

A P P E N D I X

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Table E-1. Project Area (Greater Mae Klong River Basin)

	Gross Area		Irrigable Area	
	(rai)	(ha)	(rai)	(ha)
<u>Stage I</u>				
Kamphaeng Saen S-P.	316,000	50,600	284,300	45,500
Nakhon Pathom S-P.	375,300	60,000	337,800	54,000
Nakhon Chum S-P.	289,000	46,200	259,900	41,600
Ratchaburi (Left Bank)	213,800	34,200	191,900	30,700
Sub-Total	<u>1,194,100</u>	<u>191,000</u>	<u>1,073,900</u>	<u>171,800</u>
<u>Stage II</u>				
Phanom Thuan S-P.	369,200	59,100	332,300	53,200
Song Phi Nong S-P.	346,400	55,400	311,750	49,900
Bang Len S-P.	351,500	56,200	316,350	50,600
Tha Maka S-P.	314,400	50,300	283,800	45,400
Ratchaburi (Right Bank)	337,300	54,000	303,600	48,600
Sub-Total	<u>1,718,800</u>	<u>275,000</u>	<u>1,547,800</u>	<u>247,700</u>
STAGE I + STAGE II	<u>2,912,900</u>	<u>466,000</u>	<u>2,621,700</u>	<u>419,500</u>
Damnoen Saduak S-P*	257,800	41,200	153,000	24,500
GRAND TOTAL	<u>3,170,700</u>	<u>507,200</u>	<u>2,774,700</u>	<u>444,000</u>

NOTE: \* This area will be studied in the Master Plan Study.

Data Source: Irrigation Office No. 10 at Kanchanaburi.

Table E-2. Stage-Wise Area and Numbers of Tambon, Muban, Households and Sample Farmers

	Gross Area (rai)	Irrigable Area (rai)	No. of		Number of Household		Number of Sample Farmer
			Tambon	Muban	Total Agriculture	Non-Agr.	
<u>First Stage</u>							
Kamphaeng Saen							
West of Malaiman Road	316,000	284,300	13	75	8,228	5,414	2,814
East of Malaiman Road			20	108	8,554	5,945	2,609
Nakhon Pathom							
In Zone	375,300	337,800	32	163	13,559	8,072	5,487
Out Zone			30	125	13,026	7,373	5,653
Nakhon Chum							
In Zone	289,000	259,900	18	126	10,726	6,620	4,106
Out Zone			7	45	4,606	2,340	2,266
Ratchaburi (Left Bank)							
In Zone	213,800	191,900	15	108	10,428	5,336	5,092
Out Zone			13	44	4,049	2,125	1,924
Sub-total (1st Stage)	<u>1,194,100</u>	<u>1,073,900</u>	<u>148</u>	<u>794</u>	<u>73,176</u>	<u>43,225</u>	<u>29,951</u>
<u>Second Stage</u>							
Left Bank							
West of Malaiman Road	1,067,000	960,400	23	144	18,237	15,208	3,029
East of Malaiman Road			24	161	13,953	9,565	4,388
The Maka							
Ratchaburi (Right Bank)	314,400	283,800	31	206	15,687	10,237	5,450
Sub-total (2nd Stage)	<u>337,400</u>	<u>303,600</u>	<u>41</u>	<u>233</u>	<u>18,210</u>	<u>10,492</u>	<u>7,718</u>
Total (1st + 2nd)	<u>1,718,800</u>	<u>1,547,800</u>	<u>119</u>	<u>744</u>	<u>66,087</u>	<u>45,502</u>	<u>20,585</u>
	<u>2,912,900</u>	<u>2,621,700</u>	<u>267</u>	<u>1,538</u>	<u>139,263</u>	<u>88,727</u>	<u>50,536</u>

Table B-3. Inventory of Sugar Mill Factory (1977)

Name of Factory	Capacity (Ton/day)	Location		
		Tambon	Amphoe	Changwat
1. Suphan Sugar Factory	5,000	Yan Yao	Sam Chuk	Suphanburi
2. Vang Khanai Sugar Factory	3,500	Vang Khanai	Tha Muang	Kanchanaburi
3. Thai Poemphun Industry Factory	5,242	Vang Sala	Tha Muang	-do-
4. Mid Kaset Industry Factory	7,665	Don Kamin	Tha Maka	-do-
5. Prachuap Industry Ltd. Factory	9,600	Tha Maka	-do-	-do-
6. Thai Rungruang Ltd. Factory	12,980	Tha Mai	-do-	-do-
7. Mid Ruangcharoen Factory	2,000	Takram En	-do-	-do-
8. Krungthai Ltd. Factory	2,143	Tha Mai	-do-	-do-
9. Kanchanaburi Sugar Factory	6,314	-do-	-do-	-do-
10. Ruam Lap Ltd. Factory	2,924	Tha Maka	-do-	-do-
11. Tha Maka Ltd. Sugar Factory	8,224	-do-	-do-	-do-
12. Thai Sugar Ltd. Factory	7,606	Tha Mai	-do-	-do-
13. New Kung Thai Sugar Factory	3,160	-do-	-do-	-do-
14. Kaset Maliachon Sugar Factory	2,100	Vang Sala	Tha Muang	-do-
15. Thon Buri 1 Sugar Factory	5,327	Ban Pong	Ban Pong	Ratchaburi
16. Thon Buri 3 Sugar Factory	3,885	-do-	-do-	-do-
17. Ratchaburi Industry Sugar Factory	5,952	-do-	-do-	-do-
18. Mid Pong Sugar Factory	7,661	-do-	-do-	-do-
19. Ban Pong Sugar Factory	8,652	-do-	-do-	-do-
20. Phetchaburi Sugar Factory	3,500	Tha Yang	Tha Yang	Phetchaburi
Total	113,435			

Data Source: Irrigation Office No.10, RID

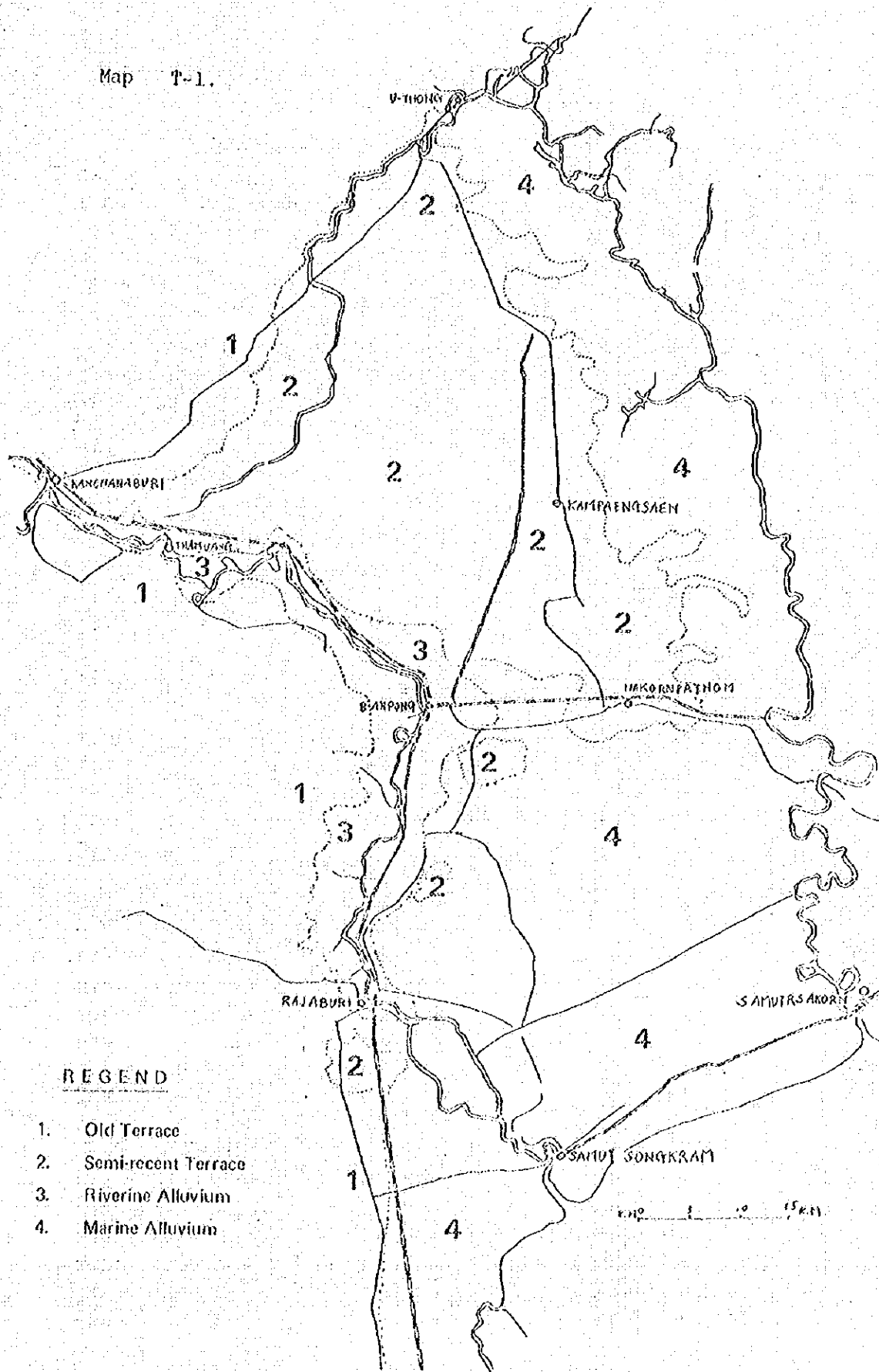
Table E-4. Inventory of Sugarcane Cultivated Area (1976/77)

<u>Changwat</u>	<u>Amphoe</u>	<u>Cultivated Area</u> (rai)	<u>Area in ha</u>
Suphanburi	U Thong	75,000	12,000
	Song Phi Nong	150,000	24,000
	Sub-total	225,000	36,000
Kanchanaburi	Muang Kanchanaburi	124,240	19,878
	Tha Muang	125,520	20,083
	Tha Maka	70,698	11,951
	Phanom Thuan	88,580	14,173
	Bo Phloi	43,994	7,039
	Sai Yok	59,310	9,490
	Lan Khan	30,485	5,518
Sub-total	550,827	88,132	
Nakhon Pathom	Muang Nakhon Pathom	20,500	3,280
	Kamphaeng Saen	78,750	12,600
	Don Tum	9,987	1,598
	Bang Len	420	67
Sub-total	109,657	17,545	
Ratchaburi	Muang Ratchaburi	6,500	1,040
	Pak Tho	6,829	1,093
	Ban Pong	22,000	3,520
	Photharam	39,978	6,396
	Chom Bung	94,600	15,136
	Suan Phung	108,174	17,308
	Bang Phac	375	60
	Damnoen Saduak	240	38
Sub-total	278,696	44,591	
Phetchaburi	Tha Yang	25,500	4,080
	Cha-am	9,360	1,498
	Nong Yaphong	7,700	1,232
	Khao Yoi	940	150
Sub-total	43,500	6,960	
	Total	1,207,680 rai	193,228 ha

Data Source: Irrigation Office No.10, RID



Map T-1.



**TOPOGRAPHICAL CLASSIFICATION**

Remarks S-1. Land Classification and Suitability

<u>Land Classification</u>	<u>Suitability</u>
1. Poorly drained clayey soils on riverine and marine alluvium	Best suited to paddy cropping (P-I)
2. Poorly drained clayey soils on brackish water sediments	Well suited to paddy cropping (P-II)
3. Area developed in old alluvial fan compounding clayey soil with poor drainage and loamy soil with good drainage	Area with poor drainage-well suited to paddy cropping (P-II), area with good drainage-well suited to upland cropping (U-II)
4. Area with good drainage, consisting of clayey - loamy old alluvial soils from basic rocks	Well suited - suited to upland cropping and fruits tree plantation (U-II/III)
5. Area with good drainage, consisting of sandy - clayey diluvium soils from acidic rocks.	Suited to upland cropping and fruits tree plantation (U-III/IV)
6. Steep slope area	Unsuited as farm lands (U-VII)
7. Sea shore deposits	Unsuited as farm lands (P-V, U-V)

Map S-2. Classification Map of Land Suitability

Table S-2. Chemical Properties of Soil in the Greater Mae Klong Project

Soil series	Loc. #	dominant texture	pH surface/ subsurface	E. C surface/ subsurface µmho	Permeability mm/day
Roi Et	255	Lic	5.8/5.6	400/800	5.0
	260	CL	5.5/5.4	200/500	5.0
	261	L	5.5/5.3	200/400	5.0
	266	CL	6.6/6.7	200/200	8.0
	267	CL	6.5/6.7	200/200	8.0
	270	CL	6.5/7.0	200/200	7.0
	271	HC	6.6/6.9	300/200	8.0
	274	CL	6.5/7.0	300/200	8.0
Kampaen Saen	203	SL	6.6/7.0	200/200	8.0
	204	SL	6.6/7.0	200/300	8.5
	205	CL	6.5/6.8	200/400	8.0
	209	L	5.6/7.2	400/800	9.0
	211	L	5.8/7.0	400/400	8.0
	212	L	5.6/8.2	500/600	9.5
	213	SL	6.5/7.0	200/300	8.0
	251	L	6.5/7.2	200/400	9.0
	252	CL	6.5/7.0	200/800	9.0
	253	CL	6.5/7.5	200/600	10.0
	257	SiL	6.0/6.8	300/200	10.0
	258	SiCL	6.1/6.9	300/300	11.0
	259	CL	6.5/7.0	100/200	10.0
NaKorn Pathom	201	SiL	6.0/6.5	200/300	6.0
	202	SiL	5.9/6.7	200/400	6.0
	220	SiCL	6.0/6.8	300/600	6.0
	223	Lic	5.5/6.0	4,200/3,000	6.0
	245	CL	6.6/7.0	200/800	5.0
	246	CL	6.5/7.0	300/800	5.5
	247	SL	6.2/6.8	200/400	5.0
	248	SiCL	5.9/6.8	300/600	6.0
	254	CL	6.8/7.0	600/600	6.0
	256	CL	6.8/7.0	600/500	6.5
	262	L	7.0/7.1	400/800	6.0
	263	CL	6.9/7.1	500/700	7.0
	264	CL	6.9/7.0	500/600	6.0
	265	L	6.9/7.0	400/600	5.0
Tha Muang	249	Lic	7.0/7.0	500/1,200	8.0
	250	CL	7.1/7.1	600/900	8.5

Table S-2 Chemical Properties of Soil in the Greater Mae Klong Project

Soil series	Loc. #	dominant texture	pH surface / subsurface	E.C. surface / subsurface µmho	Permeability mm / day
Ratchaburi	238	HC	7.0 / 7.1	500 / 2,800	5.0
	268	HC	6.5 / 6.8	2,200 / 1,500	7.0
	269	HC	7.2 / 7.2	1,900 / 1,000	6.5
	272	HC	7.0 / 7.0	500 / 1,800	5.0
	273	HC	7.0 / 7.1	600 / 2,700	5.0
	275	HC	7.0 / 7.2	1,000 / 1,200	5.5
	278	LiC	7.0 / 7.2	1,200 / 800	6.0
	280	HC	7.0 / 7.1	1,000 / 1,400	6.0
Bang Phae	224	LiC	6.2 / 6.3	4,700 / 2,600	6.5
	225	CL	7.0 / 7.2	200 / 600	4.0
	229	CL	7.1 / 7.2	300 / 800	4.0
	237	HC	6.9 / 7.0	400 / 900	4.0
	239	HC	6.8 / 7.0	500 / 1,200	4.0
	240	HC	6.9 / 7.0	400 / 1,000	4.0
	241	HC	7.0 / 7.0	200 / 1,500	6.0
	242	HC	7.1 / 7.2	400 / 600	4.0
	243	HC	7.2 / 7.5	600 / 1,600	6.0
	244	HC	7.0 / 7.3	200 / 1,000	6.0
Bang Len	226	CL	7.0 / 7.0	1,500 / 3,000	5.5
	227	HC	7.0 / 7.1	2,400 / 5,800	3.5
	228	LiC	6.8 / 7.0	1,200 / 3,500	5.0
	230	HC	7.0 / 7.1	2,000 / 6,600	3.0
Rangsit	206	HC	4.9 / 4.3	900 / 1,800	4.5
	207	HC	5.0 / 4.6	1,000 / 1,500	5.0
	208	CL	5.2 / 5.0	800 / 1,200	5.0
	210	CL	6.0 / 4.5	3,500 / 1,700	4.5
	217	CL	6.0 / 5.0	3,200 / 1,800	5.0
	218	LiC	6.2 / 4.8	4,200 / 2,800	5.0
	219	HC	4.6 / 4.7	600 / 500	5.0
	221	HC	4.5 / 3.8	600 / 500	5.0
	222	HC	5.0 / 4.2	800 / 600	5.0
	276	LiC	5.9 / 5.6	500 / 300	5.0
	277	CL	6.2 / 5.0	600 / 600	4.0
	279	CL	5.5 / 4.3	600 / 400	4.0
	281	LiC	6.4 / 5.3	3,200 / 5,600	3.0
	282	HC	6.3 / 5.0	2,500 / 4,700	3.0
	284	HC	6.2 / 5.2	2,800 / 5,000	3.0
	285	HC	5.3 / 4.0	3,000 / 4,200	4.0
	286	HC	6.8 / 4.2	500 / 1,400	5.0
287	HC	6.5 / 4.1	300 / 800	4.0	
288	HC	4.8 / 4.7	500 / 1,200	5.0	
289	HC	4.0 / 3.8	600 / 1,400	4.5	
290	CL	5.6 / 4.8	400 / 1,900	5.5	

Table S-3 Chemical Properties of Soil in the Greater Mae Klong Project

Soil series	Loc. #	dominant texture	pH surface / sub surface	EC surface / sub surface $\mu\text{mho}$	Permeability $\text{mm} / \text{day}$
Tha Chin	281	HC	7.2 / 7.1	7,000 / 8,200	6.0
	282	HC	7.1 / 7.1	6,500 / 8,000	5.0
	283	SL	7.2 / 7.1	7,500 / 10,200	8.0
	284	HC	7.3 / 7.3	6,500 / 10,500	6.0
	285	SL	7.2 / 7.1	5,000 / 6,400	7.5
	286	HC	7.0 / 7.1	4,300 / 7,600	5.5
	283	HC	7.2 / 7.0	5,200 / 7,600	4.5

Table M-1 Meteorological Data in Kanchanaburi

Station KANCHANABURI

Index Station 48 450

Latitude 14° 01' N.

Longitude 99° 32' E.

Elevation of station above MSL. 28.00

Height of barometer above MSL. 29.39

Height of thermometer above ground 1.20

Height of wind vane above ground 11.40

Height of rain gauge 0.64

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
<b>Pressure (-1000 or 900 mbs.)</b>													
Mean	13.24	11.65	10.04	08.95	07.49	07.42	07.19	07.13	07.81	10.54	12.49	13.36	10.53
Ext. Max.	24.34	22.15	19.77	20.18	19.53	15.76	14.25	14.38	15.03	18.02	21.37	23.62	23.62
Ext. Min.	04.71	03.50	01.62	01.06	09.37	01.08	09.95	00.26	03.50	02.56	06.11	05.66	05.66
Mean daily range	5.29	5.65	3.91	5.76	4.97	4.66	3.93	3.98	4.53	4.64	4.68	4.53	4.53
<b>Temperature (°C.)</b>													
Mean	24.9	27.6	30.0	31.2	30.1	29.0	28.5	28.4	28.0	27.0	25.8	24.3	27.5
Mean Max.	32.4	34.8	36.9	37.8	35.4	33.6	32.9	32.7	32.4	31.2	30.9	30.8	31.0
Mean Min.	17.5	20.4	22.3	24.7	24.9	24.5	24.0	24.0	23.7	22.9	20.8	17.9	24.0
Ext. Max.	37.2	40.0	41.7	43.5	41.6	38.4	37.8	37.5	37.6	37.3	37.5	35.3	37.2
Ext. Min.	5.5	12.8	11.0	17.2	21.9	22.0	20.8	21.5	20.8	18.9	12.0	9.0	5.5
<b>Relative Humidity (%)</b>													
Mean	61.8	60.1	56.3	58.7	70.0	72.1	73.1	73.9	77.0	79.5	74.5	68.5	65.0
Mean Max.	87.8	85.8	82.1	82.0	87.5	87.9	88.8	89.4	91.4	93.2	91.8	90.1	88.0
Mean Min.	41.8	40.2	36.1	59.0	53.1	57.8	58.6	58.9	61.8	65.3	58.9	49.9	57.0
Ext. Min.	11.0	16.0	14.0	17.0	21.0	32.0	34.0	35.0	36.0	43.0	32.0	21.0	11.0
<b>Dew Point (°C.)</b>													
Mean	17.3	19.1	19.9	21.7	23.5	23.1	23.0	22.9	23.2	23.2	21.1	18.2	20.0
<b>Evaporation (mm.)</b>													
Mean --- Piche	104.2	109.9	143.0	138.5	101.9	93.6	81.6	83.5	66.8	57.3	67.8	82.1	111.0
--- Pan	No Observation												
<b>Cloudiness (0--8)</b>													
Mean	3.3	3.5	3.6	4.4	5.8	6.6	6.8	6.9	6.7	5.8	4.5	3.6	5.0
<b>Visibility (Km.)</b>													
0700 L.S.T.	4.9	4.3	5.4	7.8	9.6	10.2	9.5	9.0	8.6	8.0	7.0	6.3	7.0
Mean	8.3	7.1	7.3	9.5	11.2	11.9	10.8	10.7	10.4	10.1	10.3	9.6	9.0
<b>Wind (Knots)</b>													
Prevailing wind	NE	SE	W	W	W	W	W	W	W	W	NE	NE	NE
Mean Wind Speed	3.3	3.8	4.2	4.6	4.4	4.6	4.5	5.0	3.9	3.4	3.5	4.1	4.0
Max. Wind Speed	25 ENE	25 SE	33 S	50 SE	33 E, W	33 W	55 SW	50 NW	40 W	30 W	21 NE	30 N	30 N
<b>Rainfall (mm.)</b>													
Mean	2.7	21.8	26.8	72.7	153.5	91.0	107.1	100.4	235.6	236.0	60.7	8.6	111.0
Mean rainy days	1.0	2.1	3.4	6.2	14.0	13.1	15.9	16.9	18.7	15.3	5.0	1.6	11.0
Greatest in 24 hr.	16.4	82.0	45.8	72.1	95.4	70.8	61.7	73.9	104.5	162.8	117.6	45.6	16.4
Day/Year	10/65	14/70	7/65	30/58	4/63	28/38	23/57	28/54	21/70	12/70	3/69	21/66	12/65
<b>Number of days with</b>													
Haze	23.5	25.1	26.9	15.5	6.3	3.6	3.4	3.7	3.1	5.9	10.0	16.0	19.0
Fog	6.1	6.5	2.2	2.0	2.0	0.5	0.9	1.2	1.1	2.2	3.3	3.5	3.0
Hail	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Thunderstorm	0.2	1.9	4.2	9.7	13.9	4.8	6.3	5.0	8.2	7.1	1.5	0.4	4.0
Squall	0.0	0.1	0.0	0.6	0.1	0.1	0.2	0.1	0.2	0.0	0.0	0.0	0.0

Remark : 1. Pressure 1955--1970  
2. Temperature 1952--1970  
3. Evaporation 1958--1970

Table M-2 Meteorological Data in Suphanburi

Station SUPHAN BURI  
 Station 48 425  
 Latitude 14° 30' N.  
 Longitude 100° 10' E.

Elevation of station above MSL. 7.00 meters  
 Height of barometer above MSL. 7.50 meters  
 Height of thermometer above ground 1.80 meters  
 Height of wind vane above ground 15.80 meters  
 Height of rain gauge 0.80 meters

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Pressure (1-1000 or 900 mbs.)													
Mean	14.32	12.48	10.83	09.48	07.69	07.32	07.25	07.36	08.22	11.33	13.15	14.14	10.30
Ext. Max.	26.95	24.20	21.43	19.26	15.22	14.28	14.34	15.03	15.66	19.32	22.38	24.95	26.95
Ext. Min.	04.30	03.22	01.20	00.60	08.78	08.96	08.99	09.49	09.86	02.14	04.52	04.65	08.78
Mean daily range	5.19	5.54	5.71	5.65	4.92	4.26	3.94	4.10	4.54	4.65	4.59	4.37	4.82
Temperature (°C.)													
Mean	25.4	27.6	29.9	31.2	30.3	29.6	28.9	28.7	28.2	27.7	26.4	25.9	28.2
Mean Max.	31.9	34.2	36.5	37.5	35.5	34.3	33.3	32.8	31.8	31.2	30.5	30.4	33.3
Mean Min.	18.9	21.1	23.3	25.0	25.1	24.8	24.5	24.6	24.5	24.3	22.3	19.4	23.3
Ext. Max.	36.7	39.8	41.0	42.2	42.6	37.8	38.0	36.5	35.6	34.5	34.2	35.0	42.6
Ext. Min.	9.2	12.0	14.8	19.4	20.9	21.8	22.0	22.1	21.3	19.4	14.5	11.9	9.2
Relative Humidity (%)													
Mean	64.0	64.9	62.3	61.6	69.1	70.2	73.0	75.1	79.7	79.7	74.8	68.1	70.2
Mean Max.	88.1	92.0	91.4	88.4	88.6	87.7	89.3	90.1	92.6	92.9	91.6	88.8	90.1
Mean Min.	44.8	41.0	41.5	42.2	52.8	56.0	59.3	62.2	68.0	68.6	61.2	51.3	54.3
Ext. Min.	23.0	16.0	18.0	21.0	24.0	36.0	41.0	45.0	48.0	48.0	38.0	34.0	16.0
Dew Point (°C.)													
Mean	18.5	20.5	21.6	22.9	24.2	23.8	23.7	23.9	24.5	24.2	22.0	19.0	22.4
Evaporation (mm.)													
Mean --- Piche	90.1	87.3	114.0	112.4	90.2	80.8	71.8	65.4	46.7	46.1	57.6	75.5	937.9
--- Pan	131.6	131.0	135.1	205.9	191.7	165.8	154.0	146.2	135.9	120.3	121.0	116.1	1805.1
Cloudiness (0 - 8)													
Mean	3.6	4.2	4.1	4.6	5.9	6.5	6.7	6.7	6.6	5.5	4.1	3.5	5.2
Visibility (Km.)													
0700 L.S.T.	4.1	2.7	4.5	6.1	6.9	7.2	6.9	7.0	6.6	6.7	6.8	6.2	6.0
Mean	8.3	6.9	7.2	8.3	9.1	9.2	8.9	9.1	8.8	9.7	10.4	10.1	8.8
Wind (Knots)													
Prevailing wind	NE	S	S	S	SW	SW	SW	SW	SW	NE	NE	NE	---
Mean Wind Speed	6.1	6.2	7.2	7.5	7.2	7.8	7.9	7.4	6.6	6.6	7.2	6.6	---
Max. Wind Speed	30 NE	30 NE SW	33 E	45 E	35 W	30 S, SW W	34 S, W	30 SW	35 SW	35 S, S, SW	30 NE	24 NE	---
Rainfall (mm.)													
Mean	3.2	13.7	41.7	70.1	175.2	113.3	130.6	154.0	322.4	221.3	46.3	5.6	1326.5
Mean rainy days	0.7	1.7	2.7	5.4	12.8	12.6	15.2	16.5	18.9	13.8	3.7	1.1	105.1
Greatest in 24 hr.	24.1	39.4	117.6	102.7	132.2	56.7	71.6	65.0	120.0	111.1	77.0	27.8	132.2
Day/Year	5/61	4/69	13/52	18/61	21/54	28/56	26/61	22/66	16/64	5/60	3/65	4/70	21/53
Number of days with													
Haze	21.0	22.6	26.3	20.8	11.7	6.6	7.0	7.5	5.2	10.1	19.1	21.2	179.1
Fog	12.1	13.9	6.8	2.2	0.3	0.5	0.2	0.5	0.3	0.7	2.4	5.1	45.0
Hail	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Thunderstorm	0.3	1.1	4.7	9.1	15.9	9.4	11.4	11.4	12.0	8.7	2.3	0.6	17.0
Squall	0.1	0.1	0.4	0.3	0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.0	1.5

Remark : 1. Pressure 1953 - 1970  
 2. Temperature 1952 - 1970  
 3. Evaporation : Piche' 1957 - 1970  
 Pan 1963 - 1970

Table H-1 Annual Average Rainfall and Seasonal Pattern

Items Rainfall Station	Average Wet Season	Average Dry Season	Average annual Rainfall	Remarks
Thong Pha Phum	1,598 mm	216 mm	1,809 mm	Quae Noi River
Percentage	(88)	(12)	(100)	(up stream)
Sai Yok	969 "	214 "	1,183 "	Quae Noi River
Percentage	(82)	(18)	(100)	(Near Proposed Damsite)
Ban Na Suan	678 "	181 "	859 "	Quae Yai River
Percentage	(79)	(21)	(100)	(up stream)
Si Sawat	759 "	237 "	996 "	Quae Yai River)
Percentage	(76)	(24)	(100)	(middle stream)
Muang Kanchanaburi	768 "	251 "	1,014 "	Near Conjunction of
Percentage	(75)	(25)	(100)	Quae & Yai and Noi R.
Bang Phae	784 "	126 "	910 "	MaeKlong River
Percentage	(86)	(14)	(100)	(middle stream)
Samut Songkhro	999 "	225 "	1,224 "	Coastal area of the
Percentage	(82)	(18)	(100)	Project

( Observation Period 1966 ~ 1974 )



Table II- 2 Yearly Run-off Pattern at K11 station (Maeklong River )

unit: mm/day

Items Year	K11 (Maeklong River ) Yearly Run-off			Percentage		Remarks
	Wet season	Dry season	Total Run-off	Wet	Dry	
1967	91, 985	17, 818	109, 768	84	16	
1968	75, 481	14, 631	90, 112	84	16	
1969	117, 488	26, 458	143, 941	82	18	
1970	77, 778	26, 248	104, 026	76	25	
1971	95, 096	19, 896	114, 492	83	17	
1972	156, 684	31, 895	188, 529	88	17	
1973	114, 108	20, 329	134, 437	85	15	
1974	185, 726	36, 354	172, 080	79	21	
1975	94, 161	27, 316	121, 477	78	22	
Total	958, 407	220, 440	1, 178, 847	81	19	
Average	106, 489. 6	24, 493. 8	130, 983	81	19	
	(9, 166. 7 MCM)	(2, 150. 2 MCM)	(11, 816. 9 MCM)			

Note: Wet Season May ~ Oct.

Dry Season Nov. ~ April

MCM Million Cubicmeter

Table II- 3 Annual Average Rainfall and Run-off

Items Name of River	C. A (1) km <sup>2</sup>	Annual Average Rainfall		Average Total Run-off (4) MCM	Average Run-off Coefficient (6) = (4) / (3)	station
		Rainfall (2) mm	Volume (3) MCM			
Kuae Yai River	11, 184	960	10, 786. 6	4, 406. 9	0. 41	K 20
"	"	"	"	"	"	"
Kuae Noi River	7, 008	1, 500	10, 512. 0	6, 500. 5	0. 62	K 10
"	"	"	"	"	"	"
Remaining Area	8, 257	1, 000	8, 257. 0	409. 5	0. 46	
"	"	"	MCM	MCM		
Maeklong River	26, 449	1, 115	29, 505. 6	11, 816. 9	0. 38	K 11

Note: Those value are estimated by observed data  
in 1967~1975 in Hydrology Division of RID.

Table H-4 Maximum Total Run-off of month in year

Items	unit m <sup>3</sup> /day					
	K 20 (Quae Yai R.)		K 10 (Quae Noi R.)		K 11 (Maeklong R.)	
Year	Run-off	month	Run-off	month	Run-off	month
1967	10,284	Aug.	25,910	Aug.	32,818	Aug.
1968	9,603	Aug.	18,680	Aug.	25,881	Aug.
1969	15,068	Aug.	33,578	Aug.	47,440	Aug.
1970	8,765	Oct.	13,198	Sep.	23,647	Sep.
1971	8,080	July	19,022	July	25,868	July
1972	16,386	Sept.	87,868	July	42,999	July
1978	12,962	Sept.	19,498	Sep.	31,228	Sep.
1974	15,880	Oct.	29,754	Aug.	42,859	Aug.
1975	12,477	Oct.	15,018	Aug.	25,886	Oct.

Table H-5 Peak discharge in year

Items	unit m <sup>3</sup> /sec					
	K 20 (Quae Yai R.)		K 10 (Quae Noi R.)		K 11 (Maeklong R.)	
Year	Discharge	Date	Discharge	Date	Discharge	Date
1967	591	21/Aug.	1,668	20/Aug.	1,805	22/Aug.
1968	614	11/Aug.	1,094	17/Aug.	1,476	18/Aug.
1969	987	11/Aug.	2,854	11/Aug.	2,822	12/Aug.
1970	470	27/Aug.	1,165	18/Aug.	1,839	19/Aug.
1971	848	26/July	1,859	28/July	2,298	29/July
1972	1,850	20/Sept.	3,026	17/July	2,983	19/July
1973	900	26/Sept.	1,728	20/June	1,952	21/June
1974	1,784	14/Oct.	3,250	21/Aug.	3,561	21/Aug.
1975	748	17/Oct.	1,005	16/Aug.	1,449	17/Aug.

Fig. II-1

MONTHLY MEAN DISCHARGE

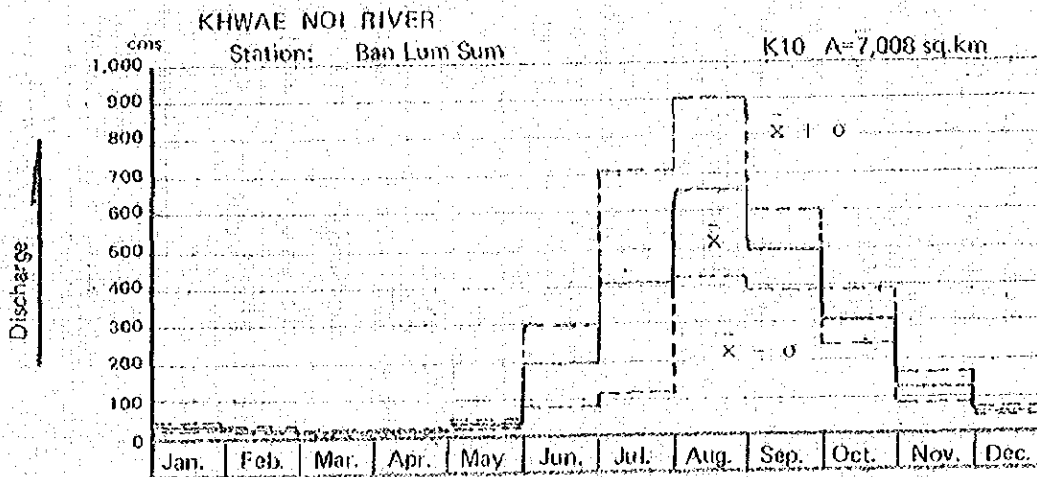
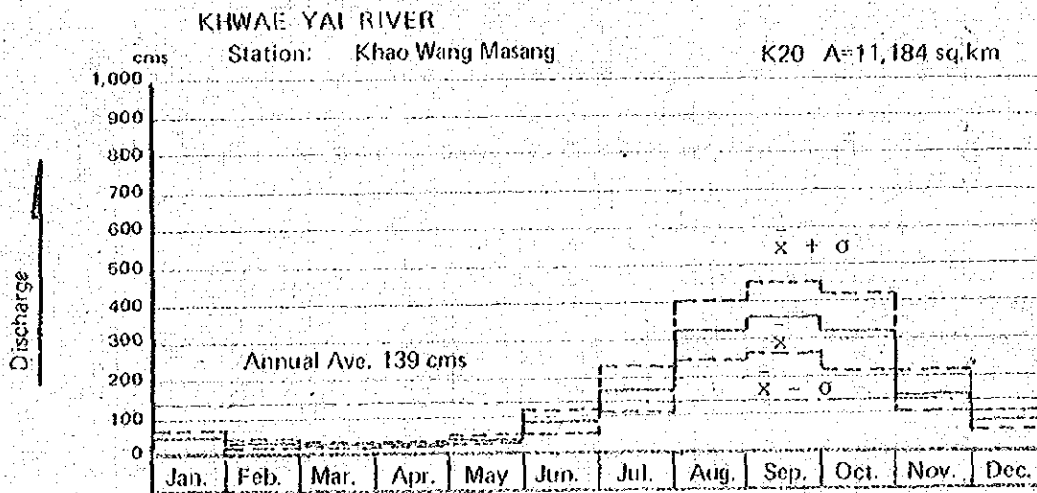
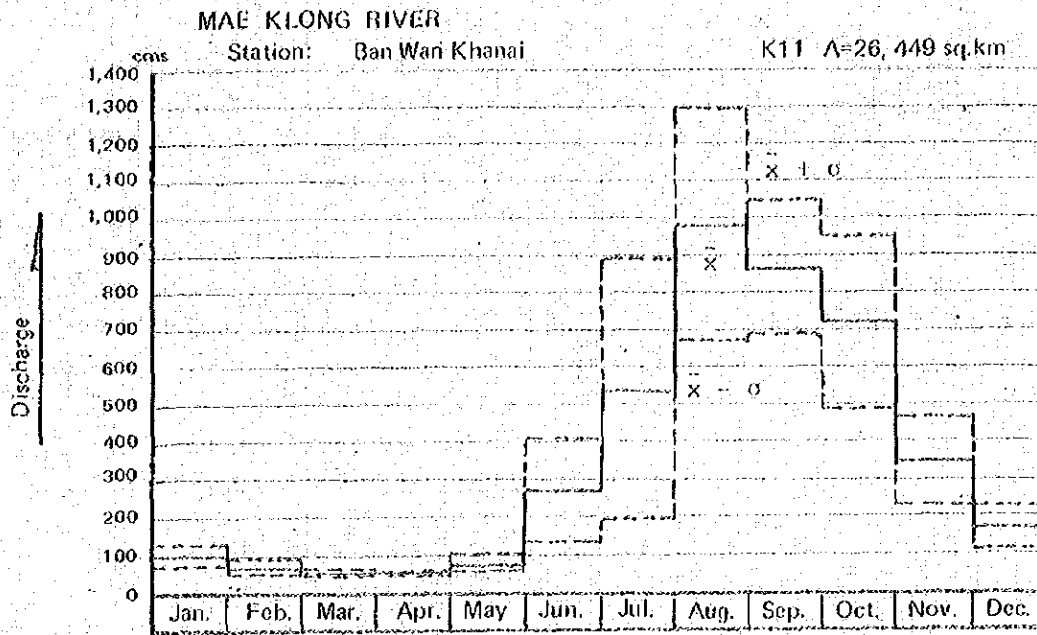


Table H-6 Quality of Water of the Main River in Thailand; Annual Average

(ppm)

River	Sampling Sites	Ca	Mg	Na	K	HCO <sub>3</sub>	SO <sub>4</sub>	Cl	SiO <sub>2</sub>	Residue on Evapo matter	Turbidity	PH	Hardness	
Khorat														
Maekong	Nong Kai	31.1	5.7	7.7	1.6	115.6	14.7	6.2	15.0	139.2	174.1	134.5	6.9	101.0
	Mukdahan	26.8	4.9	7.5	1.4	100.3	12.2	6.6	13.8	124.3	99.9	57.1	6.9	87.3
Chi	Khonkaen	21.1	4.0	57.1	3.9	69.7	5.2	94.5	10.1	244.7	60.5	89.2	6.7	69.0
Muz	Ubon Ratchathani	10.9	2.3	40.0	2.8	42.4	2.0	81.6	10.8	165.2	46.6	80.6	6.4	36.8
Northern	Valleys													
Ping	Chiang Mai	23.1	3.8	3.9	2.7	102.1	0.7	0.5	23.6	108.6	103.1	80.6	6.7	73.5
Wang	Lampang	28.3	4.0	5.2	3.6	119.0	1.7	0.8	22.0	125.8	228.9	327.5	6.9	87.5
Yom	Sukhothai	31.6	6.0	7.9	2.8	140.8	3.2	0.6	21.1	148.4	296.8	255.0	6.8	103.7
Nan	Nan	25.3	3.5	5.8	1.1	105.5	0.3	1.5	20.3	110.8	120.2	195.2	6.9	77.7
Central	Valley													
Chao Phraya	Uthai Thani	13.3	2.7	8.8	4.4	71.6	0.1	6.1	18.2	94.7	50.0	40.3	6.8	44.4
	Ayuthaya	22.5	3.9	8.4	3.2	99.7	1.2	7.5	18.3	119.8	192.1	177.6	6.7	72.2
Pasak	Saraburi	46.8	4.9	6.7	2.9	184.6	0.3	8.9	19.0	182.6	65.9	32.8	6.9	137.0
Maeklong	Ban Pong	37.7	8.6	3.0	1.9	162.1	0.2	2.1	14.1	150.1	56.9	17.4	7.0	129.5
Thailand	Average 1	19.8	3.7	10.7	2.5	82.6	3.3	12.7	16.0	115.2	112.0	111.6	6.6	64.7
Japan	Average 2	8.8	1.9	6.7	1.2	31.0	10.6	5.8	19.0	74.8	29.2	—	—	—
World	Average 3	20.4	3.4	5.8	2.1	35.2	12.1	5.7	11.7	—	—	—	—	—

1 Annual average for 30 Sampling Sites.

2 Average of 225 River of Japan (Kobayashi J: Nogaku-kenkyu Vol. 48 #2, 1961)

3 Cited from Kobayashi J.: Nogaku-kenkyu Vol. 48 #2, 1961 (Originally from Clarke, F.W., Date of Geochemistry, 1934) & Cited from Kobayashi J.: Nogaku-kenkyu, Vol. 46 #2, 1958

Table I-1 Irrigated Area (1974~1976) on  
Vajiralongkron Dam at stage I

Year	Irrigable Area Rai	Irrigated Area					
		Wet Season			Dry Season		
		Acreage Rai	Water Volume MCM	mm	Acreage Rai	Water Volume CMC	mm
1974	1,075,600 (172,096 <sup>ha</sup> )	618,566 (82,971 <sup>ha</sup> )	298.91	360	156,778 (25,086 <sup>ha</sup> )	65.70	260
Percentage	100 %	48 %			15 %		
1975	1,075,600 (172,098 <sup>ha</sup> )	617,202 (82,752 <sup>ha</sup> )	453.66	560	166,179 (26,689 <sup>ha</sup> )	135.20	510
Percentage	100 %	48 %			15 %		
1976	1,075,600 (172,096 <sup>ha</sup> )	630,370 (84,869 <sup>ha</sup> )	648.39	650	191,400 (80,624 <sup>ha</sup> )	128.42	400
Percentage	100 %	49 %			18 %		

Fig. I-1. Diagram on Calculation of Water Requirement

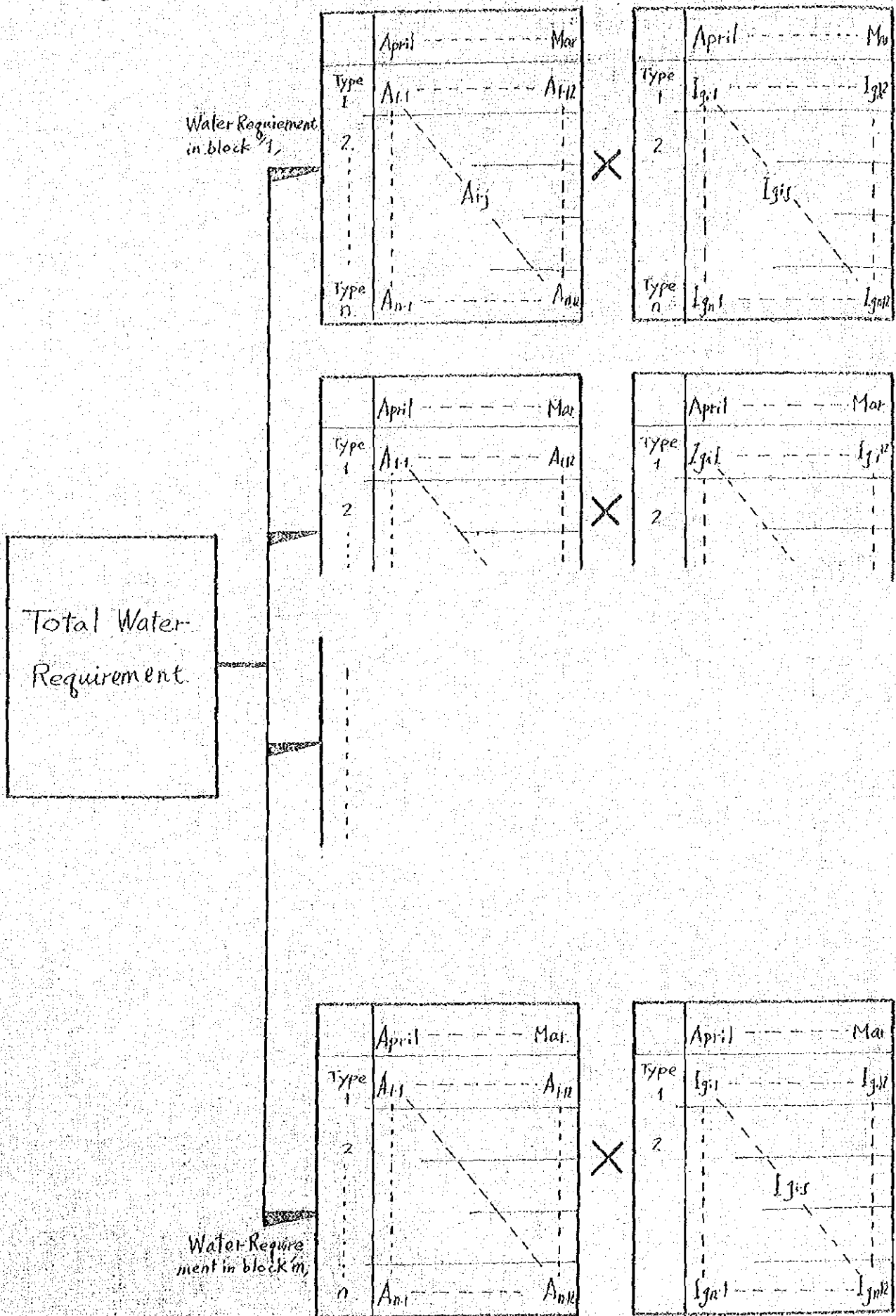


Fig. I-2. Relationship on Water Supply, Water Loss, and Water Shortage

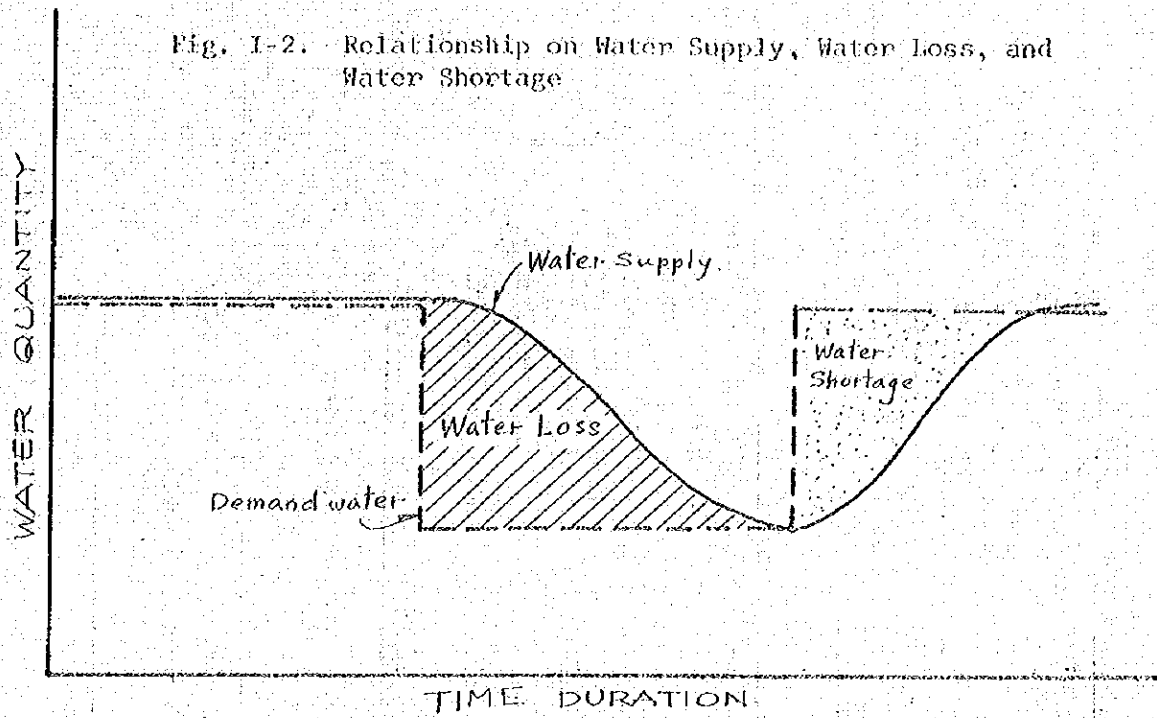
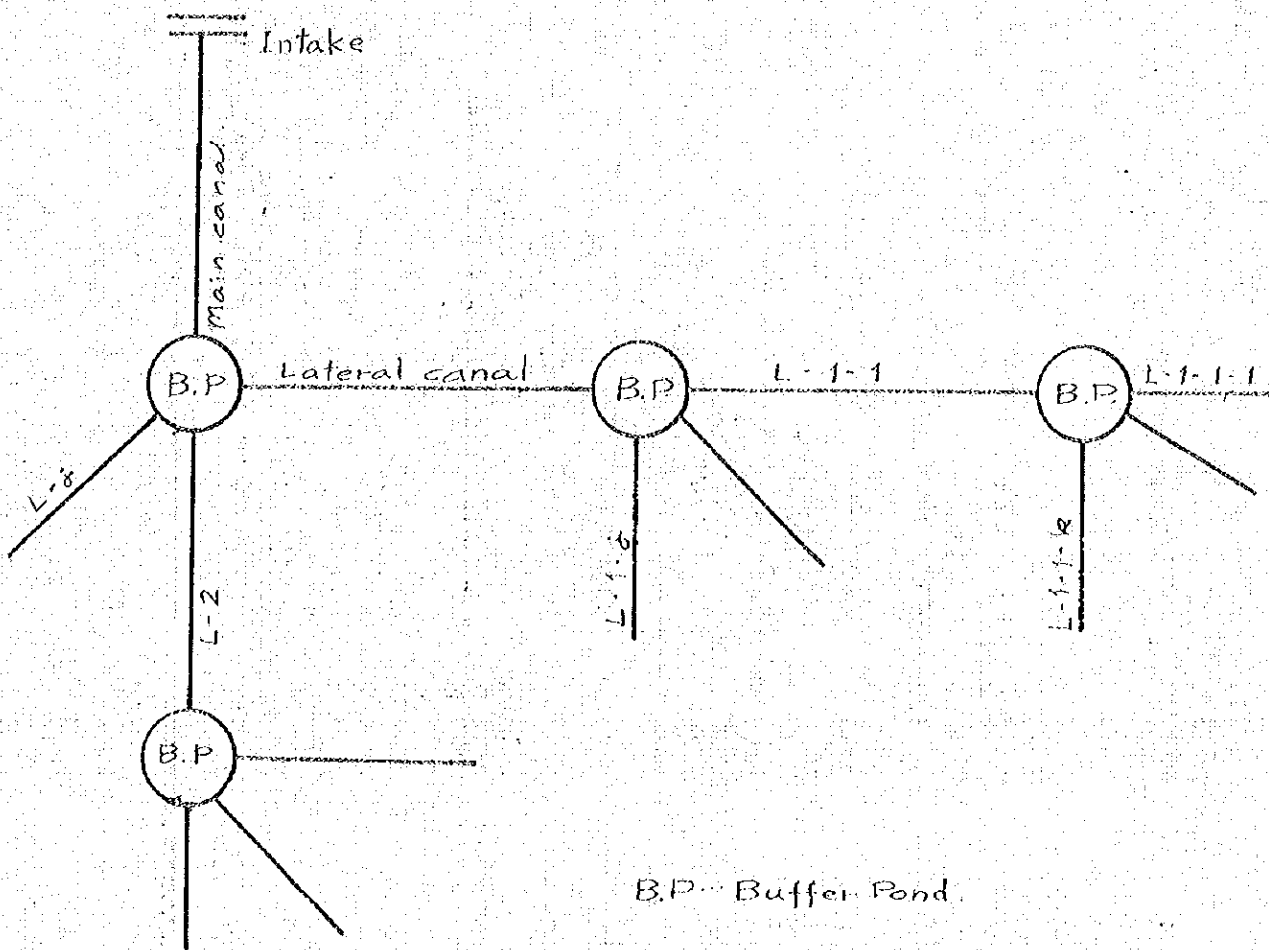
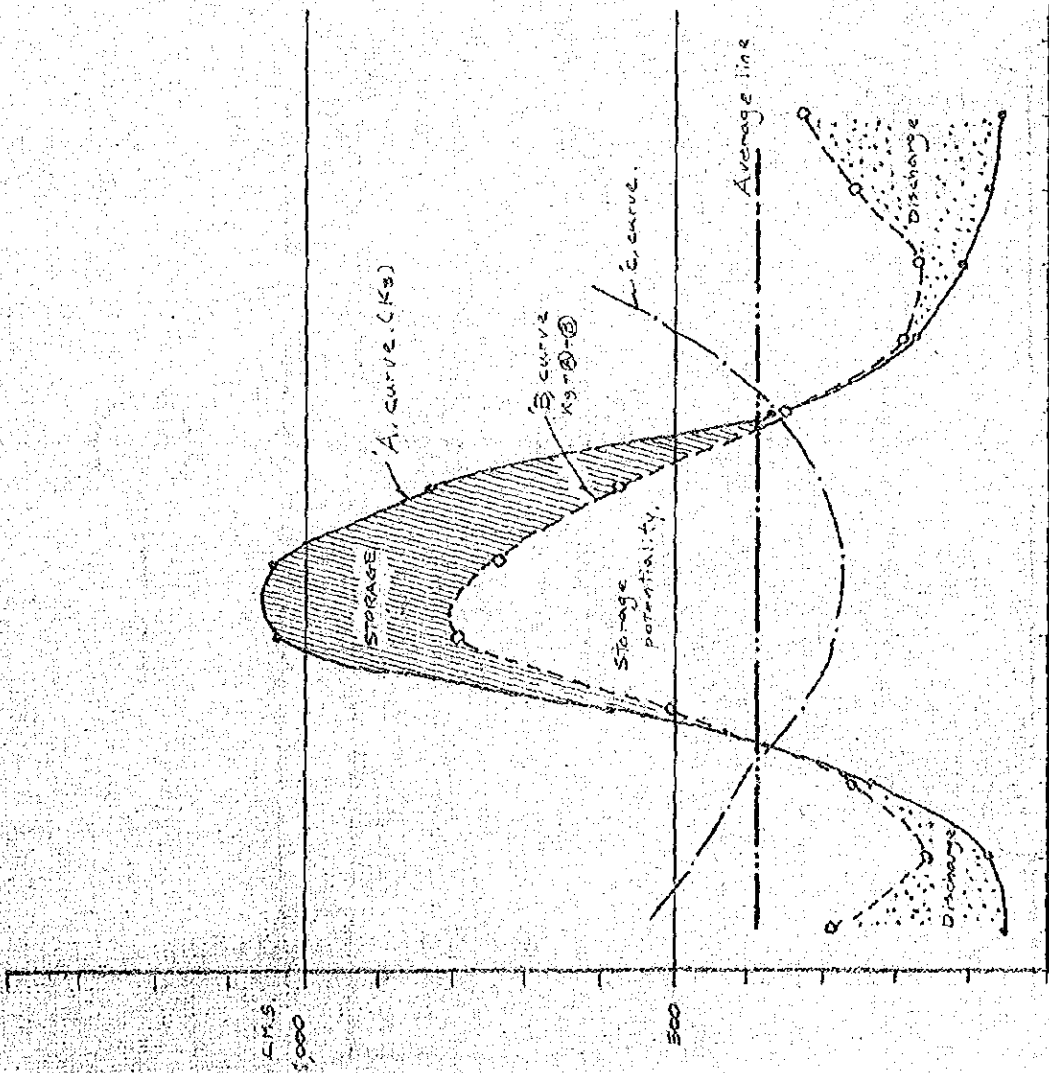


Fig. I-3. Water Flow Between Canal and Buffer Pond



B.P. Buffer Pond.

Fig. I-4-1. Relationship on Storage Volume, Discharge Volume, and Storage Potentiality in Maeklong River



O STORAGE VOLUME

Jul.	508	- 509	= 79
Aug.	1039	- 795	= 244
Sep.	1043	- 730	= 305
Oct.	035	- 575	= 260
Total	.....		888 (2300 M.C.M.)

O DISCHARGE VOLUME

Apr.	60	- 291	= -231
May	86	- 159	= -73
June	239	- 266	= -26
Dec.	178	- 188	= -10
Jan.	112	- 170	= -58
Feb.	02	- 255	= -173
Mar.	64	- 327	= -263
Total	.....		-834

O STORAGE POTENTIALITY

July	509	- 390	= 119
Aug.	795	- 390	= 405
Sep.	730	- 390	= 340
Oct.	575	- 390	= 185
Total	.....		1057 2700 M.C.M.

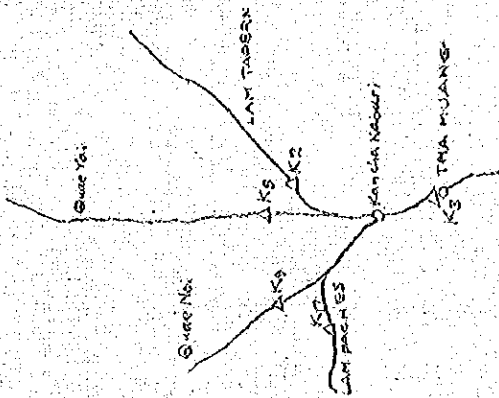
Apr. May June July Aug. Sep. Oct. Nov. Dec. Jan. Feb. Mar.



Table I-4-2 Calculation on Fig. I-4-1.

	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
K <sub>6</sub>	26	41	75	160	323	390	383	141	72	47	35	27
K <sub>9</sub>	24	36	169	412	615	612	359	119	66	40	29	22
K <sub>3</sub>	60	86	239	598	1039	1043	835	372	178	112	82	64
(A)												
K <sub>3</sub> - (K <sub>6</sub> - K <sub>9</sub> )	10	9	-5	16	101	41	93	111	40	25	18	13
" Power												
Discharge at	257	114	102	81	79	85	123	120	84	105	208	290
(C)												
K <sub>9</sub> + (A) + (B)	291	159	266	509	795	730	575	350	188	170	255	327
(C) - 50	241	119	216	459	745	680	525	300	138	120	205	277

50 cms from otherwise.



Location of Water Gauge.

- \* Data by Feasibility study, 2nd Development (R.I.D) 1968.
- \* Feasibility Report by JICA, 1976.

Table D-1. Progress of Construction Drainage Canal

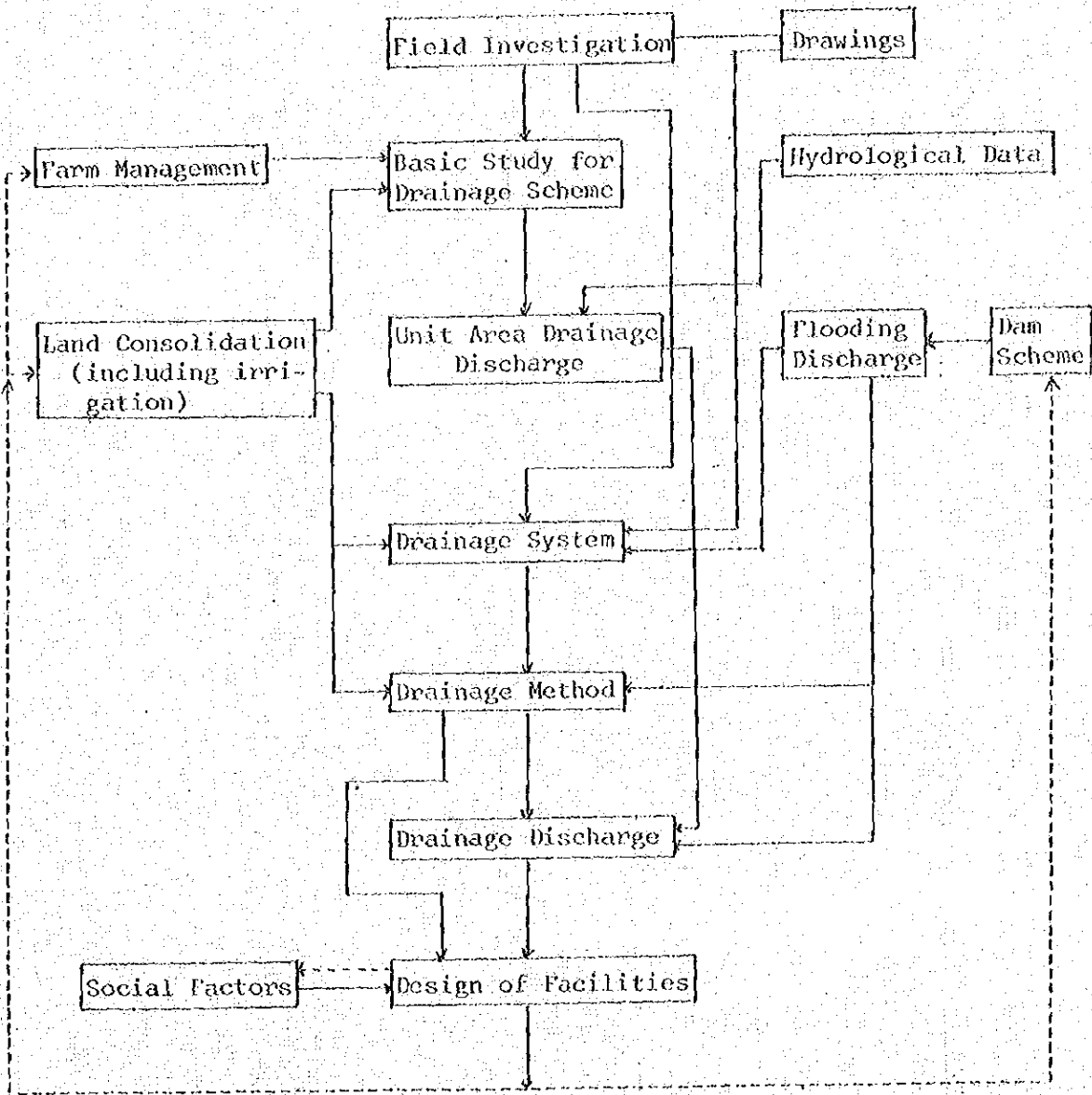
Name of Sub-Project	Planning Stage		Progress of Const'n.		Remarks
	Length (km)	C. Cost (B'000)	Length (km)	C. Cost (B'000)	
Stage I - L.B.	782	*120,000	300 (38.4)	26,370 (22.0)	
Stage II, U.R.B.	160	24,550	55.5 (34.7)	5,950 (24.2)	
Stage II, L.R.B.	180	27,600	0	0	
Stage II, U.T.	678	104,000	0	0	
Sub-total	1,800	276,150	355.5 (19.8)	32,320 (18.0)	
L.A.		250,000		1,836,777 (50.8)	

Note: ( ) : Percentage  
 L.B. : Left Bank  
 U.R.B. : Upper Right Bank  
 L.R.B. : Lower Right Bank  
 U.T. : Upper Thasan  
 L.A. : Land Acquisition  
 \* : Cost Estimate done three years ago.

Table D-2. Drainage Canal for Purpose of Irrigation  
in high water level of the Mae Klong River

Name of Canal	Klong The Sarn	Klong The Ruu	Klong Tha Pa	Klong Ta Knot	Klong Bang Pa
Location	The Sarn - Ben Bang Pla	The Ruu - Wat Bang Phra	Tha Pa - Ban Khung Ta Kao	Ta Knot - Damroen Seduak	Pan Prati Klong - Ban Bang Pa
Outlet	Nakhon Chaisi	"	"	Damroen Seduak	Mae Klong R.
Length	65,740 m	70,800 m	50,988 m	34,500 m (canal)	22,700 m
Elevation B.P. (MSL)	+9,800 m -1,490 m	+10,340 m -1,250 m	+1,250 m -1,495 m	+2,890 m -0.820 m	+1,218 m -0.820 m
Average Slope	1/5,820	1/6,110	1/18,540	1/9,300	1/11,140
River B.P.	15.0 m	15.0 m	6.0 m	5.0 m	8.0 m
Width E.P.	20.0 m	20.0 m	8.0 m	8.0 m	10.0 m
Design B.P.	51.92 m <sup>3</sup> /s	51.92 m <sup>3</sup> /s	21.0 m <sup>3</sup> /s	29.69 m <sup>3</sup> /s	5.5 m <sup>3</sup> /s
Discharge E.P.	53.95 "	53.96 "	23.48 "	28.03 "	14.01 "
Present Possible Capacity	(84.0 m <sup>3</sup> /s)	(28.0 m <sup>3</sup> /s)	(65.0 m <sup>3</sup> /s)	(30.0 m <sup>3</sup> /s)	(50.0 m <sup>3</sup> /s)
Constructed Canal	1,220 m	0 m	100 m	3,600 m	1,300 m
Construction Cost	8,950	7,620	4,000	3,600	650
Excavation	3,500	6,500	3,200	1,400	250
Structures	12,450	14,120	7,200	5,000	900
Total	24,900	28,240	14,400	14,000	1,800
m/฿	189	199	141	145	40

Fig. D-1 Flow chart on M/P study of drainage system



Note:-----> Field back

Fig. D-2 Progress chart on study of drainage system

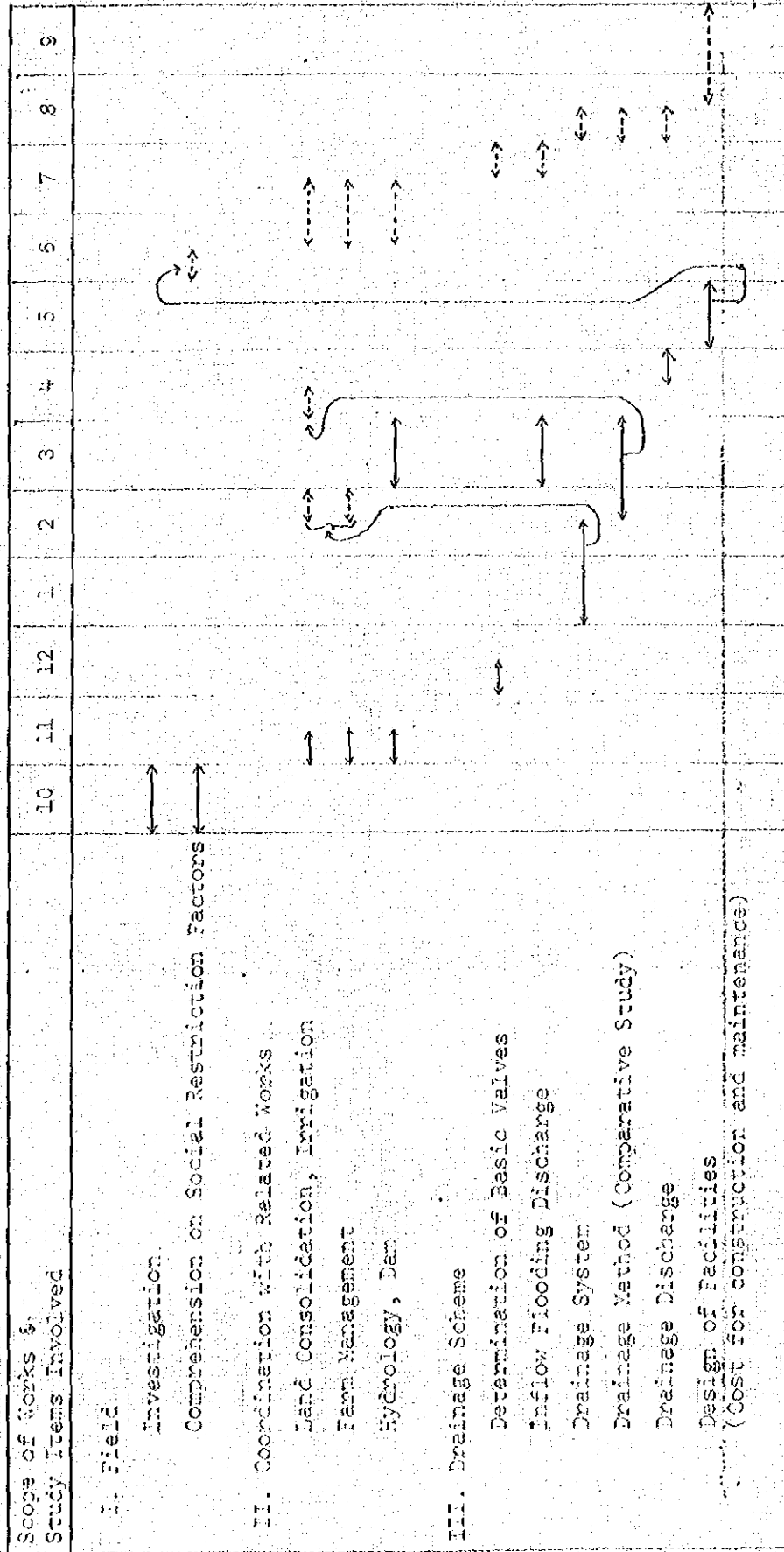


Fig. D-3. Canal System on Damnoen Saduak Canal.

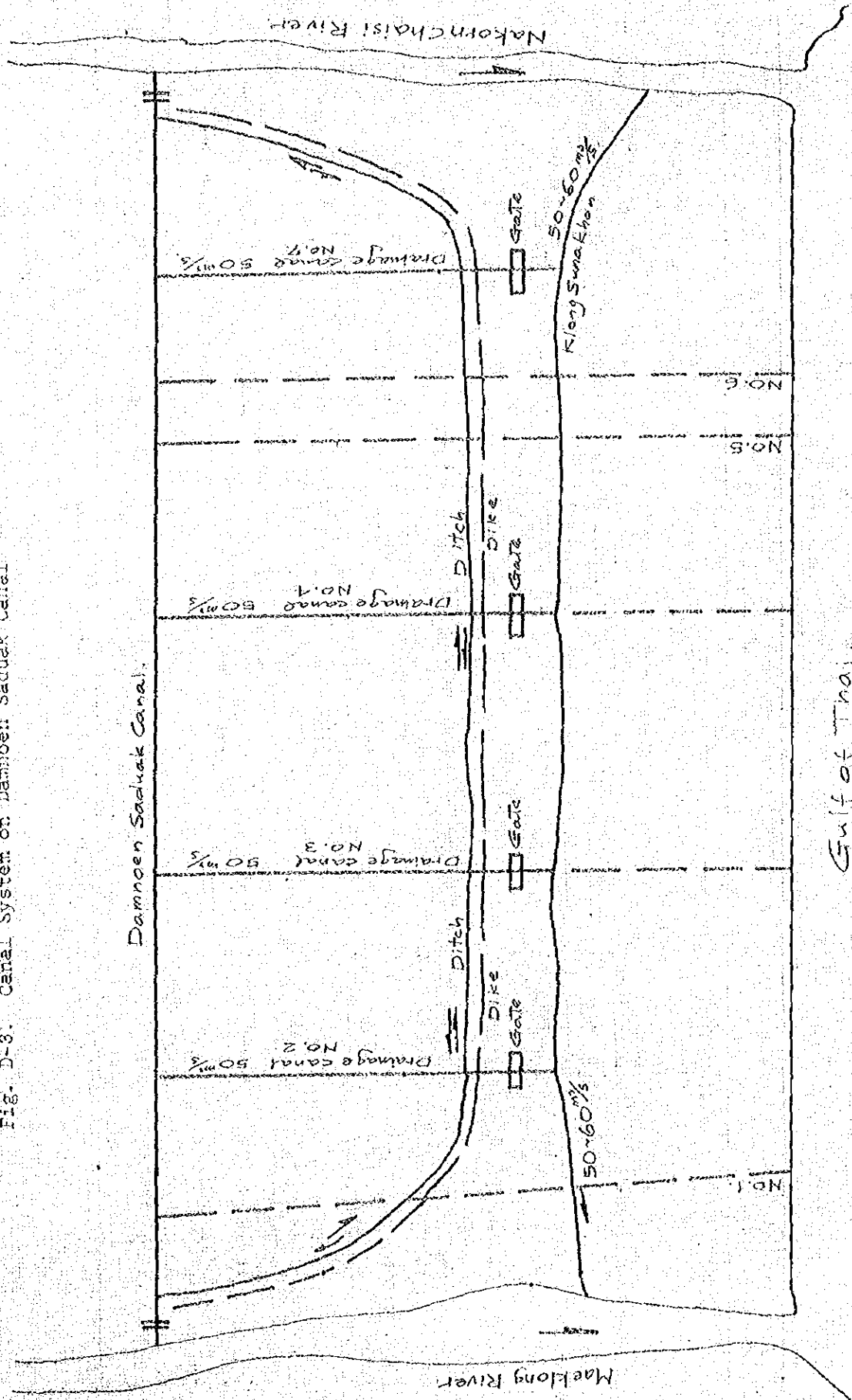
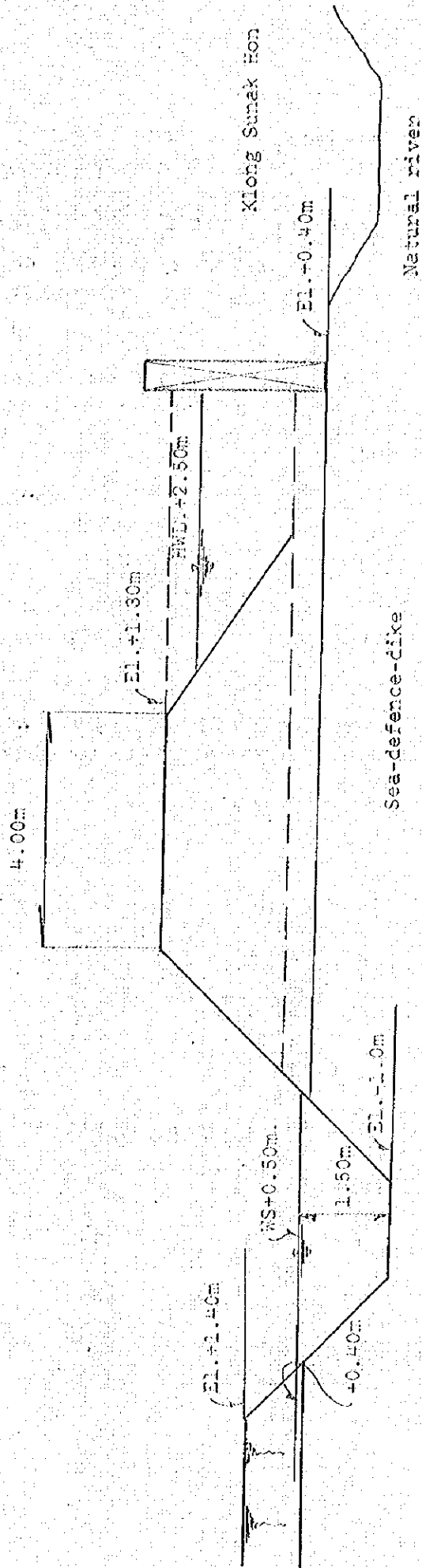


Fig. 2-4. Typical Section on Sea-Defense Dike



L-1 Progress on Land Consolidation Project,  
in Thailand

unit : rai ( ) ha

	1969	1970	1971	1972	1973	1974	1975	1976	Total	1977	1978
Chanasutr	(160) 1,000	--	(490) 3,062	(659) 4,118	--	(1,427) 8,920	(768) 4,900	(1,168) 7,900	(4,672) 29,200	(2,882) 17,700	(20,608) 128,800
Sapphaya	--	--	(124) 778	(162) 1,010	(852) 2,200	(213) 1,888	(644) 3,400	(890) 2,440	(1,785) 11,150	(829) 5,174	--
Boromdhart	--	--	--	--	--	--	(1,136) 2,100	(1,552) 9,700	(2,688) 16,800	(3,680) 23,000	(11,833) 73,958
Nong Wai	--	--	--	--	--	--	--	(160) 1,000	(160) 1,000	(480) 3,000	(11,360) 71,000
<b>TOTAL</b>	(160) 1,000	--	(618) 3,885	(821) 5,128	(852) 2,200	(1,640) 10,258	(2,448) 15,800	(3,270) 20,440	(9,805) 58,155	(7,821) 48,874	(43,801) 273,758

Table L-2. Construction Cost of Land  
Consolidation Project

Unit B/rai ( ) Y/10 a

Project Item	NONG WAI	CHANASUTR	BOROMDHART	SAPPHAYA
STAKING OUT SURVEYING	--	( 469 ) 66	( 425 ) 50	( 608 ) 60
LAND CLEARING	( 588 ) 70	( 251 ) 30	( 268 ) 81	( 608 ) 60
LAND LEVELLING	( 7,278 ) 868	( 5,770 ) 689	( 3,698 ) 429	( 5,909 ) 825
FARM ROAD	( 2,154 ) 257	( 3,861 ) 461	( 3,619 ) 482	( 7,646 ) 918
IRRIGATION DITCH	( 2,116 ) 252	( 869 ) 44	( 850 ) 41	( 1,206 ) 144
DRAINAGE DITCH	( 459 ) 54	( 810 ) 87	( 882 ) 89	( 1,742 ) 208
STRUCURE	( 2,671 ) 818	--	( 550 ) 65	( 2,060 ) 246
C. H. O	--	( 1,106 ) 182	( 278 ) 82	--
ADMINISTRATION	( 779 ) 98	( 729 ) 87	( 1,625 ) 198	--
<b>TOTAL</b>	(16,088 ) 1,912 B	(12,804 ) 1,586 B	(11,080 ) 1,812 B	(20,569 ) 2,466 B



Table L-3 Density of Road, Farm Ditch and Drain

	LENGTH OF ROAD	LENGTH OF FARM DITCH	LENGTH OF DRAIN	REMARK
BOROMDHART	( 89.4 ) 6.80 <sup>M</sup>	( 37.5 ) 6.00 <sup>M</sup>	( 32.5 ) 5.20 <sup>M</sup>	( ) ha オランダ方式
NONG WAI	( 51.1 ) 8.17 <sup>M</sup>	( 57.7 ) 9.23 <sup>M</sup>	( 37.9 ) 6.06 <sup>M</sup>	
SUPPHAYA	( 60.9 ) 9.75 <sup>M</sup>	( 56.8 ) 9.00 <sup>M</sup>	( 46.10 ) 7.38 <sup>M</sup>	台湾方式

Table L-4 Average quantity of Earth moving and Moving distance

	SAMPLE AREA	AVERAGE QUANTITY	AVERAGE MOVING DISTANCE
CHANASUTR	88A -- 1	(27.95) 44.78 <sup>M<sup>3</sup></sup>	52.06 <sup>M</sup>
	88A -- 2	(20.57) 32.92 <sup>M<sup>3</sup></sup>	85.77 <sup>M</sup>
	88A -- 3	(22.96) 36.72 <sup>M<sup>3</sup></sup>	50.94 <sup>M</sup>
	88A -- 4	(28.08) 44.98 <sup>M<sup>3</sup></sup>	50.11 <sup>M</sup>
	AVERAGE	(24.88) 39.82 <sup>M<sup>3</sup></sup>	47.37 <sup>M</sup>
BOROMDHART	722 -- 1	(14.35) 22.97 <sup>M<sup>3</sup></sup>	35.47 <sup>M</sup>
	722 -- 2	(13.51) 21.62 <sup>M<sup>3</sup></sup>	33.50 <sup>M</sup>
	722 -- 3	(33.69) 58.91 <sup>M<sup>3</sup></sup>	30.10 <sup>M</sup>
	AVERAGE	(20.52) 32.83 <sup>M<sup>3</sup></sup>	38.02 <sup>M</sup>

Table SI-1 Progress of Irrigation canal length and construction cost on the Greater MaeKlong Project  
Greater MaeKlong Project Cost and Progress

Irrigation Canal

	Total		To be completed in 1977		Progress		Remarks
	Length km	Cost x10 <sup>3</sup> Baht	Length km	Cost x10 <sup>3</sup> Baht	Length %	Costs %	
Stage I Left Bank	332.5	1,198,000	532.5	1,198,000	100	100	
Stage II Upper Right Bank	328.4	360,000	297.6	209,371	91.2	59/2	
Stage II Lower Right Bank	207.4	350,000	67.0	101,041	32.3	28.9	
Stage II Upper Tha San River	550.0	1,230,000	21.5	12,455	3.9	1.0	
Total	<u>1,618.3</u>	<u>3,138,000</u>	<u>918.6</u>	<u>1,520,867</u>	<u>56.8</u>	<u>48.5</u>	

Table SI-2 Progress of Drainage Canal length and construction cost on the Greater MaeKlong Project  
Greater MaeKlong Project Cost and Progress

Drainage Canal

	Total		To be completed in 1977		Progress		Remarks
	Length km	Cost x10 <sup>3</sup> Baht	Length km	Cost x10 <sup>3</sup> Baht	Length %	Costs %	
Stage I Left Bank	782.0	120,000	300.0	26,370	38.4	22.0	
Stage II Upper Right Bank	160.0	24,550	55.5	5,950	34.7	24.2	
Stage II Lower Right Bank	180.0	27,600	0	0	0	0	
Stage II Upper Tha San River	678.0	104,000	0	0	0	0	
Total	<u>1,800.0</u>	<u>276,150</u>	<u>355.5</u>	<u>32,320</u>	<u>19.8</u>	<u>11.7</u>	

## General Description of Banchaonon Dam Project

LOCATION : Ban Chao Nensite on the Quae Yai River

CATCHMENT AREA : 10,980 km<sup>2</sup>

ANNUAL INFLOW : 4,600 MCM

### FLOOD

Probable max. flood : 7,100 m<sup>3</sup>/s

### RESERVOIR

Normal high water level : 1,800 m  
Water surface area : 41.9 km<sup>2</sup>  
Total storage capacity : 17,745 MCM  
Effective storage capacity : 7,470 MCM  
Available drawdown : 21 m  
Max. water surface level : 182.4 m

### DAM

Type : Rock fill with center impervious core  
Geology of dam site : Quartzite, Sandstone and Limestone  
Elevation of crest : 185.0 m  
Height : 135.0 m  
Length of crest : 610.0 m  
Volume : 12,300,000 m<sup>3</sup>

### SPILOWAY

Type : Open channel chute type  
Capacity : 2,420 m<sup>3</sup>/s  
Gate : Radial gate 10m x 9.5m x 3

### OUTLET

Type : Tunnel type (to be converted from diversion tunnel)  
Gate : Side gate 2.60m x 2.20m  
Howel-Bunger valve 260φ  
Capacity : 150 m<sup>3</sup>/s

### INTAKE

Type : Reinforced concrete structure  
Gate : Roller gate 6.00m x 800m  
7.00m x 930m

### PENSTOCK

Type : Welded steel, ring girder type

Stage	Number of line	Length	Diameter
1st	3	290 m	6.00 m - 4.50 m
2nd	2	299 m	7.00 m - 5.00 m

### POWERHOUSE

Type : Reinforced concrete building

### POWER PRODUCTION

#### Max discharge

1st stage 133 m<sup>3</sup>/s x 3 units = 399 m<sup>3</sup>/s

2nd stage 199.5 m<sup>3</sup>/s x 2 units = 399 m<sup>3</sup>/s

Total 5 units 798 m<sup>3</sup>/s

Rated head : 105 m

#### Max output

1st stage : 360,000 kw

2nd stage : 360,000 kw

Total 720,000 kw

Annual energy production 1,160 x 10<sup>6</sup> kwh

### OUTLINE OF ELECTRICAL EQUIPMENT

#### (1st stage)

##### Turbine

Type : Vertical shaft, Francis turbine  
Rated output : 125,000 kw  
Revolving speed : 167 rpm

##### Generator

Type : 3-phase AC synchronous generator  
vertical shaft, rotating field  
water air cooled  
Rated output : 140,000 KVA  
Voltage : 16.5 KV  
Frequency : 50 HZ

Transformer

Type : Outdoor, 3 phase, forced oil, forced  
air cooled type  
Rated capacity : 140,000 KVA  
Voltage : 16.5/230 KV

Table A-1

## Planted Area of Major Crops in Thailand

Unit : 1000 ha

	Principal Upland Food Crops						Principal Fiber Crops		Principal Oil Seeds		Total	Rubber
	Rice	Maize	Mung Bean	Tapioca (Cassava)	Sugar Cane	Sub-total	Fiber Crops	Oil Seeds	Fiber Crops	Oil Seeds		
1962/63	6,587	328	50	123	102	603	211	391	211	391	7,792	748
64	6,597	418	101	140	149	808	280	405	280	405	8,090	824
65	6,540	552	101	105	162	920	339	420	339	420	8,201	935
66	6,554	577	120	102	141	940	516	428	516	428	9,378	941
67	7,433	653	136	180	124	1,043	667	523	667	523	9,566	983
68	6,658	744	133	141	150	1,168	512	526	512	526	8,864	1,182
69	7,228	762	200	171	182	1,315	439	525	439	525	9,507	1,212
70	7,584	680	203	191	118	1,197	521	511	521	511	9,813	1,244
71	7,494	829	239	224	188	1,430	503	554	503	554	9,981	1,276
72	7,527	1,019	148	221	188	1,526	558	571	558	571	10,182	1,308
73	7,349	997	205	335	181	1,718	582	615	582	615	10,264	1,340
74	8,366	1,148	233	428	259	2,068	512	679	512	679	11,622	1,372
75	7,982	1,240	207	488	310	2,245	503	688	503	688	11,418	1,406
76	8,896	1,312	164	492	391	2,359	403	671	403	671	12,329	1,406

Source : Agricultural Statistics of Thailand, 1975/76.

Note : 1/ : Fiber crops consist of cotton, kapok, bombax and kenaf.

2/ : Oil seeds consist of castor bear ground nuts, sesame, soy bean and coconuts.

Table A-2

## Area under Rice and Sugar Cane Cultivation by Changwat

Unit : 1000 *ha*

	Kanchana- buri	1949	Changwat					Total	
			Suphanburi	Ratchaburi	Nakhon Pathom	Petchaburi	Samut Songkram	Samut Sakhom	Total
① Total Area		1949	545	512	224	548	41	109	4 022
② Agricultural Land Holding		404	296	180	181	127	28	50	1 216
③ Cultivated Area		201	263	112	170	121	24	47	938
④ Paddy Land Holding		64	242	107	118	74	2	32	684
⑤ Area Planted to Rice		57	242	102	129	67	2	28	627
⑥ Wet Season Rice		56	191	99	74	64	2	21	597
⑦ Dry Season Rice		0.2	50.7	3.4	55.2	3.0	--	7.2	119.7
⑧ Sugar Cane		88	55	33	18	5	--	--	201
⑨ Ratio of Double Cropp- ing of Rice (%)		0.4	21.0	6.3	42.8	4.5	--	25.7	19.1

Source : Agricultural Economic Division, MOAC

Table A-3

## Planted Area and Yield of Rice 1975/76

	Wet Season			Dry Season			Total		
	Planted Area (1000 ha)	Production (1000 tons)	Yield (ton/ha)	Planted Area (1000 ha)	Production (1000 tons)	Yield (ton/ha)	Planted Area (1000 ha)	Production (1000 tons)	Yield (ton/ha)
Kingdom	8,519.0	14,092	1.65	377.3 <sup>1/</sup>	1,208.1	3.20	8,896.3	15,300	1.72
Central Plain	2,275.5	4,207	1.85	133.3 <sup>1/</sup>	440.3	3.30	2,408.8	4,647	1.93
Related Changwat	507.1	1,137.6	2.24	119.8	418.6	3.49	626.8	1,556	2.48
Kanchanaburi	57.0	104.6	1.83	0.19	0.59	3.09	57.2	105	1.84
Suphanburi	190.9	480.2	2.52	50.8	174.5	3.43	241.7	655	2.71
Ratchaburi	99.1	216.2	2.18	3.4	7.9	2.32	102.4	224	2.19
Nakhon Pathom	73.6	178.6	2.43	55.2	208.6	3.78	128.8	387	3.01
Petchaburi	63.7	113.6	1.79	3.0	9.9	3.31	66.7	124	1.85
Samut Songkram	1.8	3.9	2.18	—	—	—	1.8	4	2.18
Samut Sakhon	21.0	40.5	1.93	7.2	17.1	3.37	28.2	58	2.04

Source : Agricultural Economics Division, MOAC

<sup>1/</sup>: Report on Yield of Dry Season Rice in 1976



Table A-4

Varieties of Non-Citrus Rice in Thailand  
 Recommended by Central Committee of Variety Selection

Year: 1975/76

Name of Variety	Date of Harvesting or Growth period	Height Grain size			Disease & Insect Resistance				Yield kg/Rai	Potentiality kg/Ha	
		(Cm)	T	W	L	(mm)	Blast	Yellow Virus			Bacterial Leaf Blight
<u>Sensitive Varieties</u>											
1. Cow Ruang 88	21 Nov.	140	1.7	2.2	7.3	4.5	Susceptible	S	S	481	2.69
2. Nahng Mon S-4	25 Nov.	140	1.8	2.4	7.7	4.5	S	S	486	2.72	
3. Khao Pakh Mawh 148	3 Dec.	140	1.9	2.5	7.6	8.4	S	MR	415	2.59	
4. Leang Pratew 123	19 Nov.	150	1.8	2.3	7.4	4.5	S	MS	414	2.58	
<u>Non-Sensitive Var.</u>											
1. RD-1 (Luang Tavng x IR-8)	125 days	115	1.8	2.2	7.0	5.0	Resistant	S	S	742	4.638
2. RD-3 (LT x IR-8)	120 ~ 130	110	1.8	2.2	7.2	5.	R	S	667	4.16	
3. RD-5 (Zuang Nahk x Sigadois)	140 ~ 150	135	1.4	2.2	7.15	8.4	MR	MR	568	3.55	
4. RD-7 (C-63 x Cow Ruang 88 x Sigadois)	120 ~ 130	115	1.8	2.3	7.3	4.5	MR	R	672	4.20	
5. RD-9 (CNT1876 x EK1252 x RD-2)	115 ~ 125	110	1.8	2.3	7.3	5	MR	S	657	4.10	
6. RD11 (IR661 x Khaid Dawk - Mail 105)	125 ~ 130	114	-	-	7.6	5	MR	-	556	3.47	

Note: Blast resistance - 1 - 4 Resistant, 4 - 5 Medium, 5 - 7 Sensitive.

Table A-5. For Central plain only

Recommendation of Fertilizer Application for Paddy in Thailand.  
 (By Agricultural Extension Division, Ministry of Agriculture & Cooperative.) Year: 1977

Varietal Series	Basal application		Top-Dressing (Kgs/			
	Ammophos (formula)	Rate Kgs/Pai	1st Top-Dressing (Kind of Nitrogenous) ( $(NH_4)_2SO_4$ 20% $NH_4Cl$ 25%)	Urea (Kind of Nitrogenous) 45%	( $(NH_4)_2SO_4$ 20% $NH_4Cl$ 25%)	2nd Top-Dressing (Kind of Nitrogenous) Urea 45%
<u>Non-Sensitive Varieties</u> (High Yielding Variety)						
RD - 1	16 - 20 - 0	20	14	7	24	11
RD - 3	18 - 22 - 0	18	14	7	24	11
RD - 5	20 - 20 - 0	20	10	5	20	9
RD - 9	16 - 16 - 8	25	10	5	20	9
RD - 11						
<u>Sensitive Varieties</u> (Improved & Local Variety)						
Cox Duang 88	16 - 20 - 0	20	4	2	14	7
Niang Mon S - 4	18 - 22 - 0	18	4	2	14	7
Khao Paek Nakh 148	20 - 20 - 0	20	-	-	10	5
Leang Prater 123	16 - 16 - 8	25	-	-	10	5
Bailod etc.						

Table A-6. Sugar Cane: Planted Area, Production and Farm Value. 1962 - 1975

Year A.D.	(1)		Production 1,000 tons	Farm Price Baht/tons	Farm Value million baht	Planted Area 1,000ha	Harvested Area 1,000ha	Average Yield 1,000ha
	Planted Area 1,000 rai	Harvested Area 1,000 rai						
1962/63	636	628	3,154	-	-	102	100	31.25
1963/64	932	928	4,733	-	-	149	148	31.88
1964/65	1,014	1,009	5,074	-	-	162	161	31.25
1965/66	883	873	4,480	-	-	141	140	31.88
1966/67	778	771	3,827	-	-	124	123	30.63
1967/68	935	882	4,526	-	-	150	141	30.00
1968/69	1,137	1,124	5,979	109.08	641.8	182	180	32.50
1969/70 (2)	739	-	5,102	114.52	584.3	118	-	43.13
1970/71 (2)	862	-	6,566	107.84	710.2	138	-	47.50
1971/72 (2)	865	-	5,926	109.93	651.5	138	-	42.50
1972/73 (2)	1,133	-	9,513	110.92	1,055.2	191	-	52.50
1973/74 (2)	1,616	-	13,389	131.21	1,750.2	259	-	51.88
1974/75 (2)	1,935	-	14,592	175.78	2,579.6	310	-	46.88
1975/76	2,444	-	19,910	252.08	5,018.9	391	-	50.63
1976/77	1,208(3)	-	-	-	-	193(3)	-	-

Note: (1) From round numbers of planted area on this page

(2) Year 1969 - 1974 The Sugar Institute

(3) Planted area on the related five provinces represents 49% of the whole planted area in the Kingdom in the previous year.

(r) Revised

Table A-7

## Imports : Machinery and Appliances for Agricultural Purposes, 1962-1975

A. D.	Agr. machinery and appliances for preparing and cultivating the soil (1)		Agricultural machinery and appliances, other (2)		(3) Water pumps	
	unit	1,000 baht	unit	1,000 baht	unit	1,000 baht
1962	6,563	14,953	3,594	4,425	11,861	63,232
1963	15,481	19,333	4,374	4,012	19,741	68,552
1964	13,547	20,409	4,073	4,528	26,981	41,288
1965	18,414	19,661	4,266	5,891	39,099	43,791
1966	44,700	26,699	6,173	9,145	60,923	48,620
1967	51,564	23,924	5,001	9,498	82,126	78,281
1968	25,802	20,907	6,641	16,929	151,943	71,262
1969	33,373	20,420	7,010	12,750	106,666	77,608
1970	16,873	13,877	3,888	10,936	136,686	107,882
1971	18,786	12,279	3,792	15,266	105,109	135,700
1972	18,628	10,246	7,195	12,297	90,092	103,204
1973	24,524	8,997	9,080	24,429	150,095	102,880
1974	55,691	28,205	6,578	33,243	168,524	168,748
1975	2,130	27,175	6,560	72,664	149,021	192,542

(1) Ploughs, harrows, cultivators, seeders and other agricultural machinery and appliances for preparing and cultivating the soil.

(2) Harvesters threshers and hullers, textile separators, sorters and graders, lawn mowers, dairy farm machinery and appliances, incubators and brooders, machine and appliances for sheeting, mixing separating and packing rubber and others.

(3) Water pumps and other pumps for liquid except special pumps for dispensing liquid fuels.

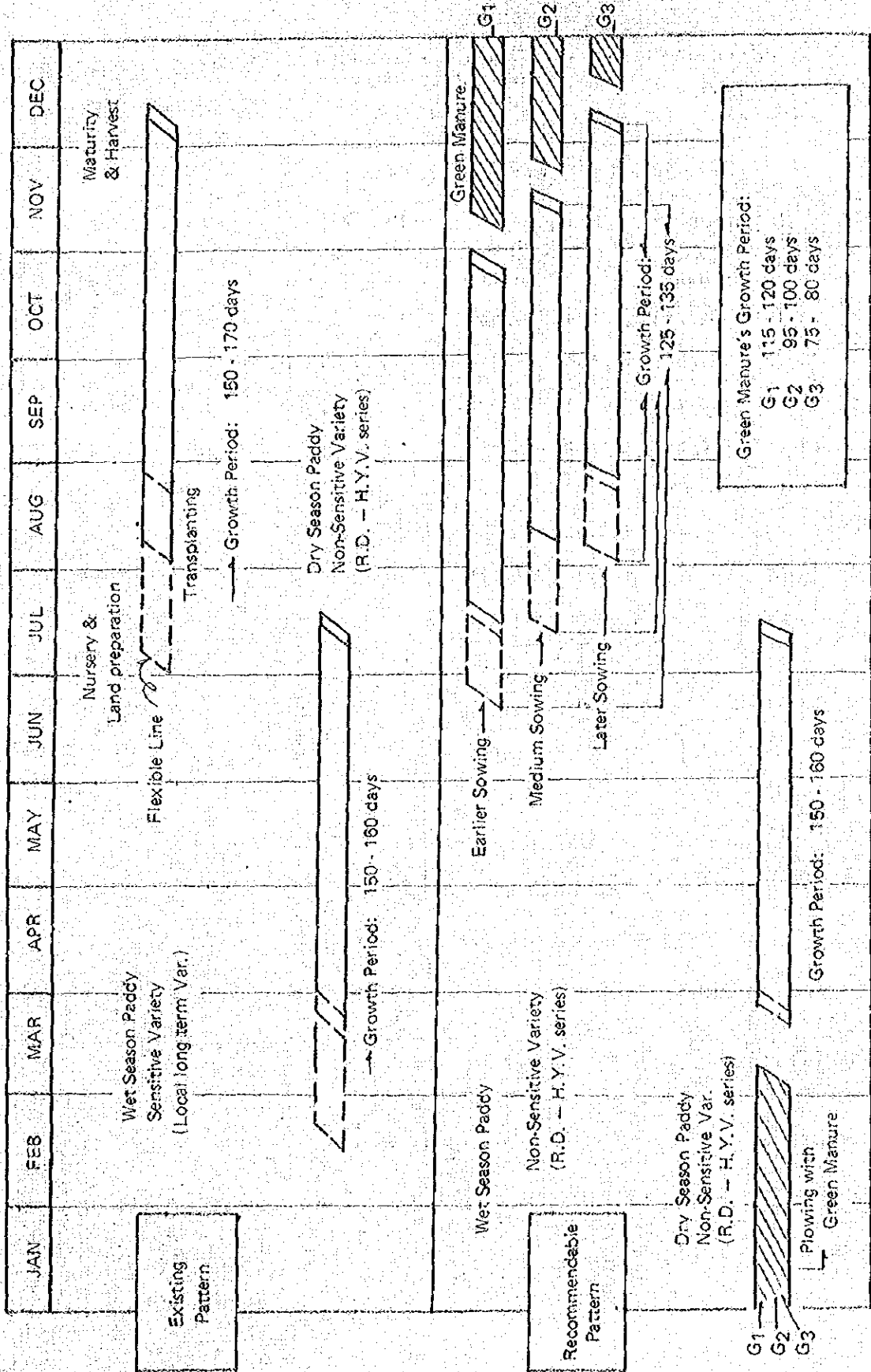
Table A-8

## Imports : Fertilizer, Fungicide and Insecticide, 1962-1975

Year	Fertilizer								Fungicide and insecticide (1)	
	Nitrogen		Phosphate		Potass		Others		tons	1000 Baht
	tons	1000 Baht	tons	1000 Baht	tons	1000 Baht	tons	1000 Baht		
1962	33,164	32,336	21,329	33,954	1,604	1,967	10,370	17,186	3,586	49,698
1963	46,730	44,941	30,608	48,427	2,006	2,451	18,134	30,104	4,782	58,198
1964	30,427	45,718	33,451	66,693	782	1,007	30,307	49,992	5,695	73,170
1965	33,357	46,800	24,099	39,218	2,199	2,802	29,233	56,611	6,747	39,656
1966	51,029	69,984	49,440	86,030	2,119	2,775	33,841	65,434	9,006	208,315
1967	57,485	75,444	39,303	147,033	3,259	4,384	67,397	118,576	11,774	179,592
1968	46,576	73,994	134,294	226,617	3,858	4,653	30,760	137,800	14,136	198,146
1969	25,781	36,649	125,752	191,049	2,750	3,918	111,346	167,827	15,705	230,681
1970	11,812	20,863	79,991	121,380	3,963	5,666	153,843	247,744	11,967	136,584
1971	53,414	79,295	53,262	31,346	4,731	7,662	121,330	202,969	5,992	129,727
1972	39,250	61,465	116,350	202,556	6,403	10,355	225,313	375,332	12,003	224,351
1973	37,655	63,926	70,224	137,197	13,224	31,272	272,612	592,238	14,617	312,010
1974	51,614	157,846	36,009	154,932	10,920	36,917	240,044	965,493	13,288	395,074
1975	36,063	217,482	900	3,210	25,980	61,951	312,237	1,331,436	3,213	316,732

(1) Insecticides, fungicides, disinfectants, weed-killers, anti-sprouting products, rat poisons, animal dressings, Naphthalene ball, and Moth balls.

FIGURE A-1 COMPARATIVE CHART OF EXISTING AND RECOMMENDABLE ROTATION SYSTEMS OF PADDY AND LEGUMINOUS CROPS FOR MAE KLONG RIVER BASIN AREA, STAGE I & II



Note: Broadcast Paddy, Sugar Cane and other crops are not incorporated in this chart.

FIGURE A-2. IMPORT OF FERTILIZERS AND AGRO-CHEMICALS

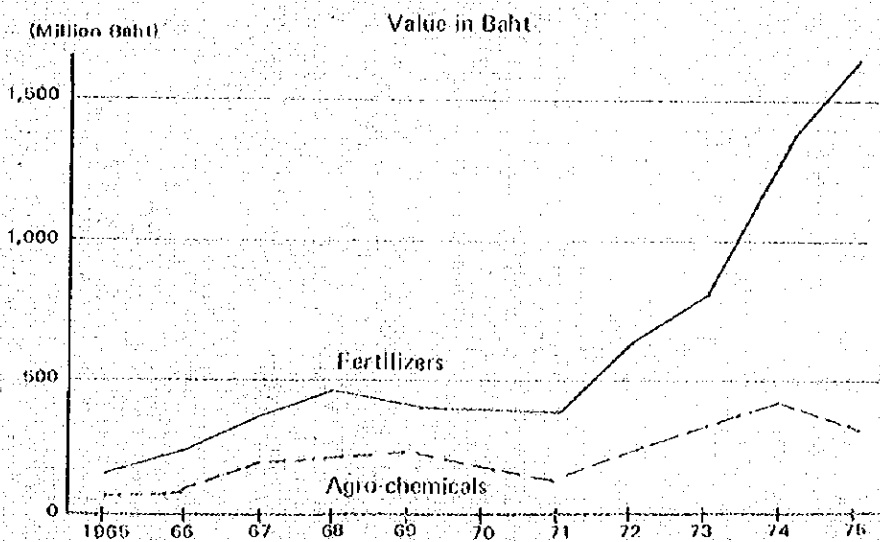
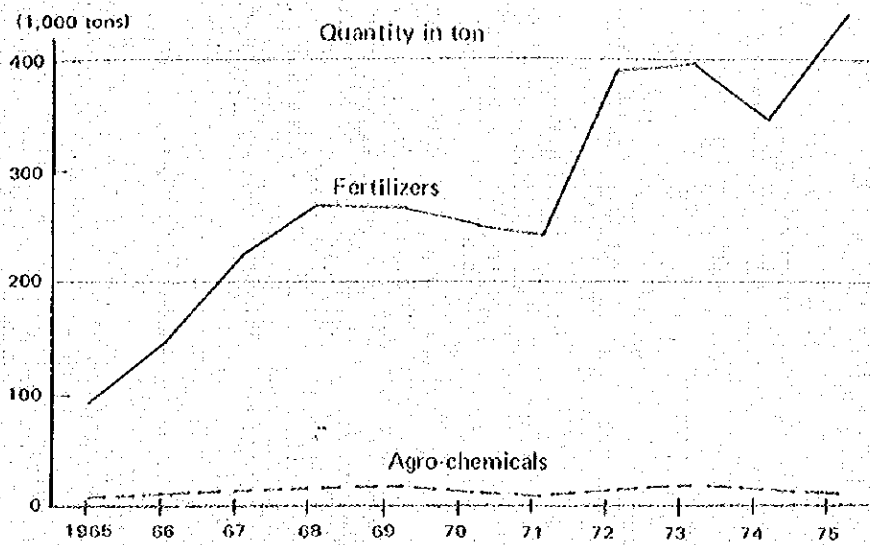
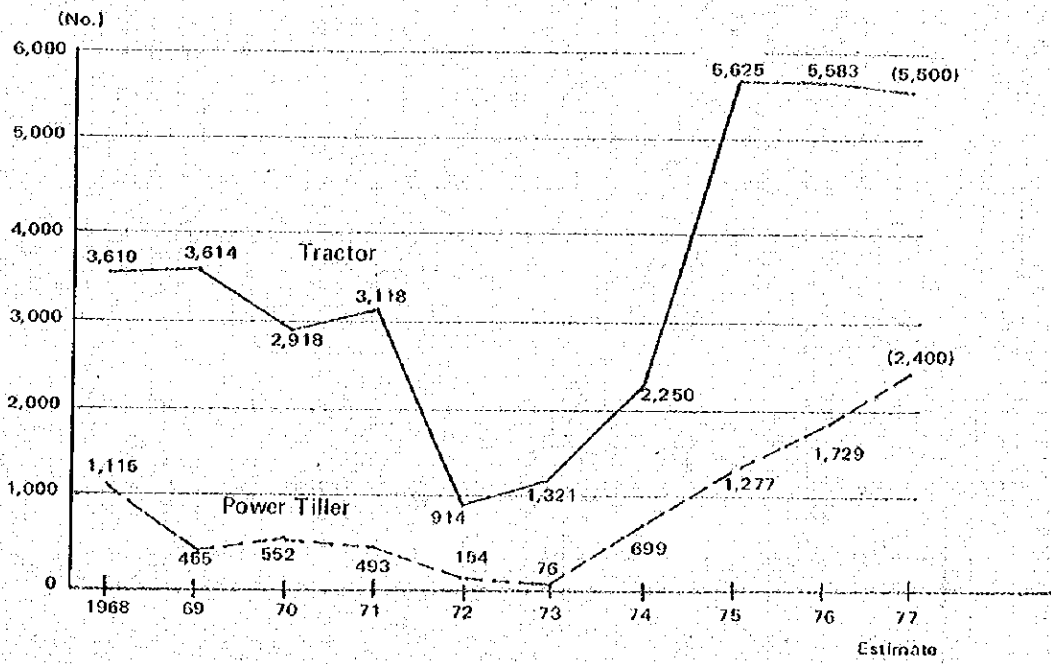


FIGURE A-3. IMPORTS OF FARMING MACHINERY





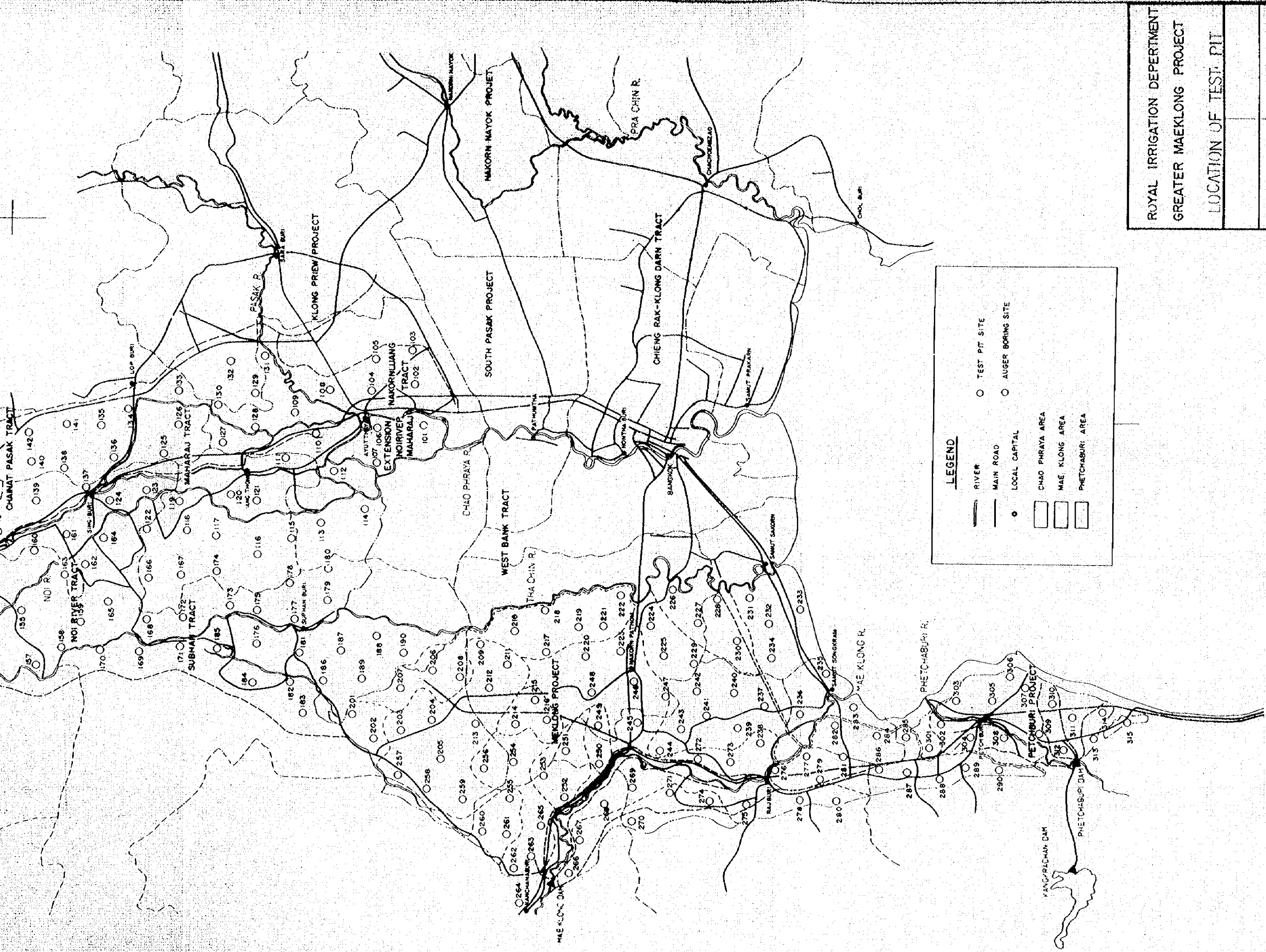










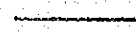

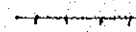

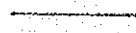













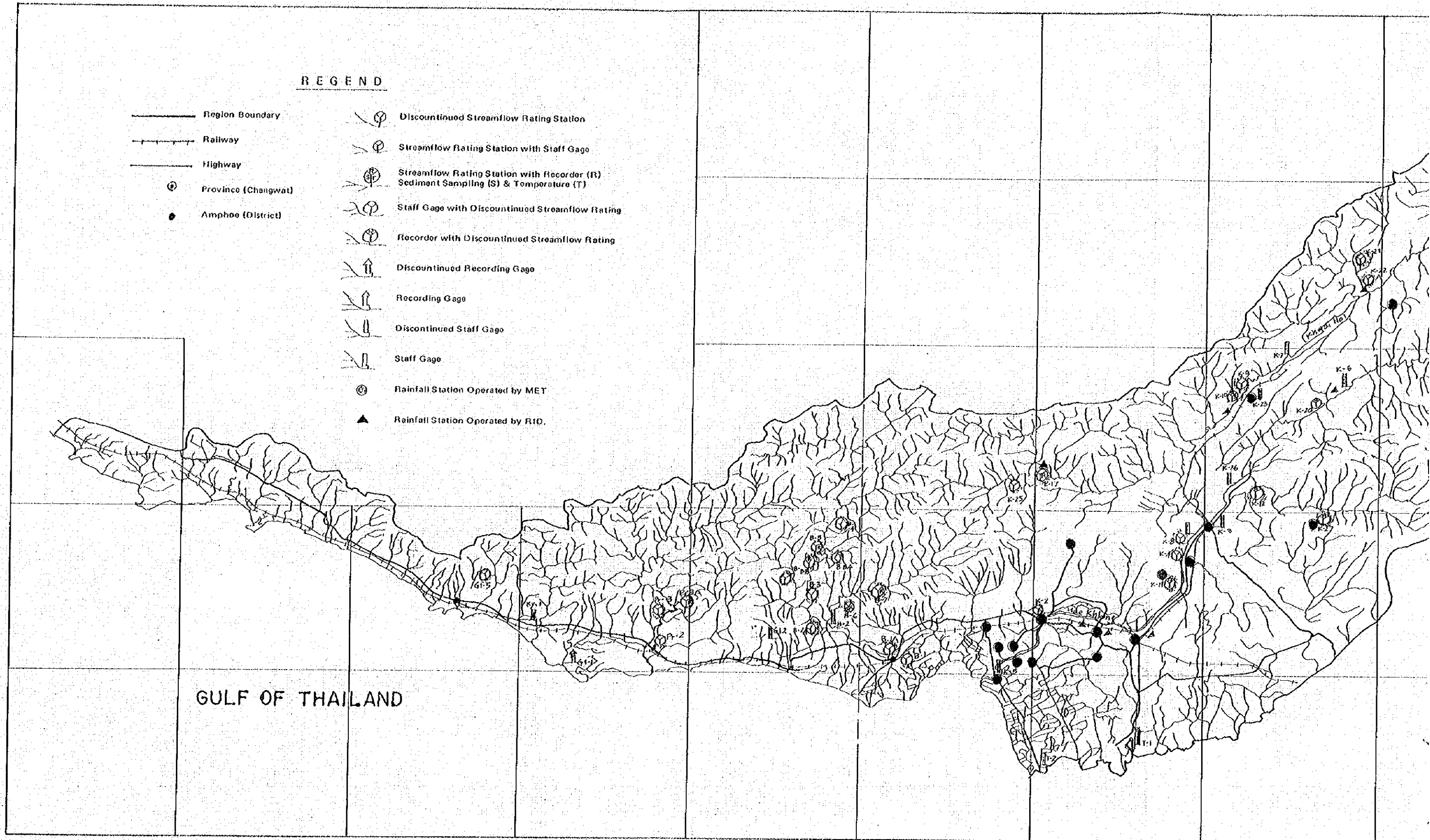
**LEGEND**

- RIVER
- MAIN ROAD
- LOCAL CAPITAL
- CHAO PHRAYA AREA
- MAE KLONG AREA
- PHETCHABURI AREA
- TEST PIT SITE
- AUGER BORING SITE

ROYAL IRRIGATION DEPARTMENT
GREATER MAEKLONG PROJECT
LOCATION OF TEST PIT
DRAWING NO. MA' S-3

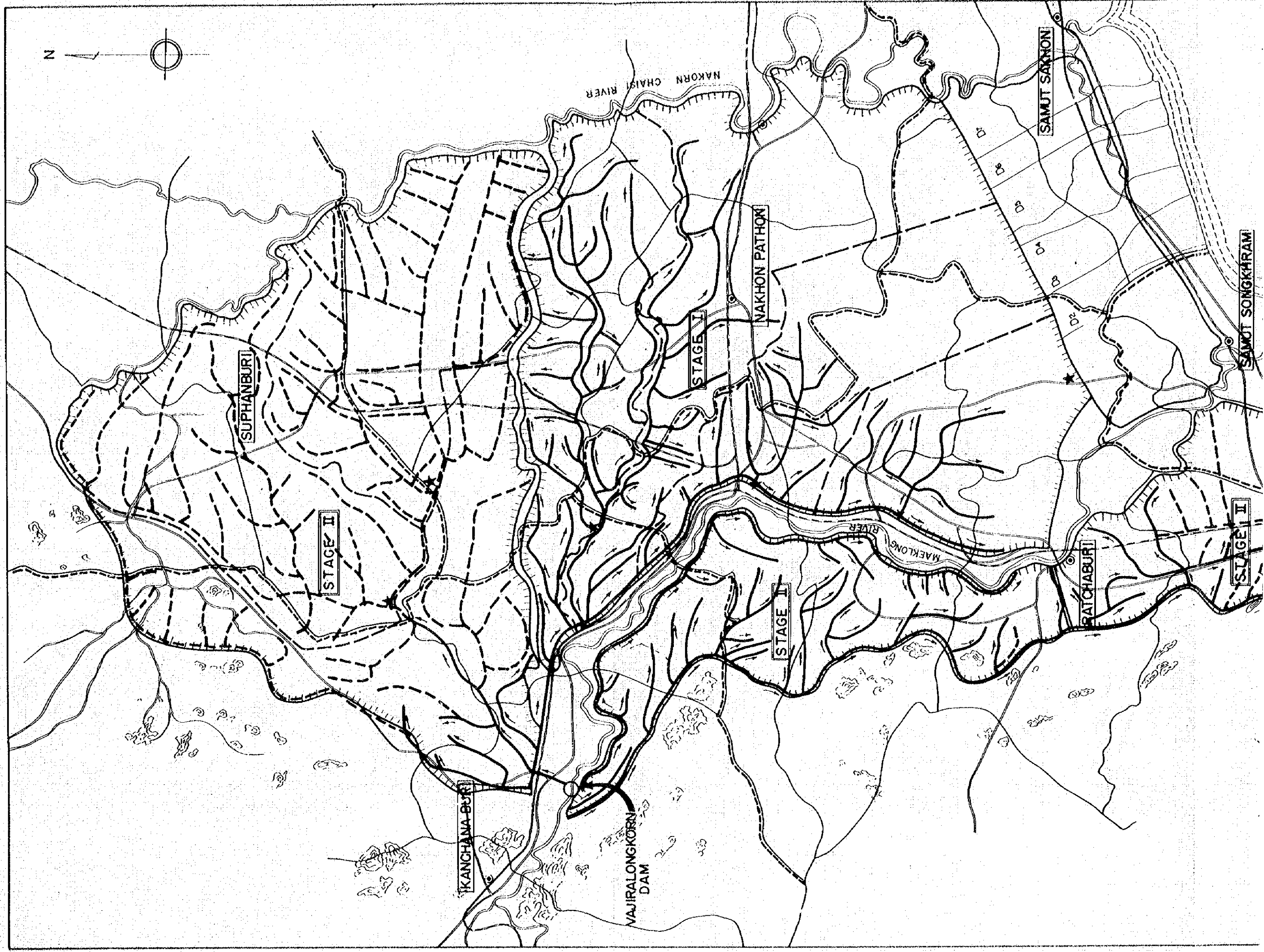
**RE G E N D**

- |   |                     |   |  |
|---|---------------------|---|--|
|  | Region Boundary     |  | Discontinued Streamflow Rating Station   |
|  | Railway             |  | Streamflow Rating Station with Staff Gage  |
|  | Highway             |  | Streamflow Rating Station with Recorder (R)<br>Sediment Sampling (S) & Temperature (T) |
|  | Province (Changwat) |  | Staff Gage with Discontinued Streamflow Rating   |
|  | Amphoe (District)   |  | Recorder with Discontinued Streamflow Rating   |
|   |                     |  | Discontinued Recording Gage  |
|   |                     |  | Recording Gage   |
|   |                     |  | Discontinued Staff Gage  |
|   |                     |  | Staff Gage   |
|   |                     |  | Rainfall Station Operated by MET   |
|   |                     |  | Rainfall Station Operated by RTD.  |







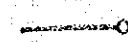

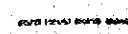
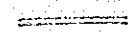


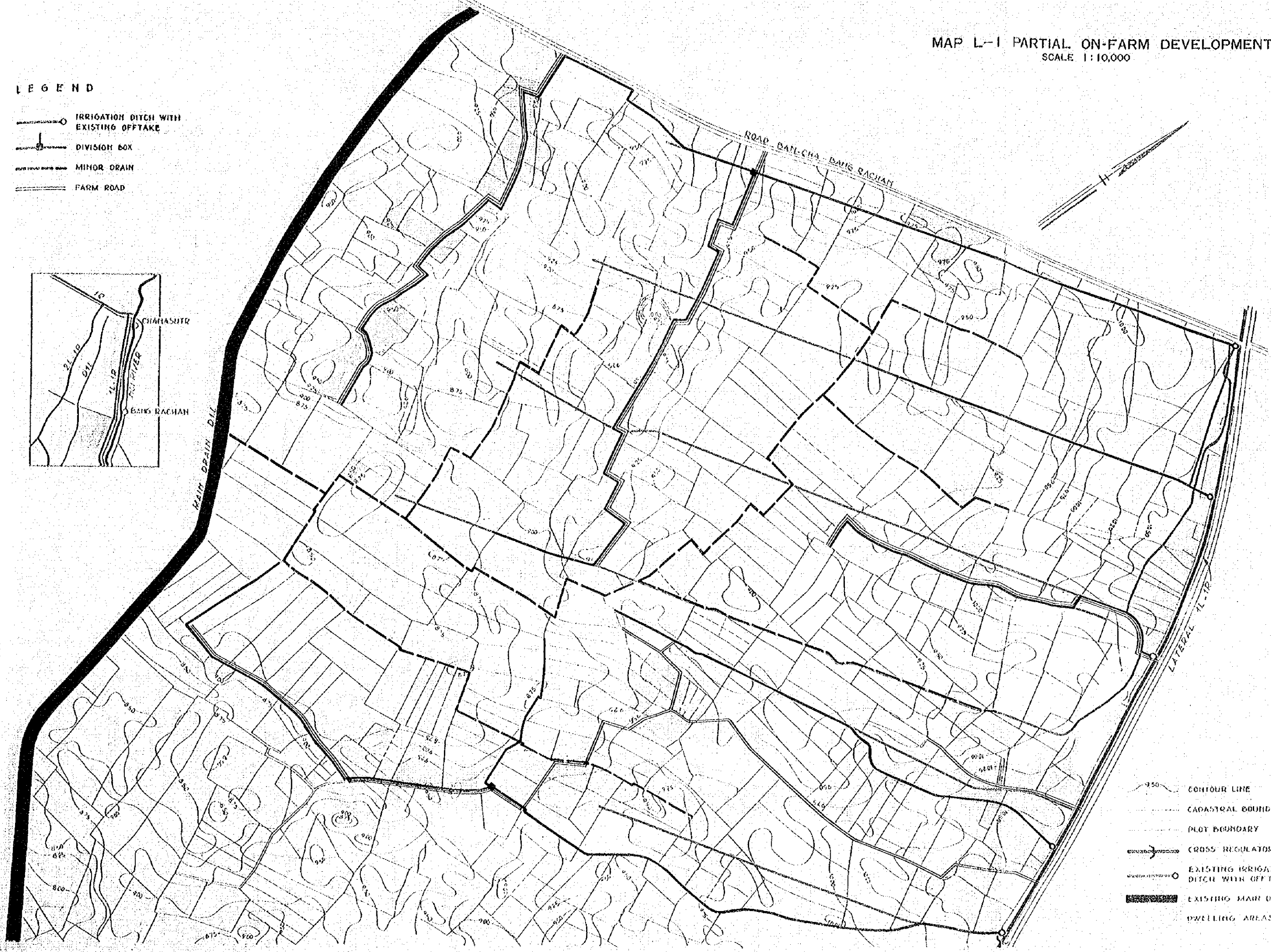
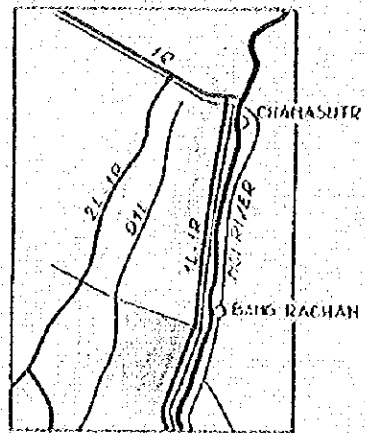


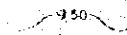


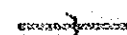
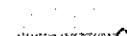




MAP L-1 PARTIAL ON-FARM DEVELOPMENT  
SCALE 1:10,000

LEGEND






-  IRRIGATION DITCH WITH EXISTING OFFTAKE
-  DIVISION BOX
-  MINOR DRAIN
-  FARM ROAD

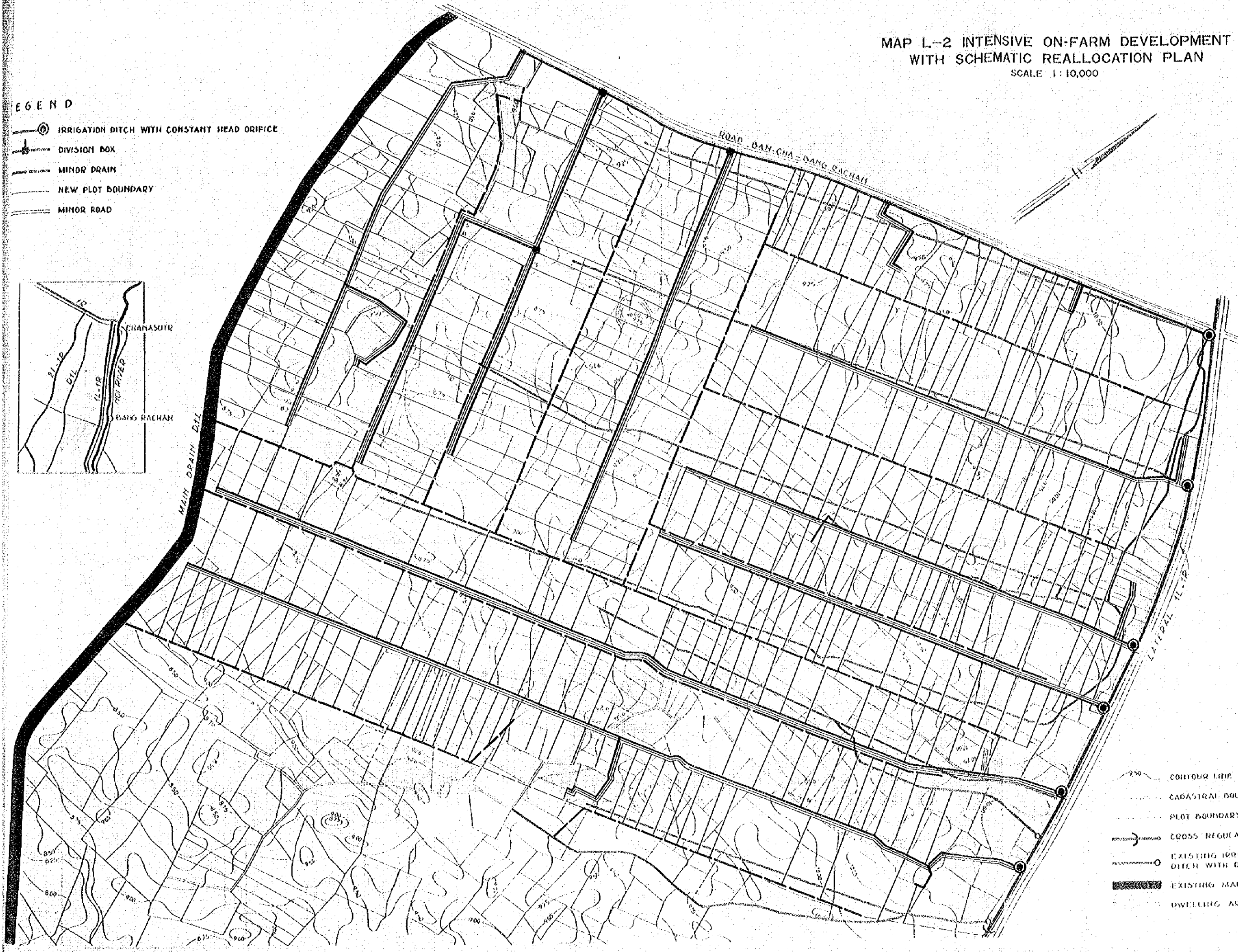
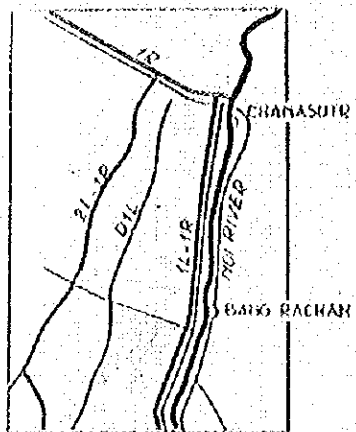









-  CONTOUR LINE
-  CADASTRAL BOUNDARY
-  PLOT BOUNDARY
-  CROSS REGULATOR
-  EXISTING IRRIGATION DITCH WITH OFFTAKE
-  EXISTING MAIN DRAIN
-  DWELLING AREAS

MAP L-2 INTENSIVE ON-FARM DEVELOPMENT  
WITH SCHEMATIC REALLOCATION PLAN  
SCALE 1:10,000

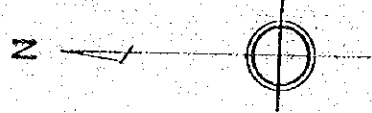
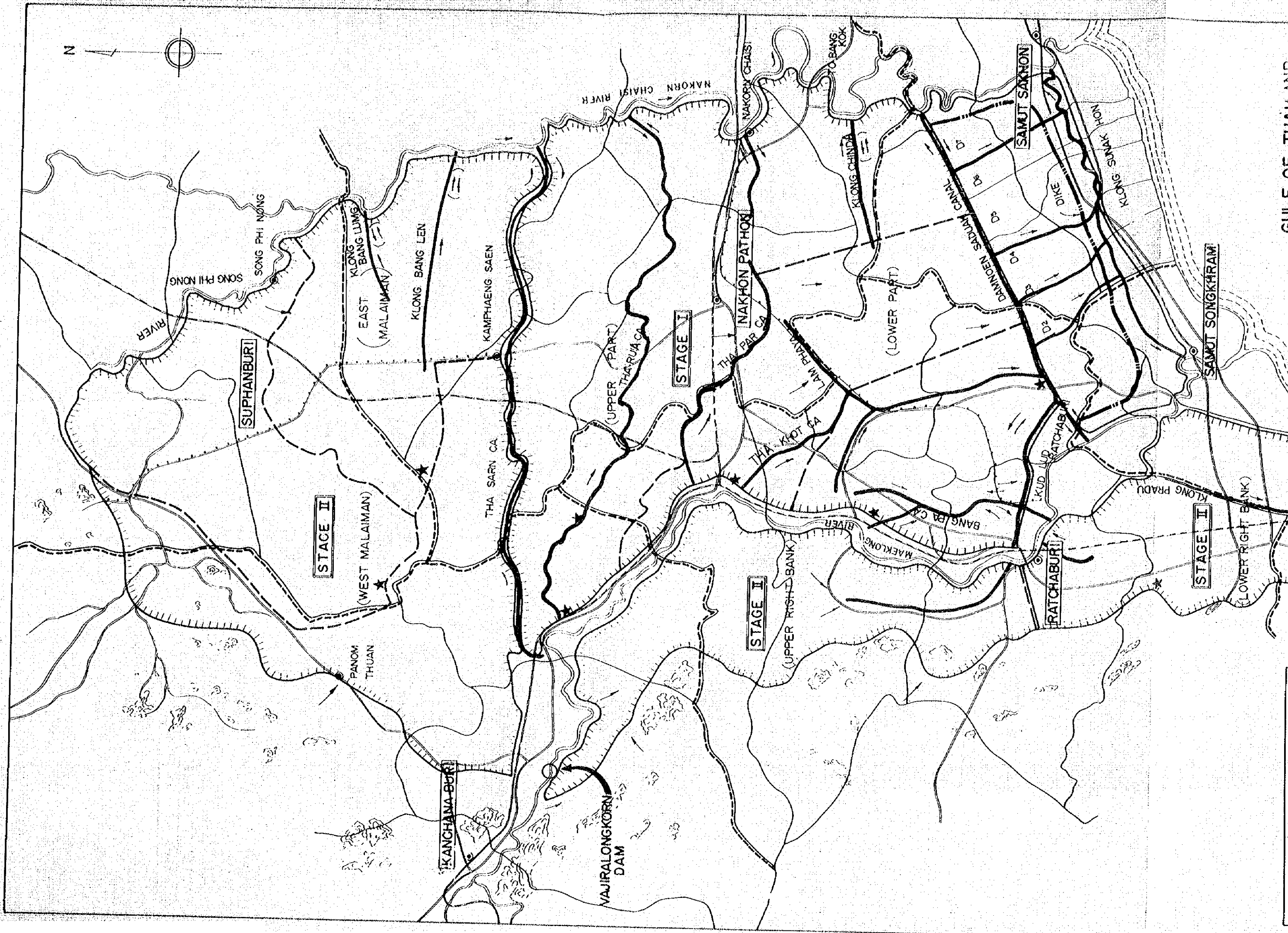
LEGEND

-  IRRIGATION DITCH WITH CONSTANT HEAD ORIFICE
-  DIVISION BOX
-  MINOR DRAIN
-  NEW PLOT BOUNDARY
-  MINOR ROAD



-  CONTOUR LINE
-  CADASTRAL BOUNDARY
-  PLOT BOUNDARY
-  CROSS REGULATOR
-  EXISTING IRRIGATION DITCH WITH OFF TAKE
-  EXISTING MAIN DRAIN
-  DWELLING AREAS





GULF OF THAI AND

SONG PHI NONG RIVER

SUPHANBURI

STAGE II

(WEST MALAIMAN)

PANOM THUAN

KANCHANA BURU

VAJIRALONGKORN DAM

THA SARN CA

KAMPHAENG SAEN

(EAST MALAIMAN)

KLONG BANG LEN

(UPPER PART)

STAGE I

STAGE II

(UPPER RIGHT BANK)

NAKHON PATHON

NAKHON CHAI

THA KIOT CA

LAM PHAI

MAEKLONG RIVER

BANG EA CA

(LOWER PART)

RATCHABURI

LKUD LUP

KLONG CHINDA

SAMUT SAKHON

DAMNOEN SADUAK CANAL

KLONG PRADU

STAGE II

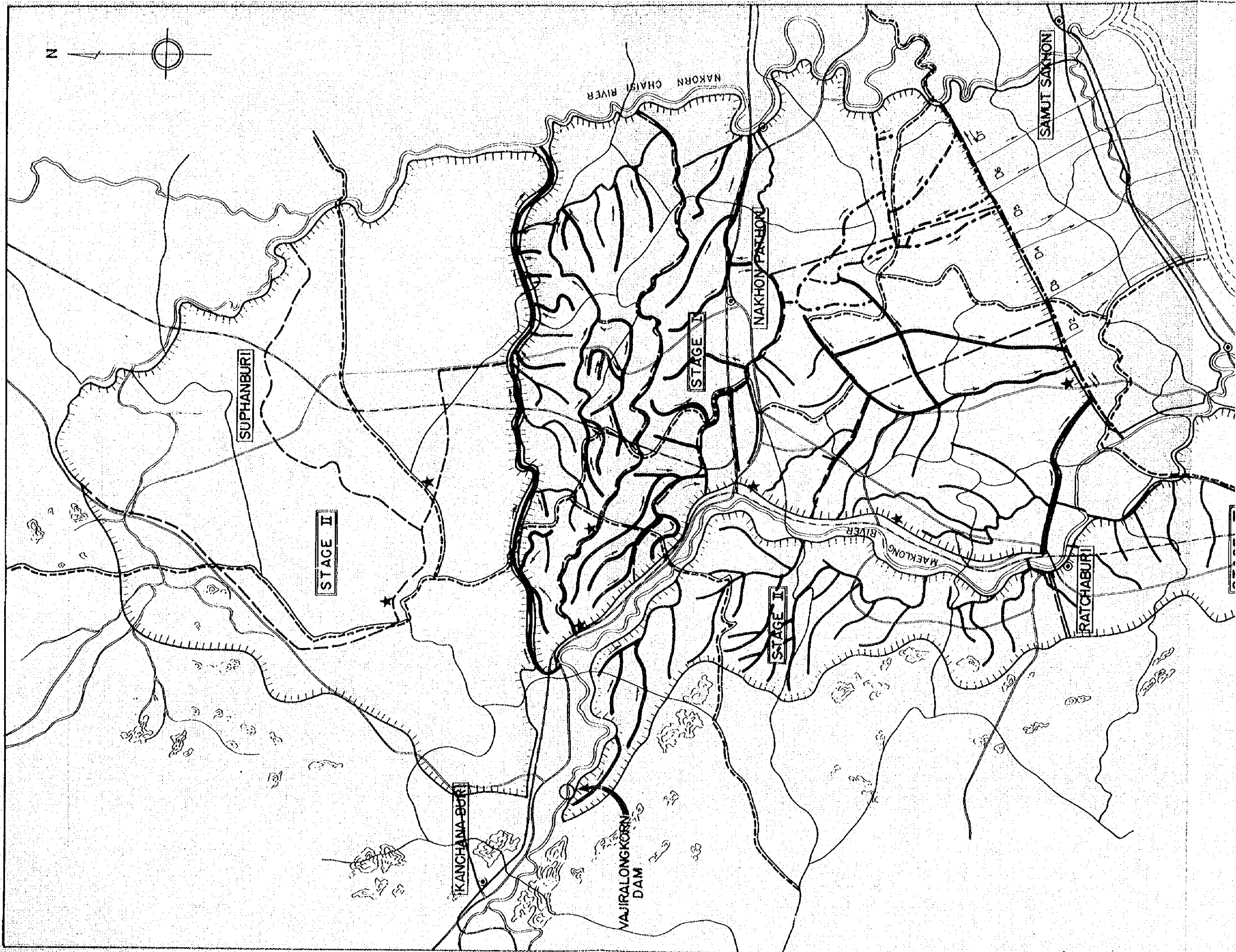
(LOWER RIGHT BANK)

SAMUT SONGKRAM

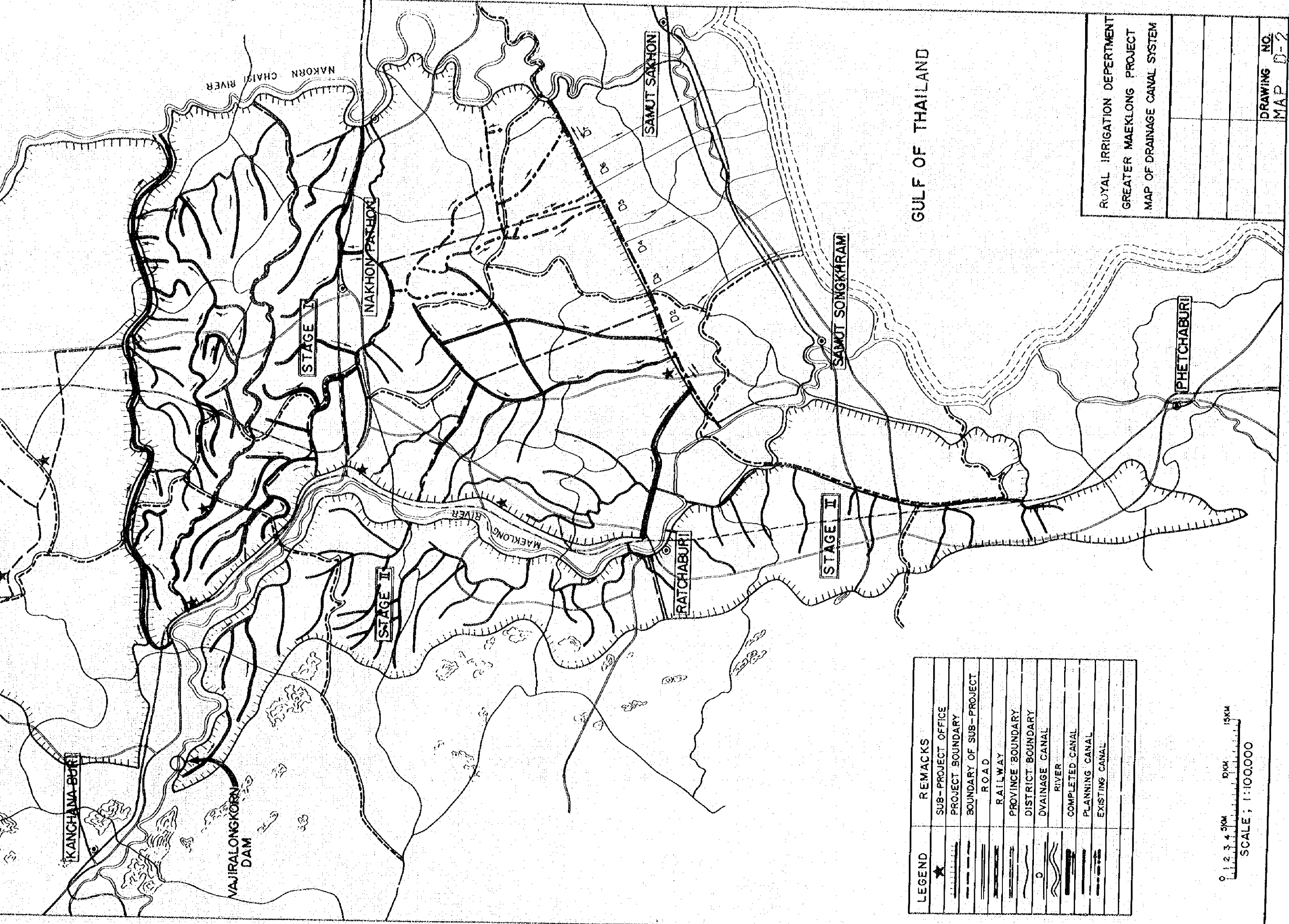
KLONG SNAK HON

DIKE



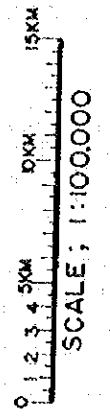






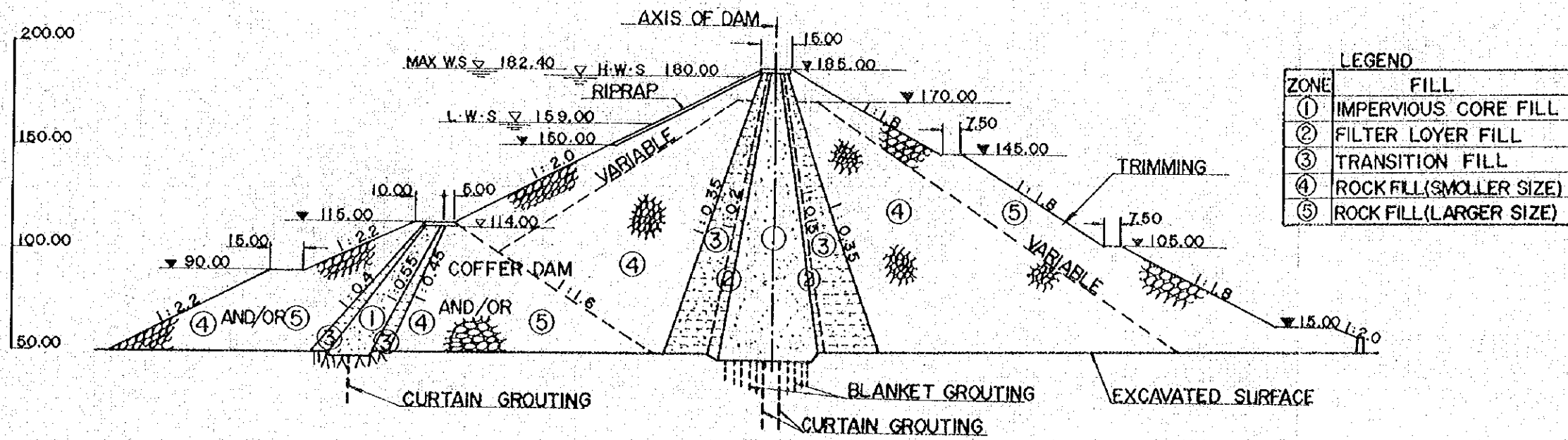
GULF OF THAILAND

LEGEND	REMARKS
★	SUB-PROJECT OFFICE
—	PROJECT BOUNDARY
- - -	BOUNDARY OF SUB-PROJECT
==	ROAD
≡≡	RAILWAY
—	PROVINCE BOUNDARY
- - -	DISTRICT BOUNDARY
〇	DRAINAGE CANAL
~~~~	RIVER
—	COMPLETED CANAL
- - -	PLANNING CANAL
---	EXISTING CANAL

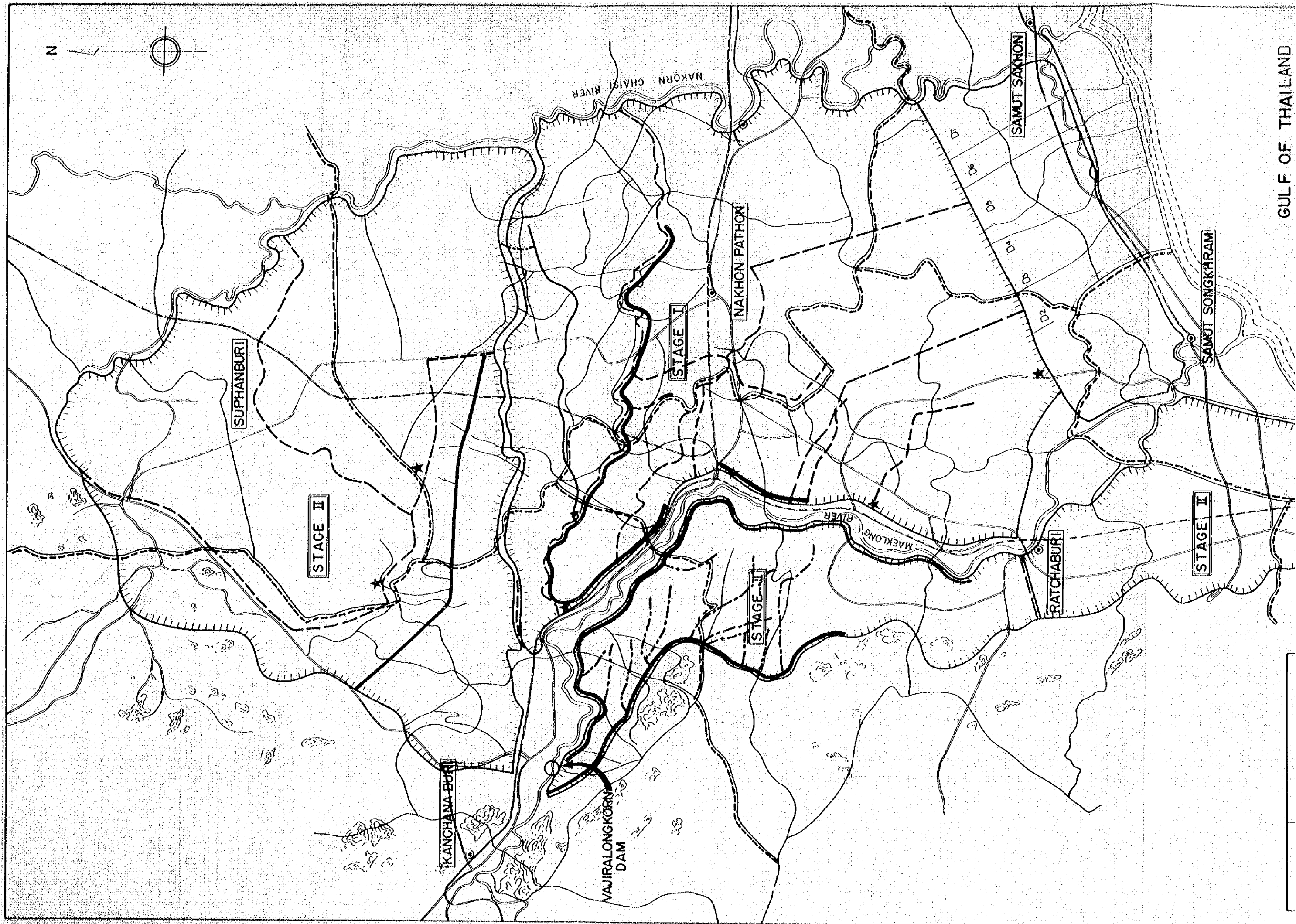


ROYAL IRRIGATION DEPARTMENT
GREATER MAEKLONG PROJECT
MAP OF DRAINAGE CANAL SYSTEM
DRAWING NO. MAP 0-2

## TYPICAL CROSS SECTION OF DAM (BAN CHAO NEN)







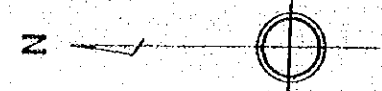
GULF OF THAILAND





LEGEND	REMARKS
★	SUB-PROJECT OFFICE
---	PROJECT BOUNDARY

GULF OF THAILAND



SUPHANBURI

STAGE II

KANCHANA-BURI

VAJIRALONGKORN  
DAM

STAGE I

NAKHON PATHOM

STAGE II

MAEKLONG  
RIVER

RATCHABURI

STAGE II

SAMUT SAKHON

SAMUT SONGKHRAM

NAKORN CHAISRI RIVER

D1  
D2  
D3  
D4  
D5  
D6  
D7





