

Table 3-21 (5) WORK VOLUME AND ESTIMATED COST FOR REPAIR AND IMPROVEMENT WANTED BY FIELD STAFF (5/25)

PHO PHIRAYA

(CANAL)	Irrigation Canal		Drainage Canal		Communi. Canal		Natural Canal		Remarks	
	M/B	km	M/B	km	M/B	km	M/B	km		
Dredging	0.05	182.2	0.1	310.0	0.2	30.0	0.2	215.3	3/4 block ① ② ③	
Widening	0.25	-	0.45	7.7	0.45	-	0.45	-	71%	
Removal of St.	0.15	-	0.3	-	0.3	-	0.3	-		
Slope Protection	0.05	27.7	0.05	9.7	0.05	-	0.05	-		
New Construction	0.8	5.8	1.6	10.7	3.0	-	-	-		
Lining	1.0	20.2	-	-	-	-	-	-		
Major Repair	0.5	-	0.5	-	0.9	-	-	-		
Total		35.3		52.1		6.0		43.1		
(DIKE)	Flood Protec. Dike		Canal Dike		Road		Other Dike		Remarks	
	M/B	km	M/B	km	M/B	km	M/B	km		
Heightening	0.25	25.1	0.25	35.0	0.6	-	0.15	20.0	3.0 M/B	
Widening	0.25	36.3	0.25	10.0	0.6	-	0.15	-		
Paving	0.3	22.1	0.3	20.0	1.0	-	0.3	-		
Slope Protection	0.05	40.8	0.05	-	0.05	-	0.05	-		
New Construction	1.3	42.8	-	-	3.0	-	0.7	20.0	14.0	
Major Repair	0.4	-	0.4	-	1.0	-	0.2	-		
Total		79.6		17.3		0		17.0	Grand Total 349.5	
(OTHER STRUC.)	Regulator/Barrage		Regulator		Siphon/Culvert		Pumping Station		Navigation Lock	
	M/B	pic	M/B	pic	M/B	pic	M/B	pic	M/B	pic
Larger Gate	1.2	-	0.1	-	0.1	-	-	-	-	-
Water Leak	0.05	-	-	-	-	-	-	-	-	-
Lower Sill	-	-	-	-	-	-	-	-	-	-
New Construction	2.0	31	0.15	28	0.15	-	1.0	12	4.0	5
Repair Gate/Moist	1.1	-	0.1	-	0.1	-	-	-	0.6	-
Repair Other St.	0.5	-	0.05	-	0.05	-	-	-	0.3	-
Remove Sedi/Weeds	0.05	8	-	-	-	-	-	-	0.05	-
Major Repair	1.0	-	0.05	-	0.05	10	0.5	-	1.2	-
Total		62.4		4.2		0.5		12.0		20.0

Table 3-21 (6) WORK VOLUME AND ESTIMATED COST FOR REPAIR AND IMPROVEMENT WANTED BY FIELD STAFF (6/25)

BOROMATHAT

(CANAL)	Irrigation Canal		Drainage Canal		Communi. Canal		Natural Canal		Remarks	
	MB	km	MB	km	MB	km	MB	km		
Dredging	0.05	96.0	0.1	102.6	0.2	0	0.2	8.0	4/4 block	
Widening	0.25	4.0	0.45	-	0.45	-	0.45	-		
Removal of St.	0.15	-	0.3	0.3	0.3	-	0.3	-	100%	
Slope Protection	0.05	45.6	0.05	30.0	0.05	-	0.05	10.0		
New Construction	0.8	-	1.6	7.0	3.0	-	-	-		
Lining	1.0	100.0	-	-	-	-	-	-		
Major Repair	0.5	-	0.5	-	0.9	-	-	-		
Total		108.1		23.1		0		2.1		
(DIKE)	Flood Protec. Dike		Canal Dike		Road		Other Dike			
Weightening	0.25	44.0	0.25	32.0	0.6	0	0.15	0		
Widening	0.25	20.0	0.25	6.0	0.6	-	0.15	-		
Paving	0.3	-	0.3	-	1.0	30.0	0.3	-		
Slope Protection	0.05	21.2	0.05	60.0	0.05	-	0.05	-		
New Construction	1.3	-	-	-	3.0	-	0.7	-		
Major Repair	0.4	-	0.4	-	1.0	-	0.2	-		
Total		17.1		12.5		30.0		0	Grand Total 196.7	
(OTHER STRUC.)	Regulator/Barrage		Regulator		Siphon/Culvert		Pumping Station		Navigation Lock	
Larger Gate	1.2	plc	0.1	plc	0.1	plc	0.1	plc	plc	plc
Water Leak	0.05	-	-	-	-	-	-	-	-	-
Lower Sill	-	-	-	-	-	-	-	-	-	-
New Construction	2.0	-	0.15	-	0.15	-	2.6	-	4.0	-
Repair Gate/Moist	1.1	-	0.1	-	0.1	-	0.6	-	0.6	-
Repair Other St.	0.5	3	0.05	24	0.05	2	0.3	1	0.3	1
Remove Sedi/Weeds	0.05	11	-	-	-	-	0.05	1	0.05	1
Major Repair	1.0	-	0.05	-	0.05	-	0.8	-	1.2	-
Total		2.1		1.2		0.1		0		0.4

Table 3-21 (7) WORK VOLUME AND ESTIMATED COST FOR REPAIR AND IMPROVEMENT WANTED BY FIELD STAFF (7/25)

CHANASUTR

(CANAL)	Irrigation Canal		Drainage Canal		Communi. Canal		Natural Canal		Remarks	
	MB	km	MB	km	MB	km	MB	km		
Dredging	0.05	127.3	0.1	60.1	0.2	-	0.2	-	7/7 block	
Widening	0.25	-	0.45	10.0	0.45	-	0.45	-		
Removal of St.	0.15	-	0.3	-	0.3	-	0.3	-	100%	
Slope Protection	0.05	78.5	0.05	-	0.05	-	0.05	-		
New Construction	0.8	-	1.6	-	3.0	-	-	-		
Lining	1.0	4.1	-	-	-	-	-	-		
Major Repair	0.5	49.9	0.5	-	0.9	-	-	-		
Total		39.4		10.5		0		0		
(DIKE)	Flood Protec. Dike		Canal Dike		Road		Other Dike			
Heightening	0.25	15.0	0.25	55.7	MB	km	MB	km	MB	
Widening	0.25	-	0.25	6.0	-	-	0.15	-	-	
Paving	0.3	-	0.3	17.0	1.0	47.6	0.3	-	-	
Slope Protection	0.05	-	0.05	130.6	-	-	0.05	-	-	
New Construction	1.3	-	-	-	-	-	0.7	-	-	
Major Repair	0.4	-	0.4	-	-	-	0.2	-	-	
Total		3.8		53.9		47.6		0	Grand Total 164.3	
(OTHER STRUC.)	Regulator/Barrage		Regulator		Siphon/Culvert		Pumping Station		Navigation Lock	
Larger Gate	1.2	MB	0.1	MB	0.1	MB	0.1	MB	MB	pic
Water Leak	0.05	-	-	-	-	-	-	-	-	-
Lower Sill	-	-	-	-	-	-	-	-	-	-
New Construction	2.0	-	0.15	1	0.15	-	2.6	-	4.0	1
Repair Gate/Hoist	1.1	-	0.1	9	0.1	-	0.6	-	0.6	-
Repair Other St.	0.5	-	0.05	2	0.1	0.05	0.3	1	0.3	0.3
Remove Sedi/Weeds	0.05	10	-	-	-	-	0.05	-	0.05	-
Major Repair	1.0	3	0.05	-	0.05	-	0.8	-	1.2	-
Total		3.5		1.3		0		0.3		4.0

Table 3-21 (8) WORK VOLUME AND ESTIMATED COST FOR REPAIR AND IMPROVEMENT WANTED BY FIELD STAFF (8/25)

YANGJIANEE

(CANAL)	Irrigation Canal		Drainage Canal		Communi. Canal		Natural Canal		Remarks	
	M\$	km	M\$	km	M\$	km	M\$	km		
Dredging	0.05	52.7	0.1	41.4	0.2	29.0	0.2	10.0	3/3 block	
Widening	0.25		0.45		0.45		0.45			
Removal of St.	0.15		0.3		0.3		0.3		100%	
Slope Protection	0.05	2.0	0.05		0.05		0.05			
New Construction	0.8		1.6		3.0					
Lining	1.0									
Major Repair	0.5		0.5		0.9					
Total										
				4.1		5.8		2.0		
(DIKE)	Flood Protec. Dike		Canal Dike		Road		Other Dike		Remarks	
	M\$	km	M\$	km	M\$	km	M\$	km		
Heightening	0.25	1.8	0.25	45.4	0.2	11.0	0.15			
Widening	0.25		0.25	3.0	0.2		0.15			
Paving	0.3		0.3		1.0		0.3			
Slope Protection	0.05		0.05		0.05		0.05			
New Construction	1.3				1.0		0.7			
Major Repair	0.4		0.4		0.3		0.2			
Total										
				12.2		2.2		0	Grand Total 36.0	
(OTHER STRUC.)	Regulator/Barrage		Regulator		Flume/Siphon/Culvert		Pumping Station		Navigation Lock	
	M\$	pic	M\$	pic	M\$	pic	M\$	pic	M\$	pic
Larger Gate	1.2	1	0.1		0.1		0.1			
Water Leak	0.05									
Lower Sill										
New Construction	2.0		0.15	7	1.1	25	3.8	2.6		4.0
Repair Gate/Hoist	1.1		0.1		0.1			0.6		0.6
Repair Other St.	0.5		0.05		0.05			0.3		0.3
Remove Sedi/Weeds	0.05	7						0.05		0.05
Major Repair	1.0		0.05					0.8		1.2
Total										0

Table 3-21 (9) WORK VOLUME AND ESTIMATED COST FOR REPAIR AND IMPROVEMENT WANTED BY FIELD STAFF (9/25)

PHAK HAI

(CANAL)	Irrigation Canal		Drainage Canal		Communi. Canal		Natural Canal		Remarks	
	M/B	km	M/B	km	M/B	km	M/B	km		
Dredging	0.05	30.0	0.1	-	0.2	20.0	0.2	30.0	2/4 block	
Widening	0.25	-	0.45	-	0.45	-	0.45	-	② + ③	
Removal of St.	0.15	7.1	0.3	-	0.3	-	0.3	0.4	56%	
Slope Protection	0.05	-	0.05	-	0.05	-	0.05	-		
New Construction	0.8	8.5	1.6	3.0	3.0	-	-	-		
Lining	1.0	-	-	-	-	-	-	-		
Major Repair	0.5	-	0.5	-	0.9	-	-	-		
Total		9.4		4.8		4.0		6.1		
(DIKE)	Flood Protec. Dike		Canal Dike		Road		Other Dike			
	M/B	km	M/B	km	M/B	km	M/B	km	M/B	
Heightening	0.25	4.0	0.25	55.0	0.6	-	0.15	-	-	
Widening	0.25	-	0.25	-	0.6	-	0.15	-	-	
Paving	0.3	-	0.3	-	1.0	-	0.3	-	-	
Slope Protection	0.05	-	0.05	-	0.05	-	0.05	1.0	0.1	
New Construction	1.3	60.0	-	-	3.0	-	0.7	-	-	
Major Repair	0.4	-	0.4	50.0	1.0	-	0.2	-	-	
Total		79.0		25.8		0		0.1	Grand Total 189.8	
(OTHER STRUC.)	Regulator/Barrage		Regulator		Sibhon/Culvert		Pumping Station		Navigation Lock	
	M/B	plc	M/B	plc	M/B	plc	M/B	plc	M/B	plc
Larger Gate	1.2	-	0.1	-	0.1	-	0.1	-	-	-
Water Leak	0.05	-	-	-	-	-	-	-	-	-
Lower Sill	-	-	-	-	-	-	-	-	-	-
New Construction	2.0	20	0.15	39	0.15	-	2.6	2	4.0	2
Repair Gate/Hoist	1.1	-	0.1	-	0.1	-	0.6	-	0.6	-
Repair Other St.	0.5	-	0.05	-	0.05	-	0.3	-	0.3	-
Remove Sedi/Weeds	0.05	2	-	-	-	-	0.05	-	0.05	-
Major Repair	1.0	1	0.05	-	0.05	8	0.8	-	1.2	-
Total		41.1		5.9		0.4		5.2		8.0

Table 3-21 (10) WORK VOLUME AND ESTIMATED COST FOR REPAIR AND IMPROVEMENT WANTED BY FIELD STAFF (10/25)

BANG BAN

(CANAL)	Irrigation Canal		Drainage Canal		Communi. Canal		Natural Canal		Remarks	
	M/B	km	M/B	km	M/B	km	M/B	km		
Dredging	0.05	54.8	0.1	44.2	0.2	-	0.2	-	2/2 block	
Widening	0.25	-	0.45	-	0.45	-	0.45	-		
Removal of St.	0.15	-	0.3	-	0.3	-	0.3	-	100%	
Slope Protection	0.05	-	0.05	-	0.05	-	0.05	-		
New Construction	0.8	-	1.6	-	3.0	-	-	-		
Lining	1.0	73.0	-	-	-	-	-	-		
Major Repair	0.5	-	0.5	-	0.9	-	-	-		
Total		75.7		4.4		0		0		
(DIKE)	Flood Protec. Dike		Canal Dike		Road		Other Dike			
Heightening	0.25	62.2	0.25	44.8	0.2	24.8	0.15	-		
Widening	0.25	-	0.25	87.9	0.2	-	0.15	-		
Paving	0.3	10.6	0.3	49.5	1.0	-	0.3	-		
Slope Protection	0.05	-	0.05	-	0.05	-	0.05	-		
New Construction	1.3	-	-	-	1.0	-	0.7	16.0	11.2	
Major Repair	0.4	-	0.4	-	0.3	-	0.2	-		
Total		18.8		48.1		5.0		11.2	Grand Total 177.9	
(OTHER STRUC.)	Regulator/Barrage		Regulator		FTO		Pumping Station		Navigation Lock	
Larger Gate	1.2	plc	0.1	2Plc	-	Pic	0.1	M/B	-	M/B
Water Leak	0.05	-	-	-	-	-	-	-	-	-
Lower Sill	-	-	-	-	-	-	-	-	-	-
New Construction	2.0	2	0.15	10	0.03	200	2.6	-	4.0	-
Repair Gate/Moist	1.1	1	0.1	-	0.01	60	0.6	-	0.6	-
Repair Other St.	0.5	1	0.05	-	-	-	0.3	-	0.3	-
Remove Sedi/Weeds	0.05	3	-	-	-	-	0.05	12	0.05	-
Major Repair	1.0	-	0.05	-	-	-	0.8	-	1.2	-
Total		5.8		1.7		6.6		0.6		0

Table 3-21 (11) WORK VOLUME AND ESTIMATED COST FOR REPAIR AND IMPROVEMENT WANTED BY FIELD STAFF (11/25)

CHAOCHET-BANG Y.

(CANAL)	Irrigation Canal		Drainage Canal		Communi. Canal		Natural Canal		Remarks	
	MB	km	MB	km	MB	km	MB	km		
Dredging	0.05	143.8	0.1	38.7	0.2	43.1	0.2	715.0		
Widening	0.25	-	0.45	-	0.45	-	0.45	-		
Removal of St.	0.15	-	0.3	-	0.3	-	0.3	-		
Slope Protection	0.05	-	0.05	-	0.05	-	0.05	-		
New Construction	0.8	-	1.6	-	3.0	-	-	-		
Lining	1.0	-	-	-	-	-	-	-		
Major Repair	0.5	-	0.5	-	0.9	-	-	-		
Total		7.2		3.9		8.6		143.0		
(DIKE)	Flood Protec. Dike		Canal Dike		Road		Other Dike		Remarks	
	MB	km	MB	km	MB	km	MB	km		
Heightening	0.35	15.8	0.35	-	0.2	-	0.2	-		
Widening	0.35	42.0	0.35	-	0.6	-	0.2	-		
Paving	0.3	70.3	0.3	-	1.0	-	0.3	-		
Slope Protection	0.1	5.0	0.1	-	0.1	-	0.1	-		
New Construction	1.8	34.5	-	-	1.0	-	1.0	-		
Major Repair	0.5	-	0.5	-	0.3	-	0.3	-		
Total		103.9		0		0		0	Grand Total 331.3	
(OTHER STRUC.)	Regulator/Barrage		Regulator		Siphon/Culvert		Pumping Station		Navigation Lock	
	MB	pic	MB	pic	MB	pic	MB	pic	MB	pic
Larger Gate	2.8	-	0.45	-	0.45	-	0.45	-	-	-
Water Leak	0.1	-	0.05	-	0.05	-	-	-	-	-
Lower Sill	-	-	-	-	-	-	-	-	-	-
New Construction	4.7	11	0.75	12	0.75	-	2.6	1	4.0	-
Repair Gate/Moist	1.0	-	0.4	-	0.4	-	0.6	-	0.6	-
Repair Other St.	0.5	-	0.2	-	0.2	-	0.3	-	0.3	-
Remove Sedi/Woods	0.1	2	-	-	-	-	0.05	-	0.05	-
Major Repair	1.4	-	0.25	-	0.25	-	0.8	-	1.2	1
Total		51.9		9.0		0		2.6		1.2

Table 3-21 (12) WORK VOLUME AND ESTIMATED COST FOR REPAIR AND IMPROVEMENT WANTED BY FIELD STAFF (12/25)

PHRAYA BANLU

(CANAL)	Irrigation Canal		Drainage Canal		Communi. Canal		Natural Canal		Remarks	
	M/B	km	M/B	km	M/B	km	M/B	km		
Dredging	0.05	49.4	0.1	42.4	0.2	41.5	0.2	274.0	3/4 block	
Widening	0.25	-	0.45	-	0.45	-	0.45	-		
Removal of St.	0.15	-	0.3	-	0.3	-	0.3	-	79%	
Slope Protection	0.05	-	0.05	-	0.05	-	0.05	-		
New Construction	0.8	-	1.6	-	3.0	-	-	-		
Lining	1.0	-	-	-	-	-	-	-		
Major Repair	0.5	-	0.5	-	0.9	-	-	-		
Total		2.5		4.2		8.3		54.8		
(DIKE)	Flood Protec. Dike		Canal Dike		Road		Other Dike			
Heightening	0.35	13.6	0.35	18.0	0.6	18.0	0.2	0.2		
Widening	0.35	-	0.35	-	0.6	-	0.2	-		
Paving	0.3	-	0.3	-	1.0	-	0.3	-		
Slope Protection	0.1	-	0.1	-	0.1	-	0.1	-		
New Construction	1.8	40.0	-	-	3.0	-	1.0	-		
Major Repair	0.5	-	0.5	-	1.0	-	0.3	-		
Total		76.8		6.3		0		0	Grand Total 186.6	
(OTHER STRUC.)	Regulator/Barrage		Regulator		Siphon/Culvert		Pumping Station		Navigation Lock	
Larger Gate	2.8	1	0.45	1	0.45	1	0.45	1	M/B	plc
Water Leak	0.1	-	0.05	-	0.05	-	-	-	-	-
Lower Sill	-	-	-	-	-	-	-	-	-	-
New Construction	4.7	3	0.75	9	0.75	-	2.6	-	4.0	-
Repair Gate/Hoist	1.0	5	0.4	3	0.4	-	0.6	-	0.6	-
Repair Other St.	0.5	1	0.2	-	0.2	-	0.3	-	0.3	-
Remove Sedi/Weeds	0.1	7	-	-	-	-	0.05	-	0.05	-
Major Repair	1.4	1	0.25	-	0.25	-	0.8	-	1.2	1
Total		24.5		8.0		0		0		1.2

PHRA PHIMON
Table 3-21 (13) WORK VOLUME AND ESTIMATED COST FOR REPAIR AND IMPROVEMENT WANTED BY FIELD STAFF (13/25)

(CANAL)	Irrigation Canal		Drainage Canal		Communi. Canal		Natural Canal		Remarks	
	MB	km	MB	km	MB	km	MB	km		
Dredging	0.05	140.0	0.1	20.0	0.2	26.0	0.2	200.0		
Widening	0.25	-	0.45	-	0.45	-	0.45	-		
Removal of St.	0.15	-	0.3	-	0.3	-	0.3	-		
Slope Protection	0.05	-	0.05	-	0.05	-	0.05	-		
New Construction	0.8	-	1.6	-	3.0	20.0	60.0	-		
Lining	1.0	-	-	-	-	-	-	-		
Major Repair	0.5	-	0.5	-	0.9	-	-	-		
Total		7.0		2.0		65.2		40.0		
(DIKE)	Flood Protec. Dike		Canal Dike		Road		Other Dike		Remarks	
	MB	km	MB	km	MB	km	MB	km		
Heightening	0.35	10.0	0.35	20.0	0.6	-	0.6	-		
Widening	0.35	-	0.35	-	0.6	-	0.2	-		
Paving	0.3	-	0.3	-	1.0	-	0.3	-		
Slope Protection	0.1	-	0.1	-	0.1	-	0.1	-		
New Construction	1.8	-	-	-	3.0	-	1.0	-		
Major Repair	0.5	-	0.5	-	1.0	-	0.5	-		
Total		3.5		7.0		0		0	Grand Total 214.3	
(OTHER STRUC.)	Regulator/Barrage		Regulator		Siphon/Culvert		Pumping Station		Navigation Lock	
	MB	plc	MB	plc	MB	plc	MB	plc	MB	plc
Larger Gate	2.8	3	0.45	-	0.45	-	0.45	-	-	-
Water Leak	0.1	3	0.05	-	0.05	-	-	-	-	-
Lower Sill	-	-	-	-	-	-	-	-	-	-
New Construction	4.7	18	0.75	-	0.75	-	2.6	-	4.0	-
Repair Gate/Hoist	1.0	-	0.4	-	0.4	-	0.6	-	0.6	-
Repair Other St.	0.5	5	0.2	-	0.2	-	0.3	-	0.3	-
Remove Sedi/Needs	0.1	21	-	-	-	-	0.05	-	0.05	2
Major Repair	1.4	-	0.25	-	0.25	-	0.8	-	1.2	-
Total		89.5		0		0		0		0.1

PHASI CHAROEN
 Table 3-21 (14) WORK VOLUME AND ESTIMATED COST FOR REPAIR AND IMPROVEMENT WANTED BY FIELD STAFF (14/25)

(CANAL)	Irrigation Canal		Drainage Canal		Communi. Canal		Natural Canal		Remarks	
	MB	km	MB	km	MB	km	MB	km		
Dredging	0.05	-	0.1	100.0	0.2	53.3	10.7	-	1/2 block	
Widening	0.25	-	0.45	-	0.45	-	-	0.2	58%	
Removal of St.	0.15	-	0.3	-	0.3	-	-	0.45	970.0	
Slope Protection	0.05	-	0.05	-	0.05	-	-	0.3	0.436.5	
New Construction	0.8	-	1.6	-	3.0	-	-	0.05	-	
Lining	1.0	-	-	-	-	-	-	-	-	
Major Repair	0.5	-	0.5	-	0.9	-	-	-	-	
Total		0		10.0		10.7			436.5	
(DIKE)	Flood Protec. Dike		Canal Dike		Road		Other Dike		Remarks	
	MB	km	MB	km	MB	km	MB	km		
Heightening	0.35	16.5	0.35	-	0.6	-	0.2	-	-	
Widening	0.35	-	0.35	-	0.6	-	0.2	-	-	
Paving	0.3	-	0.3	-	1.0	11.7	0.3	-	-	
Slope Protection	0.1	-	0.1	-	0.1	-	0.1	-	-	
New Construction	1.8	-	-	-	3.0	-	1.0	-	-	
Major Repair	0.5	-	0.5	-	1.0	-	0.3	-	-	
Total		5.8		0		11.7		0	Grand Total 501.7	
(OTHER STRUC.)	Regulator/Barrage		Regulator		Siphon/Culvert		Pumping Station		Navigation Lock	
Larger Gate	2.8	pic	0.45	pic	0.45	pic	0.45	pic	0.45	pic
Water Leak	0.1	-	0.05	-	0.05	-	0.05	-	0.05	-
Lower Sill	-	-	-	-	-	-	-	-	-	-
New Construction	4.7	4	0.75	6	0.75	-	1.0	2	4.0	0.6
Repair Gate/Hoist	1.0	-	0.4	-	0.4	-	-	-	0.6	1
Repair Other St.	0.5	1	0.2	1	0.2	-	-	-	0.3	1
Remove Sedi/Weeds	0.1	-	-	-	-	-	0.05	1	0.05	-
Major Repair	1.4	-	0.25	-	0.25	-	-	-	1.2	-
Total		19.3		4.7		0		2.1		0.9

Table 3-21 (15) WORK VOLUME AND ESTIMATED COST FOR REPAIR AND IMPROVEMENT WANTED BY FIELD STAFF (15/25)

MANOROM.

(CANAL)	Irrigation Canal		Drainage Canal		Communi. Canal		Natural Canal		Remarks	
	MB	km	MB	km	MB	km	MB	km		
Dredging	0.05	67.9	0.1	122.3	0.2	-	0.2	-		
Widening	0.25	-	0.45	-	0.45	-	0.45	-		
Removal of St.	0.15	-	0.3	-	0.3	-	0.3	-		
Slope Protection	0.05	-	0.05	-	0.05	-	0.05	-		
New Construction	0.8	-	1.6	-	3.0	-	-	-		
Lining	1.0	21.5	-	-	-	-	-	-		
Major Repair	0.5	-	0.5	-	0.9	-	-	-		
Total		24.9		12.2		0		0		
(DIKE)	Flood Protec. Dike		Canal Dike		Road		Other Dike		Remarks	
	MB	km	MB	km	MB	km	MB	km		
Heightening	0.25	-	0.25	14.2	0.2	78.0	0.15	-		
Widening	0.25	-	0.25	-	0.2	-	0.15	-		
Paving	0.3	-	0.3	-	1.0	-	0.3	-		
Slope Protection	0.05	-	0.05	-	0.05	-	0.05	-		
New Construction	1.3	-	-	-	1.0	-	0.7	-		
Major Repair	0.4	-	0.4	-	0.3	-	0.2	-		
Total		0		3.6		15.6		0	Grand Total 59.1	
(OTHER STRUC.)	Regulator/Barrage		Regulator		Siphon/Culvert		Pumping Station		Navigation Lock	
	MB	pic	MB	pic	MB	pic	MB	pic	MB	pic
Larger Gate	1.2	-	0.1	-	0.1	-	0.1	-	-	-
Water Leak	0.05	-	-	-	-	-	-	-	-	-
Lower Sill	-	-	-	-	-	-	-	-	-	-
New Construction	2.0	-	0.15	1	0.15	-	2.6	1	2.6	4.0
Repair Gate/hoist	1.1	-	0.1	-	0.1	-	0.6	-	0.6	-
Repair Other St.	0.5	-	0.05	-	0.05	-	0.3	-	0.3	-
Remove Sedi/Weeds	0.05	-	-	-	-	-	0.05	2	0.1	0.05
Major Repair	1.0	-	0.05	-	0.05	-	0.8	-	1.2	-
Total		0		0.2		0		2.7		0

Table 3-21 (16) WORK VOLUME AND ESTIMATED COST FOR REPAIR AND IMPROVEMENT WANTED BY FIELD STAFF (16/25)

CHONG KAE

(CANAL)	Irrigation Canal		Drainage Canal		Communi. Canal		Natural Canal		Remarks	
	M/B	km	M/B	km	M/B	km	M/B	km		
Dredging	0.05	84.2	0.1	26.0	0.2		0.2		2/2 block	
Widening	0.25	24.4	0.45	26.4	0.45		0.45			
Removal of St.	0.15		0.3		0.3		0.3		100%	
Slope Protection	0.05	14.0	0.05	20.0	0.05		0.05			
New Construction	0.8	3.2	1.6	2.0	3.0					
Lining	1.0	20.5	-		-		-			
Major Repair	0.5		0.5		0.9		-			
Total		34.1		18.7		0		0		
(DIKE)	Flood Protec. Dike		Canal Dike		Road		Other Dike		Remarks	
	M/B	km	M/B	km	M/B	km	M/B	km		
Heightening	0.25	2.5	0.25	15.0	0.6		0.15	6.0		
Widening	0.25		0.25	10.0	0.6		0.15			
Paving	0.3		0.3	12.0	1.0		0.3			
Slope Protection	0.05	11.0	0.05	20.0	0.05		0.05			
New Construction	1.3		-		3.0		0.7			
Major Repair	0.4		0.4		1.0		0.2			
Total		1.2		10.9		0		0.9	Grand Total 67.9	
(OTHER STRUC.)	Regulator/Barrage		Regulator		Siphon/Culvert		Pumping Station		Navigation Lock	
	M/B	plc	M/B	3plc	M/B	plc	M/B	plc	M/B	plc
Larger Gate	1.2	1.2	0.1	3	0.1		0.1		-	
Water Leak	0.05		-		-		-		-	
Lower Sill	-		-		-		-		-	
New Construction	2.0		0.15		0.15		2.6		4.0	
Repair Gate/Hoist	1.1		0.1	3	0.1		0.6		0.6	
Repair Other St.	0.5		0.05	6	0.05		0.3		0.3	
Remove Sedi/Weeds	0.05		-		-		0.05		0.05	
Major Repair	1.0		0.05		0.05		0.8		1.2	
Total		1.2		0.9		0		0		0

Table 3-21 (17) WORK VOLUME AND ESTIMATED COST FOR REPAIR AND IMPROVEMENT WANTED BY FIELD STAFF (17/25)

KOKE KATHIEM

(CANAL)	Irrigation Canal		Drainage Canal		Communi. Canal		Natural Canal		Remarks	
	MB	km	MB	km	MB	km	MB	km		
Dredging	0.05	110.0	0.1	160.0	0.2	30.0	0.2	30.0	2/2 block	
Widening	0.25	-	0.45	-	0.45	-	0.45	-	100%	
Removal of St.	0.15	-	0.3	-	0.3	-	0.3	-		
Slope Protection	0.05	35.0	0.05	126.0	0.05	14.0	0.05	14.0		
New Construction	0.8	-	1.6	5.0	3.0	-	-	-		
Lining	1.0	4.5	-	-	-	-	-	-		
Major Repair	0.5	18.6	0.5	-	0.9	-	-	-		
Total		21.1		30.3		0		6.7		
(DIKE)	Flood Protec. Dike		Canal Dike		Road		Other Dike		Remarks	
	MB	km	MB	km	MB	km	MB	km		
Heightening	0.25	35.6	0.25	12.5	0.2	30.6	0.15	6.1		
Widening	0.25	-	0.25	-	0.2	7.1	0.15	1.4		
Paving	0.3	-	0.3	-	1.0	-	0.3	-		
Slope Protection	0.05	2.0	0.05	10.0	0.05	15.0	0.05	-		
New Construction	1.3	-	-	-	1.0	-	0.7	-		
Major Repair	0.4	-	0.4	-	0.3	-	0.2	-		
Total		9.0		3.6		8.3		0	Grand Total 91.7	
(OTHER STRUC.)	Regulator/Barrage		Regulator		Siphon/Culvert		Pumping Station		Navigation Lock	
	MB	pic	MB	pic	MB	pic	MB	pic	MB	pic
Larger Gate	1.2	2	0.1	2	0.1	1	0.1	0.1	-	-
Water Leak	0.05	-	-	-	-	-	-	-	-	-
Lower Sill	-	-	-	-	-	-	-	-	-	-
New Construction	2.0	2	0.15	10	0.15	-	2.6	-	4.0	-
Repair Gate/Hoist	1.1	-	0.1	26	0.1	7	0.6	-	0.6	1
Repair Other St.	0.5	1	0.05	-	0.05	-	0.3	-	0.3	-
Remove Sedi/Weeds	0.05	2	-	-	-	-	0.05	-	0.05	-
Major Repair	1.0	-	0.05	-	0.05	-	0.8	-	1.2	-
Total		7.0		4.3		0.8		0		0.6

Table 3-21 (18) WORK VOLUME AND ESTIMATED COST FOR REPAIR AND IMPROVEMENT WANTED BY FIELD STAFF (18/25)

ROENG RANG

(CANAL)	Irrigation Canal			Drainage Canal			Communi. Canal			Natural Canal			Remarks	
	MB	km	pic	MB	km	pic	MB	km	pic	MB	km	pic		
Dredging	0.05	11.7	0.6	0.1	21.5	2.2	0.2	0.2	0.2	0.2	2.6	0.5	2/2 block	
Widening	0.25	12.1	3.0	0.45	-	-	0.45	-	0.45	-	-	-	100%	
Removal of St.	0.15	-	-	0.3	-	-	0.3	-	0.3	-	-	-		
Slope Protection	0.05	-	-	0.05	-	-	0.05	-	0.05	-	-	-		
New Construction	0.8	-	-	1.6	-	-	3.0	-	-	-	-	-		
Lining	1.0	-	-	-	-	-	-	-	-	-	-	-		
Major Repair	0.5	-	-	0.5	-	-	0.9	-	-	-	-	-		
Total				3.6		2.2			0			0.5		
(DIKE)	Flood Protec. Dike			Canal Dike			Road			Other Dike				
Heightening	0.25	27.6	6.9	0.25	27.6	6.9	0.6	0.6	0.15	0.15	0.15	0.15		
Widening	0.25	-	-	0.25	30.8	7.7	0.6	0.6	0.15	0.15	0.15	0.15		
Paving	0.3	-	-	0.3	30.8	9.2	1.0	1.0	0.3	0.3	0.3	0.3		
Slope Protection	0.05	-	-	0.05	-	-	0.05	-	0.05	-	-	-		
New Construction	1.3	-	-	-	-	-	3.0	-	0.7	-	-	-		
Major Repair	0.4	-	-	0.4	-	-	1.0	-	0.2	-	-	-		
Total				0		23.8			0			0	Grand Total 35.6	
(OTHER STRUC.)	Regulator/Barrage			Regulator			Siphon/Culvert			Pumping Station			Navigation Lock	
Larger Gate	1.2	1	2.0	0.1	1	0.2	0.1	0.1	0.1	0.1	1	1.0	4.0	
Water Leak	0.05	-	-	-	-	-	-	-	-	-	-	-	-	
Lower Sill	-	-	-	-	-	-	-	-	-	-	-	-	-	
New Construction	2.0	1	2.0	0.15	1	0.2	0.15	0.15	1.0	1.0	1	1.0	4.0	
Repair Gate/hoist	1.1	-	-	0.1	-	-	0.1	0.1	0.6	0.6	-	0.6	0.6	
Repair Other St.	0.5	2	1.0	0.05	14	0.7	0.05	3	0.2	0.3	-	0.3	1	0.3
Remove Sedi/Weeds	0.05	2	0.1	-	-	-	-	-	0.05	0.05	-	0.05	0.05	
Major Repair	1.0	-	-	0.05	-	-	0.05	-	0.8	0.8	-	1.2	1.2	
Total				3.1		0.9			0.2			1.0		0.3

Table 3-21 (19) WORK VOLUME AND ESTIMATED COST FOR REPAIR AND IMPROVEMENT WANTED BY FIELD STAFF (19/25)

MAHARAJ

(CANAL)	Irrigation Canal		Drainage Canal		Communi. Canal		Natural Canal		Remarks	
	MB	km	MB	km	MB	km	MB	km		
Dredging	0.05	74.1	0.1	32.0	0.2	-	0.2	-	3/6 block	
Widening	0.25	-	0.45	-	0.45	-	0.45	-		
Removal of St.	0.15	1.0	0.3	-	0.3	-	0.3	-		
Slope Protection	0.05	26.0	0.05	-	0.05	-	0.05	-	47%	
New Construction	0.8	-	1.6	-	3.0	-	-	-		
Lining	1.0	-	-	-	-	-	-	-		
Major Repair	0.5	-	0.5	-	0.9	-	-	-		
Total		5.2		3.2		0		0		
(DIKE)	Flood Protec. Dike		Canal Dike		Road		Other Dike			
	MB	km	MB	km	MB	km	MB	km	MB	
Heightening	0.25	47.0	0.25	38.0	0.6	-	0.15	-	-	
Widening	0.25	40.0	0.25	20.0	0.6	-	0.15	-	-	
Paving	0.3	-	0.3	-	1.0	-	0.3	-	-	
Slope Protection	0.05	-	0.05	1.0	0.05	-	0.05	-	-	
New Construction	1.3	-	-	-	3.0	-	0.7	-	-	
Major Repair	0.4	-	0.4	-	1.0	-	0.2	-	-	
Total		21.8		14.6		0		0	Grand Total 48.0	
(OTHER STRUC.)	Regulator/Barrage		Regulator		Siphon/Culvert		Pumping Station		Navigation Lock	
	MB	pic	MB	pic	MB	pic	MB	pic	MB	pic
Larger Gate	1.2	-	0.1	-	0.1	-	0.1	-	-	-
Water Leak	0.05	1	-	-	-	-	-	-	-	-
Lower Sill	-	-	-	-	-	-	-	-	-	-
New Construction	2.0	-	0.15	1	0.15	-	2.6	-	4.0	-
Repair Gate/Hoist	1.1	-	0.1	7	0.1	-	0.6	-	0.6	-
Repair Other St.	0.5	3	0.05	1	0.05	2	0.3	-	0.3	-
Remove Sedi/Weeds	0.05	1	-	-	-	-	0.05	-	0.05	-
Major Repair	1.0	-	0.05	-	0.05	-	0.8	-	1.2	-
Total		1.7		1.1		0.1		0		0

Table 3-21 (20) WORK VOLUME AND ESTIMATED COST FOR REPAIR AND IMPROVEMENT WANTED BY FIELD STAFF (20/25)

PASAK TAI

(CANAL)	Irrigation Canal			Drainage Canal			Communi. Canal			Natural Canal			Remarks			
	M\$	km	M\$	M\$	km	M\$	M\$	km	M\$	km	M\$	km		M\$		
Dredging	0.05	122.0	6.1	0.1	133.0	13.3	0.2	22.0	4.4	0.2	20.0	4.0				
Widening	0.25	90.0	22.5	0.45	-	-	0.45	-	-	0.45	12.0	5.4				
Removal of St.	0.15	-	-	0.3	-	-	0.3	-	-	0.3	-	-				
Slope Protection	0.05	88.0	4.4	0.05	55.0	2.8	0.05	-	-	0.05	6.0	0.3				
New Construction	0.8	25.0	20.0	1.6	5.0	8.0	3.0	-	-	-	-	-				
Lining	1.0	-	-	-	-	-	-	-	-	-	-	-				
Major Repair	0.5	-	-	0.5	-	-	0.9	-	-	-	-	-				
Total			53.0			24.1			4.4			9.7				
(DIKE)	Flood Protec. Dike			Canal Dike			Road			Other Dike			Remarks			
	M\$	km	M\$	M\$	km	M\$	M\$	km	M\$	km	M\$	km		M\$		
Heightening	0.25	90.0	22.5	0.25	40.0	10.0	0.6	-	-	0.15	4.0	0.6				
Widening	0.25	10.0	2.5	0.25	110.0	27.5	0.6	-	-	0.15	-	-				
Paving	0.3	170.0	51.0	0.3	40.0	12.0	1.0	-	-	0.3	-	-				
Slope Protection	0.05	85.0	4.3	0.05	60.0	3.0	0.05	-	-	0.05	5.0	0.3				
New Construction	1.3	15.0	19.5	0.5	20.0	10.0	3.0	-	-	0.7	-	-				
Major Repair	0.4	-	-	0.4	-	-	1.0	-	-	0.2	-	-				
Total			99.8			62.5			0			0.9	Grand Total 280.6			
(OTHER STRUC.)	Regulator/Barrage			Regulator			Siphon/Culvert			Pumping Station			Navigation Lock			
	M\$	pic	M\$	M\$	pic	M\$	M\$	pic	M\$	M\$	pic	M\$	pic	M\$	pic	M\$
Larger Gate	1.2	-	-	0.1	-	-	0.1	-	-	0.1	-	-	-	-	-	-
Water Leak	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lower Sill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
New Construction	2.0	-	-	0.15	20	3.0	0.15	2	0.3	2.6	-	-	4.0	4	16.0	
Repair Gate/hoist	1.1	-	-	0.1	35	3.5	0.1	-	-	0.6	1	0.6	0.6	-	-	-
Repair Other St.	0.5	5	2.5	0.05	-	-	0.05	-	-	0.3	-	-	0.3	-	-	-
Remove Sedi/Weeds	0.05	6	0.3	-	-	-	-	-	-	0.05	-	-	0.05	-	-	-
Major Repair	1.0	-	-	0.05	-	-	0.05	-	-	0.8	-	-	1.2	-	-	-
Total			2.8			6.5			0.3			0.6				16.0

Table 3-21 (21) WORK VOLUME AND ESTIMATED COST FOR REPAIR AND IMPROVEMENT WANTED BY FIELD STAFF (21/25)

NAKHON LUANG

(CANAL)	Irrigation Canal		Drainage Canal		Communi. Canal		Natural Canal		Remarks	
	MB	km	MB	km	MB	km	MB	km		
Dredging	0.05	53.0	0.1	170.0	0.2	-	0.2	100.0	20.0	
Widening	0.25	8.0	0.45	-	0.45	-	0.45	-	-	
Removal of St.	0.15	-	0.3	52.3	0.3	-	0.3	-	-	
Slope Protection	0.05	-	0.05	-	0.05	-	0.05	-	-	
New Construction	0.8	106.0	1.6	-	3.0	-	-	-	-	
Lining	1.0	18.2	-	-	-	-	-	-	-	
Major Repair	0.5	9.1	0.5	-	0.9	-	-	-	-	
Total		112.3		26.7		0		20.0		
(DIKE)	Flood Protec. Dike		Canal Dike		Road		Other Dike			
	MB	km	MB	km	MB	km	MB	km	MB	
Heightening	0.25	-	0.25	112.0	0.6	-	0.15	-	-	
Widening	0.25	17.1	0.25	-	0.6	-	0.15	-	-	
Paving	0.3	20.7	0.3	1.0	1.0	-	0.3	-	-	
Slope Protection	0.05	10.0	0.05	-	0.05	-	0.05	-	-	
New Construction	1.3	-	-	-	3.0	-	0.7	-	-	
Major Repair	0.4	-	0.4	-	1.0	-	0.2	-	-	
Total		11.0		28.3		0		0	Grand Total 210.7	
(OTHER STRUC.)	Regulator/Barrage		Regulator		Siphon/Culvert		Pumping Station		Navigation Lock	
	MB	plc	MB	plc	MB	plc	MB	plc	MB	plc
Larger Gate	1.2	-	0.1	2	0.1	-	0.1	-	-	-
Water Leak	0.05	-	-	-	-	-	-	-	-	-
Lower Sill	-	-	-	-	-	-	-	-	-	-
New Construction	2.0	4	0.15	2	0.15	2	2.6	-	4.0	-
Repair Gate/hoist	1.1	2	0.1	5	0.1	-	0.6	-	0.6	-
Repair Other St.	0.5	2	0.05	-	0.05	-	0.3	-	0.3	-
Remove Sedi/Weeds	0.05	2	-	-	-	-	0.05	-	0.05	-
Major Repair	1.0	-	0.05	-	0.05	-	0.8	-	1.2	-
Total		11.3		0.8		0.3		0		0

Table 3-21 (22) WORK VOLUME AND ESTIMATED COST FOR REPAIR AND IMPROVEMENT WANTED BY FIELD STAFF (22/25)

RANGSIT NUJ

(CANAL)	Irrigation Canal			Drainage Canal			Ditch			Natural Canal			Remarks	
	MB	km	pic	MB	km	pic	MB	km	pic	MB	km	pic		
Dredging	0.05	111.2	5.6	0.1	241.0	1.24	-	-	-	0.2	9.5	1.9		
Widening	0.25	-	-	0.45	-	-	-	-	-	0.45	-	-		
Removal of St.	0.15	10.0	1.5	0.3	3.0	0.9	-	-	-	0.3	-	-		
Slope Protection	0.05	-	-	0.05	100.0	5.0	-	-	-	0.05	-	-		
New Construction	0.8	-	-	1.6	-	-	0.1	300	30.0	-	-	-		
Lining	1.0	289.1	289.1	-	-	-	-	-	-	-	-	-		
Major Repair	0.5	-	-	0.5	-	-	-	-	-	-	-	-		
Total			296.2			30.0			30.0			1.9		
(DIKE)	Flood Protec. Dike			Canal Dike			Road			Other Dike				
	MB	km	pic	MB	km	pic	MB	km	pic	MB	km	pic	MB	
Heightening	0.35	20.0	7.0	0.35	243.0	85.1	0.6	-	-	0.2	-	-	-	
Widening	0.35	-	-	0.35	91.0	31.9	0.6	-	-	0.2	-	-	-	
Paving	0.3	-	-	0.3	135.0	40.5	1.0	-	-	0.3	-	-	-	
Slope Protection	0.1	-	-	0.1	-	-	0.1	-	-	0.1	-	-	-	
New Construction	1.8	-	-	-	-	-	3.0	-	-	1.0	-	-	-	
Major Repair	0.5	-	-	0.5	-	-	1.0	-	-	0.3	-	-	-	
Total			7.0			157.5			0			0	Grand Total 641.0	
(OTHER STRUC.)	Regulator/Darrage			Regulator			Siphon/Culvert			FTO			Navigation Lock	
	MB	km	pic	MB	km	pic	MB	km	pic	MB	km	pic	MB	km
Larger Gate	2.8	-	-	0.45	-	-	0.45	-	-	-	-	-	-	-
Water Leak	0.1	-	-	0.05	-	-	0.05	-	-	-	-	-	-	-
Lower Sill	-	-	-	-	-	-	-	-	-	-	-	-	-	-
New Construction	4.7	21	98.7	0.75	-	-	0.75	-	-	0.03	181	5.4	4.0	-
Repair Gate/Hoist	1.0	-	-	0.4	-	-	0.4	-	-	-	-	-	0.6	-
Repair Other St.	0.5	-	-	0.2	-	-	0.2	-	-	-	-	-	0.3	-
Remove Sedi/Weeds	0.1	3	0.3	-	-	-	-	-	-	-	-	-	0.05	-
Major Repair	1.4	-	-	0.25	54	15.5	0.25	2	0.5	-	-	-	1.2	-
Total			99.0			15.5			0.5			5.4		0

Table 3-21 (23) WORK VOLUME AND ESTIMATED COST FOR REPAIR AND IMPROVEMENT WANTED BY FIELD STAFF (23/25)

RANGSIT TAI

(CANAL)	Irrigation Canal		Drainage Canal		Communi. Canal		Natural Canal		Remarks	
	MB	km	MB	km	MB	km	MB	km		
Dredging	0.05	117.7	0.1	360.0	0.2	38.2	0.2	65.0	4/5 block	
Widening	0.25	-	0.45	-	0.45	-	0.45	-		
Removal of St.	0.15	154.6	0.3	-	0.3	-	0.3	-	81%	
Slope Protection	0.05	-	0.05	-	0.05	-	0.05	-		
New Construction	0.8	-	1.6	13.0	3.0	-	-	-		
Lining	1.0	-	-	-	-	-	-	-		
Major Repair	0.5	-	0.5	-	0.9	-	-	-		
Total	29.1		56.8		7.7		13.0			
(DIKE)	Flood Protec. Dike		Canal Dike		Road		Other Dike			
	MB	km	MB	km	MB	km	MB	km		
Heightening	0.35	19.0	0.35	13.2	0.2	13.2	0.2	2.6		
Widening	0.35	51.0	0.35	-	0.2	-	0.2	-		
Paving	0.3	-	0.3	-	1.0	-	0.3	-		
Slope Protection	0.1	-	0.1	-	0.1	-	0.1	-		
New Construction	1.8	-	-	-	1.0	-	1.0	-		
Major Repair	0.5	-	0.5	-	0.3	-	0.3	-		
Total	24.6		4.6		2.6		0		Grand Total 277.6	
(OTHER STRUC.)	Regulator/Barrage		Regulator		Siphon/Culvert		Pumping Station		Navigation Lock	
	MB	plc	MB	plc	MB	plc	MB	plc	MB	plc
Larger Gate	2.8	7	0.45	19.6	0.45	1	0.45	0.45	-	-
Water Leak	0.1	9	0.05	0.9	0.05	-	-	-	-	-
Lower Sill	-	-	-	-	-	-	-	-	-	-
New Construction	4.7	13	0.75	61.1	0.75	48	0.75	2.6	4.0	-
Repair Gate/hoist	1.0	2	0.4	2.0	0.4	1	0.4	0.6	0.6	2
Repair Other St.	0.5	5	0.2	2.5	0.6	3	0.2	0.3	0.3	-
Remove Sedi/Weeds	0.1	32	-	3.2	-	-	-	0.05	0.05	2
Major Repair	1.4	8	0.25	11.2	0.25	-	0.25	0.8	1.2	-
Total	100.5		37.0		0.4		0		1.3	

Table 3-21 (24) WORK VOLUME AND ESTIMATED COST FOR REPAIR AND IMPROVEMENT WANTED BY FIELD STAFF (24/25)

KHLONG DAN

(CANAL)	Irrigation Canal		Drainage Canal		Communi. Canal		Natural Canal		Remarks	
	MB	km	MB	km	MB	km	MB	km		
Dredging	0.05	20.0	0.1	271.0	0.2	149.7	0.2	85.6	4/4 block	
Widening	0.25	-	0.45	-	0.45	-	0.45	-		
Removal of St.	0.15	5.0	0.3	-	0.3	-	0.3	-		
Slope Protection	0.05	10.0	0.05	40.0	0.05	25.0	0.05	25.0	100%	
New Construction	0.8	-	1.6	-	3.0	-	-	-		
Lining	1.0	-	-	-	-	-	-	-		
Major Repair	0.5	-	0.5	-	0.9	-	-	-		
Total			2.3	29.1	31.2		18.5			
(DIKE)	Flood Protec. Dike		Canal Dike		Road		Other Dike		Remarks	
	MB	km	MB	km	MB	km	MB	km		
Heightening	0.35	-	0.35	-	0.6	-	0.2	-		
Widening	0.35	-	0.35	-	0.6	-	0.2	-		
Paving	0.3	-	0.3	-	1.0	-	0.3	-		
Slope Protection	0.1	-	0.1	-	0.1	-	0.1	-		
New Construction	1.8	-	-	-	3.0	-	1.0	-		
Major Repair	0.5	12.1	0.5	-	1.0	-	0.3	-		
Total			6.1	0	0		0		Grand Total 103.6	
(OTHER STRUC.)	Regulator/Barrage		Regulator		Siphon/Culvert		Pumping Station		Navigation Lock	
	MB	pic	MB	pic	MB	pic	MB	pic	MB	pic
Larger Gate	2.8	-	0.45	-	0.45	-	0.45	-	-	-
Water Leak	0.1	-	0.05	-	0.05	-	-	-	-	-
Lower Sill	-	-	-	-	-	-	-	-	-	-
New Construction	4.7	2	0.75	-	0.75	-	2.6	-	4.0	-
Repair Gate/Hoist	1.0	-	0.4	-	0.4	-	0.6	-	0.6	-
Repair Other St.	0.5	-	0.2	15	0.2	-	0.3	3	0.3	-
Remove Sedi/Weeds	0.1	16	-	-	-	-	0.05	5	0.05	-
Major Repair	1.4	-	0.25	-	0.25	-	0.8	-	1.2	1
Total			11.0		3.0		0		1.2	1.2

Table 3-21 (25) WORK VOLUME AND ESTIMATED COST FOR REPAIR AND IMPROVEMENT WANTED BY FIELD STAFF (25/25)

PHRA ONG CHAIYANU.

(CANAL)	Irrigation Canal		Drainage Canal		Communi. Canal		Natural Canal		Remarks	
	MB	km	MB	km	MB	km	MB	km		
Dredging	0.05	406.2	0.1	16.0	0.2	157.3	0.2	867.8	4/4 block	
Widening	0.25	-	0.45	-	0.45	-	0.45	-		
Removal of St.	0.15	-	0.3	-	0.3	-	0.3	-		
Slope Protection	0.05	-	0.05	-	0.05	-	0.05	-	100%	
New Construction	0.8	-	1.6	-	3.0	-	-	-		
Lining	1.0	-	-	-	-	-	-	-		
Major Repair	0.5	-	0.5	-	0.9	-	-	-		
Total		20.3		1.6		27.5		175.6		
(DIKE)	Flood Protec. Dike		Canal Dike		Road		Other Dike		Grand Total	
	MB	km	MB	km	MB	km	MB	km		
Heightening	0.35	12.7	0.35	-	0.6	-	0.2	-	327.6	
Widening	0.35	-	0.35	-	0.6	-	0.2	-		
Paving	0.3	-	0.3	-	1.0	-	0.3	-		
Slope Protection	0.1	-	0.1	-	0.1	-	0.1	-		
New Construction	1.8	12.7	-	-	3.0	-	1.0	-		
Major Repair	0.5	-	0.5	-	1.0	-	0.3	-		
Total		27.3		0		0		0		
(OTHER STRUC.)	Regulator/Barrage		Regulator		Siphon/Culvert		Pumping Station		Navigation Lock	
	MB	plc	MB	plc	MB	plc	MB	plc	MB	plc
Larger Gate	2.8	3	0.45	3	0.45	-	0.45	-	-	-
Water Leak	0.1	4	0.05	5	0.05	-	-	-	-	-
Lower Sill	-	-	-	-	-	-	-	-	-	-
New Construction	4.7	6	0.75	19	0.75	-	2.6	-	4.0	6
Repair Gate/Hoist	1.0	-	0.4	-	0.4	-	0.6	-	0.6	-
Repair Other St.	0.5	-	0.2	-	0.2	-	0.3	-	0.3	-
Remove Sedi/Weeds	0.1	3	-	-	-	-	0.05	-	0.05	-
Major Repair	1.4	-	0.25	-	0.25	-	0.8	-	1.2	-
Total		37.3		16.0		0		0		24.0

Table 3-22 (1) SUMMARY OF COST WANTED FOR IMPROVEMENT
IN THE DELTA BY STRUCTURE (1/2)

(Unit : Mill. Baht)

Project Name	Canal			Dike			Other Structures			Total		
	Irrigat.	Drainage	Communi.	Natural	Flood	Canal	Road	Other	Po-To-Ro		To-Ro-Bo	Others
Phonlathep	29.3	2.2	0.6	0	0	0.9	0	21.0	1.1	3.1	1.1	59.3
Thabole	75.0	10.0	0.8	0.3	0	3.3	0	0	3.0	1.0	0.1	94.4
Samchuk	32.6	3.6	0	0	0	9.0	30.0	0	6.5	1.4	1.0	84.1
Donchedi	28.5	8.2	0	1.5	14.1	4.0	6.0	0	2.0	1.5	0	65.8
Phophraya	35.3	52.1	6.0	43.1	79.6	17.3	0	17.0	62.4	4.2	32.5	349.5
Borommathat	108.1	23.1	0	2.1	17.1	12.5	30.0	0	2.1	1.2	0.5	196.7
Chanasutr	33.4	10.5	0	0	3.8	53.9	47.6	0	3.5	1.3	4.3	164.3
Yangmanee	2.7	4.1	5.8	2.0	0.5	12.2	2.2	0	1.6	1.1	3.8	36.0
Phak Hai	9.4	4.8	4.0	6.1	79.0	25.8	0	0.1	41.1	5.9	13.6	189.8
Bang Ban	75.7	4.4	0	0	18.8	48.1	5.0	11.2	5.8	1.7	7.2	177.9
Manorom	24.9	12.2	0	0	0	3.6	15.6	0	0	0.2	2.7	59.2
Chong Kae	34.1	18.7	0	0	1.2	10.9	0	0.9	1.2	0.9	0	67.9
Koke Kathiem	21.1	30.3	0	6.7	9.0	3.6	8.3	0	7.0	4.3	1.4	91.7
Roeng Rang	3.6	2.2	0	0.5	0	23.8	0	0	3.1	0.9	1.5	35.6
Maharaj	5.2	3.2	0	0	21.8	14.6	0	0	1.7	1.1	0.1	47.7
Pasak Tai	53.0	24.1	4.4	9.7	99.8	62.5	0	0.9	2.8	6.5	16.9	280.6
Nakhon Luang	112.3	26.7	0	20.0	11.0	28.3	0	0	11.3	0.8	0.3	210.7
Sub-Total	691.1	240.4	21.6	92.0	355.7	334.3	144.7	51.1	156.2	37.1	87.0	2,211.2
Chaochet-B.Y.	7.2	3.9	8.6	143.0	103.9	0	0	0	51.9	9.0	3.8	331.1
Phraya Banlu	2.5	4.2	8.3	54.8	76.8	6.3	0	0	24.5	8.0	1.2	186.6
Phraa Phimon	7.0	2.0	65.2	40.0	3.5	7.0	0	0	89.5	0	0.1	214.3
Phasi Charoen	0	10.0	10.7	436.5	5.8	0	11.7	0	19.3	4.7	3.0	501.7
Rangsit Nua	296.2	30.0	30.0	1.9	7.0	157.5	0	0	99.0	13.5	5.9	641.0
Rangsit Tai	29.1	56.8	7.7	13.0	24.6	4.6	2.6	0	100.5	37.0	1.7	277.6
Khlong Dan	2.3	29.1	31.2	18.5	6.1	0	0	0	11.0	3.0	2.4	103.6
Praong Chaiya	20.3	1.6	27.5	173.6	27.3	0	0	0	37.3	16.0	24.0	327.6
Sub-Total	364.6	137.6	189.2	881.3	255.0	175.4	14.3	-	433.0	91.2	42.1	2,583.7
Total	1,055.7	378.0	210.8	973.3	610.7	509.7	159.0	51.1	589.2	128.3	129.1	4,794.9

N.B. 1. Estimated from q'naire survey results to water masters of 25 projects in the Delta
2. Po-To-Ro : Regulator without pipe culvert(s)
3. To-Ro-Bo : Regulator with pipe culvert(s)

Table 3-22 (2) SUMMARY OF COST WANTED FOR IMPROVEMENT
IN THE DELTA BY STRUCTURE (2/2)

Structure	Gravity Irri. Area		Wat. Conserv. Area		Total	
	MB	(%)	MB	(%)	MB	(%)
1. Irrigation Canal	691.1	(31)	364.6	(14)	1,055.7	(22)
2. Drainage Canal	240.4	(11)	137.6	(5)	378.0	(8)
3. Communi. Canal	21.6	(1)	189.2	(8)	210.8	(4)
4. Natural Canal	92.0	(4)	881.3	(34)	973.3	(20)
Sub-total	1,045.1	(47)	1,572.7	(61)	2,617.8	(54)
5. Flood Protec. Dike	355.7	(16)	255.0	(10)	610.7	(13)
6. Canal Dike	334.3	(15)	175.4	(7)	509.7	(11)
7. Road	144.7	(7)	14.3	(0)	159.0	(3)
8. Other Dike	51.1	(2)	-	-	51.1	(1)
Sub-total	885.8	(40)	444.7	(17)	1,330.5	(28)
9. Reg. (Po-To-Ro) *2	156.2	(7)	433.0	(17)	589.2	(12)
10. Reg. (To-Ro-Bo) *3	37.1	(2)	91.2	(3)	128.3	(3)
11. Other Civil Works	87.0	(4)	42.1	(2)	129.1	(3)
Sub-total	280.3	(13)	566.3	(22)	846.6	(18)
		MB (%)		MB (%)		MB (%)
Total	2,211.2	(100)	2,583.7	(100)	4,794.9	(100)

N.B. * Estimated from questionnaire answers from water masters of 25 projects in the Delta; not all answers were collected.

*2 Regulator with □-shaped culvert or without culvert

*3 Regulator with ○-shaped culvert

Table 3-23 IMPROVEMENT & REPAIR COST WANTED PER IRRIGABLE AREA BY PROJECT IN THE DELTA

Project	Cost M.Bt	Ratio of Answered Water Mast. Area	Adjusted Cost M.Bt	(*2) Irrigable Area(rai)	Per Rai Cost Bt/rai	Order
A. Gravity Irrigation Area						
Phonlathep	59.3	0.33	179.7	118,700	1,514	2
Thabote	94.4	1.00	94.4	218,356	432	9
Samchuk	84.1	1.00	84.1	372,100	226	13
Don Chedi	65.8	0.51	129.0	162,500	794	6
Pho Phraya	349.5	0.71	492.2	415,938	1,183	3
Borommathat	196.7	1.00	196.7	369,077	533	8
Chanasutr	164.3	1.00	164.3	527,000	312	11
Yangmanee	36.0	1.00	36.0	233,689	154	17
Phak Hai	189.8	0.56	338.9	206,000	1,645	1
Bang Ban	177.9	1.00	177.9	160,000	1,112	4
Nanorom	59.1	1.00	59.1	264,110	224	14
Chong Kae	67.9	1.00	67.9	238,739	284	12
Koke Kathiem	91.7	1.00	91.7	228,300	402	10
Roeng Rang	35.6	1.00	35.6	203,780	175	16
Maharaj	48.0	0.47	102.1	501,800	204	15
Pasak Tai	280.6	1.00	280.6	272,000	1,032	5
Nakhon Luang	210.7	1.00	210.7	301,795	698	7
Total	2,211.4		2,740.9	4,793,884	572	
B. Water Conservation Area						
Chaochet-B.Y.	331.3	1.00	331.3	406,000	816	3
Phraya Banlu	186.6	0.79	236.2	437,500	540	7
Phra Phimon	214.3	1.00	214.3	277,560	772	4
Phasi Charoen	501.7	0.58	865.0	287,850	3,005	1
Rangsit Nua	641.0	1.00	641.0	445,500	1,439	2
Rangsit Tai	277.6	0.81	342.0	526,000	650	5
Khlong Dan	103.6	1.00	103.6	569,020	182	6
Phra Ong Chaiv.	327.6	1.00	327.6	510,000	642	8
Total	2,583.7		3,061.0	3,459,430	885	

N.B. * Estimated from q'naire survey results to water masters of 25 projects in the Delta.

*2 Irrigable Area employed by project offices.

Table 3-25 UNIT COST FOR IMPROVEMENT AND REPAIR AT AT LATERAL LEVEL

Order Project	Baht/rai	Average		
<u>(Gravity Irrigation Area)</u>				
1. Phak Ijai	1,645	<div style="border: 1px solid black; padding: 5px; width: fit-content;"> Overall Average = $10,924/17 + 10\%$ = 700 B/rai </div>	<div style="border: 1px solid black; padding: 5px; width: fit-content;"> Upper half ave. = $8,511/8+10\%$ = 1,200 B/rai </div>	<div style="border: 1px solid black; padding: 5px; width: fit-content;"> Middle half average = $4,713/9+10\%$ = 600 B/rai </div>
2. Phonlathep	1,514			
3. Pho Phraya	1,183			
4. Bang Ban	1,112			
5. Pasak Tai	1,032			
6. Don Chdi	794			
7. Nakhon Luang	698			
8. Borommathat	533			
9. Thabote	432			
10. Koke Kathiem	402			
11. Chanasutr	312			
12. Chong Kae	284			
13. Sam Chuk	226			
14. Manorom	224			
15. Maharaj	204			
16. Roeng Rang	175			
17. Yangmanee	154			
⇔ Intensive Request ⇔				
⇔ Moderate Request ⇔				
<u>(Water Conservation Area)</u>				
1. Phasi Charoen	3,005	<div style="border: 1px solid black; padding: 5px; width: fit-content;"> Overall average = $8,045/8+10\%$ = 1,100 B/rai </div>	<div style="border: 1px solid black; padding: 5px; width: fit-content;"> Upper half ave. = $6,032/4+10\%$ = 1,700 B/rai </div>	<div style="border: 1px solid black; padding: 5px; width: fit-content;"> Mid. half ave. = $2,880/4+10\%$ = 800 B/rai </div>
2. Rangsit Nua	1,439			
3. Chaochet-Bang Y.	816			
4. Phara Phimon	772			
5. Rangsit Tai	650			
6. Phra Ong Chai.	642			
7. Phraya Ban Lu	540			
8. Khlong Dan	182			
⇔ Conservative Request ⇔				

Table 3-26 LOCATION OF FLOW MEASUREMENT SITE

<u>Site No.</u>	<u>Location</u>	<u>Note</u>
(Chainat-Pasak Canal)		
0.	Down Stream of Manorom Regulator	Bridge
1.	9 km Down Stream of Manorom Regulator	Bridge
2.	22 km Down Stream of Manorom Regulator	Bridge
3.	35 km Down Stream of Manorom Regulator	Bridge
4.	1 km Down Stream of Chong Kae Regulator	Bridge
5.	20 km Down Stream of Chong Kae Regulator	Bridge
6.	28 km Down Stream of Chong Kae Regulator	Bridge
7.	Down Stream of Khok Kathiem Regulator	Bridge
8.	9 km Down Stream of Khok Kathiem Regulator	Bridge
8-1.	15 km Down Stream of Khok Kathiem Regulstor	Bridge
9.	31 km Down Stream of Khok Kathiem Regulator	Bridge
10.	2 km Down Stream of Roeng Rang Regulator	Bridge
11.	8 km Down Stream of Roeng Rank Regulator	Bridge

(Chaint-Ayutthaya Canal)

12.	1 km Down Stream of Maharaj Regulator	Bridge
13.	At KM 50 + 300	

<u>Site No.</u>	<u>Location</u>	<u>Note</u>
(Raphiphatana, Raphiphatana South and West Branch Canals)		
A.	Down Stream of Phra Narai Regulator	Bridge
B.	4 km Down Stream of Phra Narai Regulator	Bridge
C.	12 km Down Stream of Phra Narai Regulator	Bridge
D.	22km Down Stream of Phra Narai Regulator	Bridge
E.	Down Stream of Phra Narai Regulator	Bridge
F.	13km Down Stream of Phra Narai Regulator	Bridge
G.	23km Down Stream of Phra Narai Regulator	Bridge
H.	Down Stream of Phra Thammaracha Regulator	
I.	Down Stream of Hok Wa Regulator	Bridge
J.	6km Down Stream of Hok Wa Regulator	Bridge
K.	Down Stream of Khlong 13 Tail Regulator	
L.	Down Stream of Phra Sri Sil Regulator	

(Makamthao-Uthong Canal)

1.	At KM 3 + 450
2.	At KM 56 + 100

Table 3-27 COMPARISON OF DESIGN X-SECTIONS WITH PRESENT ONES IN MAJOR CANALS

Canal Name	Section	Location (km)	Water Area		Balance	
			At Design (m ²)	At Present (m ²)	Water Area (m ²)	Percent (%)
Chainat-Pasak Canal	Section 0	0+500	240.00	267.9	27.9	11.6
	" 1	12+500	240.00	279.3	39.3	16.4
	" 2	24+900	252.00	284.1	52.1	22.5
	" 3	39+500	224.00	198.6	(-) 25.4	(-) 11.3
	" 4	46+500	216.00	240.0	24.0	11.1
	" 5	64+795	208.00	258.3	50.3	24.2
	" 6	79+566	194.58	228.3	33.72	17.3
	" 7	86+711	194.58	233.4	38.82	20.0
	" 8	94+928	184.00	189.3	5.3	2.9
	" 8-1	99+038	184.00	158.7	(-) 25.3	(-) 13.8
	" 10	122+650	173.94	166.0	(-) 7.94	(-) 4.6
" 11	128+343	139.54	160.0	20.46	14.7	
	Mean				9.3	
Raphiphatana Canal *1	Section A	0+500	133.50	167.2	33.7	25.2
	" B	4+350	123.00	185.8	60.4	49.1
	" C	12+050	123.00	146.8	23.8	19.3
	" D	26+250	110.10	140.8	30.7	27.9
	Mean				30.4	
Raphiphatana South Branch Canal	Section E	0+500	136.00	111.4	(-) 24.6	(-) 18.0
	" F	12+600	120.00	108.2	(-) 11.8	(-) 9.8
	" G	22+200	104.00	107.6	3.6	3.5
	Mean				(-) 8.1	
Klong 13 Canal	Section H	0+300	84.24	91.4	7.16	8.5
	" I	12+950	84.24	79.2	(-) 5.04	(-) 6.0
	" J	19+220	84.24	53.4	(-) 30.84	(-) 36.6
	" K	25+720	84.24	71.0	(-) 13.24	(-) 15.7
	Mean				(-) 12.5	
Chainat-Ayuthaya Canal	Section 12		69.84	96.9	27.06	38.7
	" 13	50+300	48.24	53.4	5.16	10.7
	Mean					24.7
Makamthao-Uthong Canal	Section 1	3+450	51.84	63.4	11.56	22.3
	" 2	56+100	34.00	34.0	0	0
	Mean					11.2

N.B. *1 One excavated in 1978. New design X-sections not found.

Table 4-1 VARIABLES FOR EVALUATION OF PROJECT FACILITIES AND O&M

Evaluation Index	Variables and derivation Formula
1. Service Area Size	= (irrigable area)
2. Land Consolidation rate	= ((intensive consolidated area)+(extensive consolidated area)x0.5)/(irrigable area)
3. Cropping Intensity	= (wet season cropped area)+(dry season cropped area)/(irrigated area)
4. Crop Diversification rate	= ((wet season non-paddy cropped area)+(dry season non-paddy cropped area))/((wet season cropped area)+(dry season cropped area))
5. Water Behavior Stability	= (percentage of "Good Water Control" at head regulator of project area as shown in Table 1.4.2 of ANNEX-1)
6. Oldness of Project Facilities	= minimum value of (1987-((year of construction completion)-(year of construction start))x0.5/50 or 1.00
7. Functional Degree of Project Facilities	= 1/6 x ((\sum (degree of workability)/(mean)) for irr. & drain. canal, natural canal, dike, regulator, road and barrage) : from Q'naire Form 5.3.1; Q-5
8. Necessity for Improvement	= 1/6 x ((\sum (degree of damage)/(mean)+(degree of needs for repair & improve.)/(mean) for irr. & drain. canal, natural canal, dike, regulator, road and barrage) : from Q'naire Form 5.3.1 ; Q-5
9. Cost for Improvement	= (per-rai budget programed in the on-going 5-year Improvement Plan 1987-91)

Table 4-2 (1) VALUES OF EVALUATION INDICES BY PROJECT (1/2)

Project Name	Service Area (rai)	Land Consolidation Rate	Cropping Intensity	Crop Diversifi. Rate	Water Behavior Stability
PHONLATHEP	96,000	0	1.6	0	40
THABOTE	179,000	0	1.7	0	75
SAM CHUK	305,000	0.2	1.5	0.2	96
DON CHEDI	144,000	0.2	1.3	0.1	33
PHO PHURAYA	370,000	0	1.2	0	68
BOROMNATHAT	365,000	0.4	1.4	0	51
CHANASUTR	474,000	0.3	1.5	0	89
YANGMANEE	233,000	0	1.0	0	55
PHAK HAI	206,000	0	1.0	0	83
BANG BAN	144,000	0	1.0	0	**
*CHAOCHED-B. Y.	406,000	0	0.8	0	**
*PHYA BAN LU	438,000	0	1.3	0.1	**
*PHRA PHIMON	261,000	0	1.4	0.2	**
*PHASI CHAROEN	200,000	0	1.1	0.7	**
MANOROM	236,000	0.3	1.3	0	46
CHONG KAE	292,000	0.2	0.9	0.1	59
KOKE KATHIEM	220,000	0	1.1	0.0	50
ROENG RANG	183,000	0	1.1	0.1	48
MAHARAJ	476,000	0	1.2	0.1	30
PASAK TAI	241,000	0	1.1	0	23
NAKHON LUANG	267,000	0	1.0	0	23
*RANGSIT NUA	454,000	0	1.0	0.4	**
*RANSIT THAI	578,000	0	1.3	0	**
*KHLONG DAN	528,000	0	0.8	0.1	**
*PRA-ONG CHAIY	510,000	0	1.4	0	**
Mean	312,240	0.06	1.20	0.08	44
Mean in gravity Irrig. Area	260,647	0.09	1.23	0.04	44
Mean in water Conserv. area	421,875	**	1.14	0.19	**

N.B. * Project in water conservation area; else in gravity irrigation area.

** Data not available.

Table 4-2 (2) VALUES OF EVALUATION INDICES BY PROJECT (2/2)

Project Name	Oldness of Facilities	Functional Degree of Facili.	Neccesity for Imp- rovement	Cost for Improve. (Baht/rai)
PHONLATHEP	0.6	1.11	1.08	316
THABOTE	0.6	1.11	1.58	197
SAM CHUK	0.8	1.05	1.21	155
DON CHEDI	0.5	1.08	1.16	226
PHO PHRAYA	1.0	0.74	0.57	95
BOROMMATHAT	0.6	1.11	1.09	124
CHANASUTR	0.6	0.92	0.92	62
YANGMANEE	0.6	1.05	0.93	126
PHAK HAI	0.6	1.06	1.28	215
BANG BAN	0.2	0.99	1.00	440
*CHAOCHED-B.Y.	0.9	1.04	0.81	112
*PHYA BAN LU	0.9	0.85	0.84	124
*PHRA PHIMON	0.9	0.79	0.72	120
*PHASI CHAROEN	1.0	0.89	0.95	100
MANOROM	0.6	1.09	1.47	113
CHONG KAE	0.6	0.95	0.94	71
KOKE KATHIEM	0.6	0.90	0.81	285
ROENG RANG	0.6	1.11	1.38	430
MAHARAJ	0.6	1.02	1.02	155
PASAK TAI	1.0	0.99	0.88	139
NAKHON LUANG	0.5	1.05	0.96	184
*RANGSIT NUA	1.0	1.11	1.01	141
*RANSIT THAI	1.0	0.89	1.13	158
*KHLONG DAN	1.0	1.11	1.20	136
*PRA-ONG CHAIY	1.0	0.89	0.86	88
Mean	0.72	1.00	1.00	172
Mean in gravi- ty Irri. Area	0.62	1.02	1.07	196
Mean in water Conserv.area	0.94	0.96	0.94	122

N.B. * Project in water conservation area; else in gravity irrigation area.

** Data not available.

Table 4-3 EVALUATED RESULTS OF SYSTEMS BY PROJECT AREA IN THE DELTA AND AN EXAMPLE OF DETERMINING IMPROVEMENT PRIORITY

Proj. Area	Impor tance	Evaluated Value					System Goodns	*	Example		*
		Funct. Satis	Opera. Easi.	Econo. Jusstif.	Agri. Advan.	Imp. Priori.			Pri- ority		
(GRAVITY IRRIGATION AREA)											
PLTP	-0.44	-0.17	0.26	-0.43	-0.56	-0.23	*	0.01	10	*	
TABT	-0.31	0.18	0.47	-0.21	-0.53	-0.02	*	-0.08	14	*	
SAMC	1.67	0.12	-1.38	1.68	1.98	0.60	*	0.24	2	*	
DONC	0.48	-0.00	-0.67	0.57	1.00	0.22	*	0.06	6	*	
POPY	-0.20	-0.08	0.21	-0.17	0.09	-0.17	*	0.09	5	*	
BORM	-0.15	0.16	0.32	-0.16	0.79	0.28	*	-0.36	17	*	
CHAN	0.01	0.15	0.55	-0.03	0.46	0.28	*	-0.30	16	*	
YANG	-0.43	0.08	0.35	-0.27	-0.72	-0.14	*	0.00	11	*	
PAKH	-0.46	0.04	0.52	-0.42	-0.72	-0.15	*	-0.07	13	*	
BANB	-0.54	-0.44	0.55	-0.80	-0.72	-0.35	*	-0.05	12	*	
MANR	-0.34	0.28	0.29	-0.17	0.41	0.20	*	-0.29	15	*	
CHNG	0.56	0.15	-0.56	0.73	0.89	0.30	*	0.06	6	*	
KOKA	-0.42	-0.27	0.32	-0.51	-0.69	-0.29	*	0.03	9	*	
RUNR	0.47	-0.27	-0.63	0.18	0.24	-0.12	*	0.21	3	*	
MAHA	0.87	0.05	-0.74	0.67	0.27	0.06	*	0.27	1	*	
PASK	-0.39	0.03	-0.06	-0.27	-0.69	-0.25	*	0.11	4	*	
NKNL	-0.38	-0.01	0.21	-0.37	-0.72	-0.22	*	0.04	8	*	
(WATER CONSERVATION AREA)											
CHBY	-0.44	0.02	0.35	-0.40	-0.43	-0.12	*	-0.08	7	*	
PYBL	-0.09	-0.07	0.18	-0.11	-0.11	-0.03	*	-0.03	3	*	
PYPH	-0.03	-0.13	-0.00	0.10	0.10	0.02	*	0.03	3	*	
PASI	0.72	0.04	-0.91	0.95	0.89	0.24	*	0.23	1	*	
RNUA	0.36	0.03	-0.39	0.28	0.33	0.07	*	0.08	2	*	
RTAI	-0.16	-0.05	0.32	-0.38	-0.28	-0.10	*	-0.09	8	*	
KDAN	-0.17	0.11	0.14	-0.29	-0.25	-0.07	*	-0.07	5	*	
PRAO	-0.18	0.04	0.32	-0.16	-0.25	-0.01	*	-0.07	5	*	

Table 5-1 IRRIGATION AREA BY CONSTRUCTION DECADE
(Projects over 1,000 ha only)

Reg. Name	Irrigable Area (ha)					
	No. of Project	Before 1951	No. of Projects	1951-1960	No. of Projects	1961-1970
Reg. No.1	2	18,384	1	9,600	-	-
Reg. No.2	2	15,520	-	-	3	29,920
Reg. No.3	-	-	4	45,520	5	19,040
Reg. No.4	-	-	6	25,392	1	1,408
Reg. No.5	-	-	7	38,736	8	20,361
Reg. No.6	-	-	4	47,612	4	14,636
Reg. No.7	5	268,800	3	79,600	6	230,240
Reg. No.8	4	240,800	3	4,656	6	228,960
Reg. No.9	1	81,600	5	108,640	7	23,040
Reg. No.10	1	20,800	1	22,400	5	39,840
Reg. No.11	1	3,200	2	4,480	2	8,000
Reg. No.12	-	-	5	18,160	6	18,976
Total	16	649,104 ha	41	404,796 ha	53	634,421 ha
Construction Period			before 1951	before 1961	before 1971	
Cumulative Irrigable Area (ha)			649,104	1,053,900	1,688,321	
(rai)			4.06 Mill.	6.59 Mill.	10.55 Mill.	
% against irrigable 3.45 Mill. Ha (as of 1986)			19 %	31%	49%	
No. of Project			16 projects	57 projects	108 projects	

Source: Water Resources Development in Thailand: Aug. 1986, RID

Table 5-2 (1) LIST OF LARGE AND MEDIUM SCALE IRRIGATION
PROJECTS CONSTRUCTED BEFORE 1971 (1/5)

(medium & large scale projects with over 1,000ha selected)

Project Name	Compl. Yr	Irrigable Area		Ha
		before '51	'51-'60	
(Region No. 1)				
Mae Ping Kao	1941	7,184		
Mae Kuang	1954		9,600	
Mae Faek	1936	11,200		
Total		18,384	9,600	
(Region No. 2)				
Mae Lao	1963			26,560
Mae Wang	1949	12,320		
Mae Pung	1949	3,200		
Nam Samun	1967			1,600
Nam Sa	1966			1,760
Total		15,520		29,920
(Region No. 3)				
Khlong Krathin	1952		3,120	
Si Chaliang	1959		1,920	
Nong Pla Mo	1962			1,280
Nam Rit	1967			6,240
Thung San	1955		32,000	
Khlong Wang Nam Sai	1962			1,600
Khlong Wat Ta Yom	1953		8,480	
Khlong Khan	1961			4,800
Pasak (left bank)	1969			5,120
Total			45,520	19,040
(Region No. 4)				
Mae Khong Valley	1955		10,240	
Huai Luang	1956		6,400	
Kut Ling Ngo Tank	1962			1,408
Huai Khakhang Tank	1957		1,280	
Kaeng Laeng Chan Tank	1953		1,040	
Ban Tum-Ban Tui	1955		4,640	
Nong Chok Khwang Tank	1956		1,792	
Total			25,392	1,408

Table 5-2 (2) LIST OF LARGE AND MEDIUM SCALE IRRIGATION
PROJECTS CONSTRUCTED BEFORE 1971 (2/5)

Project Name	Compl. Yr	Irrigable Area Ha		
		before '51	'51-'60	'61-'70
(Region No. 5)				
Huai Suang Tank	1969			1,120
Huai Pla Hang	1961			6,400
Huai Sam Hong Tank	1958		1,600	
Huai Kan Luang Tank	1968			1,392
Huai Si Khun Tank	1959		1,056	
Huai Khilek Tank	1965			4,000
Huai Aeng Tank	1964			3,369
Thung Saeng Badan	1955		28,800	
Nong Ya Ma Tank	1952		1,760	
Huai Si Thon Tank	1959		1,760	
Huai Phung Tank	1966			1,360
Huai Fa Tank	1966			1,440
Huai Sathot Tank	1969			1,280
Phuttha Utthayan Tank	1957		2,560	
Nong Chang Yai	1953		1,200	
Total			38,736	20,361
(Region No. 6)				
Lam Phra Phloeng Dam	1970			10,096
Lower Lam Takhong	1957		13,500	
Lam Chalmuak Tank	1963			1,260
Thung Samrit	1958		24,480	
Huai Talat Tank	1956		2,240	
Huai Chorakhe Mak Tank	1963			2,000
Huai Saneng	1959		7,392	
Lam Phok Tank	1961			1,280
Total			47,612	14,636

Table 5-2 (3) LIST OF LARGE AND MEDIUM SCALE IRRIGATION
PROJECTS CONSTRUCTED BEFORE 1971 (3/5)

(medium & large scale projects with over 1,000ha selected)

Project Name	Compl. Yr	Irrigabel Area		Ha
		before '51	'51-'60	
(Region No. 7)				
Khlong Yang	1952		1,200	
Ma-Kham-Thao (Phonlathep)	1963			15,200
Tha Bote	1963			25,760
Sam Chuk	1955		48,800	
Don Chedi	1964			21,280
Pho Phraya	1933	59,200		
Borommathat	1963			58,400
Channasutr	1963			76,000
Yang Mani	1963			33,600
Phak Hai	1953		29,600	
Chao Chet-Bang Yihon	1950	64,960		
Phraya Banlue	1950	70,080		
Phra Phimon	1950	42,560		
Phasi Charoen	1907	32,000		
Total		268,800	79,600	230,240
(Region No. 8)				
Manorom	1962			30,720
Chong Khae	1963			38,080
Khok Ka-Thiam	1963			31,360
Roeng Rang	1963			26,080
Maha Raj	1964			67,520
Tha Luang	1924	36,160		
North Rangsit	1924	72,640		
Nakhon Luang	1964			35,200
South Rangsit	1933	48,000		
Khlong Dan	1933	84,000		
Dong Phlap	1952		1,280	
Huai Sap Lek Tank	1954		1,936	
Huai Som Tank	1958		1,440	
Total		240,800	4,656	228,960

Table 5-2 (4) LIST OF LARGE AND MEDIUM SCALE IRRIGATION
PROJECTS CONSTRUCTED BEFORE 1971 (4/5)

(medium & large scale projects with over 1,000ha selected)

Project Name	Compl. Yr	Irrigable Area (ha)		
		before '51	'51-'60	'61-'70
(Region No. 9)				
Phra-Ong Chaiya-Nuchit	1933	81,600		
Nakhon Nayok	1954		91,840	
Tha Hae	1960		9,600	
Bang Pakong (left bank)	1963			10,400
Phan Thong	1965			2,960
Ban Khai	1960		4,800	
Bung Tom Chan	1957		1,280	
Rayong Flood Protection	1962			3,200
Laem Sing	1962			2,640
Wang Kra-Chae	1955		1,120	
Huai Sa-Ton	1967			1,280
Huai Yang	1967			1,280
Khleng Yang	1967			1,280
Total		81,600	108,640	23,040
(Region No. 10)				
Tha Lo	1962			2,960
Damnoen Sa-Duak	1907	20,800		
Prasit Chonlakan	1963			3,072
Kaeng Krachan Dam	1966			19,520
Phetchaburi (Right Bank)	1956		22,400	
Phetchaburi (Left Bank)	1965			11,840
Kui Buri	1962			2,448
Total		20,800	22,400	39,840
(Region No. 11)				
Chumphon	1962			4,800
Tha-Rua Ri	1954		1,280	
Bang Chak	1962			3,200
Tha Phaya	1955		3,200	
Phraek Muang	1949	3,200		
Total		3,200	4,480	8,000

Table 5-2 (5) LIST OF LARGE AND MEDIUM SCALE IRRIGATION
PROJECTS CONSTRUCTED BEFORE 1971 (5/5)

(medium & large scale projects with over 1,000ha selected)

Project Name	Compl. Yr	Irrigable Area		
		before '51	'51-'60	'61-'70
(Region No. 12)				
Na Thom	1953		1,600	
Phaya Hong	1968			2,720
Khuan Kut	1955		2,560	
Pa Bon	1970			1,120
Pak Rawa	1955		4,800	
Cha-Muang	1962			5,120
Plak Pling	1965			3,200
Phru Sano	1955		8,000	
Pe-Se-Mat	1970			1,600
Na Tham	1952		1,200	
Du Son	1964			5,216
Total			18,160	18,976
Grand Total		649,104	404,796	634,421

Table 5-3 WATER USE FACILITIES BY SYSTEM LEVEL AND UNIT COST FOR IMPROVEMENT BY ALTERNATIVE CASE

System Level and Components	Specification	Alternative Case		
		Intensive	Moderate	Conservative
(Basin System) Bhumibol Dam, Naresuan Dam, Yom Weir Sirikit Dam, Kiu Lom Dam Rama VI Barrage Chao Phraya Dam	auto-gate control auto-gate control	MB not needed not needed L.S. 20 L.S. 20	MB not needed not needed L.S. 20 L.S. 20	MB not needed not needed L.S. 20 L.S. 20
(Main System) - Irrigation canal and appurtenant structures with design capacity over 10 CMS (capacity : Q in CMS, Length : L in km) - Regulator (Po-To-Ro) with total width over 10 m (total width : W in m)	10 < Q =< 30 CMS, 263 km 30 < Q =< 100 CMS, 179 km 100 < Q CMS, 167 km Irrig. Regulator, 19 plc Drain. Regulator, 23 plc	MB .05*Q*L .04*Q*L .03*Q*L .45*W .30*W	MB .025*Q*L .020*Q*L .015*Q*L .225*W .15*W	MB .025*Q*L .020*Q*L .015*Q*L .225*W .15*W
(Lateral System) - Irrigation canal and appurtenant structures with design capacity below 10 CMS till FTO - Drainage, navigation and natural river system structures - Regulators with total width below 10 m	Gravity irri. area 4.44 Mill.rai Wat. conserv. area 3.37 Mill.rai	B/rai 1,200 1,700	B/rai 600 800	B/rai 270 550
(On-farm System) - Overall on-farm irrigation and drainage facilities	Mill.rai Not consolidated 7.39 Extensively consoli. 0.07 Intensively consoli. 0.35	B/rai 2,000 1,000 0	B/rai 1,000 300 0	B/rai 500 0 0

Table 5-4 (1) ESTIMATED COST BREAKDOWNS FOR IMPROVEMENT OF IRRIGATION AND DRAINAGE SYSTEM AT MAIN CANAL LEVEL (LEVEL-2) (1/4)

(Name) Structure	Specification/Quantity	Cost
(Phonlathep)		
Phonlathep Reg.	4-6.50 m	5.9
Makamthao-Uthong Canal	33-35 cms x 21.1 km	14.3
Tung Rahan Canal	11 cms x 0.4 km	0.1
Total		20.3
(Thabote)		
Thabote Reg.	4-6.00 m	5.4
M-U Canal	30-33 cms x 3.7 km	2.3
"	20-30 cms x 29.6 km	18.5
Bang Khian D. Reg.	2-6.00 m	1.8
Suphan Main D.1	2-6.00 m	1.8
Total		29.8
(Samchuk)		
Samchuk Reg.	2-12.50 m	5.6
1L	17-19 cms x 3.2 km	1.4
1R	10-13 cms x 13.2 km	3.8
Krasiew-Tharakum Drain Reg.	4-3.00 m	1.8
Total		12.6
(Pho Phraya)		
Pho Phraya Reg.	2-12.50 m	5.6
1R	30-35 cms x 10.3 km	6.7
1R-1R	10-12 cms x 0.7 km	0.2
1L	10-15 cms x 1.0 km	0.3
Suphan Main D.4	3-6.00 m	2.7
Total		15.5
(Don Chedi)		
M-U Canal	10-20 cms x 29.1 km	10.9
Total		10.9
(Borommathat)		
Borommathat Reg.	4-6.00 m	5.4
2L	10-12 cms x 3.6 km	1.0
1R	10-27 cms x 17.5 km	8.1
1L	10-14 cms x 6.7 km	2.0
Total		16.5
(Chanasutr)		
Chanasutr Reg.	4-6.00 m	5.4
1R Reg.	3-6.00 m	4.6
1R	48-55 cms x 6.0 km	6.2
	30-48 cms x 33.9 km	26.4
	10-30 cms x 36.5 km	18.3
Total		60.9

Table 5-4 (2) ESTIMATED COST BREAKDOWNS FOR IMPROVEMENT OF IRRIGATION AND DRAINAGE SYSTEM AT MAIN CANAL LEVEL (LEVEL-2) (2/4)

(Name) Structure	Specification/Quantity	Cost
(Yangmanee)		MB
Yangmanee Reg.	4-6.00 m	5.4
3L	10-18 cms x 18.0 km	6.3
K. Lam Chuad D. Reg.	3-6.00 m	2.7
Suphan Main D.4 Reg.	3-6.00 m	2.7
Phra Ngam D. Reg.	3-6.00 m	2.7
Total		19.8
(Phak Hai)		
Phak Hai Reg.	3-6.00 m	4.1
K. Phak Hai Head Reg.	2-6.00 m	2.7
K. Phak Hai-Chaochet	50-68 cms x 15.1 km	17.8
K. Ladchado D. Reg.	3-6.00 m	2.7
Total		27.3
(Bang Ban)		
none	none	none
(Chaochet-Bang Yihon)		
K. Yipun Nua	(10 cms) x 18.0 km	4.5
K. Bang Sai-Lad Bua Luang	(10 cms) x 20.0 km	5.0
Khlong San	(10 cms) x 18.0 km	4.5
Chaochet-Bang Y. No. 4	8 cms x 19.0 km	3.8
Khlong Sali D. Reg.	3-6.00 m	2.7
Total		20.5
(Phraya Banlu)		
K. Kunsri Reg.	3-6.00 m	4.6
K. Yipun Tai Reg.	2-6.00 m	3.1
K. Phra Udom	2-6.00 m	3.1
Total		10.8
(Phra Phimon)		
none	none	none
(Phasi Charoen)		
none	none	none
(Manorom)		
Manorom Reg.	6-6.00 m	8.1
Chainat-Pasak Canal	210 cms x 45.6 km	143.6
Total		151.7
(Chong Kae)		
Chong Kae Reg.	5-6.00 m	6.8
Chainat-Pasak Canal	180 cms x 39.7 km	107.2
Total		114.0

Table 5-4 (3) ESTIMATED COST BREAKDOWNS FOR IMPROVEMENT OF IRRIGATION AND DRAINAGE SYSTEM AT MAIN CANAL LEVEL (LEVEL-2) (3/4)

(Name) Structure	Specification/Quantity	Cost
(Koke Kathiem)		
Koke Kathiem Reg.	4-6.00 m	5.4
Chainat-Pasak Canal	158 cms x 36.7 km	87.0
2IR	10-13 cms x 3.2 km	0.9
Total		93.3
(Roeng Rang)		
Roeng Rang Reg.	3-6.00 m	4.1
Chainat-Pasak Canal	140 cms x 12.9 km	27.1
Roeng Rang M.D. Reg.	3-6.00 m	2.7
Total		33.9
(Maharaj)		
Maharaj Reg.	3-4.00 m	2.7
Chainat-Ayutthaya Canal	30-55 cms x 53.0 km	45.1
"	10-30 cms x 35.0 km	17.5
Total		65.3
(Pasak Tai)		
Phra Narai Reg.	5-3.00/8-4.20	10.9
Phra Ekathotsarot Reg.	12-3.30	10.1
Raphiphatana Canal	150-120 cms x 32.0 km	64.8
" South	80 cms x 6.6 km	10.6
" West	38 cms x 11.0 km	8.4
Phra Sri Sil Reg.	4-2.44 m	2.5
Phra Sri Saowaphak Reg.	4-2.44 m	2.5
Total		109.8
(Nakhon Luang)		
K. Bang Hong D. Reg.	5-3.00 m	2.3
K. Bang Pho D. Reg.	5-6.00 m	4.5
Khao Mao D. Reg.	3-6.00 m	2.7
Khlong Chik D. Reg.	3-6.00 m	2.7
K. Nakhon Luang	10-30 cms x 32.8 km	16.4
Total		28.6
(Rangsit Nua)		
Raphiphatana West Br.	30-38 cms x 5.0 km	3.4
"	10-30 cms x 13.8 km	6.9
Raphiphatana South Br.	59-80 cms x 21.8 cms	22.7
2E	20 cms x 2.4 km	1.2
1R	11-17 cms x 19.1 km	6.7
Phra Intaracha D. Reg.	3-3.00 m	1.4
Total		42.3

Table 5-4 (4) ESTIMATED COST BREAKDOWNS FOR IMPROVEMENT OF IRRIGATION AND DRAINAGE SYSTEM AT MAIN CANAL LEVEL (LEVEL-2) (4/4)

(Name) Structure	Specification/Quantity	Cost
(Rangsit Tai)		
Chulalongkorn D. Reg.	4-3.00 m	1.8
K. Rangsit D. Reg.	1-6.00/2.2.50	1.7
K. Phra Achan	1-6.00/4-3.50	3.0
Raphiphatana S. Br.	28-45 cms x 25.3 km	18.5
Total		25.0
(Khlong Dan)		
Khlong Dan 1 D. Reg.	6-4.00 m	3.6
Total		3.6
(Phra Ong Chaiyanuchit)		
none	none	none

Table 5-5 COST REQUIREMENTS BY SYSTEM LEVEL AND BY ALTERNATIVE IMPROVEMENT CASE

(Unit : Mill.Baht)

Project Name	Land Consolidation Area (1000rai)		Intensive Case		Moderate Case		Conservative Case		
	Intensiv.	Extensiv.	Total	L-4	L-3	L-2	L-4	L-3	L-2
Phoniathep	-	-	96.3	193	116	41	96	58	20
Thabote	-	-	179.4	359	215	60	179	108	30
Samchuk	51.9	-	305.0	506	366	25	253	183	13
Don Chedi	26.5	9.6	144.5	226	173	22	111	87	11
Pho Phraya	-	-	370.0	740	444	31	370	222	16
Borommathat	150.4	2.3	365.0	427	438	33	213	219	17
Chanasutr	135.6	25.4	474.3	652	569	122	321	285	61
Yangmanee	-	-	232.9	452	280	40	226	140	20
Phak Hai	-	-	206.0	412	247	55	206	124	27
Bang Ban	-	-	144.2	288	173	-	144	87	-
Chaoched - B.Y.	-	-	406.0	812	690	41	406	325	21
Pharaya Ban Lu	-	-	437.5	875	744	22	438	350	11
Phra Phimon	-	-	261.4	523	444	-	261	209	-
Phasi Charoen	-	-	200.0	400	340	-	200	160	-
Manorom	78.2	5.7	152.1	310	283	303	154	142	152
Chong Kae	-	-	292.4	585	351	228	292	175	114
Koke Kathiem	41.9	24.0	154.3	333	264	187	162	132	93
Roeng Rang	-	-	183.0	366	220	68	183	110	34
Maharaj	-	-	476.3	953	572	131	476	286	49
Pasak Tai	-	-	240.6	481	289	220	241	144	65
Nakhon Luang	-	-	267.0	534	320	57	267	160	29
Rangsit Nua	-	-	454.0	908	772	85	454	363	42
Rangsit Tai	-	-	577.9	1156	982	50	578	462	25
Khlong Dan	-	-	527.9	1056	897	7	528	422	4
Pra Ong Chaiya.	-	-	510.0	1020	867	-	510	408	-

N.B. L-2 = Main Canal Level, L-3 = Lateral Canal Level, and L-4 = On-farm Level

Table 5-6 COST REQUIREMENTS BY SYSTEM LEVEL AND BY ALTERNATIVE IMPROVEMENT CASE (Unit : Mill.Baht)

Project Name	Intensive				Moderate				Conservative					
	L-2	L-3	L-4	L-4	L-2	L-3	L-3	L-4	L-2	L-3	L-3	L-4	L-4	
Phonlat.	41	116	157	193	350	20	58	78	96	174	20	26	46	48
Thabote	60	215	275	359	634	30	108	139	179	317	30	48	78	90
Samchuk.	25	366	391	506	897	13	183	196	253	449	13	82	95	127
Don che.	22	173	195	226	421	11	87	98	111	209	11	39	50	54
Pho Phr.	31	444	475	740	1215	16	222	238	370	608	16	100	116	185
Boromma.	33	438	471	427	898	17	219	236	213	449	17	99	116	106
Chanasu.	122	569	691	652	1343	61	285	346	321	667	61	128	189	157
Yangman.	40	280	320	452	772	20	140	160	226	386	20	63	83	113
Phak Hai	55	247	302	412	714	27	124	151	206	357	27	56	83	103
Bang ban	0	173	173	288	461	0	87	87	144	231	0	39	39	72
Chao-BY.	41	690	731	812	1543	21	325	346	406	752	21	223	244	203
Phara.B	22	744	766	875	1641	11	350	361	438	799	11	241	252	219
Phra Ph.	0	444	444	523	967	0	209	209	261	470	0	144	144	131
Phasi C.	0	340	340	400	740	0	160	160	200	360	0	110	110	100
Total	492	5239	5731	6865	12596	247	2557	2804	3424	6228	247	1398	1645	1708
Manorom	303	283	586	310	896	152	142	294	154	448	152	64	216	76
Chong K.	228	351	579	585	1164	114	175	289	292	581	114	79	193	146
Koke Ka.	187	264	451	333	784	93	132	225	162	387	93	60	153	77
Roeng R.	68	220	288	366	654	34	110	144	183	327	34	49	83	92
Maharaj.	131	572	703	953	1656	65	286	351	476	827	65	129	194	238
Pasak T.	220	289	509	481	990	110	144	254	241	495	110	65	175	120
Nakhon L	57	320	377	534	911	29	160	189	267	456	29	72	101	134
Rangs.N.	85	772	857	908	1765	42	363	405	454	859	42	250	292	227
Rangs.T.	50	982	1032	1156	2188	25	462	487	578	1065	25	318	343	289
Khlong D	7	897	904	1056	1960	4	422	426	528	954	4	290	294	264
Pra Ong	0	867	867	1020	1887	0	408	408	510	918	0	281	281	255
Total	1336	5817	7153	7702	14855	668	2804	3472	3845	7317	668	1657	2325	1918

N.B. L-2 = Main Canal Level, L-3 = Lateral Canal Level, and L-4 = On-farm Level

Table 5-7 COST REQUIREMENTS BY IMPROVEMENT ALTERNATIVES
(Unit : Mill. Baht)

Project	Consrv	Moderat	Intensiv	500	1000	1500	2000	2500
Phonlat.	94 MB	174 MB	350 MB	MB	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
Thabote	168	317	634	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
Samchuk.	222	449	897	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
Don Che.	104	209	421	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
Pho Phr.	301	608	1,215	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
Boromma.	222	449	898	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
Chanasu.	346	667	1,343	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
Yangman.	196	386	772	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
Phak Hai	186	357	714	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
Bang Ban	111	231	461	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
Chao-BY.	447	752	1,543	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
Phara.B	471	799	1,641	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
Phra Ph.	275	470	967	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
Phasi C.	210	360	740	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
Sub-total	3,353	6,228	12,596	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
Manorom	292	448	896	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
Chong K.	339	581	1,164	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
Koke Ka.	230	387	784	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
Roeng R.	175	327	654	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
Maharaj	432	827	1,656	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
Pasak T.	295	495	990	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
Nakhon L	235	456	911	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
Rangs.N.	519	859	1,765	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
Rangs.T.	632	1,065	2,188	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
Khlong D	558	954	1,960	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
Pra Ong	536	918	1,887	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
Sub-total	6,568	7,317	14,855	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
Total	7,596	13,545	27,451	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC

Table 5-8 (1) COST REQUIREMENT AT MANAGEMENT LEVEL (1/3)
 (IN INTENSIVE IMPROVEMENT CASE) (Unit : Mill. Baht)

Project	L-2	L2-3	L2-4	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	
Phonlat.	41	157	350	23333344444444																				
Thabote	60	275	634	22333333334444444444																				
Samchuk.	25	391	897	2333333333333344444444444444																				
Don che.	22	195	421	2333333344444444																				
Pho Phr.	31	475	1215	23333333333333333333333344444444444444																				
Boromma.	33	471	898	23333333333333333333333344444444444444																				
Chanasu.	122	691	1343	22222333333333333333333333333344444444444444																				
Yangman.	40	320	772	23333333333333444444444444444444444444																				
Phak Hai	55	302	714	22333333333333444444444444444444444444																				
Bang ban	0	173	461	333333334444444444																				
Chao-BY.	41	731	1543	23333333333333333333333333333333333333333333333334444444444444444444																				
Phara.B	22	766	1641	23333333333333333333333333333333333333333333333334444444444444444444																				
Phra Ph.	0	444	967	33333333333333333333333333333333333333333333333334444444444444444444																				
Phasi C.	0	340	740	33333333333333333333333333333333333333333333333334444444444444444444																				
Total	492	5731	12596																					
Manorom	303	586	896	22222222222233333333333333333333333333333333333334444444444444444444																				
Chong K.	228	579	1164	22222222223333333333333333333333333333333333333334444444444444444444																				
Koke Ka.	187	451	784	22222233333333333333333333333333333333333333333334444444444444444444																				
Roeng R.	68	288	654	22233333333333444444444444444444444444																				
Maharaj	131	703	1656	22222333333333333333333333333333333333333333333334444444444444444444																				
Pasak T.	220	509	990	22222222333333333333333333333333333333333333333334444444444444444444																				
Nakhon L	57	377	911	22333333333333333333333333333333333333333333333334444444444444444444																				
Rangs.N.	85	857	1765	22233333333333333333333333333333333333333333333334444444444444444444																				
Rangs.T.	50	1032	2188	22333333333333333333333333333333333333333333333334444444444444444444																				
Khlong D	7	904	1960	33333333333333333333333333333333333333333333333334444444444444444444																				
Pra Ong	0	867	1887	33333333333333333333333333333333333333333333333334444444444444444444																				
Total	1336	7153	14855																					

Table 5-8 (2) COST REQUIREMENT AT MANAGEMENT LEVEL (2/3)
 (IN MODERATED IMPROVEMENT CASE) (Unit: Mill. Baht)

Project	Management Level												
	L-2	L-3	L2-4	0	1	2	3	4	5	6	7	8	9
Phonlat.	20	78	174	2834444									
Thabote	30	138	317	2833334444444									
Samchuk.	13	196	449	28333334444444444									
Don che.	11	98	209	3833444									
Pho Phr.	16	238	608	283333333344444444444									
Boromma.	17	236	449	2833333334444444444									
Chanasu.	61	346	667	22333333333333444444444									
Yangman.	20	160	386	233333444444444									
Phak Hai	27	151	357	233333444444444									
Bang ban.	0	87	231	333444444									
Chao-BY.	21	346	752	28333333333344444444444									
Phara.B	11	361	799	3333333333333344444444444									
Phra Ph.	0	209	470	33333333444444444									
Phasi C.	0	160	360	3333334444444									
Total	247	2804	6228										
Manorom	152	294	448	222223333333666666									
Chong K.	114	289	581	22222333333344444444444									
Koke Ka.	93	225	387	222233333344444									
Roeng R.	34	144	327	2333334444444									
Maharaj	65	351	827	2223333333333344444444444									
Pasak T.	110	254	495	2222333333444444444									
Nakhon L	29	189	456	2833333344444444444									
Rangs.N.	42	405	859	223333333333333344444444444									
Rangs.T.	25	487	1065	2333333333333333333344444444444									
Khlong D	4	426	954	33333333333333444444444444444									
Pra Ong	0	408	918	33333333333333334444444444444									
Total	668	3472	7317										

Table 5-8 (3) COST REQUIREMENT AT MANAGEMENT LEVEL (3/3)
 (IN CONSERVATIVE IMPROVEMENT CASE) (Unit : Mill. Baht)

Project	L-2	L2-3	L2-4	0	1	2	3	4	5	6	7	8	9
Phonlat.	20	46	94		2344								
Thabote	30	78	168		2334444								
Samchuk.	13	95	222		233344444								
Don che.	11	50	104		3344								
Pho Phr.	16	116	301		2333344444444								
Boromma.	17	116	222		233334444								
Chanasu.	61	189	346		223333333444444								
Yangman.	20	83	196		23344444								
Phak Hai	27	83	186		2334444								
Bang ban	0	39	111		3344								
Chao-BY.	21	244	447		2333333333344444444								
Phara.B	11	252	471		33333333333444444444								
Phra Ph.	0	144	275		33333344444								
Phasi C.	0	110	210		33334444								
Total	247	1645	3353										
Manorom	152	216	292		222223333444								
Chong K.	114	193	339		2222333444444								
Koke Ka.	93	153	230		222233444								
Roeng R.	34	83	175		2334444								
Maharaj	65	194	432		2223333344444444444								
Pasak T.	110	175	295		222233344444								
Nakthon L	29	101	235		233344444								
Rangs.N.	42	292	519		22333333333334444444444								
Rangs.T.	25	343	632		2333333333333444444444444								
Khlong D	4	294	558		3333333333334444444444444								
Pra Ong	0	281	536		3333333333334444444444444								
Total	668	4650	6568										

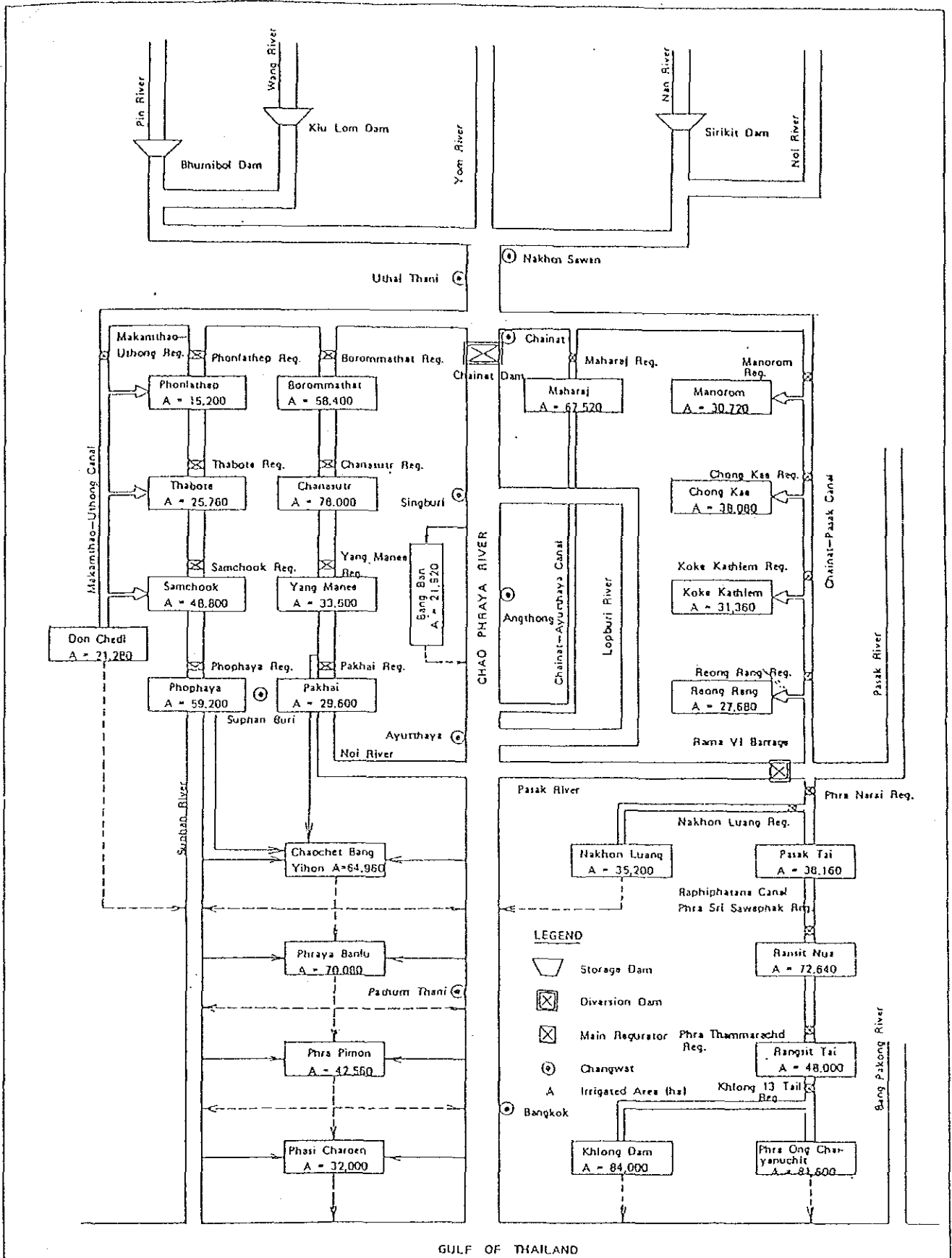
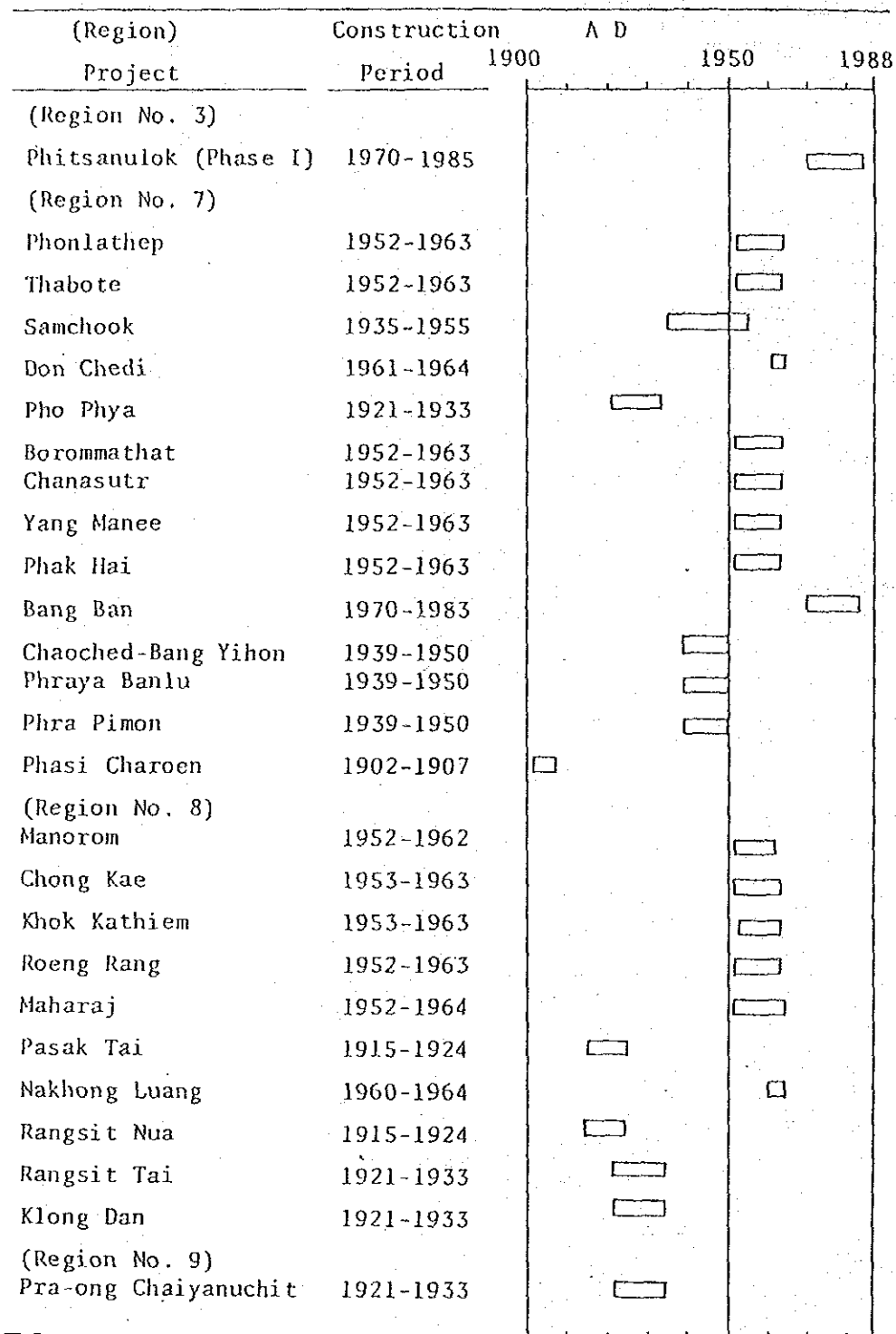


Figure 1-1 WATER SUPPLY SYSTEM IN CHAO PHRAYA DELTA



Source : Water Resources Devopment in Thailand; Aug. '86; RID

Figure 2-1 PROJECT CONSTRUCTION CHRONOLOGY IN THE DELTA

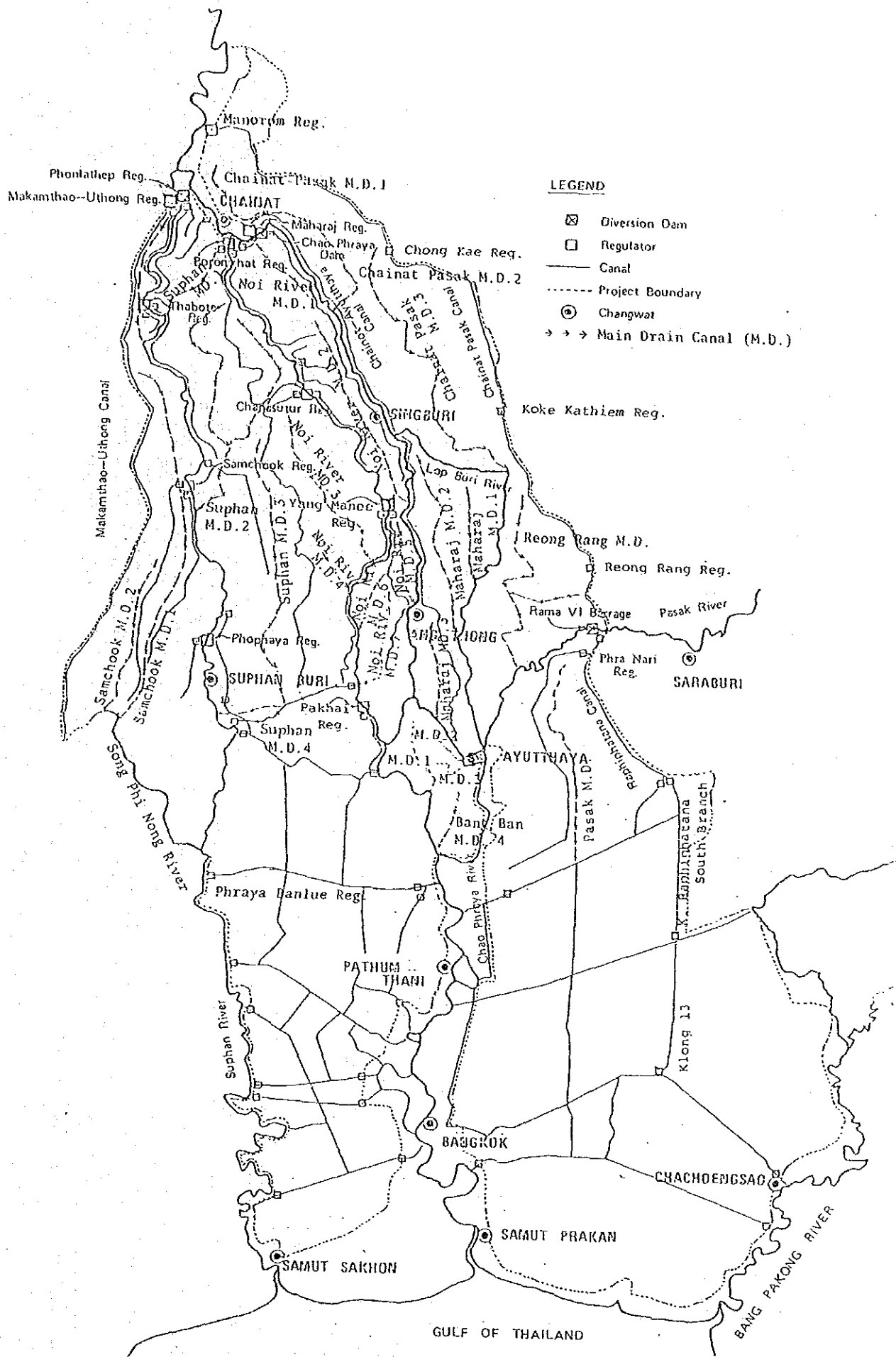


Figure 2-2 LOCATION MAP OF IRRIGATION AND DRAINAGE SYSTEM IN THE DELTA

● - MINOR ACTIVITY
 ● - MAJOR ACTIVITY

ACTIVITIES	AGENCIES																						
	R I D	RGAT	N E A	Mec. Dept.	Harbour	MMA	N E B	NSDB	Hydro-graph	A R D	P H D	Ind. Works	ALRO	Fisheries Dept.	Forestry Dept.	Health Dept.	Mineral Res.	Rain Making D.	National Unvers.	A I T	B M A		
DATA COLLECTION	Metereology	●																					
	Surface Water	●																					
	Ground Water																						
	Water Quality																						
PLANNING	Fisheries																						
	Irrigation	●																					
	Hydropower																						
	Flood Control																						
	Navigation																						
	Water Supply																						
CONSTRUCTION & IMPLEMENTATION	Industrial Use																						
	Wildlife																						
	Environmental Control																						
	Fisheries																						
	Irrigation	●																					
	Hydropower																						
	Flood Control																						
	Navigation																						
	Water Supply																						
	Fisheries																						
OPERATION & MAINTENANCE	Irrigation																						
	Hydropower																						
	Flood Control																						
	Navigation																						
	Water Supply																						
RESEARCH	Industrial Use																						
	Wildlife																						
	Environmental Control																						
	Fisheries																						
	All activities																						

Figure 2-3 ACTIVITIES AND GOVERNMENT AGENCIES IN WATER RESOURCES PROGRAM IN THAILAND

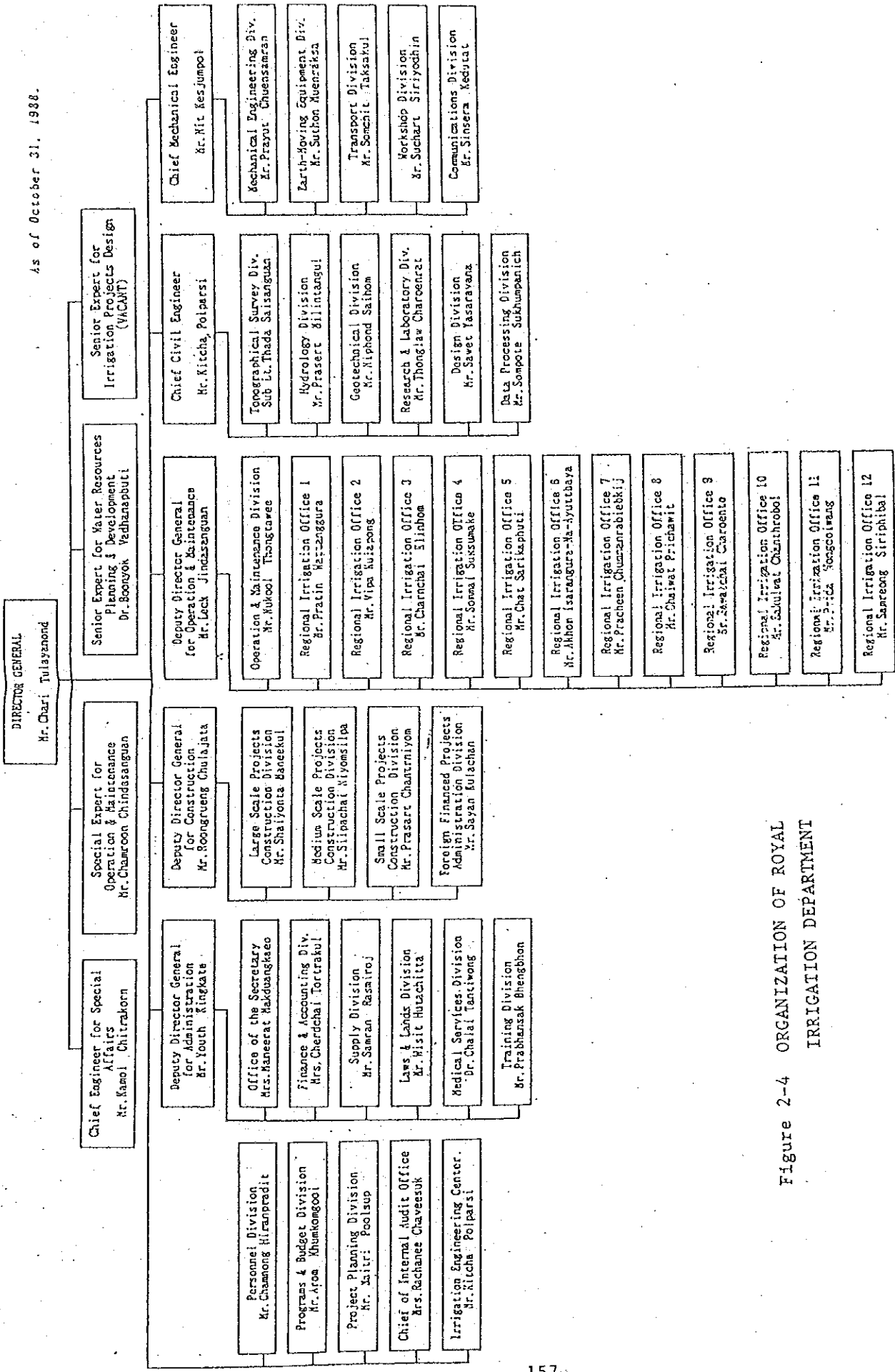


Figure 2-4 ORGANIZATION OF ROYAL IRRIGATION DEPARTMENT

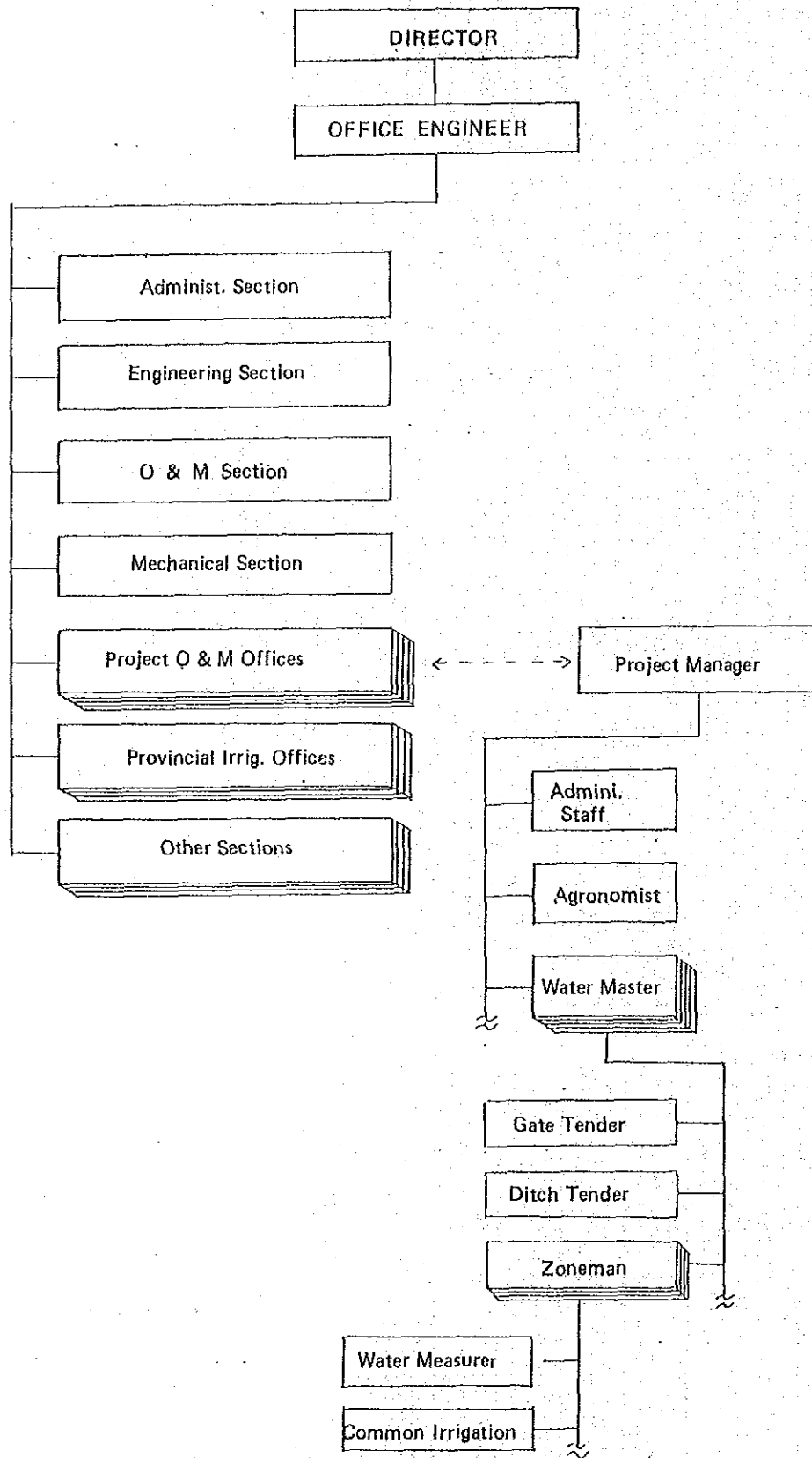


Figure 2-5 ORGANIZATION OF REGIONAL IRRIGATION OFFICE AND PROJECT O&M OFFICE

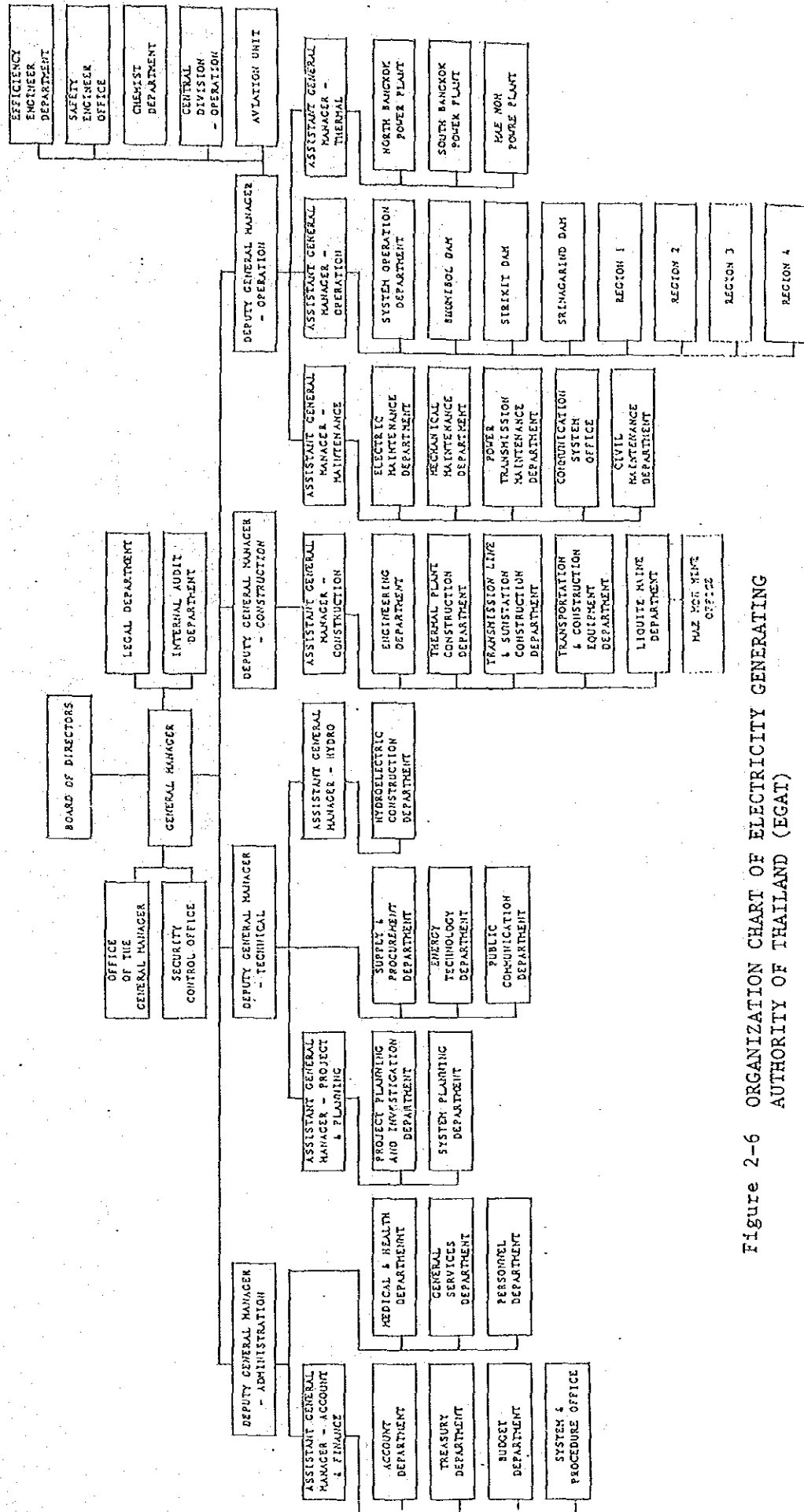


Figure 2-6 ORGANIZATION CHART OF ELECTRICITY GENERATING AUTHORITY OF THAILAND (EGAT)

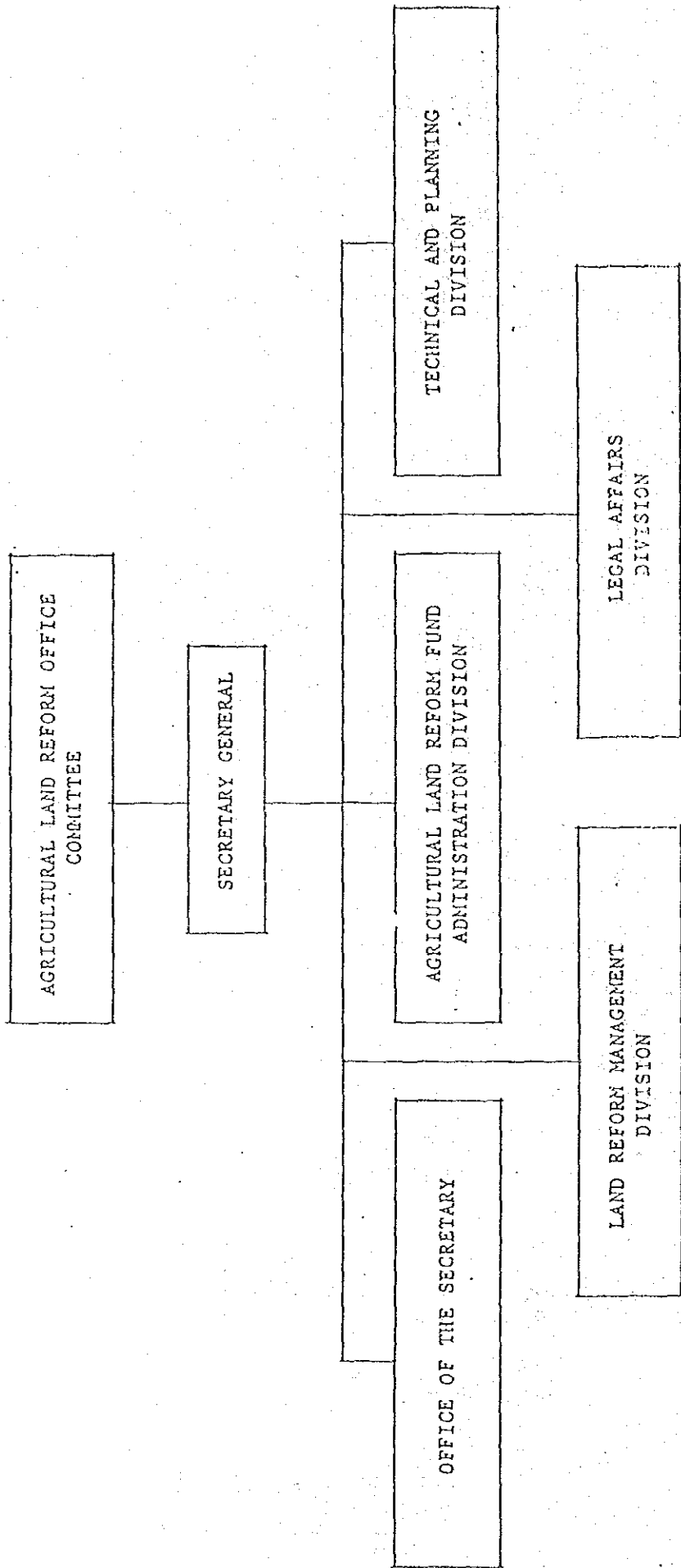


Figure 2-7 ORGANIZATION CHART OF AGRICULTURAL LAND REFORM OFFICE (ALRO)

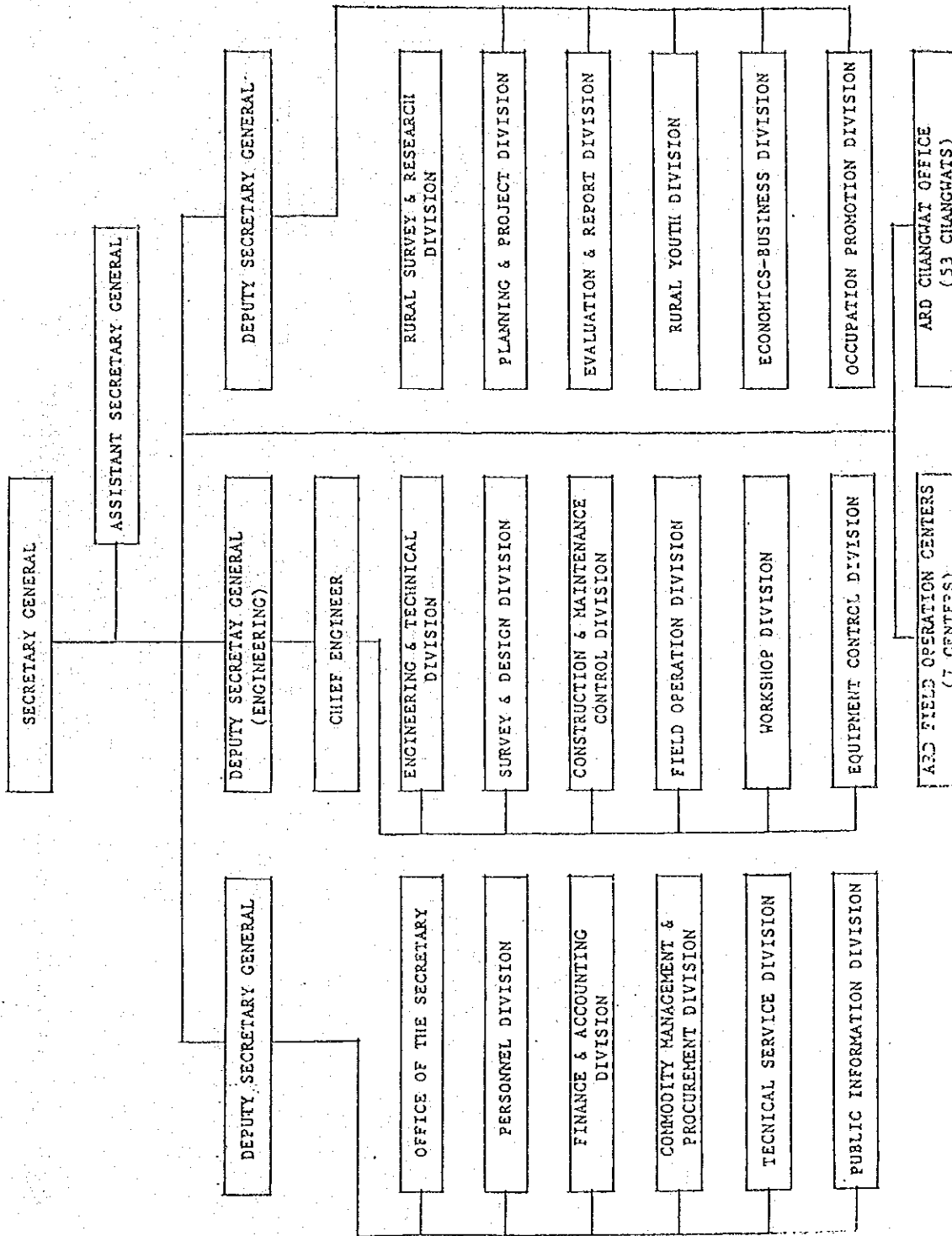


Figure 2-8 ORGANIZATION CHART OF OFFICE OF ACCELERATED RURAL DEVELOPMENT (ARD)

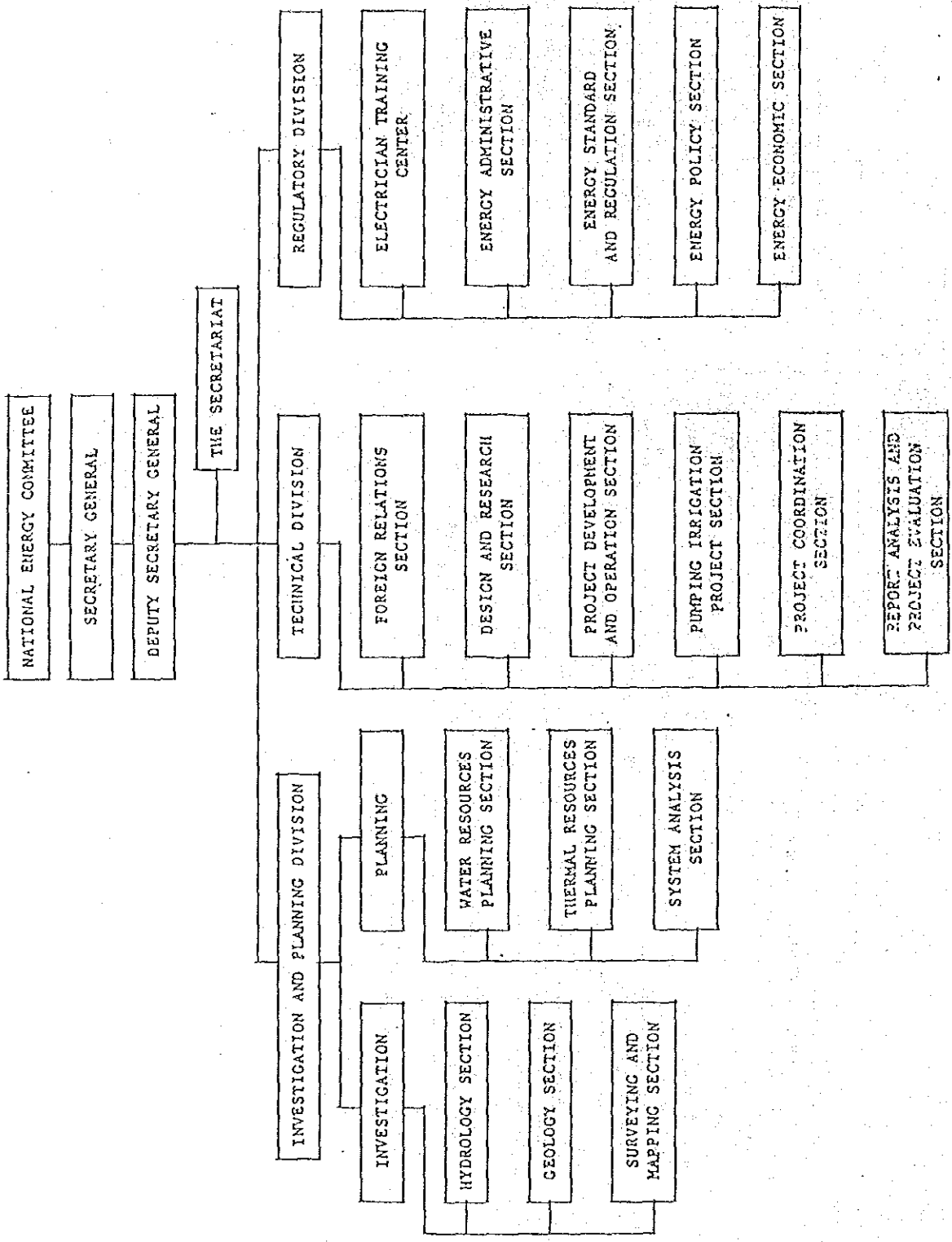


Figure 2-9 ORGANIZATION CHART OF NATIONAL ENERGY ADMINISTRATION

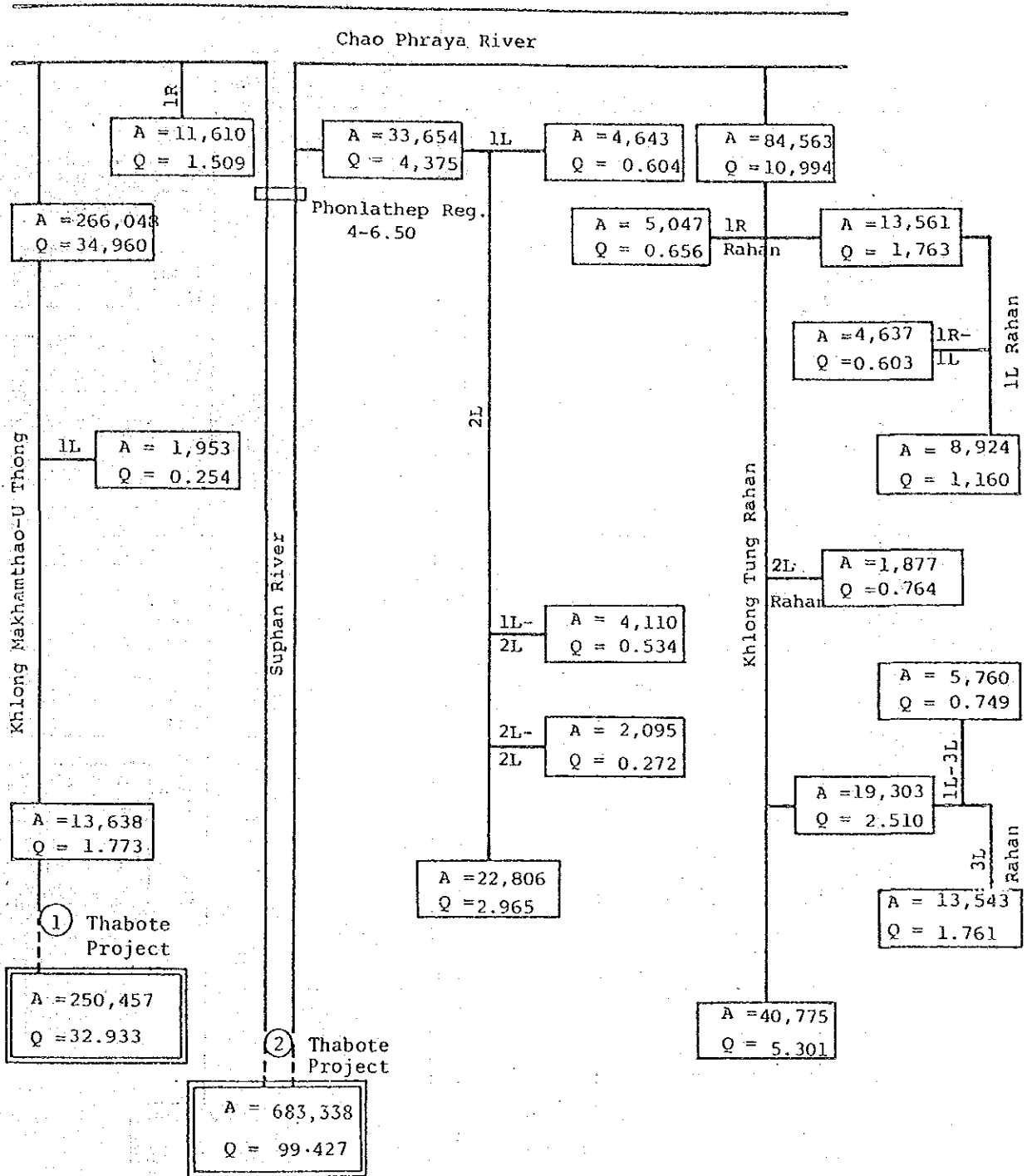


Figure 3-1 (1) IRRIGATION SYSTEM DIAGRAM IN THE DELTA (PHONLATHEP PROJECT)

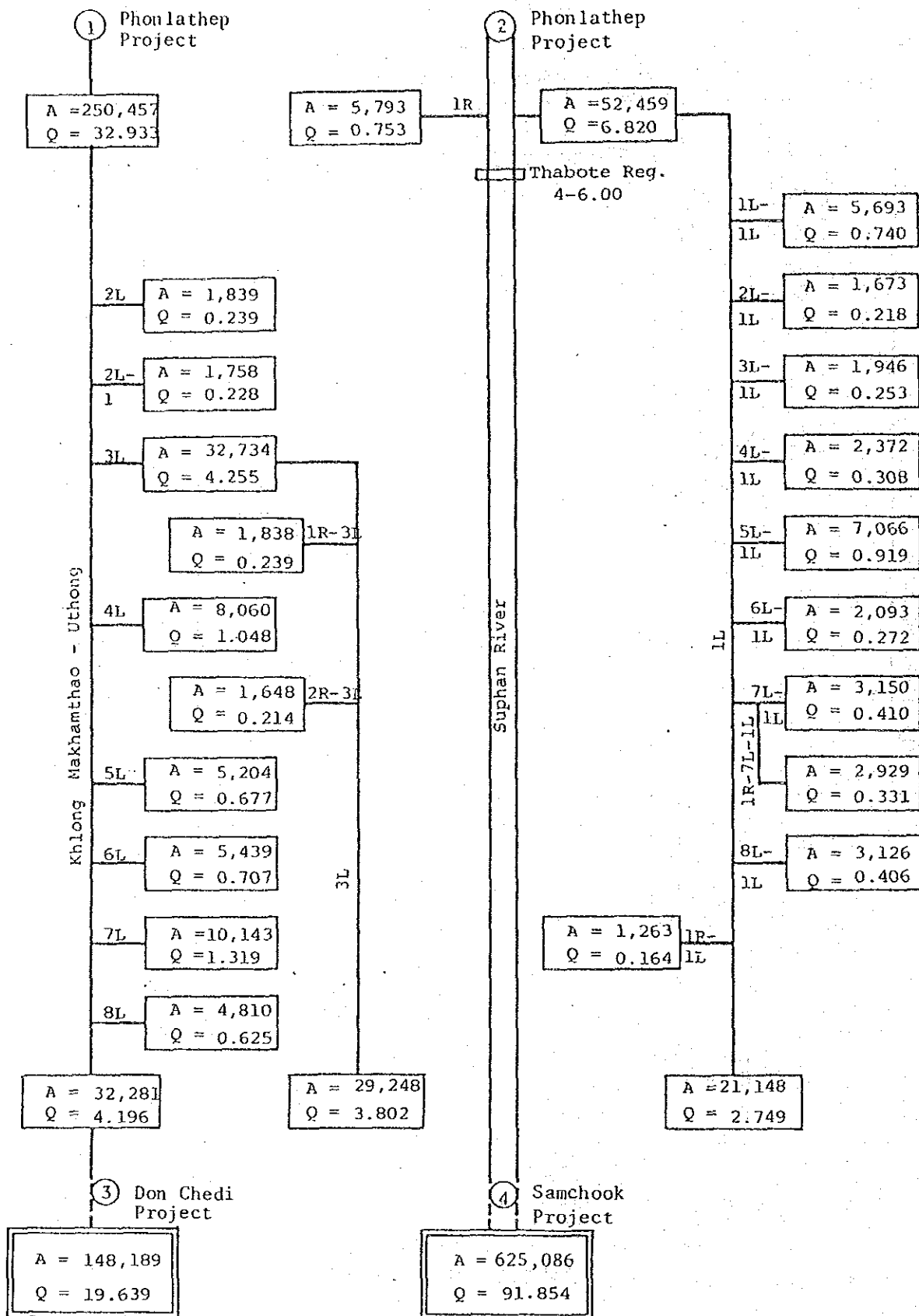


Figure 3-1 (2) IRRIGATION SYSTEM DIAGRAM IN THE DELTA (THABOTE PROJECT)

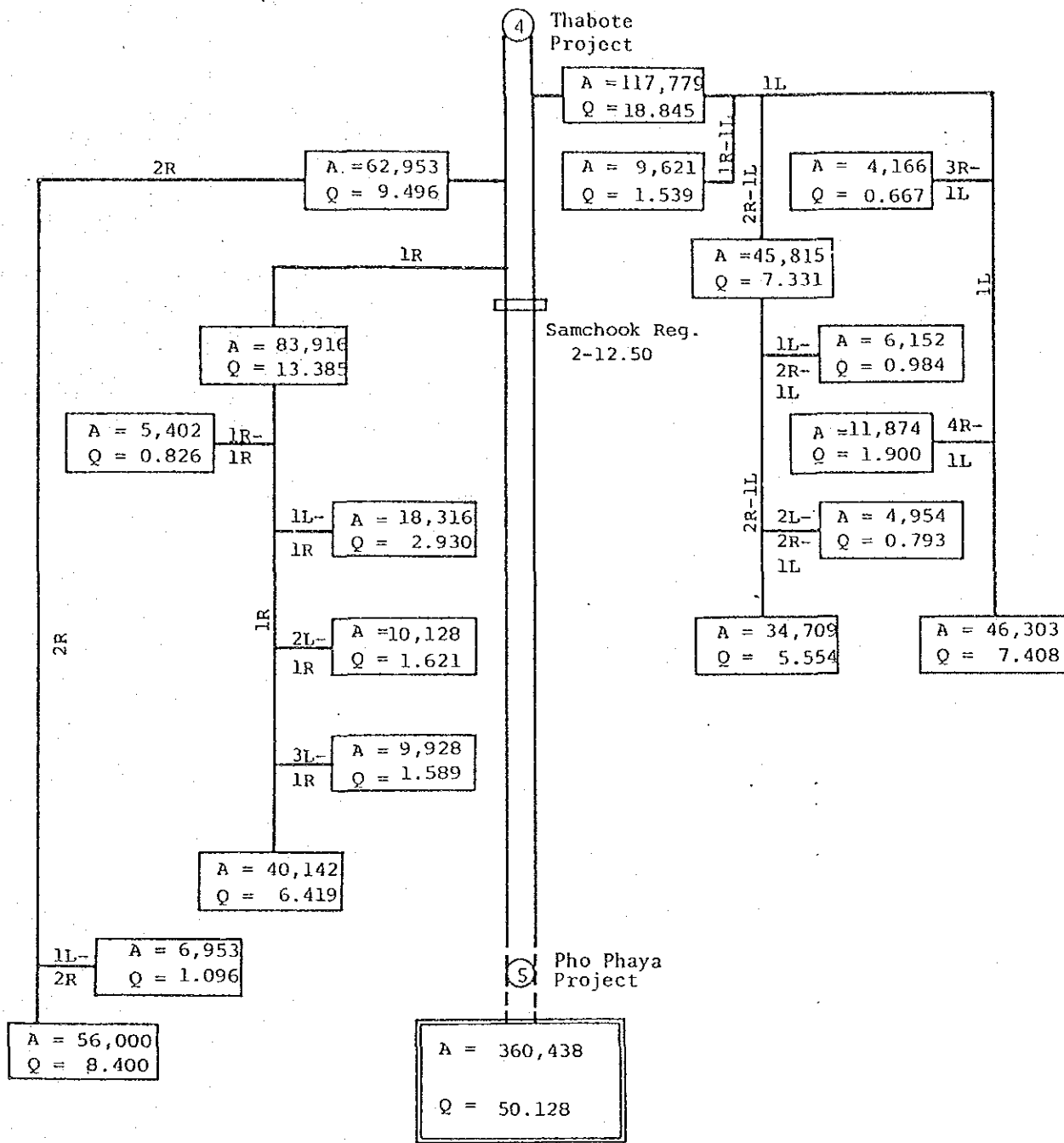


Figure 3-1 (3) IRRIGATION SYSTEM DIAGRAM IN THE DELTA (SAM CHUK PROJECT)

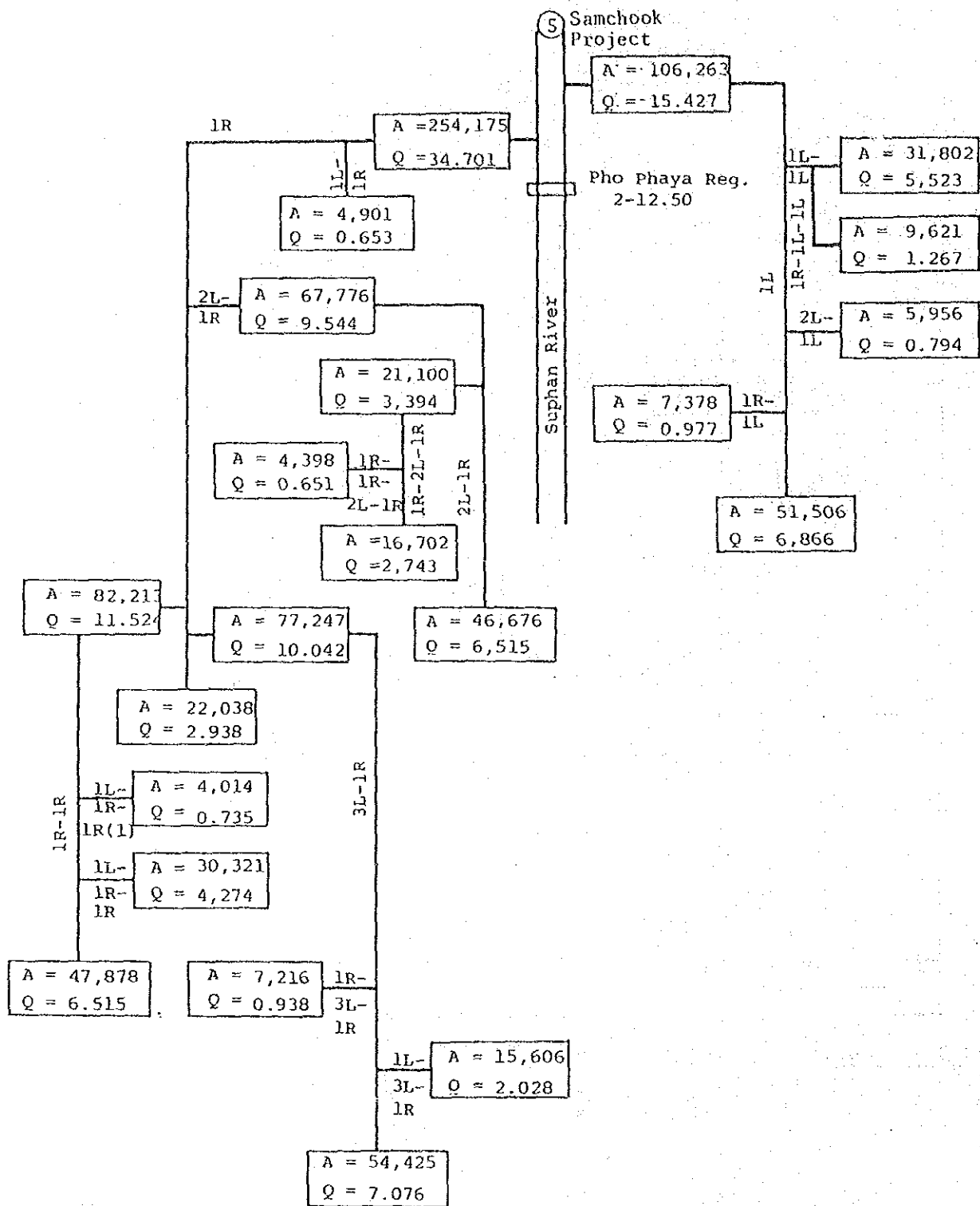


Figure 3-1 (4) IRRIGATION SYSTEM DIAGRAM IN THE DELTA (PHO PHRAYA PROJECT)

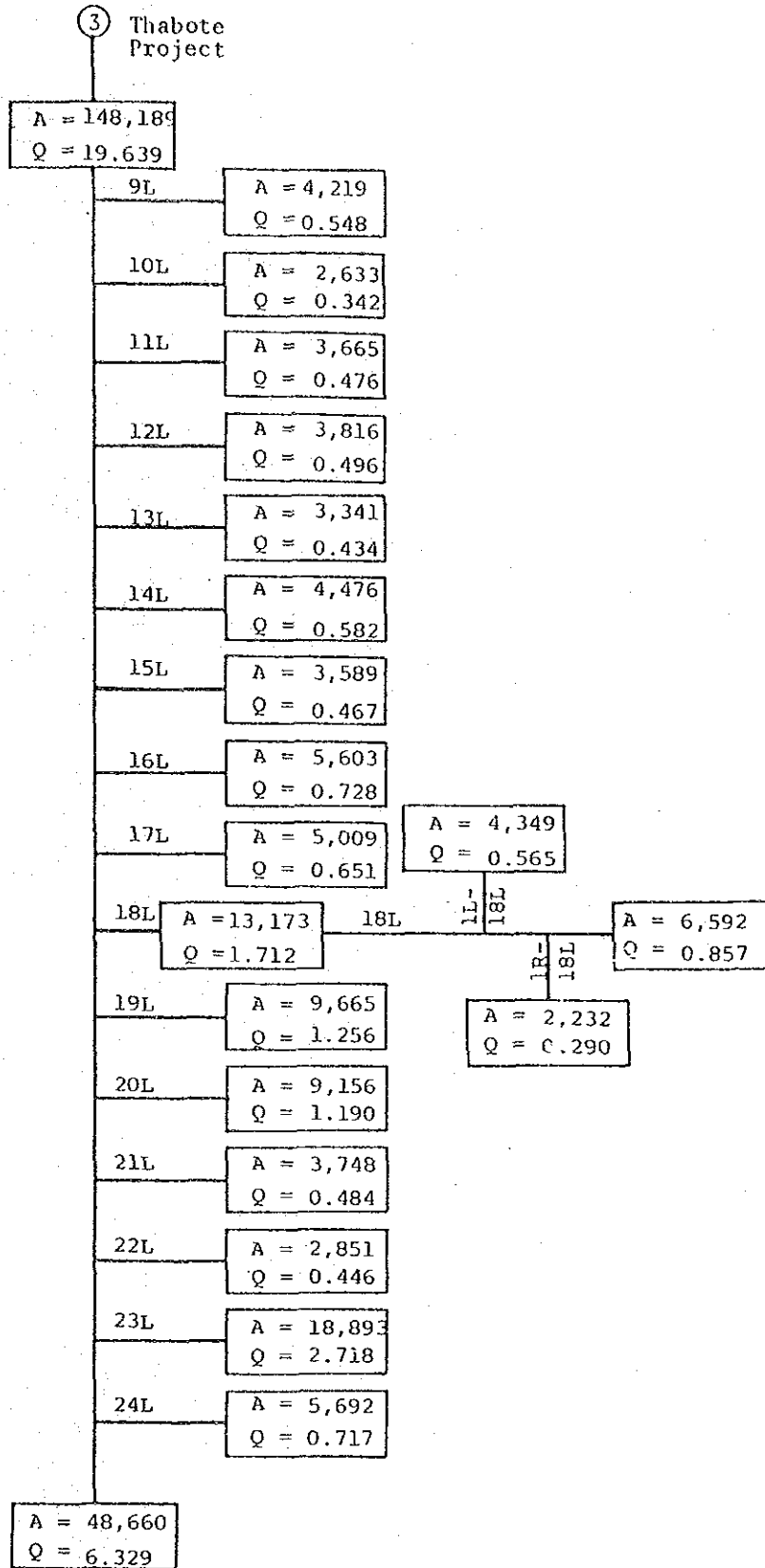


Figure 3-1 (5) IRRIGATION SYSTEM DIAGRAM IN THE DELTA (DON CHEDI PROJECT)

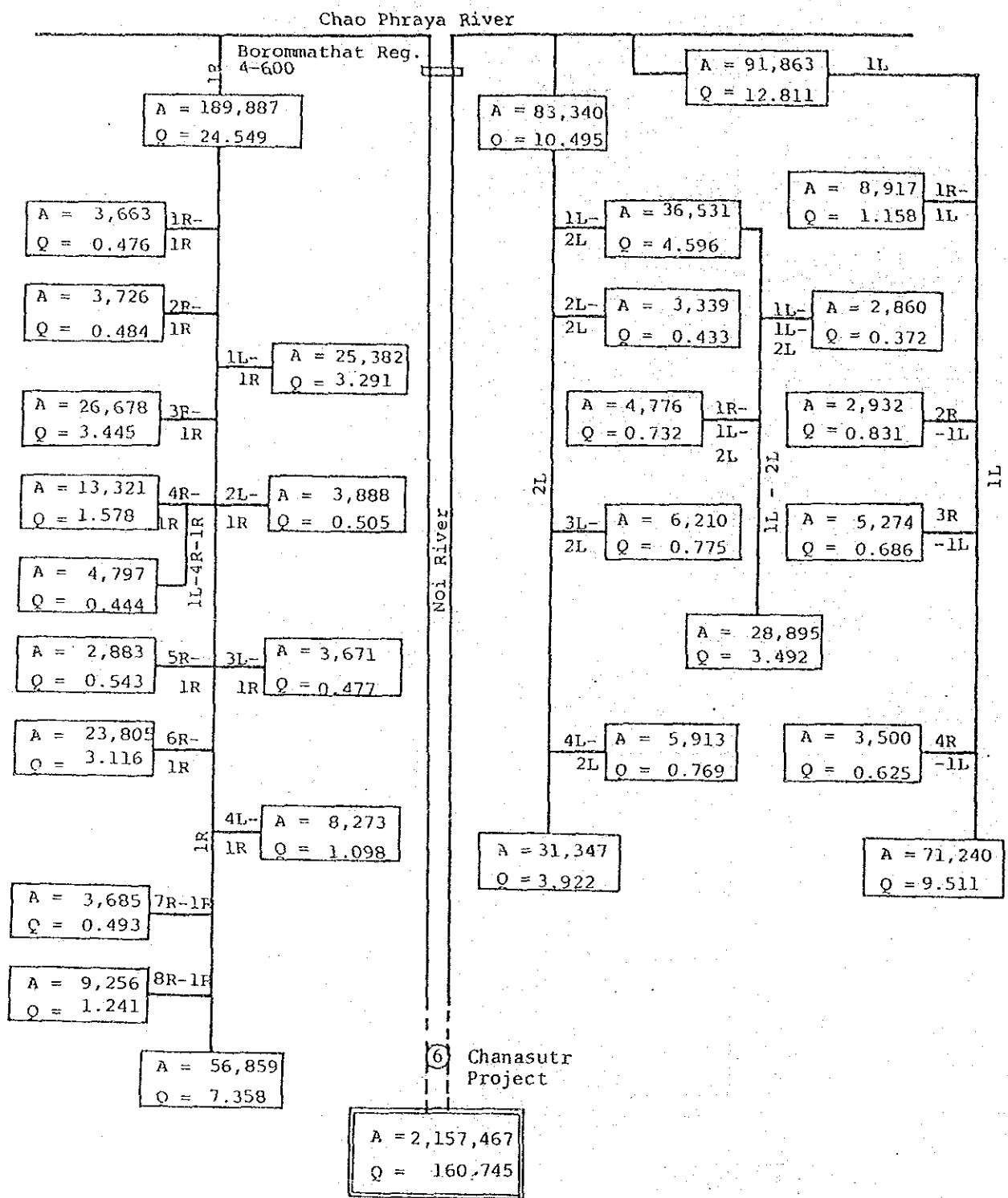


Figure 3-1 (6) IRRIGATION SYSTEM DIAGRAM IN THE DELTA (BOROMMATHAT PROJECT)

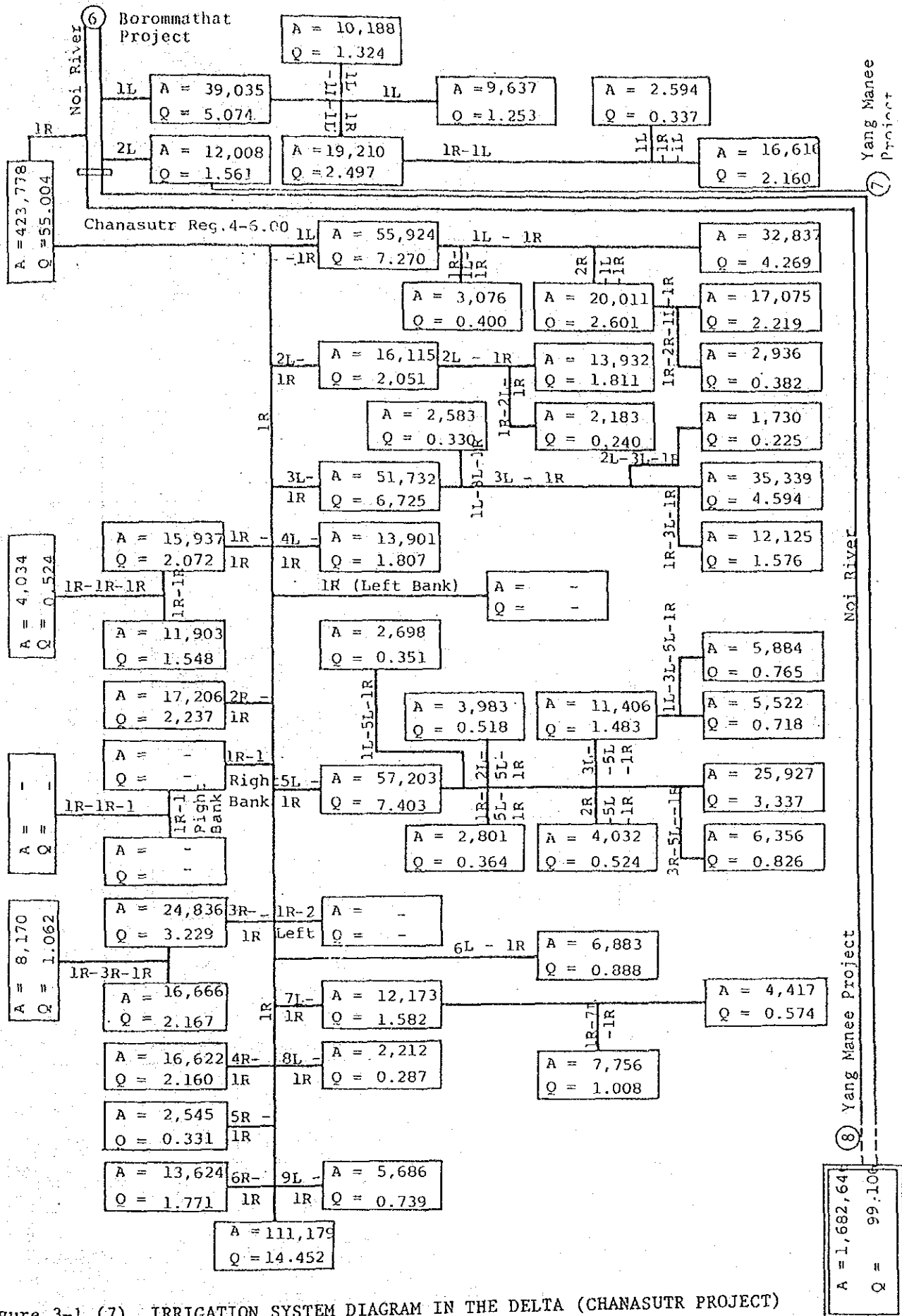


Figure 3-1 (7) IRRIGATION SYSTEM DIAGRAM IN THE DELTA (CHANASUTR PROJECT)

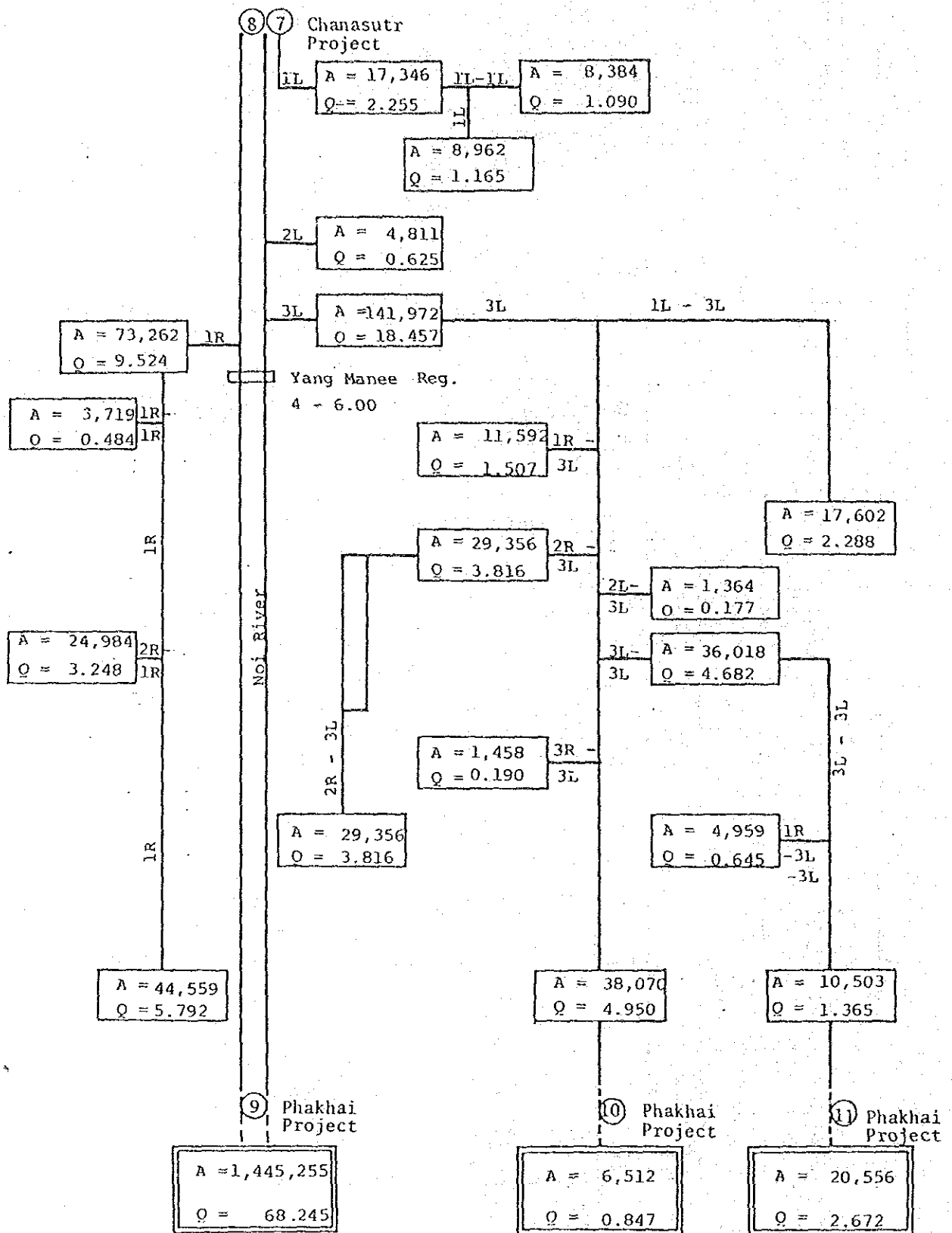


Figure 3-1 (8) IRRIGATION SYSTEM DIAGRAM IN THE DELTA (YANG MANEE PROJECT)

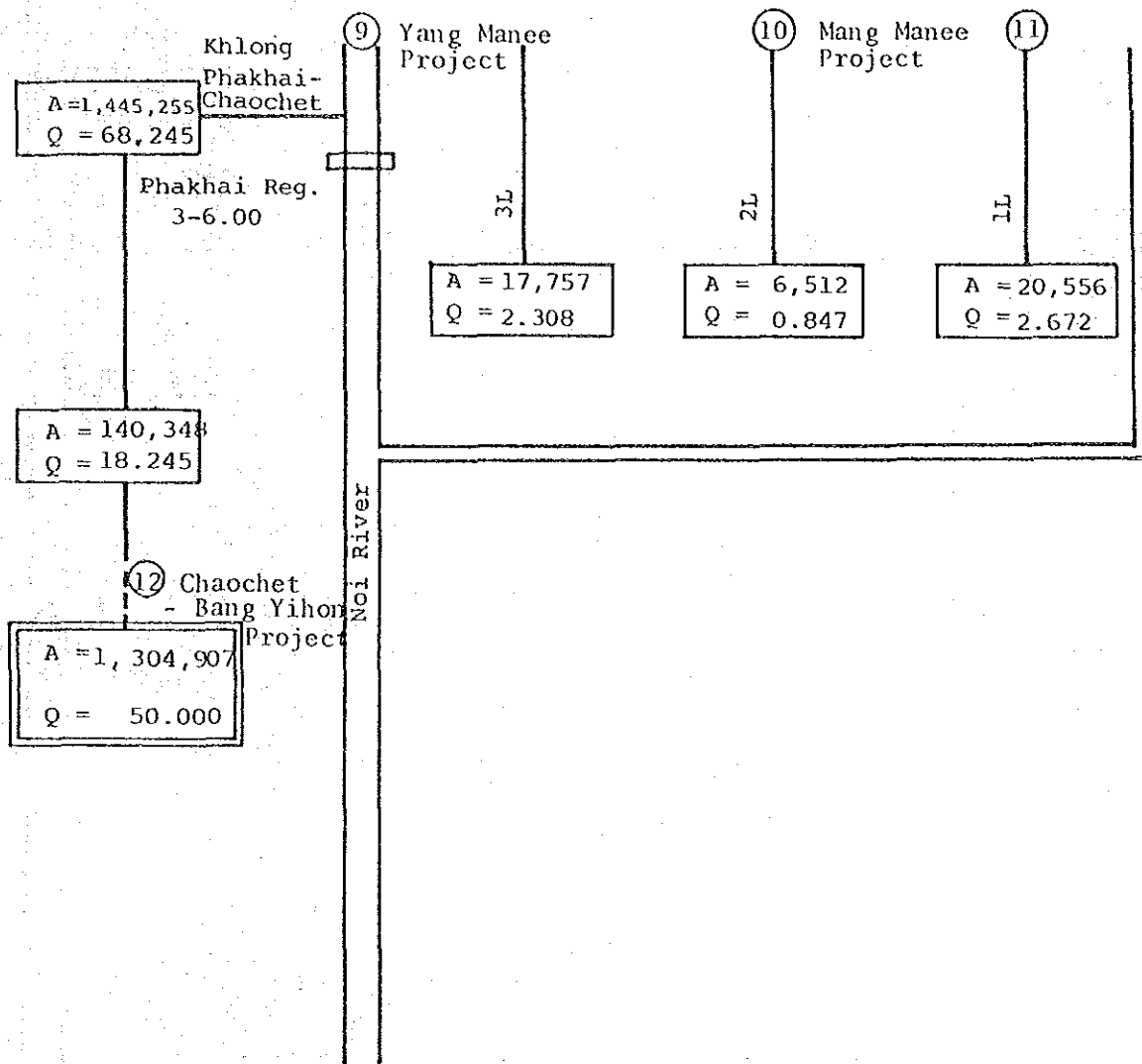


Figure 3-1 (9) IRRIGATION SYSTEM DIAGRAM IN THE DELTA (PHAK HAI PROJECT)

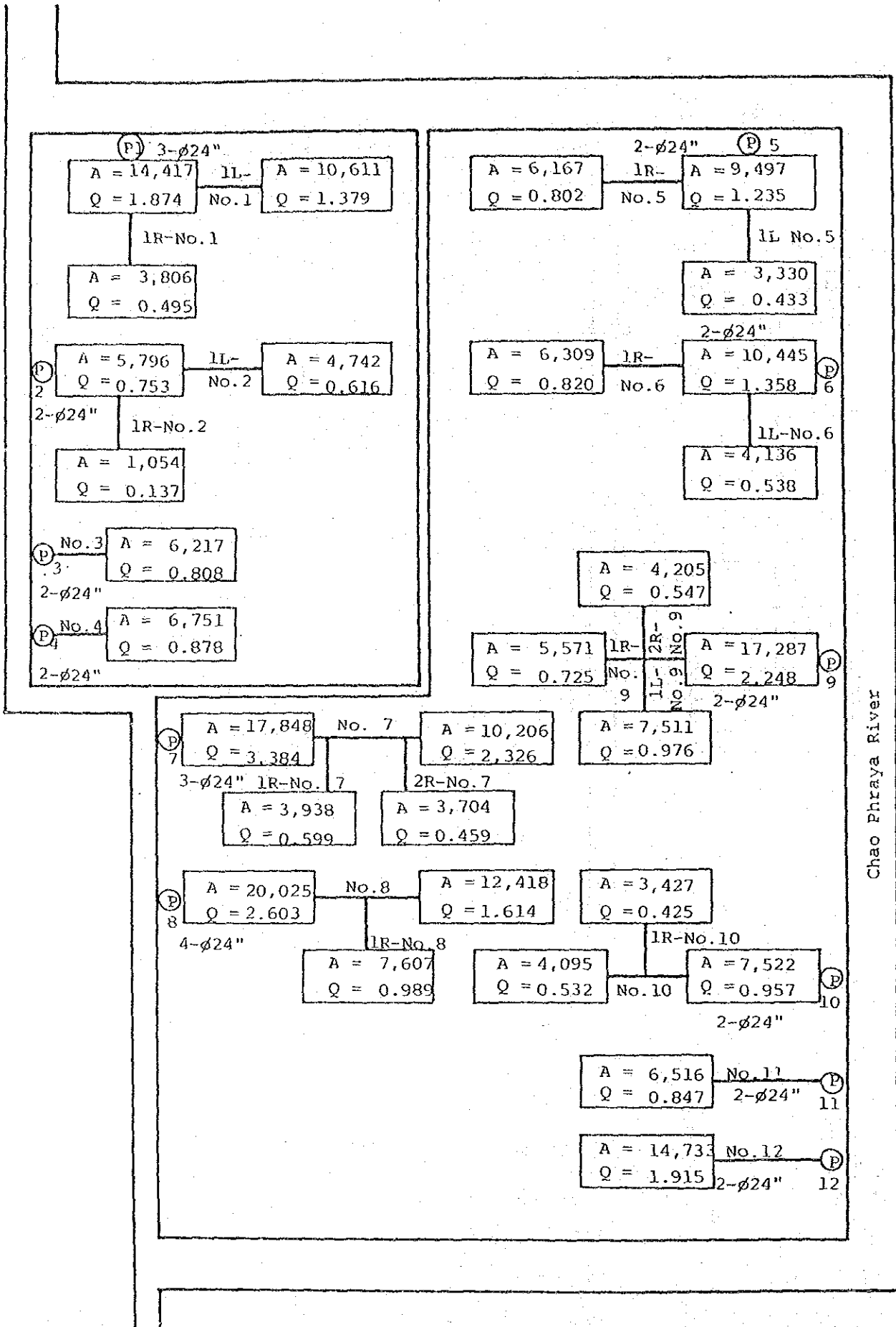


Figure 3-1 (10) IRRIGATION SYSTEM DIAGRAM IN THE DELTA (BANG BAN PROJECT)

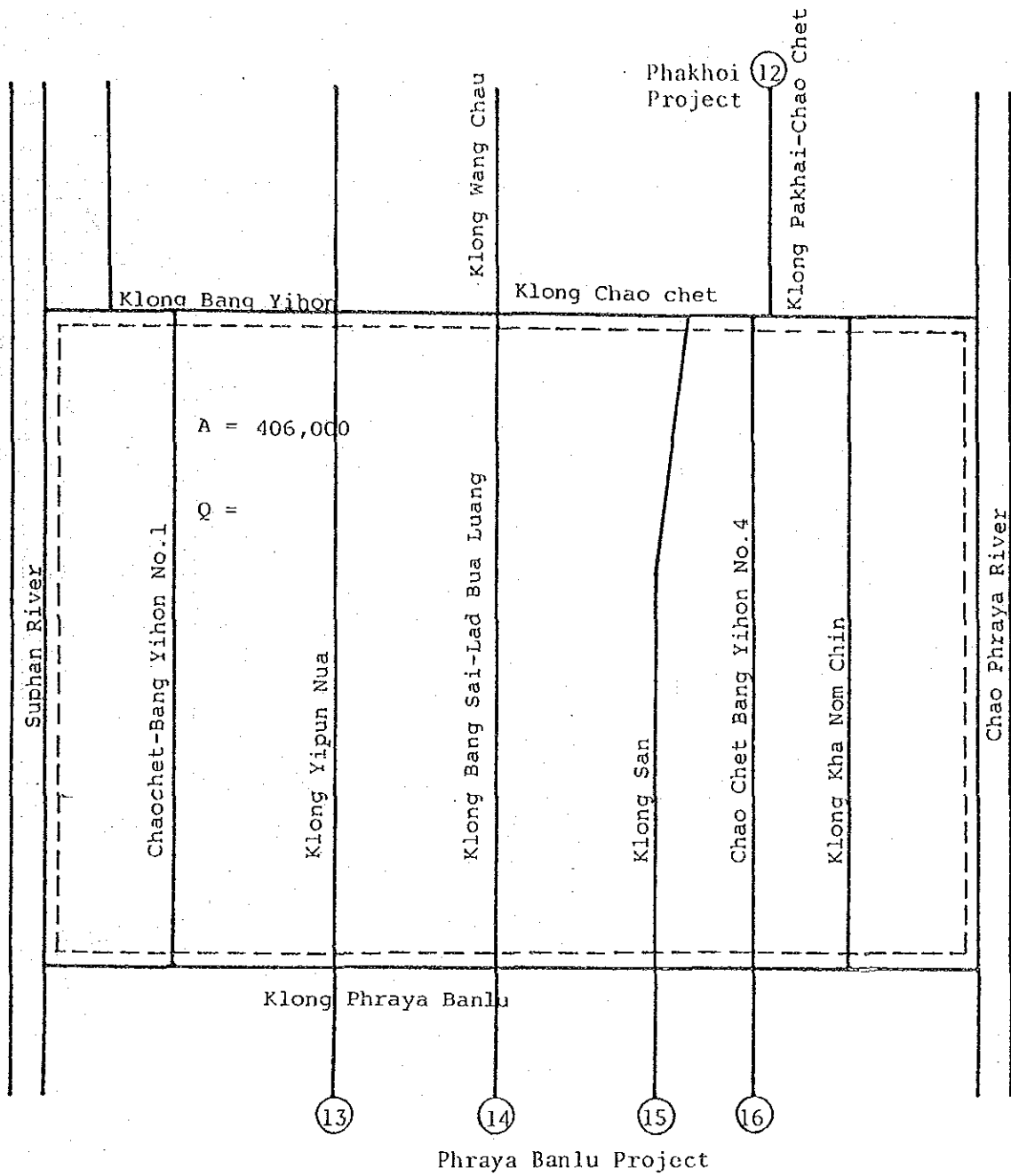


Figure 3-1 (11) IRRIGATION SYSTEM DIAGRAM IN THE DELTA
(CHAO CHET-BAN YIHON PROJECT)

Chaochet-Bang Yihon Project

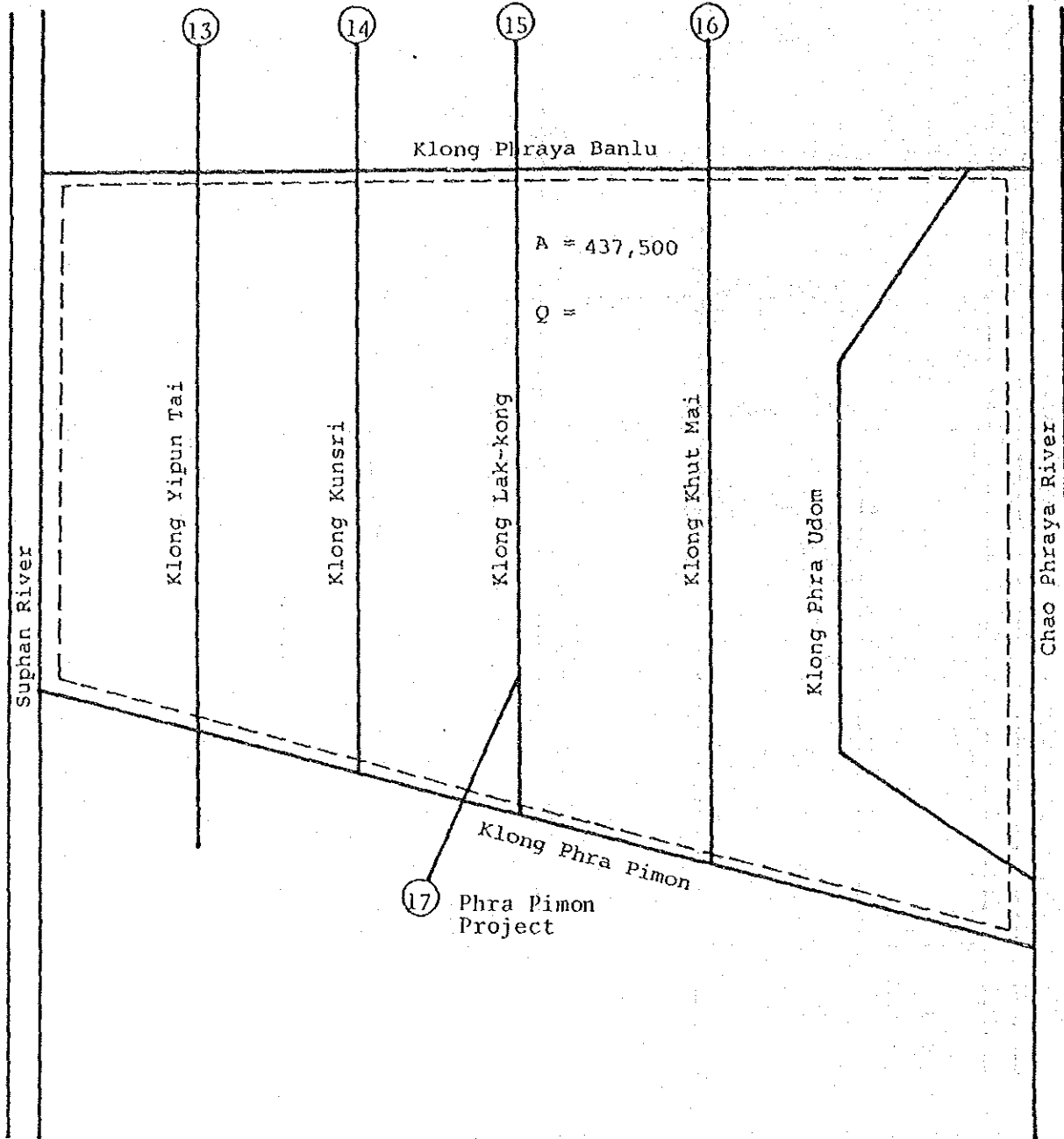


Figure 3-1 (12) IRRIGATION SYSTEM DIAGRAM IN THE DELTA
(PHRAYA BAN LU PROJECT)

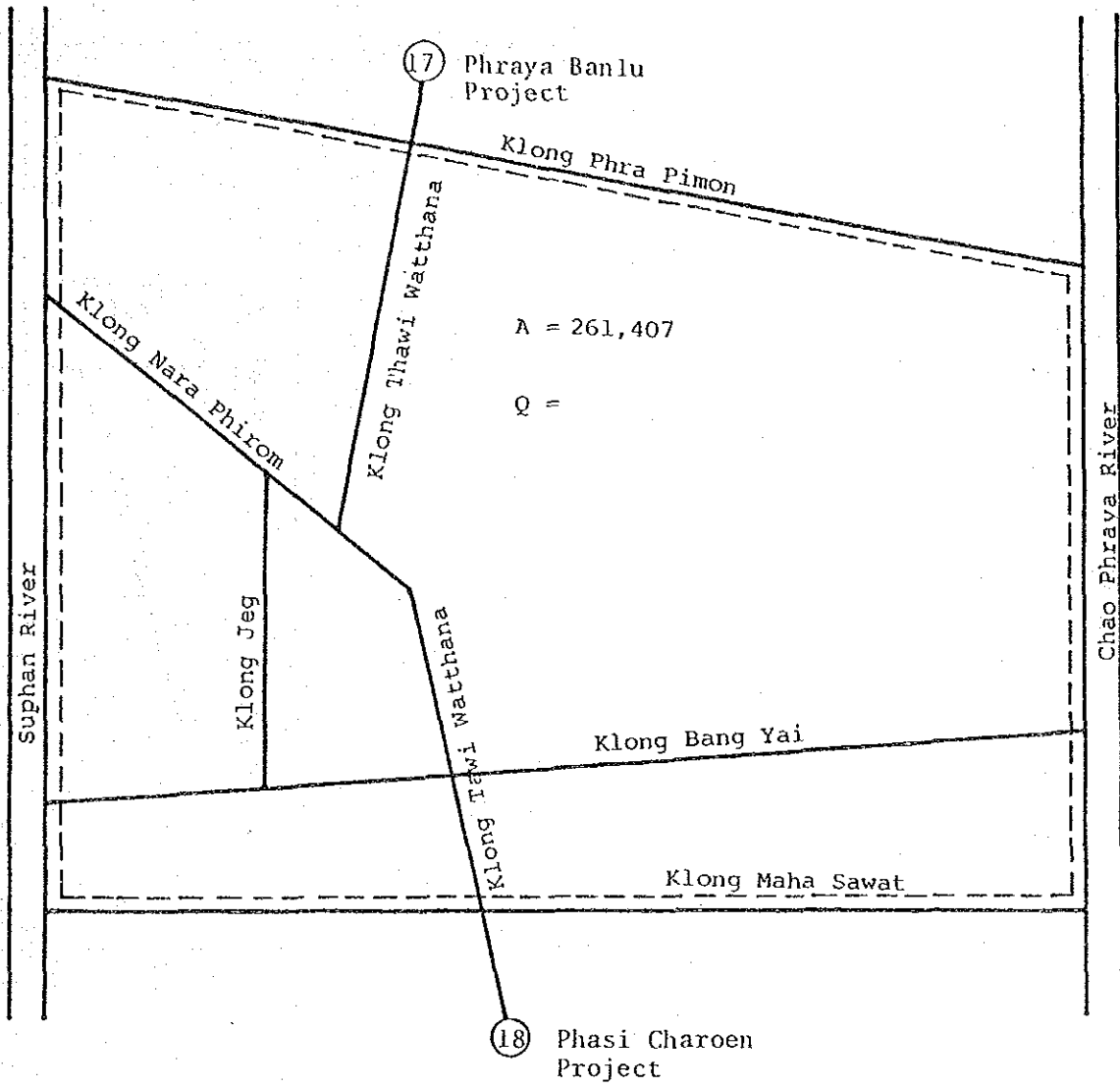


Figure 3-1 (13) IRRIGATION SYSTEM DIAGRAM IN THE DELTA (PHRA PHIMON PROJECT)

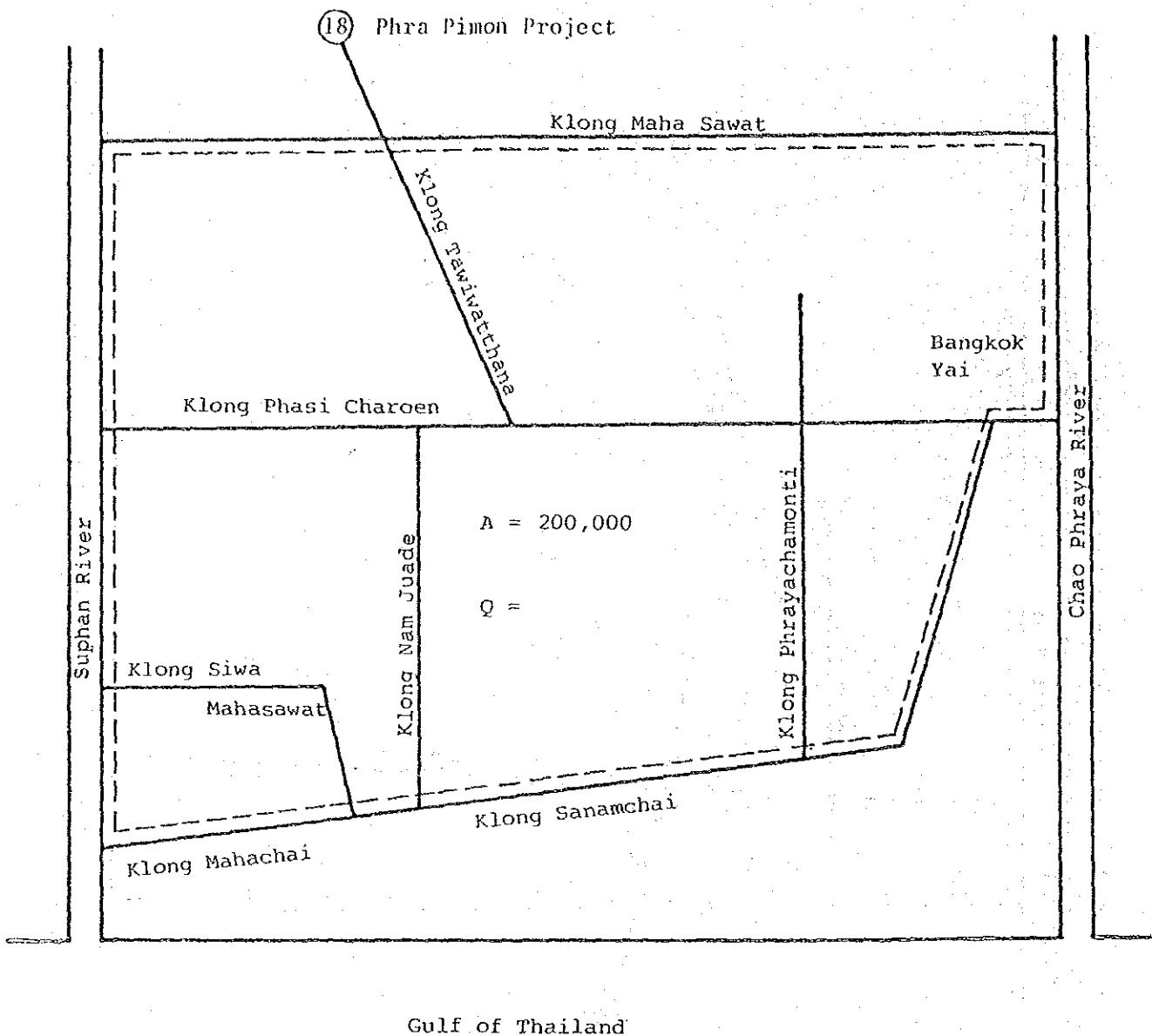


Figure 3-1 (14) IRRIGATION SYSTEM DIAGRAM IN THE DELTA
(PHASI CHAROEN PROJECT)

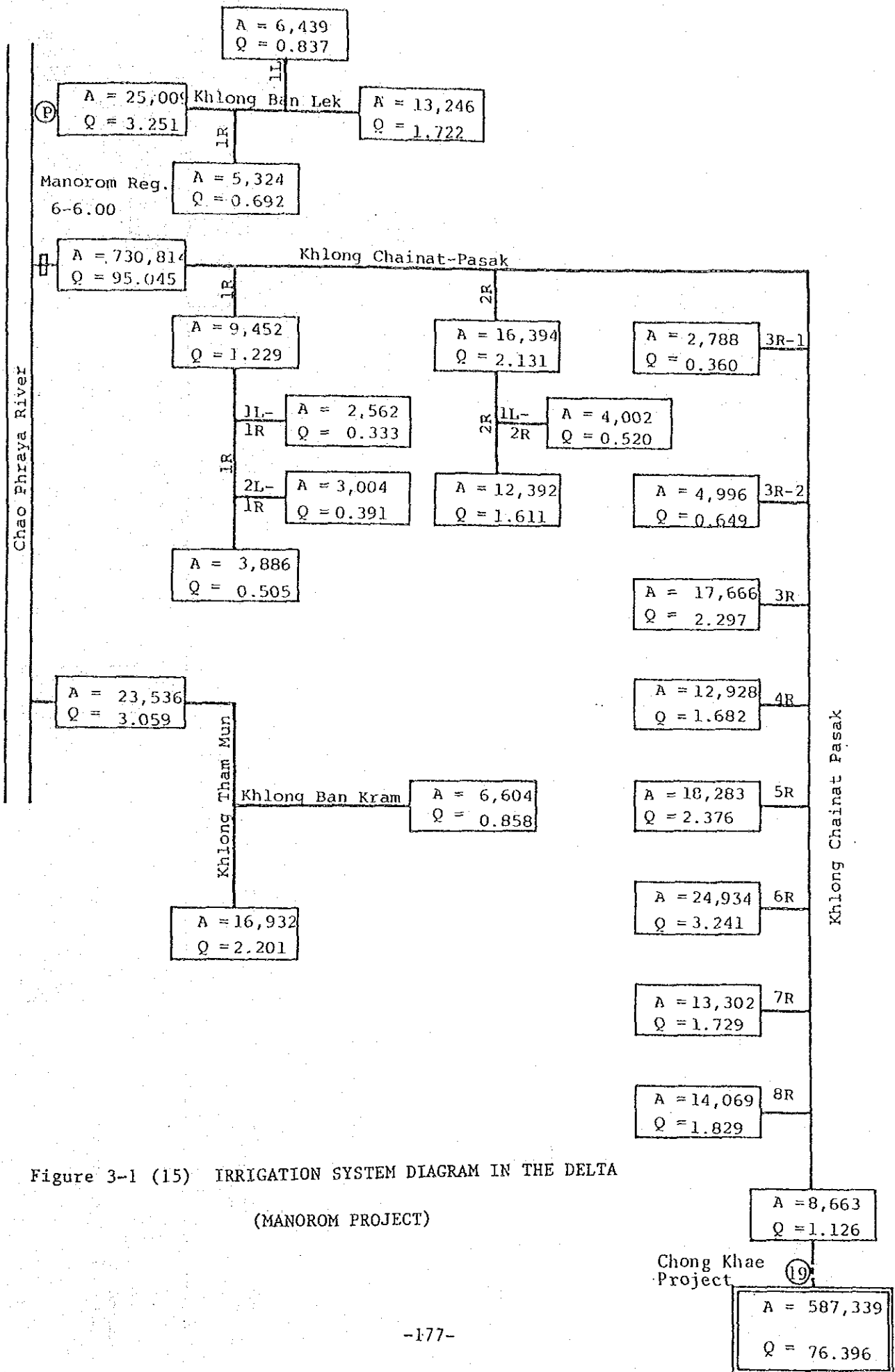


Figure 3-1 (15) IRRIGATION SYSTEM DIAGRAM IN THE DELTA
(MANOROM PROJECT)

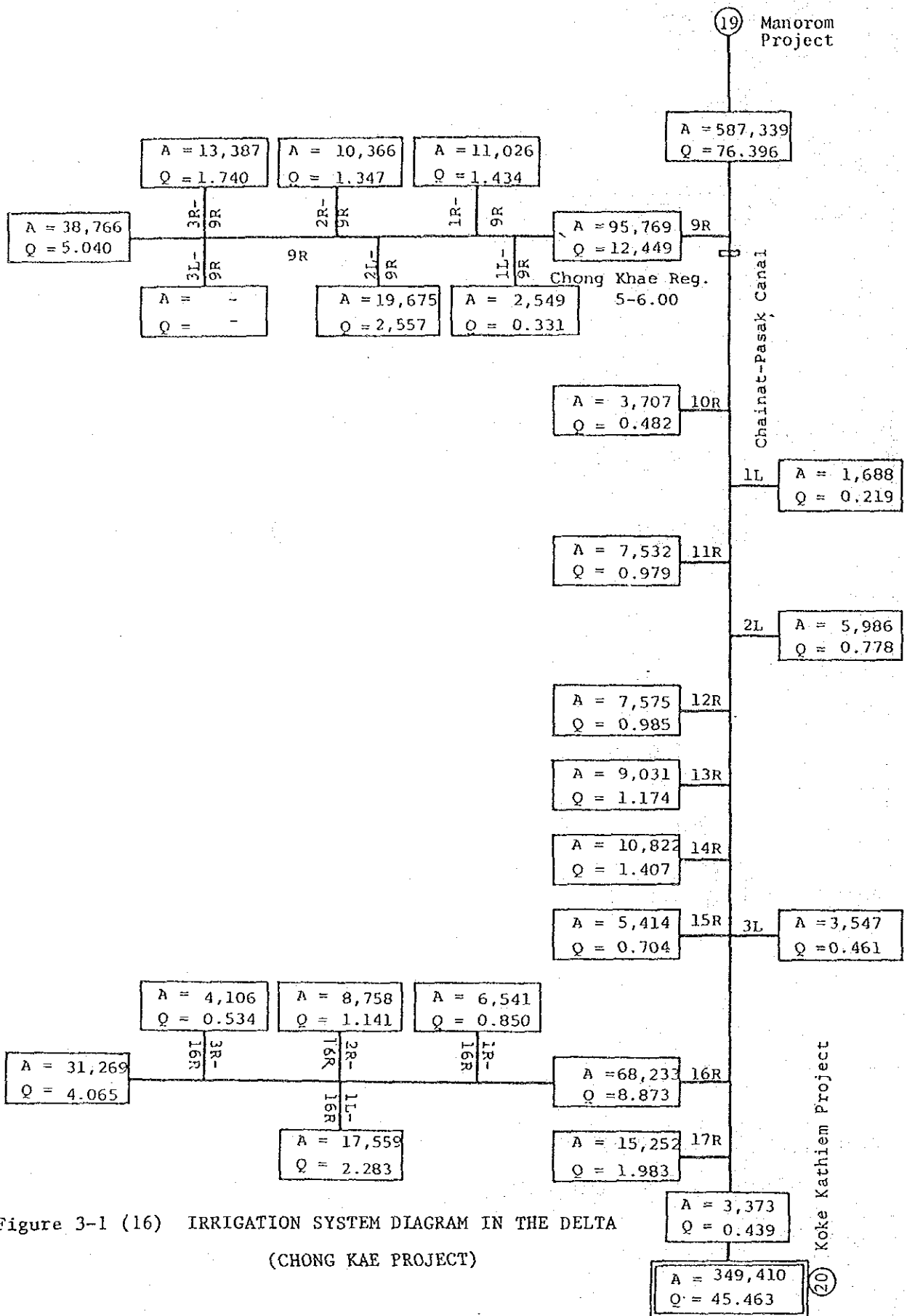


Figure 3-1 (16) IRRIGATION SYSTEM DIAGRAM IN THE DELTA
(CHONG KAE PROJECT)

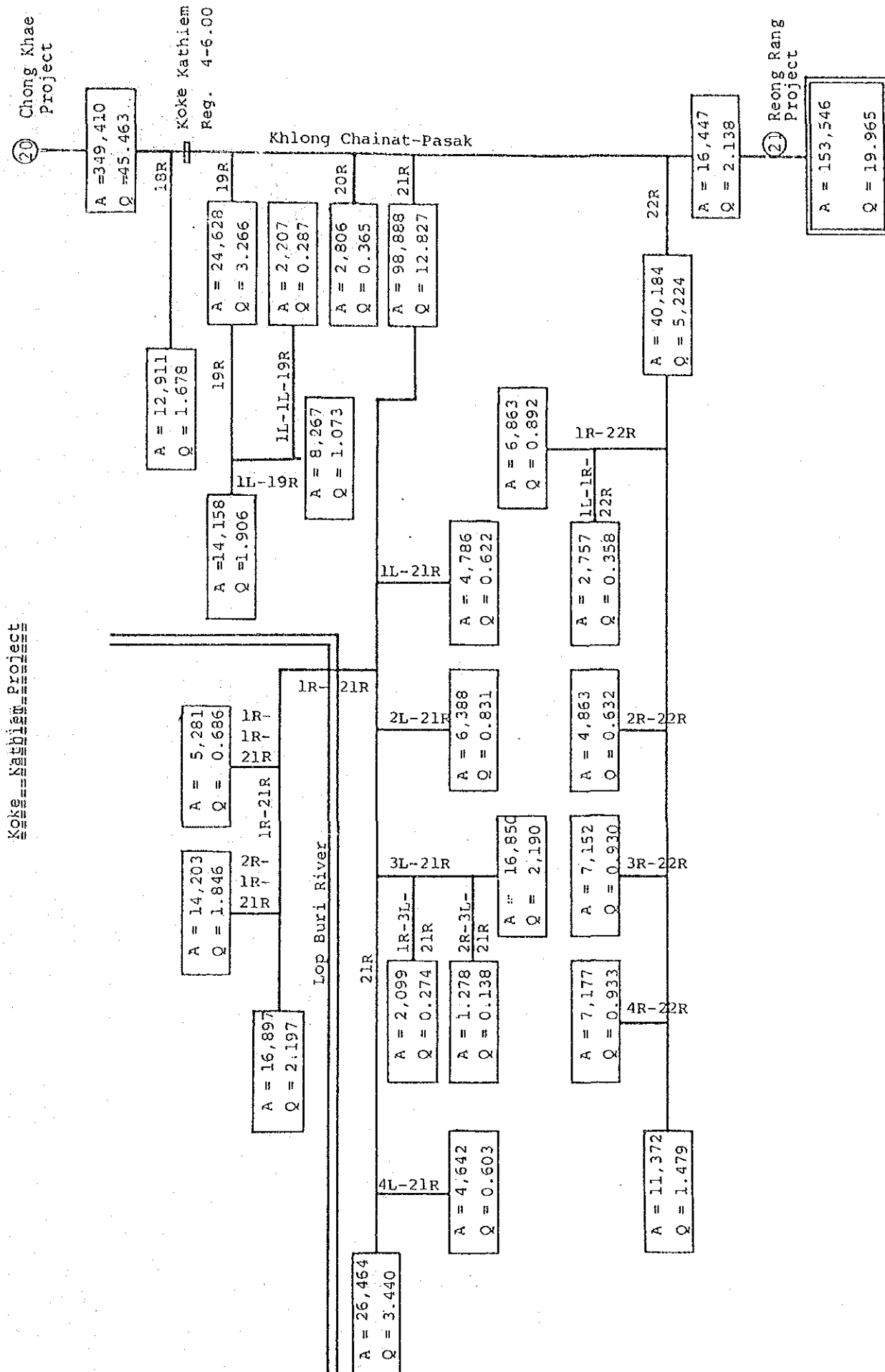


Figure 3-1 (17) IRRIGATION SYSTEM DIAGRAM IN THE DELTA (KOKE KATHIEM PROJECT)

Roeng Rang Project

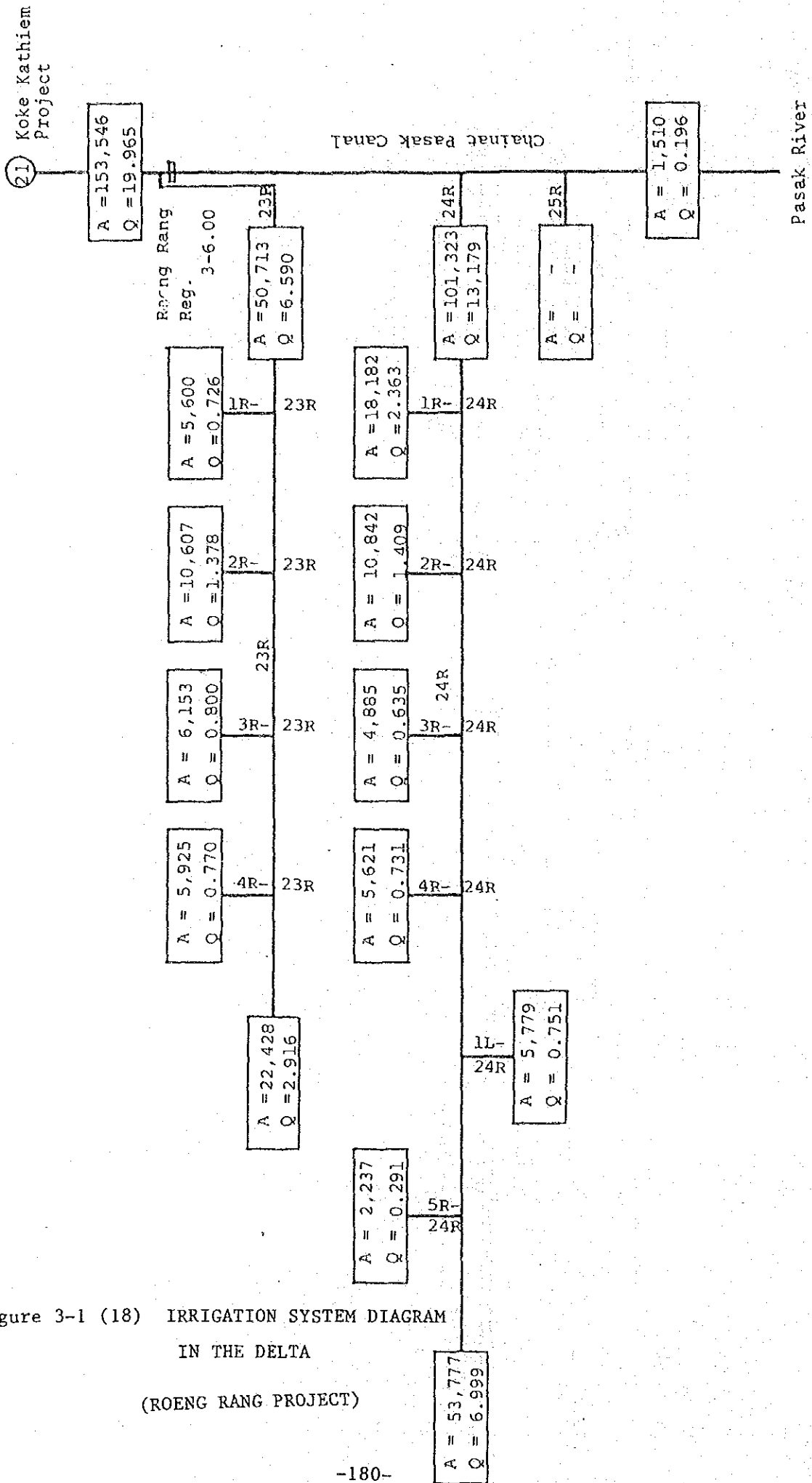


Figure 3-1 (18) IRRIGATION SYSTEM DIAGRAM
IN THE DELTA

(ROENG RANG PROJECT)

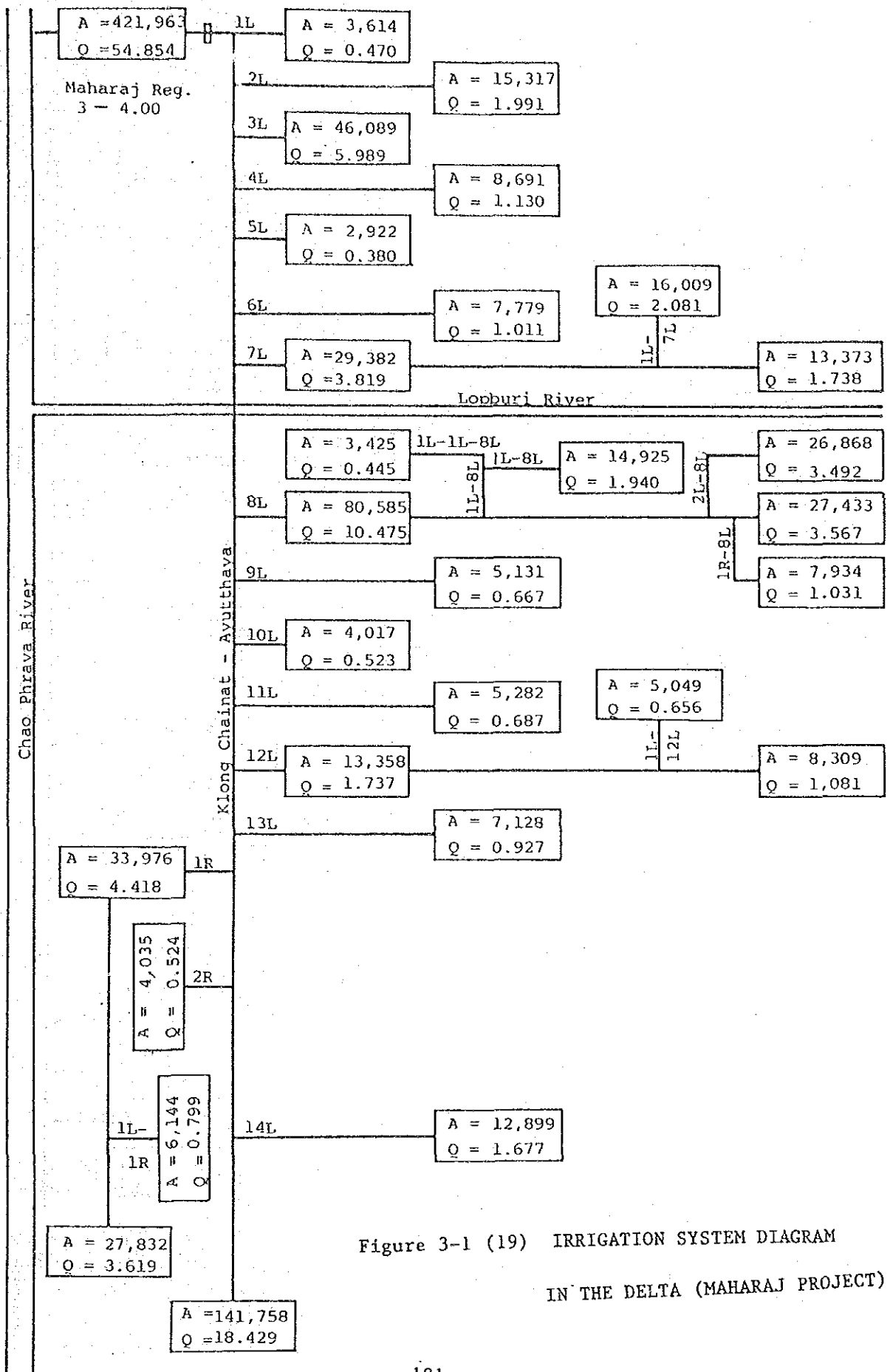


Figure 3-1 (19) IRRIGATION SYSTEM DIAGRAM
IN THE DELTA (MAHARAJ PROJECT)

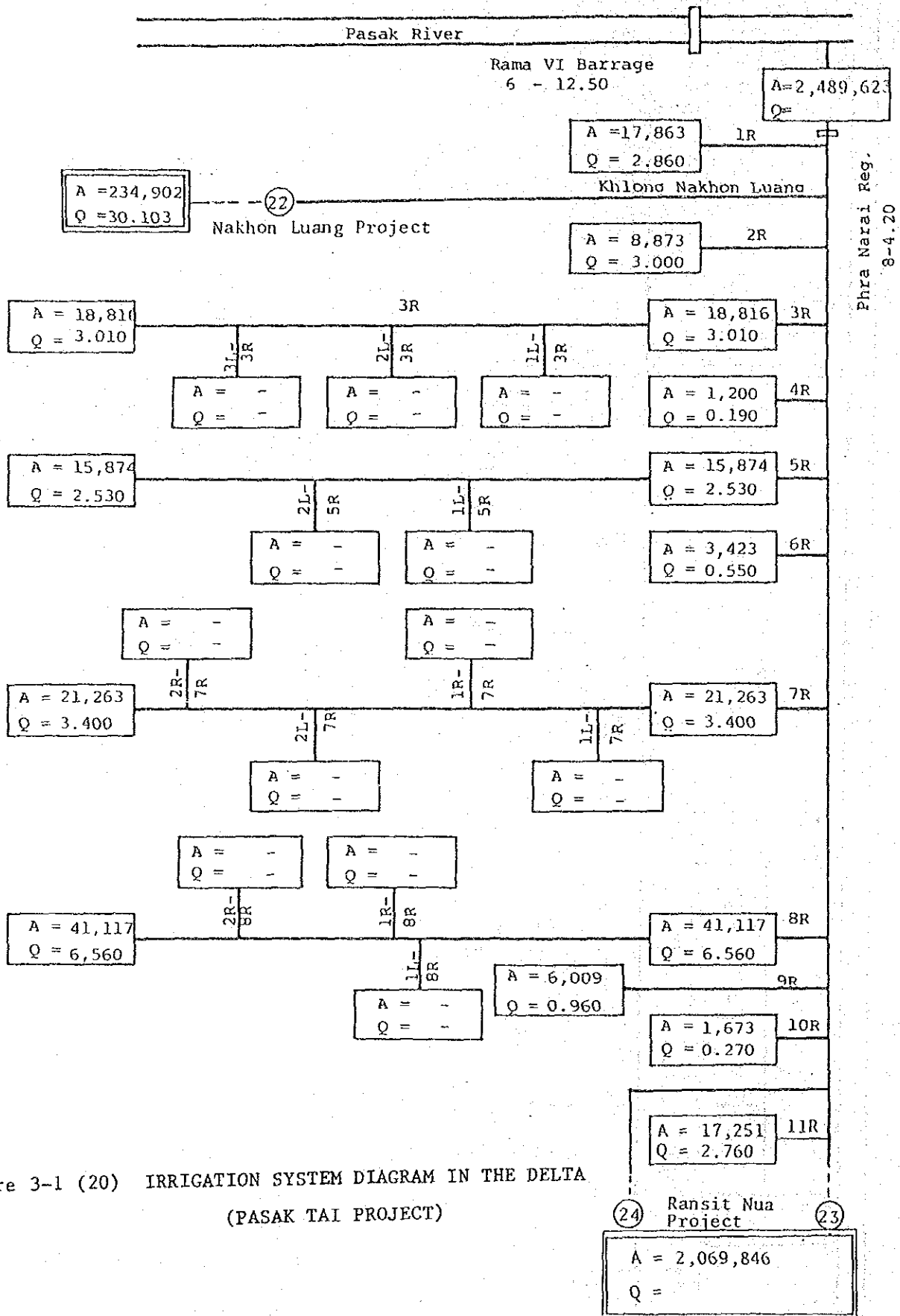


Figure 3-1 (20) IRRIGATION SYSTEM DIAGRAM IN THE DELTA
(PASAK TAI PROJECT)

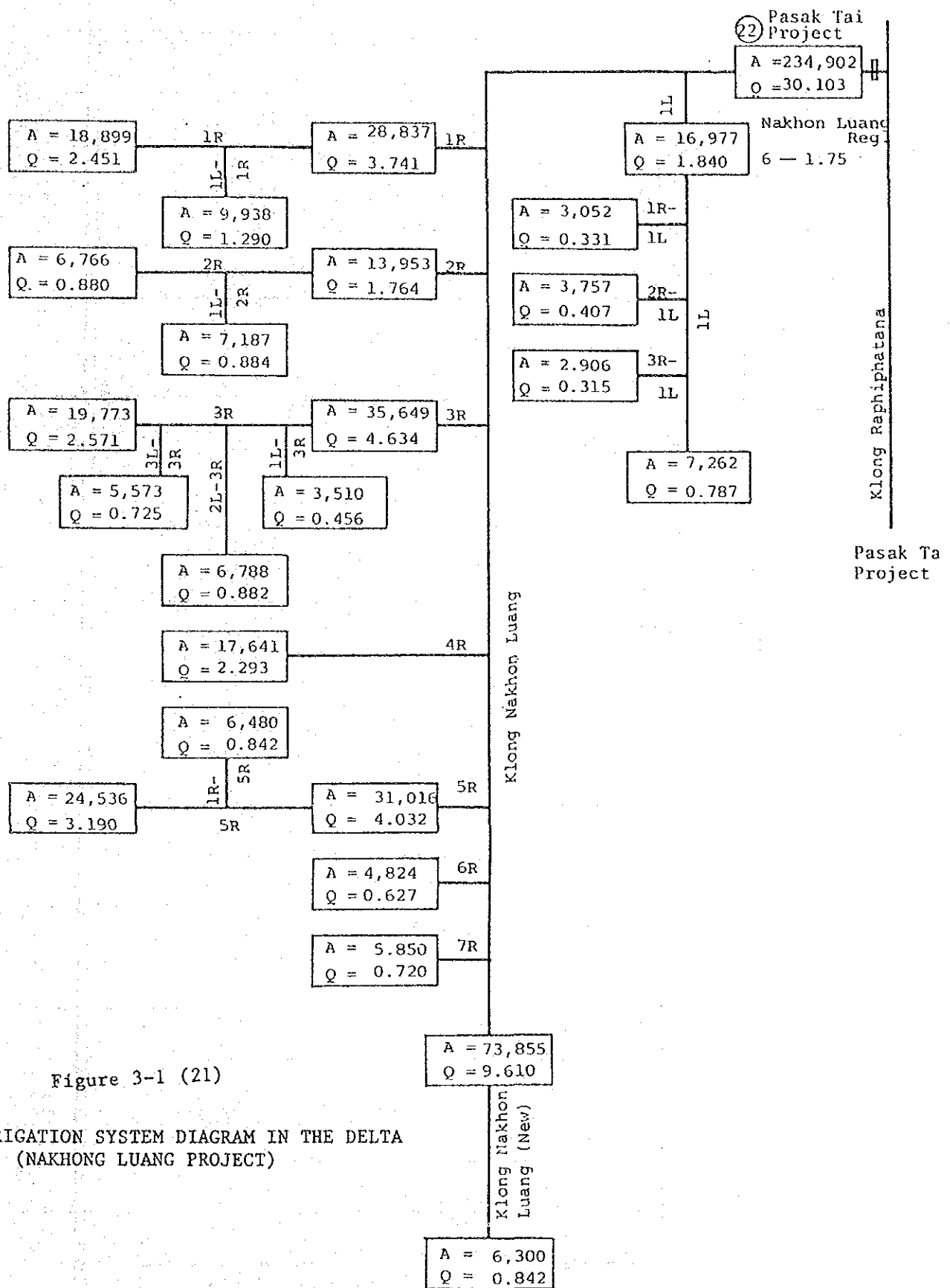


Figure 3-1 (21)

IRRIGATION SYSTEM DIAGRAM IN THE DELTA (NAKHONG LUANG PROJECT)

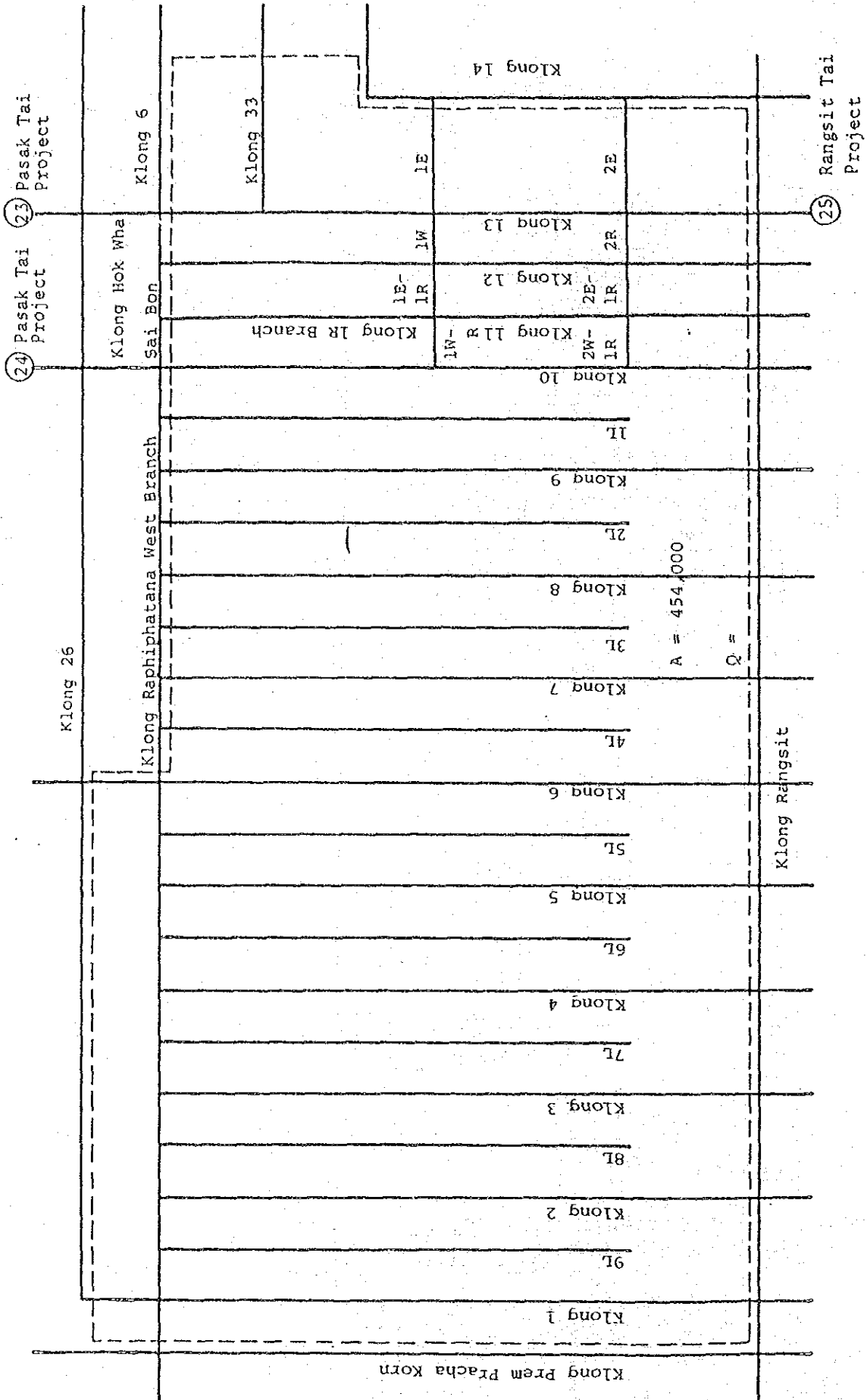


Figure 3-1 (22) IRRIGATION SYSTEM DIAGRAM IN THE DELTA (RANGSIT NUA PROJECT)

Rangsit Tai Project

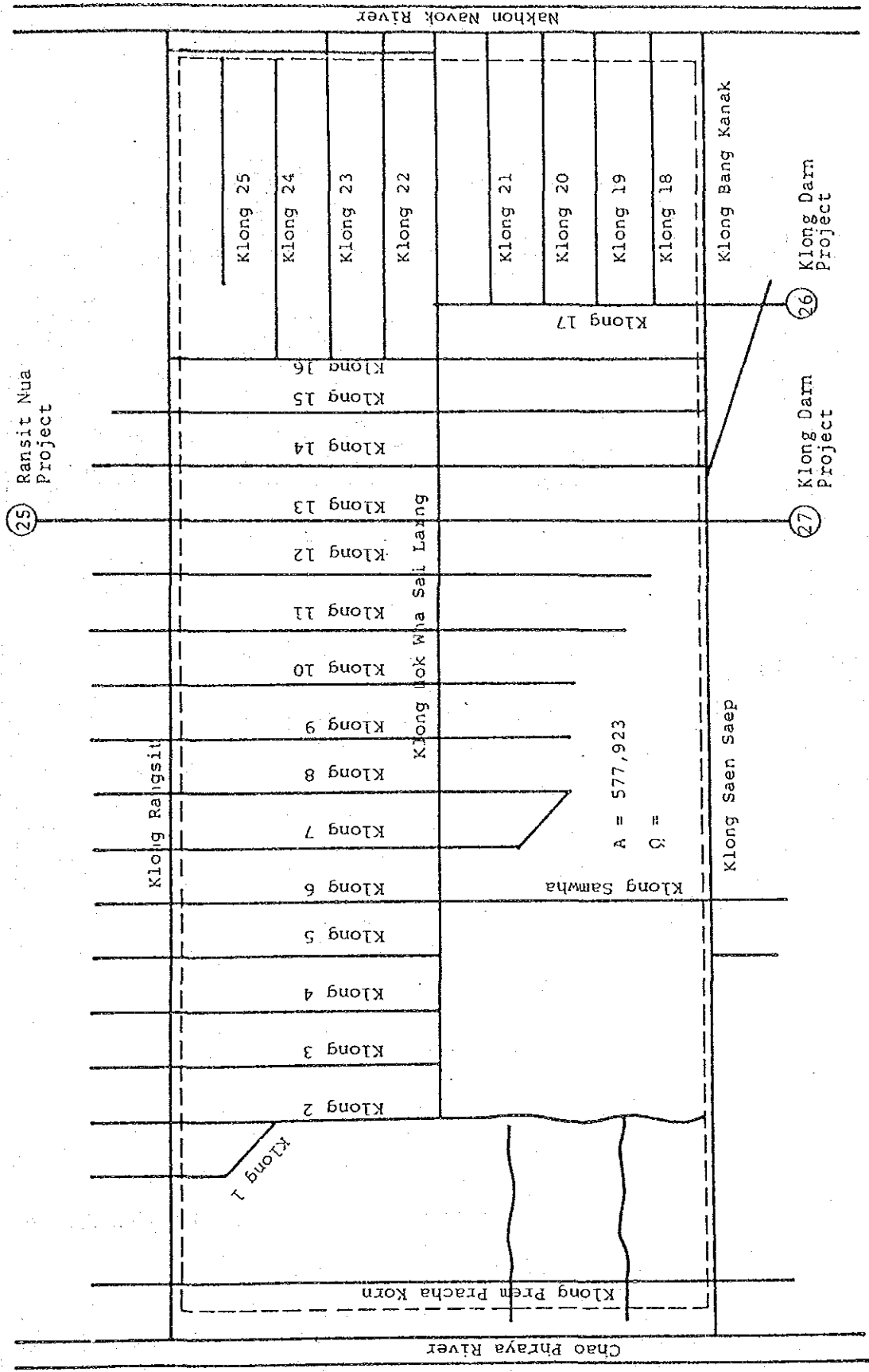


Figure 3-1 (23) IRRIGATION SYSTEM DIAGRAM IN THE DELTA (RANGSIT TAI PROJECT)

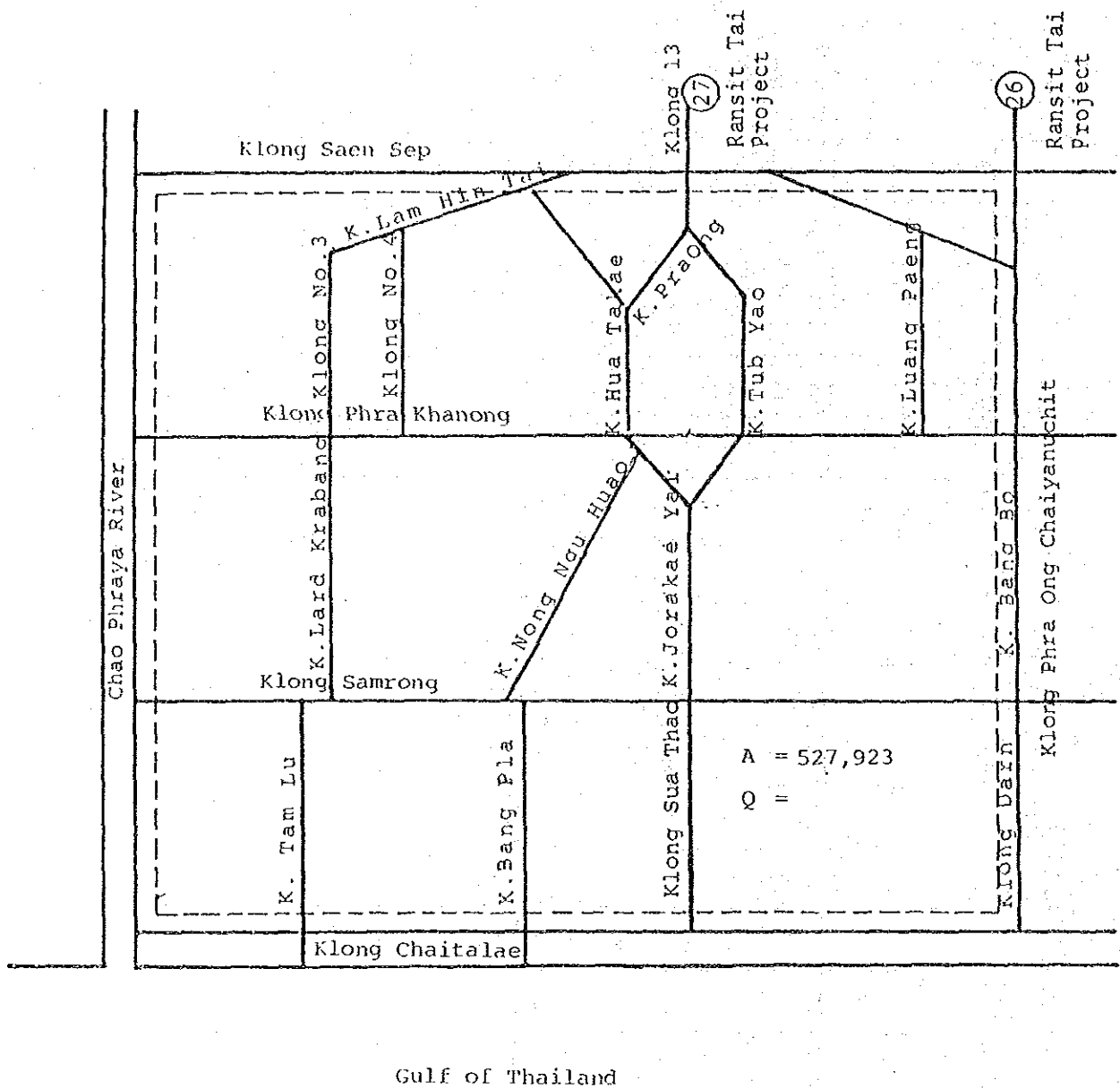


Figure 3-1 (24) IRRIGATION SYSTEM DIAGRAM IN THE DELTA (KHLONG DAN PROJECT)

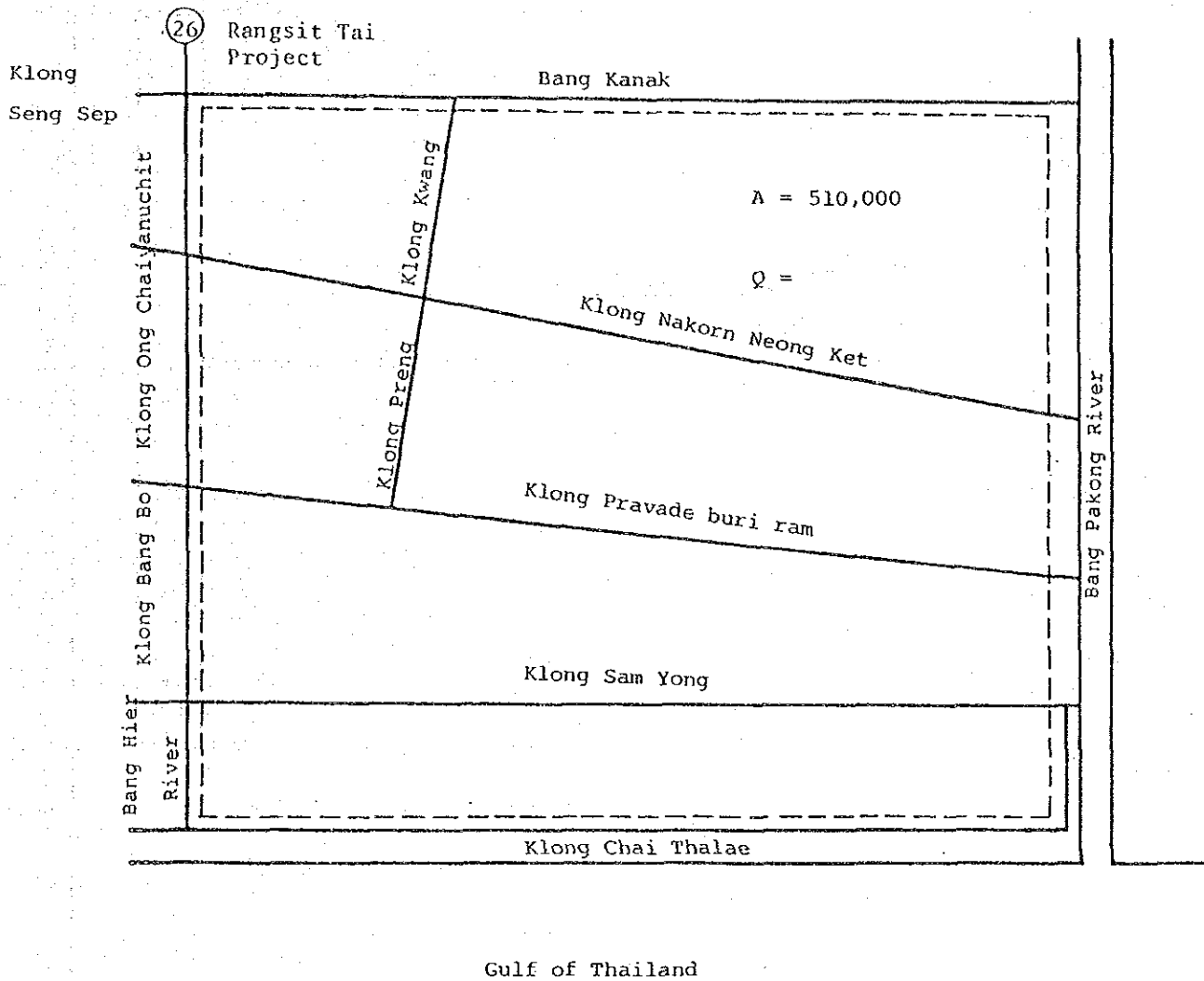


Figure 3-1 (25) IRRIGATION SYSTEM DIAGRAM IN THE DELTA
(PHRA ONG CHAIYANUCHIT PROJECT)

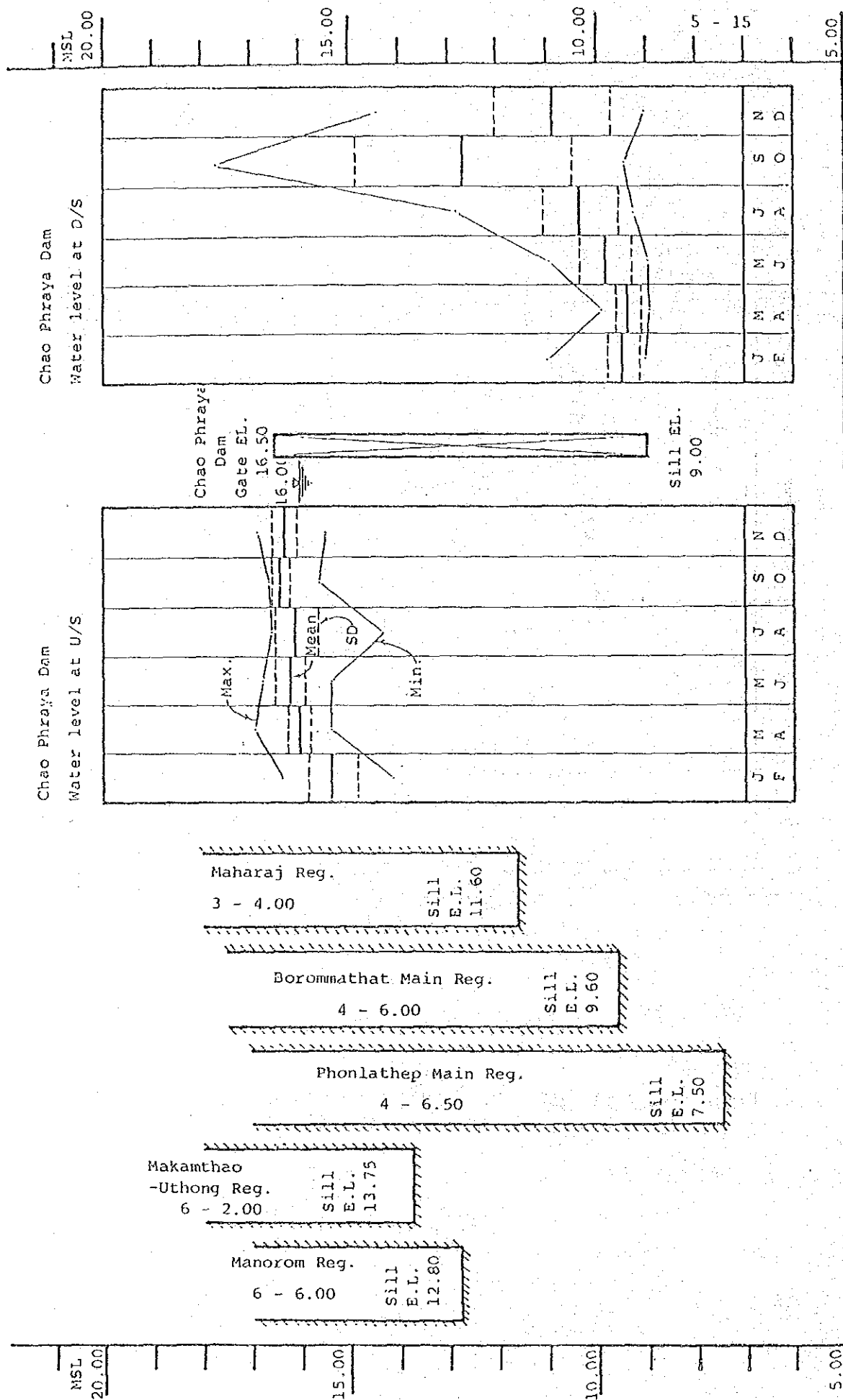


Figure 3-2 WATER LEVEL & SILL ELEVATION OF CHAO PHRAYA DAM & MAIN HEAD REGULATOR

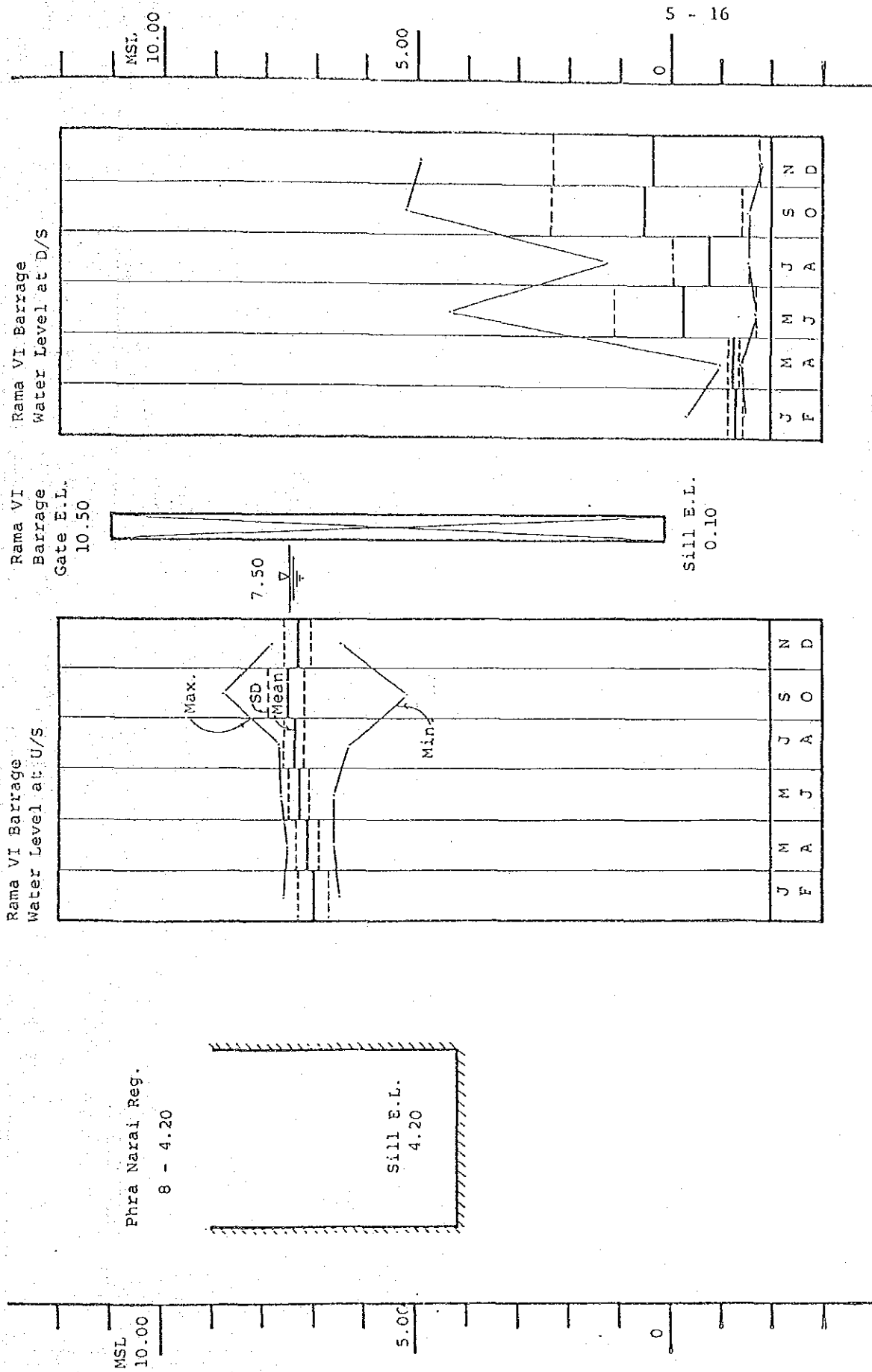


Figure 3-3 WATER LEVEL & SILL ELEVATION OF RAMA VI BARRAGE & PHRA NARAI REGULATOR

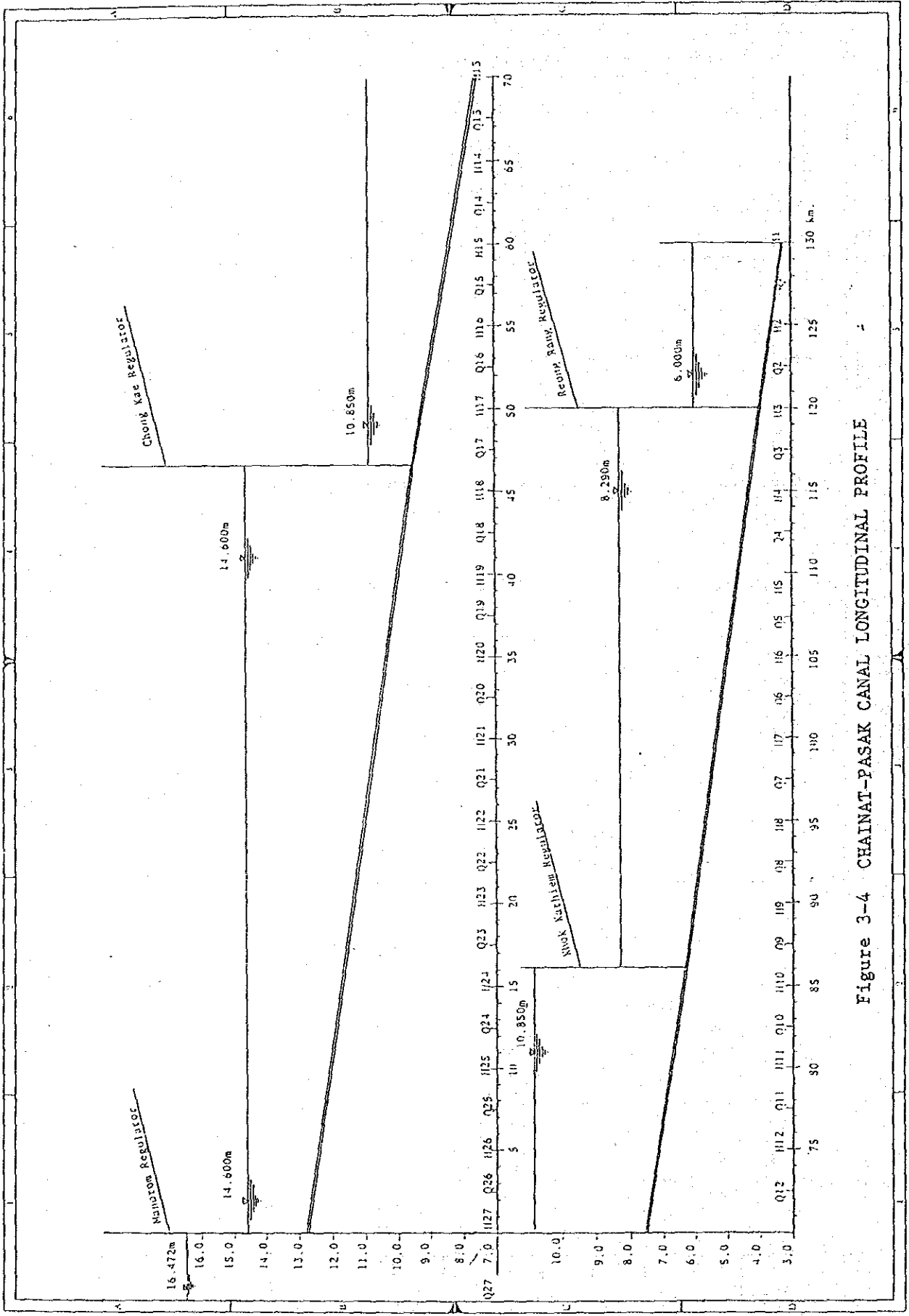


Figure 3-4 CHAINAT-PASAK CANAL LONGITUDINAL PROFILE

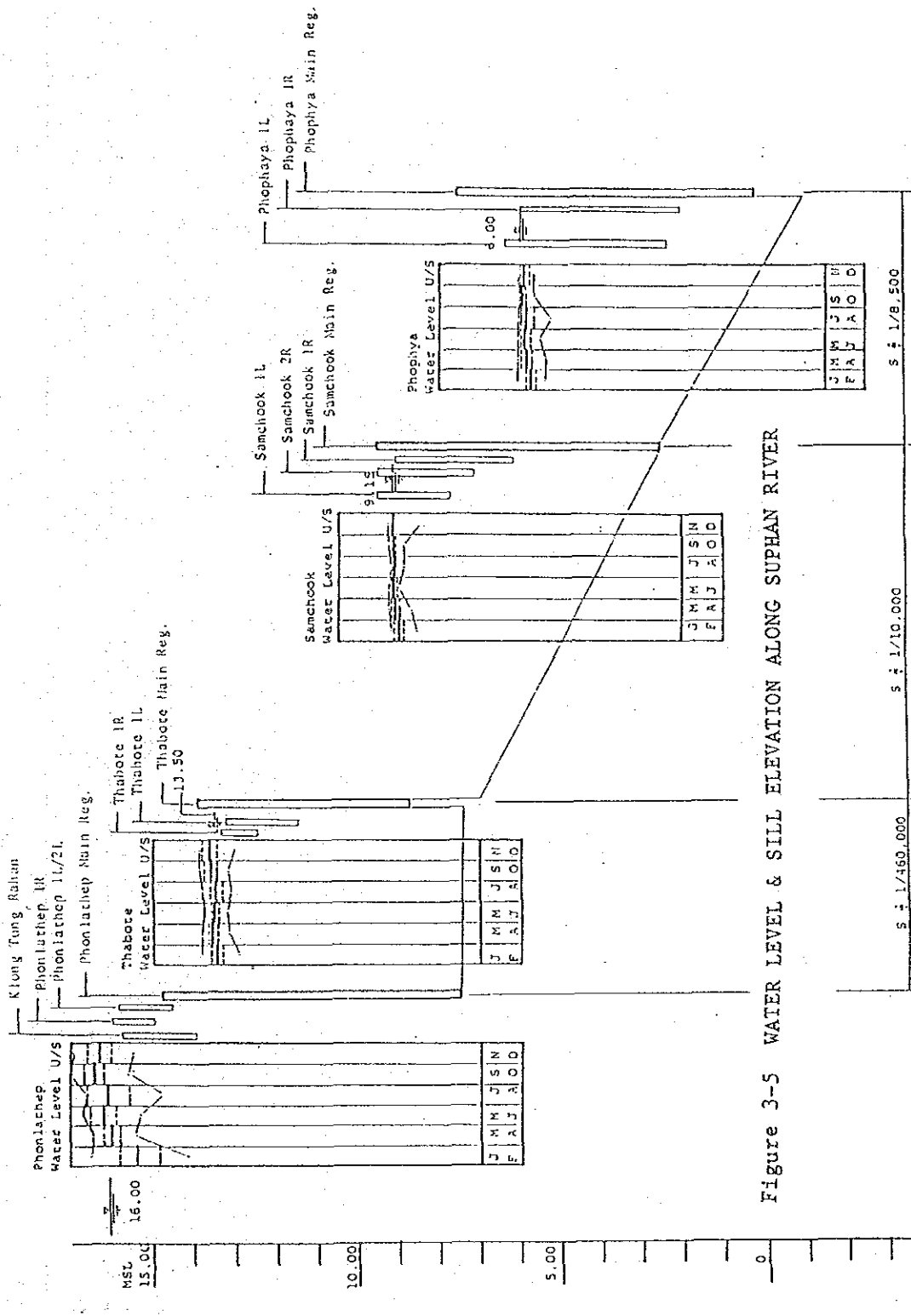
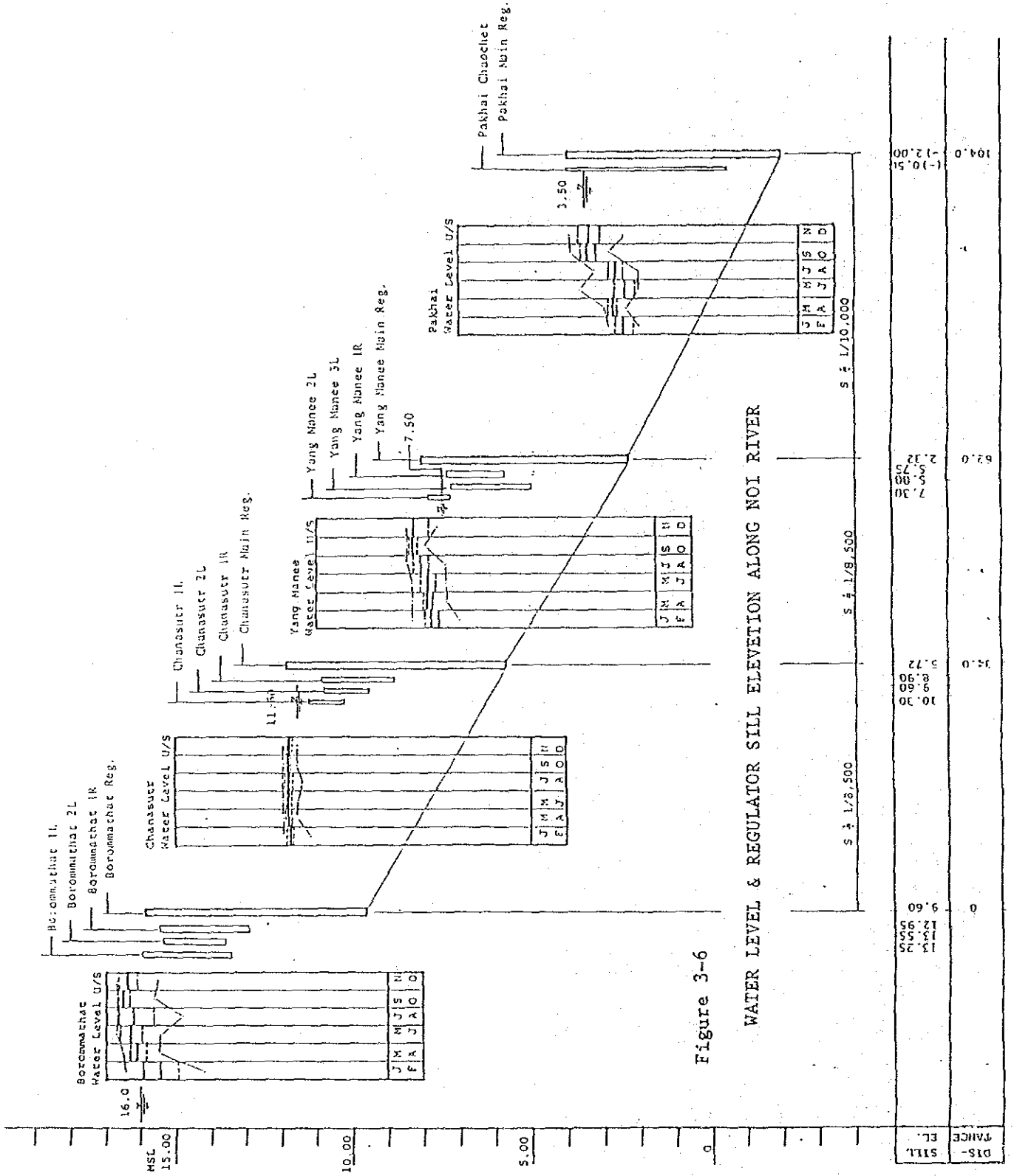
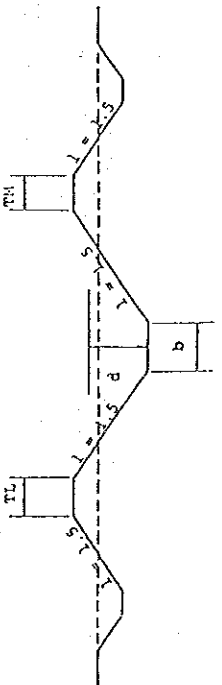


Figure 3-5 WATER LEVEL & SILL ELEVATION ALONG SUPHAN RIVER

STILL	EL	0	23.0	66.0	96.0
015-17ANCE	13.90	14.45	7.50	11.45	12.50
	14.90	11.45	8.75	12.50	7.24
	14.45	11.45	8.75	7.03	6.89
	14.90	11.45	8.75	7.03	2.50
	14.45	11.45	8.75	7.03	2.26
	14.90	11.45	8.75	7.03	1.91
	14.45	11.45	8.75	7.03	1-10.20



Borommathat Project
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Location	Hydraulic Properties					Dimension				Remarks
	A	V	Q	S	d	TL	TR	TR		
0.025 - 1.500	5.854	0.360	2.107	0.0001	4.00	1.05	2.00	2.00		
1.500 - 2.200	5.329	0.352	1.876	0.0001	3.50	1.05	2.00	2.00		
2.200 - 3.210	4.804	0.344	1.652	0.0001	3.00	1.05	1.05	1.05		
3.210 - 4.400	4.500	0.234	1.503	0.0001	3.00	1.00	1.50	1.50		
4.400 - 5.000	4.000	0.324	1.296	0.0001	2.50	1.00	2.50	2.50		
5.000 - 6.250	3.500	0.313	1.095	0.0001	2.00	1.00	1.00	1.00		
6.250 - 8.000	1.934	0.270	0.466	0.0001	2.00	0.65	1.00	1.00		
8.000 - 8.720	1.125	0.195	0.219	0.0001	1.50	0.50	1.00	1.00		

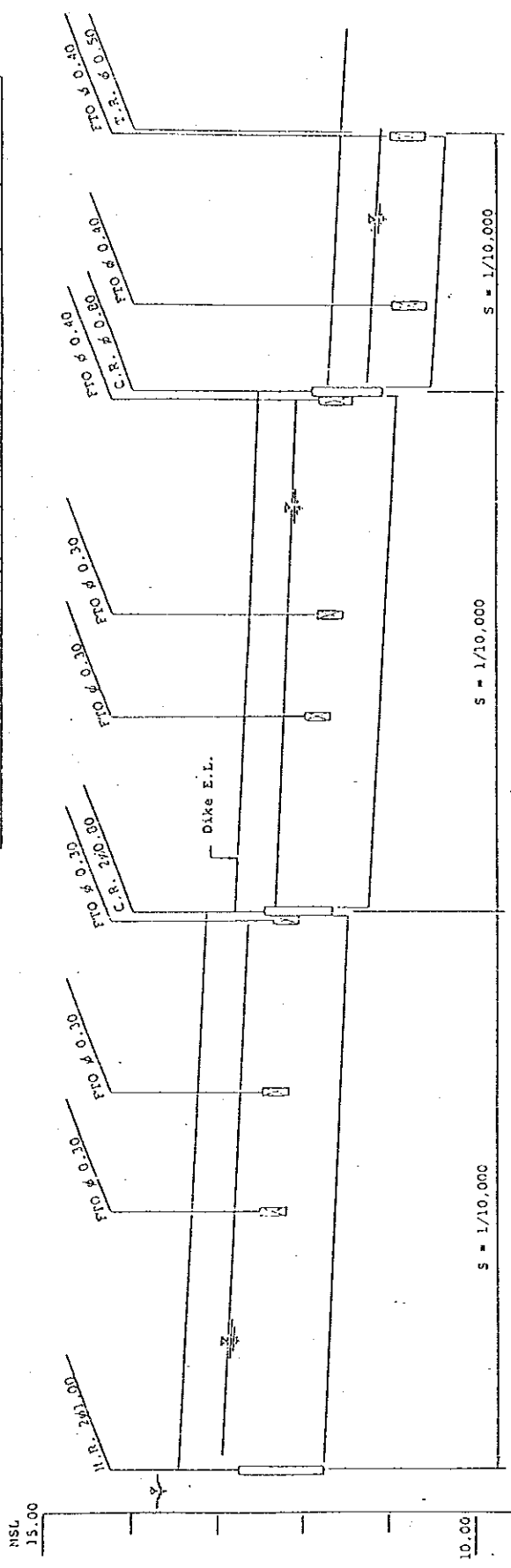


Figure 3-7 WATER LEVEL & REGULATOR SILL ELEVATION
 ALONG BOROMMATHAT 4R-1R CANAL

DIS TANCE	SILL	WATER LEVEL
0	11.75	11.75
1.50	12.20	12.20
2.20	12.17	12.17
3.20	12.06	11.66
3.21	11.66	11.66
4.50	11.67	11.67
5.00	11.54	11.54
6.24	11.42	11.42
6.25	11.03	11.03
6.80	10.56	10.56
7.80	10.57	10.57
7.81	10.42	10.42

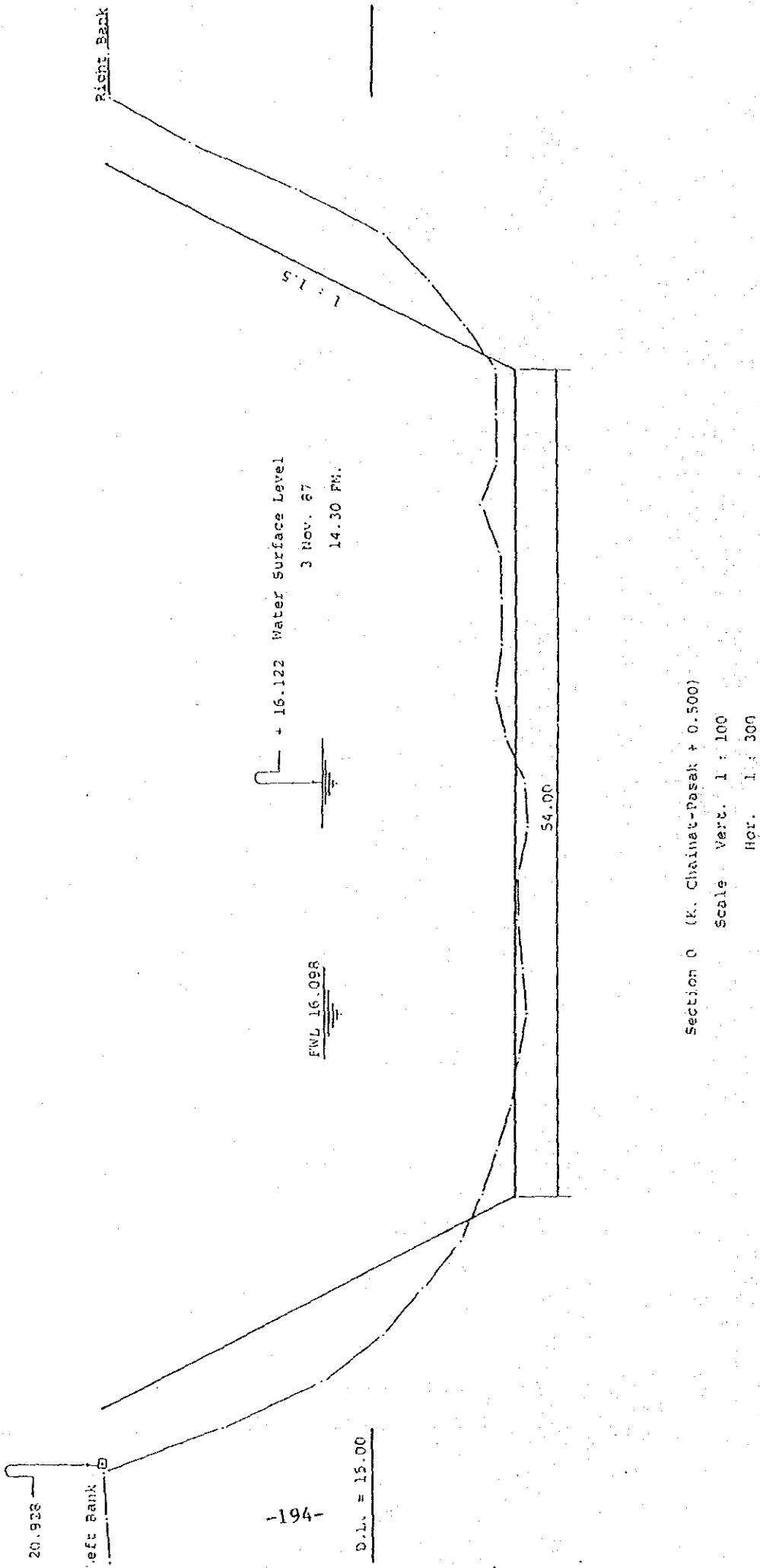
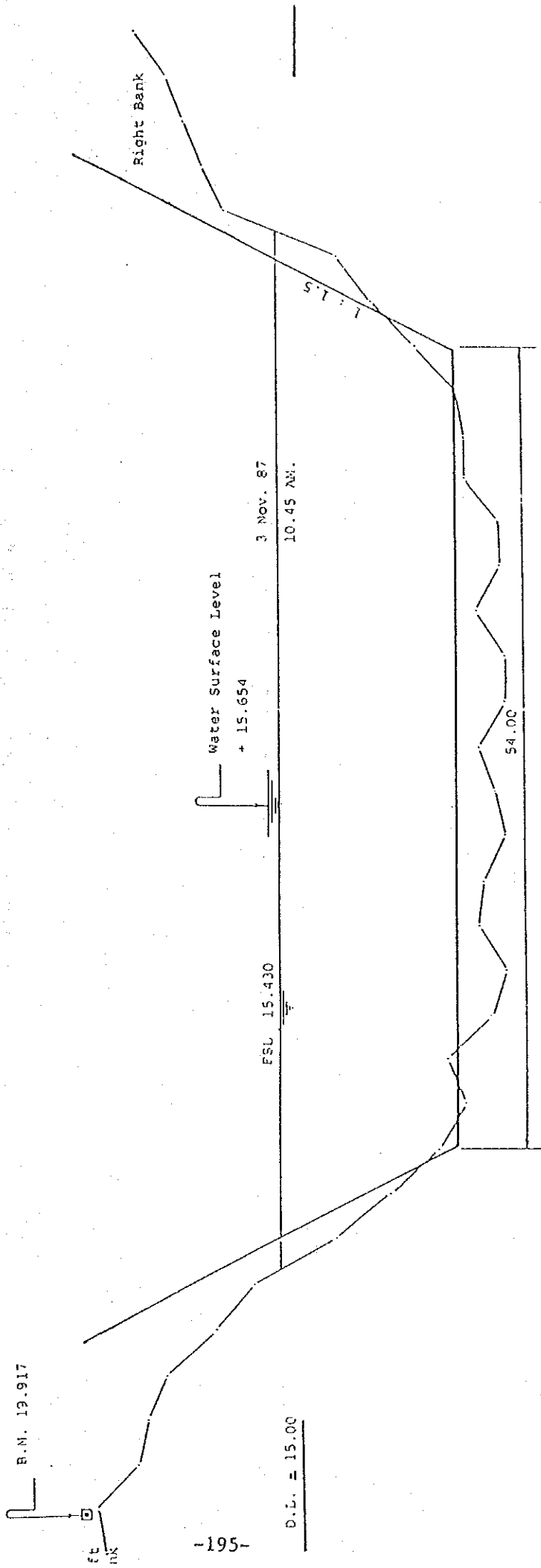


Figure 3-8 (1) PRESENT AND DESIGNED CANAL CROSS-SECTIONS
(CHAINAT-PASAK CANAL +500)

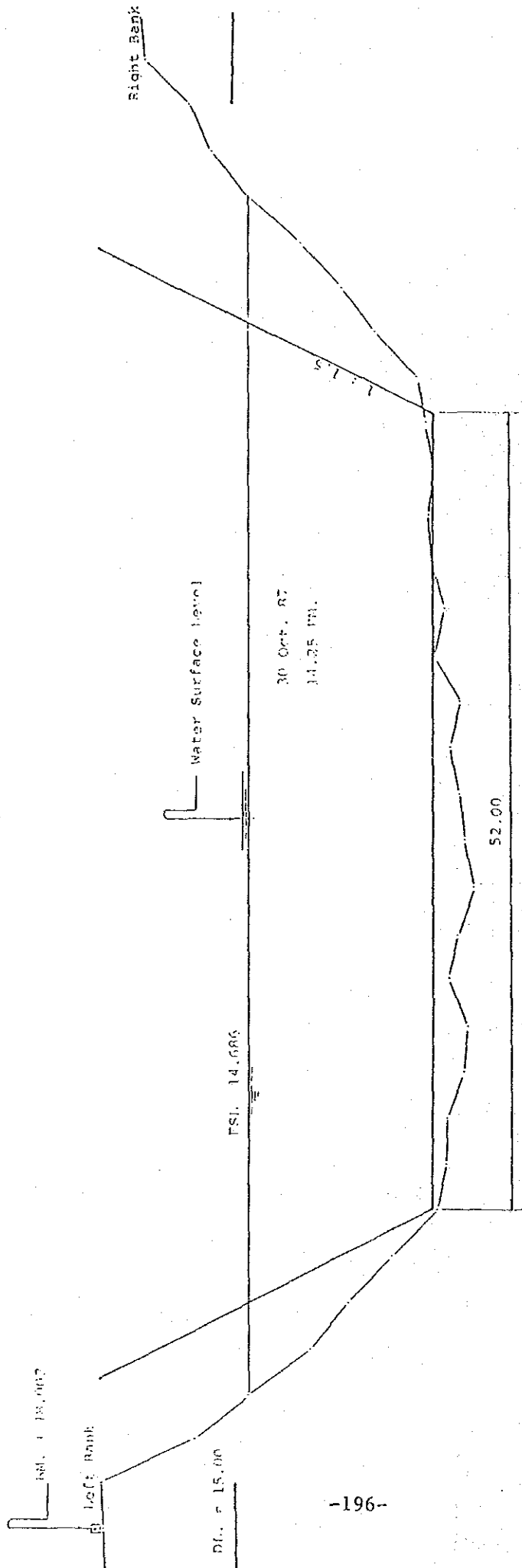


Section 1 (Klong Chainat - Pasak + 12.520)

Scale Vert. 1 : 100

Hor. 1 : 300

Figure 3-8 (2) PRESENT AND DESIGNED CANAL CROSS-SECTIONS
(CHAINAT-PASAK CANAL 12+520)

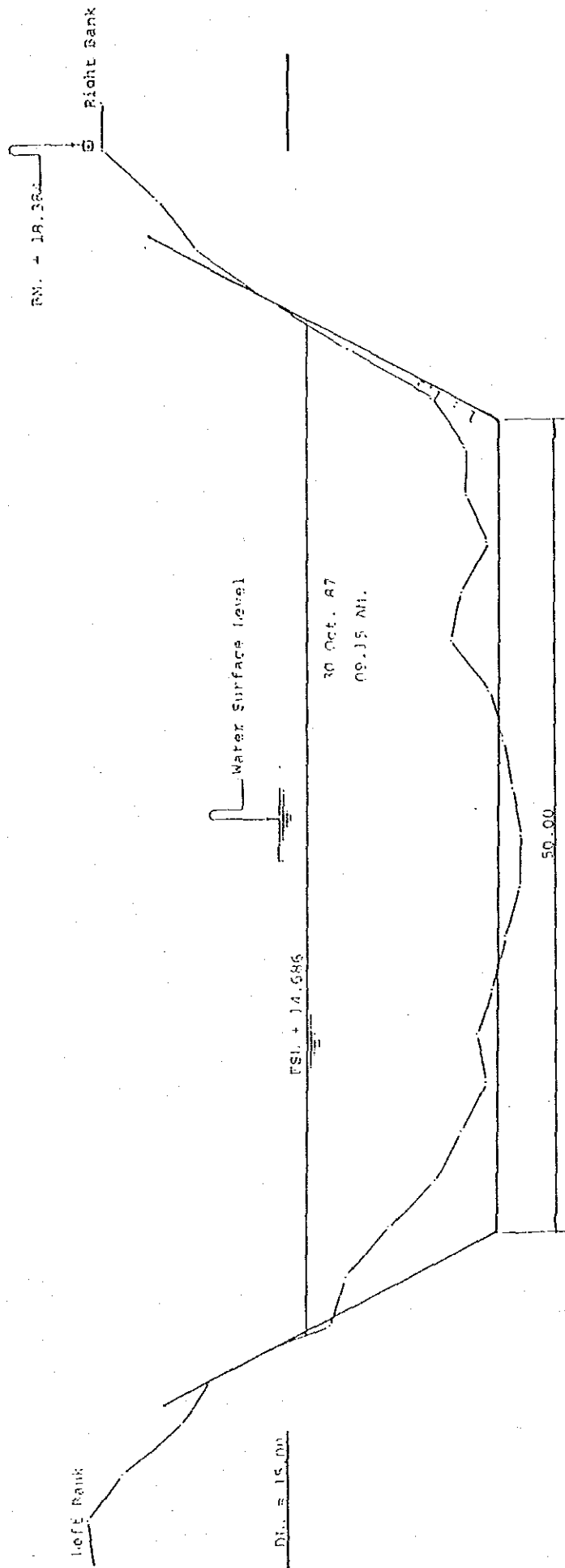


Section 2 (Kilona Chainat - Pasak +24.900)

Scale Vert. 1 : 100

Hor. 1 : 300

Figure 3-8 (3) PRESENT AND DESIGNED CANAL CROSS-SECTIONS
(CHAINAT-PASAK CANAL 24+900)



Section 3 (Klong Chainat - Pasak +19.500)

Scale Vert. 1 : 100

Hor. 1 : 300

Figure 3-8 (4) PRESENT AND DESIGNED CANAL CROSS-SECTIONS
(CHAINAT-PASAK CANAL 39+500)

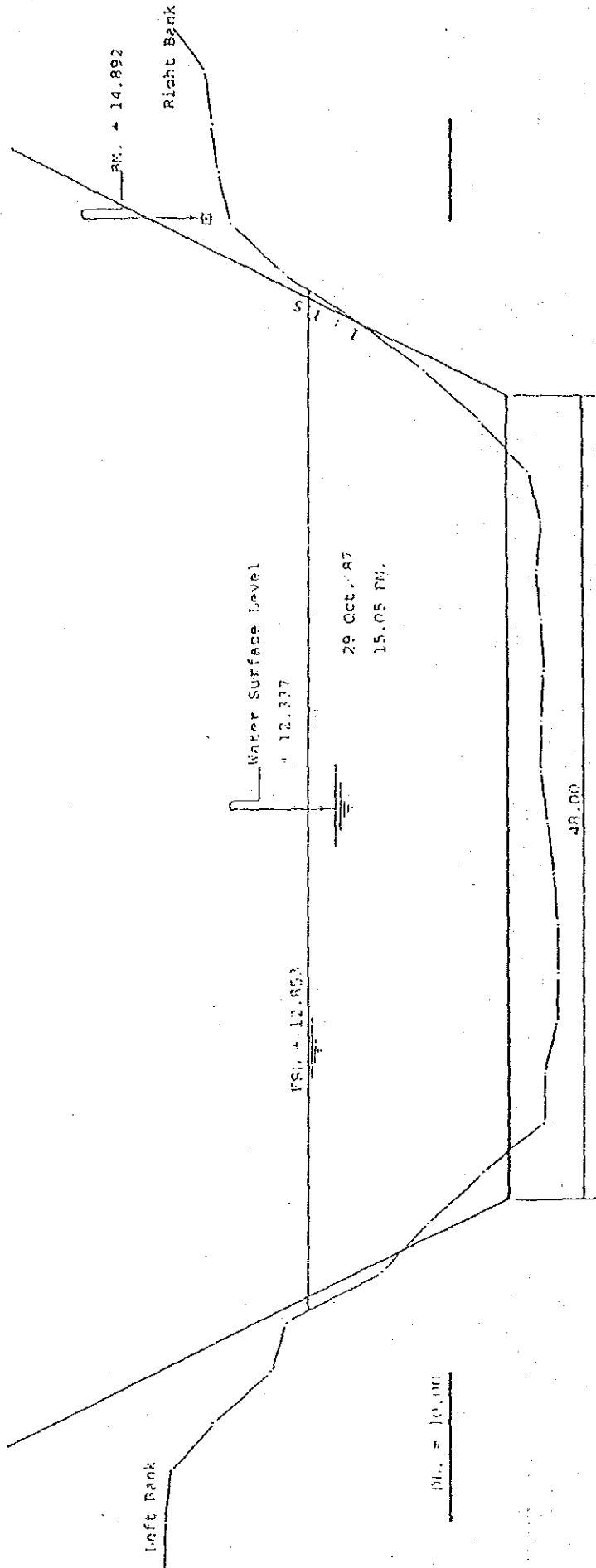
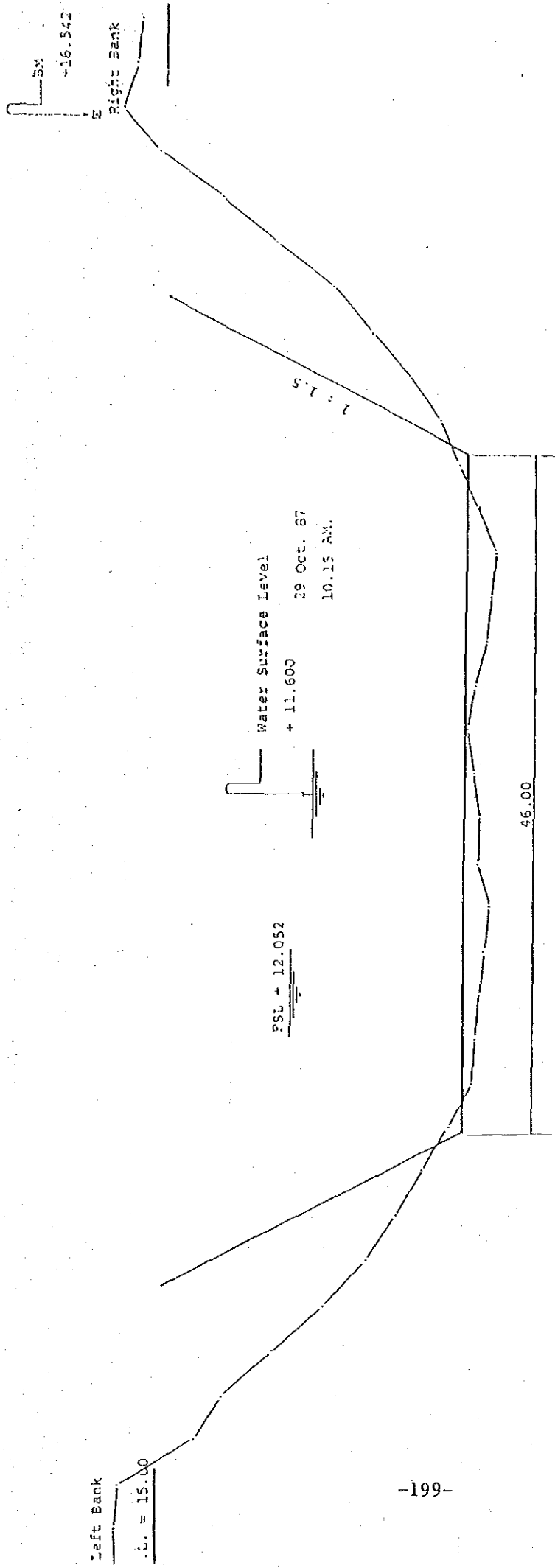


Figure 3-8 (5) PRESENT AND DESIGNED CANAL CROSS-SECTIONS
(CHAINAT-PASAK CANAL 46+487)

Section 4 (Plan Chainat - Pasak 46+487)

Scale Vert. 1 : 100

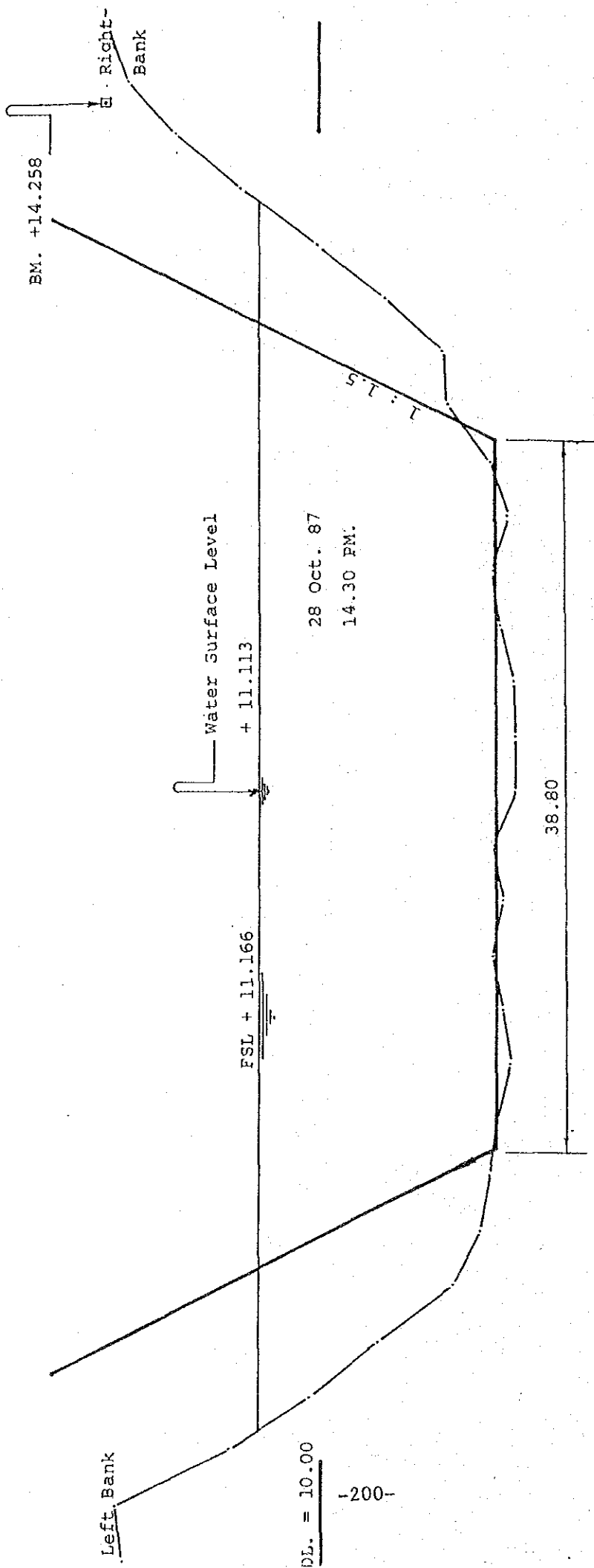
Hor. 1 : 300



Section 5 (X. Chainat-Pasak + 64.795)

Scale Vert. 1 : 100
Hor. 1 : 300

Figure 3-8 (6) PRESENT AND DESIGNED CANAL CROSS-SECTIONS
(CHAINAT-PASAK CANAL 64+795)



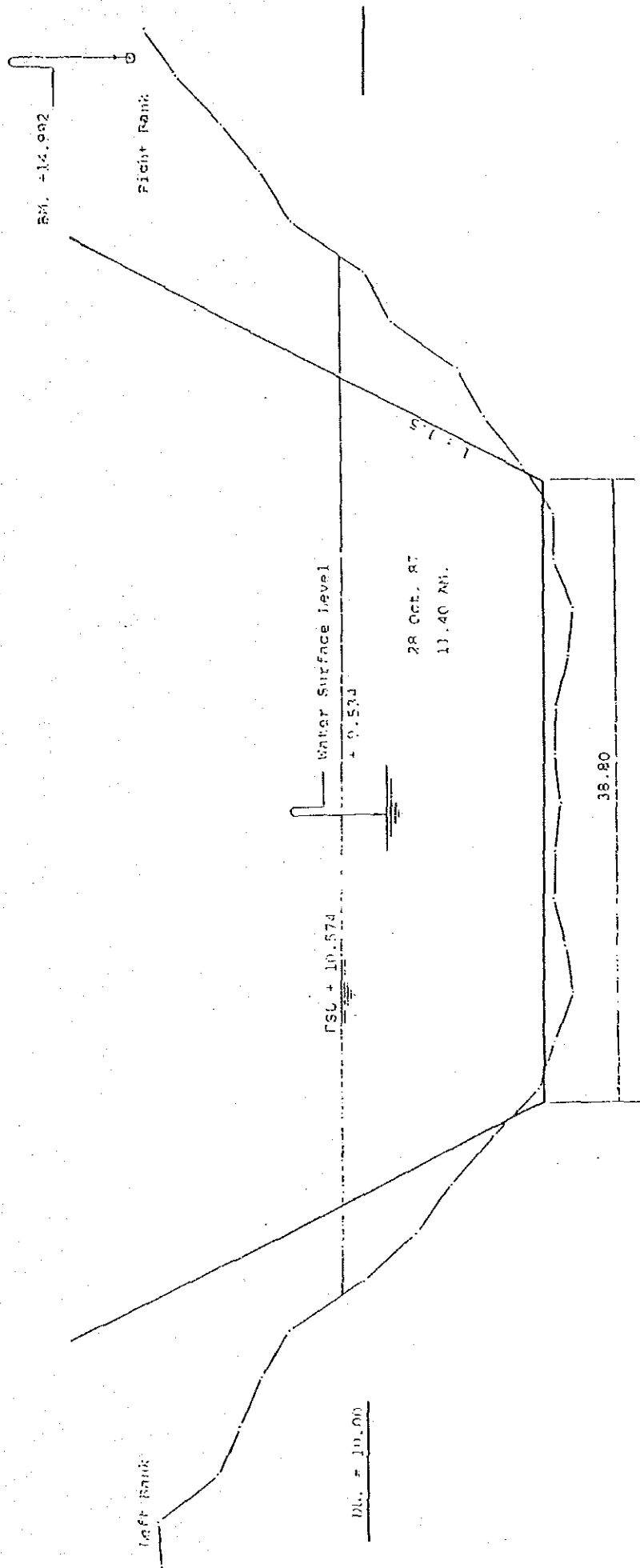
PL. = 10.00

Section 6 (Klong Chainat - Pasak +79.566)

Scale Vert. 1 : 100

Hor. 1 : 300

Figure 3-8 (7) PRESENT AND DESIGNED CANAL CROSS-SECTIONS
(CHAINAT-PASAK CANAL 79+566)

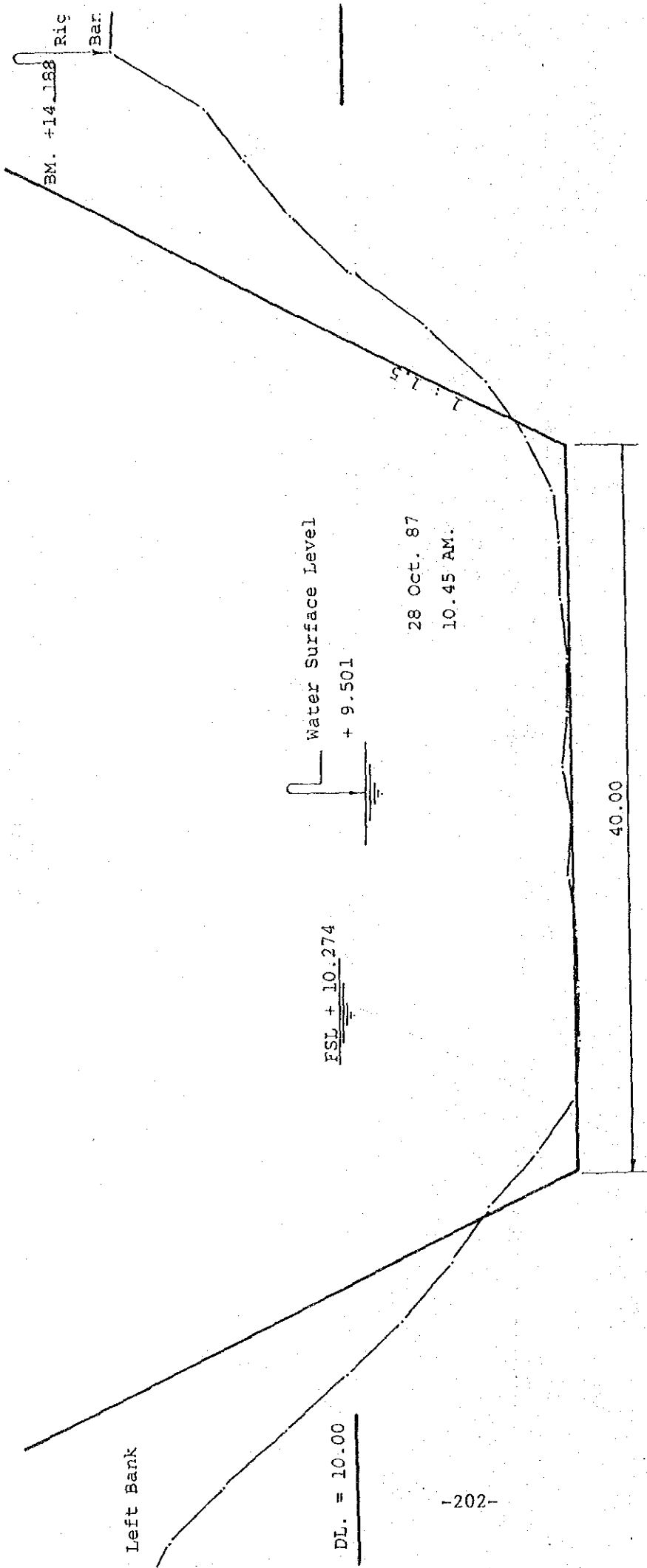


Section 7 (Along Chainat - Pasak)

Scale Vert. 1 : 100

Hor. 1 : 100

Figure 3-8 (8) PRESENT AND DESIGNED CANAL CROSS-SECTIONS
(CHAINAT-PASAK CANAL : SECTION 7)

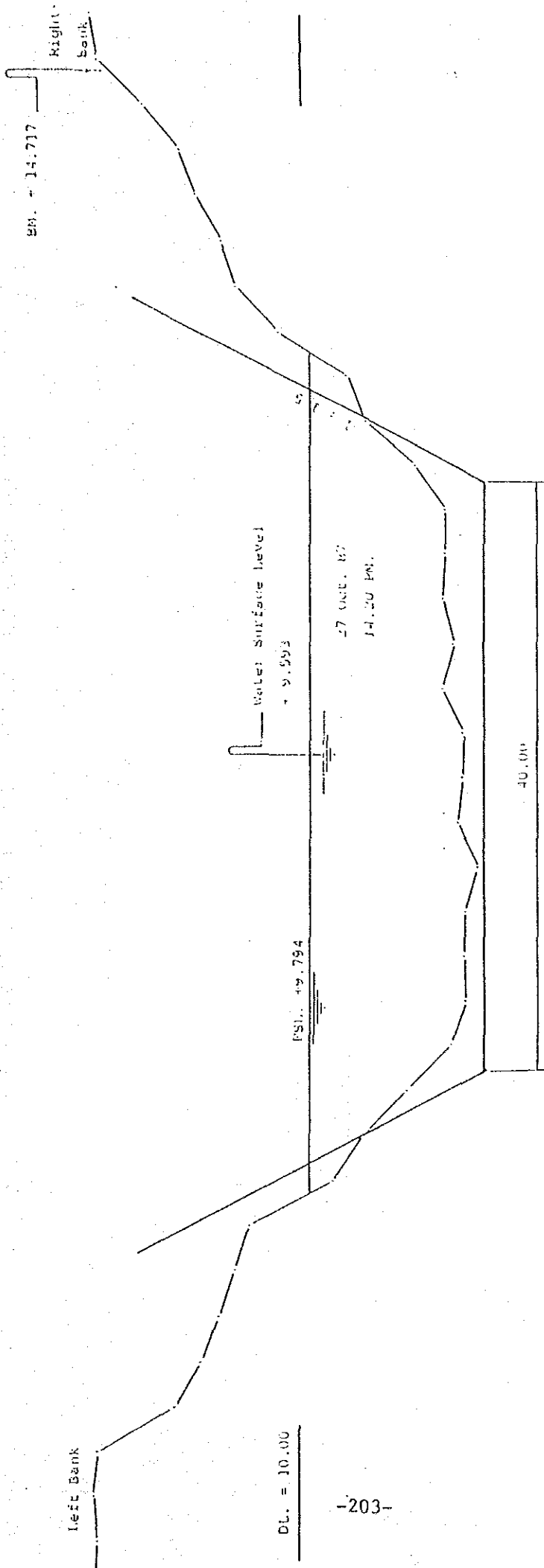


Section 8 (Klong Chainat - Pasak + 94.974)

Scale Vert. 1 : 100

Hor. 1 : 300

Figure 3-8 (9) PRESENT AND DESIGNED CANAL CROSS-SECTIONS
(CHAINAT-PASAK CANAL 94+974)



Section 8/1 (Klong Chaiat - Pasak + 99.038)

Scale Vert. 1 : 100

Hor. 1 : 500

Figure 3-8 (10) PRESENT AND DESIGNED CANAL CROSS-SECTIONS
(CHAINAT-PASAK CANAL 99+038)

DL. = 10.00

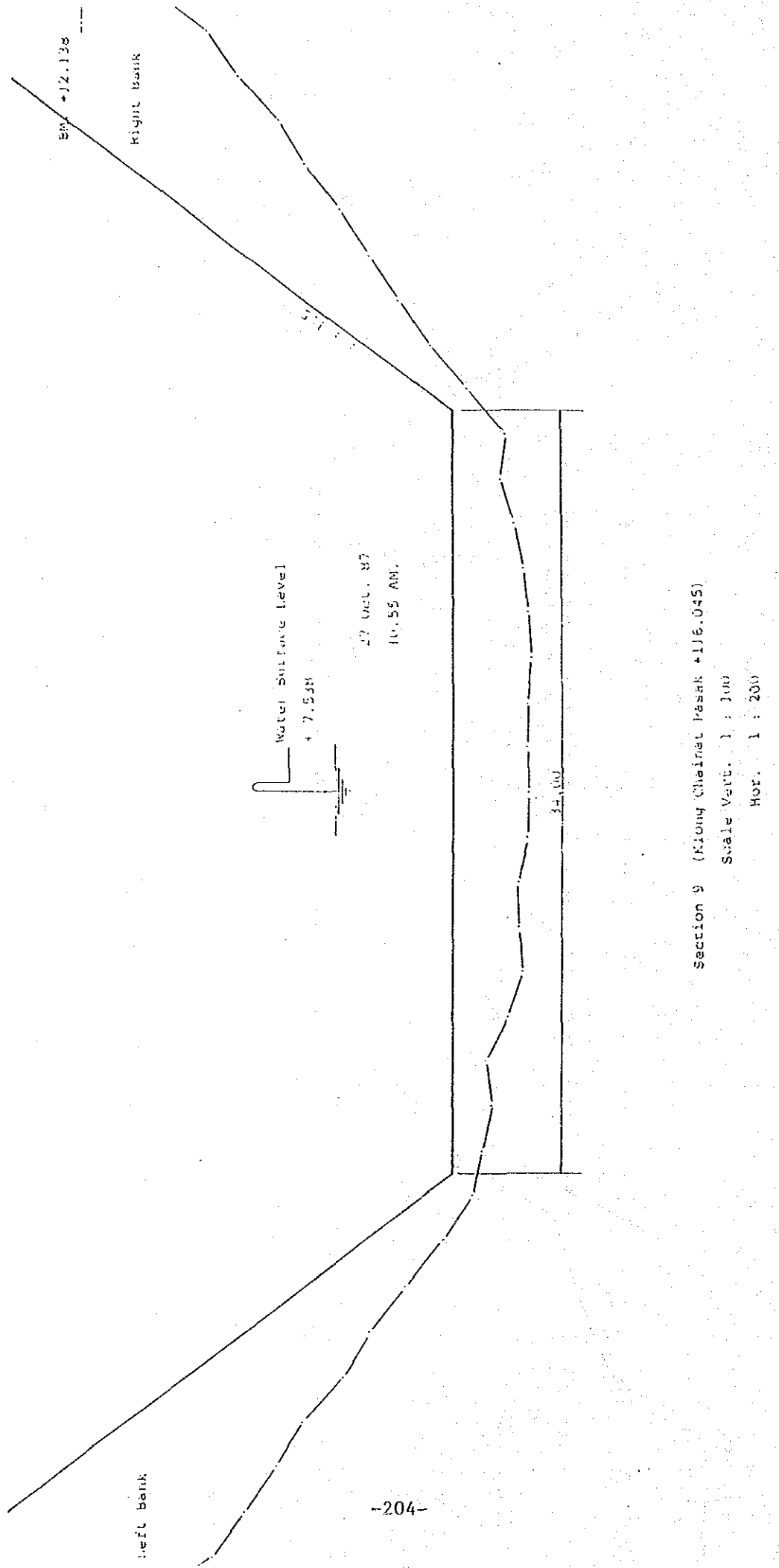
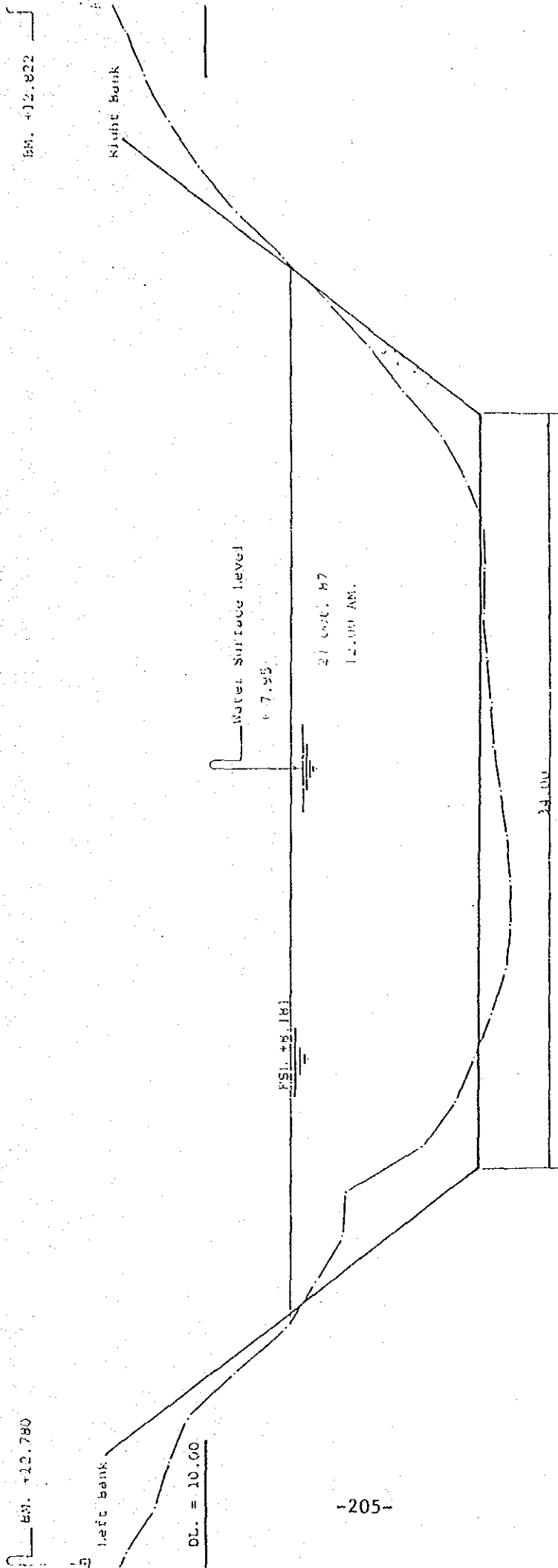


Figure 3-8 (11) PRESENT AND DESIGNED CANAL CROSS-SECTIONS
(CHAINAT-PASAK CANAL 116+045)

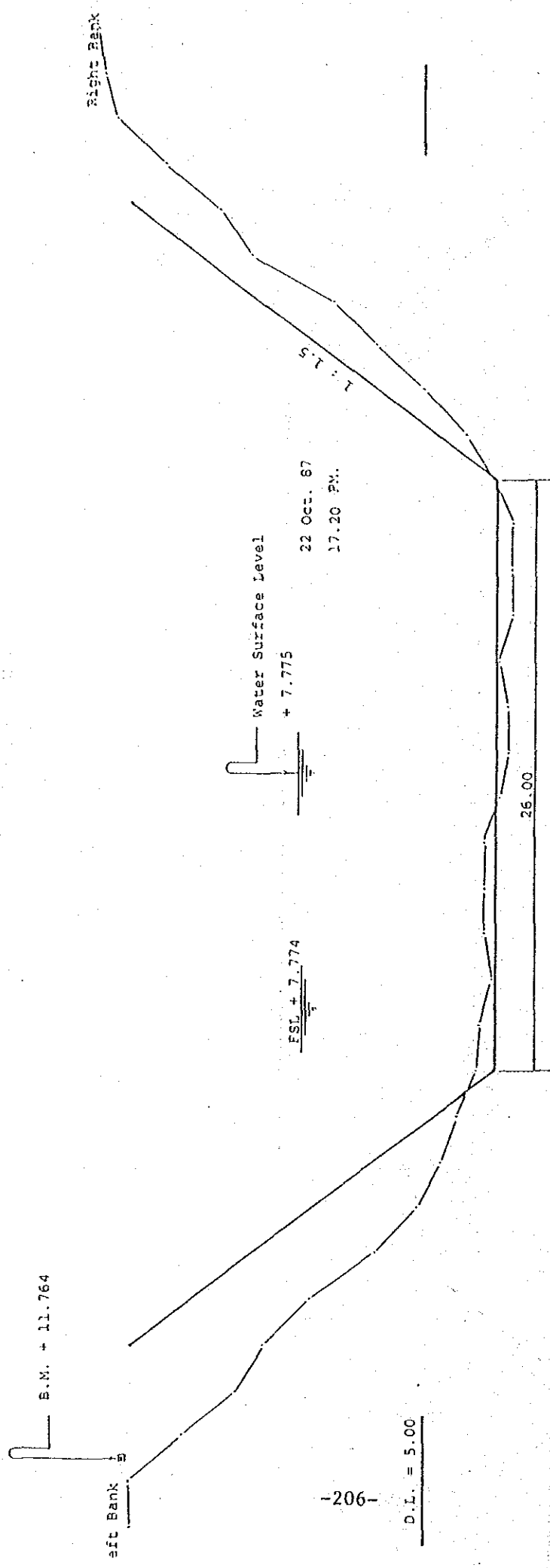


Section 10 (Klong Chainat-Pasak +122.650)

Scale Vert. 1 : 100

Hor. 1 : 500

Figure 3-8 (12) PRESENT AND DESIGNED CANAL CROSS-SECTIONS
(CHAINAT-PASAK CANAL 122+650)



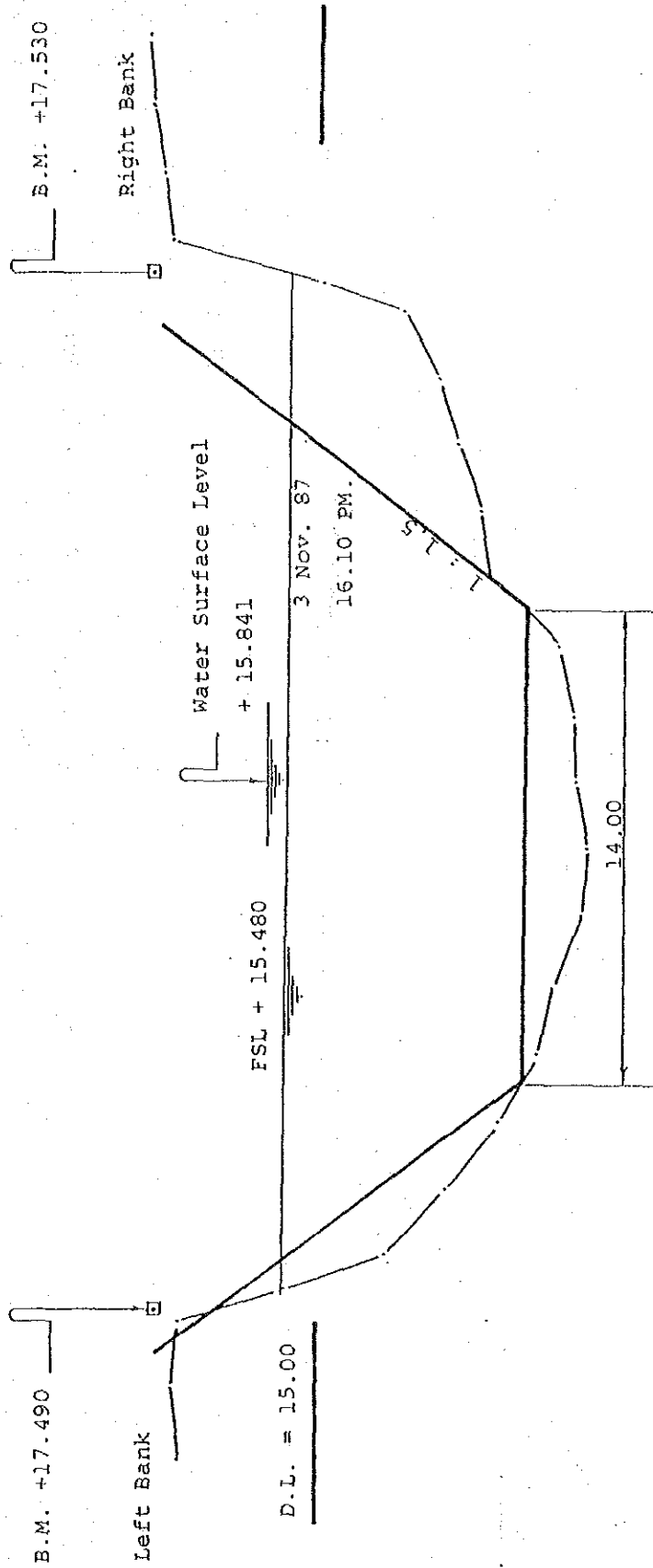
Section 11 (K. Chainat-Pasak - 128.343)

Scale Vert. 1 : 100

Hor. 1 : 200

Figure 3-8 (13) PRESENT AND DESIGNED CANAL CROSS-SECTIONS
(CHAINAT-PASAK CANAL 128+343)

D.L. = 5.00

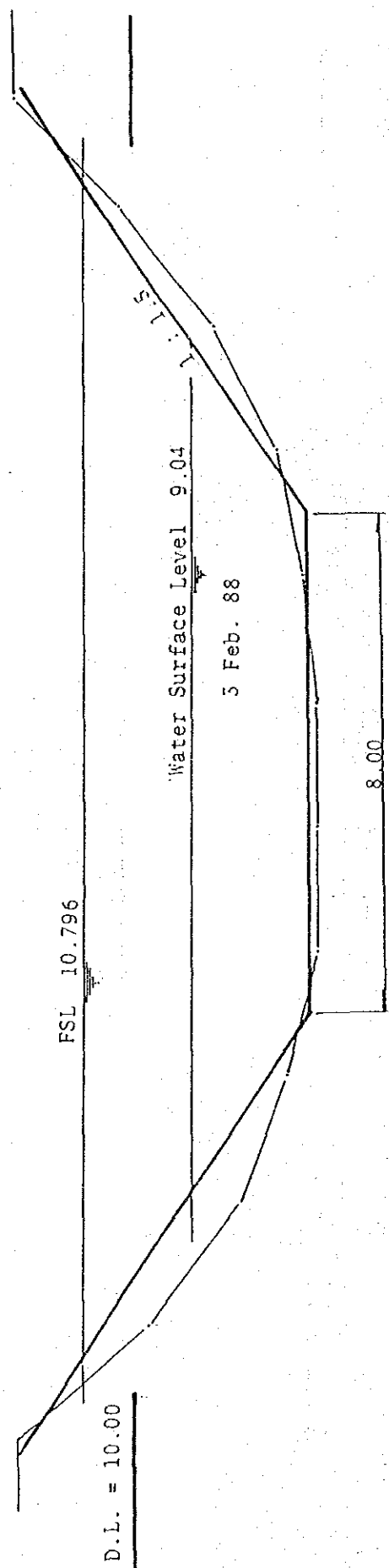


Section 12 (Chainat - Ayutthaya Canal)

Scale Vert. 1 : 100

Hor. 1 : 200

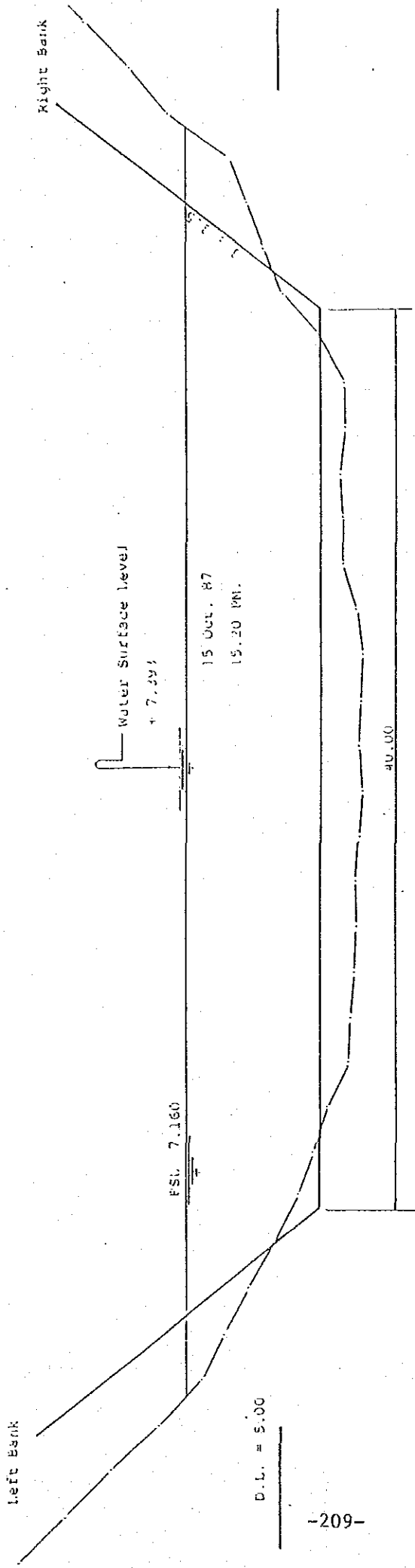
Figure 3-8 (14) PRESENT AND DESIGNED CANAL CROSS-SECTIONS
(CHAINAT-AYUTTHAYA CANAL : SECTION 12)



Section 13 (Chainat - Ayutthaya Canal + 50.500)
 Scale Vert. 1 : 100
 Hor. 1 : 100

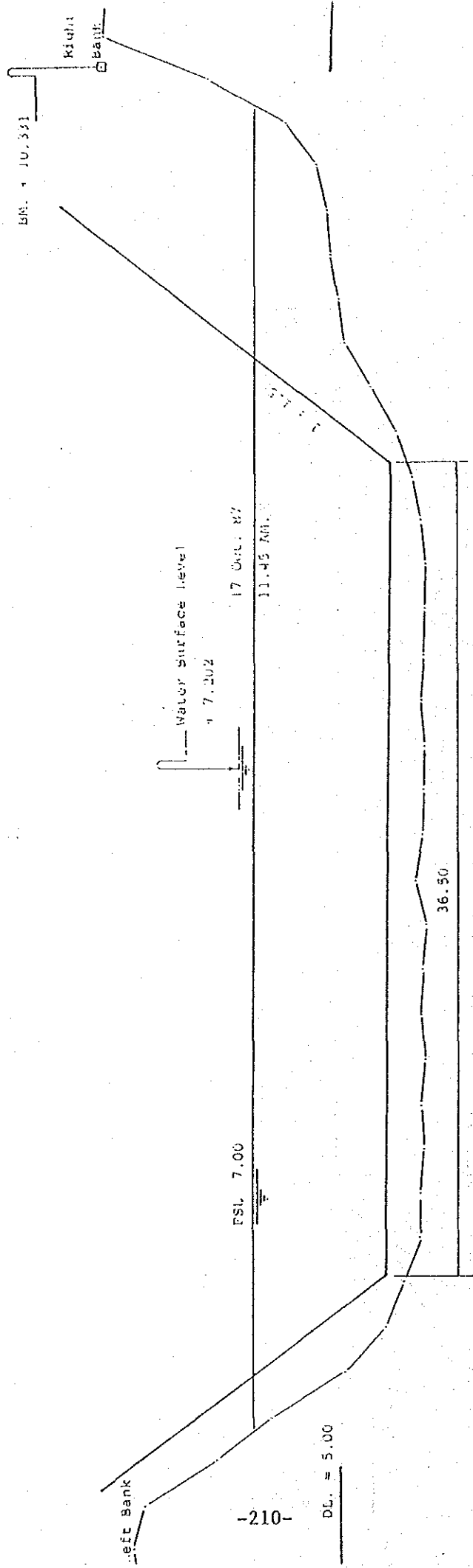
Figure 3-8 (15) PRESENT AND DESIGNED CANAL CROSS-SECTIONS
 (CHAINAT-AYUTTHAYA CANAL 50+300)

D.L. = 10.00



Section A (Klong Raphiphatana +0.500)
 Scale Vert. 1 : 100
 Hor. 1 : 200

Figure 3-8 (16) PRESENT AND DESIGNED CANAL CROSS-SECTIONS
 (RAPHIPHATANA CANAL 0+500)

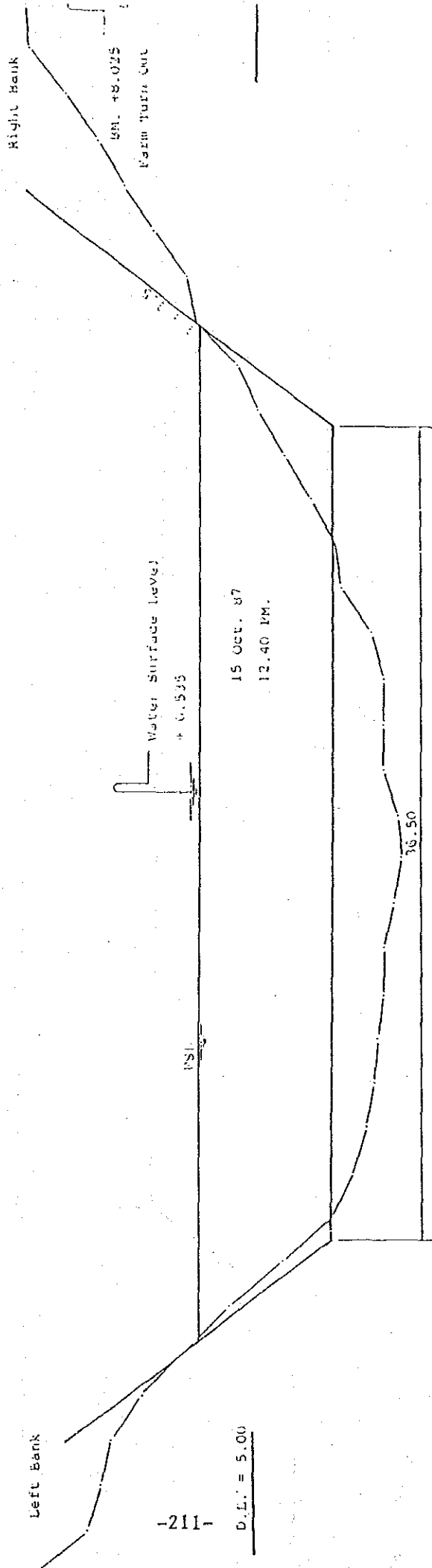


Section B (Klong Kaphiphatana +1.350)

Scale Vert. 1 : 100

Hor. 1 : 200

Figure 3-8 (17) PRESENT AND DESIGNED CANAL CROSS-SECTIONS
(RAPHIPHATANA CANAL 4+350)



Section C (Along Raphiphatana + 12.050)

Scale Vert. 1 : 100

Hor. 1 : 200

Figure 3-8 (18) PRESENT AND DESIGNED CANAL CROSS-SECTIONS
(RAPHIPHATANA CANAL 12+050)

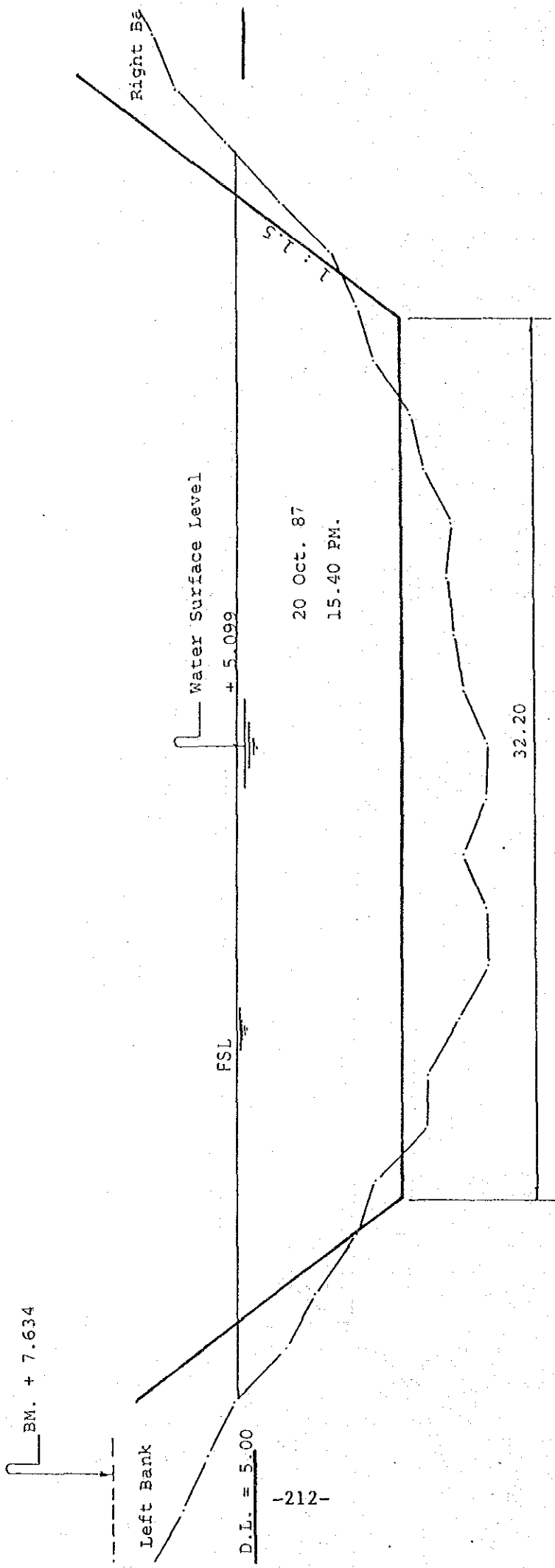
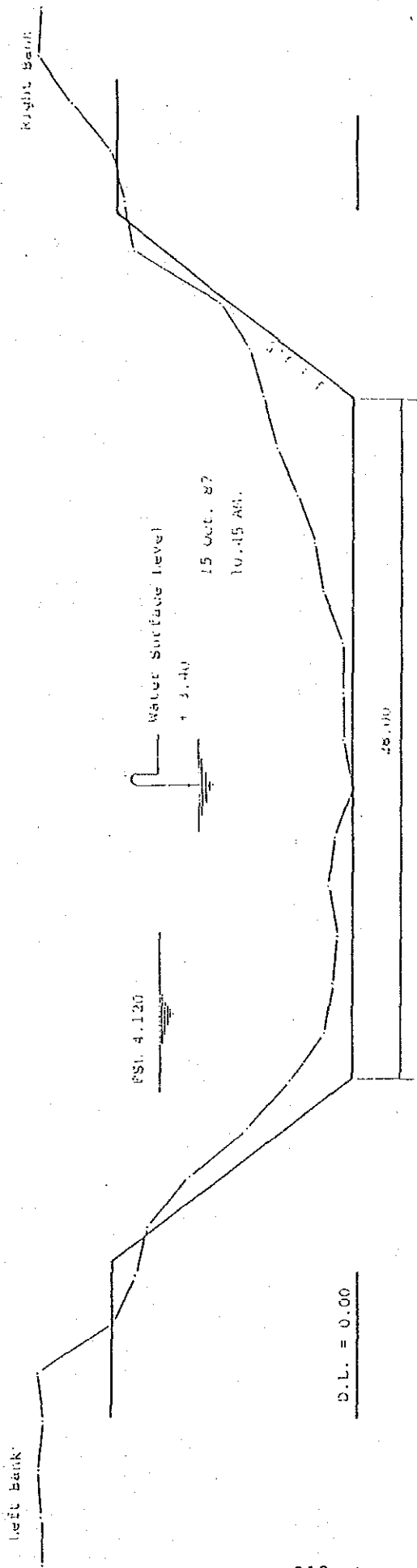


Figure 3-8 (19) PRESENT AND DESIGNED CANAL CROSS-SECTIONS
 (RAPHIPHATANA CANAL 26+250)

Scale Vert. 1 : 100
 Hor. 1 : 200

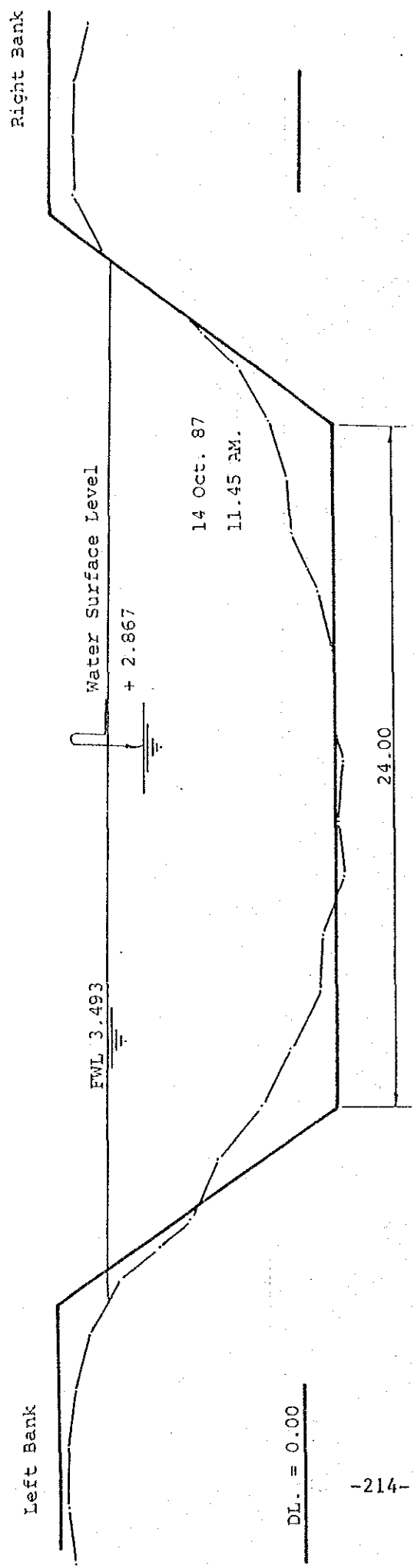


Section E (Klong Raphiphatana South Branch, + 0.500)

Scale Vert. 1 : 100

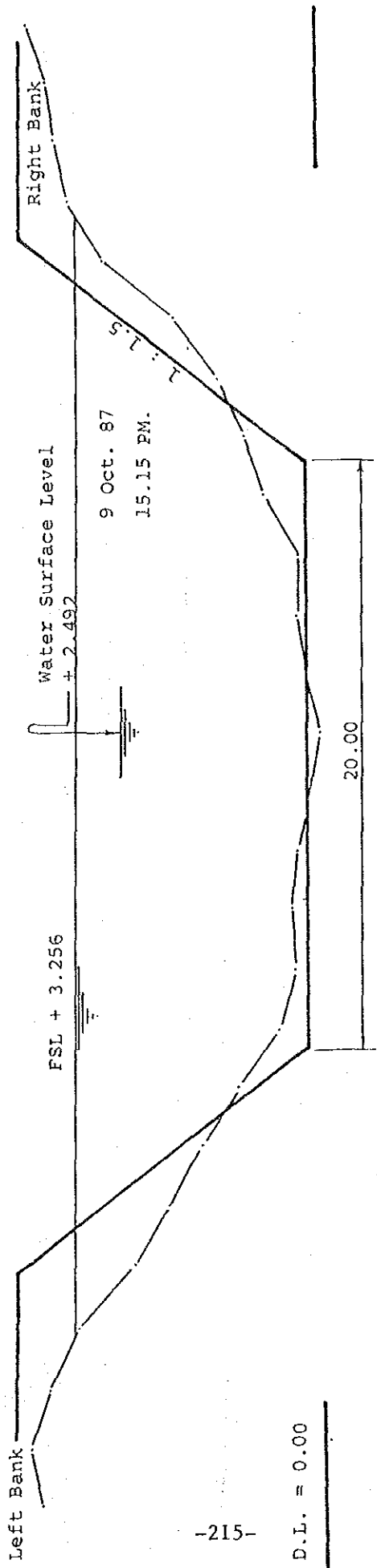
Hor. 1 : 200

Figure 3-8 (20) PRESENT AND DESIGNED CANAL CROSS-SECTIONS
(RAPHIPHATANA SOUTH BRANCH CANAL 0+500)



Section F (Klong Raphipatana South Branch + 12.600)
 Scale Vert. 1 : 100
 Hor. 1 : 200

Figure 3-8 (21) PRESENT AND DESIGNED CANAL CROSS-SECTIONS
 (RAPHIPHATANA SOUTH BRANCH CANAL 12+600)



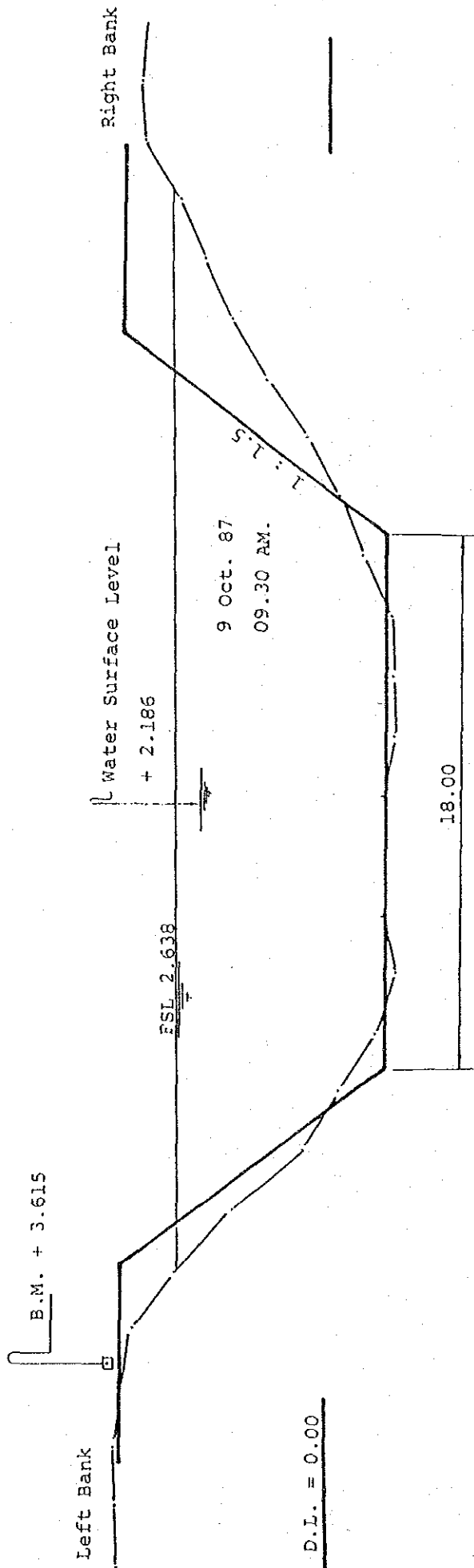
Section G (Klong Raphiphatana South Branch + 22.200)

Scale Vert. 1 : 100

Hor. 1 : 200

Figure 3-8 (22) PRESENT AND DESIGNED CANAL CROSS-SECTIONS
(RAPHIPHATANA SOUTH BRANCH CANAL 22+200)

D.L. = 0.00



Section H (Klong 13 + 0.300)

Scale Vert: 1 : 100

Hor. 1 : 200

Figure 3-8 (23) PRESENT AND DESIGNED CANAL CROSS-SECTIONS
(KHLONG 13 0+300)

D.L. = 0.00

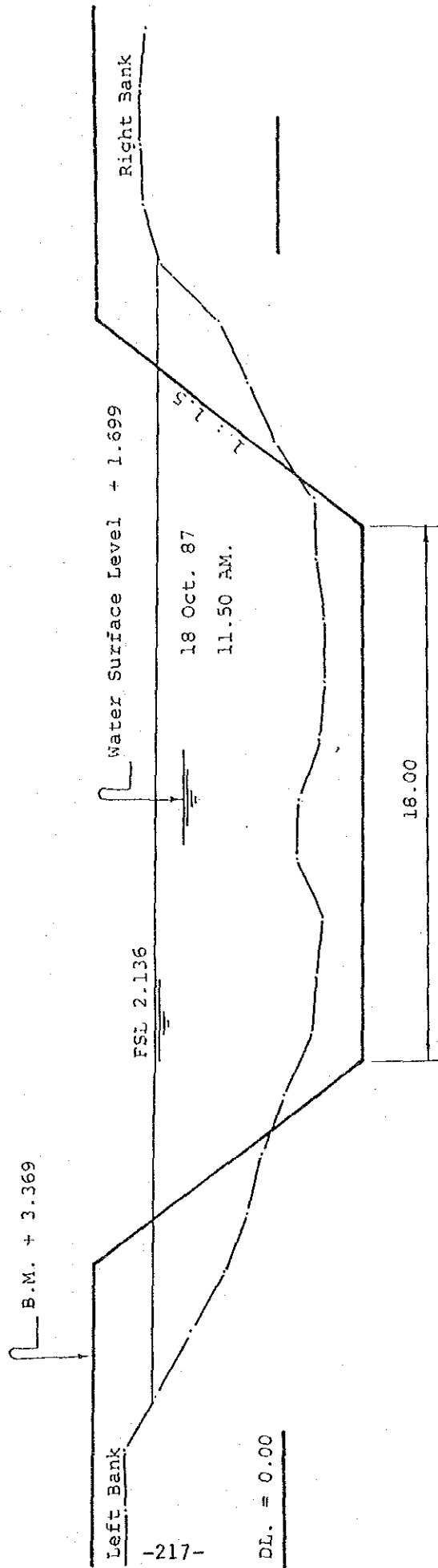
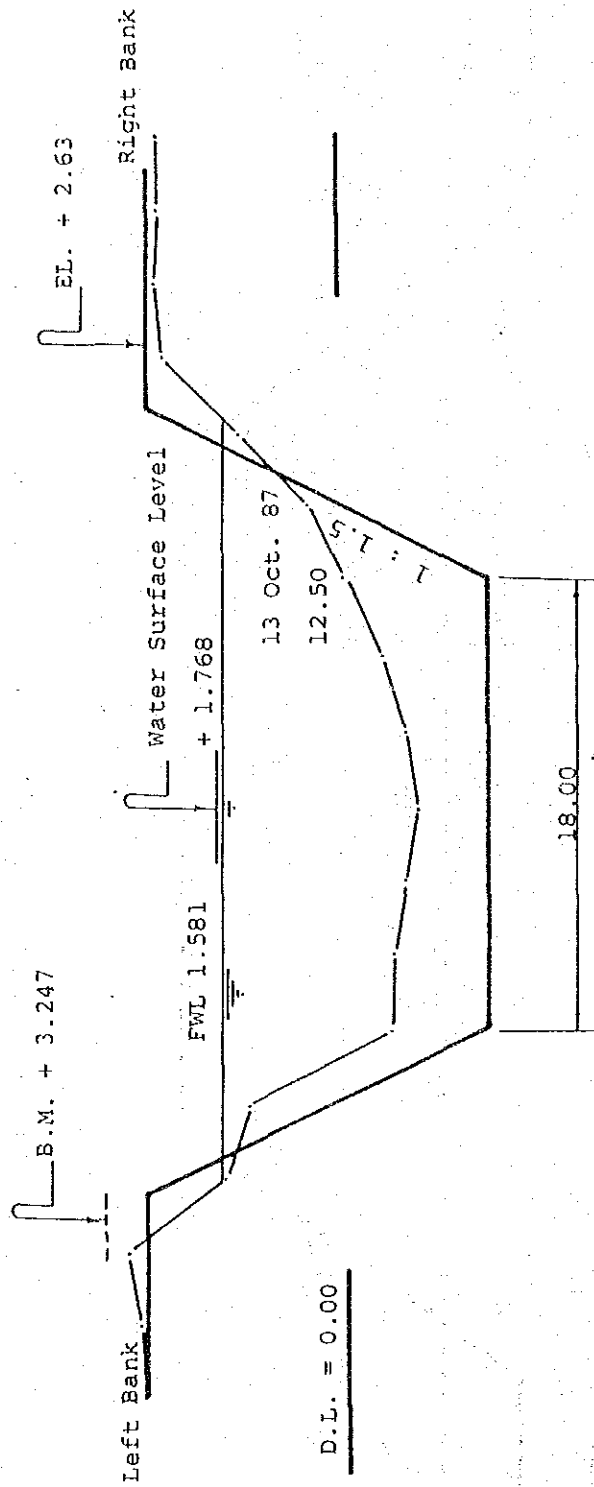


Figure 3-8 (24) PRESENT AND DESIGNED CANAL CROSS-SECTIONS
(KHLONG 13 12+950)

Scale Vert. 1 : 100

Hor. 1 : 200

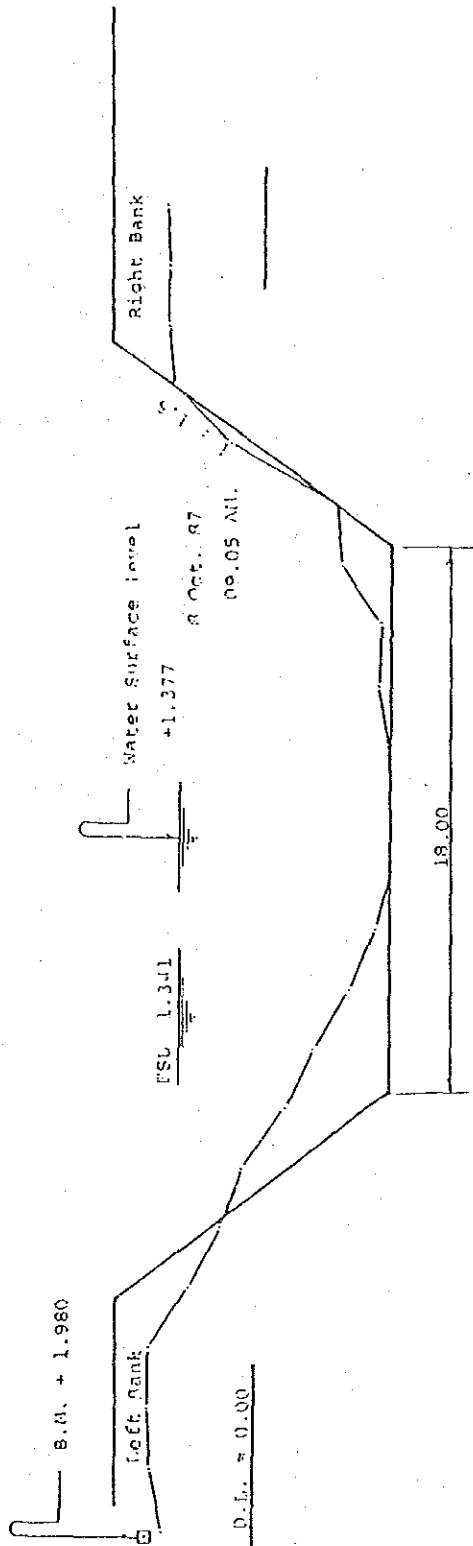


Section J (Klong 13 + 19.220)

Scale Vert. 1 : 100

Hor. 1 : 300

Figure 3-8 (25) PRESENT AND DESIGNED CANAL CROSS-SECTIONS
(KHLONG 13 19+220)

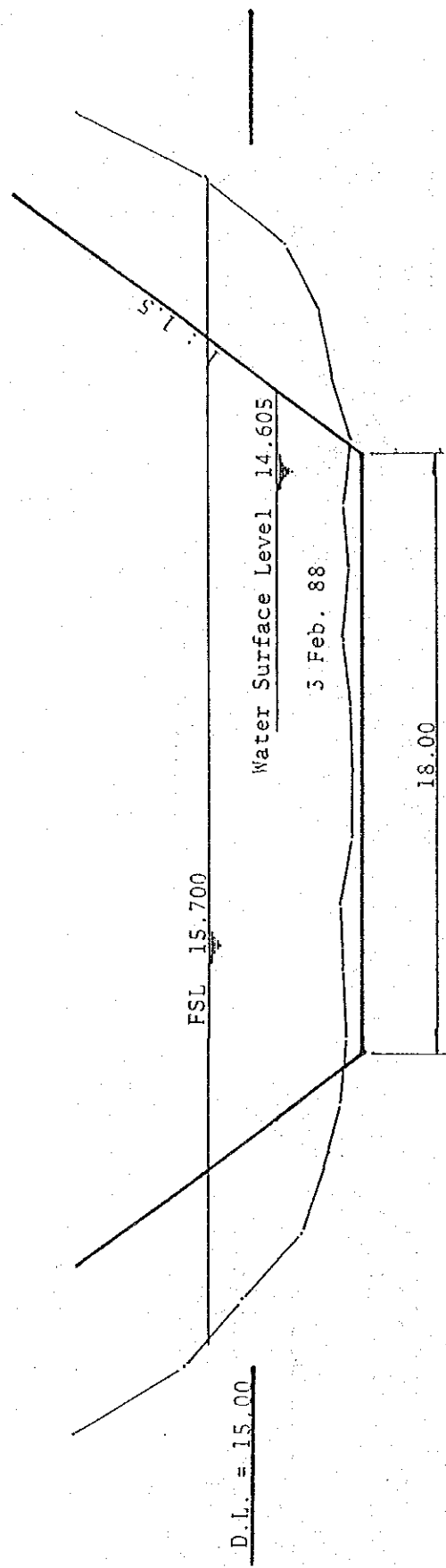


SECTION K (Kilong 13 + 25.720)

Scale Vert. 1 : 100

Hor. 1 : 200

Figure 3-8 (26) PRESENT AND DESIGNED CANAL CROSS-SECTIONS
(KILONG 13 25+720)

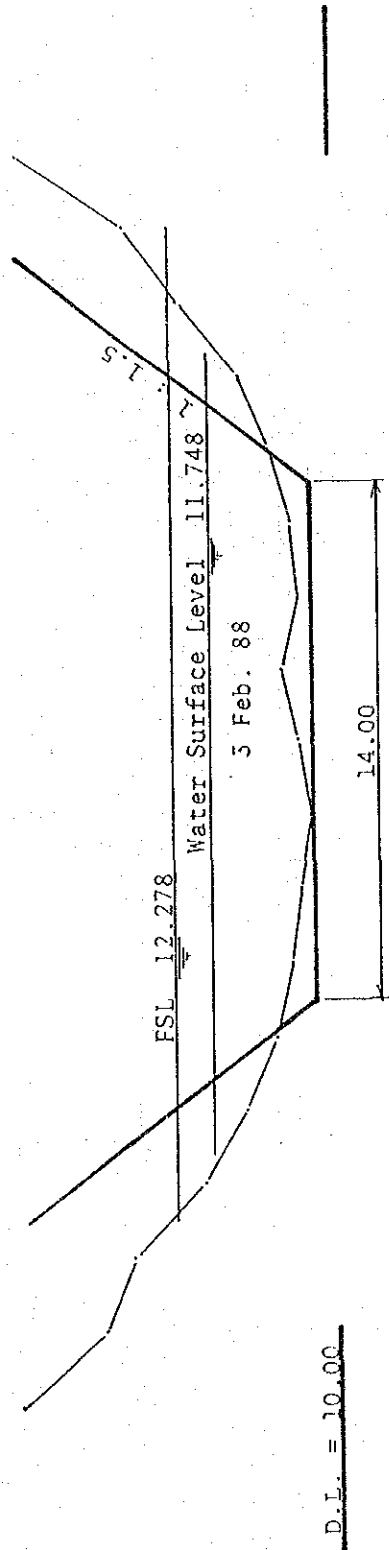


Section 1 (Makamthao - Uthong Canal + 5.450)

Scale Vert. 1 : 100

Hor. 1 : 200

Figure 3-8 (27) PRESENT AND DESIGNED CANAL CROSS-SECTIONS
(MAKAMTHAO-UTHONG CANAL 3+450)

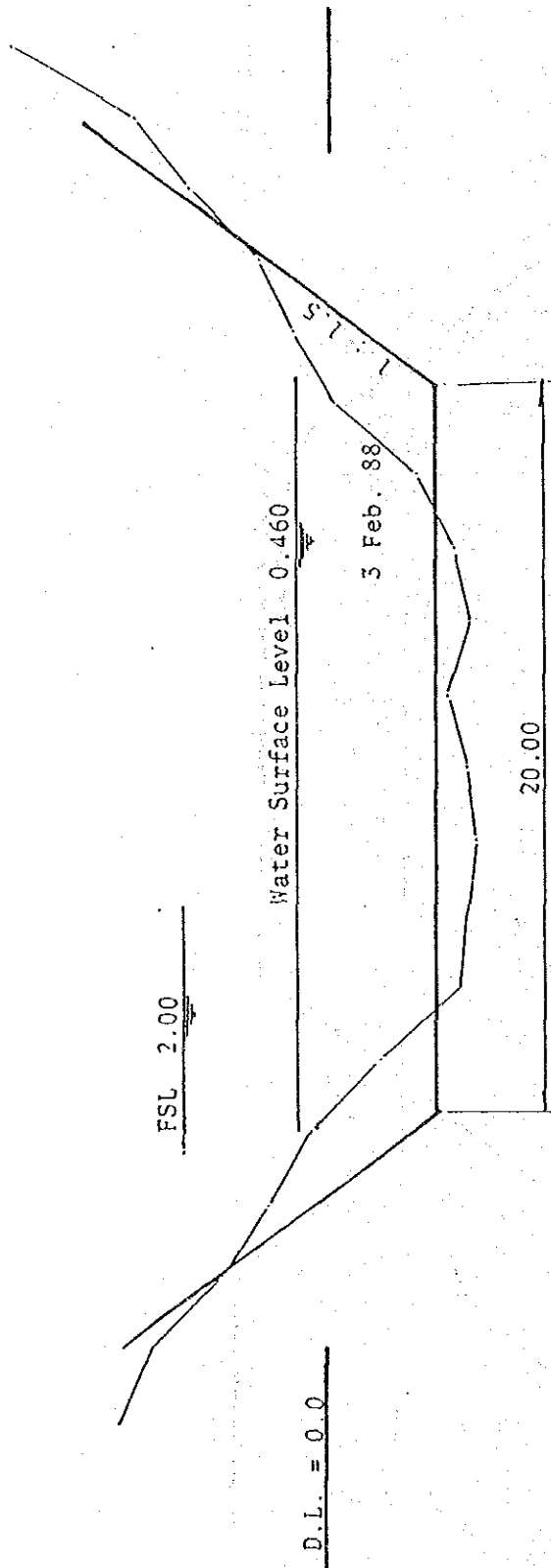


Section 2 (Makamthao - Uthong Canal + 56.100)

Scale Vert. 1 : 100

Hor. 1 : 200

Figure 3-8 (28) PRESENT AND DESIGNED CANAL CROSS-SECTIONS
(MAKAMTHAO-UTHONG CANAL 56+100)



Scale Vert 1 : 100
 Hor. 1 : 200

Figure 3-8 (29) PRESENT AND DESIGNED CANAL CROSS-SECTION
 (YIPUN NUA CANAL)

Form 3-1 (1) QUESTIONNAIRE TO PROJECT MANAGER (1/2)

Project Name: _____ Reg. No.: _____

1. Your office staff at present						
Staff	C5 - C7	C3 - C4	C1 - C2	Employee	Total	Remarks
Admin. staff						
Water master						
Zoneman						
Gate tender						
Others						
Total						

2. Experiences of office heads						
Post	Service on the post	Service for R/O				Remarks
		Years	Years	Age	Years	
Project Manager						
Office Engineer						

3. Are there some of water problems? If some more, please specify						
Problem	Season	Occurrence	Ong. time in	Maximum problem		Remarks
				Years	Area in (sq. ft.)	
<input type="checkbox"/> Water shortage	Wet	Years				
<input type="checkbox"/> Water shortage	Dry	Years				
<input type="checkbox"/> Flooding	Wet	Years				
<input type="checkbox"/> Salty water	Dry	Years				
<input type="checkbox"/> Acid soil	Dry	Years				
<input type="checkbox"/> Water pollution	Dry	Years				

4. How much budget were spent for repair and improvement of project facilities in the last 5 years?						
Budget	FY	FY 2525				
		FY 2525	FY 2526	FY 2527	FY 2528	FY 2529
		Baht	Baht	Baht	Baht	Baht

6. What makes you difficult for good operation, maintenance and repair of project facilities? Please write your opinion.						

5. Do you have following structures? How are their conditions?

Structure	Degree of workability	Degree of damage	Needs for repair/improve	Remarks
<input type="checkbox"/> Irrig./Drain. canal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Natural canal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Farm ditch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Dike	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Regulator	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Navigation lock	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Pumping Station	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Siphon	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Road	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Barrage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

1	some structures	1	destroyed
2	a few structures	2	much damaged
3	one structure	3	some damaged
4	not workable	4	slightly damaged
5	workable, not satisfactory	5	no damage

1	to be abandoned
2	to be reconstructed
3	urgently needed
4	needed
5	not needed

Form 3-1 (2) QUESTIONNAIRE TO PROJECT MANAGER (2/2)

7. In order to perform your duties in more efficient and improved ways, what measures are needed? What are your requirements?		9. Any comments/opinions/requests regarding your project	
Measure to be taken	Requirement/Remarks	Necessity	
More qualified staff		<input type="checkbox"/>	<input type="checkbox"/> Resolutely needed
More vehicle		<input type="checkbox"/>	<input type="checkbox"/> Very much needed
More communication equip.		<input type="checkbox"/>	<input type="checkbox"/> Needed
More office equip.		<input type="checkbox"/>	<input type="checkbox"/> Preferably needed
More OSM equip.		<input type="checkbox"/>	<input type="checkbox"/> Not needed
More staff training		<input type="checkbox"/>	
More office space		<input type="checkbox"/>	

8. If present structures have to be repaired or improved, what is your idea of repair and improvement?

Necessity	Structure	Work type	Work Volume	Name and Location
<input type="checkbox"/>	Irrig. canal	<input type="checkbox"/>	km	
<input type="checkbox"/>	Drain Canal	<input type="checkbox"/>	km	
<input type="checkbox"/>	Communi. canal	<input type="checkbox"/>	km	
<input type="checkbox"/>	Natural canal	<input type="checkbox"/>	km	
<input type="checkbox"/>	Dike	<input type="checkbox"/>	km	
<input type="checkbox"/>	Barrage	<input type="checkbox"/>	places	
<input type="checkbox"/>	Regulator	<input type="checkbox"/>	places	
<input type="checkbox"/>	Navigation lock	<input type="checkbox"/>	places	
<input type="checkbox"/>	Pump station	<input type="checkbox"/>	places	
<input type="checkbox"/>	Siphon	<input type="checkbox"/>	places	

absolutely needed
 much needed
 needed
 preferably needed
 not needed

dredging
 widening
 lining/paving
 new construction

re-construction for improved structure
 re-construction for structure same as before
 major repair or improvement
 minor repair or improvement

Date : _____ Signature : _____

Form 3-2 QUESTIONNAIRE TO WATER MASTER

Office Name: _____ Project Name: _____ Reg. No.: _____

1. How many staff are working for your office at present?		Remarks	
Zoneman	Gate tender	Other staff	
pers.	pers.	pers.	
2. Your experience as water master			
Service as water master	Service for RID	Your age	Remarks
Years	Years	Years	
3. Are there some of following problem? If yes or some more, please specify.			
Problem	Season	Occurrence Once in	Max. problem area in % (cal)
		Years	% ()
<input type="checkbox"/> Water shortage	Wet	Years	% ()
<input type="checkbox"/> Water shortage	Dry	Years	% ()
<input type="checkbox"/> Flooding	Wet	Years	% ()
<input type="checkbox"/> Salty water	Dry	Years	% ()
<input type="checkbox"/> Acid soil	Dry	Years	% ()
<input type="checkbox"/> Water pollution	Dry	Years	% ()
<input type="checkbox"/>			
<input type="checkbox"/>			
<input type="checkbox"/>			
5. What makes you difficult for good operation, maintenance and repair of project facilities. Please write your opinions.			
6. Any comments/opinions/requests regarding your control area.			

4. Do you have any of following problem? Or, if project facilities have to be repaired or improved, what are necessary measures to be done?

Canal problem	Necessary measure	Irrigation canal	Drainage canal	Communi. canal	National canal
<input type="checkbox"/> Shallow depth	Dredging	km	km	km	km
<input type="checkbox"/> Narrow width	Widening	km	km	km	km
<input type="checkbox"/> Illegal structure	Removal	km	km	km	km
<input type="checkbox"/> Slope damage	Protection	km	km	km	km
<input type="checkbox"/> Short length	New Construction	km	km	km	km
<input type="checkbox"/>					
<input type="checkbox"/>					
Dike problem	Necessary measure	Flood protection dike	Canal dike	Road	Other dike
<input type="checkbox"/> Low crest	Heightening	km	km	km	km
<input type="checkbox"/> Narrow width	Widening	km	km	km	km
<input type="checkbox"/> Poor pavement	paving	km	km	km	km
<input type="checkbox"/> Slope damage	protection	km	km	km	km
<input type="checkbox"/> Short length	New Construction	km	km	km	km
<input type="checkbox"/>					
<input type="checkbox"/>					
Other problem structures	Regulator	Farm turnout	Siphon	Pumping station	Navigation lock
<input type="checkbox"/> Narrow width	pls.	pls.	pls.	pls.	pls.
<input type="checkbox"/> Short gate height	pls.	pls.	pls.	pls.	pls.
<input type="checkbox"/> Water leak	pls.	pls.	pls.	pls.	pls.
<input type="checkbox"/> High or low sill elevation	pls.	pls.	pls.	pls.	pls.
<input type="checkbox"/> New construction	pls.	pls.	pls.	pls.	pls.
<input type="checkbox"/> Damaged gate or hoist	pls.	pls.	pls.	pls.	pls.
<input type="checkbox"/> Damaged other structures	pls.	pls.	pls.	pls.	pls.
<input type="checkbox"/> Sediment	pls.	pls.	pls.	pls.	pls.
<input type="checkbox"/> Debris and floating weeds	pls.	pls.	pls.	pls.	pls.
<input type="checkbox"/> Foundation stability	pls.	pls.	pls.	pls.	pls.
<input type="checkbox"/> Small cross-section	pls.	pls.	pls.	pls.	pls.
<input type="checkbox"/>					
<input type="checkbox"/>					
<input type="checkbox"/>					

Date: _____ Signature: _____

Form 5-1 EXAMPLE OF CRITERIA FOR IMPROVEMENT (REGULATOR)

Structure Type : ~~Regulator (Po To Ro)~~ Purpose : ~~Irrigation~~
 Function : ~~Upstream W. control~~
 Gate width : ~~5 10 m in total~~

Item	Option 1	Option 2	Option 3	Option 4	Option 5
River/canal bed	<input type="checkbox"/> no protect	<input type="checkbox"/> dry riprap	<input type="checkbox"/> wet riprap	<input type="checkbox"/> concrete	
River/canal slope	<input type="checkbox"/> no protect	<input type="checkbox"/> dry riprap	<input type="checkbox"/> wet riprap	<input type="checkbox"/> concrete	
Upstream apron	<input type="checkbox"/> no protect	<input type="checkbox"/> dry riprap	<input type="checkbox"/> wet riprap	<input type="checkbox"/> concrete	
Downstream apron	<input type="checkbox"/> no protect	<input type="checkbox"/> dry riprap	<input type="checkbox"/> wet riprap	<input type="checkbox"/> concrete	
Transition wall	<input type="checkbox"/> no protect	<input type="checkbox"/> dry riprap	<input type="checkbox"/> wet riprap	<input type="checkbox"/> concrete	
Foundation	<input type="checkbox"/> none	<input type="checkbox"/> slab	<input type="checkbox"/> pile	<input type="checkbox"/> bear pile	
Sill	<input type="checkbox"/> none	<input type="checkbox"/> brick	<input type="checkbox"/> plain conc	<input type="checkbox"/> R conc	
Wall	<input type="checkbox"/> none	<input type="checkbox"/> lumber	<input type="checkbox"/> brick	<input type="checkbox"/> plain conc	<input type="checkbox"/> R conc
Pier	<input type="checkbox"/> none	<input type="checkbox"/> brick	<input type="checkbox"/> masonry	<input type="checkbox"/> plain conc	<input type="checkbox"/> R conc
Slab	<input type="checkbox"/> none	<input type="checkbox"/> brick	<input type="checkbox"/> masonry	<input type="checkbox"/> plain conc	<input type="checkbox"/> R conc
Operation platform	<input type="checkbox"/> none	<input type="checkbox"/> lumber	<input type="checkbox"/> masonry	<input type="checkbox"/> steel	<input type="checkbox"/> R conc
Trash screen	<input type="checkbox"/> none	<input type="checkbox"/> floating	<input type="checkbox"/> fixed	<input type="checkbox"/> both	
Screen material	<input type="checkbox"/> none	<input type="checkbox"/> bamboo	<input type="checkbox"/> wood	<input type="checkbox"/> steel bar	<input type="checkbox"/> steel plate
Trash removing	<input type="checkbox"/> none	<input type="checkbox"/> manual	<input type="checkbox"/> mech-man	<input type="checkbox"/> mech-elect	<input type="checkbox"/> auto-mecha
.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Gate Structure

Item	Option 1	Option 2	Option 3	Option 4	Option 5
Gate type	<input type="checkbox"/> none	<input type="checkbox"/> stop-log	<input type="checkbox"/> drop gate	<input type="checkbox"/> sluice	<input type="checkbox"/> radial
Gate material	<input type="checkbox"/> none	<input type="checkbox"/> lumber	<input type="checkbox"/> steel plat	<input type="checkbox"/> steel fabricated	
Water seal tatch	<input type="checkbox"/> none	<input type="checkbox"/> lumber	<input type="checkbox"/> steel	<input type="checkbox"/> R rubber	
Water tight direc	<input type="checkbox"/> none	<input type="checkbox"/> one-way	<input type="checkbox"/> two-way		
Hoist type	<input type="checkbox"/> none	<input type="checkbox"/> spndl gear	<input type="checkbox"/> chain blok	<input type="checkbox"/> drum gear	
Driving	<input type="checkbox"/> no	<input type="checkbox"/> manual	<input type="checkbox"/> electric		
Gate control	<input type="checkbox"/> no	<input type="checkbox"/> at gate	<input type="checkbox"/> remote cnl	<input type="checkbox"/> tele contrl	
Auto.gate contrl	<input type="checkbox"/> none	<input type="checkbox"/> semi-auto	<input type="checkbox"/> full-auto		
Auto.contrl system	<input type="checkbox"/> none	<input type="checkbox"/> on-off	<input type="checkbox"/> feed-back		
Water level monitr	<input type="checkbox"/> none	<input type="checkbox"/> staff gage	<input type="checkbox"/> automatic		
Gate openngg monit	<input type="checkbox"/> none	<input type="checkbox"/> by eyes	<input type="checkbox"/> automatic		
.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Remarks : _____

Form 5-2 EXAMPLE OF CRITERIA FOR IMPROVEMENT (OPEN CANAL)

Structure Type : ~~Open Canal~~

Purpose : ~~Irrigation~~

Capacity : ~~5-10 CMS~~

Item	Option 1	Option 2	Option 3	Option 4	Option 5
Cross-section	<input type="checkbox"/> natural	<input type="checkbox"/> rectangular	<input type="checkbox"/> trapezoidal		
Alignment	<input type="checkbox"/> natural	<input type="checkbox"/> meandering	<input type="checkbox"/> straight		
Slope/side protect	<input type="checkbox"/> none	<input type="checkbox"/> wood wall	<input type="checkbox"/> riprap	<input type="checkbox"/> conc. wall	<input type="checkbox"/> sheet pile
Conc. lining	<input type="checkbox"/> none	<input type="checkbox"/> 1-face	<input type="checkbox"/> 2-face	<input type="checkbox"/> 3-face	
Bank	<input type="checkbox"/> none	<input type="checkbox"/> w/footpath	<input type="checkbox"/> cart traff	<input type="checkbox"/> car traffic	
Bank crest	<input type="checkbox"/> no pave	<input type="checkbox"/> laterite	<input type="checkbox"/> gravel	<input type="checkbox"/> asphalt	<input type="checkbox"/> concrete
Bank slope	<input type="checkbox"/> no protec	<input type="checkbox"/> sodding	<input type="checkbox"/> riprap		
.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Remarks : _____

Form 5-3 EXAMPLE OF CRITERIA FOR IMPROVEMENT (PIPELINE)

Structure Type : ~~Pipeline~~

Purpose : ~~Irrigation~~

Diameter : ~~0.30-0.60 m~~

Pipe : ~~R.C. pipe~~

Item	Option 1	Option 2	Option 3	Option 4	Option 5
Foundation	<input type="checkbox"/> none	<input type="checkbox"/> wood	<input type="checkbox"/> sand	<input type="checkbox"/> concrete	<input type="checkbox"/> pile
Pipe Fittings	<input type="checkbox"/> none	<input type="checkbox"/> PVC	<input type="checkbox"/> asbestos	<input type="checkbox"/> cast iron	<input type="checkbox"/> steel
Joint	<input type="checkbox"/> none	<input type="checkbox"/> collar	<input type="checkbox"/> socket		
Joint seal	<input type="checkbox"/> none	<input type="checkbox"/> mortar	<input type="checkbox"/> bolt-nut	<input type="checkbox"/> welding	<input type="checkbox"/> rubber ring
Laying	<input type="checkbox"/> on ground	<input type="checkbox"/> semi-und.g	<input type="checkbox"/> under sand	<input type="checkbox"/> in air	
Inner coating	<input type="checkbox"/> none	<input type="checkbox"/> paint	<input type="checkbox"/> mortar	<input type="checkbox"/> asphalt	<input type="checkbox"/> other
Outer coating	<input type="checkbox"/> none	<input type="checkbox"/> paint	<input type="checkbox"/> mortar	<input type="checkbox"/> asphalt	<input type="checkbox"/> other
Air bent/valve	<input type="checkbox"/> none	<input type="checkbox"/> yes			
Sand sluice	<input type="checkbox"/> none	<input type="checkbox"/> yes			
Stop valve	<input type="checkbox"/> none	<input type="checkbox"/> plug	<input type="checkbox"/> sluice	<input type="checkbox"/> butterfly	<input type="checkbox"/> other
Valve drive	<input type="checkbox"/> none	<input type="checkbox"/> manual	<input type="checkbox"/> electric		
.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Remarks : _____

Form 5-4 EXAMPLE OF CRITERIA FOR IMPROVEMENT (SIPHON)

Structure Type : Siphon

Purpose : Irrigation

Capacity : 5-10 CMS

Across : Canal

Item	Option 1	Option 2	Option 3	Option 4	Option 5
Foundation	<input type="checkbox"/> none	<input type="checkbox"/> sand	<input type="checkbox"/> fric. pile	<input type="checkbox"/> bear pile	
Canal bed protec	<input type="checkbox"/> none	<input type="checkbox"/> dry riprap	<input type="checkbox"/> wet riprap	<input type="checkbox"/> concrete	
Canal slope prt	<input type="checkbox"/> none	<input type="checkbox"/> dry riprap	<input type="checkbox"/> wet riprap	<input type="checkbox"/> concrete	
Upstream apron	<input type="checkbox"/> none	<input type="checkbox"/> dry riprap	<input type="checkbox"/> wet riprap	<input type="checkbox"/> concrete	
Downstream apron	<input type="checkbox"/> none	<input type="checkbox"/> dry riprap	<input type="checkbox"/> wet riprap	<input type="checkbox"/> concrete	
Transition wall	<input type="checkbox"/> none	<input type="checkbox"/> lumber	<input type="checkbox"/> riprap	<input type="checkbox"/> plain conc	<input type="checkbox"/> R. concrete
Sill	<input type="checkbox"/> none	<input type="checkbox"/> brick	<input type="checkbox"/> plain conc	<input type="checkbox"/> R. concrete	
Wall	<input type="checkbox"/> none	<input type="checkbox"/> lumber	<input type="checkbox"/> riprap	<input type="checkbox"/> plain conc	<input type="checkbox"/> R. concrete
Slab	<input type="checkbox"/> none	<input type="checkbox"/> brick	<input type="checkbox"/> masonry	<input type="checkbox"/> R. concrete	
Water seal	<input type="checkbox"/> none	<input type="checkbox"/> elas. sheet	<input type="checkbox"/> water stop		
Trash screen	<input type="checkbox"/> none	<input type="checkbox"/> floating	<input type="checkbox"/> fixed	<input type="checkbox"/> both	
Screen material	<input type="checkbox"/> none	<input type="checkbox"/> bamboo	<input type="checkbox"/> wood	<input type="checkbox"/> steel bar	<input type="checkbox"/> steel plate
Trash removing	<input type="checkbox"/> none	<input type="checkbox"/> manual	<input type="checkbox"/> mecha-manu	<input type="checkbox"/> mech-elect	<input type="checkbox"/> auto-mecha
.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Remarks : _____

Form 5-5 EXAMPLE OF CRITERIA FOR IMPROVEMENT (DIKE)

Structure Type : Dike

Purpose : Canal protection, O&M and communal traffic

Location : Along canal of 10-30 CMS

Item	Option 1	Option 2	Option 3	Option 4	Option 5
Foundation treat	<input type="checkbox"/> none	<input type="checkbox"/> sand	<input type="checkbox"/> gravel		
Crest	<input type="checkbox"/> footpath	<input type="checkbox"/> cart road	<input type="checkbox"/> 1-lane	<input type="checkbox"/> 2-lane	<input type="checkbox"/> 4-lane
Pavement	<input type="checkbox"/> none	<input type="checkbox"/> laterite	<input type="checkbox"/> gravel	<input type="checkbox"/> asphalt	<input type="checkbox"/> concrete
Side slope	<input type="checkbox"/> no protec	<input type="checkbox"/> sodding	<input type="checkbox"/> riprap		
Side ditch	<input type="checkbox"/> none	<input type="checkbox"/> yes			
.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Remarks : _____

Form 5-6 EXAMPLE OF CRITERIA FOR IMPROVEMENT (PUMPING STATION)

Structure Type : ~~Pumping Station~~

Purpose : ~~Irrigation~~

Type : ~~Permanent~~

Capacity : ~~1.5 CMS, 0.5 M head~~

Item	Option 1	Option 2	Option 3	Option 4	Option 5
Foundation	<input type="checkbox"/> none	<input type="checkbox"/> sand bed	<input type="checkbox"/> footing	<input type="checkbox"/> fric. pile	<input type="checkbox"/> bear. pile
Station type	<input type="checkbox"/> none	<input type="checkbox"/> portable	<input type="checkbox"/> movable	<input type="checkbox"/> permanent	
Run by	<input type="checkbox"/> none	<input type="checkbox"/> wind	<input type="checkbox"/> gasoline E.	<input type="checkbox"/> diesel E.	<input type="checkbox"/> electric
Pump type	<input type="checkbox"/> none	<input type="checkbox"/> dragon whe	<input type="checkbox"/> axial flow	<input type="checkbox"/> mixed flow	<input type="checkbox"/> volute
Operation	<input type="checkbox"/> none	<input type="checkbox"/> manual	<input type="checkbox"/> semi auto	<input type="checkbox"/> full auto	
Pump control	<input type="checkbox"/> none	<input type="checkbox"/> at pump	<input type="checkbox"/> remote	<input type="checkbox"/> tele-control	
Water level monito	<input type="checkbox"/> none	<input type="checkbox"/> staff gage	<input type="checkbox"/> auto recorder		
Pump ope. monitor	<input type="checkbox"/> none	<input type="checkbox"/> manual	<input type="checkbox"/> auto recorder		
.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Remarks :

Form 5-7 EXAMPLE OF CRITERIA FOR IMPROVEMENT (BRIDGE)

Structure Type : ~~Bridge~~

Type : ~~Reinforced concrete~~

Location : ~~Across navigation canal
of 10-20 m width~~

Item	Option 1	Option 2	Option 3	Option 4	Option 5
Type	<input type="checkbox"/> none	<input type="checkbox"/> wooden	<input type="checkbox"/> steel	<input type="checkbox"/> R. concrete	<input type="checkbox"/> PC beam
Foundation	<input type="checkbox"/> none	<input type="checkbox"/> footing	<input type="checkbox"/> fric. pile	<input type="checkbox"/> bear. pile	<input type="checkbox"/> cason
Pier	<input type="checkbox"/> none	<input type="checkbox"/> wood	<input type="checkbox"/> masonry	<input type="checkbox"/> steel	<input type="checkbox"/> R. concrete
Floor	<input type="checkbox"/> none	<input type="checkbox"/> wood	<input type="checkbox"/> steel	<input type="checkbox"/> R. concrete	<input type="checkbox"/> PC beam
Width	<input type="checkbox"/> foot lane	<input type="checkbox"/> cart lane	<input type="checkbox"/> 1-lane	<input type="checkbox"/> 2-lane	<input type="checkbox"/> 4-lane
.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Remarks :

JICA