

Table 4.6.2 PROJECT COSTS OF ALTERNATIVE FLOOD MANAGEMENT PLANS (1/2)

| Cost Item | Unit | Unit price (US\$) | Plan B2A | | Plan B2B | | Plan C2 | |
|-------------------------------------|------|-------------------|-----------|-------------------|------------|-------------------|-----------|-------------------|
| | | | Qty | Amount (US\$) | Qty | Amount (US\$) | Qty | Amount (US\$) |
| I. CONSTRUCTION COST | | | | | | | | |
| (1) Preparatory works | L.S | 10% | 1 | 3,612,000 | 1 | 5,038,000 | 1 | 1,571,000 |
| (2) Foundation excavation | cu.m | 1.0 | 740,000 | 740,000 | 740,000 | 740,000 | 540,000 | 540,000 |
| (3) Dike embankment | cu.m | 2.5 | 5,800,000 | 14,500,000 | 5,800,000 | 14,500,000 | 5,600,000 | 14,000,000 |
| (4) Vegetation Cover | cu.m | 1.0 | 900,000 | 900,000 | 900,000 | 900,000 | 770,000 | 770,000 |
| (5) Sluiceway | nos. | 20,000 | 30 | 600,000 | 30 | 600,000 | 20 | 400,000 |
| (7) Bridge | sq.m | 1,500 | 0 | 0 | 0 | 0 | 0 | 0 |
| (6) Channel excavation | cu.m | 2 | 9,690,000 | 19,380,000 | 16,820,000 | 33,640,000 | 0 | 0 |
| (7) Apure module | ha | 200 | 0 | 0 | 0 | 0 | 0 | 0 |
| (8) Miscellaneous works | L.S | 3% | 1 | 1,083,600 | 1 | 1,511,400 | 1 | 471,300 |
| Sub Total (I) | | | | 40,815,600 | | 56,929,400 | | 17,752,300 |
| II. LAND ACQUISITION COST | | | | | | | | |
| | ha | 100.0 | 1,925 | 192,500 | 2,400 | 240,000 | 1,050 | 105,000 |
| III. ADMINISTRATION COST | | | | | | | | |
| (5% of I + II) | L.S | | | 2,040,780 | | 2,846,470 | | 887,615 |
| IV. ENGINEERING SERVICE COST | | | | | | | | |
| Detailed Design (7% of I) | L.S | | | 6,938,652 | | 5,692,940 | | 1,775,230 |
| Construction Supervision | | | | 2,857,092 | | 3,985,058 | | 1,242,661 |
| | | | | 4,081,560 | | 5,692,940 | | 1,775,230 |
| V. PHYSICAL CONTINGENCY | | | | | | | | |
| (10 % of I + II + III + IV) | L.S | | | 4,998,753 | | 6,570,881 | | 2,052,015 |
| GRAND TOTAL | | | | 54,986,285 | | 72,279,691 | | 22,572,160 |

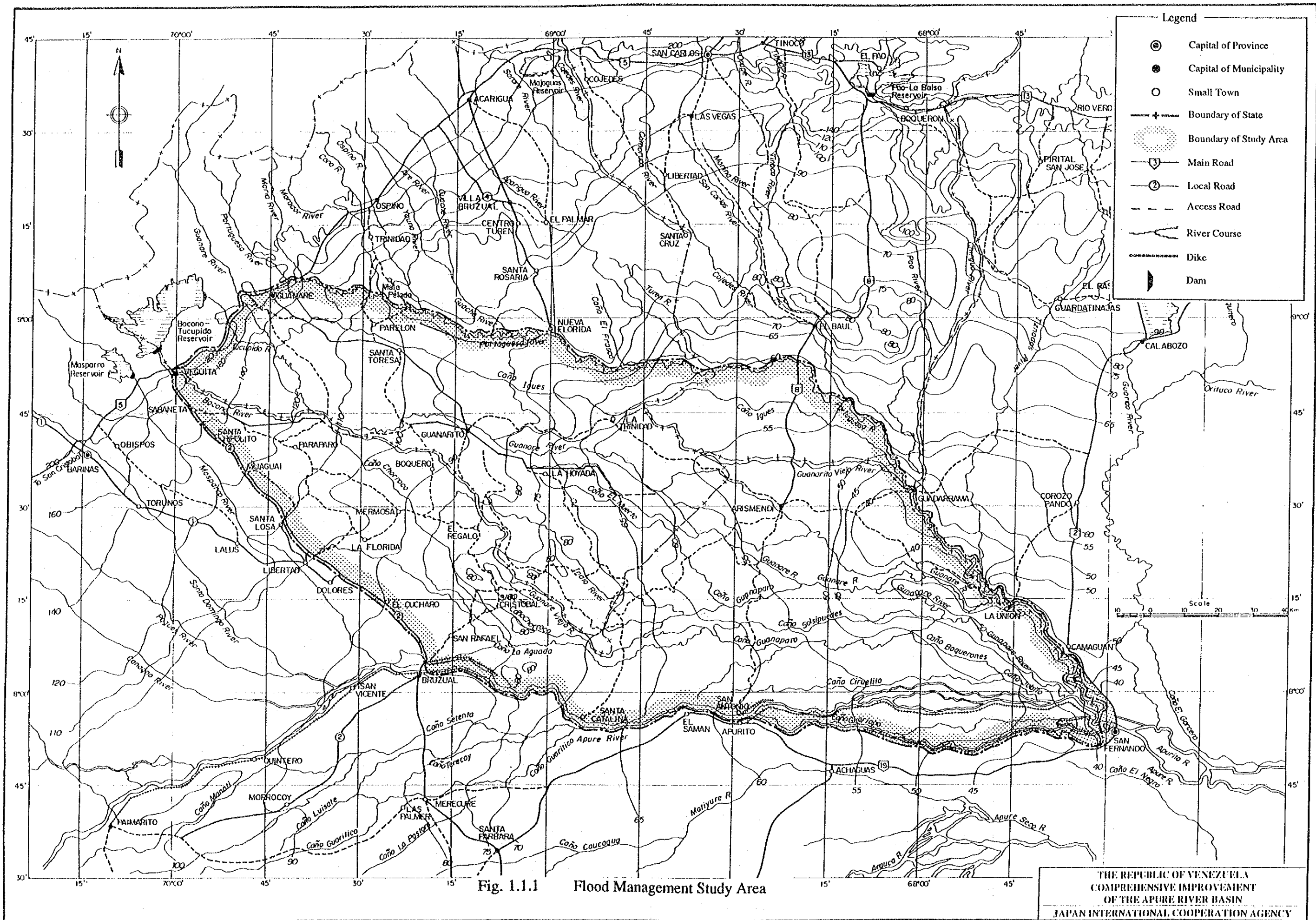
Note: (1) Currency exchange rate : 1 US \$ = 82 Bs = 119.72 Y

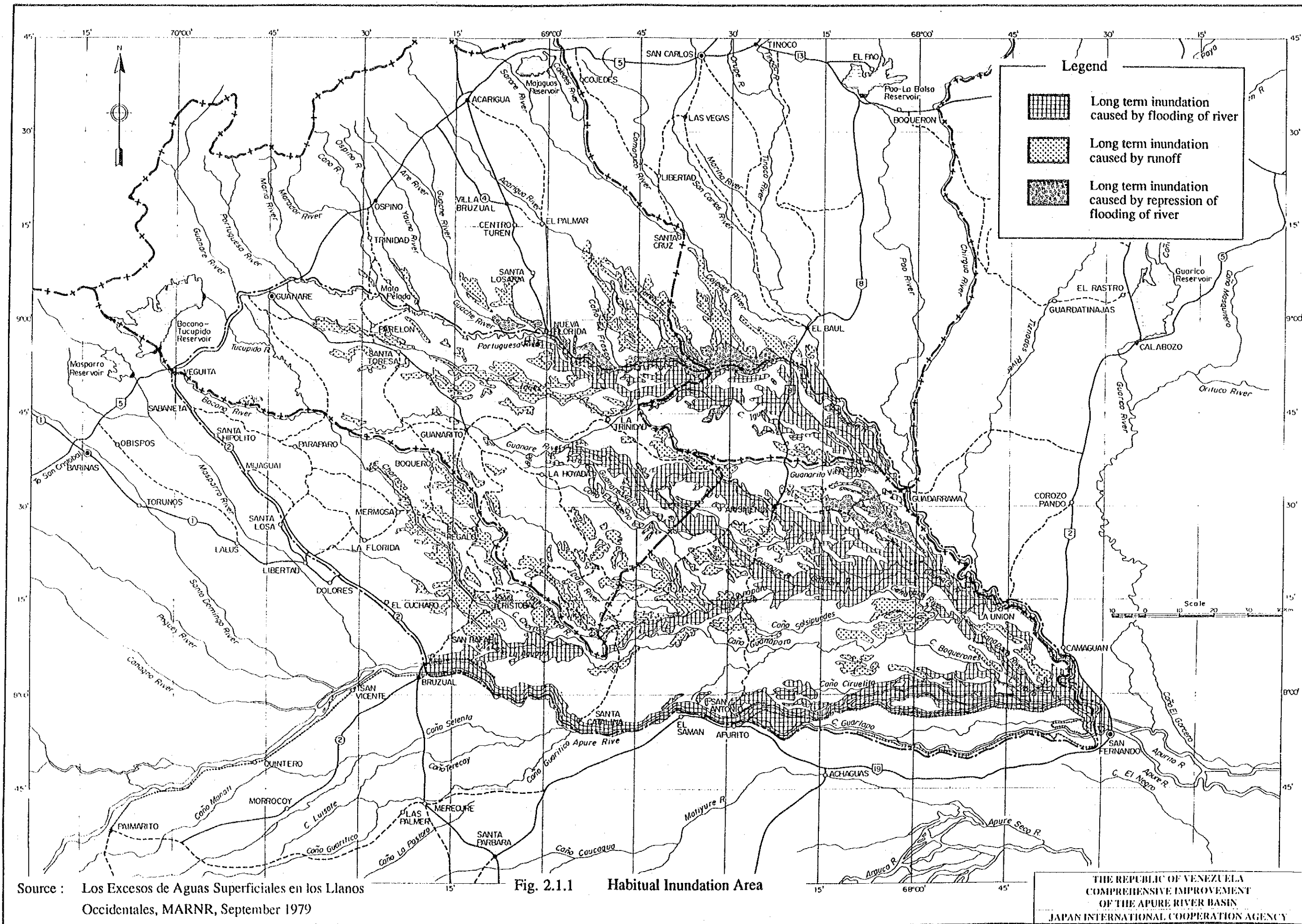
Table 4.6.2 PROJECT COSTS OF ALTERNATIVE FLOOD MANAGEMENT PLANS (2/2)

| Cost Item | Unit | Unit price (US\$) | Plan D1A | | Plan D1B | | Plan D2 | |
|--------------------------------------|------|----------------------|-----------|------------------|-----------|------------------|---------|------------------|
| | | | Qty | Amount (US\$) | Qty | Amount (US\$) | Qty | Amount (US\$) |
| I. CONSTRUCTION COST | | | | | | | | |
| (1) Preparatory works | L.S | 10% | 1 | 960,000 | 1 | 1,702,000 | 1 | 10,400,000 |
| (2) Foundation excavation | cu.m | 1.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| (3) Dike embankment | cu.m | 2.5 | 0 | 0 | 2,240,000 | 5,600,000 | 0 | 0 |
| (4) Vegetation Cover | cu.m | 1.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| (5) Sluiceway | nos. | 20,000 | 0 | 0 | 0 | 0 | 0 | 0 |
| (6) Bridge | sq.m | 1,500 | 3,200 | 4,800,000 | 3,200 | 4,800,000 | 0 | 0 |
| (7) Channel excavation | cu.m | 2 | 2,400,000 | 4,800,000 | 3,310,000 | 6,620,000 | 0 | 0 |
| (8) Apure module | ha | 200 | 0 | 0 | 0 | 0 | 520,000 | 104,000,000 |
| (9) Miscellaneous works | L.S | 3% | 1 | 288,000 | 1 | 510,600 | 1 | 3,120,000 |
| Sub-total of I | | | | 10,848,000 | | 19,232,600 | | 117,520,000 |
| II. LAND ACQUISITION COST | | | | | | | | |
| | ha | 100.0 | 0 | 0 | 900 | 90,000 | 0 | 0 |
| III. ADMINISTRATION COST | | | | | | | | |
| (5% of I + II) | L.S | | | 542,400 | | 966,130 | | 5,876,000 |
| IV. ENGINEERING SERVICE COST | | | | | | | | |
| Detailed Design (7 % of I) | L.S | | | 1,844,160 | | 3,269,542 | | 19,978,400 |
| Construction Supervision (10 % of I) | | | | 759,360 | | 1,346,282 | | 8,226,400 |
| | | | | 1,084,800 | | 1,923,260 | | 11,752,000 |
| V. PHYSICAL CONTINGENCY | | | | | | | | |
| (10 % of I + II + III + IV) | L.S | | | 1,323,456 | | 2,355,827 | | 14,337,440 |
| GRAND TOTAL | | | | 14,558,016 | | 25,914,099 | | 157,711,840 |

Note: (1) Currency exchange rate : 1 US \$ = 82: BS = 119.72 ₺

FIGURES





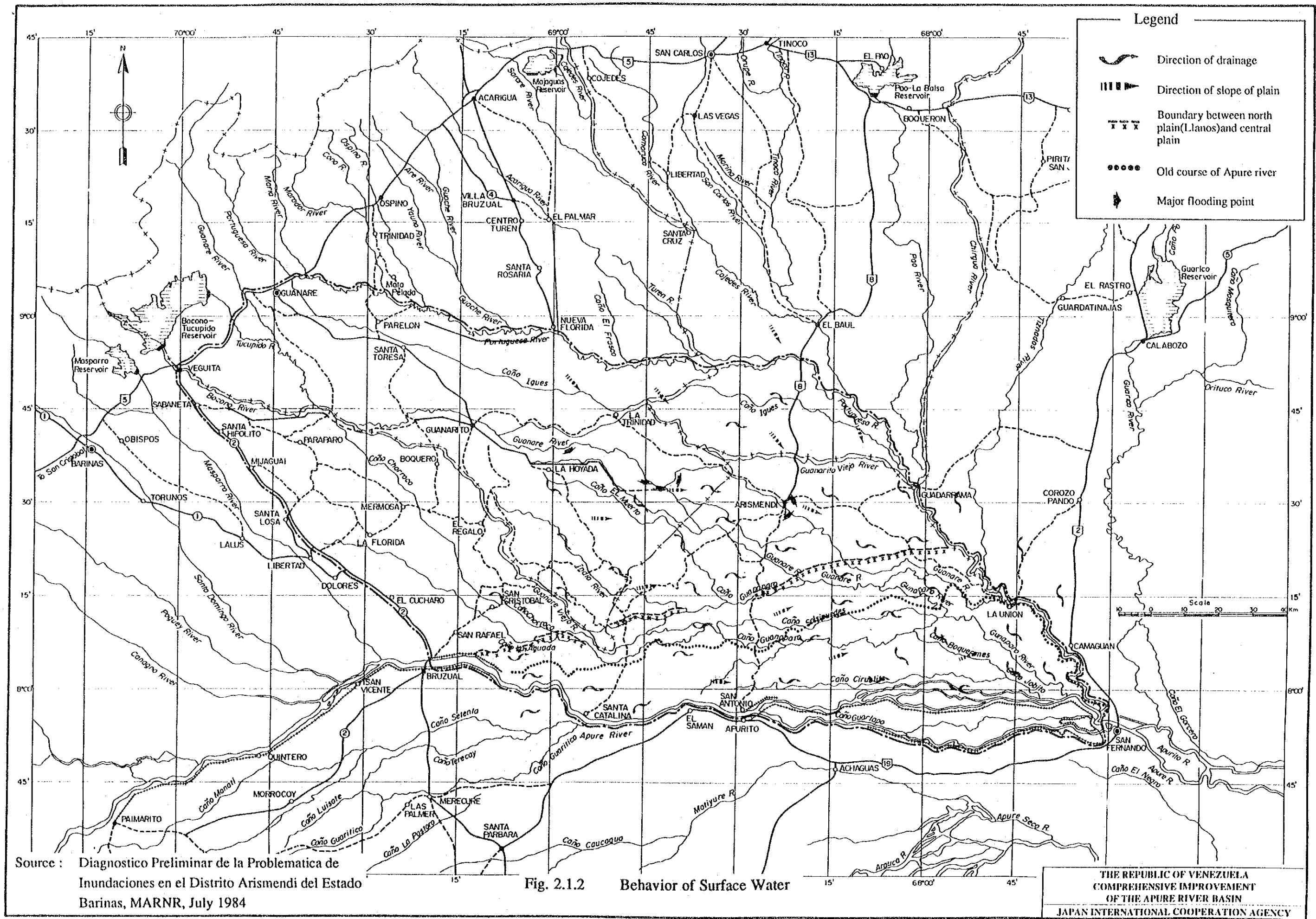
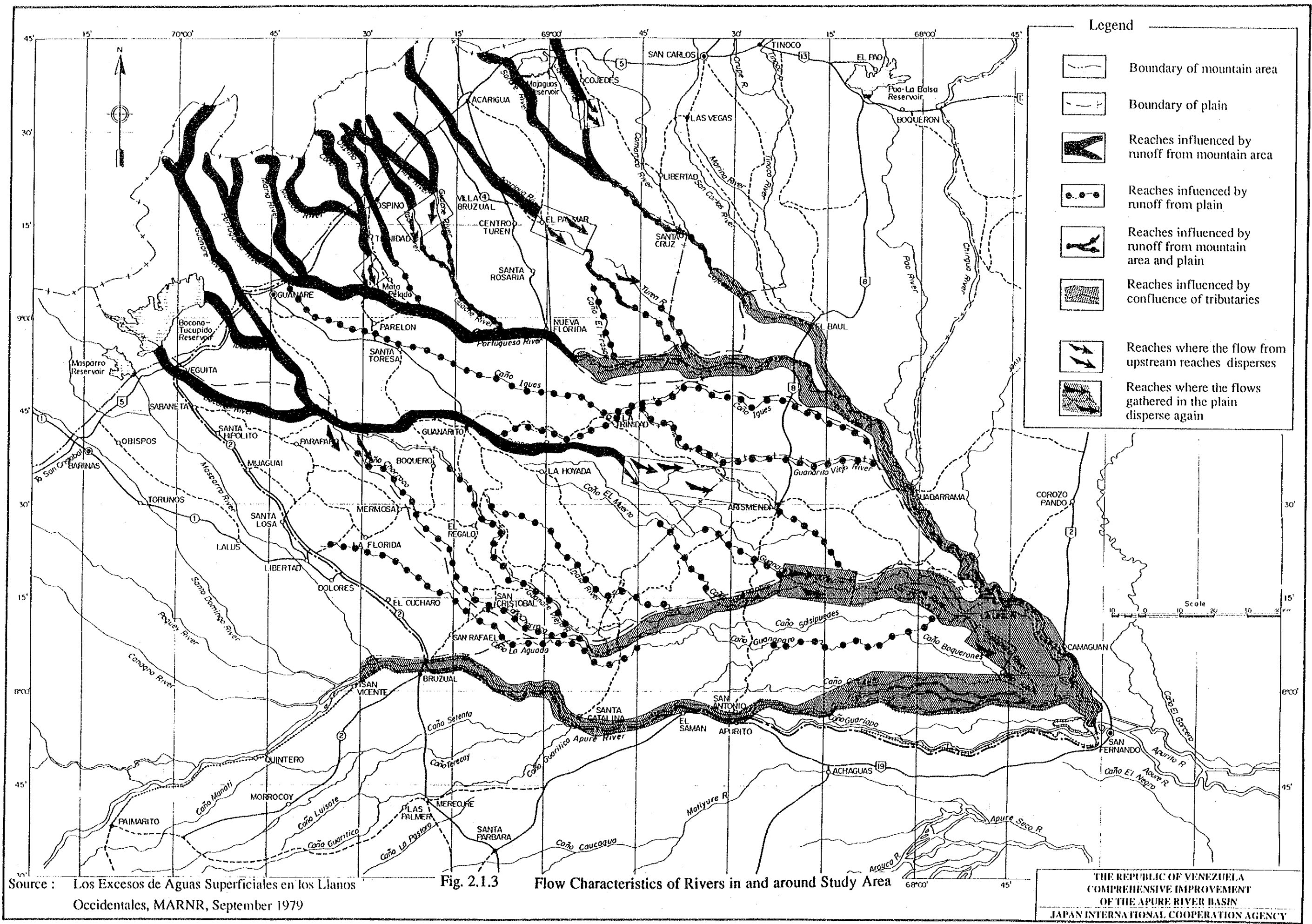
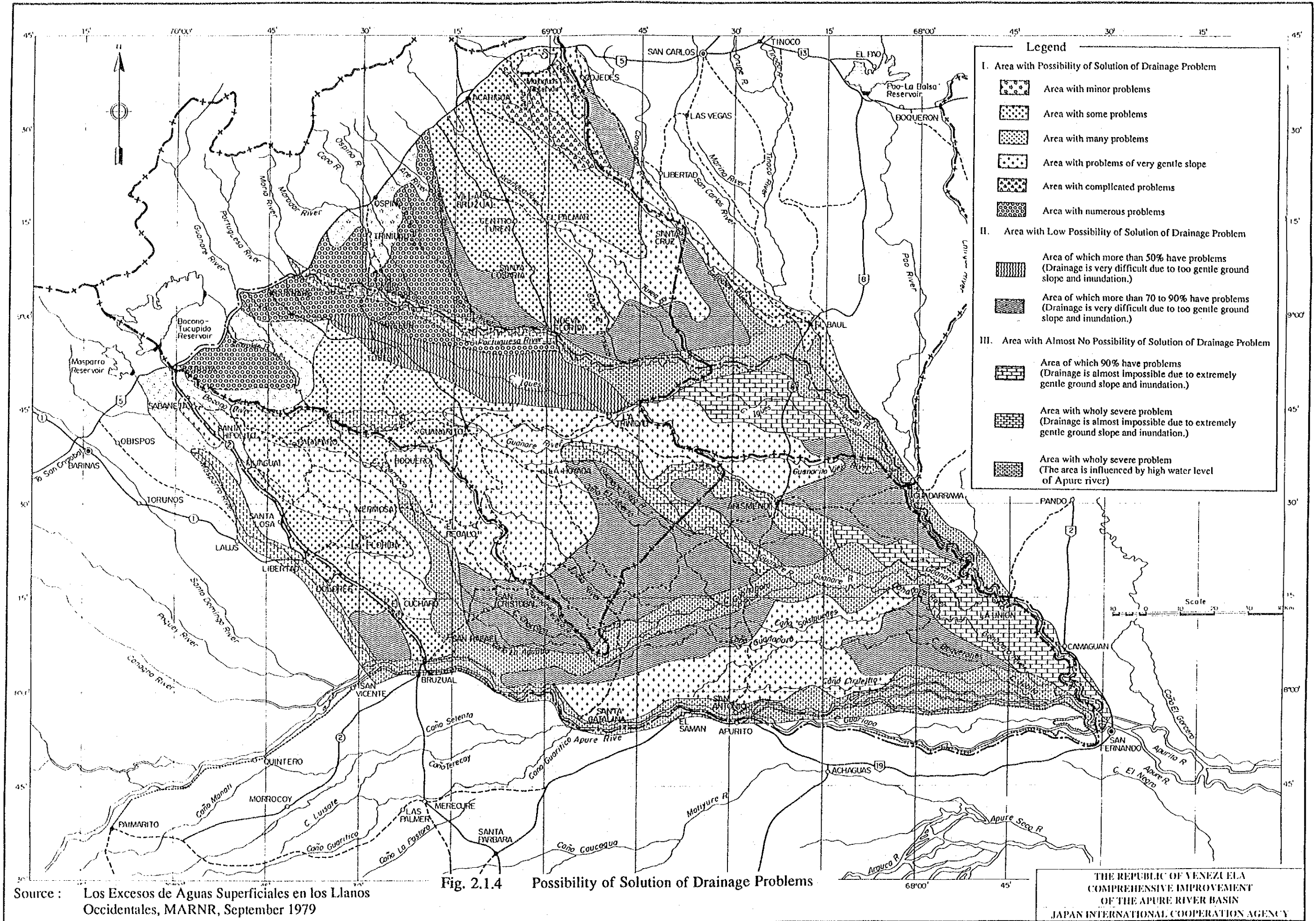


Fig. 2.1.2 Behavior of Surface Water

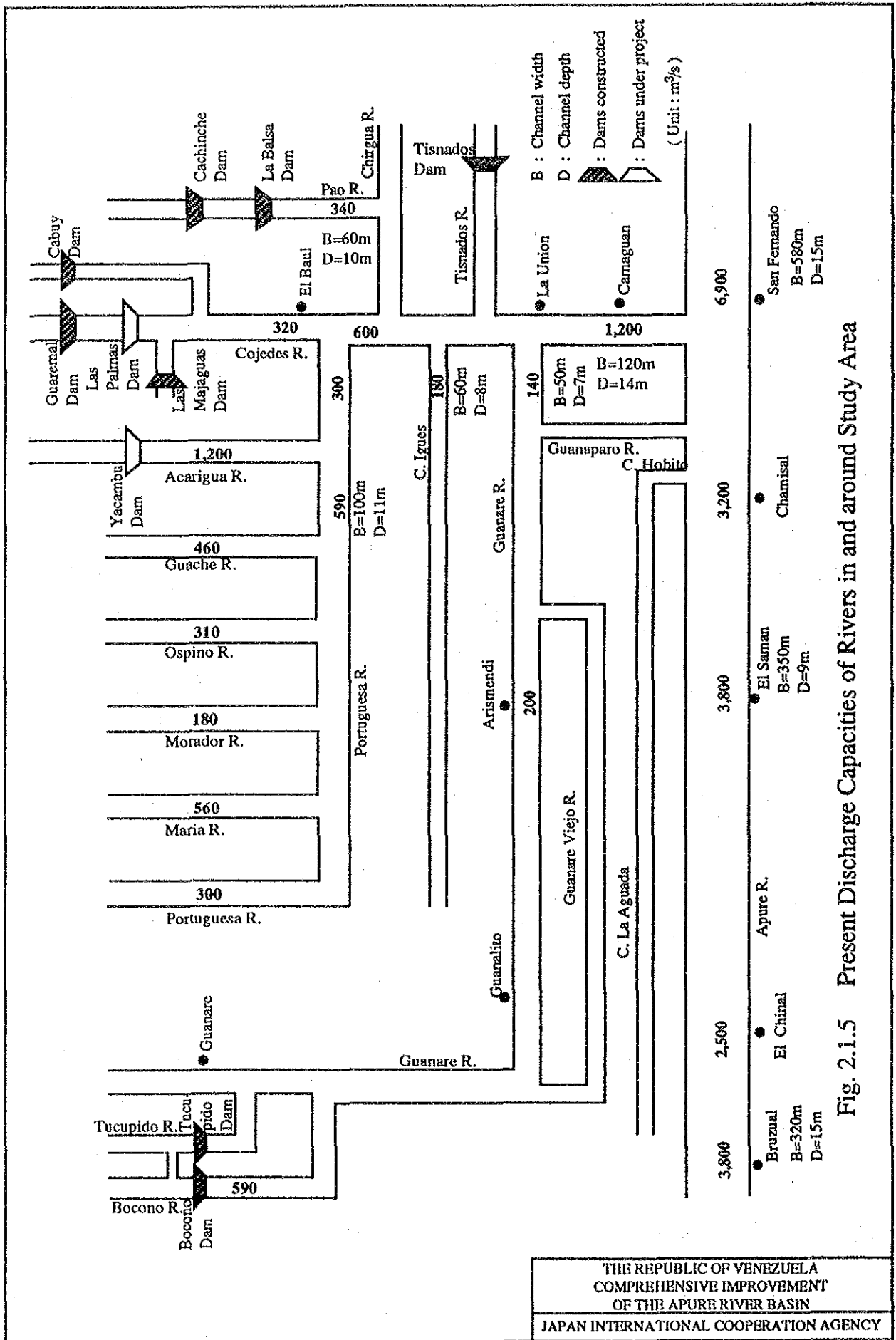


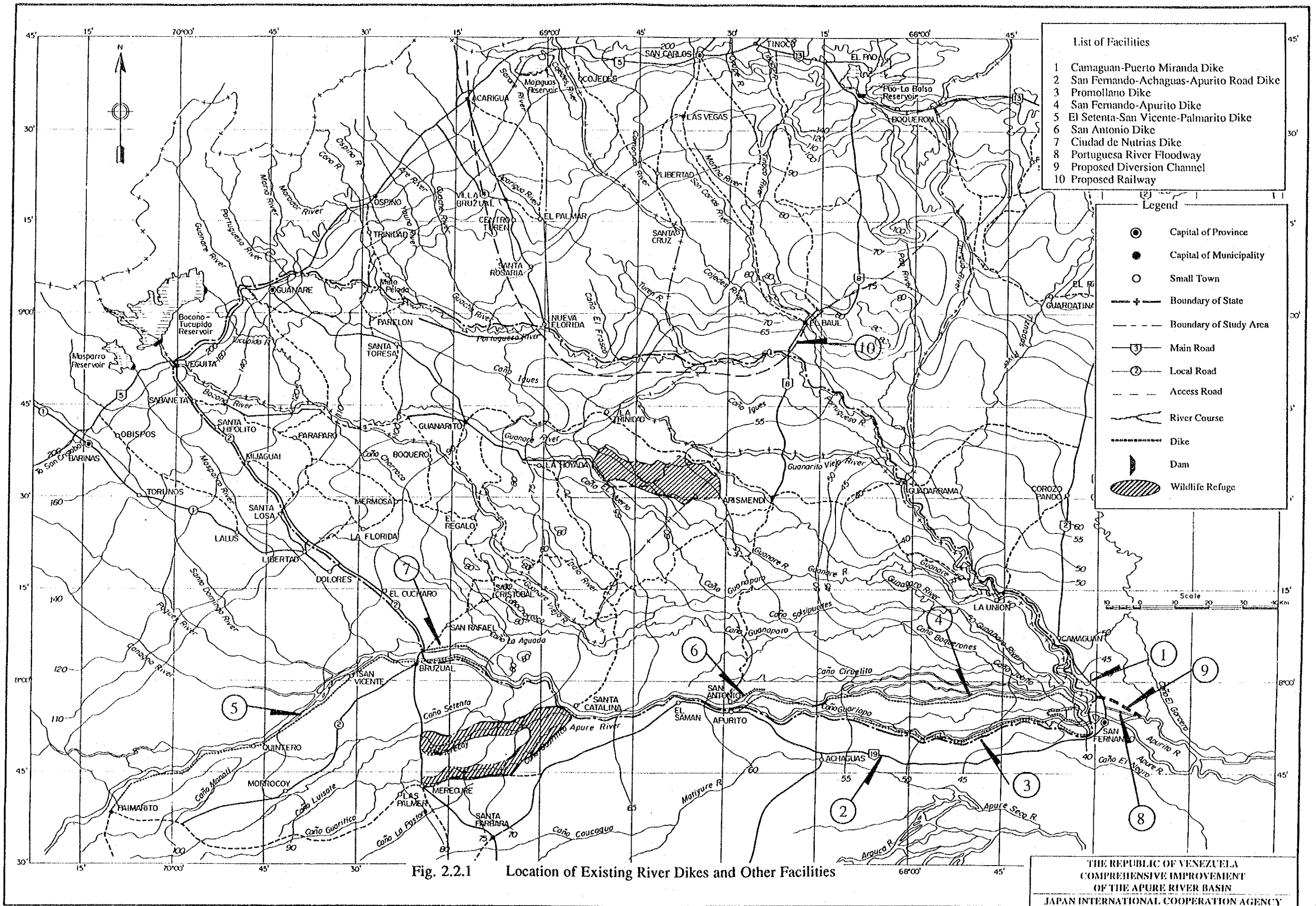


Source : Los Excesos de Aguas Superficiales en los Llanos Occidentales, MARNR, September 1979

Fig. 2.1.4 Possibility of Solution of Drainage Problems

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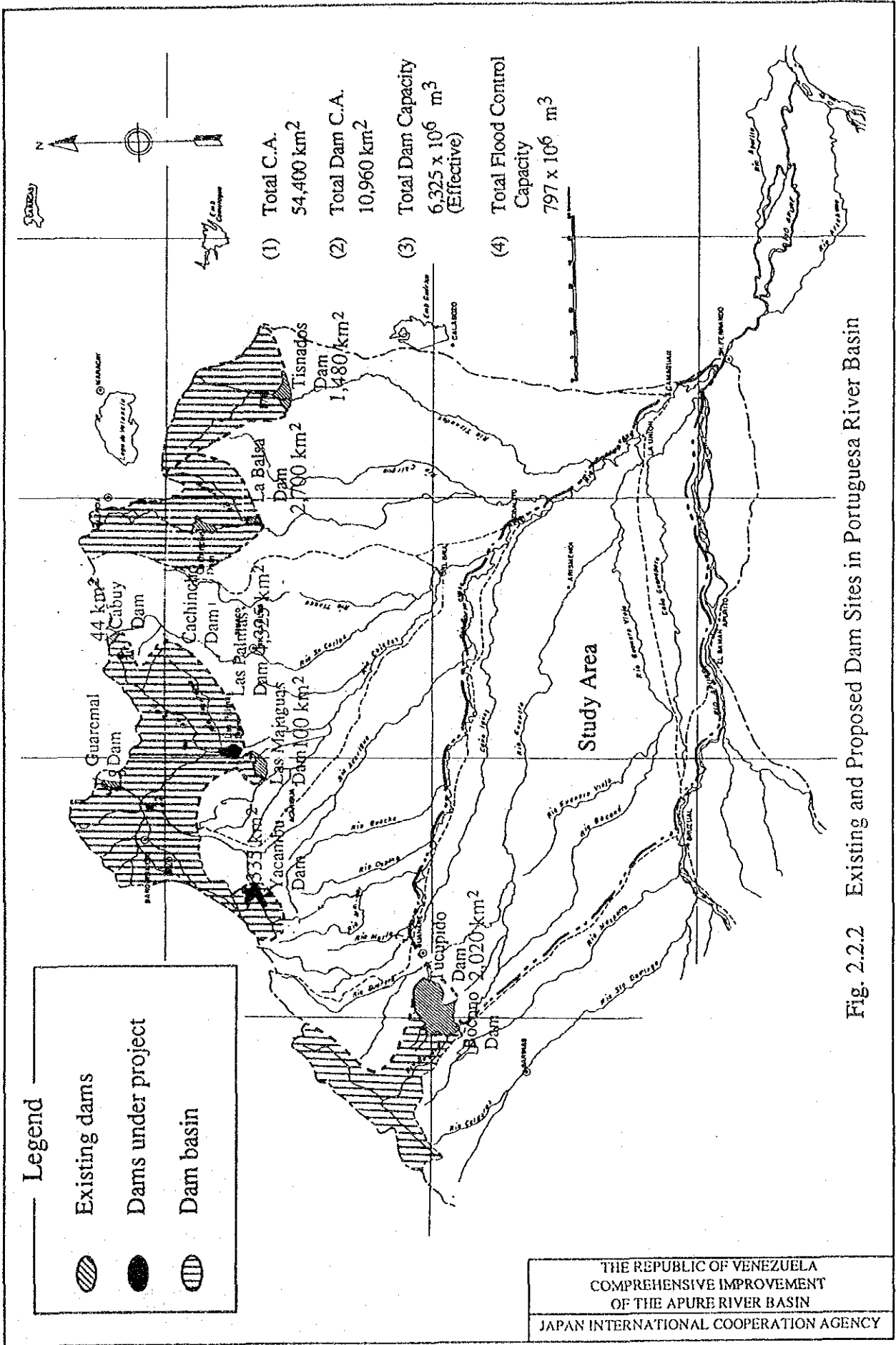
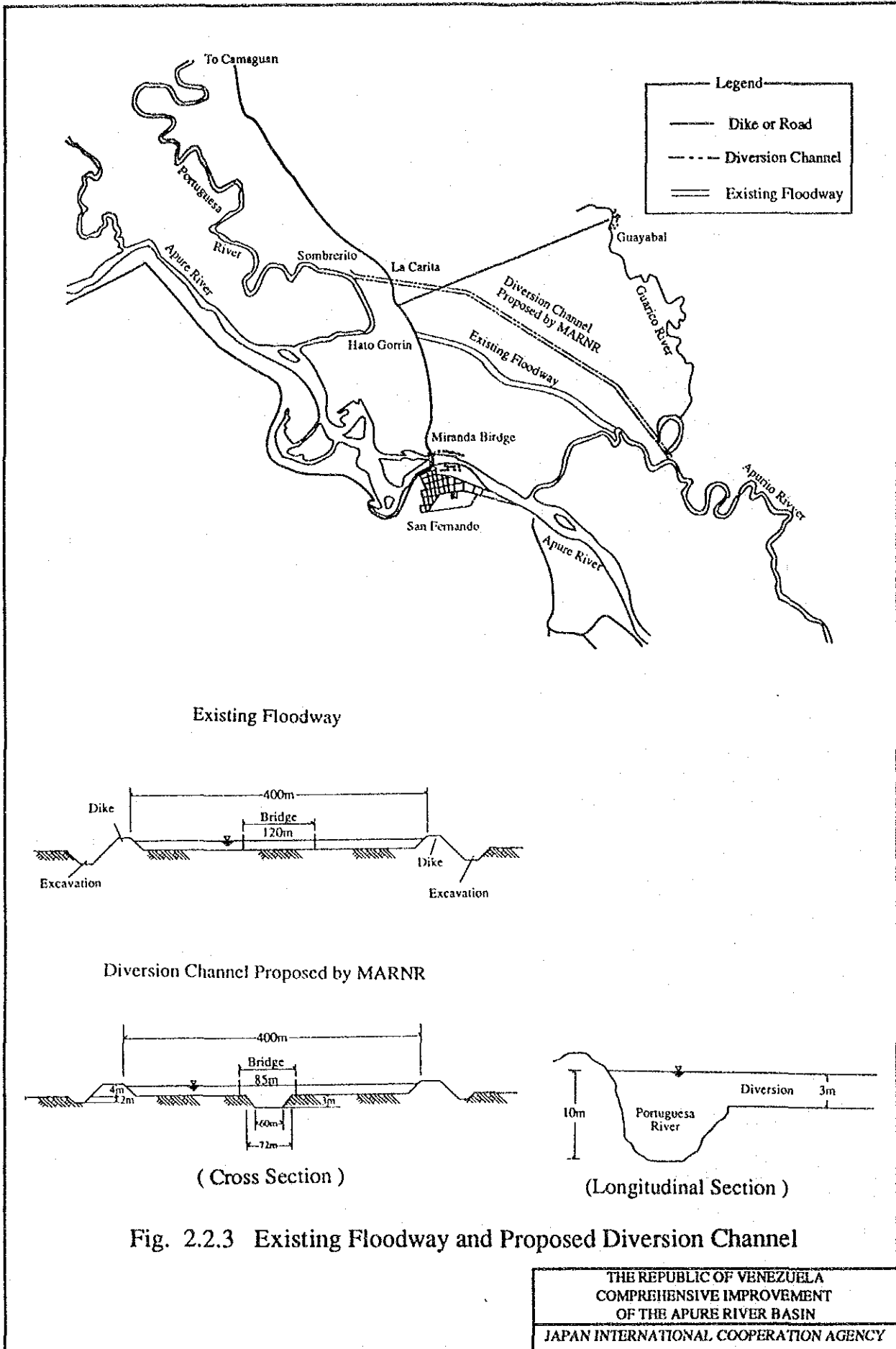
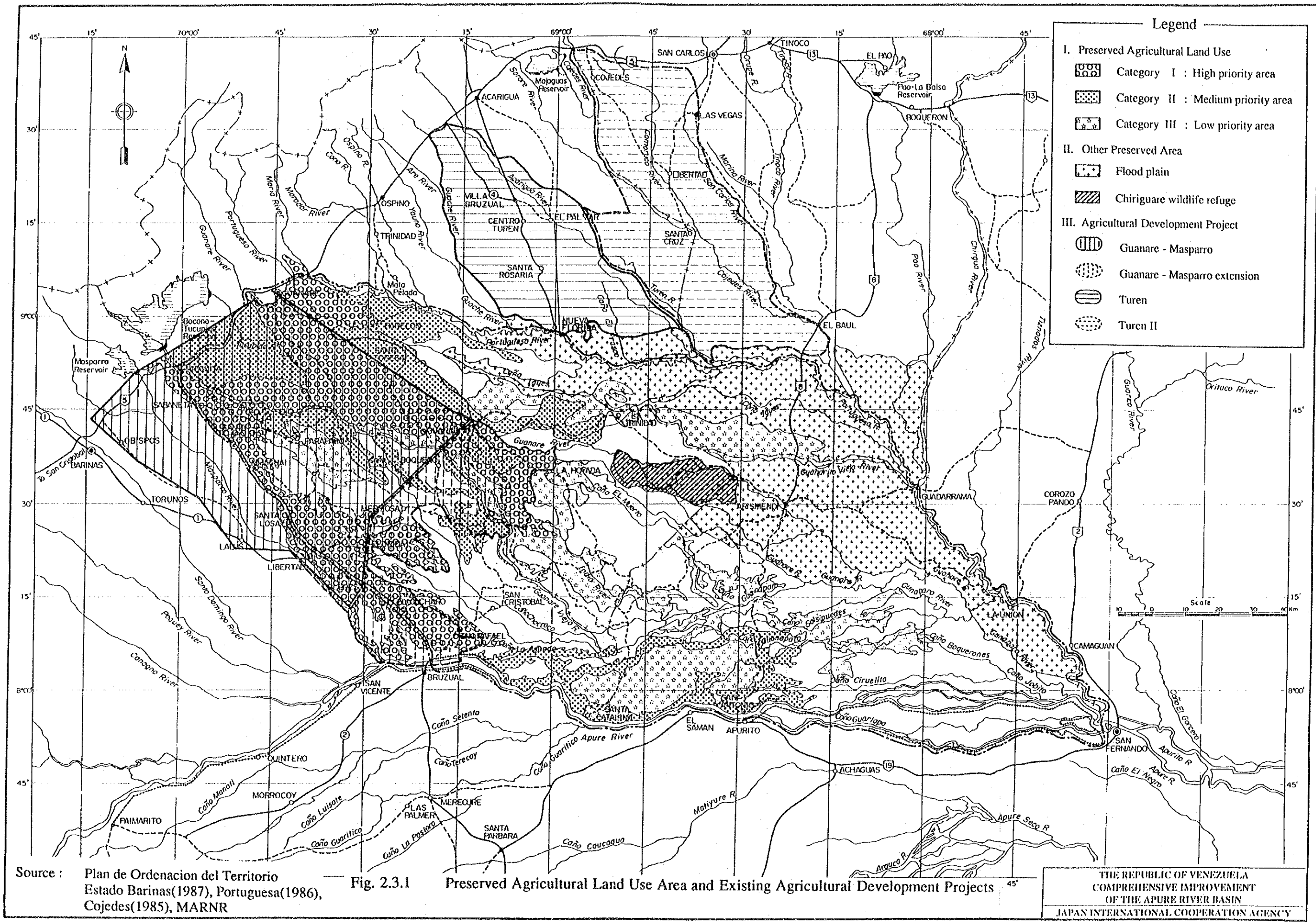


Fig. 2.2.2 Existing and Proposed Dam Sites in Portuguesa River Basin





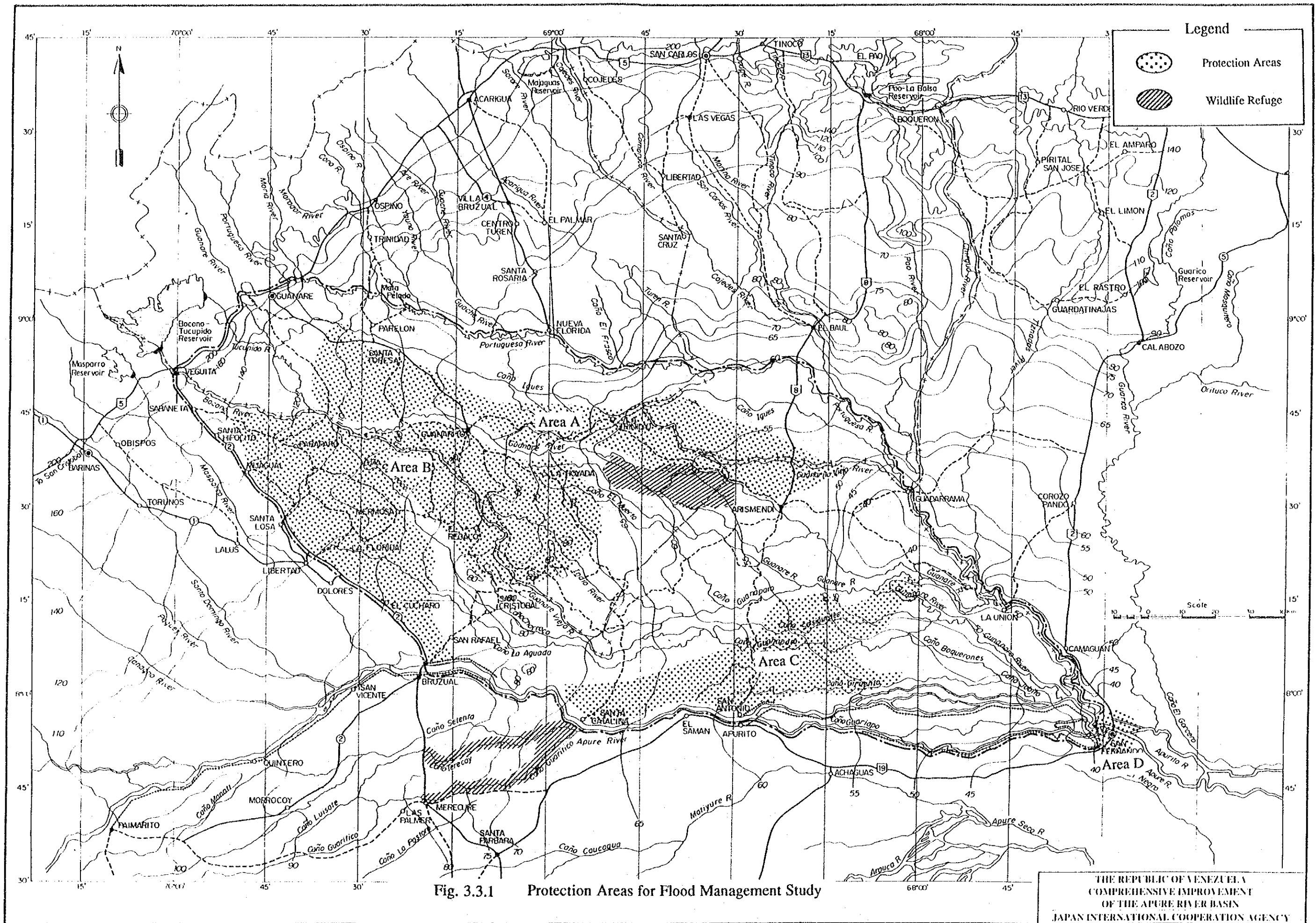


Fig. 3.3.1 Protection Areas for Flood Management Study

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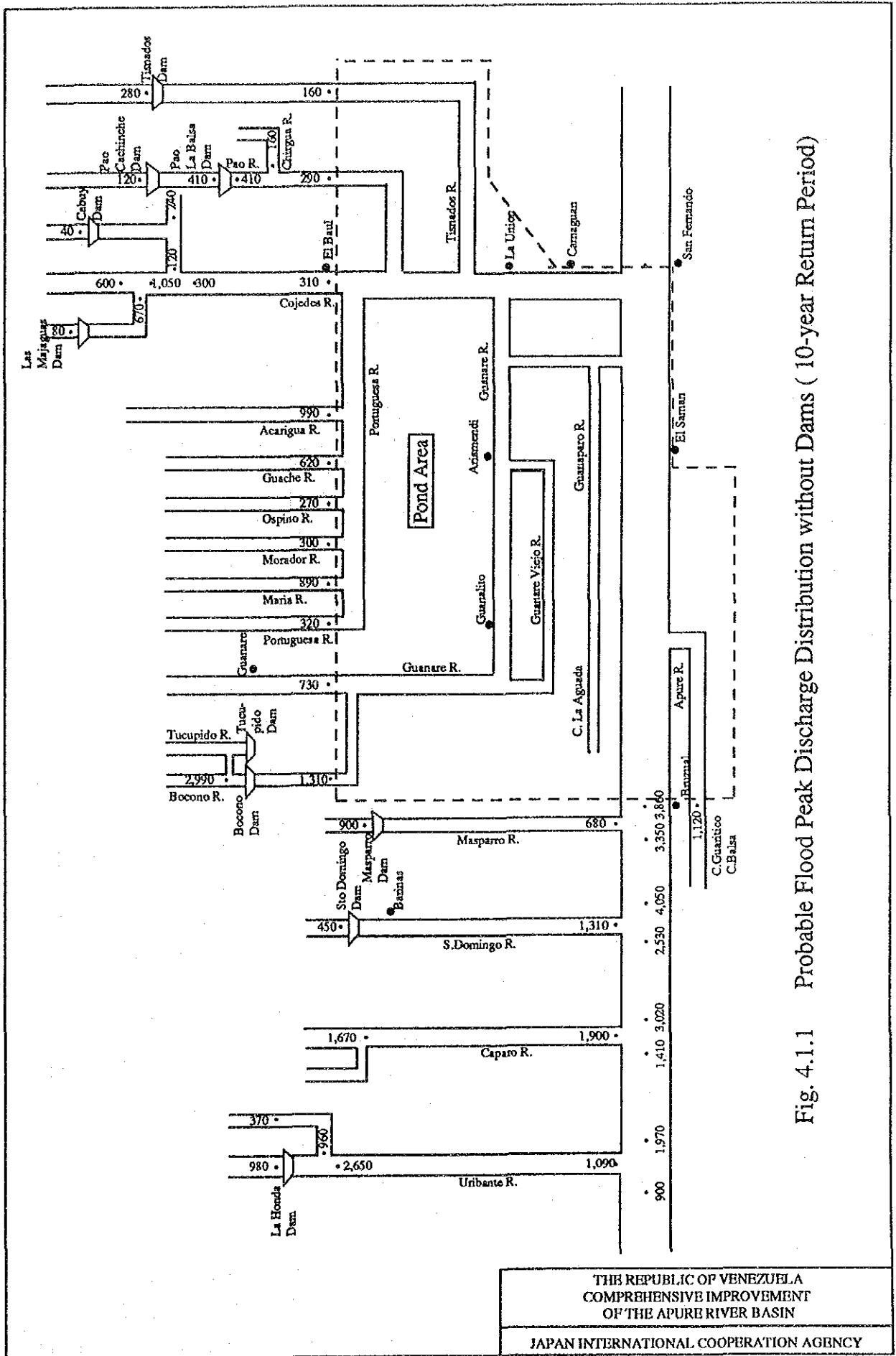


Fig. 4.1.1 Probable Flood Peak Discharge Distribution without Dams (10-year Return Period)

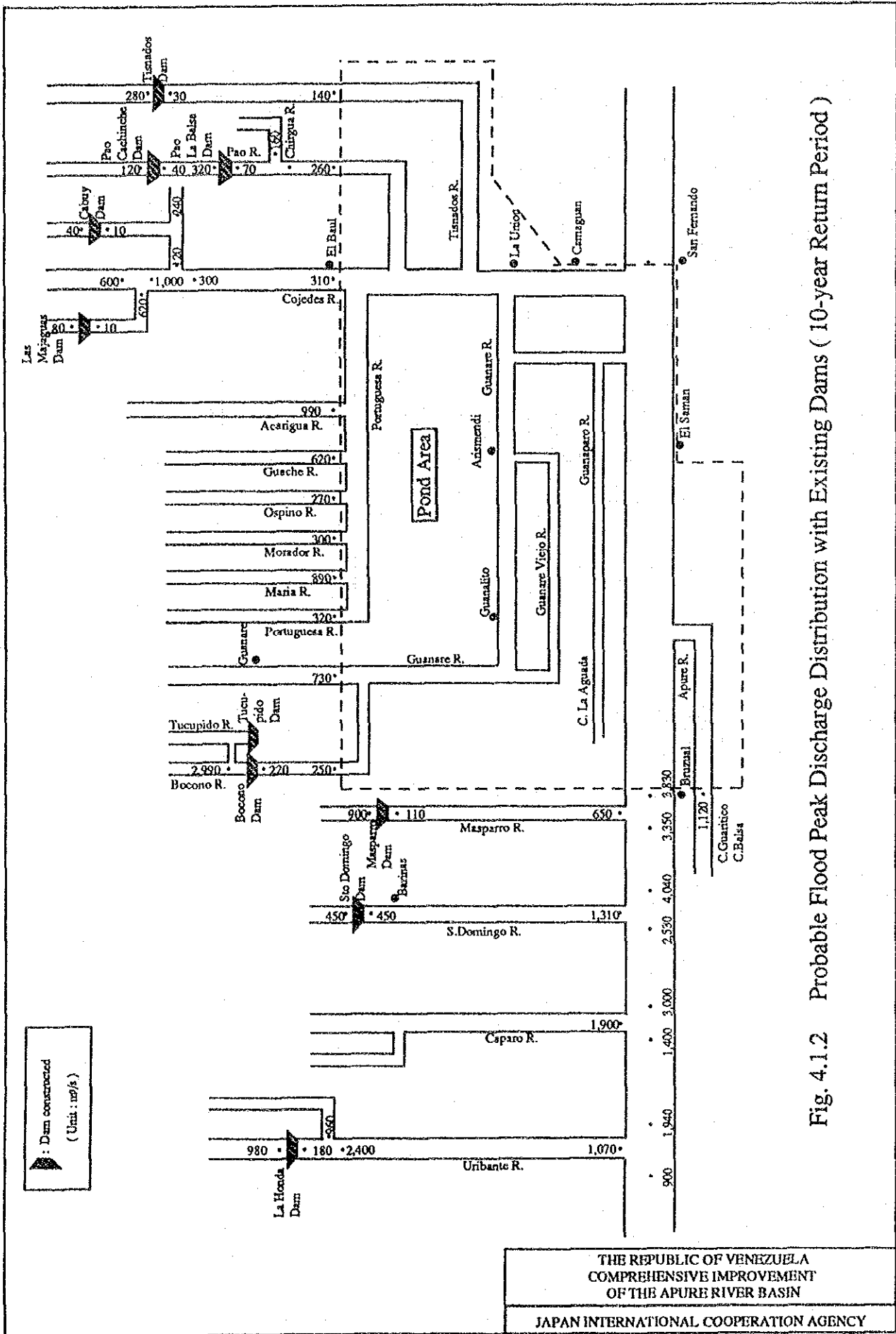


Fig. 4.1.2 Probable Flood Peak Discharge Distribution with Existing Dams (10-year Return Period)

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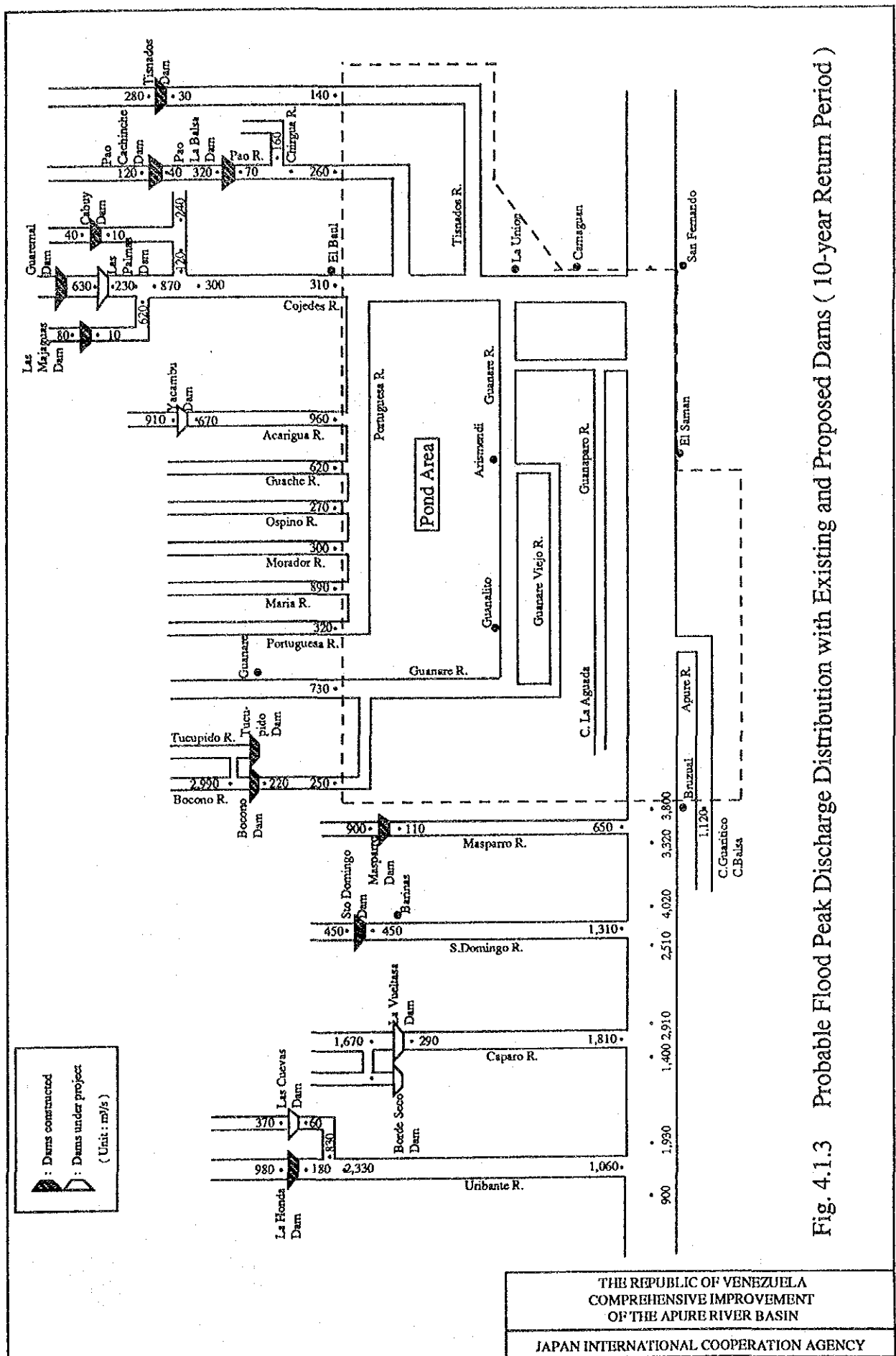


Fig. 4.1.3 Probable Flood Peak Discharge Distribution with Existing and Proposed Dams (10-year Return Period)

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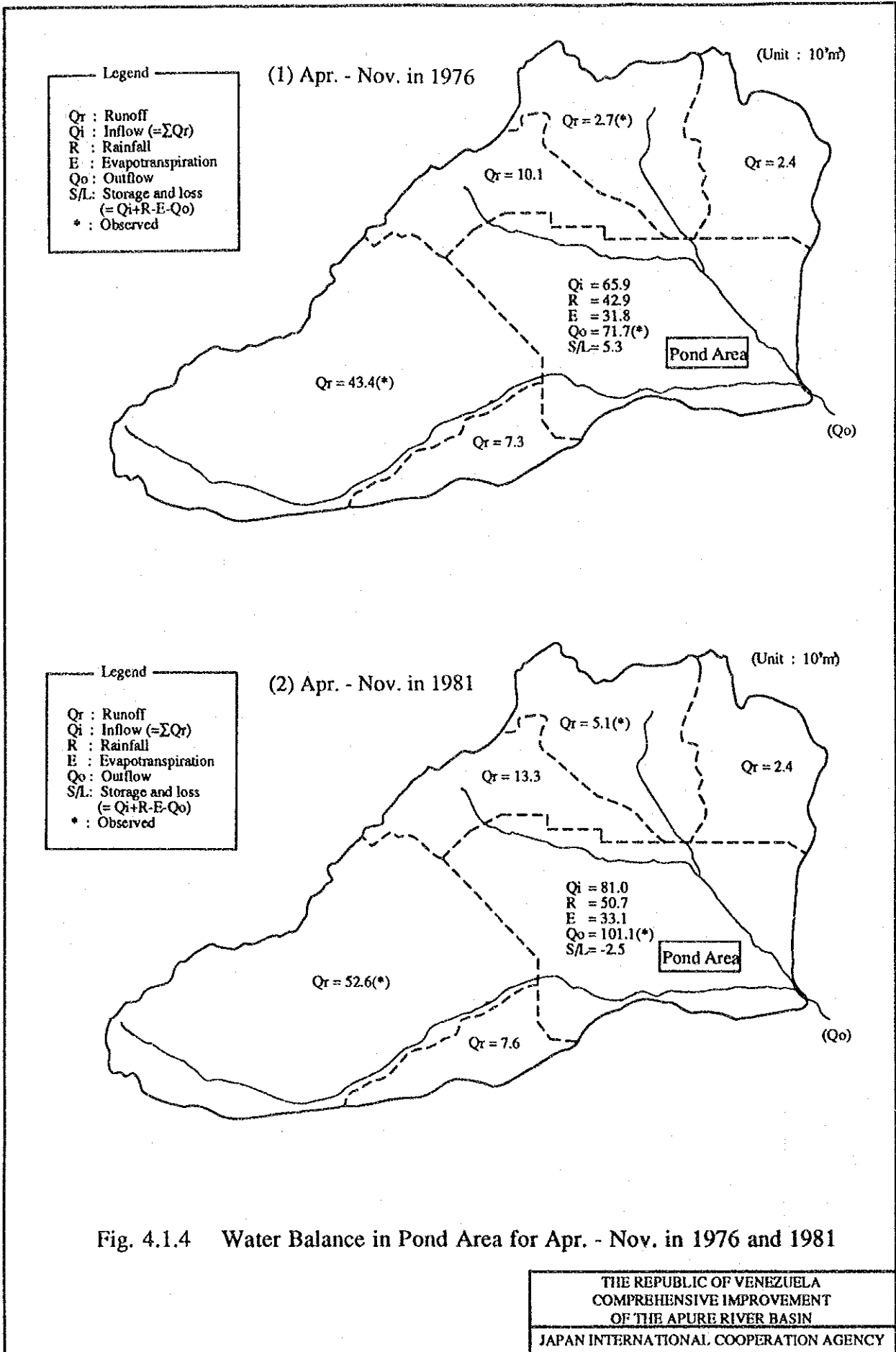


Fig. 4.1.4 Water Balance in Pond Area for Apr. - Nov. in 1976 and 1981

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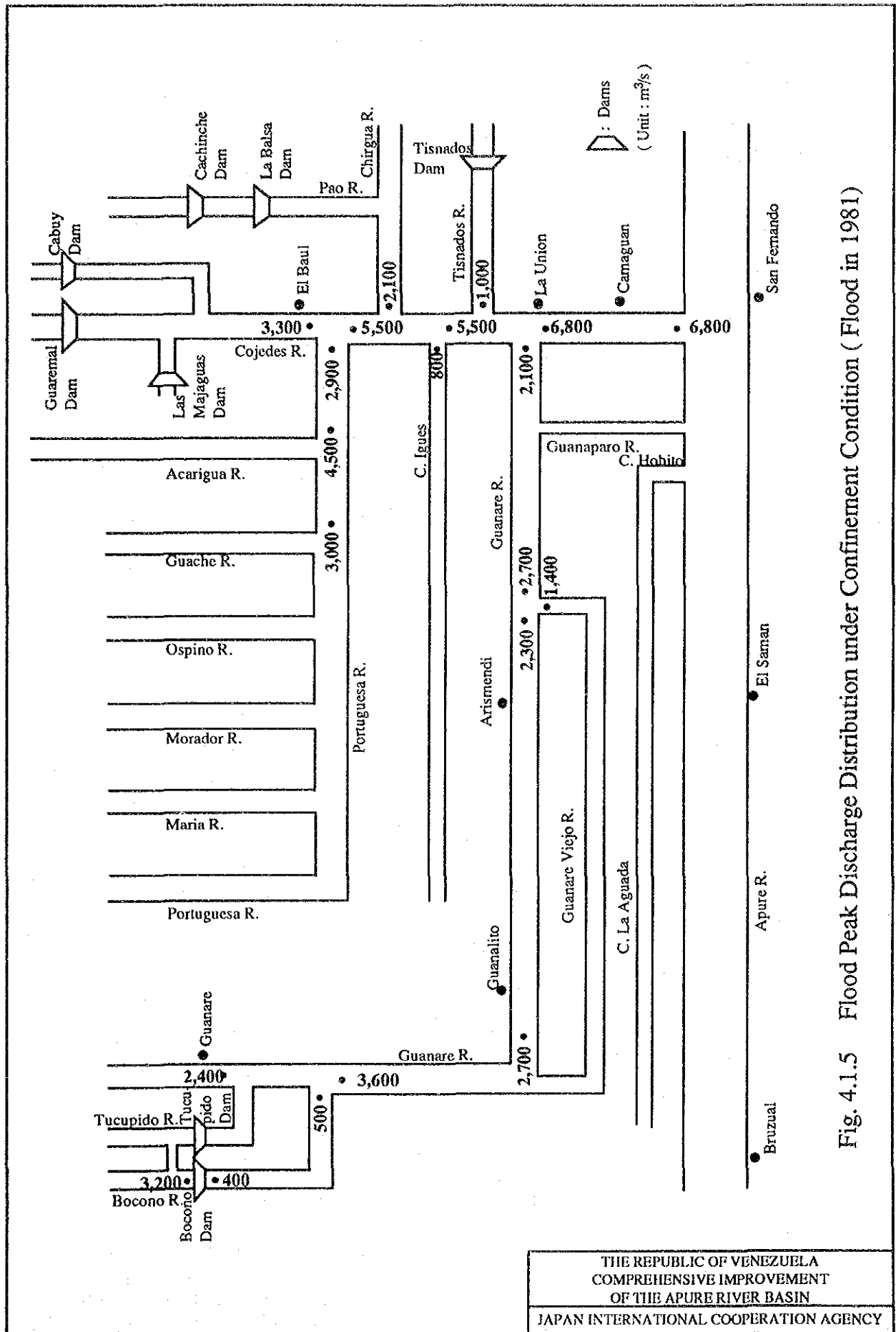
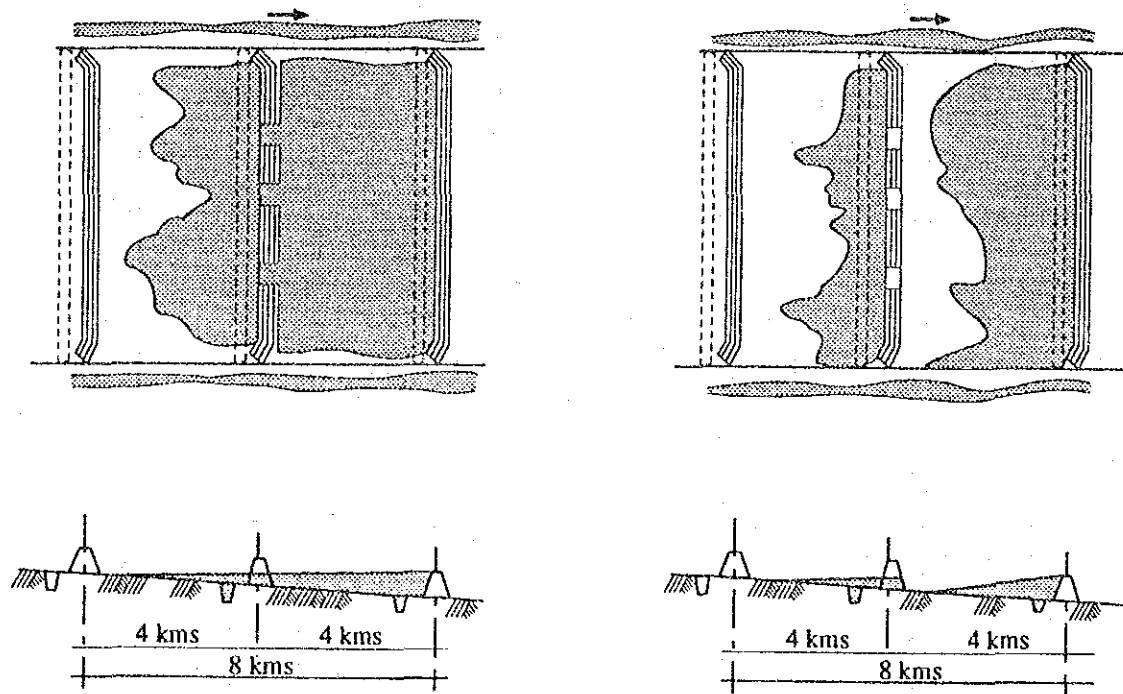


Fig. 4.1.5 Flood Peak Discharge Distribution under Confinement Condition (Flood in 1981)



Rainy Season

Dry Season

Longitudinal Section

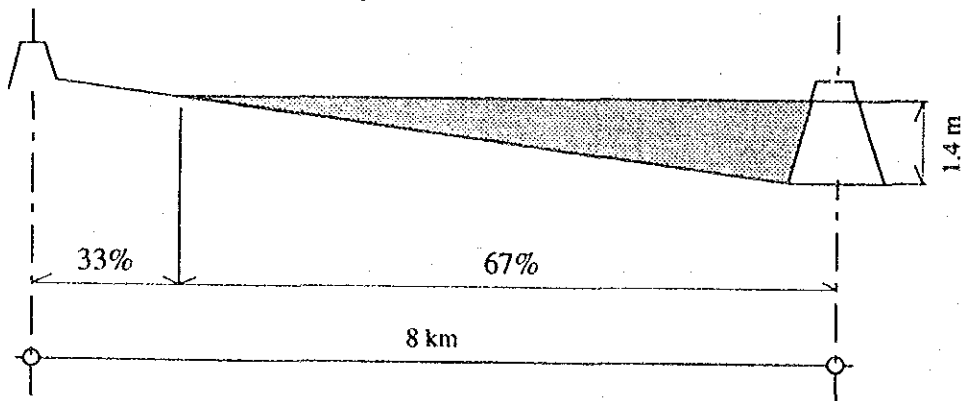


Fig. 4.1.6 Schematic Figure of Apure Module

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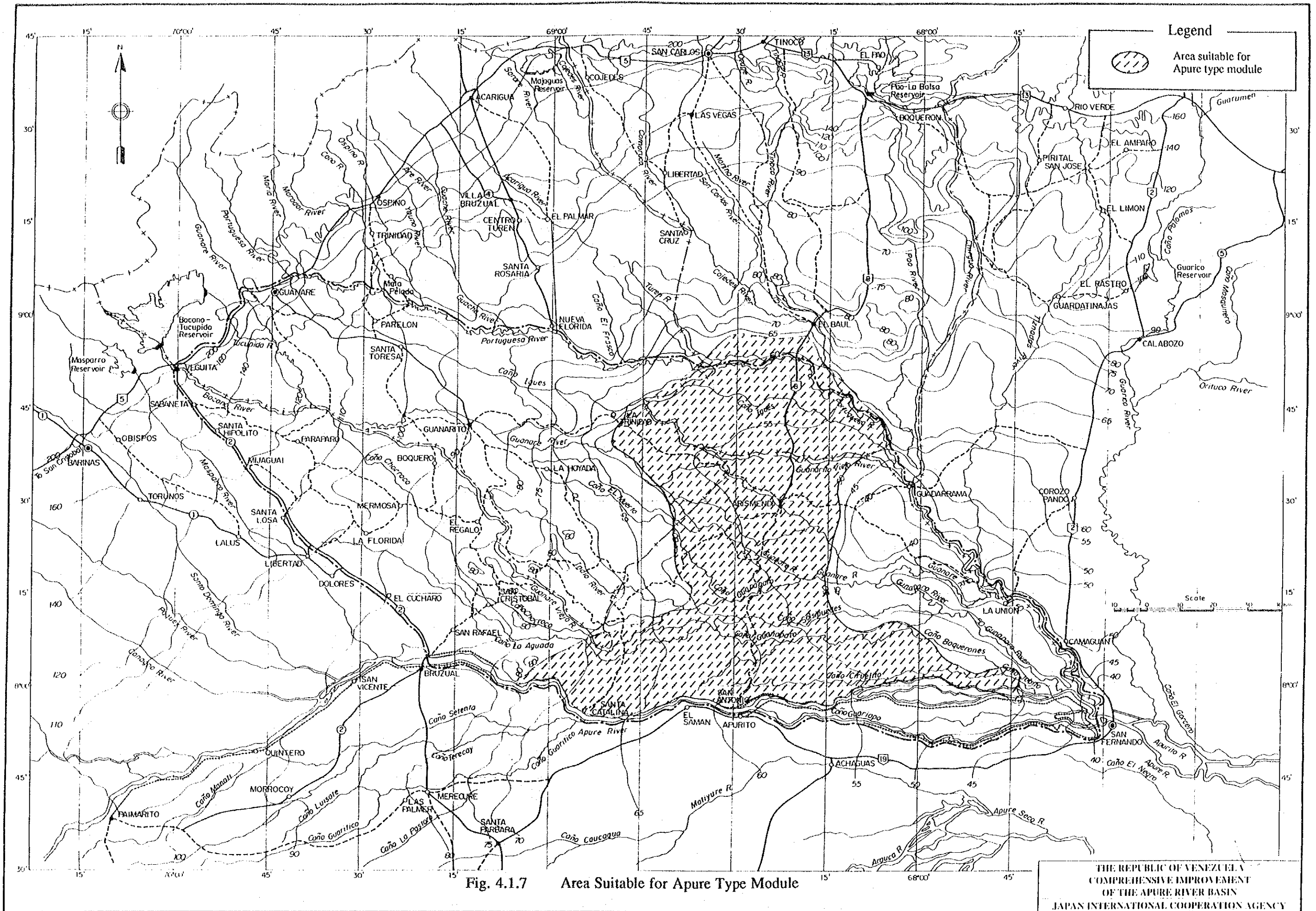


Fig. 4.1.7 Area Suitable for Apure Type Module

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Station : Arismendi

Period : 1971~1990

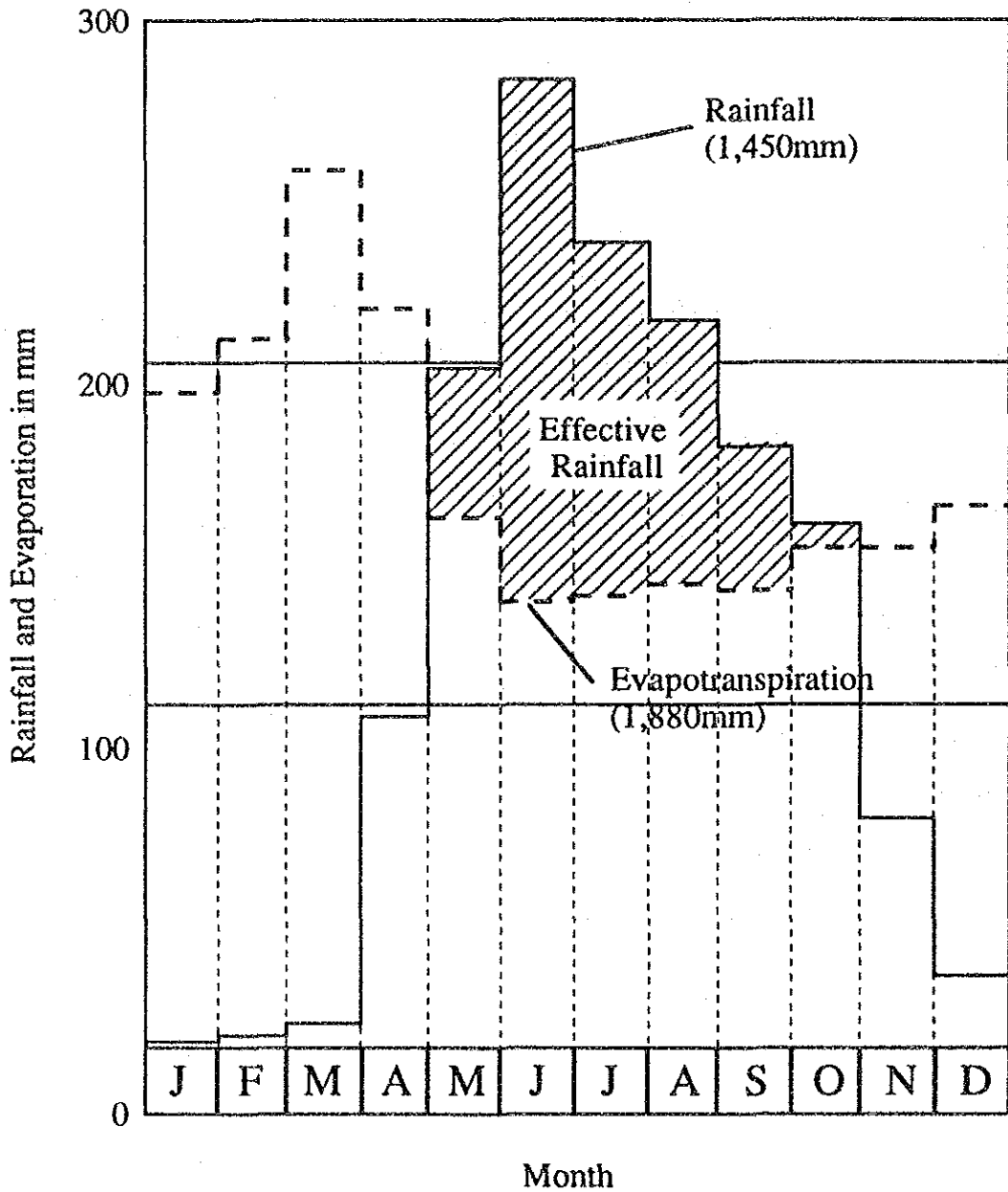
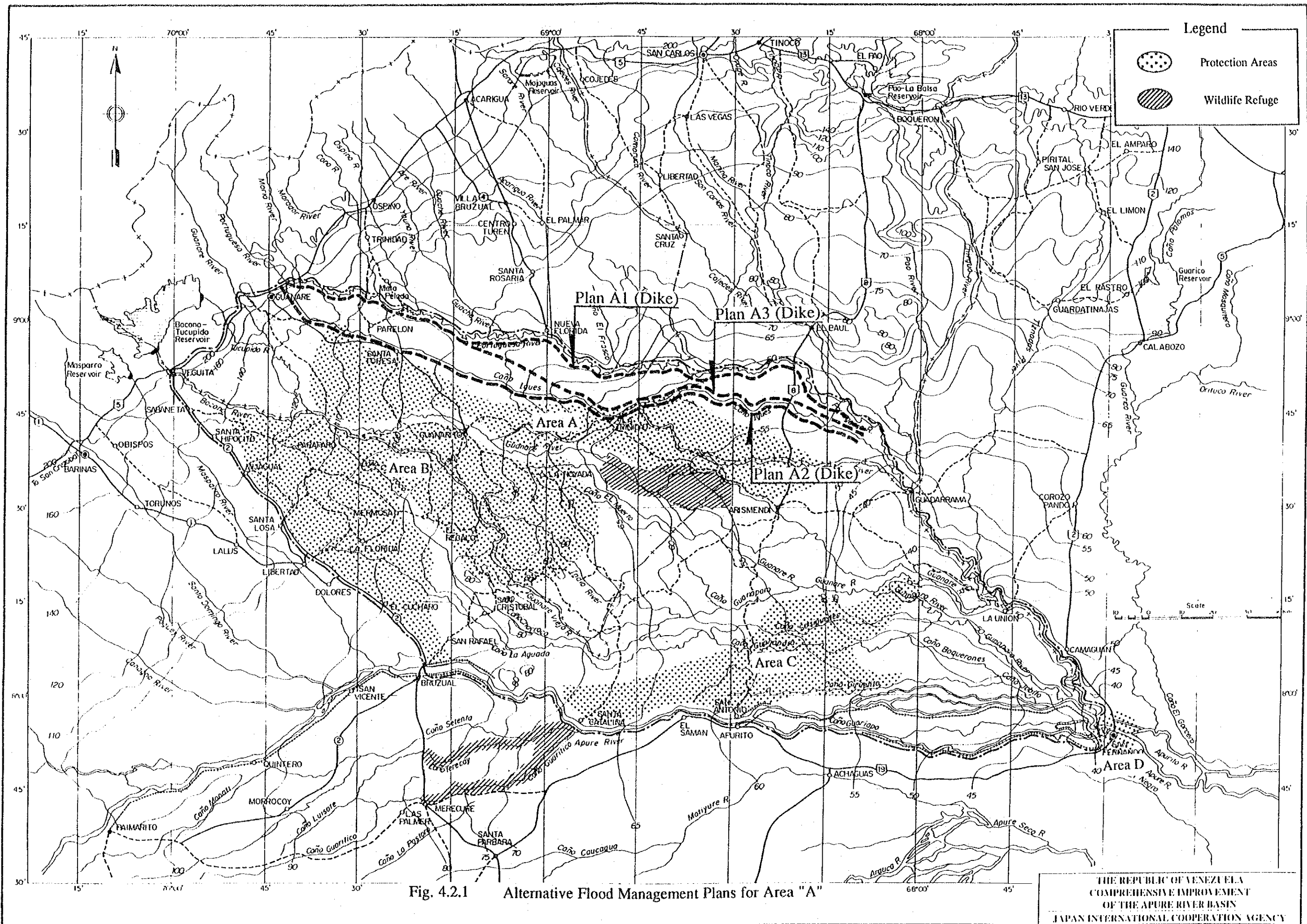


Fig. 4.1.8 Water Balance in Module

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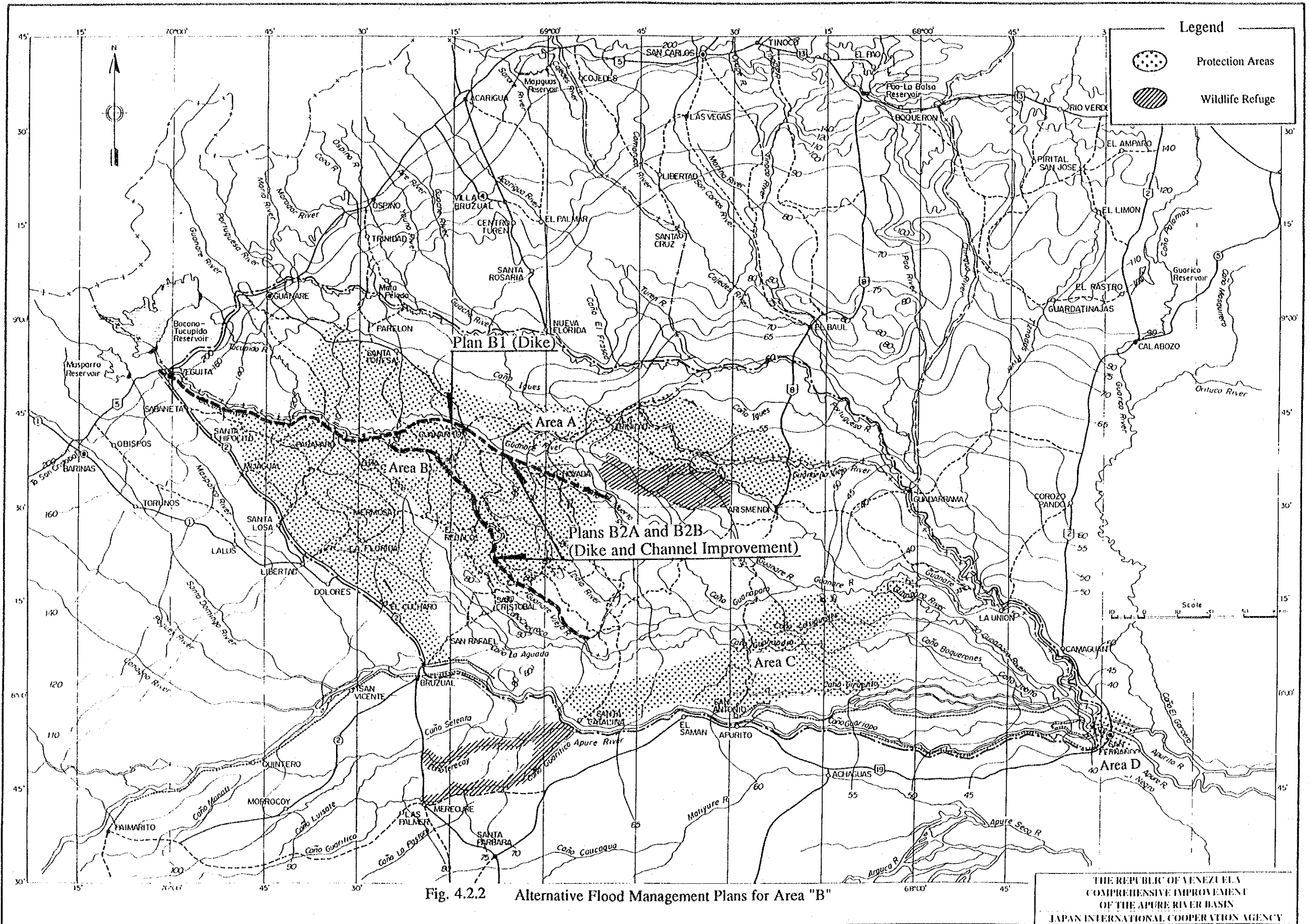


Fig. 4.2.2 Alternative Flood Management Plans for Area "B"

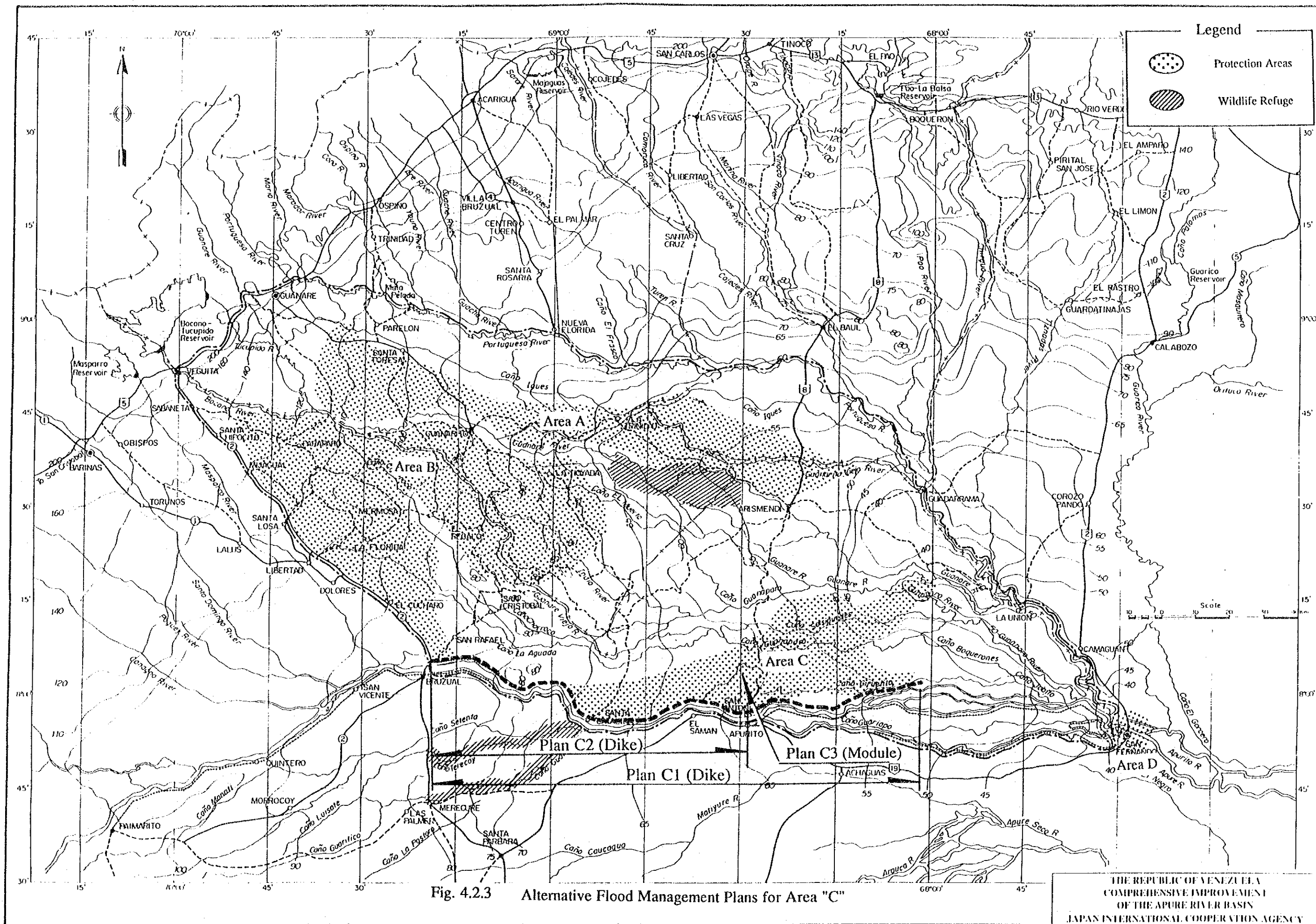


Fig. 4.2.3 Alternative Flood Management Plans for Area "C"

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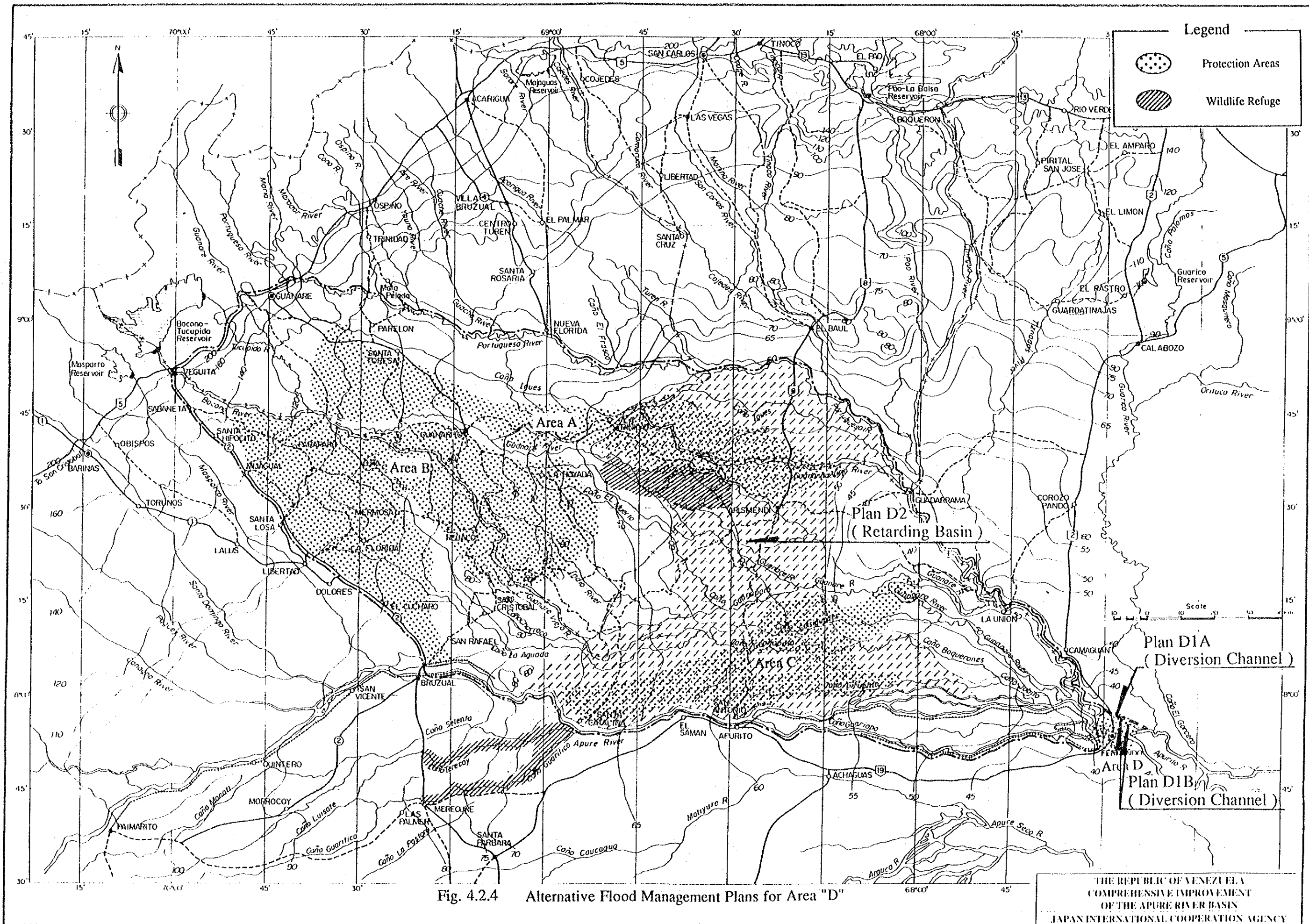


Fig. 4.2.4 Alternative Flood Management Plans for Area "D"

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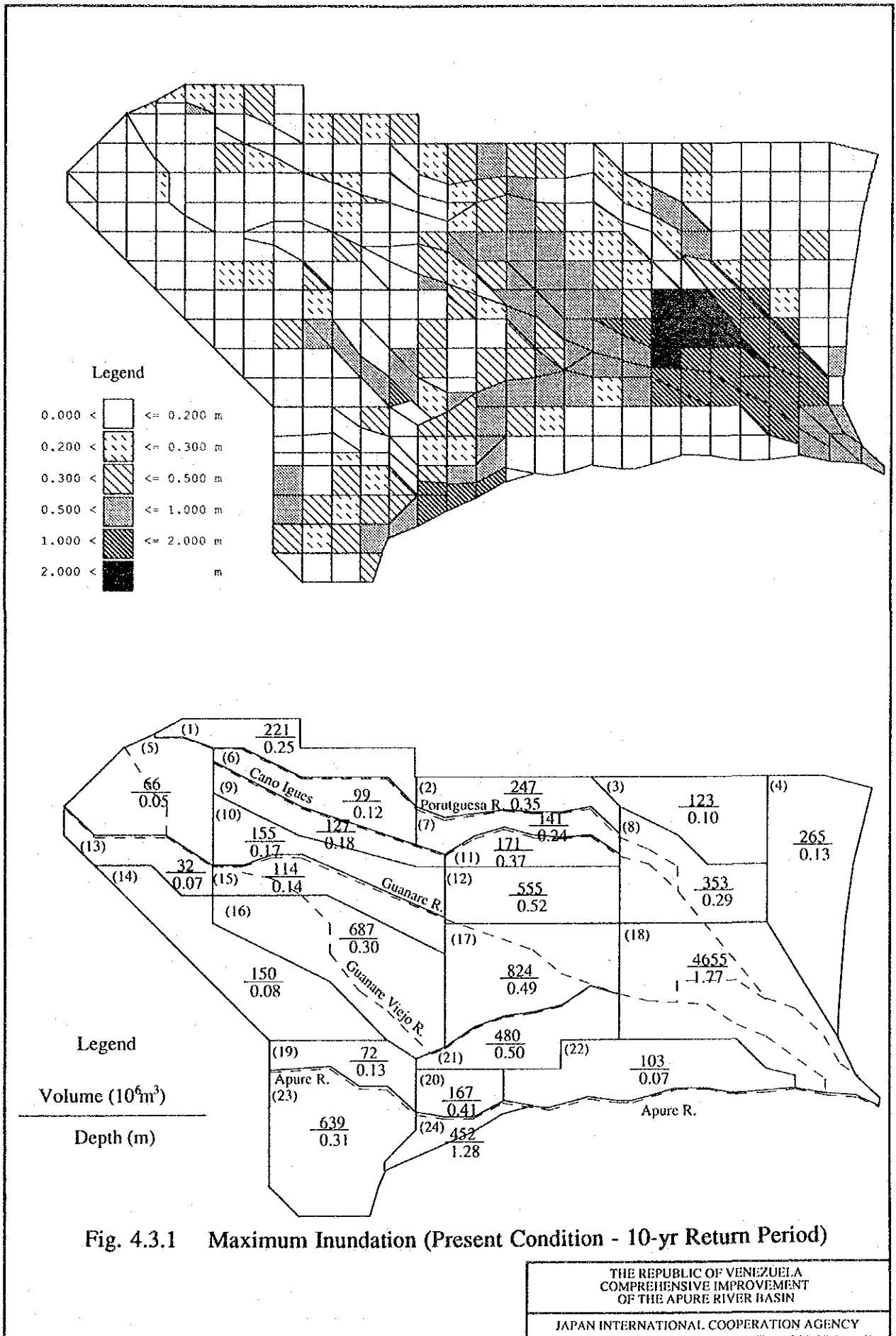


Fig. 4.3.1 Maximum Inundation (Present Condition - 10-yr Return Period)

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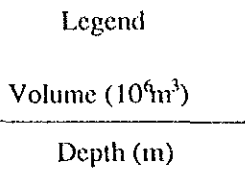
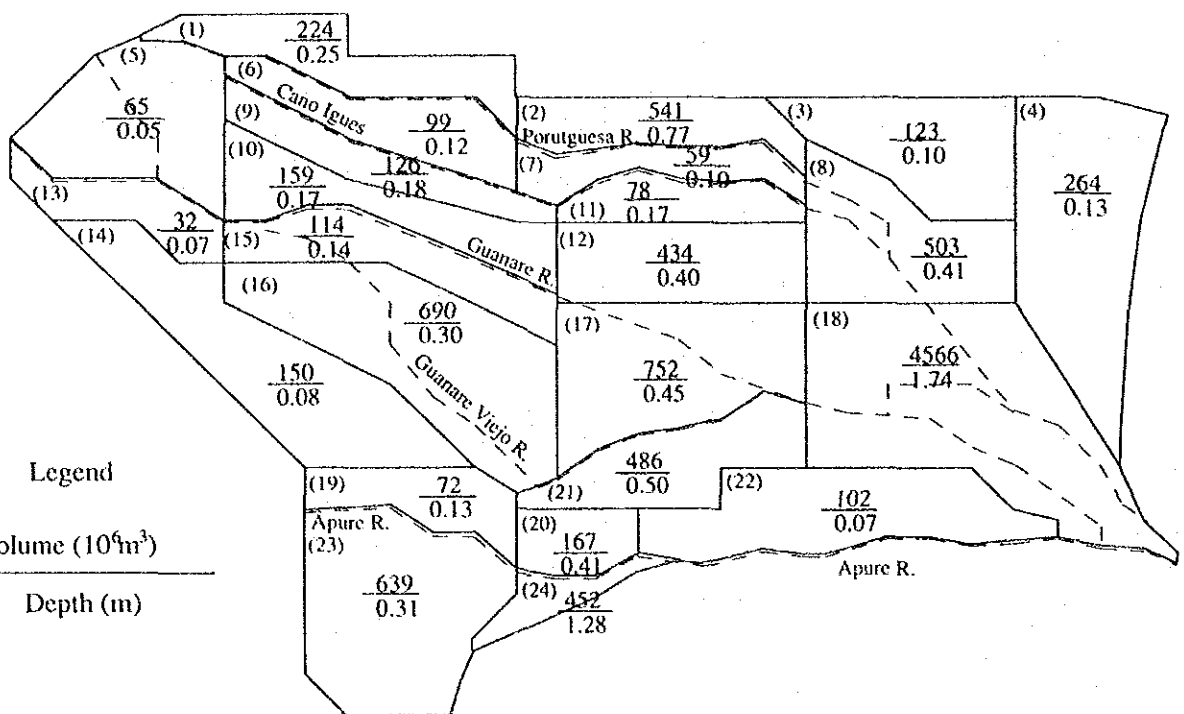
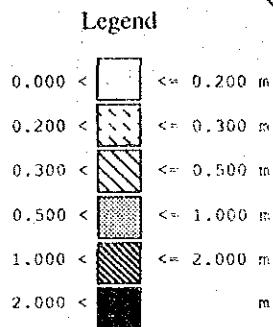
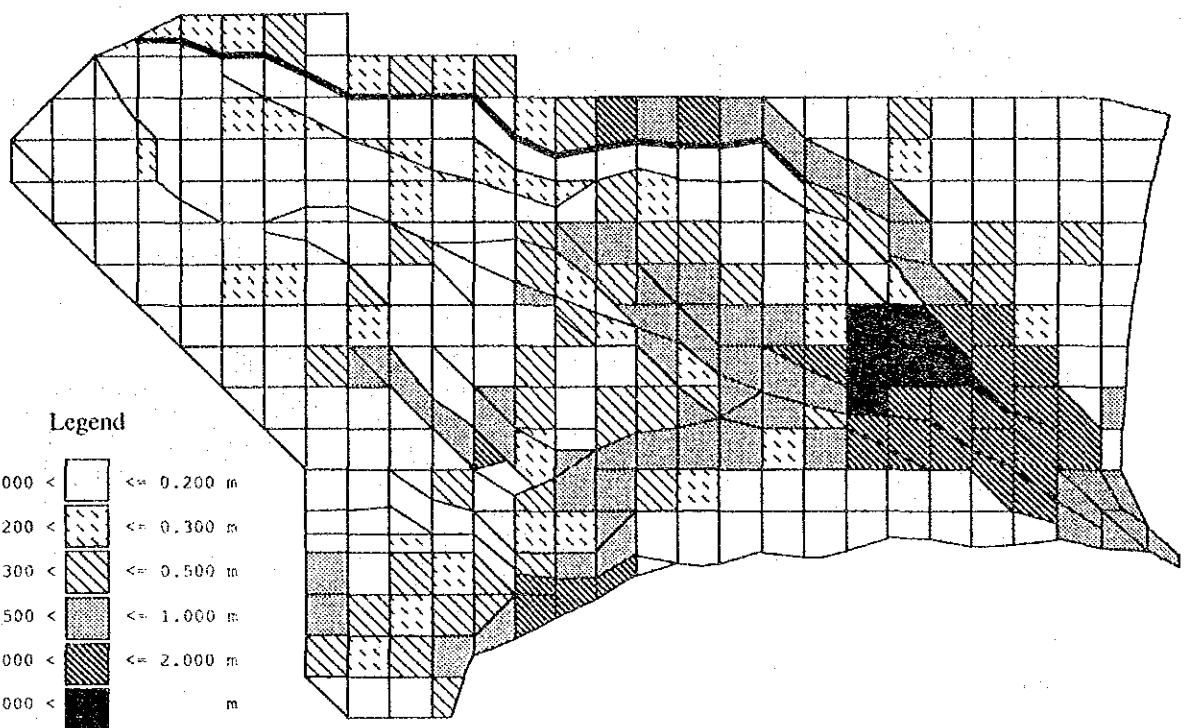


Fig. 4.3.2 Maximum Inundation (Plan A1 - 10-yr Return Period)

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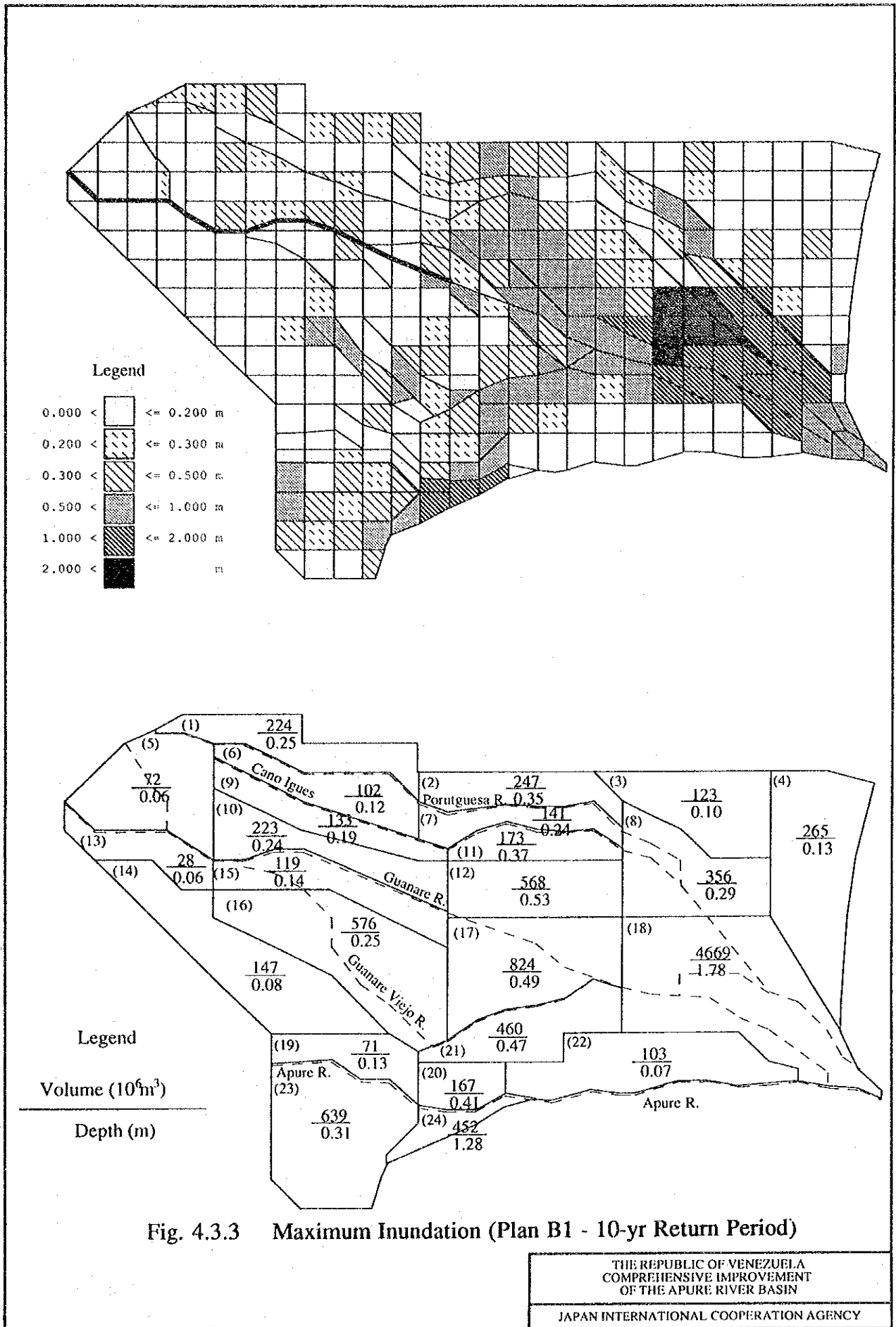


Fig. 4.3.3 Maximum Inundation (Plan B1 - 10-yr Return Period)

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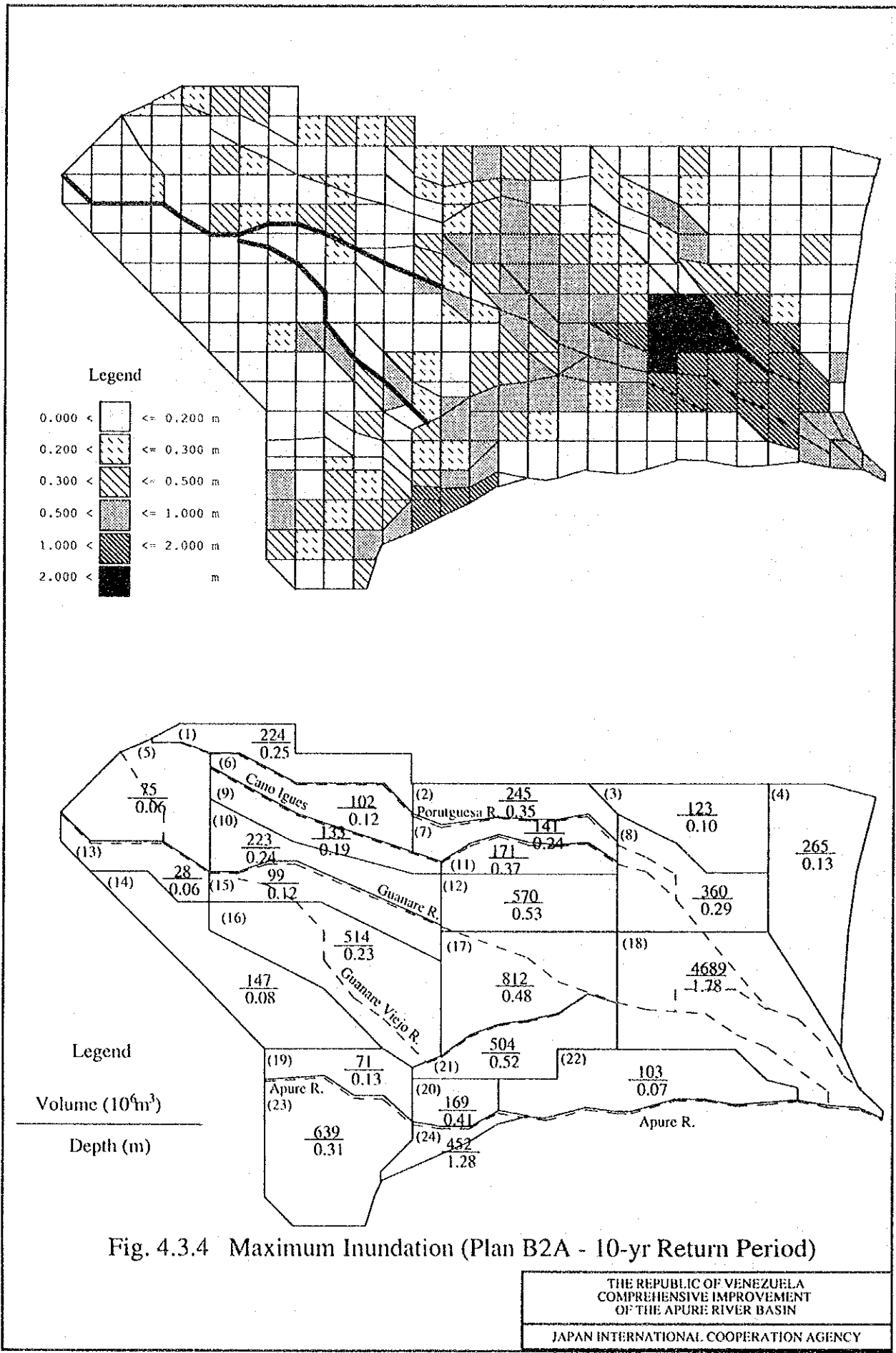


Fig. 4.3.4 Maximum Inundation (Plan B2A - 10-yr Return Period)

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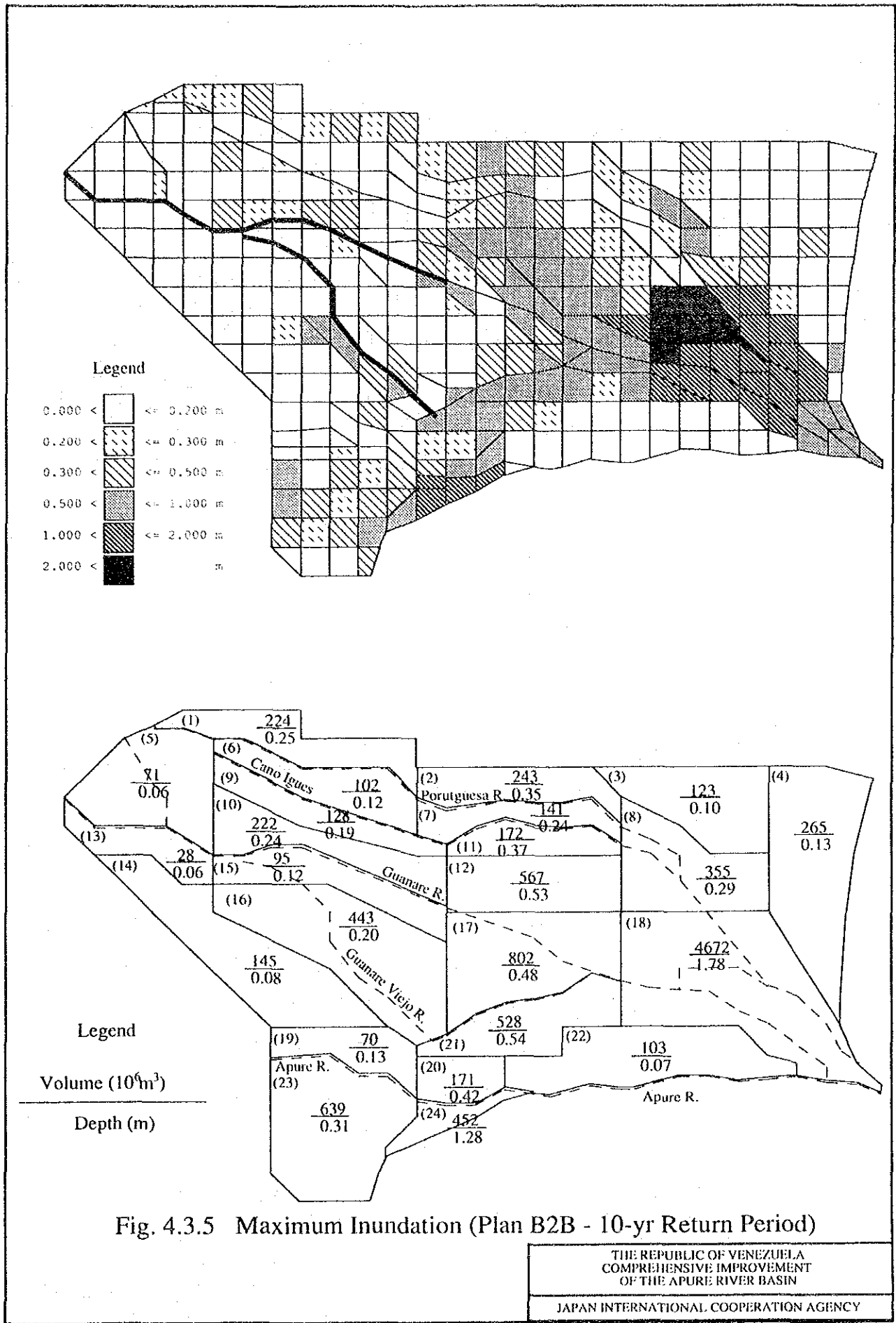


Fig. 4.3.5 Maximum Inundation (Plan B2B - 10-yr Return Period)

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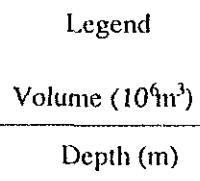
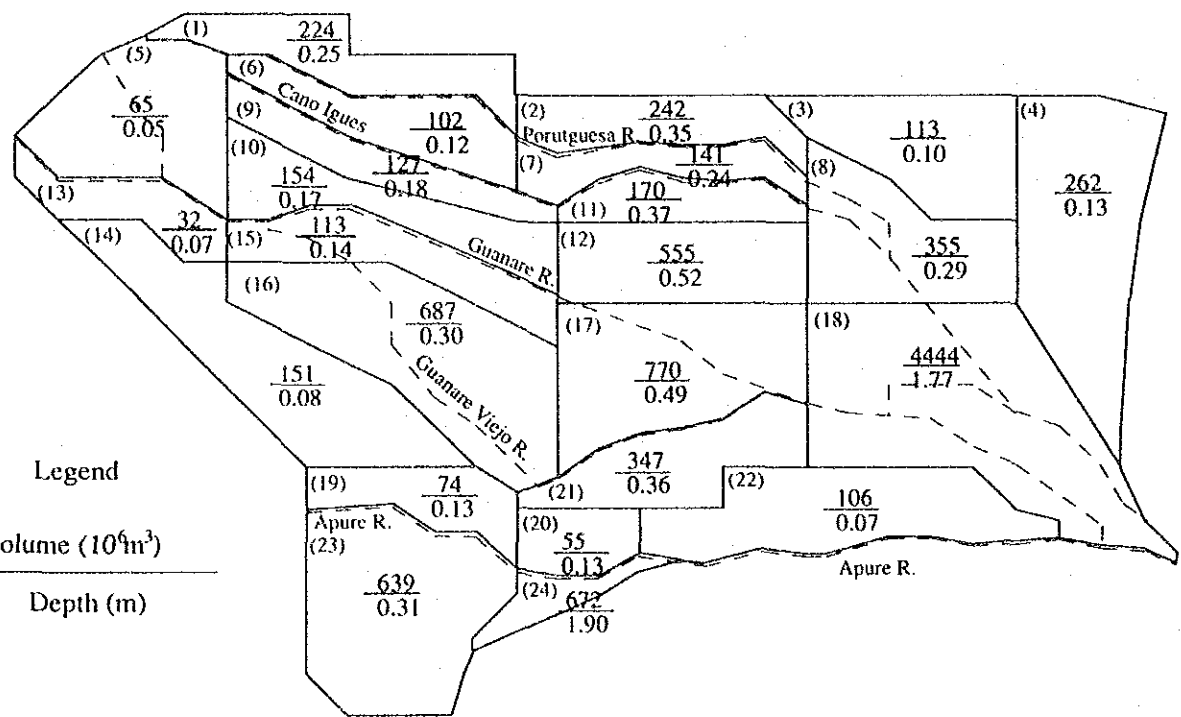
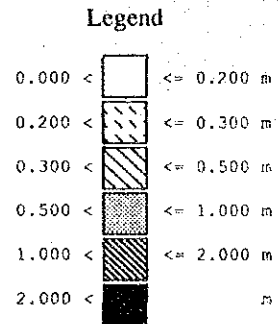
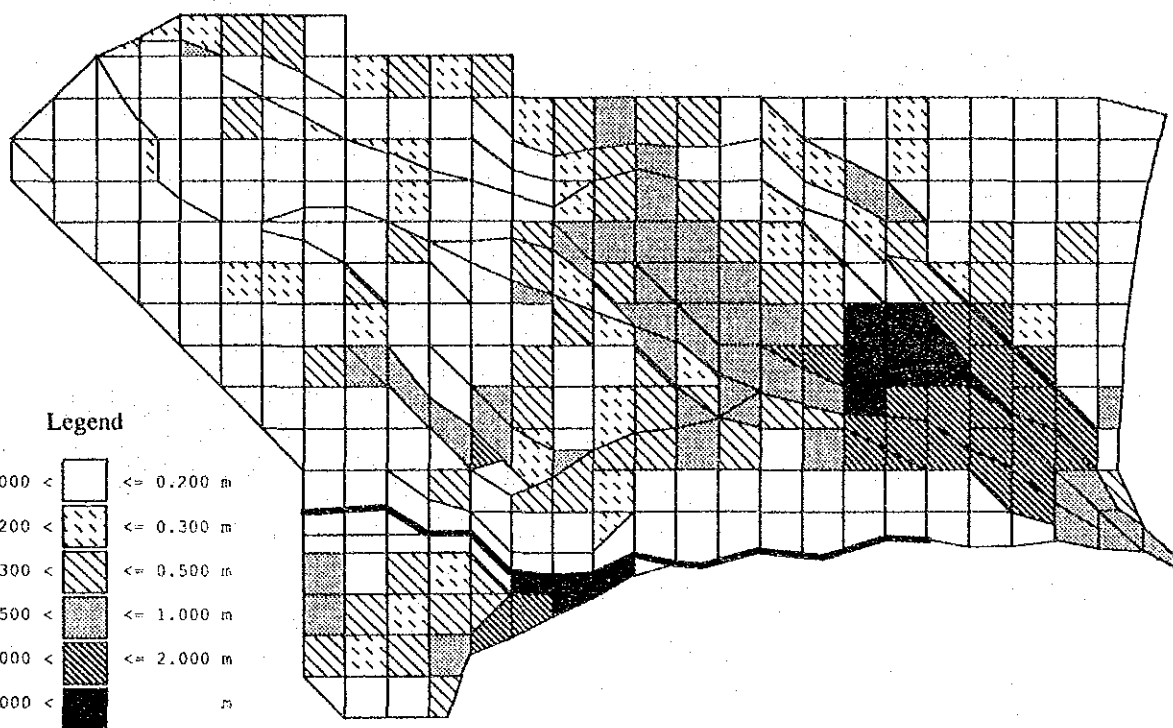


Fig. 4.3.6 Maximum Inundation (Plan C1 - 10-yr Return Period)

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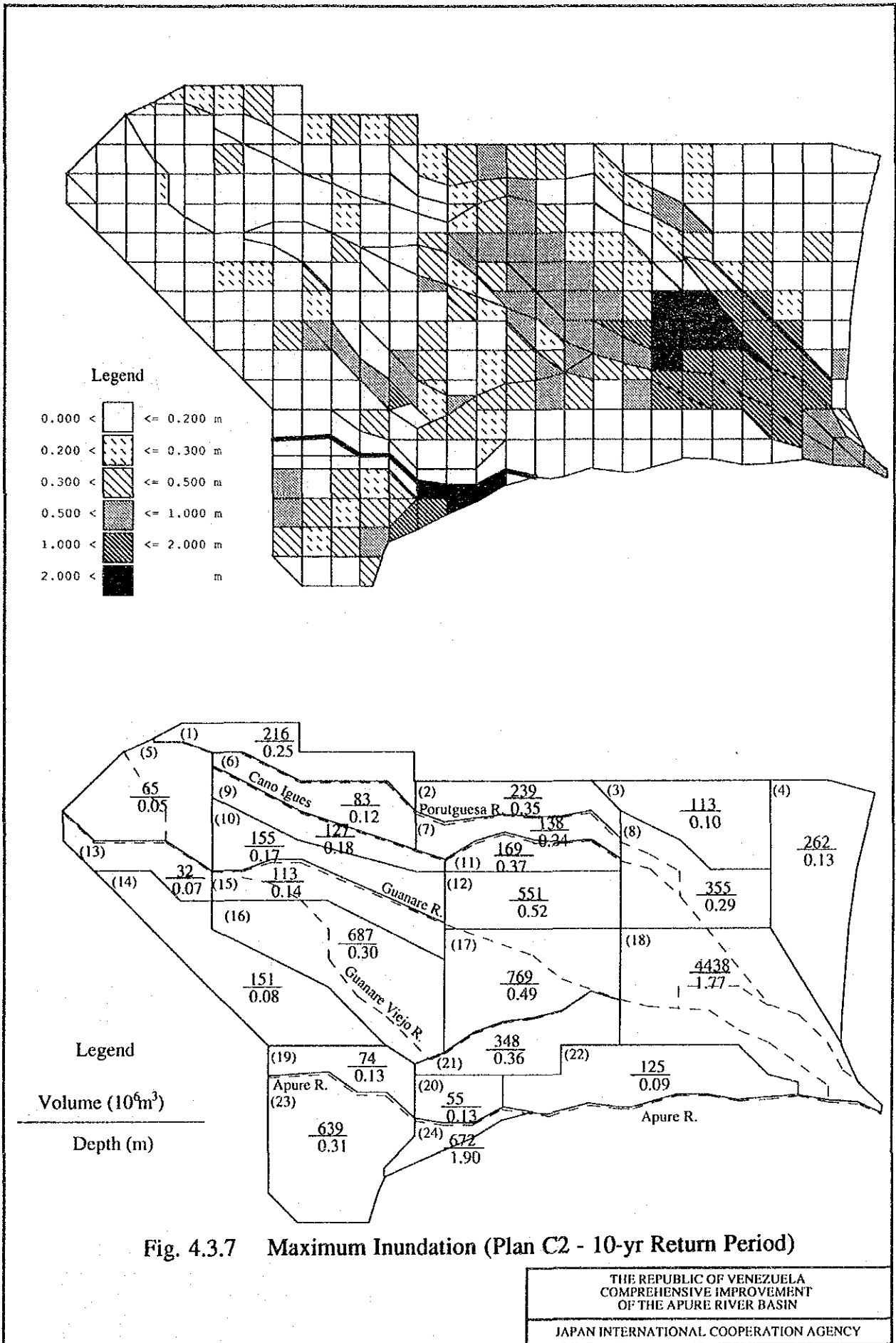


Fig. 4.3.7 Maximum Inundation (Plan C2 - 10-yr Return Period)

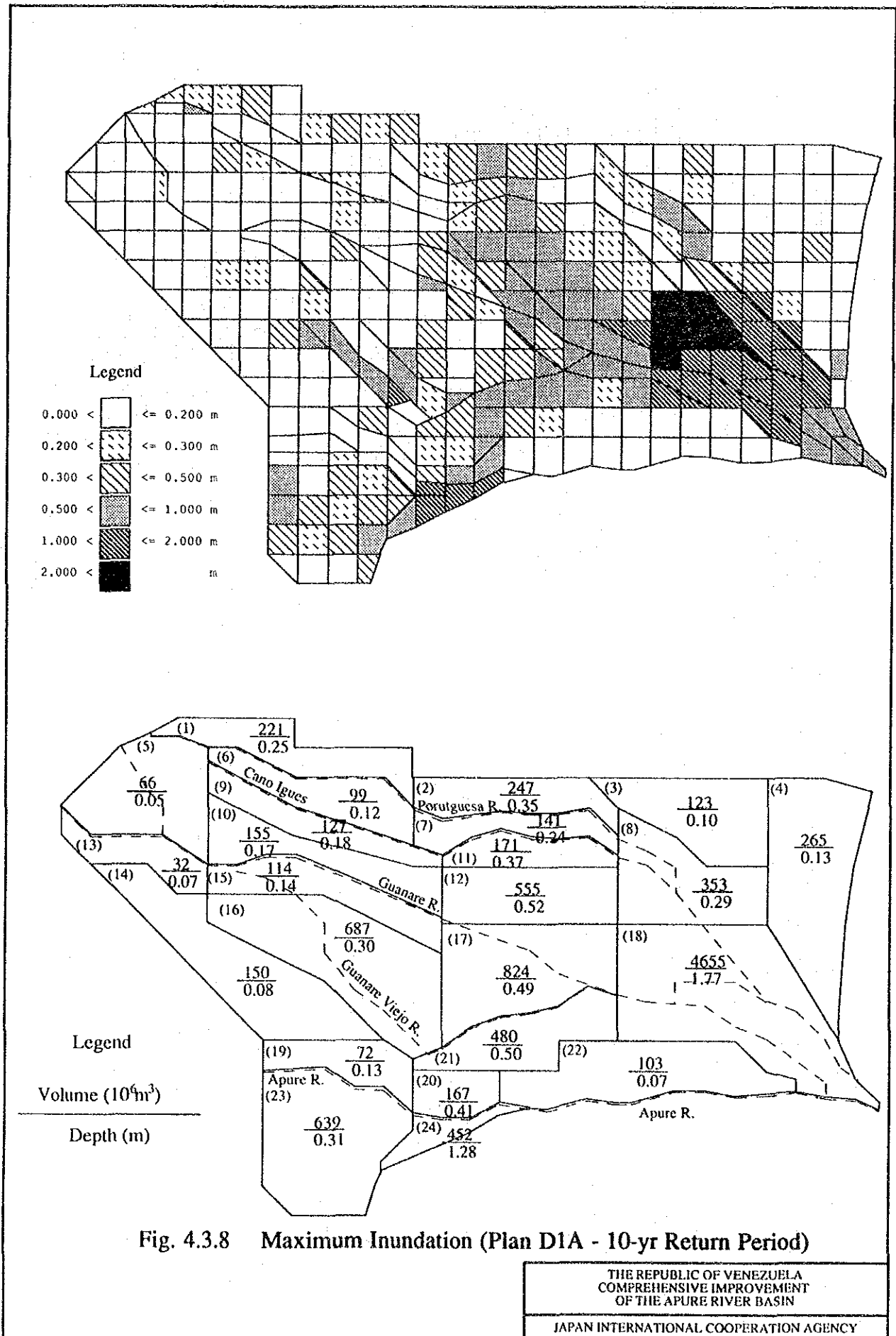


Fig. 4.3.8 Maximum Inundation (Plan D1A - 10-yr Return Period)

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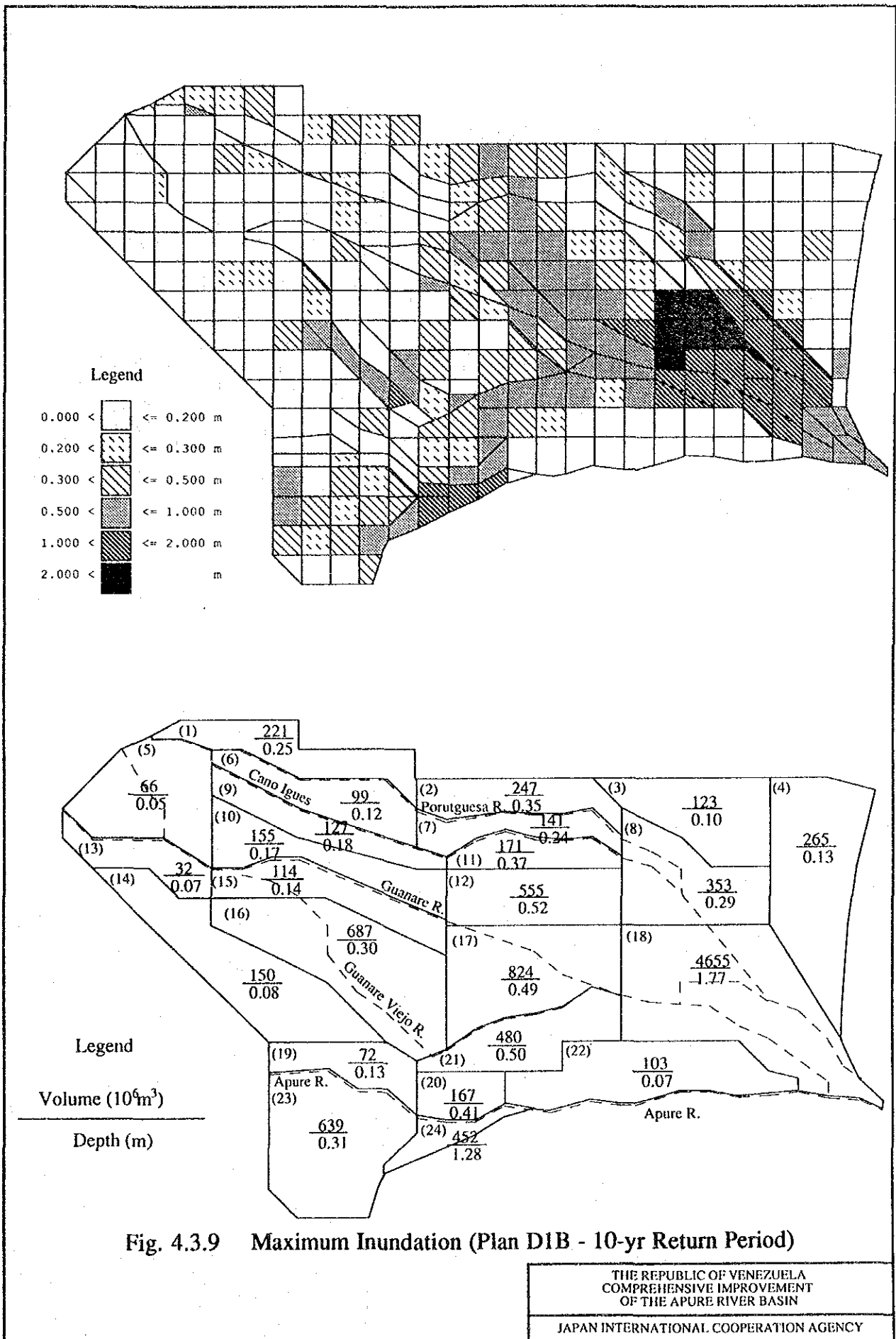


Fig. 4.3.9 Maximum Inundation (Plan D1B - 10-yr Return Period)

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