List of Tables

Table 4.1 Unit Water Demand

Target

(Daily Average Basis)

Population	Unit Water Demand (l/person/day) Domestic Use (Target)	Industrial Use	Total (Target)
Less than 1,000	150	-	150
1,000 -5,000	180	-	180
5,000 - 20,000	225	23	248
20,000 - 50,000	300	30	330
50,000 - 100,000	375	38	413
100,000 and more	450	90	540

Source : IEOS, 1991

(Note) :

- To be applied in the hotter zones, annual mean temperature in which exceeds 18 degree centigrade (C), such as the Manabi Province (25.9 C of annual mean temperature in Portoviejo).
- Including commercial use water.
- Including water loss and unaccounted-for water in the system.
- Daily maximum demand = 150% of the daily average demand.

Proposed

(Daily Average Basis)

Population	Unit Water Demand (l/person/day) Year 1990 (55%)	Year 2000 (70%)	Year 2010 (85%)	Year 2020 (100%)
Less than 1,000	83	105	128	150
1,000 - 5,000	99	126	153	180
5,000 - 20,000	136	173	210	248
20,000 - 50,000	182	231	281	330
50,000 - 100,000	227	289	351	413
100,000 and more (Portoviejo and Manta)	297	378	459	540

Source : PHIMA, 1991

(Note) :

- To be applied for projection in the service area.
- Including commercial use water.
- Including water loss and unaccounted-for water in the system.
- Daily maximum demand = 150% of the daily average demand.

Table 4.2 (a) Irrigation Water Requirement

(5-year return period)

(Unit: 1,000 m3)

Scheme	Area (ha)	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
Carrizal-Chon	15,000	8,316	2,388	10,204	18,692	27,048	19,220	23,694	28,529	36,603	34,133	26,874	17,526	253,227
Amarillos	1,000	627	449	1,475	1,260	1,830	1,261	1,582	2,089	2,616	2,334	1,983	1,276	18,782
Guarango	1,500	1,784	1,906	3,526	3,192	3,456	2,380	2,705	3,325	4,258	4,039	3,185	2,165	35,921
Rio Chico	1,700	1,032	596	1,661	2,226	3,406	1,991	2,885	3,542	4,542	4,197	3,292	1,970	31,340
Pechiche-Pasa	850	997	648	1,726	1,749	1,925	1,357	1,547	1,896	2,417	2,288	1,808	1,195	19,553
Santa Ana	3,300	3,810	3,589	6,364	7,230	7,172	4,582	5,468	7,018	9,001	8,289	6,522	4,492	73,537
Mejia	1,250	1,438	1,357	2,402	2,719	2,696	1,722	2,066	2,656	3,413	3,142	2,419	1,695	27,725
Ceibal-Guayal	4,650	5,550	5,921	10,938	9,893	10,727	7,396	8,415	9,773	13,209	12,520	9,878	6,725	110,945
Total	29,250	23,554	16,854	38,296	46,961	58,260	39,909	48,362	58,828	76,059	70,942	55,961	37,044	571,030

Table 4.2 (b) Irrigation Water Requirement

(Average year)

(Unit: 1,000 m3)

Scheme	Area (ha)	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
Carrizal-Chone	15,000	0	0	0	3,424	16,522	10,353	14,988	26,639	33,558	32,302	24,225	9,406	171,417
Amarillos	1,000	0	0	416	435	1,189	919	1,269	2,003	2,462	2,209	1,801	867	13,570
Guarango	1,500	785	658	2,268	2,458	2,855	2,084	2,432	3,313	4,201	4,027	3,155	1,850	30,086
Rio Chico	1,700	0	0	469	940	2,260	1,294	2,131	3,344	4,341	3,944	3,047	1,150	22,920
Pechiche-Pasaje	850	352	143	1,078	1,075	1,294	663	1,225	1,732	2,272	2,091	1,637	737	14,299
Santa Ana	3,300	1,314	1,321	3,749	5,449	5,833	3,611	4,684	6,914	8,800	8,173	6,185	3,782	59,815
Mejia	1,250	496	502	1,420	2,051	2,194	1,357	1,767	2,617	3,341	3,098	2,342	1,427	22,612
Ceibal-Guayaba	4,650	2,443	2,047	7,038	7,618	8,864	6,479	7,565	10,291	13,032	12,483	9,785	5,749	93,394
Total	29,250	5,390	4,671	16,438	23,450	41,011	26,760	36,061	56,853	72,007	68,327	52,177	24,968	428,113

Table 6.1 Work Force of CRM

Category	Permanent Professional/ Administrative	Worker/Labor		Contract		TOTAL
		Permanent	Temporary	Skilled	Unskilled	
CRM (Headquarters)	213	314	211	5	-	743
Poza Honda	39	175	59	1	-	274
Chone	18	44	16	1	3	82
La Estancilla	20	51	20	-	-	91
PHIMA	11	1	3	.5	-	20
PFI	4	-	-	-	-	4
Other Agencies	4	14	7	0	0	25
Total	309	599	316	12	3	1,239

Source: CRM, Informacion Basica, March 1993.

Table 6.2 Financial Situation of CRM

(Unit: S/.million)

Item	Year					
	1987	1988	1989	1990	1991	1992
A. Receipt						
1. Actual Current Tributary	634	980	3,391	2,963	4,267	5,538
2. Actual Current Non-Tributary	2	33	77	20	33	70
3. Current Transfer	959	553	806	1,162	1,602	1,321
4. Capital Transfer	115	1,178	1,011	829	3,212	6,942
5. Finance Accounts	1,199	46	80	3	1,850	108
6. Balance in Banks and Petty Cash	30	27	3	118	198	770
Total	2,939	2,817	5,368	5,095	11,162	14,749
B. Expenditures						
1. Remunerations	284	450	715	976	1,785	2,978
2. Services	293	675	1,009	344	704	1,396
3. Consumables and Materials	30	143	376	373	585	672
4. Office Furniture	47	44	157	109	175	334
5. Acquisition of Real Estate and Livestock Property	2	2	-	9	45	89
6. Construction and Other Investments	1,642	535	1,946	1,373	5,176	6,530
7. Amortization and Loans	389	604	421	746	463	522
8. Current Transfer	227	290	545	762	1,215	2,016
9. Global Budget	47	91	119	181	-	-
Total	2,961	2,834	5,288	4,873	10,148	14,537

Source: CRM, "Liquidaciones anuales de los presupuestos del CRM"

Table 11.1 Summary of Construction Cost

Description	Foreign Currency (1000 US$)	Local Currency (1000 S/.)	Total (1000 S/.)	Total (Equivalent 1000 US$)
1.Package 1 Civil Works for Daule Peripa-La Esperanza Transbasin	29,035.57	31,956,625	97,286,658	43,238.51
2.Package 2 Civil Works for La Esperanza-Poza Honda Transbasin and Poza honda-Mancha Grande Transbasin	52,299.84	61,809,803	179,484,443	79,770.86
3.Package 3 Electrical and Mechanical Works for Daule Peripa-La Esperanza,La Esperanza-Poza Honda and Poza Honda -Mancha Grande Transbasins	25,045.55	5,941,627	62,294,115	27,686.27
Total(1 to 3)	106,380.96	99,708,055	339,065,215	150,695.65
4. Land aquisition and compensation	0.00	555,230	555,230	246.78
5. Administration expenses	0.00	6,781,304	6,781,304	3,013.91
6. Engineering services	10,012.00	3,429,000	25,956,000	11,536.00
Total(1 to 6)	116,392.96	110,473,609	372,357,769	165,492.34
7. Physical contingency	9,385.51	10,120,932	31,238,330	13,883.70
Total(1 to 7)	125,778.47	120,594,541	403,596,099	179,376.04
8. Price escalation	25,434.90	0	57,228,525	25,434.90
Grand total	151,213.37	120,594,541	460,824,624	204,810.94

Price level : As of August 1994
Exchange rate : US$ 1.00 = s/. 2,250

Table 11.2 Disbursement Schedule

(Unit:1,000 US$,1,000 S/.)

Description	Total F.C.(US$)	Total L.C.(S/.)	1996 F.C.(US$)	1996 L.C.(S/.)	1997 F.C.(US$)	1997 L.C.(S/.)	1998 F.C.(US$)	1998 L.C.(S/.)	1999 F.C.(US$)	1999 L.C.(S/.)	2000 F.C.(US$)	2000 L.C.(S/.)	2001 F.C.(US$)	2001 L.C.(S/.)
1. Basic Perip-La Esperanza Transbasin (Package 1)	29,035.57	31,956,625	0.00	0	7,037.02	8,078,375	5,122.81	6,361,382	8,252.38	9,117,277	6,651.95	8,764,039	1,971.41	1,635,552
2. La Esperanza-Poza Honda, Poza Honda-Hancha Grande Transbasin (Package 2)	52,299.84	61,809,803	0.00	0	13,765.26	16,674,714	14,665.78	17,521,224	11,692.97	13,537,624	8,818.34	10,281,262	3,357.43	3,794,979
3. Electrical and mechanical Works (Package 3)	25,045.55	5,941,627	0.00	0	0.00	0	4,963.41	1,188,325	2,154.44	222,811	15,572.11	2,228,118	2,356.59	2,302,381
Total(1 to 3)	106,380.96	99,708,055	0.00	0	20,802.28	24,753,089	24,751.00	25,070,931	22,099.79	22,877,712	31,042.40	19,273,411	7,685.43	7,732,912
4. Land Acquisition and Compensation	0.00	555,250	0.00	277,625	0.00	277,625	0.00	0	0.00	0	0.00	0	0.00	0
5. Administration Expenses	0.00	6,781,304	0.00	0	0.00	1,431,164	0.00	1,615,214	0.00	1,452,645	0.00	1,782,276	0.00	500,505
6. Engineering Services	10,012.00	3,420,000	0.00	0	2,112.99	723,675	2,384.72	816,741	2,143.82	734,234	2,631.52	901,267	738.95	253,083
Total(1 to 6)	116,392.96	110,473,609	0.00	277,625	22,915.27	27,185,553	27,135.72	27,502,886	24,243.61	25,063,991	33,673.92	21,957,954	8,424.44	8,486,500
7. Physical Contingency	9,385.51	10,120,932	0.00	27,763	2,185.88	2,610,813	2,246.97	2,545,509	2,166.38	2,381,486	2,145.77	1,905,555	640.53	645,484
Total(1 to 7)	125,778.47	120,594,541	0.00	305,388	25,101.15	29,796,366	29,382.69	30,048,395	26,409.97	27,445,479	35,819.69	23,862,509	9,064.97	9,136,384
8. Price Escalation	25,434.90	0	0.29	0	3,565.99	0	8,147.88	0	5,787.76	0	5,705.83	0	2,219.15	0
Grand Total	151,213.37	120,594,541	0.29	305,388	28,667.14	29,796,366	37,530.57	30,048,395	32,197.73	27,445,479	41,525.52	23,862,509	11,284.12	9,136,384

Price level : As of August 1994
Exchange rate : US$ 1.00 = s/. 2,250
Escalation : 3% p.a. for both foreign and local currency portions in terms of US Dollars

Table 13.1 Demand for Water Supply

(MCM/Year)

Year	Total Demand			Demand met by Transbasin Scheme		
	Poza Honda	Chone-Est.	Total	Poza Honda	Chone-Est.	Total
1990	34.5	8.2	42.7	-	-	-
91	37.0	9.2	46.2	-	-	-
92	39.5	10.3	49.8	-	-	-
93	42.0	11.3	53.3	-	-	-
94	44.5	12.3	56.8	-	-	-
95	47.1	13.3	60.4	-	-	-
96	49.6	14.3	63.9	-	-	-
97	52.1	15.3	67.4	-	-	-
98	54.6	16.3	70.9	-	-	-
99	57.1	17.4	74.5	-	-	-
2000	59.6	18.4	78.0	14.6	-	14.6
01	63.3	19.7	83.0	18.3	-	18.3
02	67.1	20.8	87.9	22.1	-	22.1
03	70.8	22.1	92.9	25.8	-	25.8
04	74.5	23.3	97.8	29.5	-	29.5
05	78.3	24.5	102.8	33.3	-	33.3
06	82.0	25.7	107.7	37.0	-	37.0
07	85.7	27.0	112.7	40.7	-	40.7
08	89.4	28.2	117.6	44.4	-	44.4
09	93.2	29.4	122.6	48.2	-	48.2
2010	96.9	30.6	127.5	51.9	-	51.9
11	102.4	32.1	134.5	57.4	-	57.4
12	107.9	33.5	141.4	62.9	-	62.9
13	113.4	35.0	148.4	68.4	-	68.4
14	118.9	36.4	155.3	73.9	-	73.9
15	124.4	37.9	162.3	79.4	-	79.4
16	129.8	39.4	169.2	84.8	-	84.8
17	135.3	40.9	176.2	90.3	0.9	91.2
18	140.8	42.3	183.1	95.8	2.3	98.1
19	146.3	43.8	190.1	101.3	3.8	105.1
2020	151.8	45.2	197.0	106.8	5.2	112.0

Table 13.2 Irrigation Benefit

Irrigation Scheme	Area (ha)	Const. Cost ($/ha)	Annual Benefit ($/ha)	Annual Net Benefit ($/ha)	Annual Net Benefit (US$1,000)
Carrizal - Chone	15,000	3,795	1,067	687.5	10,313
Amarillos	1,000	4,337	995	561.3	561
Guarango	1,500	4,817	1,012	530.3	795
Rio Chico	1,700	3,177	986	668.3	1,136
Santa Ana	3,300	1,327	853	720.3	2,377
Pechiche - Pasaje	850	4,946	739	244.4	208
Mejia	1,250	2,581	845	586.9	734
Ceibal - Guayaba	4,650	2,598	852	592.2	2,753

Construction cost x 0.10 = Annual cost

Capital cost : 8%, O & M cost : 2%

Benefit of the Project

Irrigation Scheme	Area (ha)	Annual Irrigation Benefit (US$1,000)
Amarillos	1,000	561
Guarango	1,500	795
Rio Chico	1,700	1,136
Santa Ana	2,200	1,585
Pechiche - Pasaje	850	208
Mejia	1,250	734
Ceibal - Guayaba	4,650	2,753
Total	13,150	7,772

Table 13.3 Shrimp Farming Benefit

	Production [1] (tons)	Fresh Water [2] Demand (MCM/year)	Gross [3] income	Production [4] cost	Profit [5]
			(Prices in US$ 1,000)		
With Project	7,734	102.6	34,030	17,015	17,015
Without Project	4,420	-	19,448	9,744	9,744
Net increase	3,314	102.6	14,582	7,271	7,271 [6]

Remarks:

(1) Net production in metric tons for effective shrimp pond area of 2,663 ha

(2) Annual fresh water requirement in MCM

(3) Farmgate price of shrimp : US$ 4.4/kg

(4) Production cost is assumed to be 50 % of the gross income.

(5) Profit or benefit without counting fresh water charge.

(6) Net increase of profit of US$ 7.27 million is the annual shrimp farming benefit of the project.

Table 13.4 Economic Cost and Benefit Stream (1/3)

EIRR 11.88%

Year	Economic Cost (US $ million) Construction	O & M	Economic Benefit (US$ million) Water Supply (US$ 0.3/cu.m)	Irrigation	Shrimp Farm
1996	0.11				
97	35.96				
98	40.33				
99	36.42				
2000	44.52				
01	12.39				
02		1.94	6.63	4.97	3.64
03		1.98	7.74	6.22	5.46
04		2.02	8.85	7.77	7.27
05		2.06	9.99	7.77	7.27
06		2.10	11.10	7.77	7.27
07		2.14	12.21	7.77	7.27
08		2.18	13.32	7.77	7.27
09		2.22	14.46	7.77	7.27
2010		2.26	15.57	7.77	7.27
11		2.32	17.22	7.77	7.27
12		2.37	18.87	7.77	7.27
13		2.43	20.52	7.77	7.27
14		2.48	22.17	7.77	7.27
15		2.54	23.82	7.77	7.27
16		2.61	25.44	7.77	7.27
17		2.68	27.36	7.77	7.27
18		2.74	29.43	7.77	7.27
19		2.81	30.63	7.77	7.27
2020		2.88	33.60	7.77	7.27
21		2.88	33.60	7.77	7.27
22		2.88	33.60	7.77	7.27
23		2.88	33.60	7.77	7.27
24		2.88	33.60	7.77	7.27
25		2.88	33.60	7.77	7.27
26		2.88	33.60	7.77	7.27
27		2.88	33.60	7.77	7.27
28		2.88	33.60	7.77	7.27
29		2.88	33.60	7.77	7.27
2030		2.88	33.60	7.77	7.27

Remarks:

1. Economic construction cost = Financial construction cost in Foreign currency + 0.82 x Financial construction cost in Local currency
2. Economic O&M cost = 0.82 x Financial O&M cost
3. Economic water supply benefit = Water demand to be met by the Project MCM/year x assumed unit value (US$ 0.3 /m^3)
4. Economic irrigation benefit maturation is 64% in the first year, 80% in the second year and 100% in the third year onward.
5. Economic shrimp farm benefit maturation is 50% in the first year, 75% in the second year and 100% in the third year onward.

Table 13.4 Economic Cost and Benefit Stream (2/3)

EIRR 13.41%

Year	Economic Cost (US $ million) Construction	O & M	Economic Benefit (US$ million) Water Supply (US$ 0.4/cu.m)	Irrigation	Shrimp Farm
1996	0.11				
97	35.96				
98	40.33				
99	36.42				
2000	44.52				
01	12.39				
02		1.94	8.84	4.97	3.64
03		1.98	10.32	6.22	5.46
04		2.02	11.80	7.77	7.27
05		2.06	13.32	7.77	7.27
06		2.10	14.80	7.77	7.27
07		2.14	16.28	7.77	7.27
08		2.18	17.76	7.77	7.27
09		2.22	19.28	7.77	7.27
2010		2.26	20.76	7.77	7.27
11		2.32	22.96	7.77	7.27
12		2.37	25.16	7.77	7.27
13		2.43	27.36	7.77	7.27
14		2.48	29.56	7.77	7.27
15		2.54	31.76	7.77	7.27
16		2.61	33.92	7.77	7.27
17		2.68	36.48	7.77	7.27
18		2.74	39.24	7.77	7.27
19		2.81	40.84	7.77	7.27
2020		2.88	44.80	7.77	7.27
21		2.88	44.80	7.77	7.27
22		2.88	44.80	7.77	7.27
23		2.88	44.80	7.77	7.27
24		2.88	44.80	7.77	7.27
25		2.88	44.80	7.77	7.27
26		2.88	44.80	7.77	7.27
27		2.88	44.80	7.77	7.27
28		2.88	44.80	7.77	7.27
29		2.88	44.80	7.77	7.27
2030		2.88	44.80	7.77	7.27

Remarks:

1. Economic construction cost = Financial construction cost in Foreign currency + 0.82 x Financial construction cost in Local currency
2. Economic O&M cost = 0.82 x Financial O&M cost
3. Economic water supply benefit = Water demand to be met by the Project MCM/year x assumed unit value (US$ 0.3 /m^3)
4. Economic irrigation benefit maturation is 64% in the first year, 80% in the second year and 100% in the third year onward.
5. Economic shrimp farm benefit maturation is 50% in the first year, 75% in the second year and 100% in the third year onward.

Table 13.4 Economic Cost and Benefit Stream (3/3)

EIRR 14.76%

Year	Economic Cost (US $ million) Construction	O & M	Economic Benefit (US$ million) Water Supply (US$ 0.5/cu.m)	Irrigation	Shrimp Farm
1996	0.11				
97	35.96				
98	40.33				
99	36.42				
2000	44.52				
01	12.39				
02		1.94	11.05	4.97	3.64
03		1.98	12.90	6.22	5.46
04		2.02	14.75	7.77	7.27
05		2.06	16.65	7.77	7.27
06		2.10	18.50	7.77	7.27
07		2.14	20.35	7.77	7.27
08		2.18	22.20	7.77	7.27
09		2.22	24.10	7.77	7.27
2010		2.26	25.95	7.77	7.27
11		2.32	28.70	7.77	7.27
12		2.37	31.45	7.77	7.27
13		2.43	34.20	7.77	7.27
14		2.48	36.95	7.77	7.27
15		2.54	39.70	7.77	7.27
16		2.61	42.40	7.77	7.27
17		2.68	45.60	7.77	7.27
18		2.74	49.05	7.77	7.27
19		2.81	51.05	7.77	7.27
2020		2.88	56.00	7.77	7.27
21		2.88	56.00	7.77	7.27
22		2.88	56.00	7.77	7.27
23		2.88	56.00	7.77	7.27
24		2.88	56.00	7.77	7.27
25		2.88	56.00	7.77	7.27
26		2.88	56.00	7.77	7.27
27		2.88	56.00	7.77	7.27
28		2.88	56.00	7.77	7.27
29		2.88	56.00	7.77	7.27
2030		2.88	56.00	7.77	7.27

Remarks:

1. Economic construction cost = Financial construction cost in Foreign currency + 0.82 x Financial construction cost in Local currency
2. Economic O&M cost = 0.82 x Financial O&M cost
3. Economic water supply benefit = Water demand to be met by the Project MCM/year x assumed unit value (US$ 0.3 /m^3)
4. Economic irrigation benefit maturation is 64% in the first year, 80% in the second year and 100% in the third year onward.
5. Economic shrimp farm benefit maturation is 50% in the first year, 75% in the second year and 100% in the third year onward.

Table 13.5 Financial Cost and Benefit Stream (1/3)

FIRR 8.63%

Year	Financial Cost (US $ million) Construction	O & M	Financial Benefit (US$ million) Water Supply (US$ 0.15/cu.m)	Irrigation	Shrimp Farm
1996	0.14				
97	41.91				
98	50.89				
99	44.40				
2000	52.13				
01	15.34				
02		3.00	4.20	3.15	2.31
03		3.15	5.05	4.06	3.56
04		3.31	5.95	5.22	4.89
05		3.48	6.92	5.38	5.03
06		3.65	7.91	5.54	5.19
07		3.83	8.96	5.71	5.34
08		4.02	10.07	5.88	5.50
09		4.21	11.26	6.06	5.67
2010		4.41	12.49	6.24	5.84
11		4.66	14.23	6.42	6.01
12		4.92	16.06	6.62	6.19
13		5.19	17.99	6.81	6.38
14		5.47	20.02	7.02	6.57
15		5.77	22.16	7.23	6.76
16		6.10	24.38	7.45	6.97
17		6.44	27.00	7.67	7.18
18		6.80	29.91	7.90	7.39
19		7.18	33.01	8.14	7.61
2020		7.57	36.23	8.38	7.84
21		7.80	37.32	8.63	8.08
22		8.03	38.44	8.89	8.32
23		8.27	39.59	9.16	8.57
24		8.52	40.78	9.43	8.82
25		8.78	42.00	9.71	9.09
26		9.04	43.26	10.01	9.36
27		9.31	44.56	10.31	9.64
28		9.59	45.90	10.62	9.93
29		9.88	47.27	10.93	10.23
2030		10.17	48.69	11.26	10.54

Remarks:

1. Financial construction cost is as shown in Table 11.2 including price contingency with an annual inflation rate of 3%.

2. Financial O&M cost is subject to an annual inflation rate 3%.

3. Financial water supply benefit = Water demand to be met by the Project (MCM/year) x assumed unit value (US$ 0.15/m^3), subject to an annual inflation rate of 3%.

4. Financial irrigation and shrimp farm benefit = 0.5 x Economic benefit subject to an annual inflation rate of 3%.

Table 13.5 Financial Cost and Benefit Stream (2/3)

FIRR 10.02%

Year	Financial Cost (US $ million)		Financial Benefit (US$ million)		
	Construction	O & M	Water Supply (US$ 0.20/cu.m)	Irrigation	Shrimp Farm
1996	0.14				
97	41.91				
98	50.89				
99	44.40				
2000	52.13				
01	15.34				
02		3.00	5.60	3.15	2.31
03		3.15	6.73	4.06	3.56
04		3.31	7.93	5.22	4.89
05		3.48	9.23	5.38	5.03
06		3.65	10.55	5.54	5.19
07		3.83	11.95	5.71	5.34
08		4.02	13.43	5.88	5.50
09		4.21	15.01	6.06	5.67
2010		4.41	16.65	6.24	5.84
11		4.66	18.97	6.42	6.01
12		4.92	21.41	6.62	6.19
13		5.19	23.99	6.81	6.38
14		5.47	26.69	7.02	6.57
15		5.77	29.55	7.23	6.76
16		6.10	32.51	7.45	6.97
17		6.44	36.00	7.67	7.18
18		6.80	39.88	7.90	7.39
19		7.18	44.01	8.14	7.61
2020		7.57	48.31	8.38	7.84
21		7.80	49.76	8.63	8.08
22		8.03	51.25	8.89	8.32
23		8.27	52.79	9.16	8.57
24		8.52	54.37	9.43	8.82
25		8.78	56.00	9.71	9.09
26		9.04	57.68	10.01	9.36
27		9.31	59.42	10.31	9.64
28		9.59	61.20	10.62	9.93
29		9.88	63.03	10.93	10.23
2030		10.17	64.92	11.26	10.54

Remarks:

1. Financial construction cost is as shown in Table 11.2 including price contingency with an annual inflation rate of 3%.

2. Financial O&M cost is subject to an annual inflation rate 3%.

3. Financial water supply benefit = Water demand to be met by the Project (MCM/year) x assumed unit value (US$ 0.15/m^3), subject to an annual inflation rate of 3%.

4. Financial irrigation and shrimp farm benefit = 0.5 x Economic benefit subject to an annual inflation rate of 3%.

Table 13.5 Financial Cost and Benefit Stream (3/3)

FIRR 11.22%

Year	Financial Cost (US $ million) Construction	O & M	Financial Benefit (US$ million) Water Supply (US$ 0.25/cu.m)	Irrigation	Shrimp Farm
1996	0.14				
97	41.91				
98	50.89				
99	44.40				
2000	52.13				
01	15.34				
02		3.00	7.00	3.15	2.31
03		3.15	8.42	4.06	3.56
04		3.31	9.92	5.22	4.89
05		3.48	11.53	5.38	5.03
06		3.65	13.18	5.54	5.19
07		3.83	14.93	5.71	5.34
08		4.02	16.78	5.88	5.50
09		4.21	18.77	6.06	5.67
2010		4.41	20.82	6.24	5.84
11		4.66	23.72	6.42	6.01
12		4.92	26.77	6.62	6.19
13		5.19	29.98	6.81	6.38
14		5.47	33.37	7.02	6.57
15		5.77	36.93	7.23	6.76
16		6.10	40.63	7.45	6.97
17		6.44	45.00	7.67	7.18
18		6.80	49.85	7.90	7.39
19		7.18	55.02	8.14	7.61
2020		7.57	60.38	8.38	7.84
21		7.80	62.19	8.63	8.08
22		8.03	64.06	8.89	8.32
23		8.27	65.98	9.16	8.57
24		8.52	67.96	9.43	8.82
25		8.78	70.00	9.71	9.09
26		9.04	72.10	10.01	9.36
27		9.31	74.26	10.31	9.64
28		9.59	76.49	10.62	9.93
29		9.88	78.78	10.93	10.23
2030		10.17	81.15	11.26	10.54

Remarks:

1. Financial construction cost is as shown in Table 11.2 including price contingency with an annual inflation rate of 3%.
2. Financial O&M cost is subject to an annual inflation rate 3%.
3. Financial water supply benefit = Water demand to be met by the Project (MCM/year) x assumed unit value (US$ 0.15/m^3), subject to an annual inflation rate of 3%.
4. Financial irrigation and shrimp farm benefit = 0.5 x Economic benefit subject to an annual inflation rate of 3%.

List of Figures

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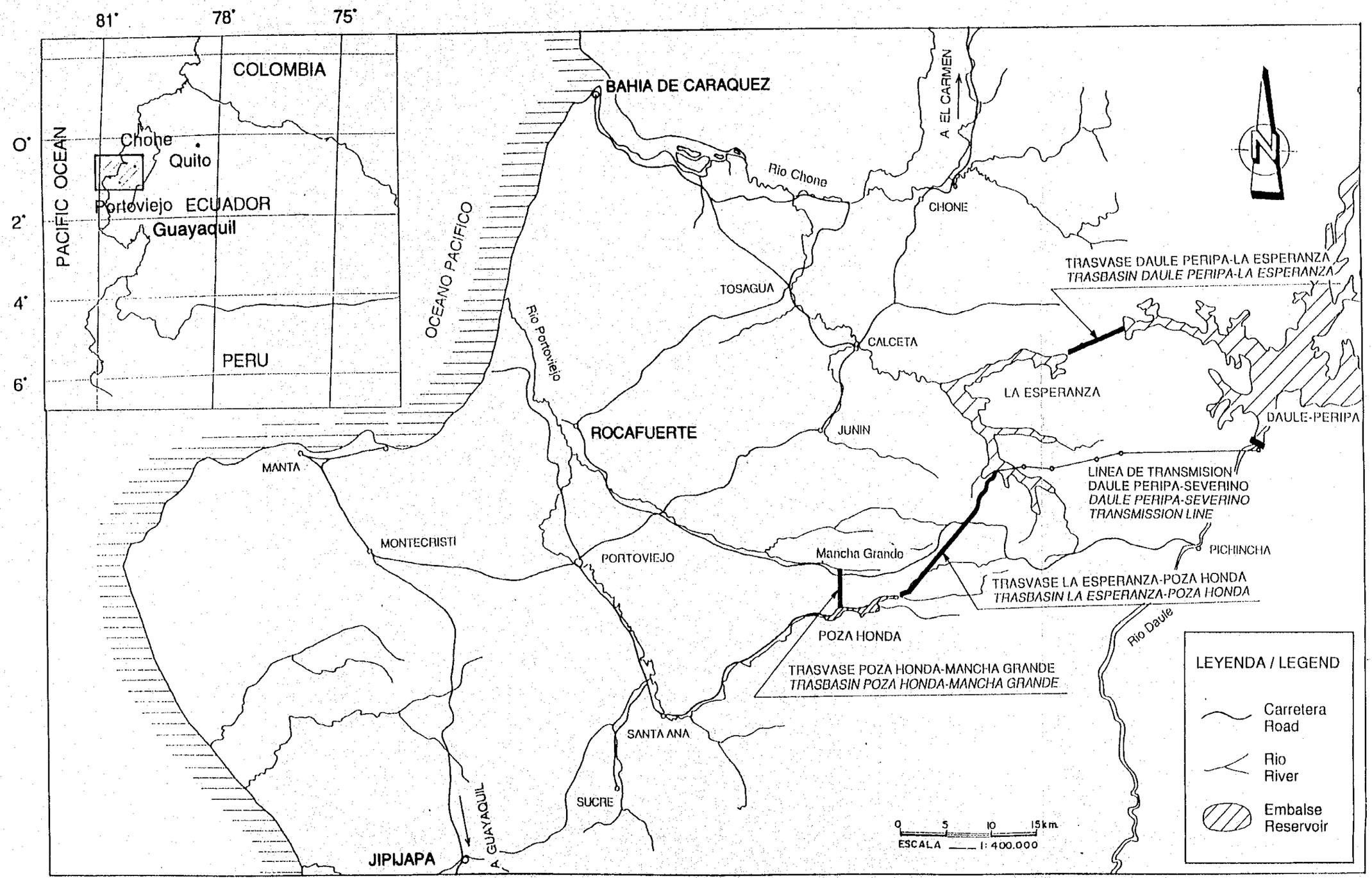
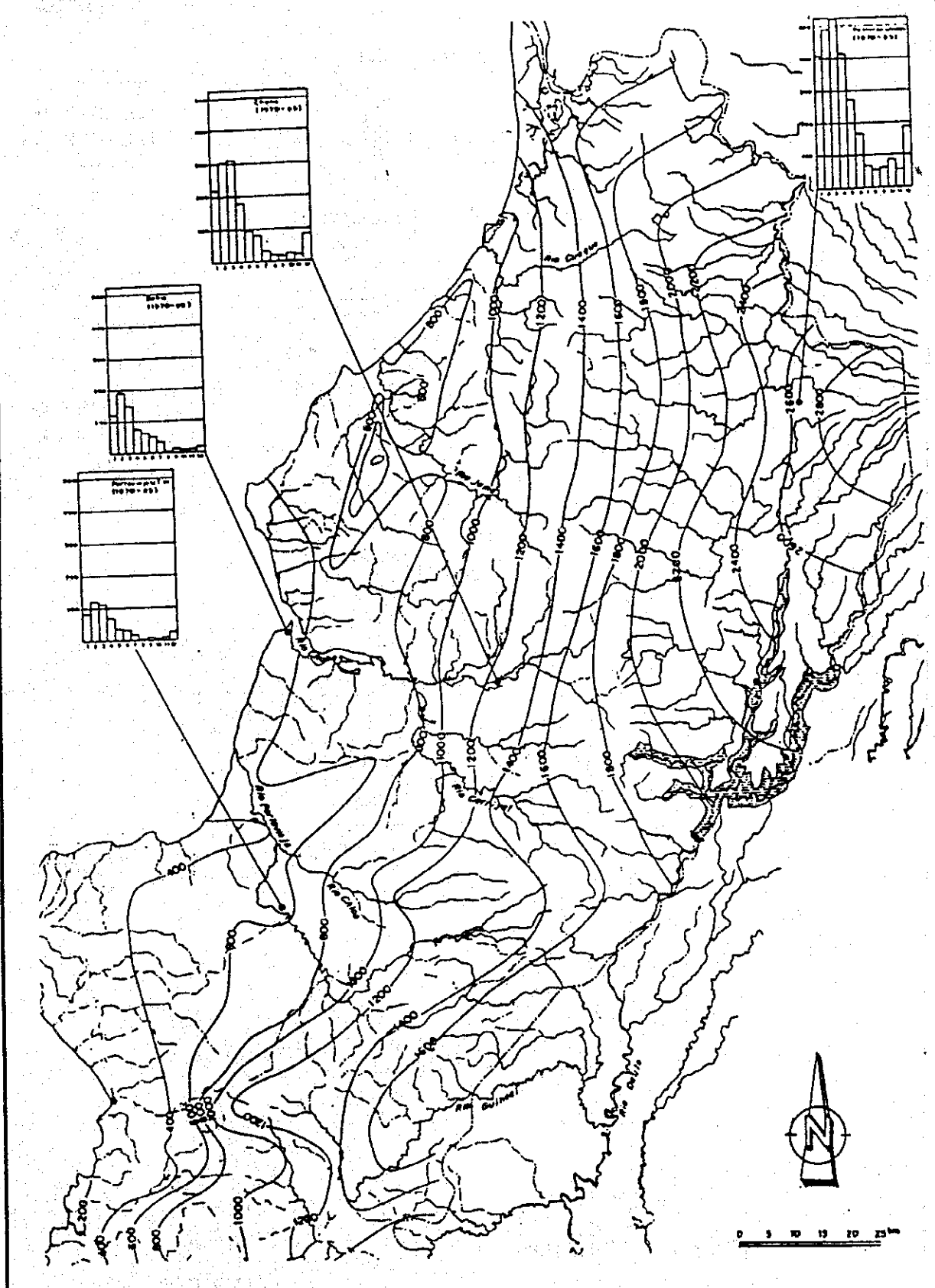
FIGURE 2.1



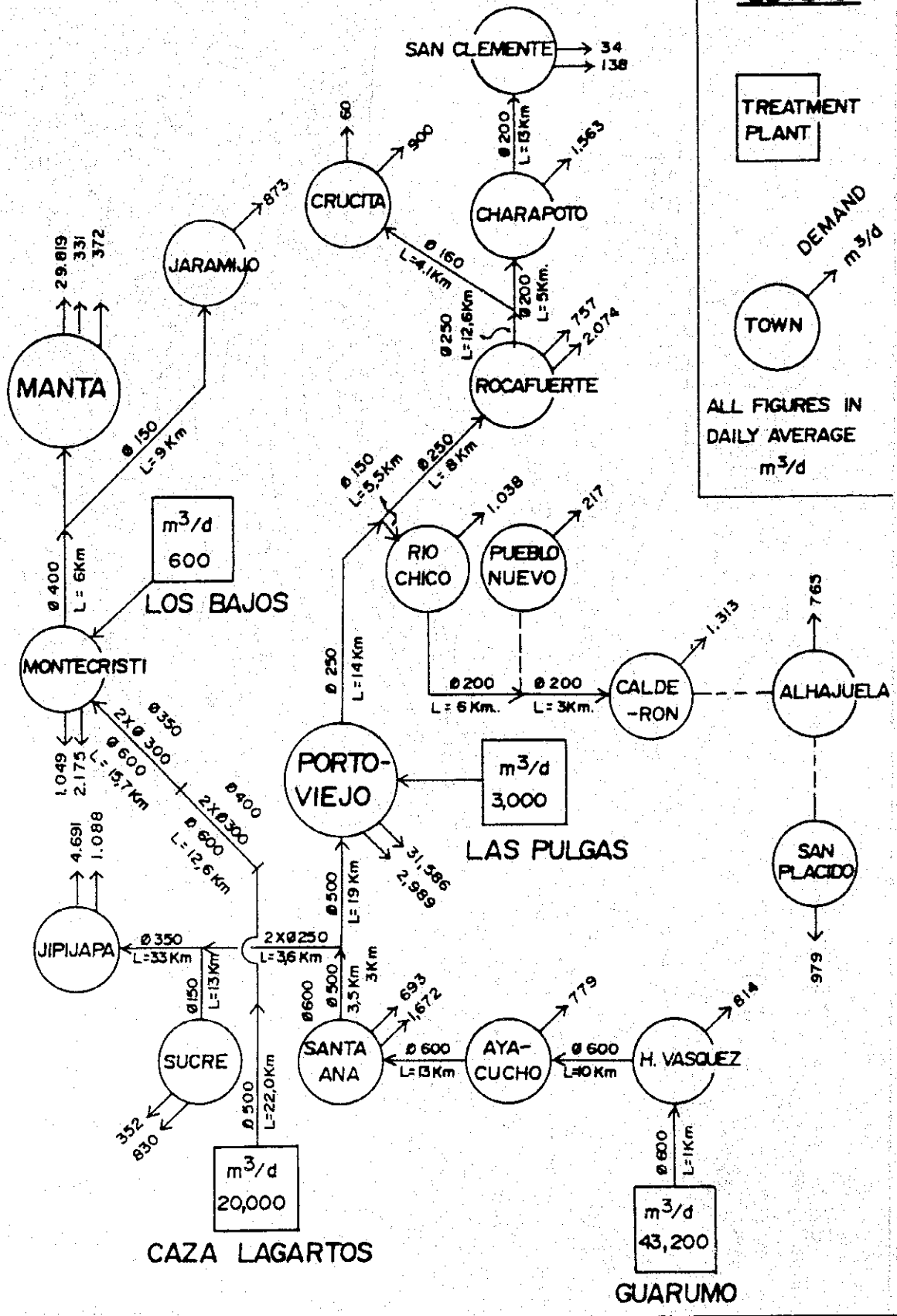
GOVERNMENT OF THE REPUBLIC OF ECUADOR CENTRO DE REHABILITACION DE MANABI (CRM) ***THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS*** JAPAN INTERNATIONAL COOPERATION AGENCY	TITLE **Project Location Map**

FIGURE 2.2



GOVERNMENT OF THE REPUBLIC OF ECUADOR CENTRO DE REHABILITACION DE MANABI (CRM) ***THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS*** JAPAN INTERNATIONAL COOPERATION AGENCY	TITLE Isohyetal Map of Project Area

FIGURE 4.1



GOVERNMENT OF THE REPUBLIC OF ECUADOR
CENTRO DE REHABILITACION DE MANABI (CRM)

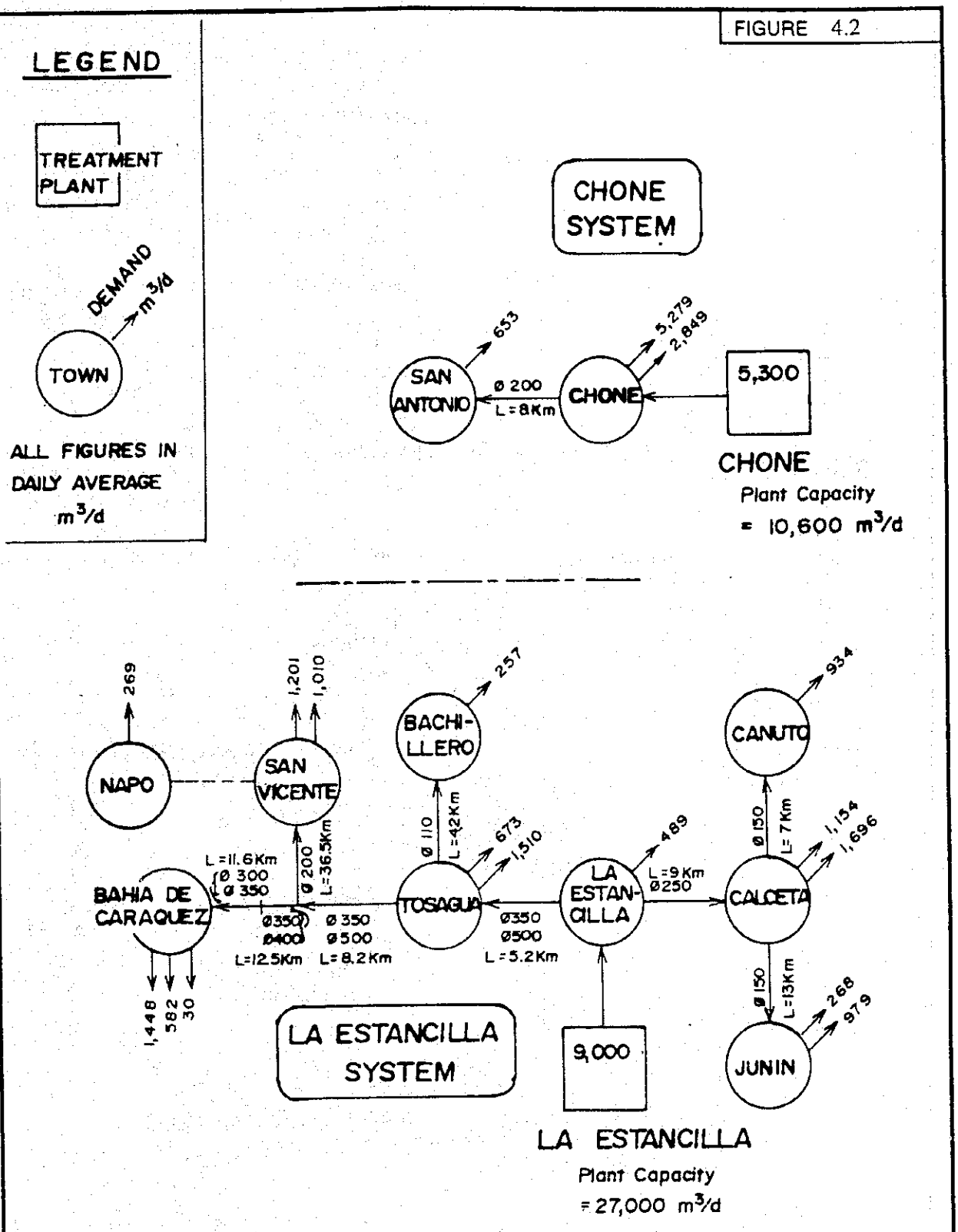
THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS

JAPAN INTERNATIONAL COOPERATION AGENCY

TITLE

Schematic Layout of Poza Honda Water Supply System

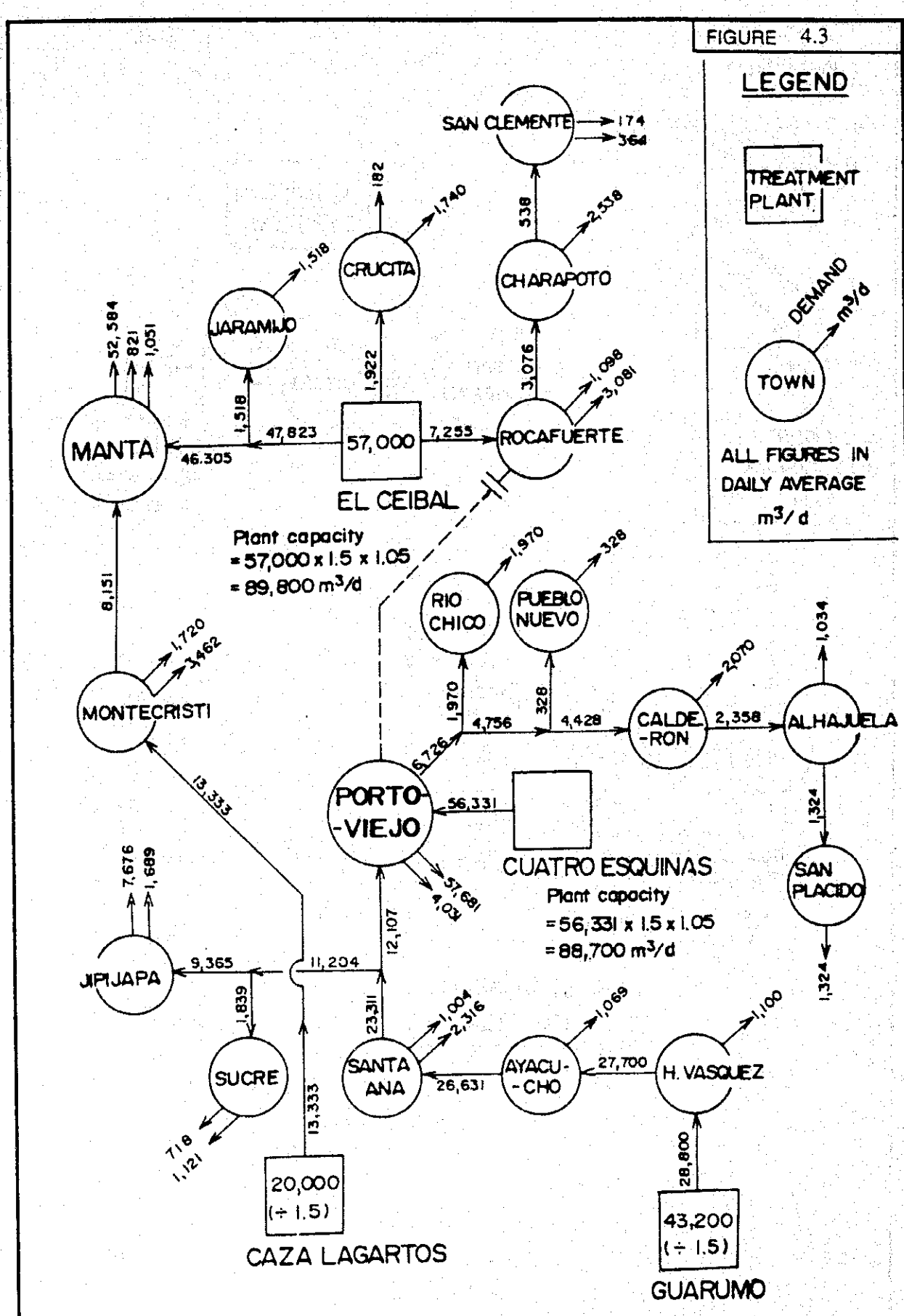
FIGURE 4.2



GOVERNMENT OF THE REPUBLIC OF ECUADOR
CENTRO DE REHABILITACION DE MANABI (CRM)
THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS
JAPAN INTERNATIONAL COOPERATION AGENCY

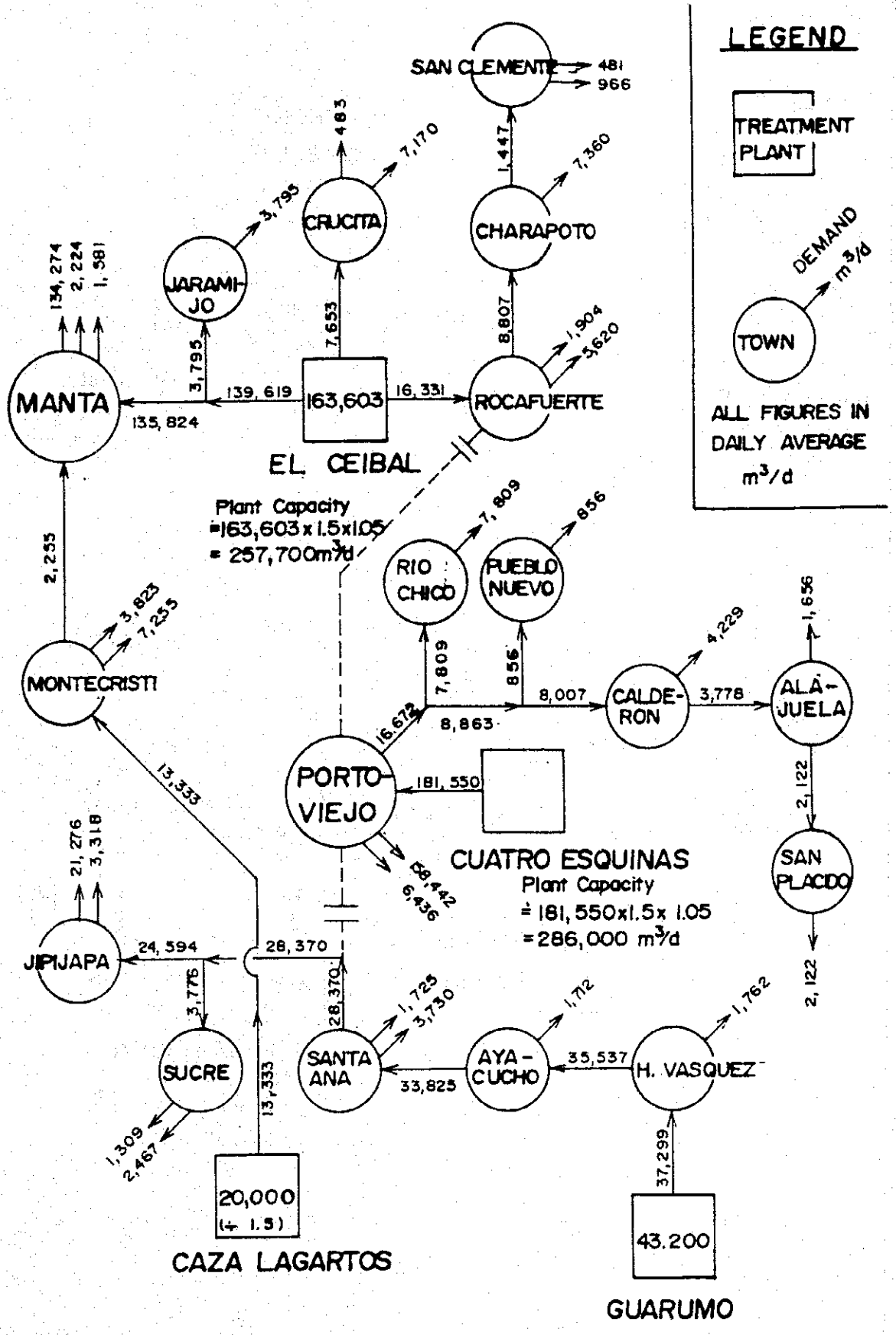
TITLE
Schematic Layout of La Estancilla and Chone System

FIGURE 4.3



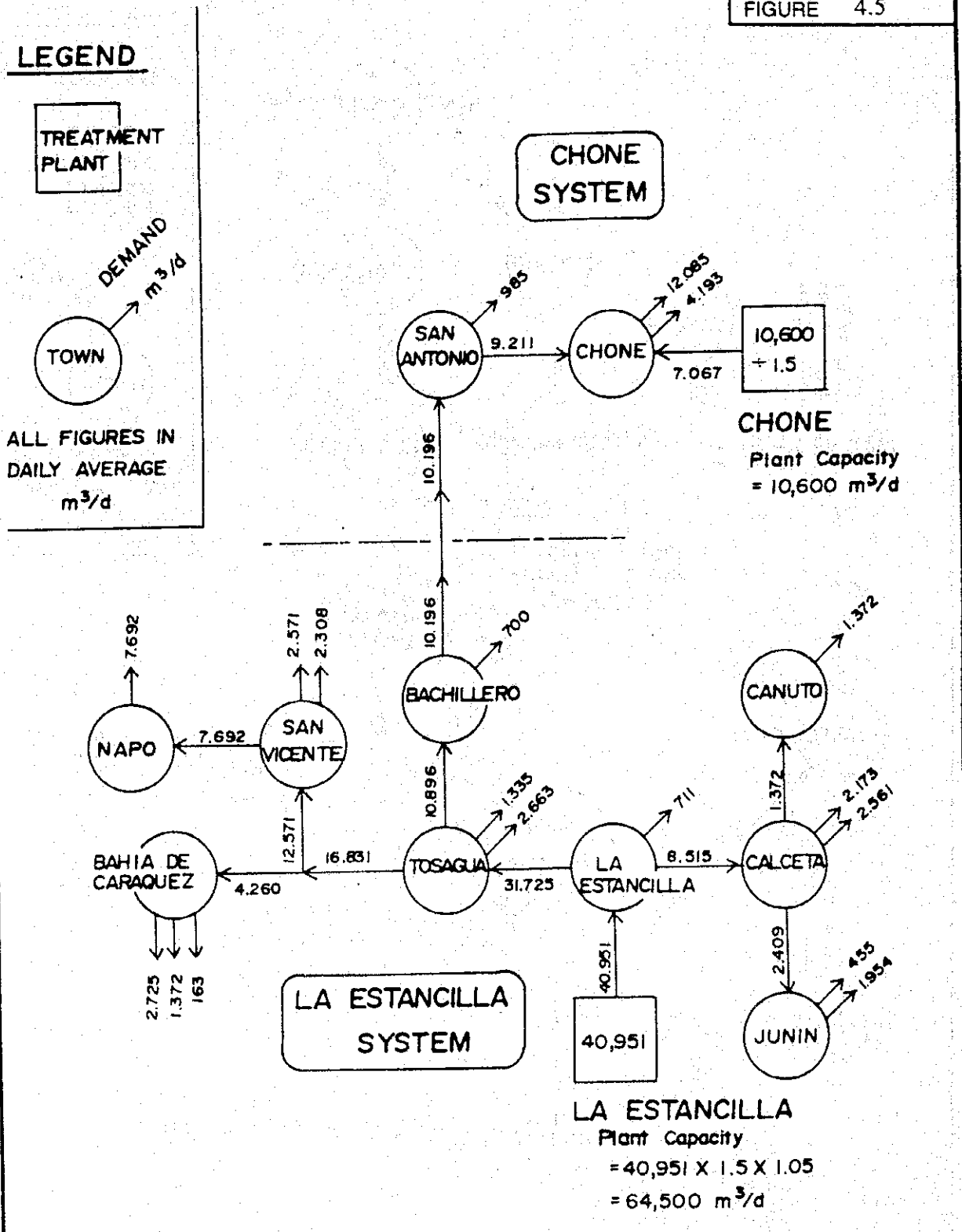
GOVERNMENT OF THE REPUBLIC OF ECUADOR CENTRO DE REHABILITACION DE MANABI (CRM) *THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS* JAPAN INTERNATIONAL COOPERATION AGENCY	TITLE Schematic Layout of Poza Honda Water Supply System 2000

FIGURE 4.4



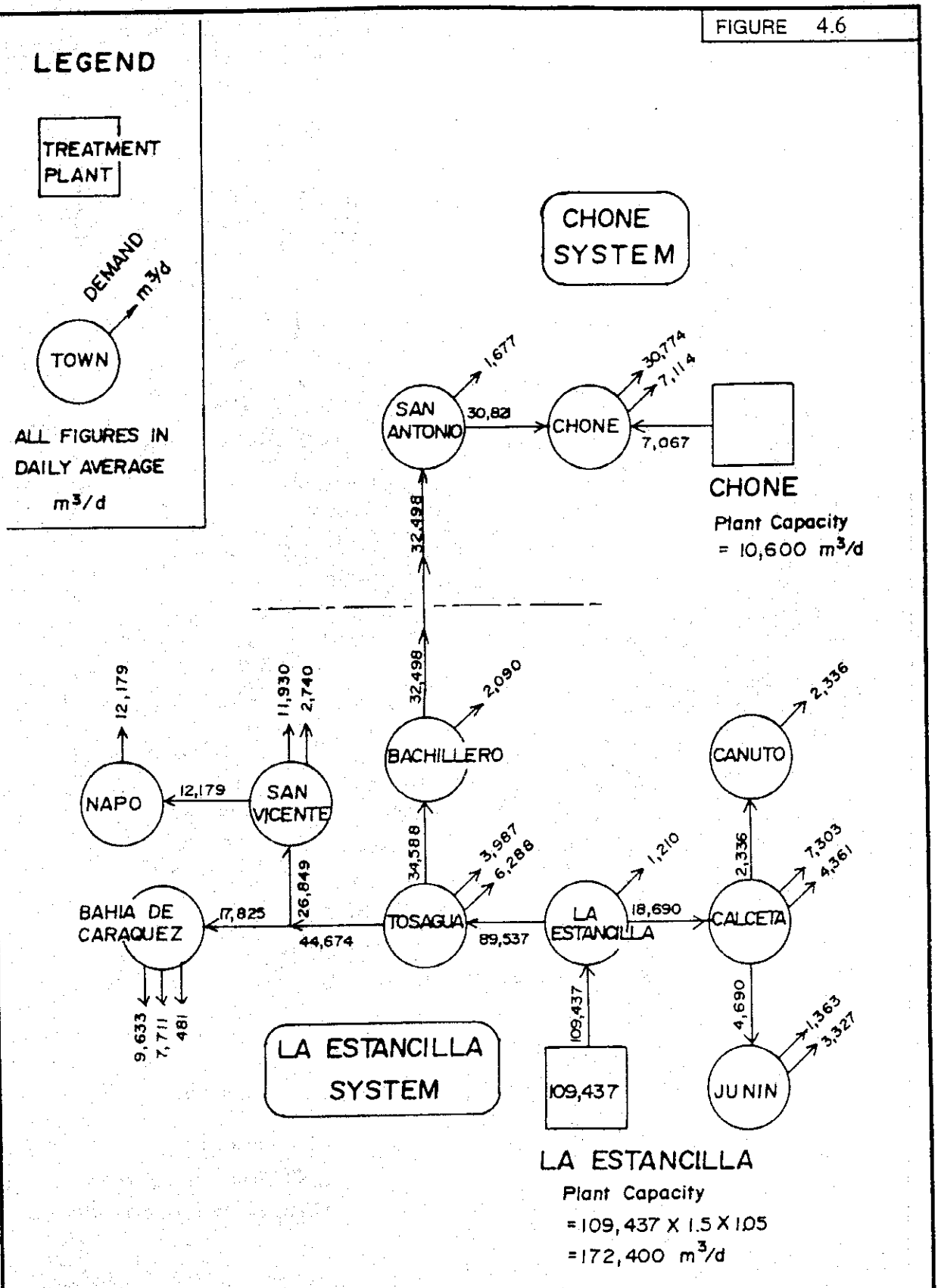
GOVERNMENT OF THE REPUBLIC OF ECUADOR CENTRO DE REHABILITACION DE MANABI (CRM) *THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS* JAPAN INTERNATIONAL COOPERATION AGENCY	TITLE Schematic Layout of Poza Honda Water Supply System 2020

FIGURE 4.5



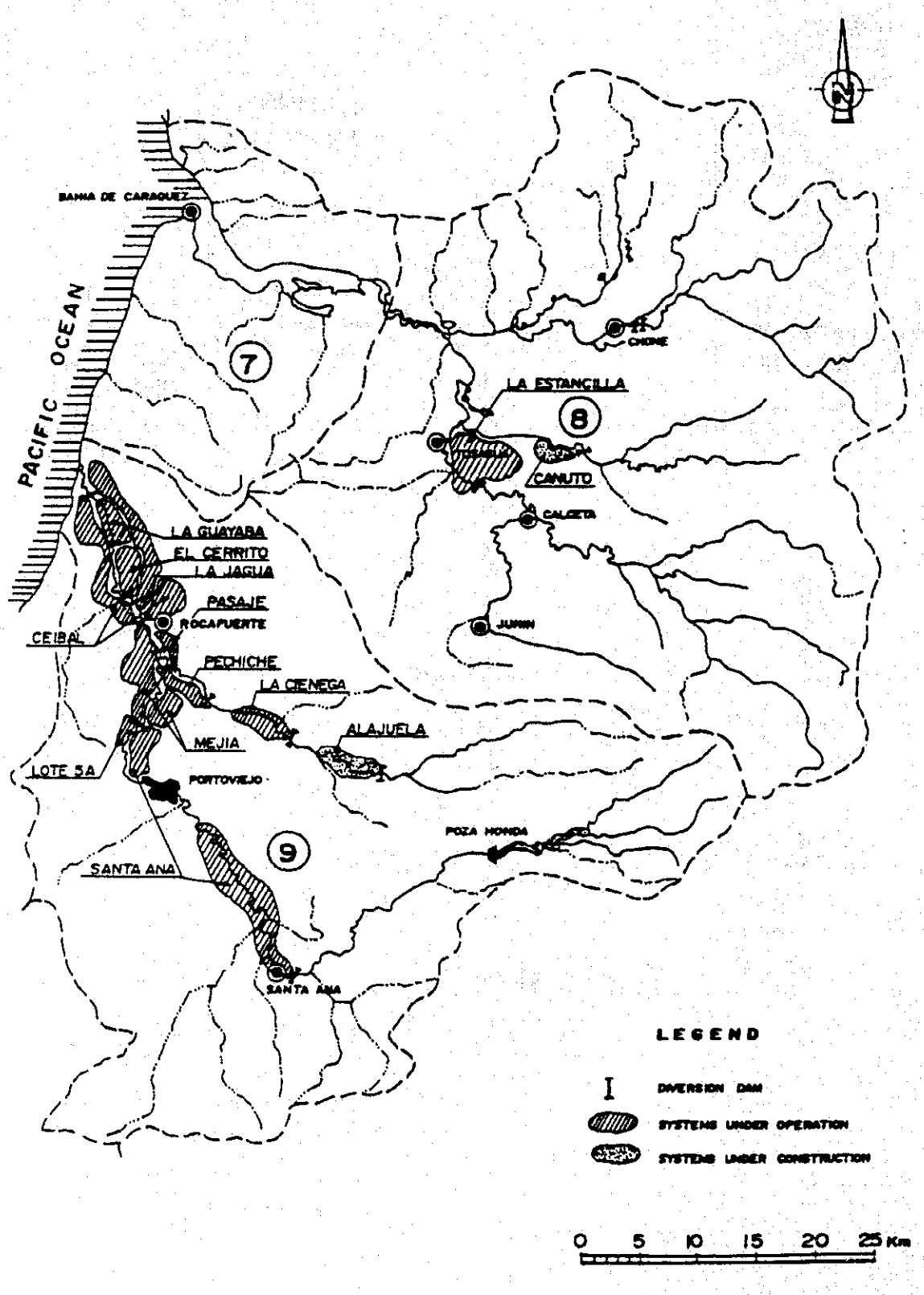
GOVERNMENT OF THE REPUBLIC OF ECUADOR CENTRO DE REHABILITACION DE MANABI (CRM) *THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS* JAPAN INTERNATIONAL COOPERATION AGENCY	TITLE Schematic Layout of Chone-La Estancilla Water Supply System 2000

FIGURE 4.6



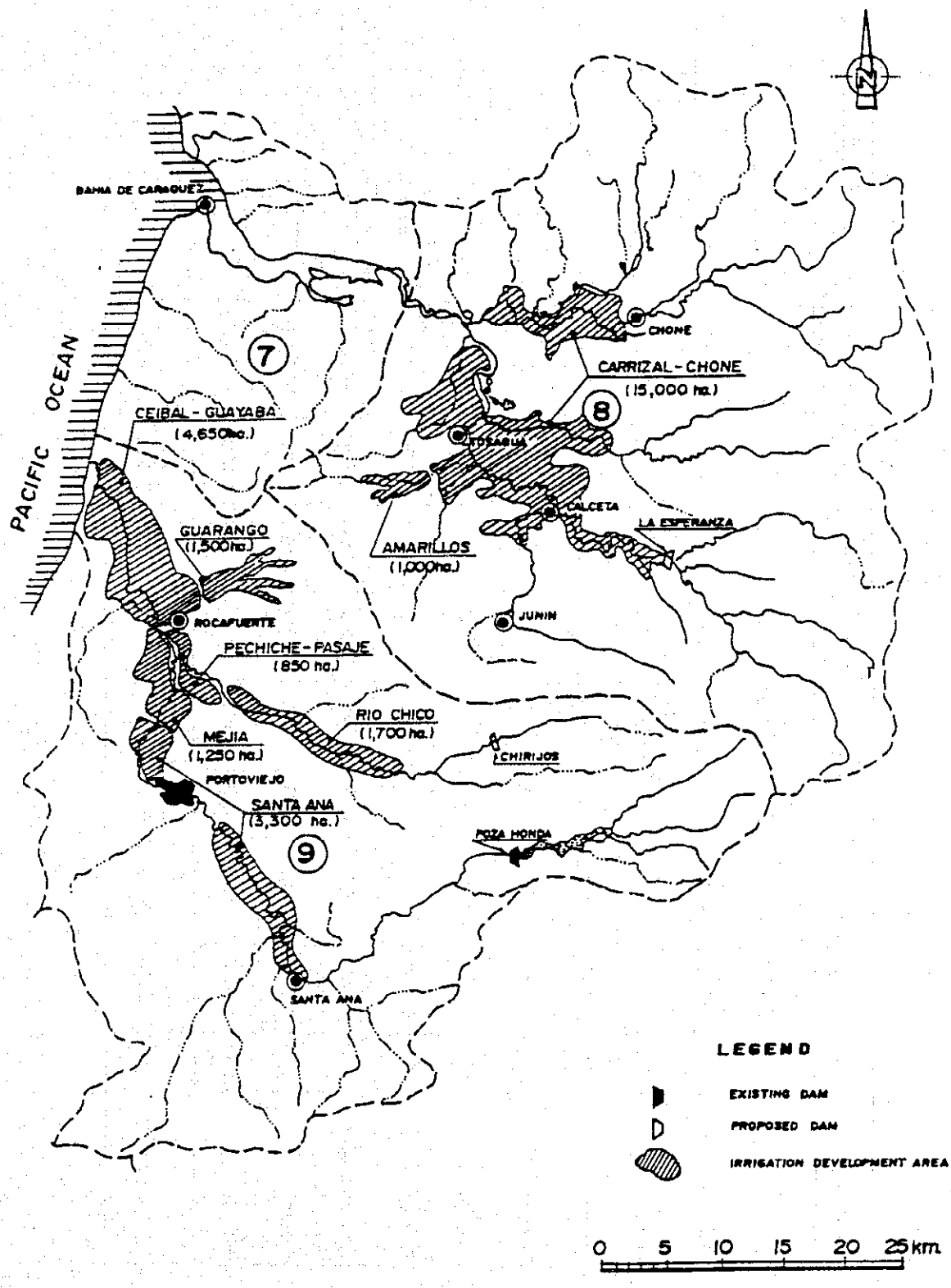
GOVERNMENT OF THE REPUBLIC OF ECUADOR CENTRO DE REHABILITACION DE MANABI (CRM) *THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS* JAPAN INTERNATIONAL COOPERATION AGENCY	TITLE Schematic Layout of Chone-La Estancilla Water Supply System 2020

FIGURE 4.7



GOVERNMENT OF THE REPUBLIC OF ECUADOR CENTRO DE REHABILITACION DE MANABI (CRM) *THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS* JAPAN INTERNATIONAL COOPERATION AGENCY	TITLE Existing Irrigation Areas

FIGURE 4.8



GOVERNMENT OF THE REPUBLIC OF ECUADOR CENTRO DE REHABILITACION DE MANABI (CRM) *THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS* JAPAN INTERNATIONAL COOPERATION AGENCY	TITLE Proposed Irrigation Schemes

GOVERNMENT OF THE REPUBLIC OF ECUADOR
CENTRO DE REHABILITACION DE MANABI (CRM)

THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS

JAPAN INTERNATIONAL COOPERATION AGENCY

TITLE

Proposed Cropping Patterns

Crops	Days	Carrizal - Chone	Amarillos	Guarango	Río Chico	Pechiche - Pasaje	Santa Ana	Mejía	Celbal - Guayaba
		(ha.)	(ha.)	(ha.)	(ha.)	(ha.)	(ha.)	(ha.)	(ha.)
Rice	135	5,970	400	595	680	340	1,310	500	1,850
Rice	135	5,970	400	595	680	340	1,310	500	1,850
Maize	120	740	50	75	90	40	165	60	230
Maize	120	740	50	75	90	40	165	60	230
Vegetables	120	740	50	80	80	40	165	60	230
Vegetables	120	1,780	110	180	200	90	385	150	550
Cotton	150	2,320	150	230	260	130	510	190	720
Peanut/Soybean	120	1,280	90	130	140	80	290	110	400
Citrus	365	2,220	150	220	250	130	490	180	690
Platano	365	3,010	200	300	340	170	660	250	930
Total		24,770	1,650	2,480	2,810	1,400	5,450	2,060	7,680

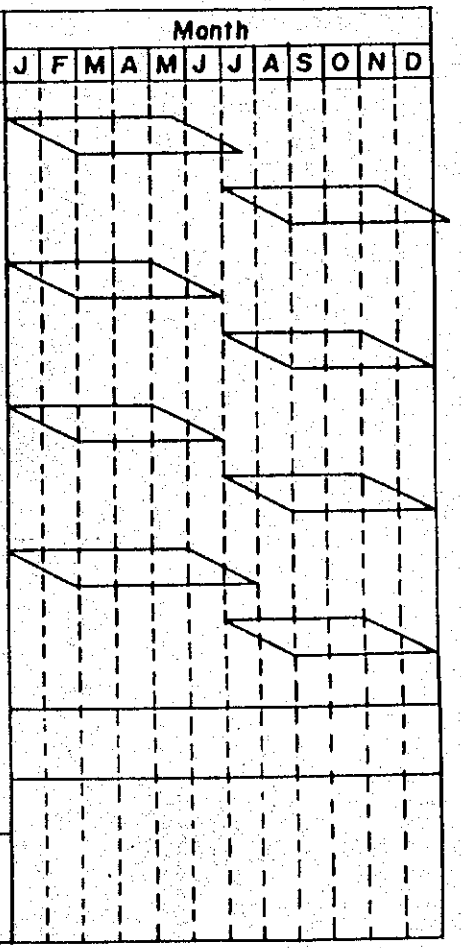
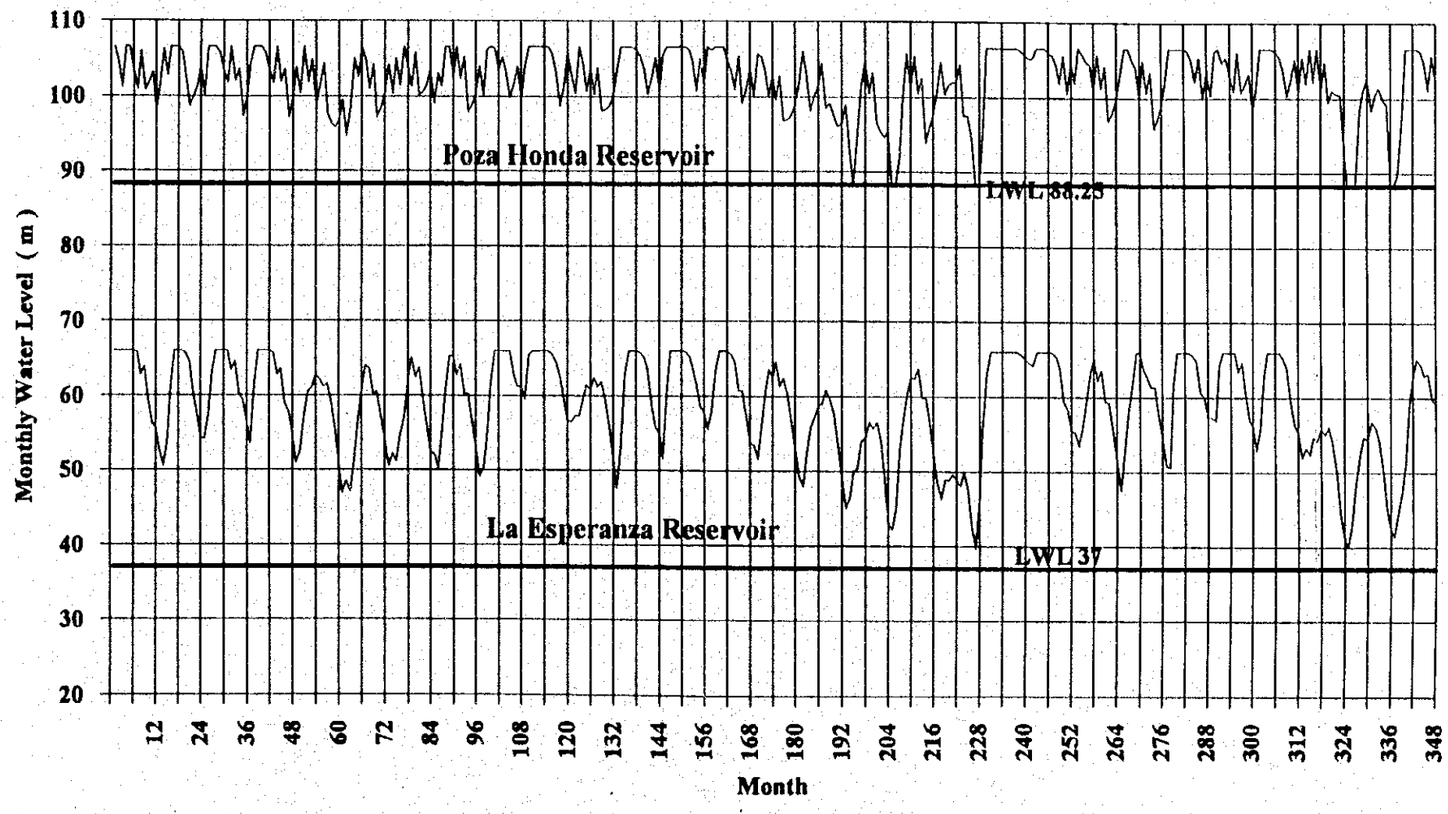


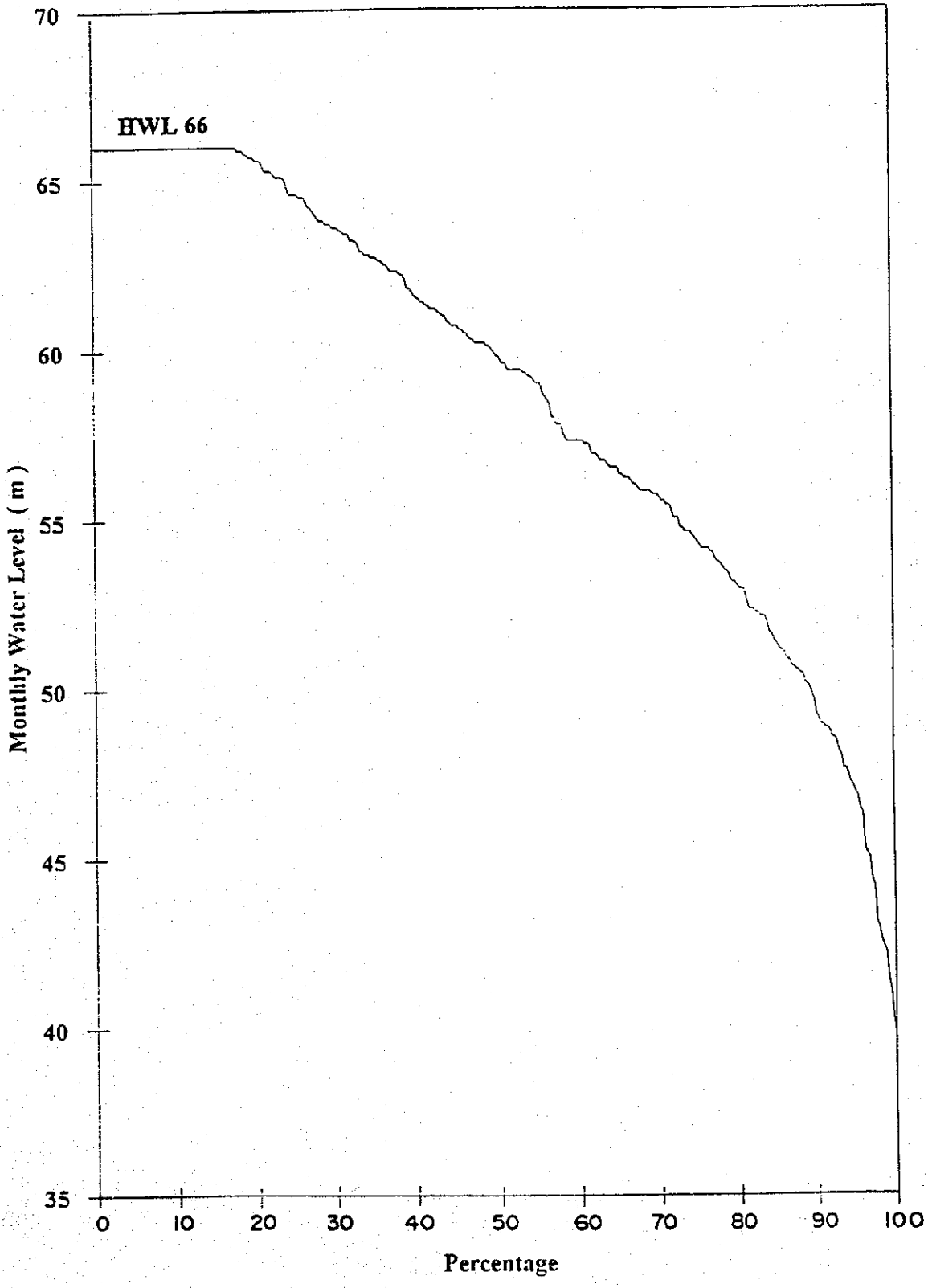
FIGURE 4.9

FIGURE 5.1



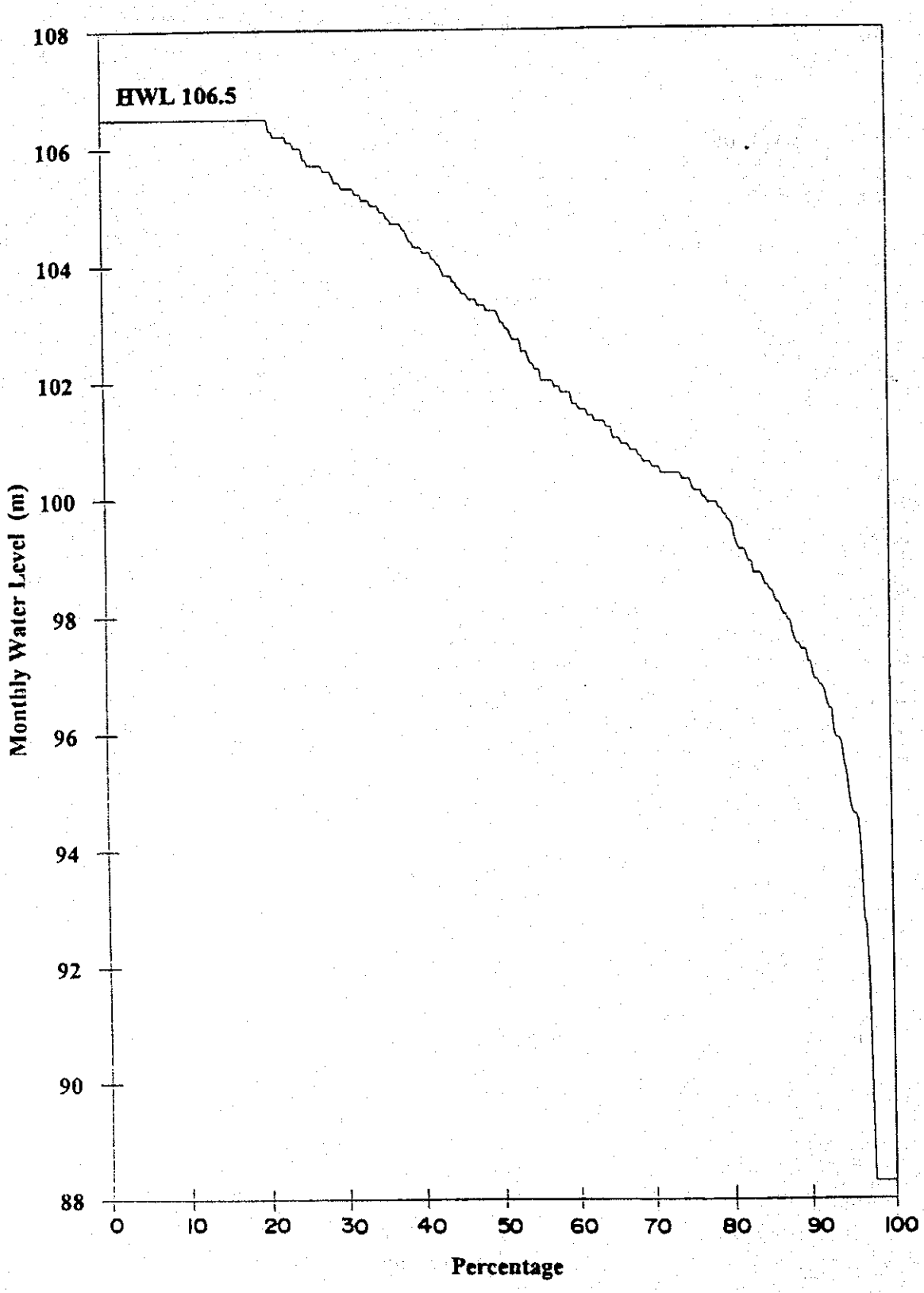
GOVERNMENT OF THE REPUBLIC OF ECUADOR CENTRO DE REHABILITACION DE MANABI (CRM) *THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS* JAPAN INTERNATIONAL COOPERATION AGENCY	TITLE Results of Integrated Reservoir Operation, Q_{EP} = 16 m^3/s (Reservoir Operation Curve)

FIGURE 5.2



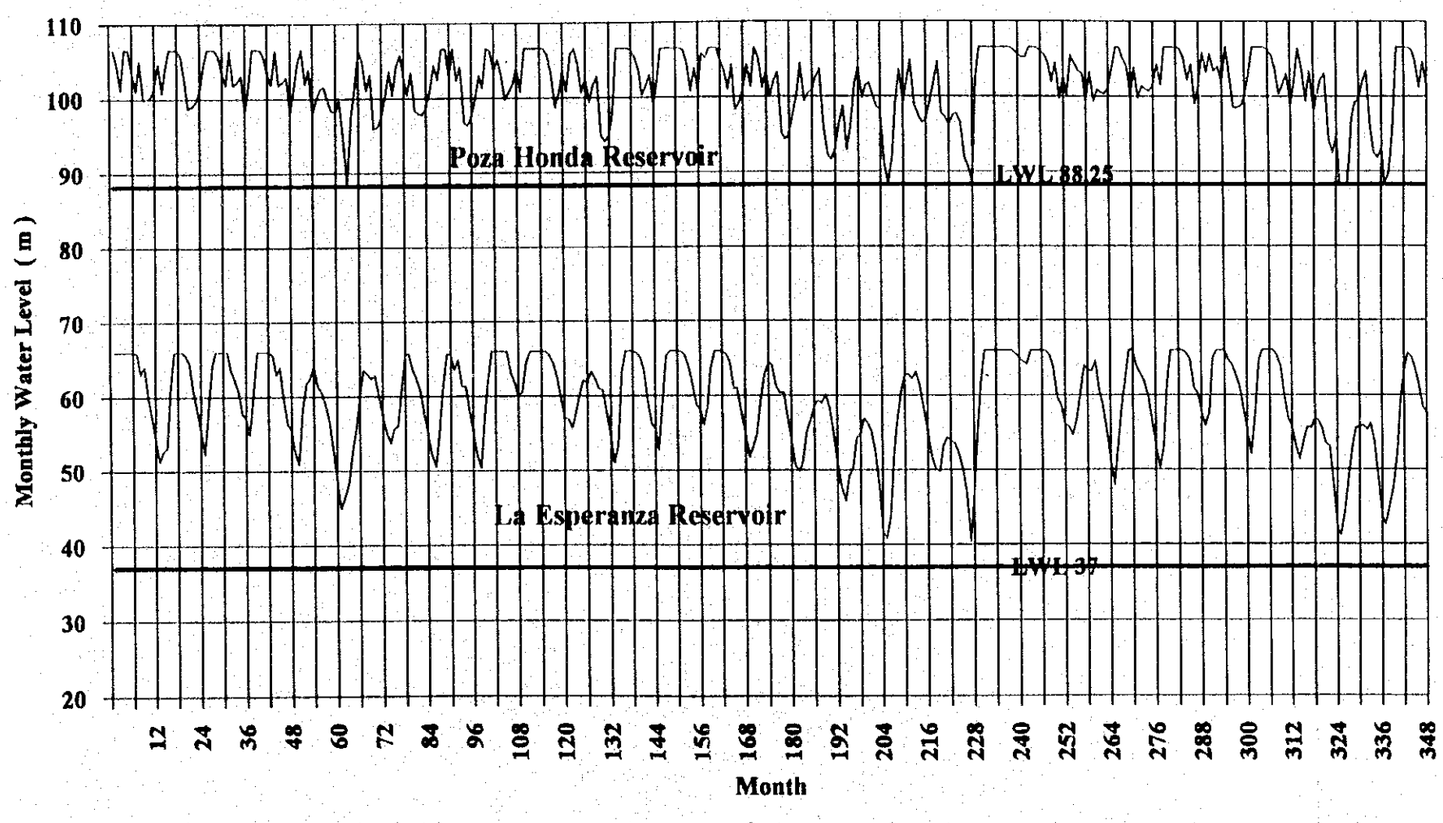
GOVERNMENT OF THE REPUBLIC OF ECUADOR CENTRO DE REHABILITACION DE MANABI (CRM) *THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS* JAPAN INTERNATIONAL COOPERATION AGENCY	TITLE Results of Integrated Reservoir Operation, Q_{EP} = 16 m^3/s (Duration Curve : La Espenranza)

FIGURE 5.3



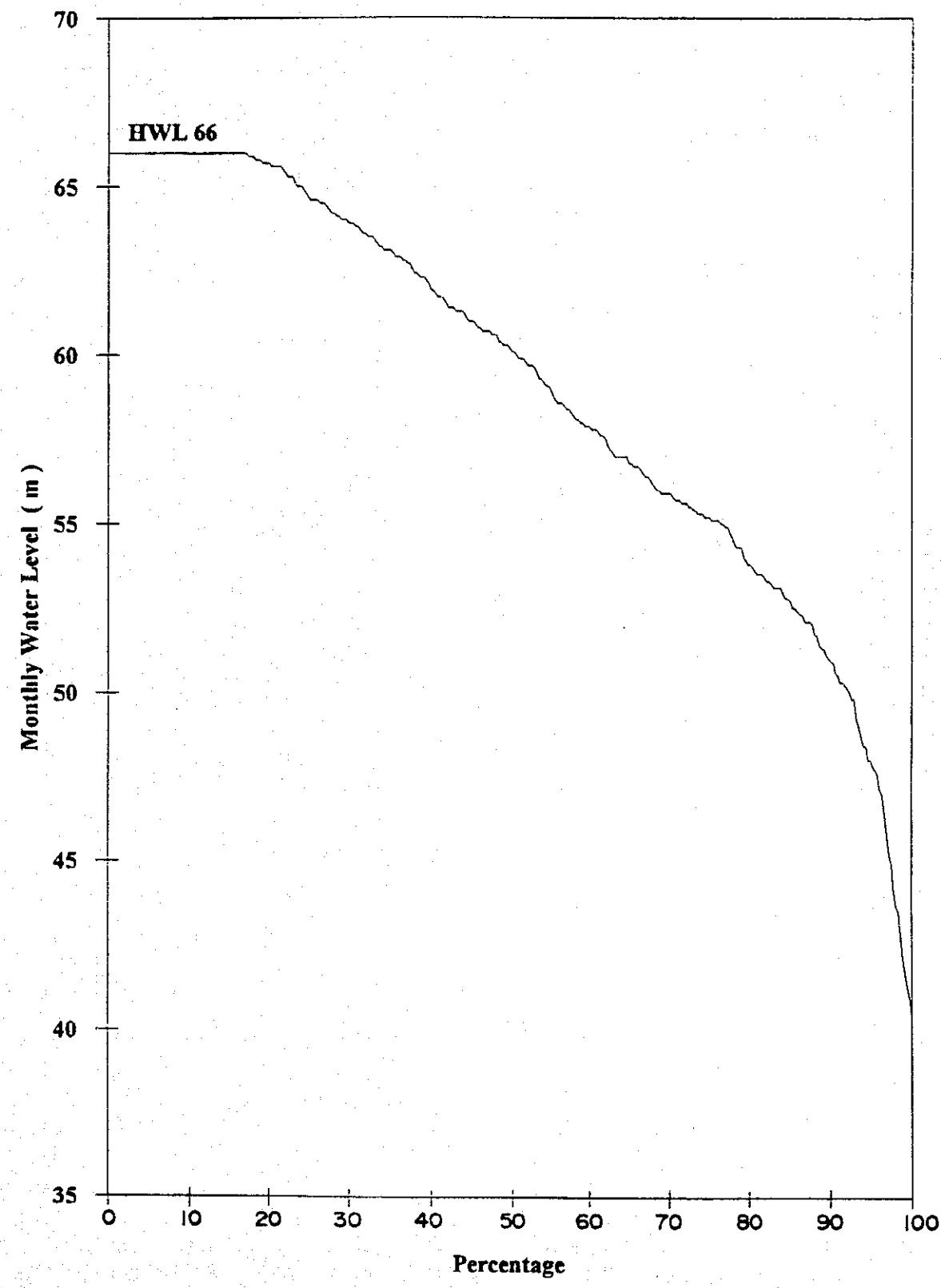
GOVERNMENT OF THE REPUBLIC OF ECUADOR CENTRO DE REHABILITACION DE MANABI (CRM) *THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS* JAPAN INTERNATIONAL COOPERATION AGENCY	TITLE Results of Integrated Reservoir Operation, Q_{EP} = 16 m^3/s (Duration Curve : Poza Honda)

FIGURE 5.4



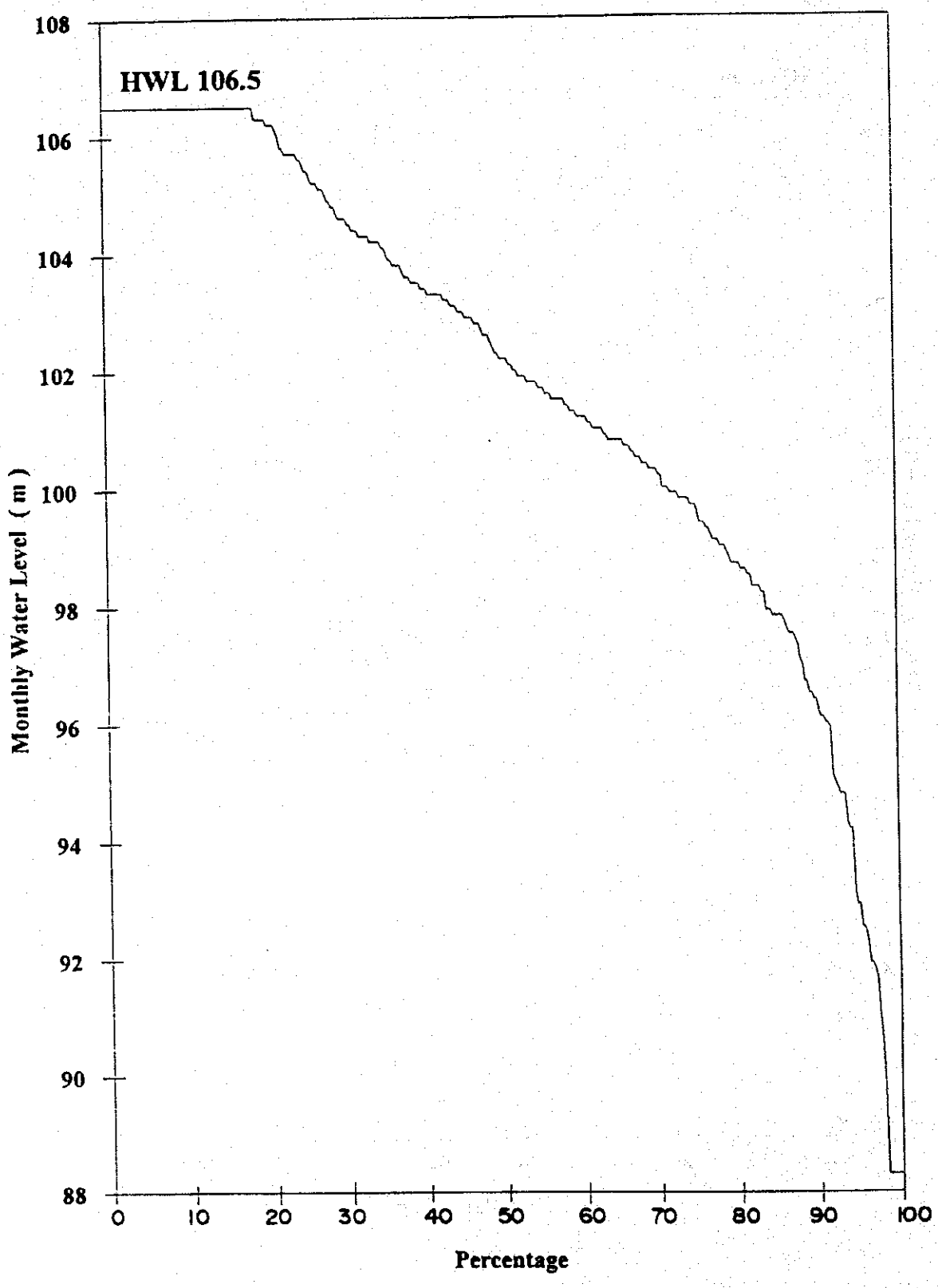
GOVERNMENT OF THE REPUBLIC OF ECUADOR CENTRO DE REHABILITACION DE MANABI (CRM) *THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS* JAPAN INTERNATIONAL COOPERATION AGENCY	TITLE Results of Integrated Reservoir Operation, Q_{EP} = 14 m^3/s (Reservoir Operation Curve)

FIGURE 5.5



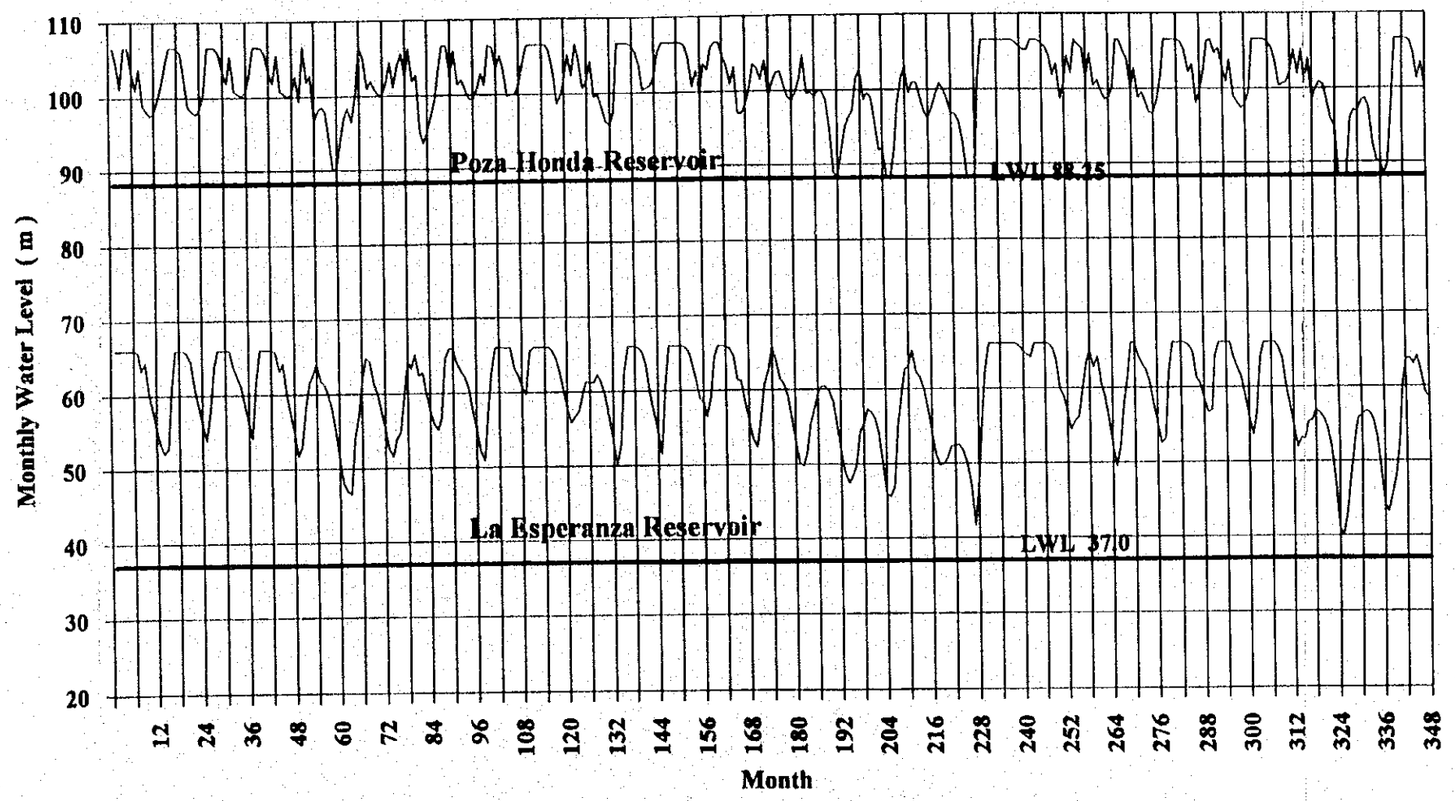
GOVERNMENT OF THE REPUBLIC OF ECUADOR CENTRO DE REHABILITACION DE MANABI (CRM) *THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS* JAPAN INTERNATIONAL COOPERATION AGENCY	TITLE Results of Integrated Reservoir Operation, Q_{EP} = 14 m^3/s (Duration Curve : La Espenranza)

FIGURE 5.6



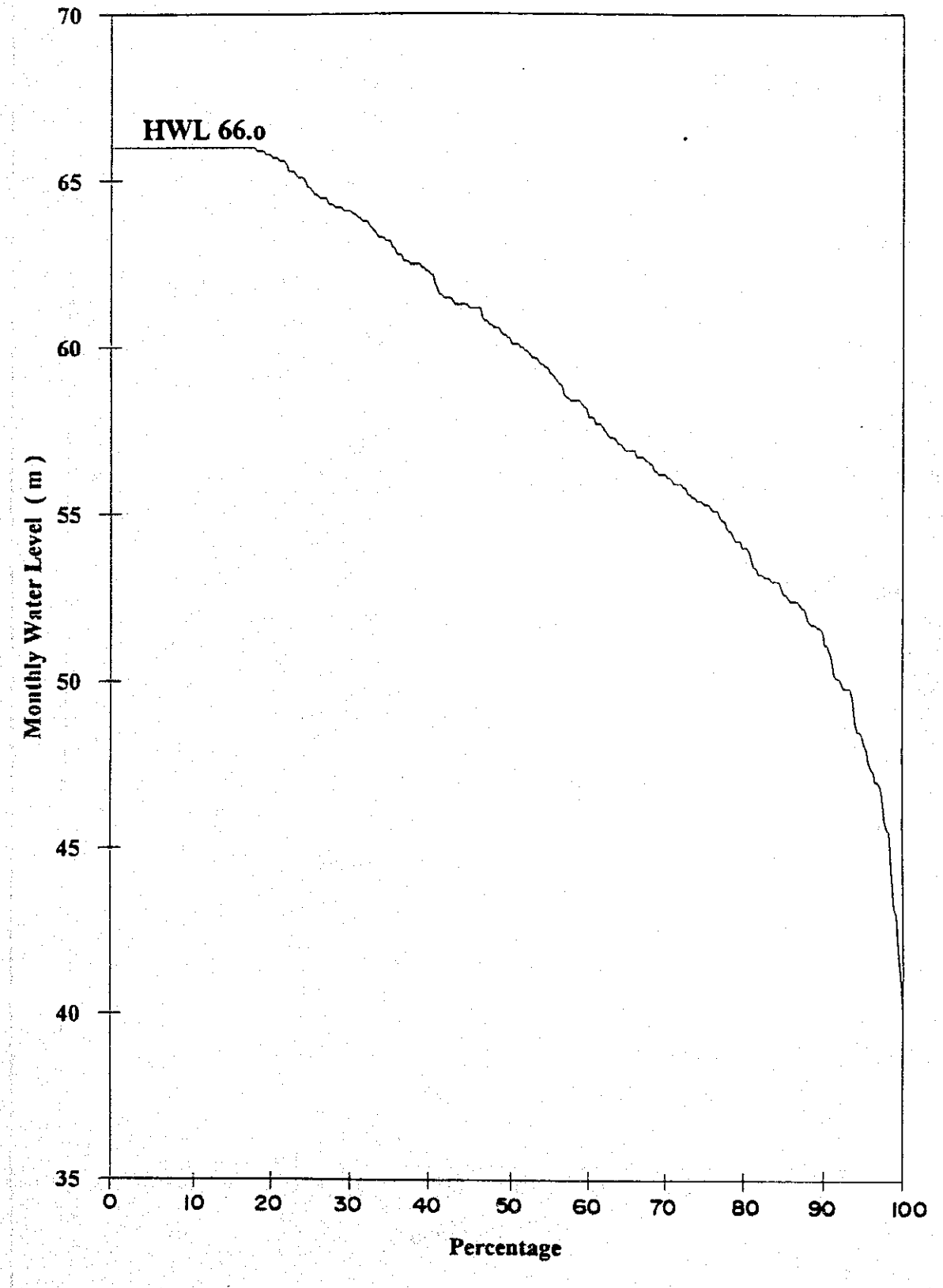
GOVERNMENT OF THE REPUBLIC OF ECUADOR CENTRO DE REHABILITACION DE MANABI (CRM) *THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS* JAPAN INTERNATIONAL COOPERATION AGENCY	TITLE Results of Integrated Reservoir Operation, Q_{EP} = 14 m^3/s (Duration Curve : Poza Honda)

FIGURE 5.7



GOVERNMENT OF THE REPUBLIC OF ECUADOR CENTRO DE REHABILITACION DE MANABI (CRM) *THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS* JAPAN INTERNATIONAL COOPERATION AGENCY	TITLE Results of Integrated Reservoir Operation, Q_{EP} = 12 m^3/s (Reservoir Operation Curve)

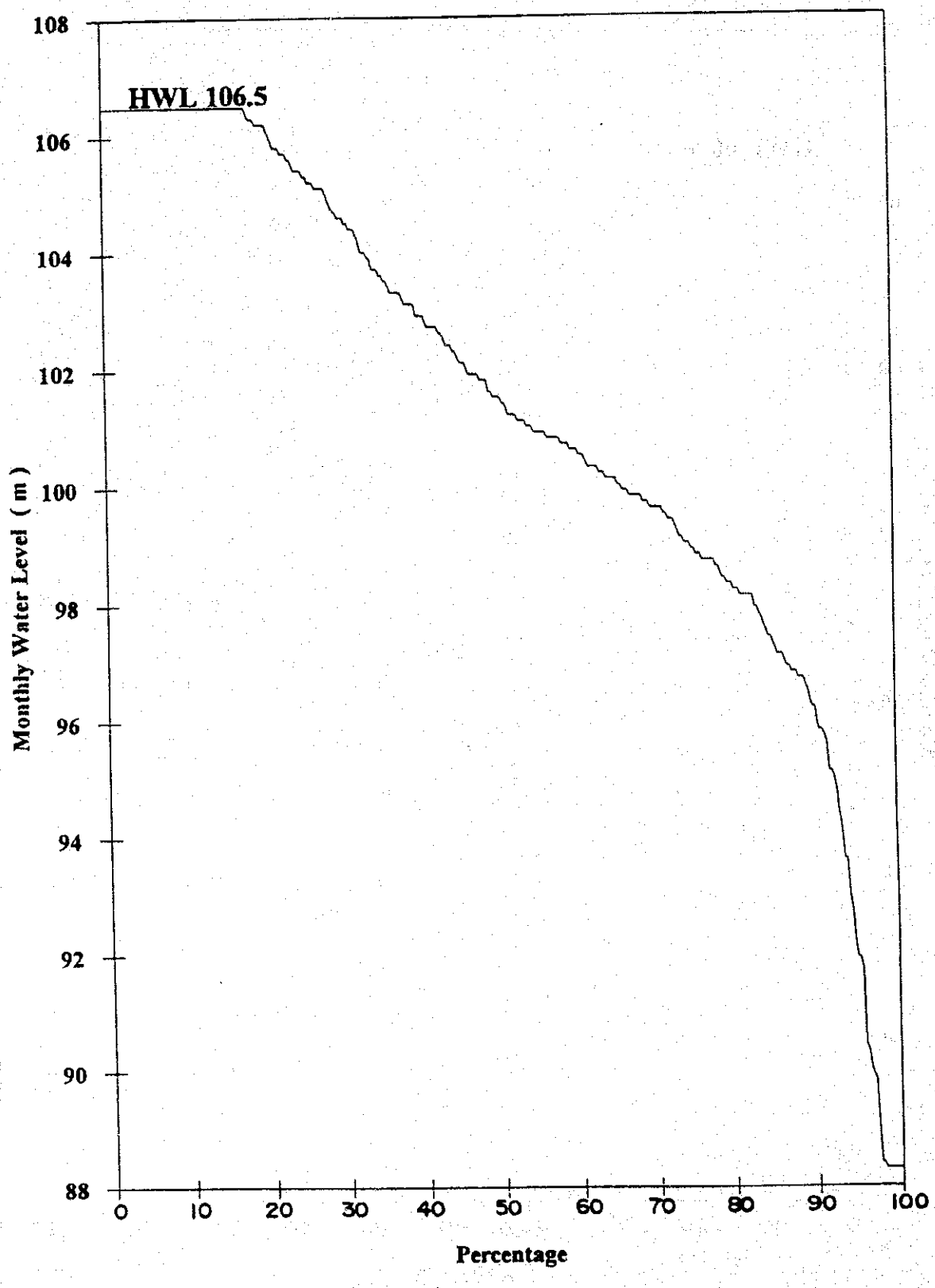
FIGURE 5.8



GOVERNMENT OF THE REPUBLIC OF ECUADOR
CENTRO DE REHABILITACION DE MANABI (CRM)
THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS
JAPAN INTERNATIONAL COOPERATION AGENCY

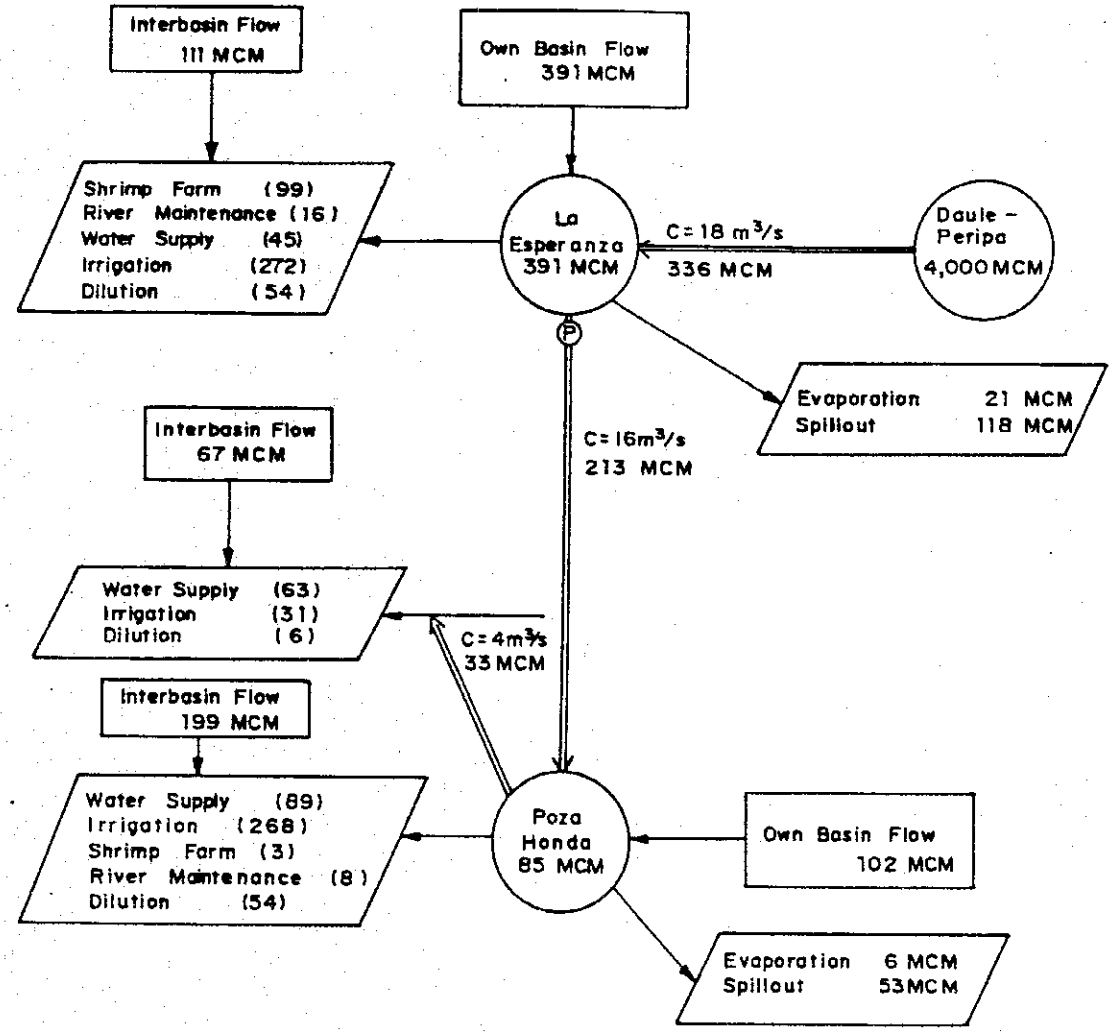
TITLE
Results of Integrated Reservoir Operation, Q_{EP} = 12 m^3/s
(Duration Curve : La Espenranza)

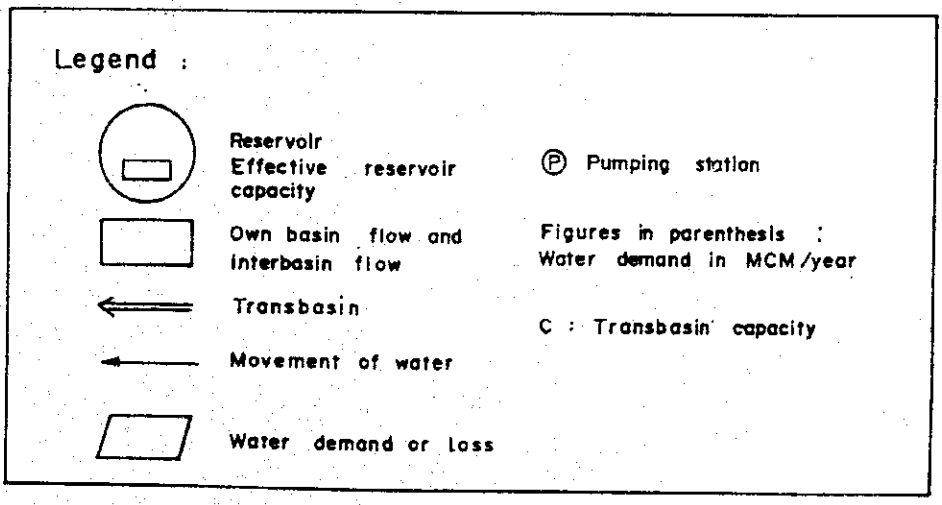
FIGURE 5.9



GOVERNMENT OF THE REPUBLIC OF ECUADOR CENTRO DE REHABILITACION DE MANABI (CRM) *THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS* JAPAN INTERNATIONAL COOPERATION AGENCY	TITLE Results of Integrated Reservoir Operation, Q_{EP} = 12 m^3/s (Duration Curve : Poza Honda)

FIGURE 5.10

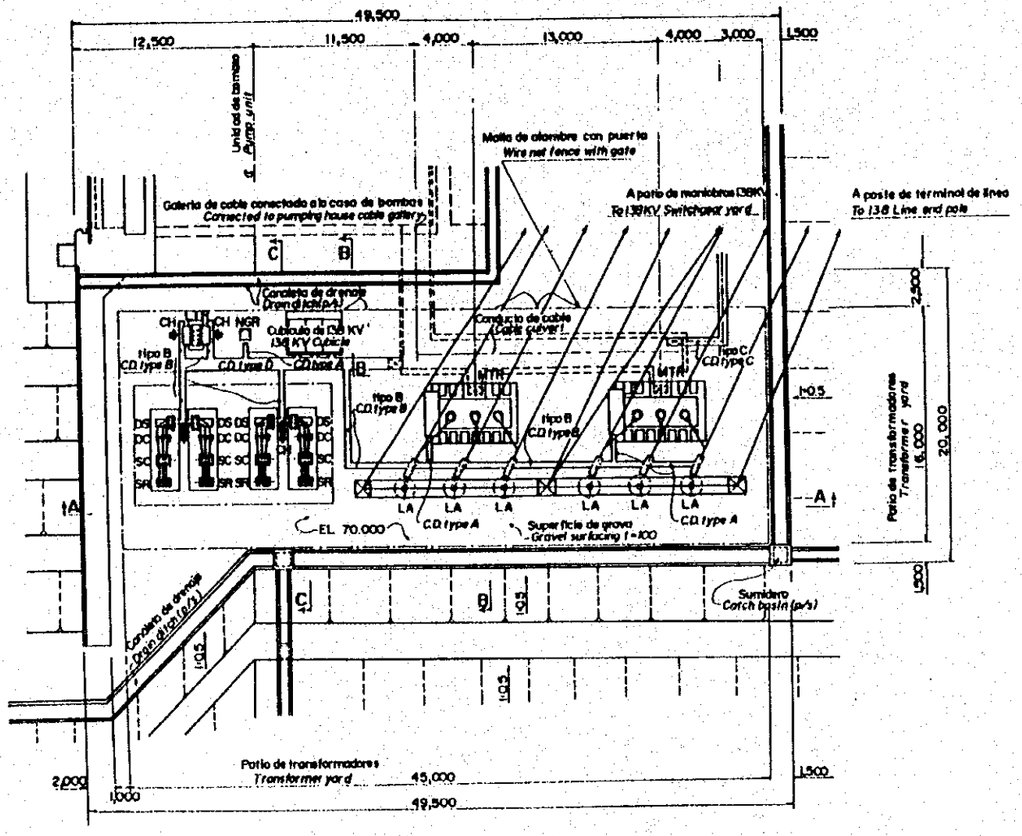




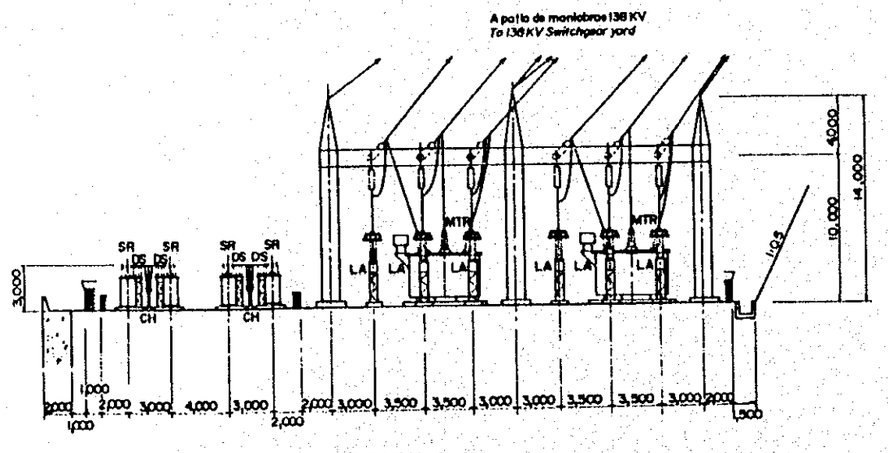
GOVERNMENT OF THE REPUBLIC OF ECUADOR
CENTRO DE REHABILITACION DE MANABI (CRM)
THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS
JAPAN INTERNATIONAL COOPERATION AGENCY

TITLE
Schematic Water Balance,
$Q_{EP} = 16\ m^3/s$

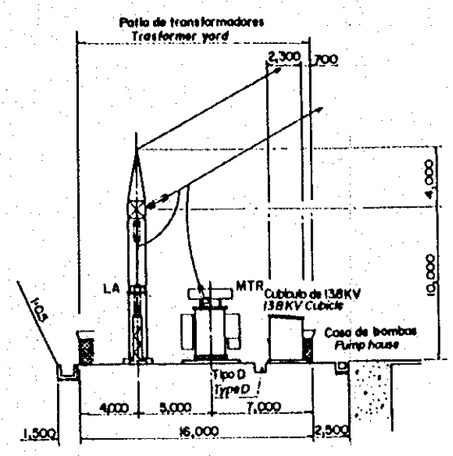
FIGURE 6.1



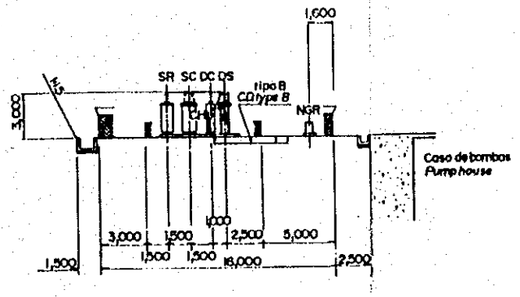
PLANTA
PLAN



SECCION A-A
SECTION A-A



SECCION B-B
SECTION B-B



SECCION C-C
SECTION C-C

Notas 1.- La ubicacion y dimensiones de los equipos seran ordenada por la Fiscalizacion de acuerdo con el diseño de los equipos

2.- Los equipos seran suministrados e instalados por otros

Notes 1.- Locations and dimensions of equipment foundations will be directed by the supervision in accordance with the final design of the equipments.

2.- The equipments shall be supplied and installed by others

	LEYENDA / *LEGEND*
DC	BOBINA DE DESCARGA / *DISCHARGE COIL*
DS	SECCIONADOR / *DISCONNECTING SWITCH*
LA	PARARRAYOS / *LIGHTNING ARRESTER*
MTR	TRANSFORMADOR PRINCIPAL / *MAIN TRANSFORMER*
SC	CONDENSADOR ESTATICO / *STATIC CONDENSER*
SR	REACTOR SERIE / *SERIES REACTOR*
CH	TERMINALES DE CABLE / *CABLE HEAD*
LTR	TRANSFORMADOR LOCAL / *LOCAL TRANSFORMER*
NGR	RESISTENCIA DE CONEXION DE TIERRA AL NEUTRO / *NEUTRAL GROUNDING RESISTOR*
CD	DUCTO DE CABLE / *CABLE DUCT*

GOVERNMENT OF THE REPUBLIC OF ECUADOR
CENTRO DE REHABILITACION DE MANABI (CRM)

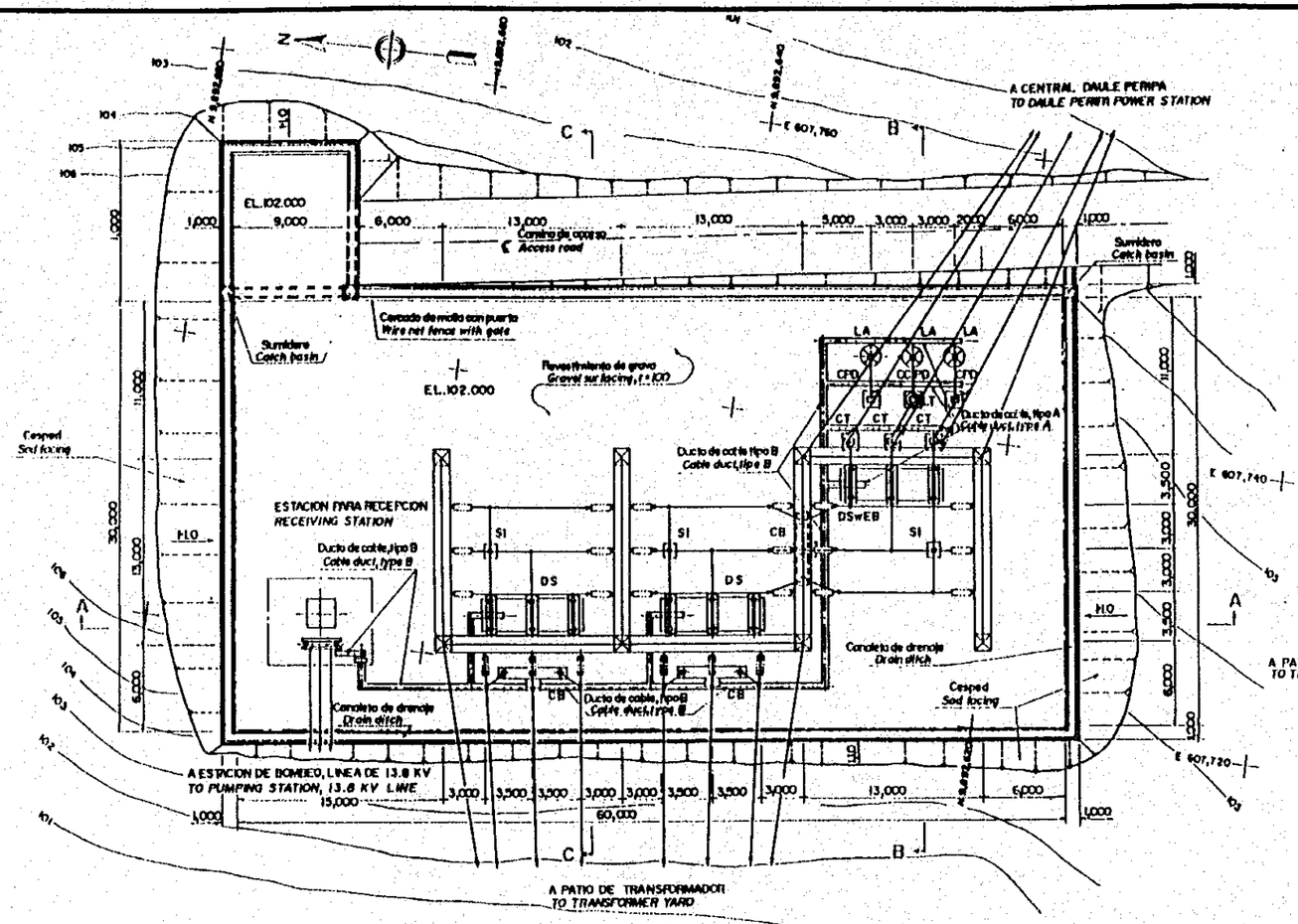
THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS

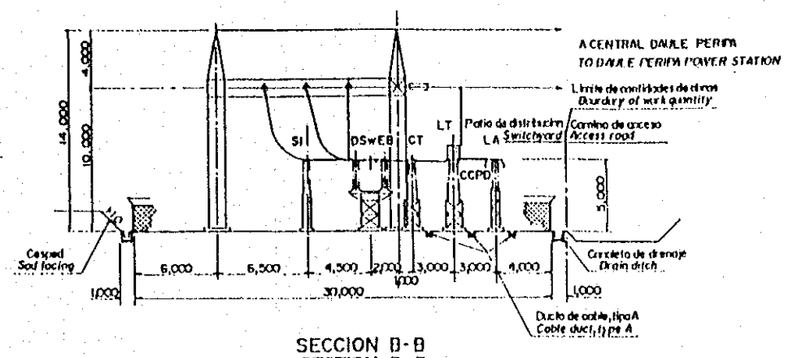
JAPAN INTERNATIONAL COOPERATION AGENCY

TITLE

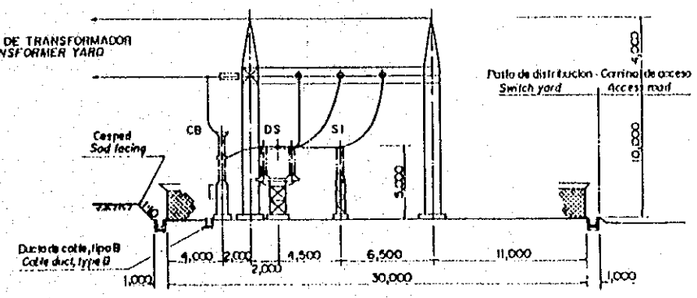
Arrangement of Severino Substation

FIGURE 6.2

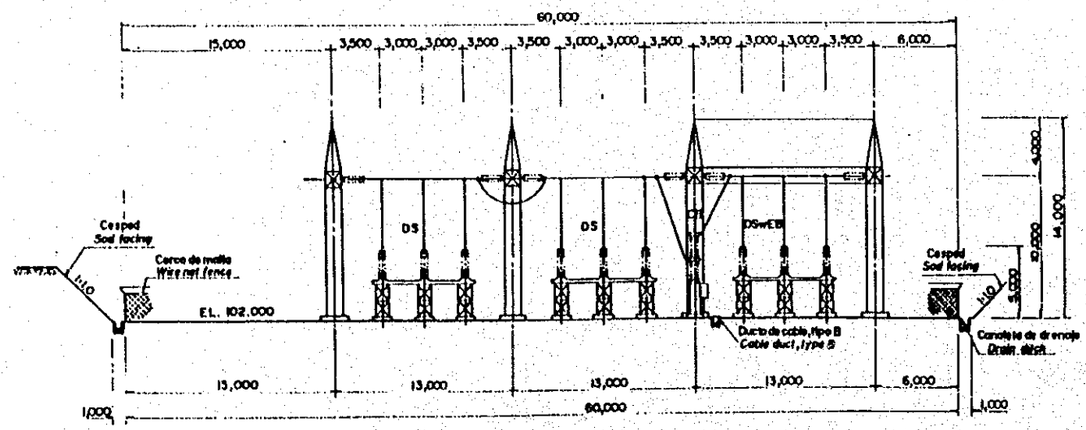




SECCION B-B
SECTION B-B



SECCION C-C
SECTION C-C



SECCION A-A
SECTION A-A

NOTAS

1.- Las ubicaciones y dimensiones de cimentacion para los equipos serán según lo ordene la Fiscalizacion de acuerdo con el diseño final de los mismos

2.- Los equipos serán suministrados e instalados por otro

NOTES

1.- *Locations and dimensions of equipment foundations will be directed by the supervision in accordance with the final desing of the equipments.*

2.- *The equipments shall be supplied and installed by others.*

LEYENDA / *LEGEND*	
CB	INTERRUPTOR AUTOMATICO / *CIRCUIT BREAKER*
CCPD	DIVISOR CAPACITIVO DE POTENCIAL PARA CARRIER / *COUPLING CAPACITOR POTENCIAL DEVICE*
CPD	DIVISOR CAPACITIVO DE POTENCIAL / *CAPACITOR TRANSFORMER*
CT	TRANSFORMADOR CORRIENTE / *CURRENT TRANSFORMER*
DS	SECCIONADOR / *DISCONNECTING SWITCH*
DSwEB	SECCIONADOR CON CUCHILLA DE PUESTA A TIERRA / *DISCONNECTING SWITCH WITH EARTH BLADE*
LA	PARARRAYOS / *LIGHTNING ARRESTER*
LT	TRAMPA DE ONDA / *LINE TRAP*
SI	AISLADOR SOPORTE / *SUPPORT INSULATOR*

GOVERNMENT OF THE REPUBLIC OF ECUADOR
CENTRO DE REHABILITACION DE MANABI (CRM)

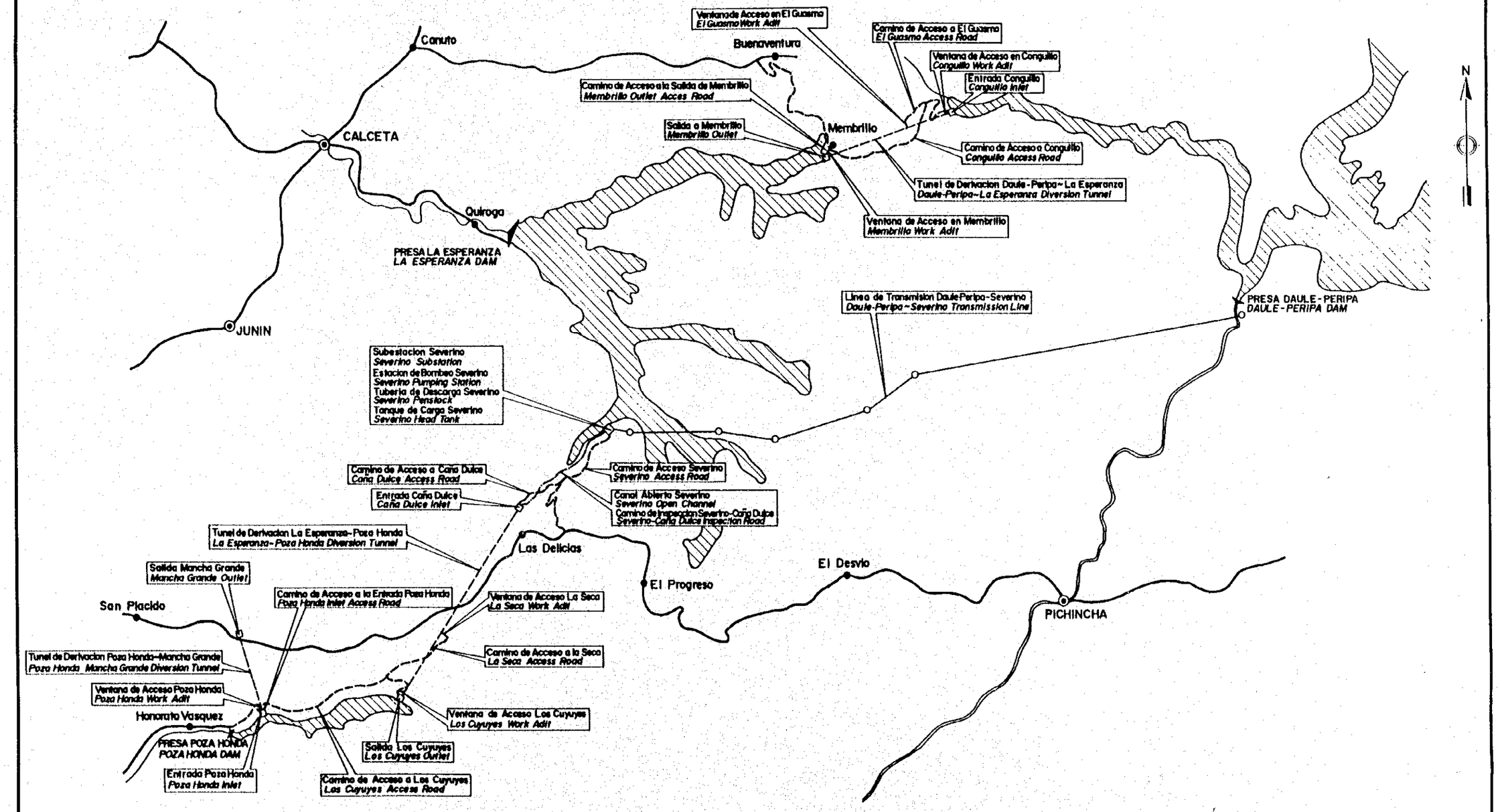
THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS

JAPAN INTERNATIONAL COOPERATION AGENCY

TITLE

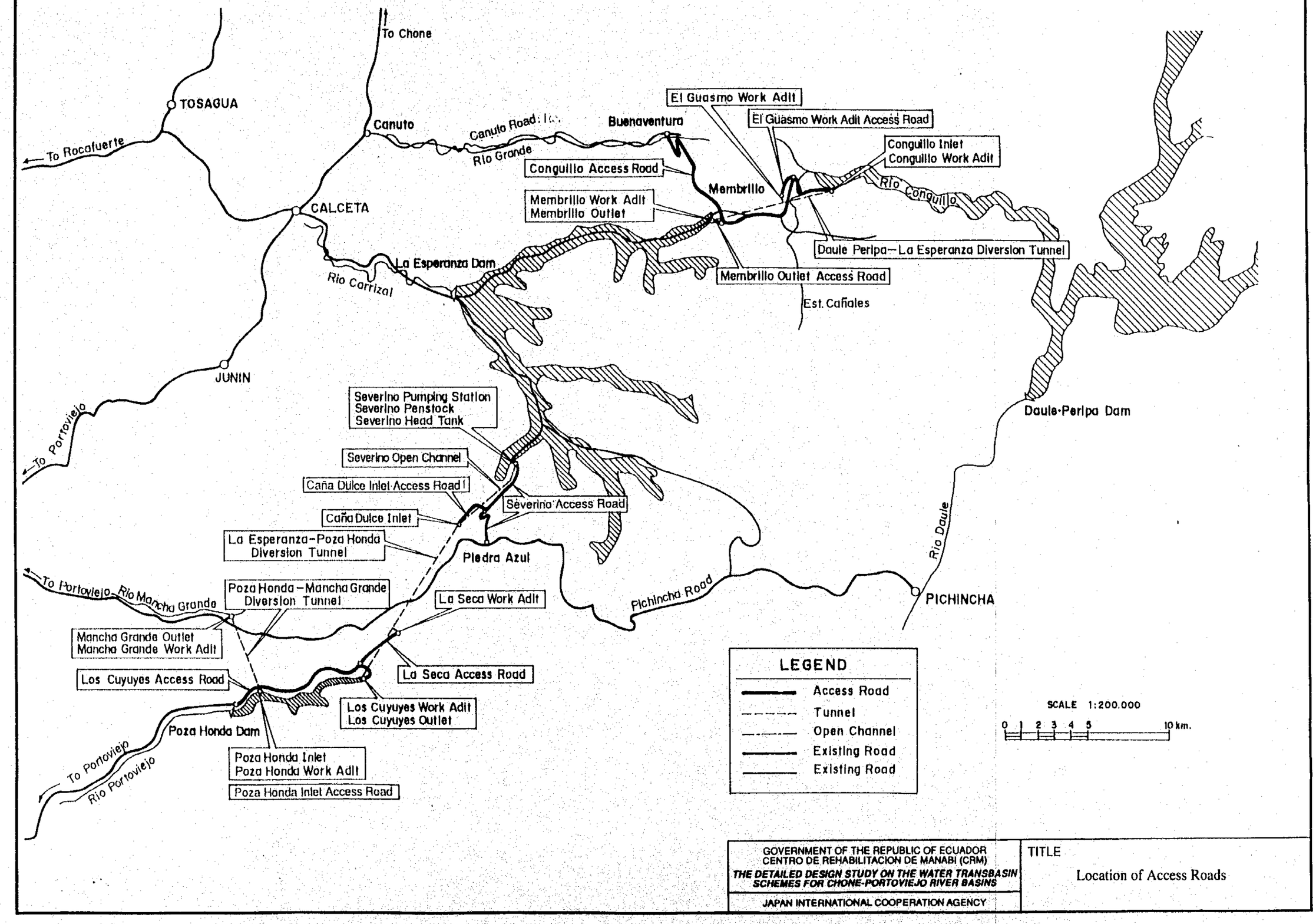
Layout of Outdoor Switchyard

FIGURE 6.3



GOVERNMENT OF THE REPUBLIC OF ECUADOR CENTRO DE REHABILITACION DE MANABI (CRM) ***THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS*** JAPAN INTERNATIONAL COOPERATION AGENCY	TITLE Route of Transmission Line

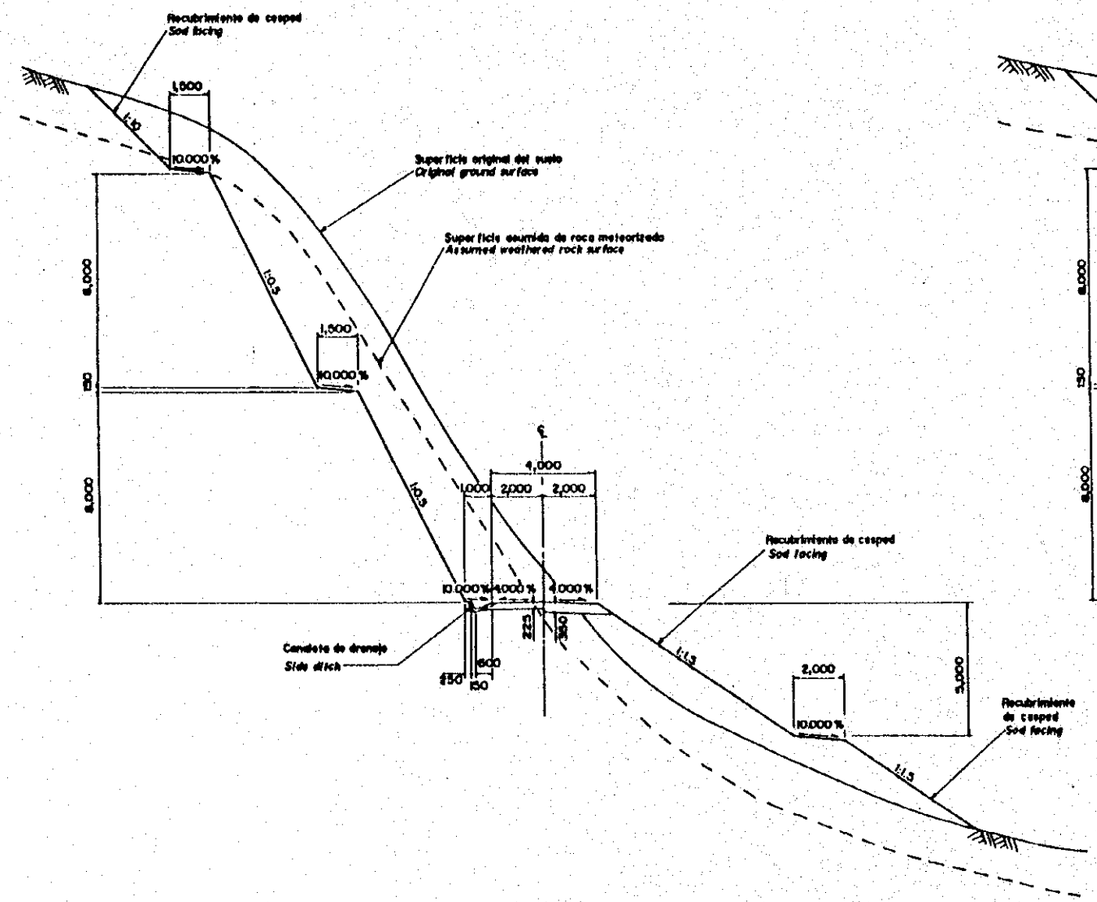
FIGURE 6.4



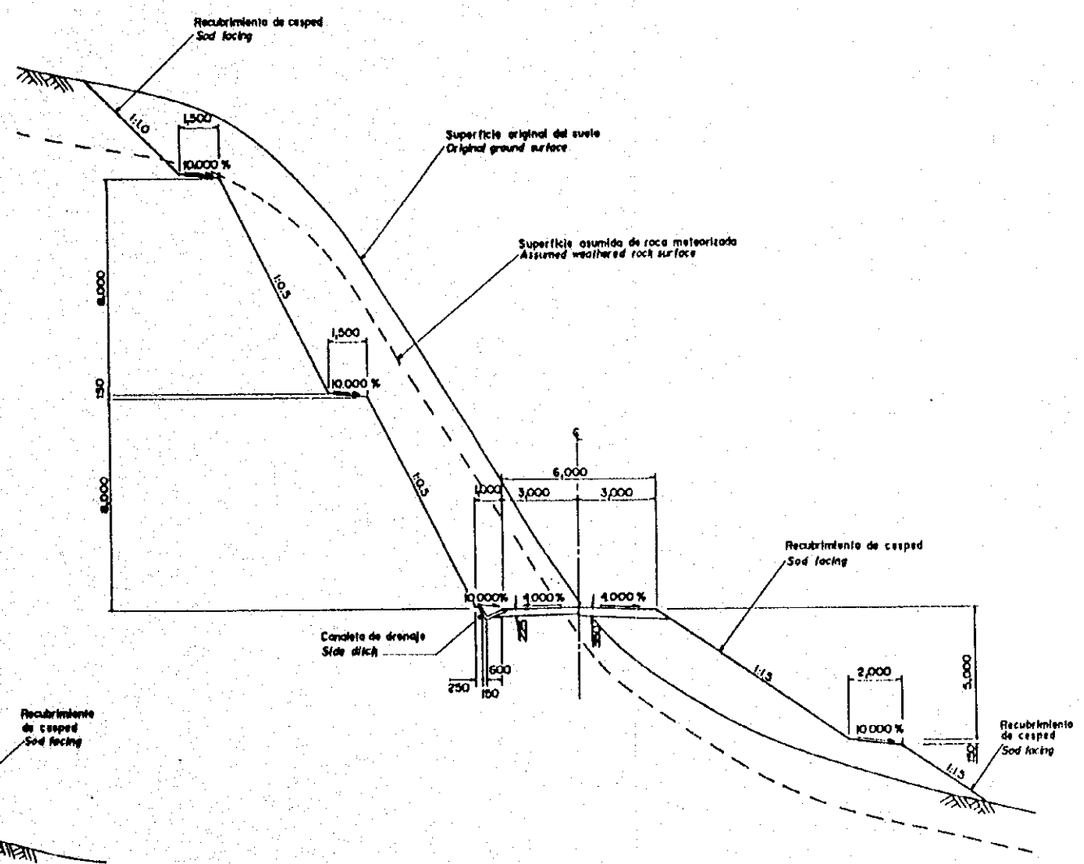
GOVERNMENT OF THE REPUBLIC OF ECUADOR
CENTRO DE REHABILITACION DE MANABI (CRM)
THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS
JAPAN INTERNATIONAL COOPERATION AGENCY

TITLE
Location of Access Roads

FIGURE 6.5



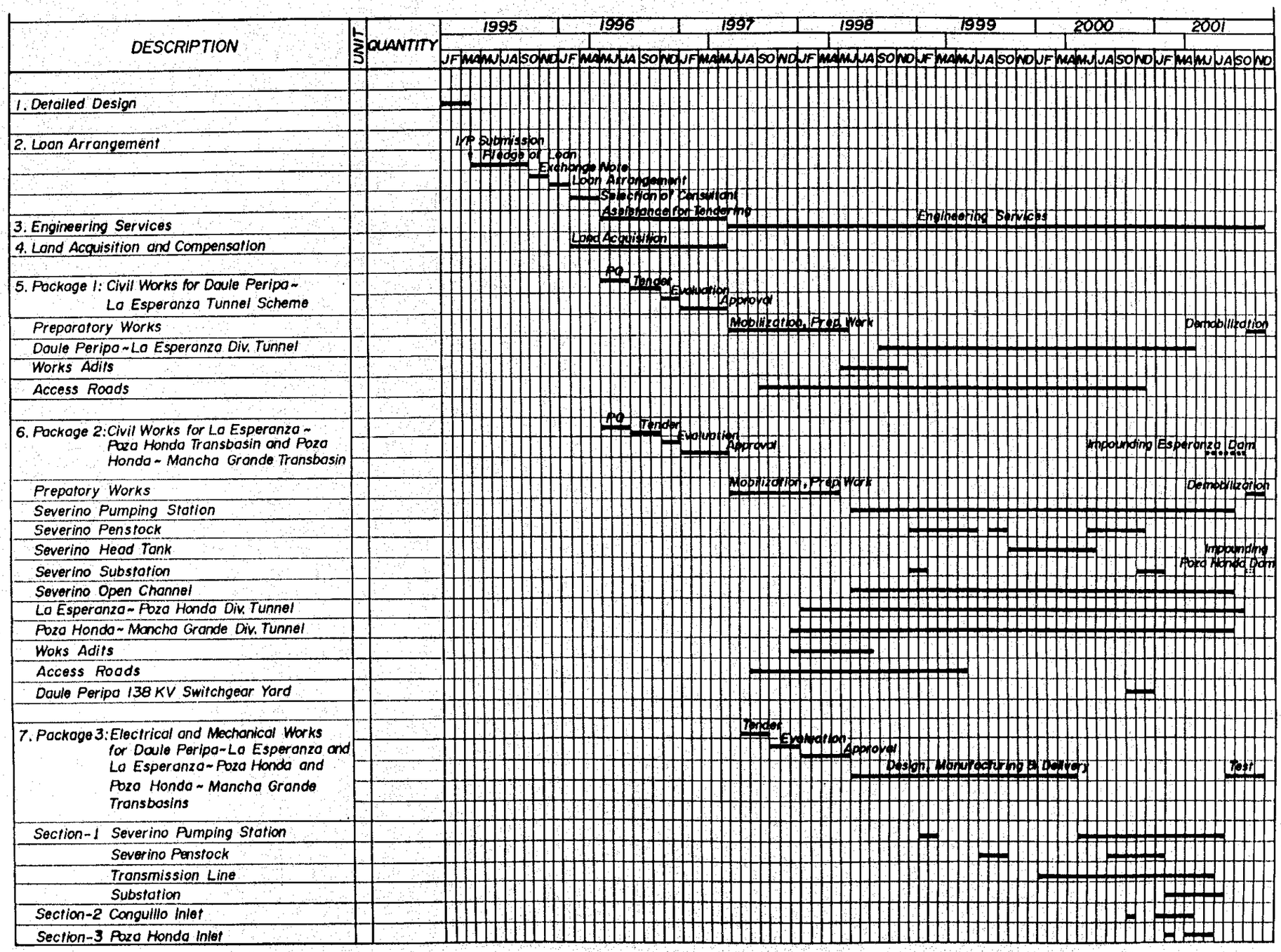
TEMPORARY ACCESS ROAD
(El Guasmo and La Seca Access Roads)



PERMANENT ACCESS ROAD

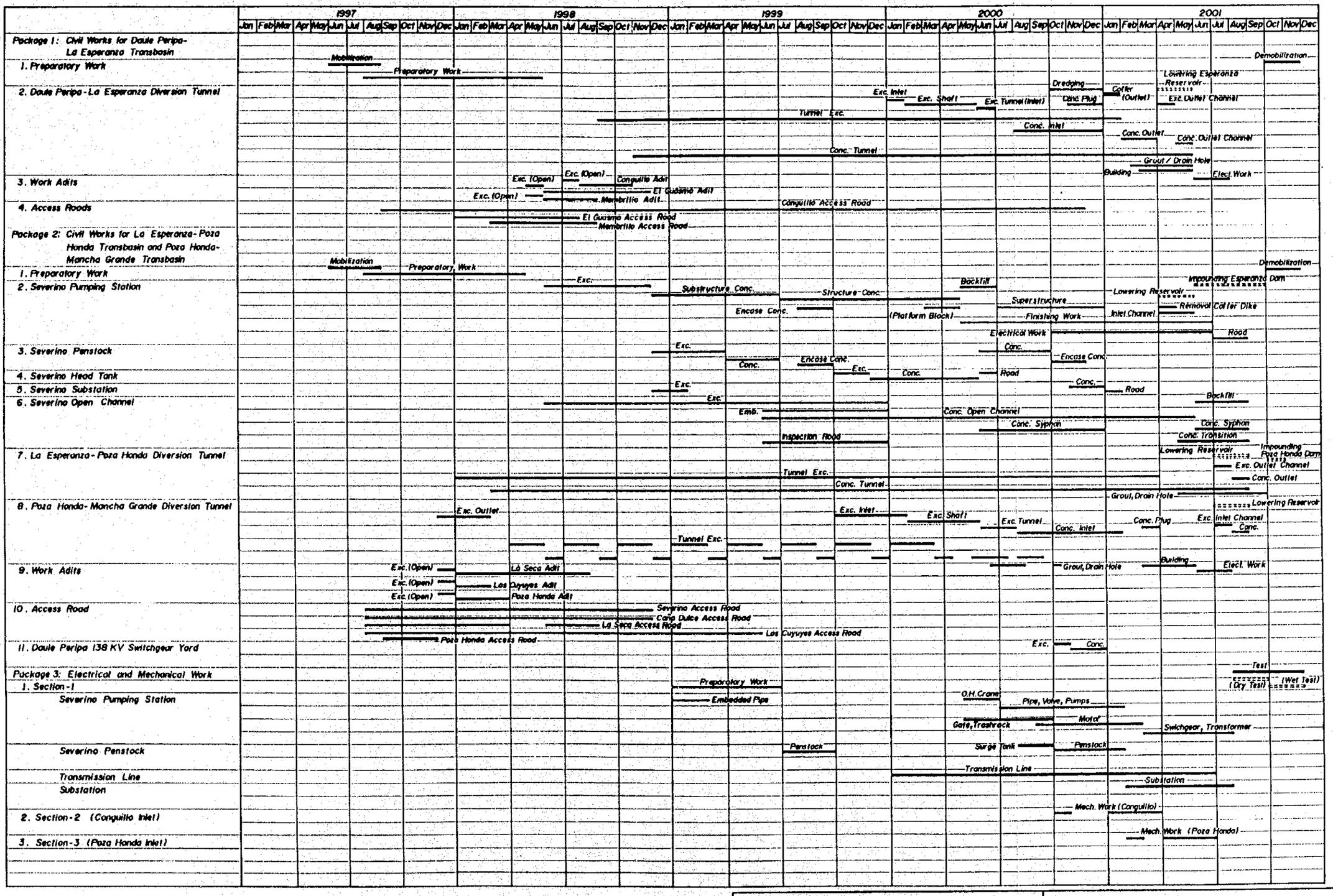
GOVERNMENT OF THE REPUBLIC OF ECUADOR CENTRO DE REHABILITACION DE MANABI (CRM) ***THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS*** JAPAN INTERNATIONAL COOPERATION AGENCY	TITLE Typical Cross Section of Access Roads

FIGURE 7.1



GOVERNMENT OF THE REPUBLIC OF ECUADOR CENTRO DE REHABILITACION DE MANABI (CRM) ***THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS*** JAPAN INTERNATIONAL COOPERATION AGENCY	TITLE Implementation Schedule

FIGURE 7.2



GOVERNMENT OF THE REPUBLIC OF ECUADOR
CENTRO DE REHABILITACION DE MANABI (CRM)

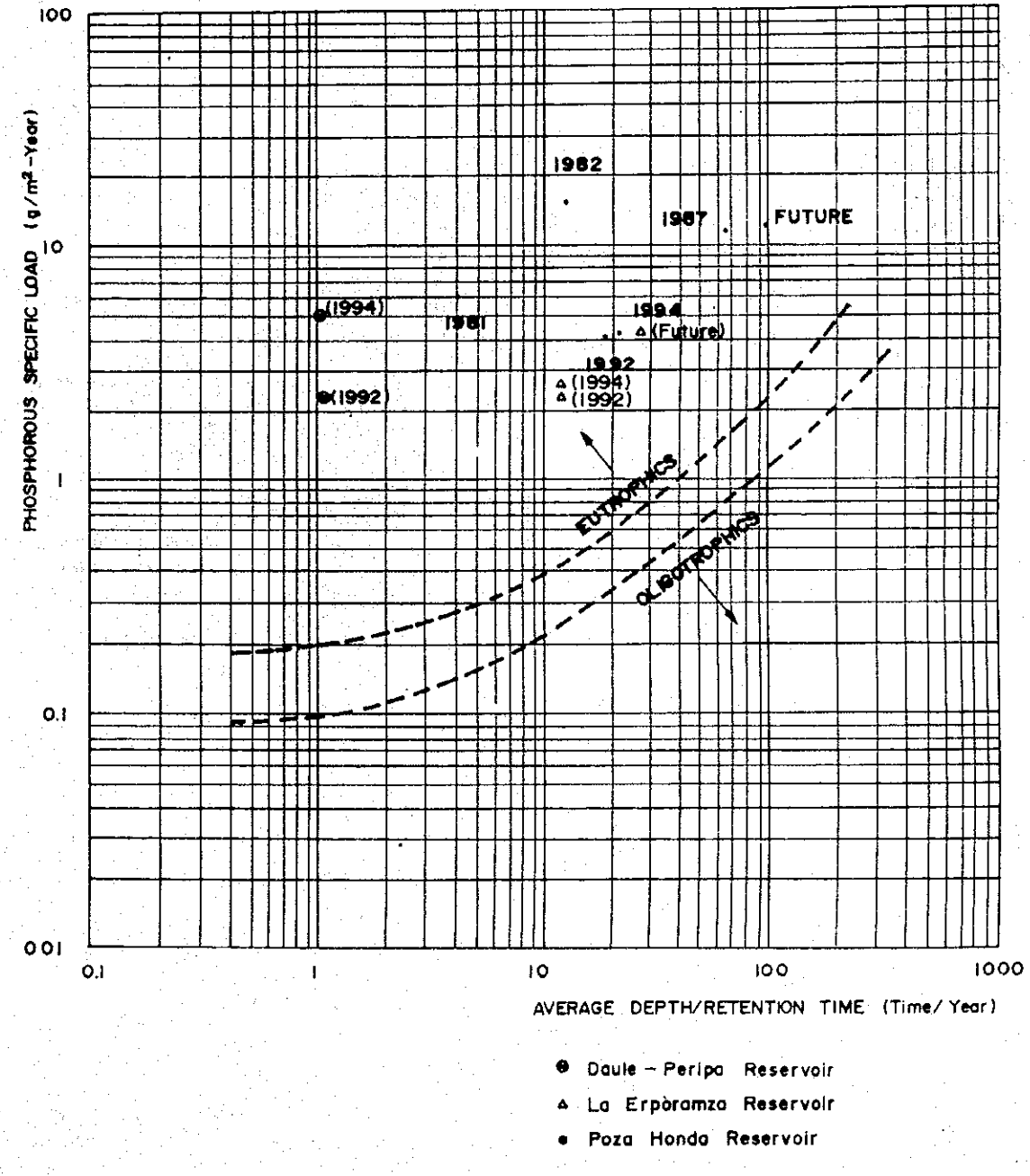
THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS

JAPAN INTERNATIONAL COOPERATION AGENCY

TITLE

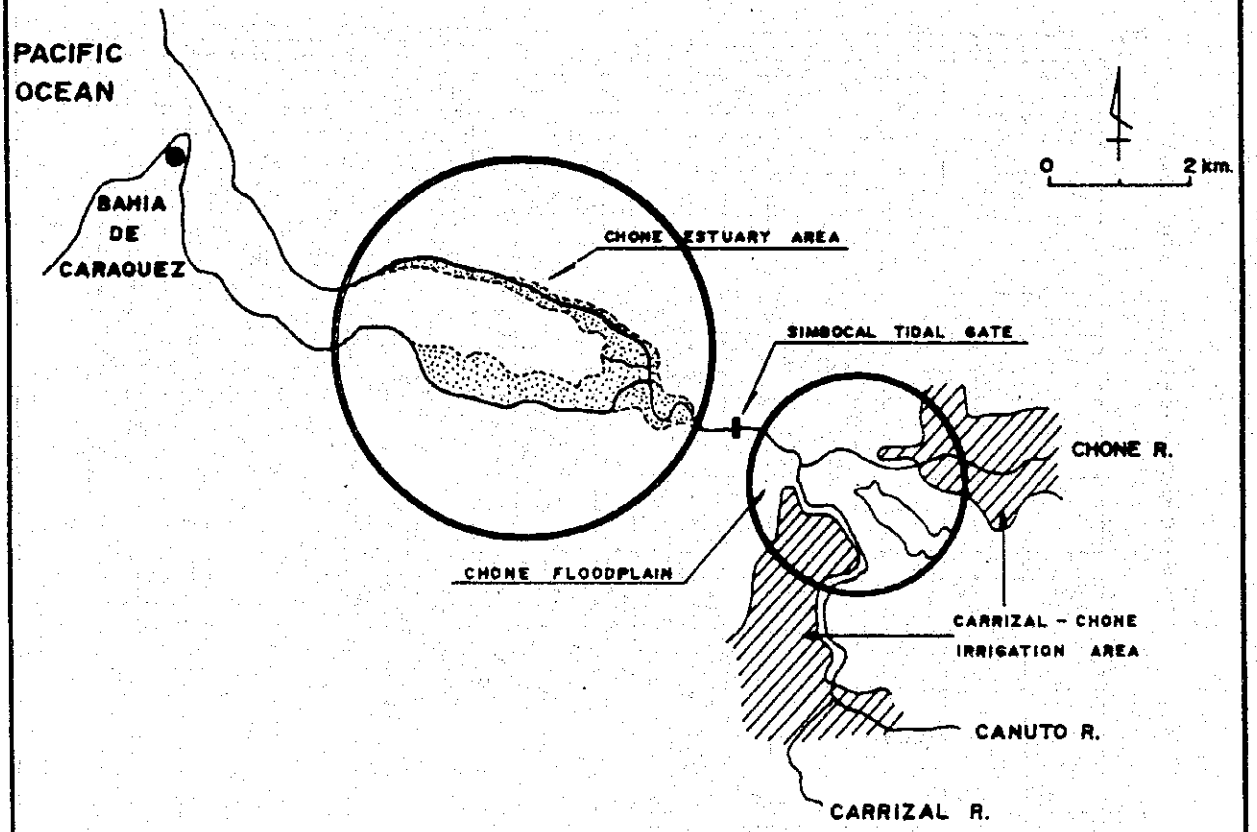
Construction Schedule

FIGURE 8.1



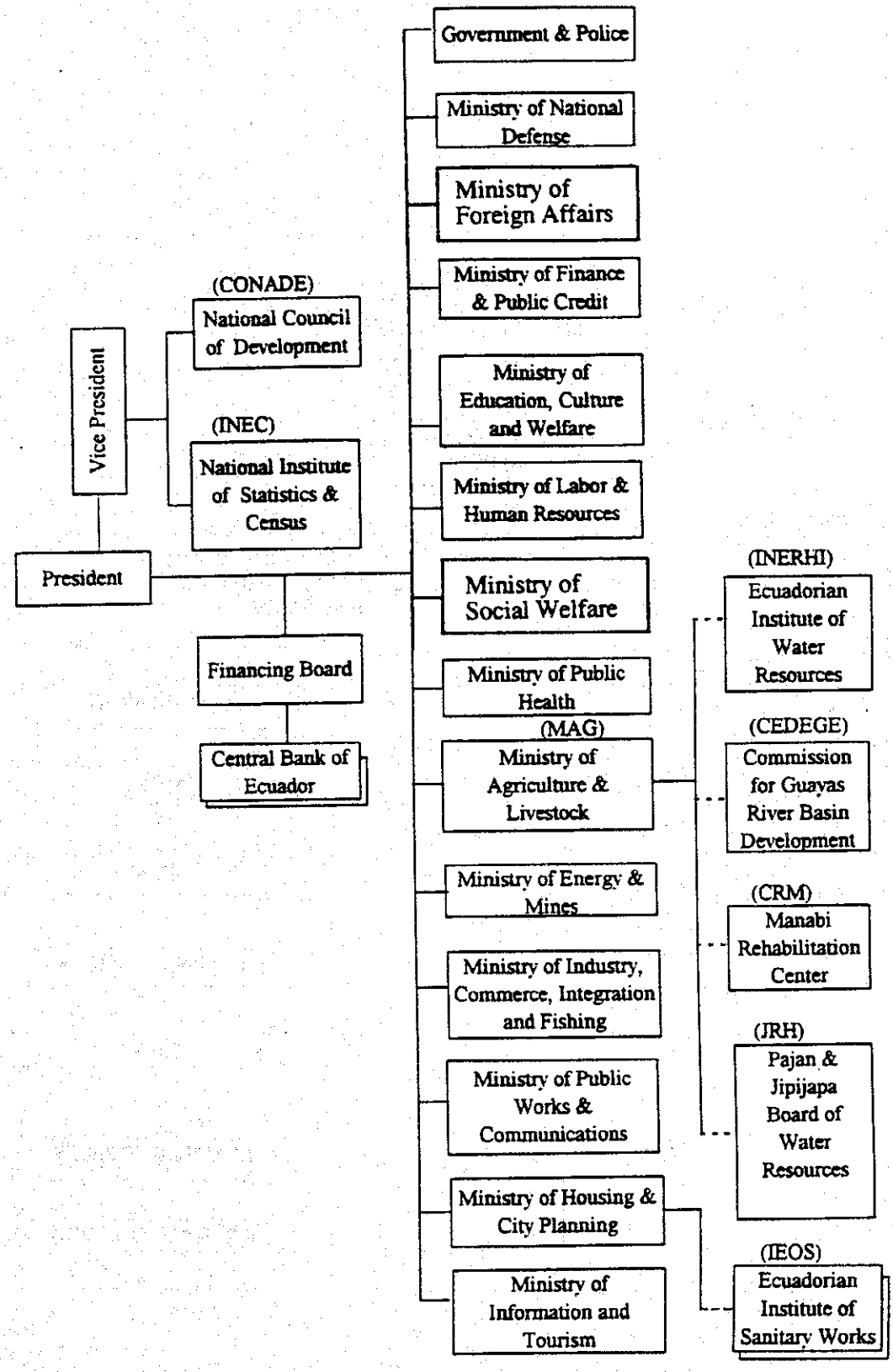
GOVERNMENT OF THE REPUBLIC OF ECUADOR CENTRO DE REHABILITACION DE MANABI (CRM) THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE PORTOVIEJO RIVER BASINS JAPAN INTERNATIONAL COOPERATION AGENCY	TITLE Eutrophication Trend for Poza-Honda and La Esperanza Reservoirs

FIGURE 8.2



GOVERNMENT OF THE REPUBLIC OF ECUADOR CENTRO DE REHABILITACION DE MANABI (CRM) *THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS* JAPAN INTERNATIONAL COOPERATION AGENCY	TITLE Ecological Area to be Protected

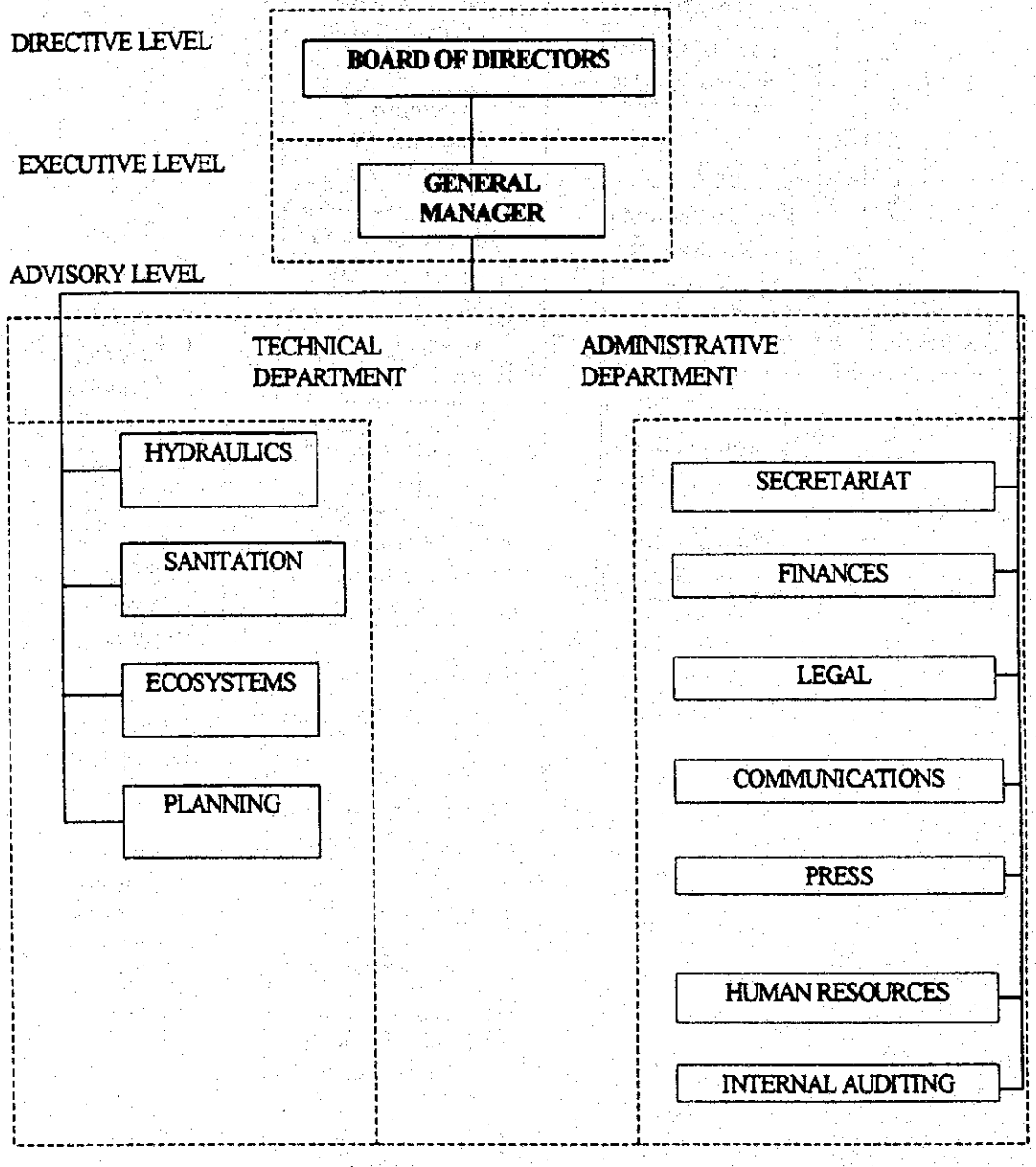
FIGURE 9.1



Source: Department of Regulation and Financial Consolidation for the General Supervision, Ecuador (Direccion de Normas y Consolidacion Financiera de la Contraloria General del Estado)

GOVERNMENT OF THE REPUBLIC OF ECUADOR CENTRO DE REHABILITACION DE MANABI (CRM) *THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS* JAPAN INTERNATIONAL COOPERATION AGENCY	TITLE Organization of Government of Ecuador

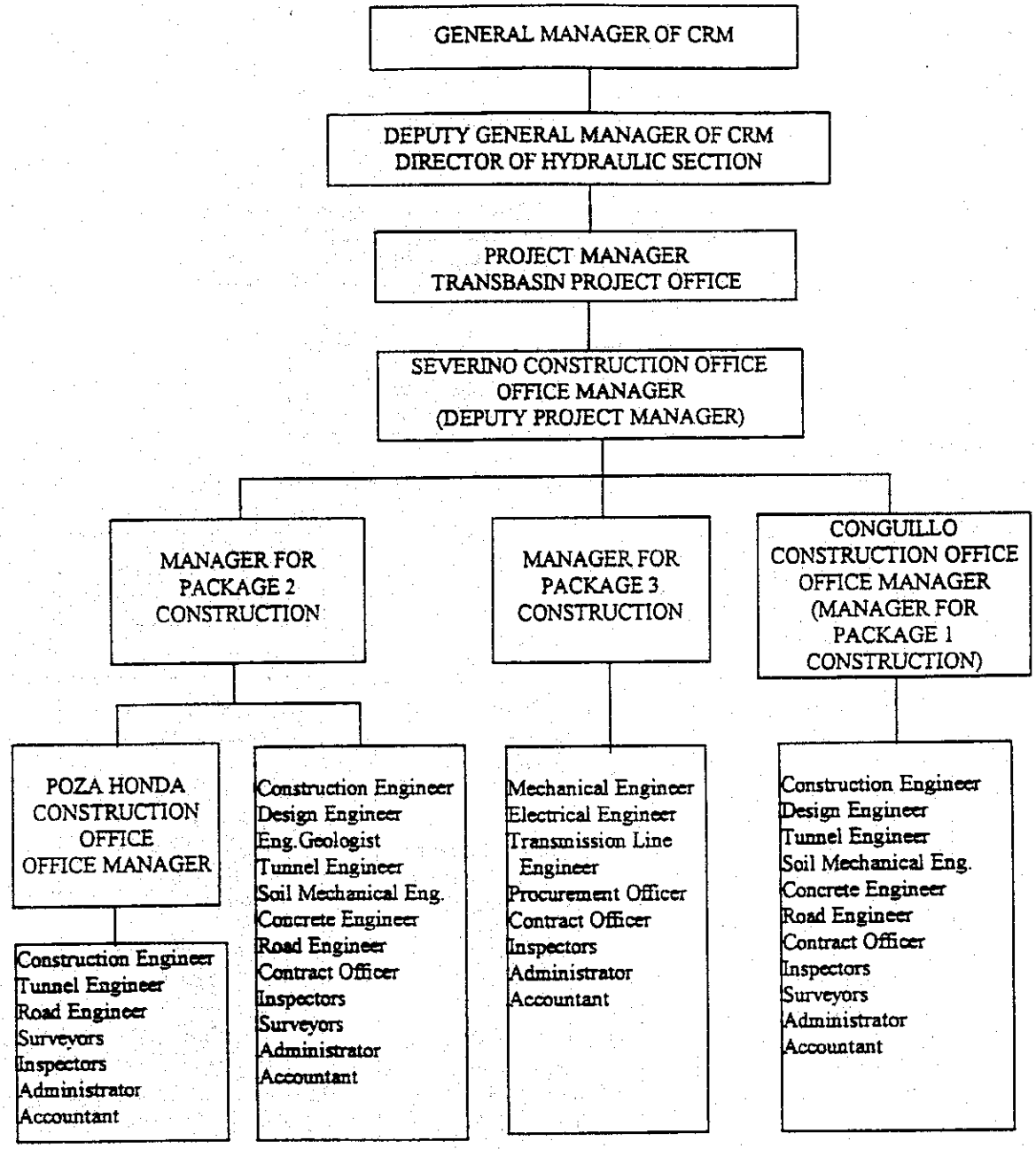
FIGURE 9.2



GOVERNMENT OF THE REPUBLIC OF ECUADOR
CENTRO DE REHABILITACION DE MANABI (CRM)
THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS
JAPAN INTERNATIONAL COOPERATION AGENCY

TITLE
Organization of CRM

FIGURE 9.3

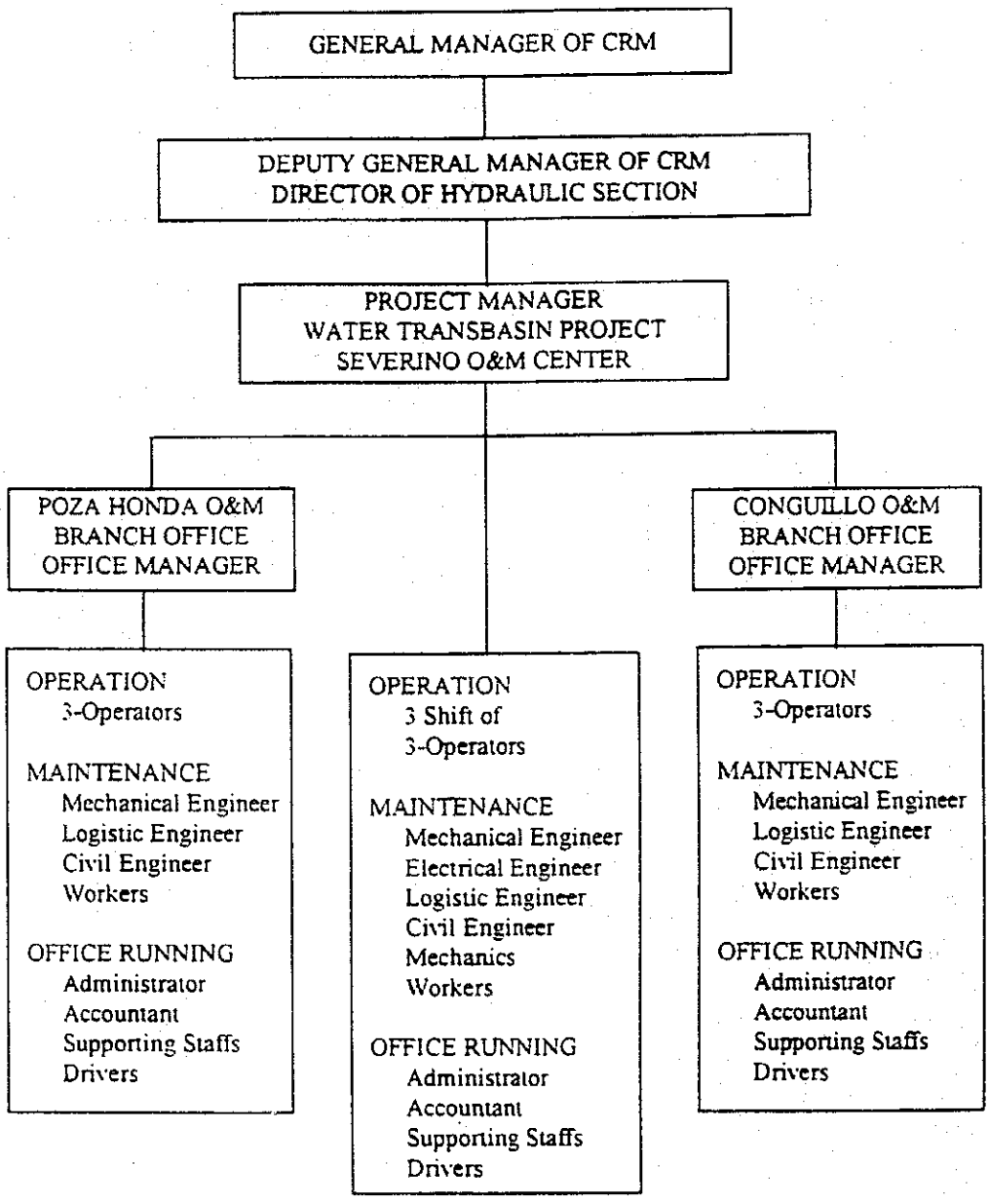


GOVERNMENT OF THE REPUBLIC OF ECUADOR
CENTRO DE REHABILITACION DE MANABI (CRM)
THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS
JAPAN INTERNATIONAL COOPERATION AGENCY

TITLE

Project Organization during Construction

FIGURE 9.4

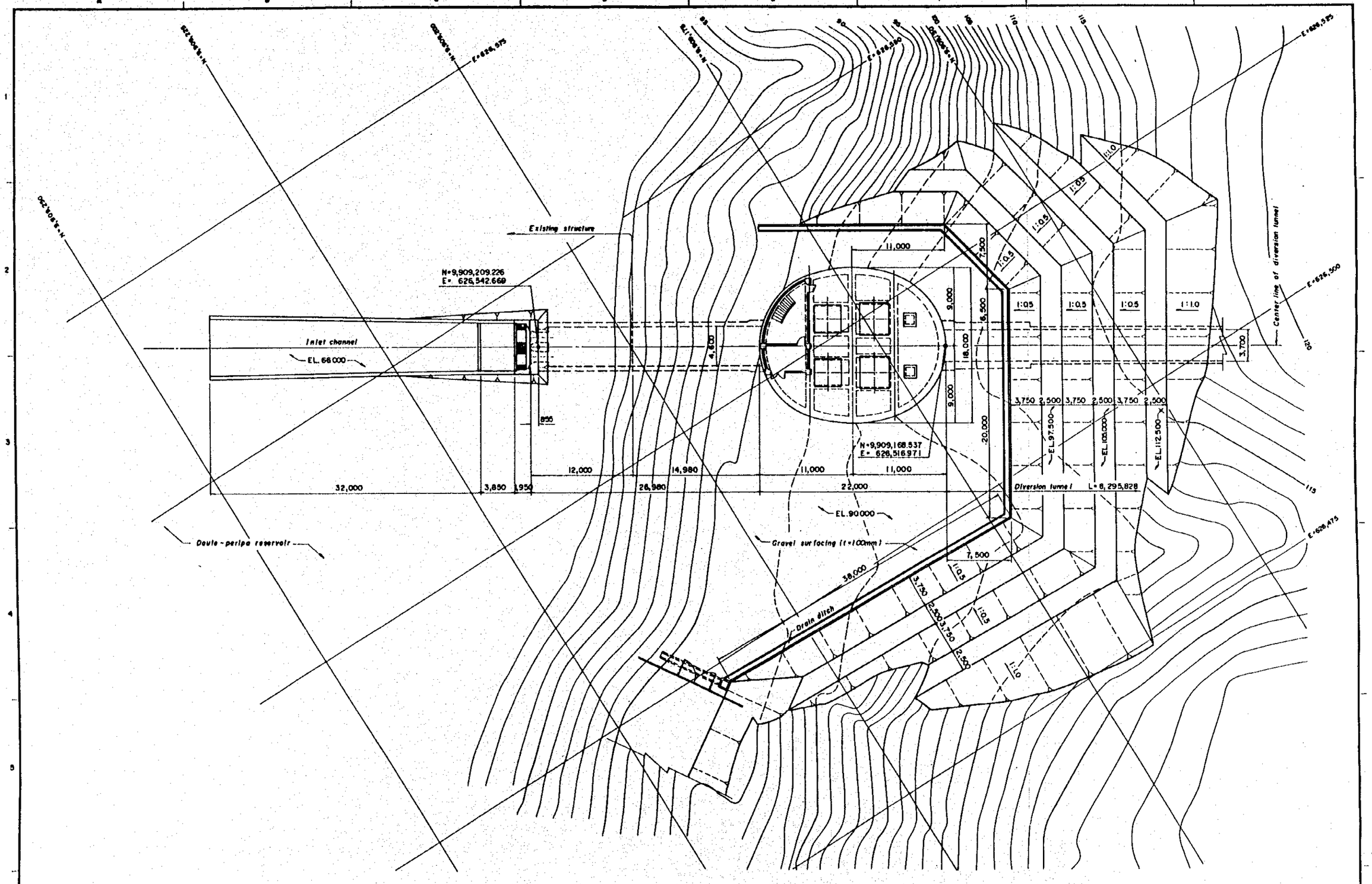


GOVERNMENT OF THE REPUBLIC OF ECUADOR CENTRO DE REHABILITACION DE MANABI (CRM) *THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS* JAPAN INTERNATIONAL COOPERATION AGENCY	TITLE Project Organization during O&M

List of Drawings

List of Drawings (cont'd)

Dwg. 6.28	Poza Honda- Mancha Grande Diversion Tunnel Tunnel Typical Cross Sections
Dwg. 6.29	Mancha Grande Outlet, Plan (1/2)
Dwg. 6.30	Mancha Grande Outlet, Plan (2/2)
Dwg. 6.31	Mancha Grande Outlet, Profile



PLAN

ESCALA A / SCALE A 0 10 20m

ESCALA B / SCALE B

REV. Nº	REVISADO	APROBADO	FECHA

CRM
CENTRO DE REHABILITACION DE MANABI

Estudio de Diseño Detallado de los Trasvases de Agua para los Cursos de Los Ríos Chone - Portoviejo
The Detailed Design Study on the Water Transbasin Schemes for Chone - Portoviejo River Basins

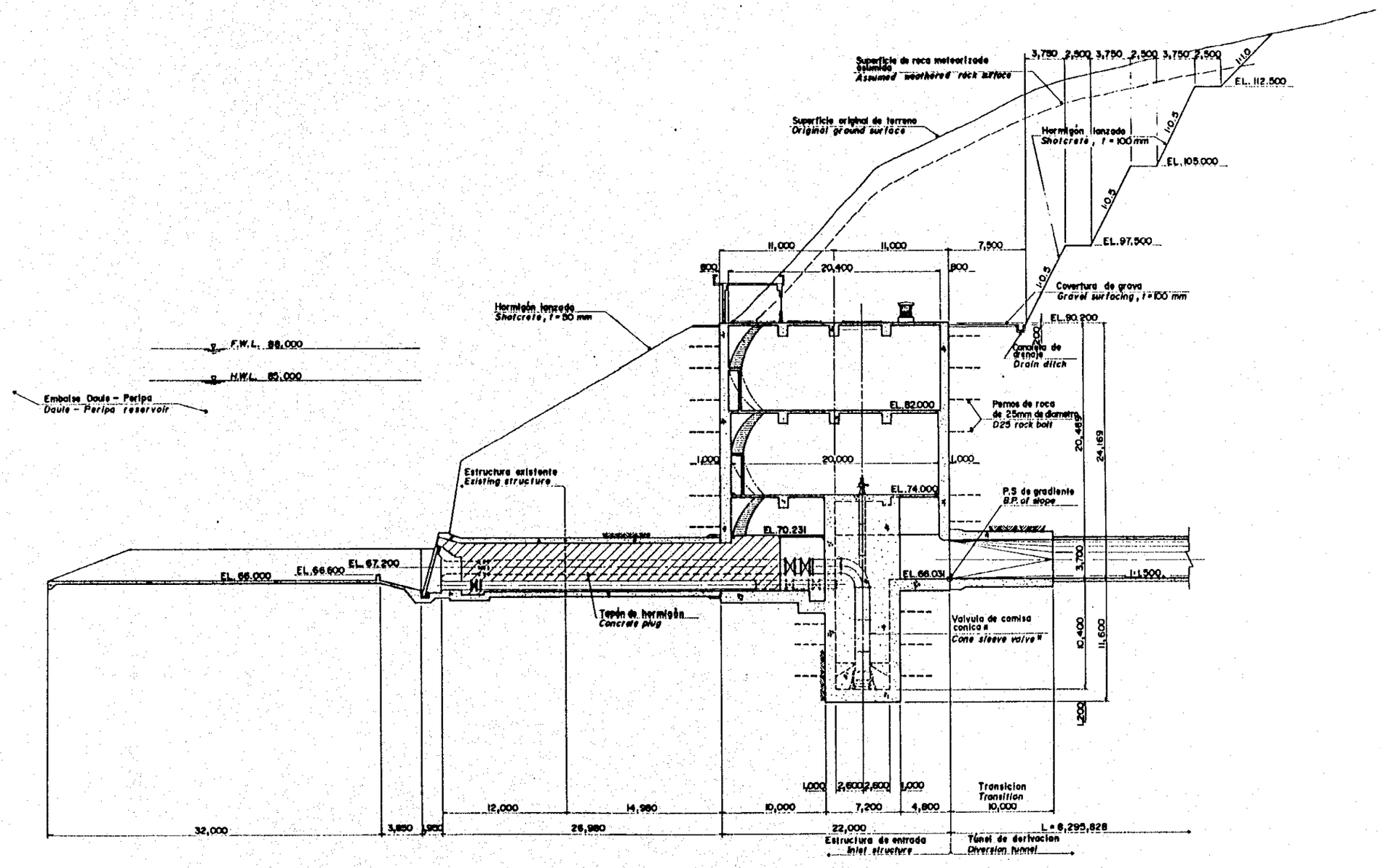
REPUBLICA DEL ECUADOR

TITULO : TUNEL DE DERIVACION DAULE PERIPA - LA ESPERANZA
DAULE PERIPA - LA ESPERANZA DIVERSION TUNNEL

ENTRADA EN CONGUILLO
PLANTA
CONGUILLO INLET
PLAN

LEVANTO :	
DIBUJO :	
DISEÑO :	
REVISO :	
ENTREGO :	
FECHA :	

APROBADO :
FECHA :
DIBUJO Nº
6.1



PERFIL
PROFILE

Nota:
El rubro marcado con * se instalará por otro contratista.

Note:
*Item marked with * shall be installed by the other Contractor.*

ESCALA A / *SCALE A* 0 20m (:)

ESCALA B / *SCALE B* (:)

REV. Nº	REVISADO	APROBADO	FECHA

CRM
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DAULE PERIPA – LA ESPERANZA DIVERSION TUNNEL

ENTRADA EN CONGUILLO
PERFIL
CONGUILLO INLET
PROFILE

LEVANTO:	APROBADO:
DIBUJO:	FECHA:
DISEÑO:	DIBUJO Nº
REVISO:	6.2
ENTREGO:	
FECHA:	