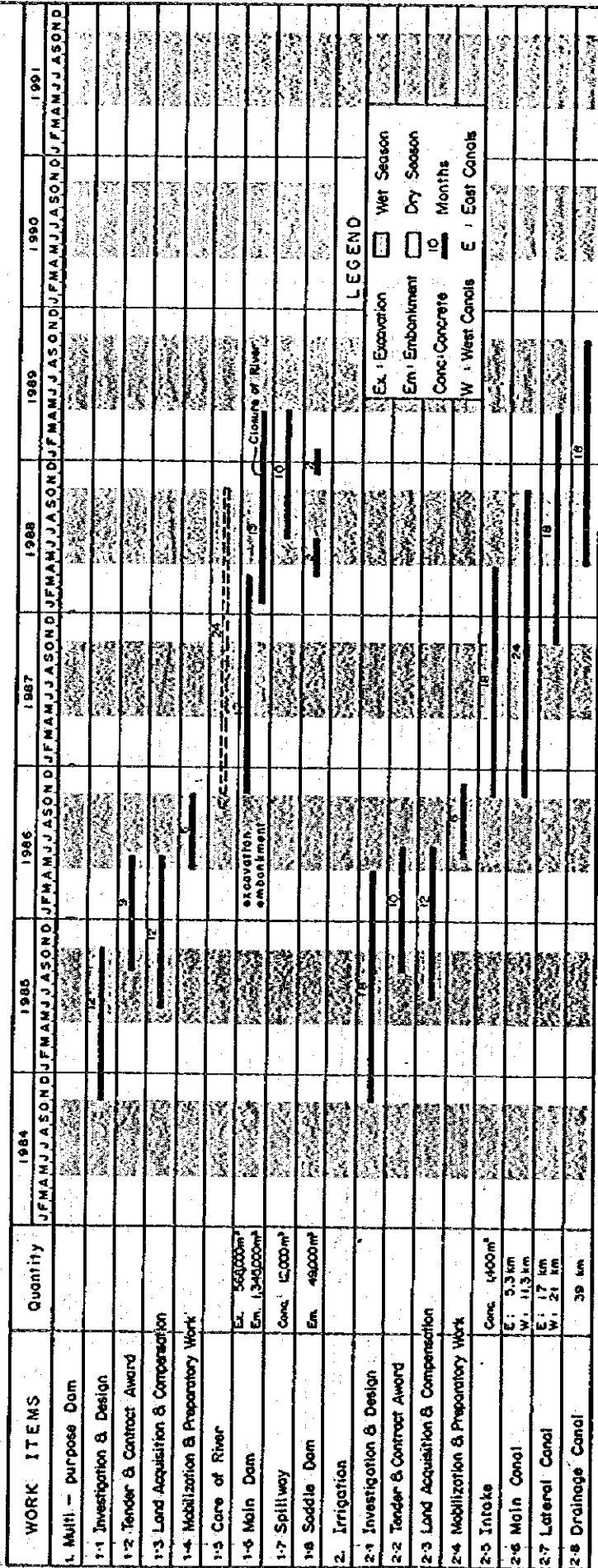


Fig. 33 Implementation Schedule of Khiong Thap Ma Dam Scheme

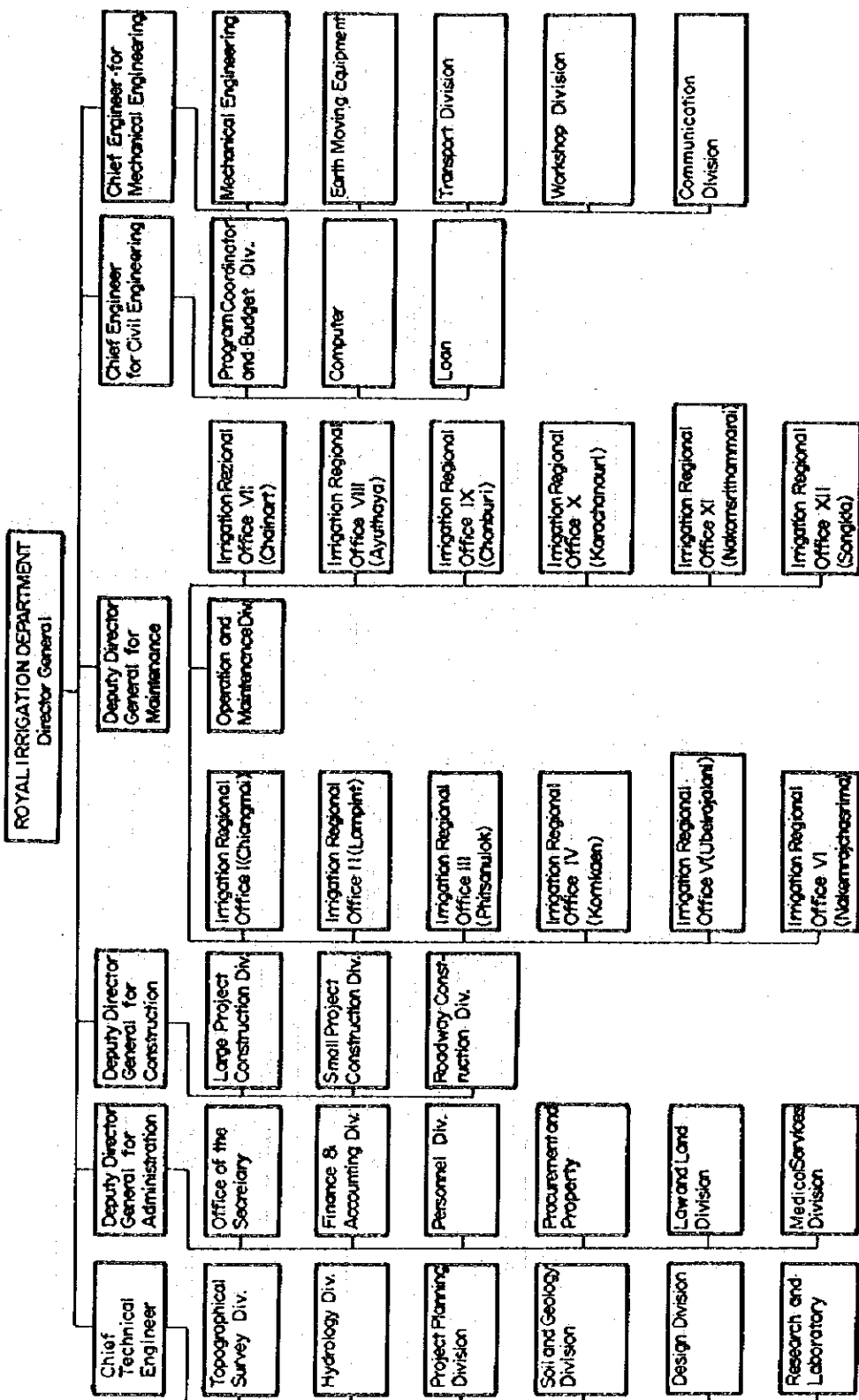


Fig.34 Organization Chart of Royal Irrigation Department

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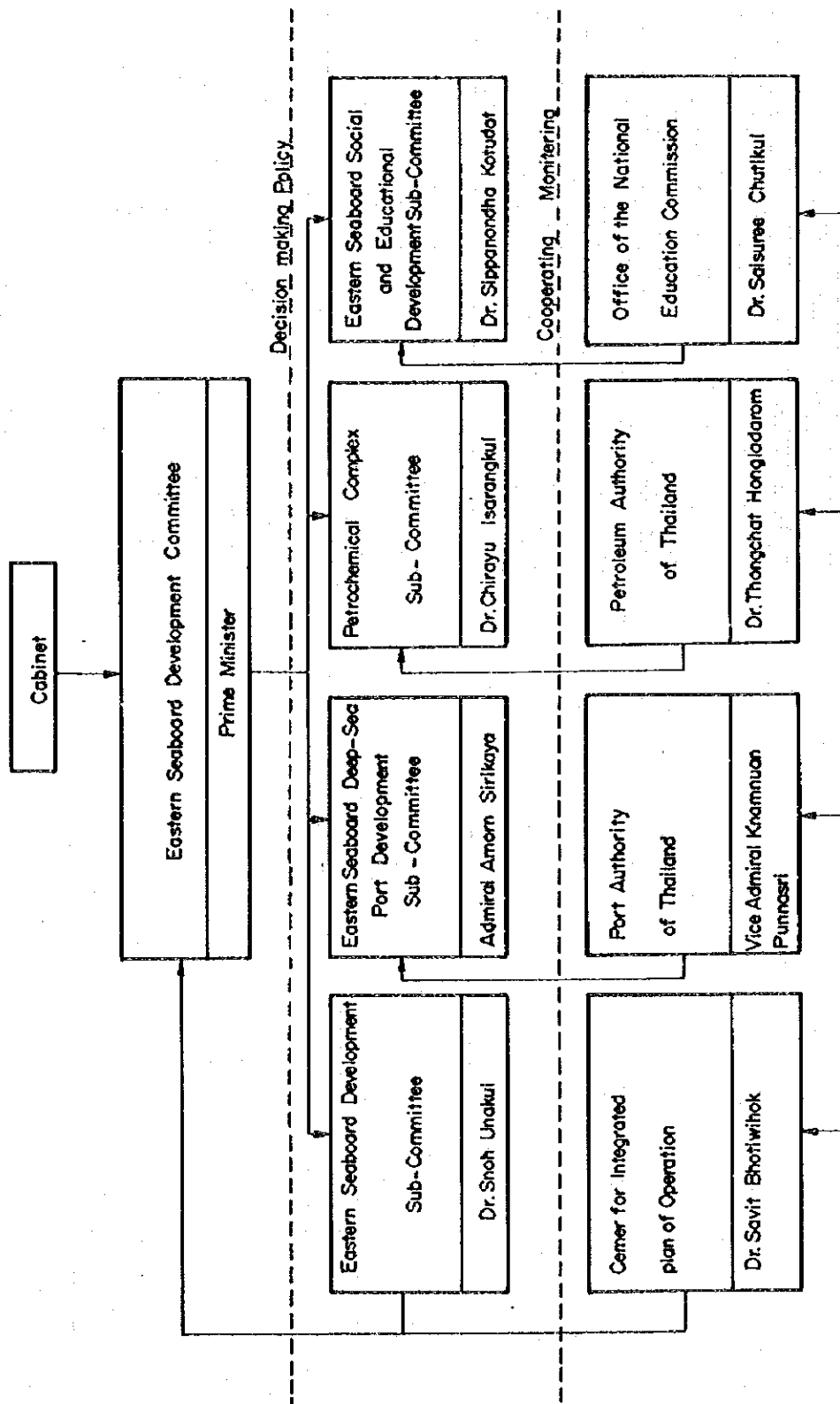


Fig.35 Organization Chart of Eastern Seaboard Development Committee

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