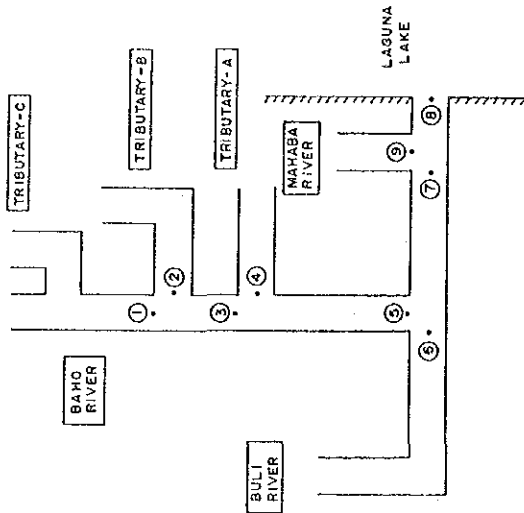


PASIG-MARIKINA RIVER BASIN  
(INCL. SAN JUAN RIVER BASIN)

UNIT: m<sup>3</sup>/s

| Point No. | RETURN PERIOD |      |      |      |      |      |      |
|-----------|---------------|------|------|------|------|------|------|
|           | 100           | 50   | 30   | 20   | 10   | 5    | 2    |
| 1         | 2000          | 1800 | 1700 | 1600 | 1400 | 1200 | 1000 |
| 2         | 2000          | 1800 | 1700 | 1600 | 1400 | 1200 | 1000 |
| 3         | 2700          | 2450 | 2250 | 2100 | 1900 | 1600 | 1300 |
| 4         | 3050          | 2800 | 2550 | 2400 | 2100 | 1750 | 1400 |
| 5         | 3500          | 3200 | 2900 | 2700 | 2400 | 2050 | 1600 |
| 6         | 3500          | 3200 | 2900 | 2800 | 2400 | 2050 | 1600 |
| 7         | 2250          | 2000 | 1850 | 1750 | 1450 | 1200 | 900  |
| 8         | 1200          | 1100 | 1000 | 950  | 850  | 750  | 550  |
| 9         | 140           | 130  | 125  | 120  | 115  | 110  | 105  |
| 10        | 290           | 260  | 270  | 260  | 250  | 240  | 220  |
| 11        | 420           | 400  | 395  | 380  | 360  | 340  | 320  |
| 12        | 700           | 670  | 660  | 630  | 590  | 560  | 510  |
| 13        | 790           | 780  | 740  | 700  | 660  | 600  | 540  |
| 14        | 1450          | 1300 | 1200 | 1150 | 1000 | 850  | 650  |



BULI-BAHO-MAHABA RIVER BASIN

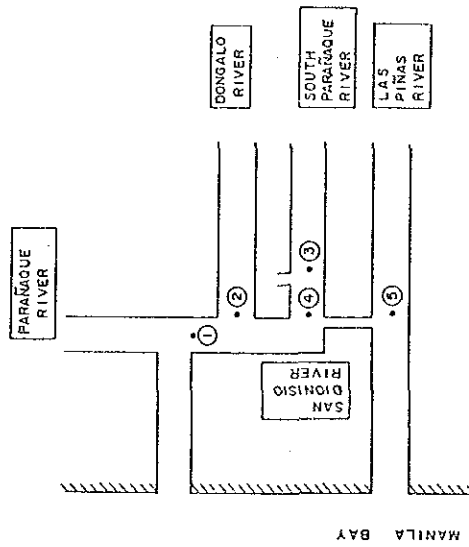
UNIT: m<sup>3</sup>/s

| Point No. | RETURN PERIOD |     |     |     |     |     |     |
|-----------|---------------|-----|-----|-----|-----|-----|-----|
|           | 100           | 50  | 30  | 20  | 10  | 5   | 2   |
| 1         | 260           | 230 | 210 | 205 | 200 | 180 | 160 |
| 2         | 70            | 65  | 60  | 60  | 55  | 50  | 45  |
| 3         | 240           | 220 | 200 | 190 | 180 | 160 | 140 |
| 4         | 210           | 190 | 170 | 165 | 160 | 140 | 120 |
| 5         | 430           | 390 | 350 | 340 | 310 | 280 | 230 |
| 6         | 80            | 75  | 70  | 68  | 65  | 60  | 50  |
| 7         | 450           | 400 | 360 | 350 | 320 | 280 | 230 |
| 8         | 480           | 430 | 390 | 370 | 340 | 290 | 230 |
| 9         | 150           | 130 | 120 | 115 | 110 | 100 | 90  |

THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
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JAPAN INTERNATIONAL COOPERATION AGENCY

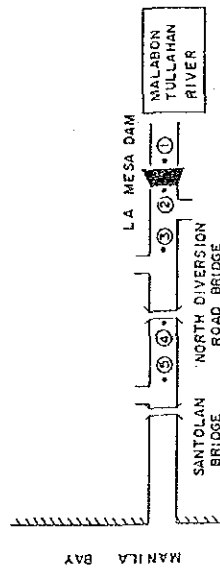
図 3. 4 - 6 (1/2) 1986年土地利用下の  
河川流域の確率流量



SOUTH PARAÑAQUE-LAS PIÑAS RIVER BASIN

UNIT: m<sup>3</sup>/s

| Point No. | RETURN PERIOD |     |     |     |     |
|-----------|---------------|-----|-----|-----|-----|
|           | 100           | 50  | 30  | 20  | 10  |
| ①         | 510           | 460 | 420 | 400 | 350 |
| ②         | 180           | 160 | 150 | 140 | 130 |
| ③         | 300           | 260 | 240 | 230 | 210 |
| ④         | 330           | 300 | 280 | 260 | 230 |
| ⑤         | 180           | 160 | 150 | 140 | 130 |



MALABON-TULLAHAN RIVER BASIN

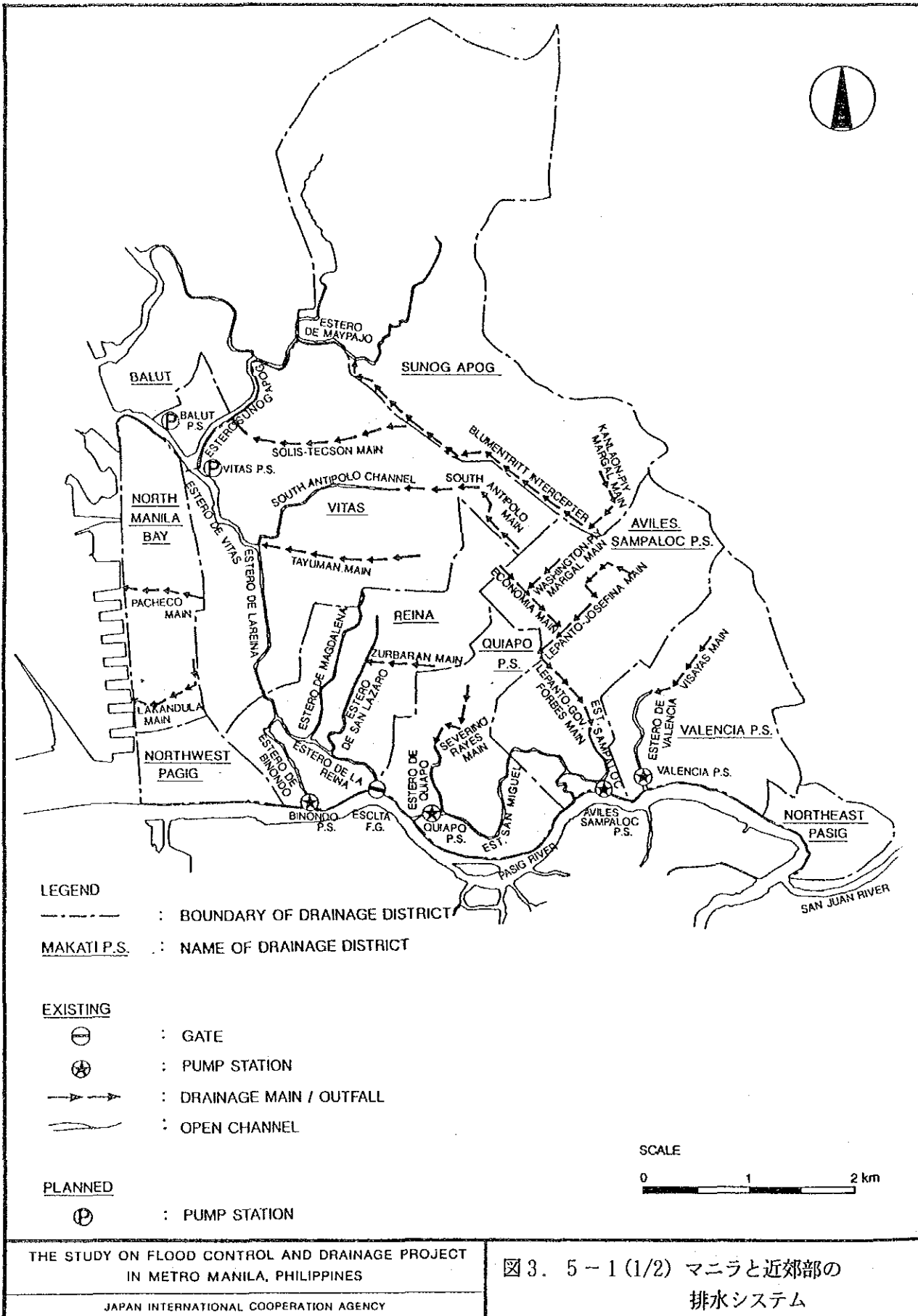
UNIT: m<sup>3</sup>/s

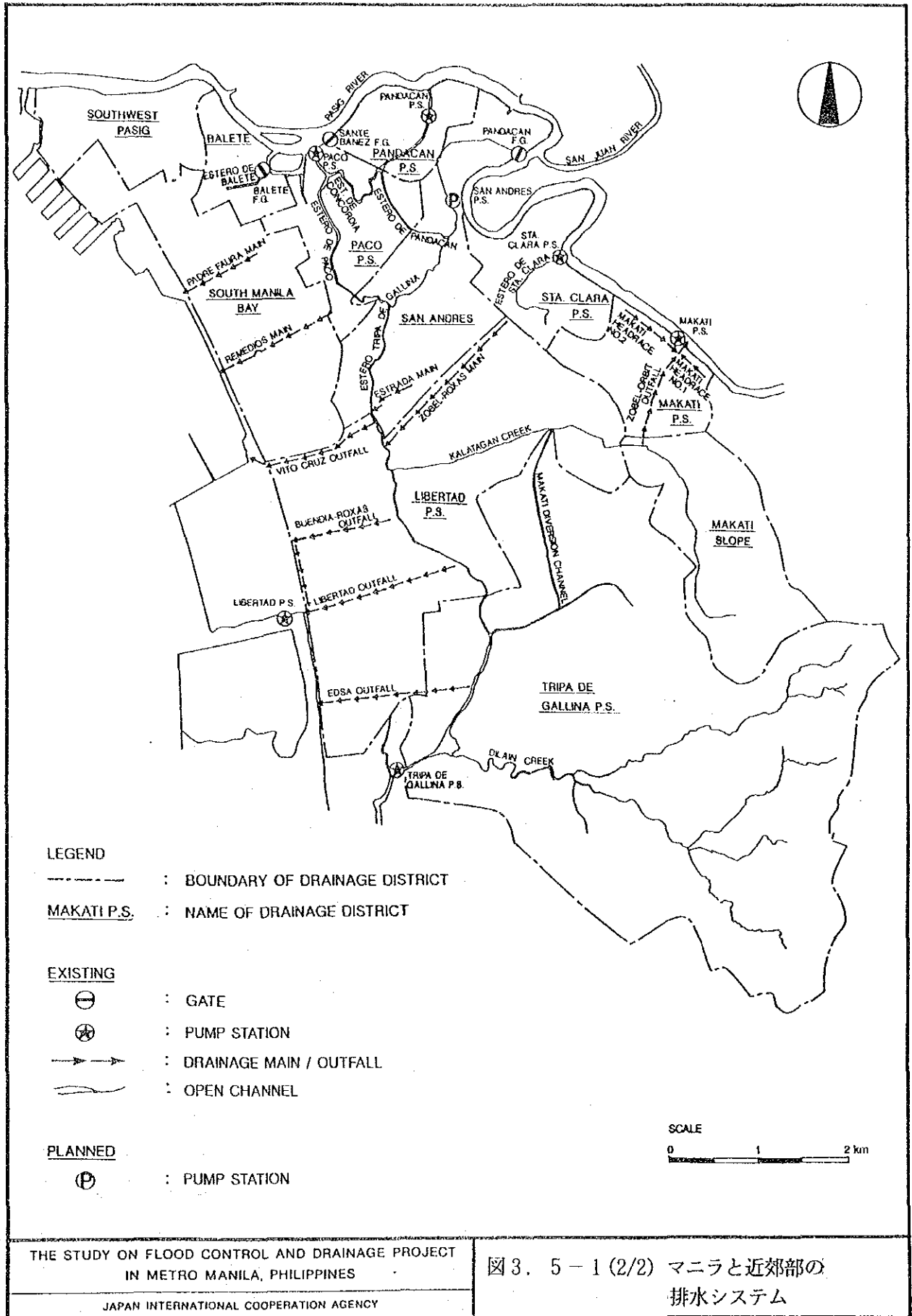
| Point No. | RETURN PERIOD |     |     |     |     |
|-----------|---------------|-----|-----|-----|-----|
|           | 100           | 50  | 30  | 20  | 10  |
| ①         | 395           | 365 | 355 | 335 | 300 |
| ②         | 235           | 215 | 205 | 195 | 170 |
| ③         | 315           | 290 | 280 | 260 | 230 |
| ④         | 390           | 350 | 340 | 310 | 270 |
| ⑤         | 420           | 380 | 360 | 335 | 285 |

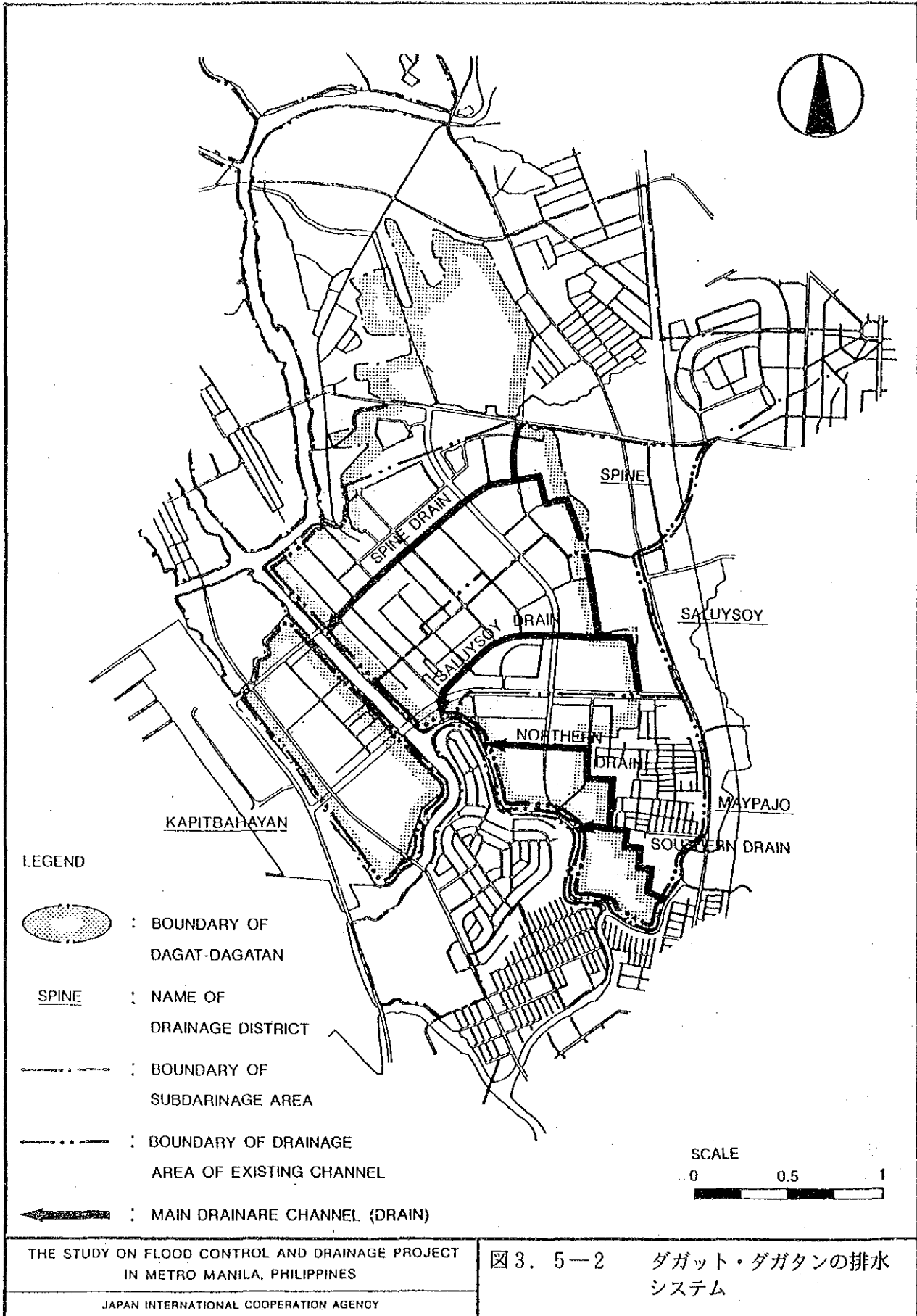
THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
IN METRO MANILA, PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

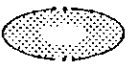
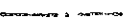


図3. 4-6(2/2) 1986年土地利用下の  
河川流域の確率流量







LEGEND

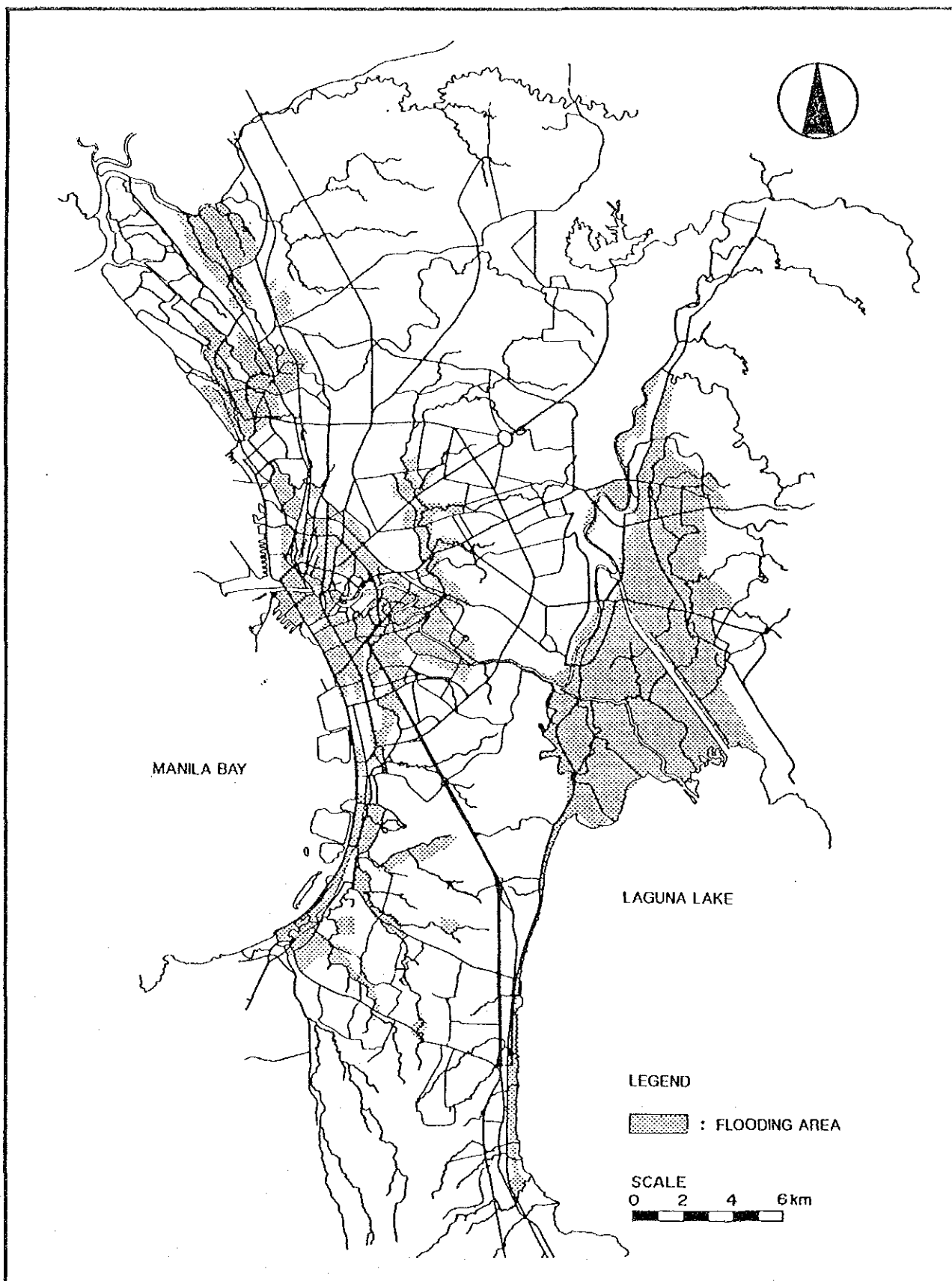
-  : BOUNDARY OF DAGAT-DAGATAN
- SPINE : NAME OF DRAINAGE DISTRICT
-  : BOUNDARY OF SUBDRAINAGE AREA
-  : BOUNDARY OF DRAINAGE AREA OF EXISTING CHANNEL
-  : MAIN DRAINARE CHANNEL (DRAIN)

SCALE  
0 0.5 1

THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
IN METRO MANILA, PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

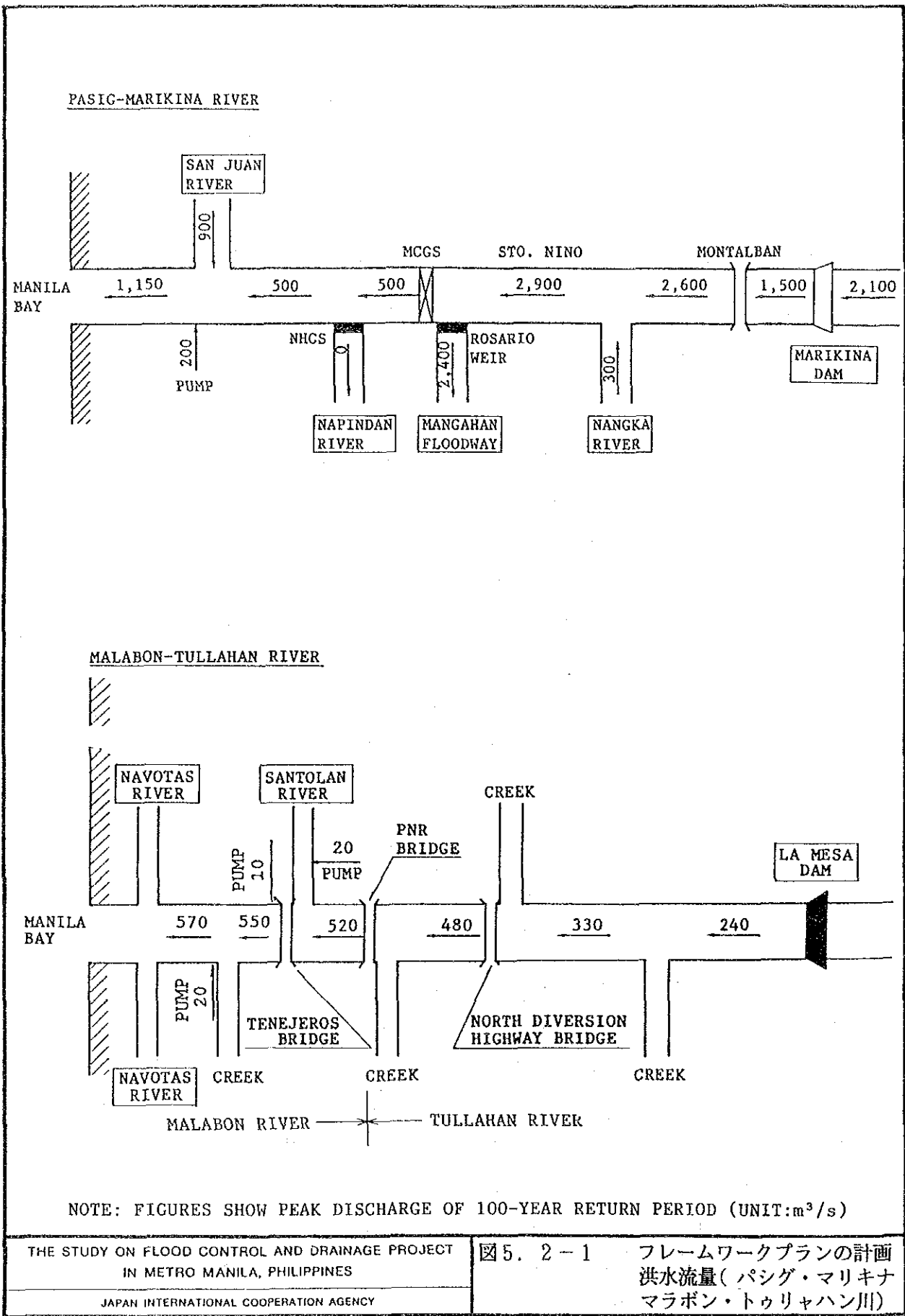
図 3. 5-2 ダガット・ダガタンの排水システム



THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
IN METRO MANILA, PHILIPPINES

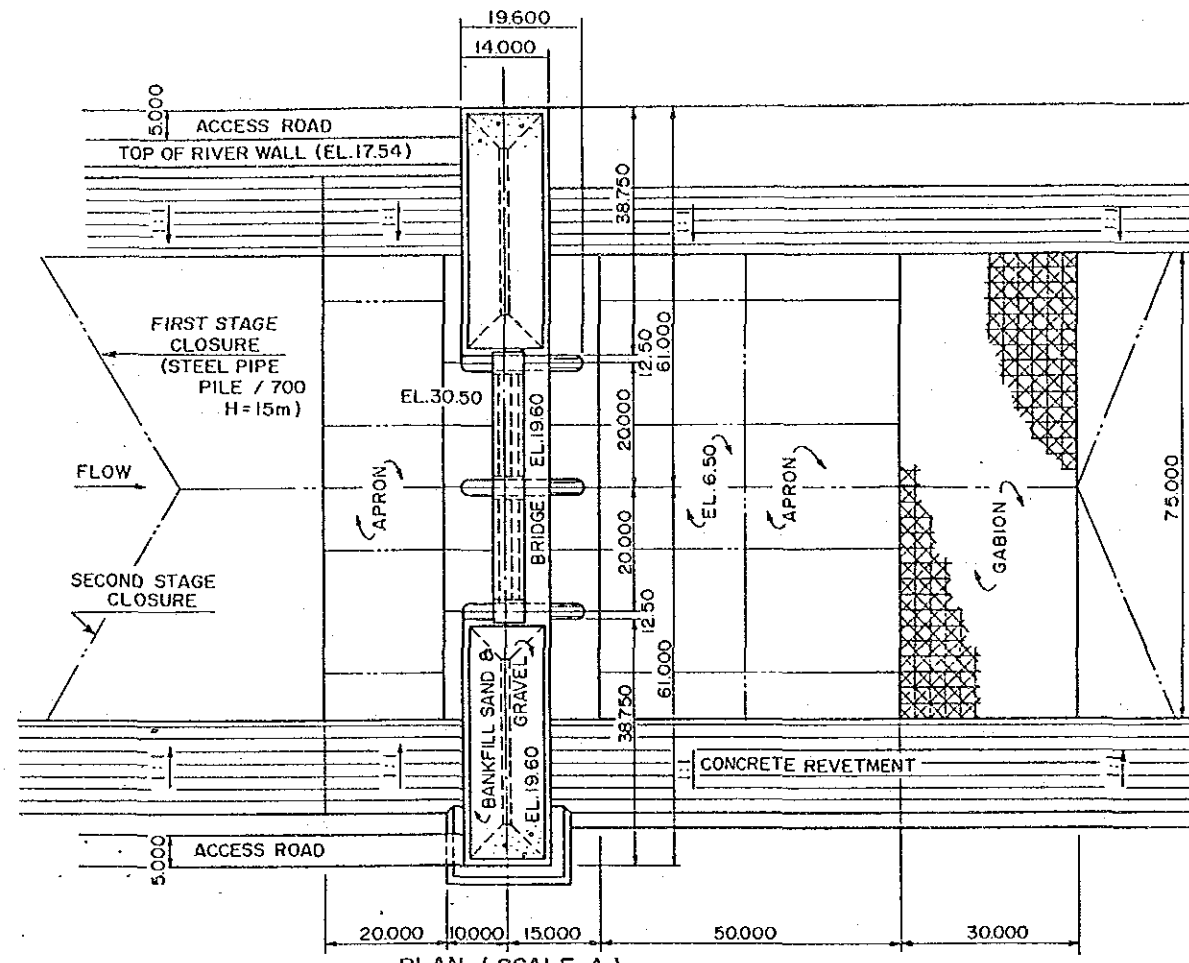
JAPAN INTERNATIONAL COOPERATION AGENCY

図 3. 8-1 1986年氾濫域図

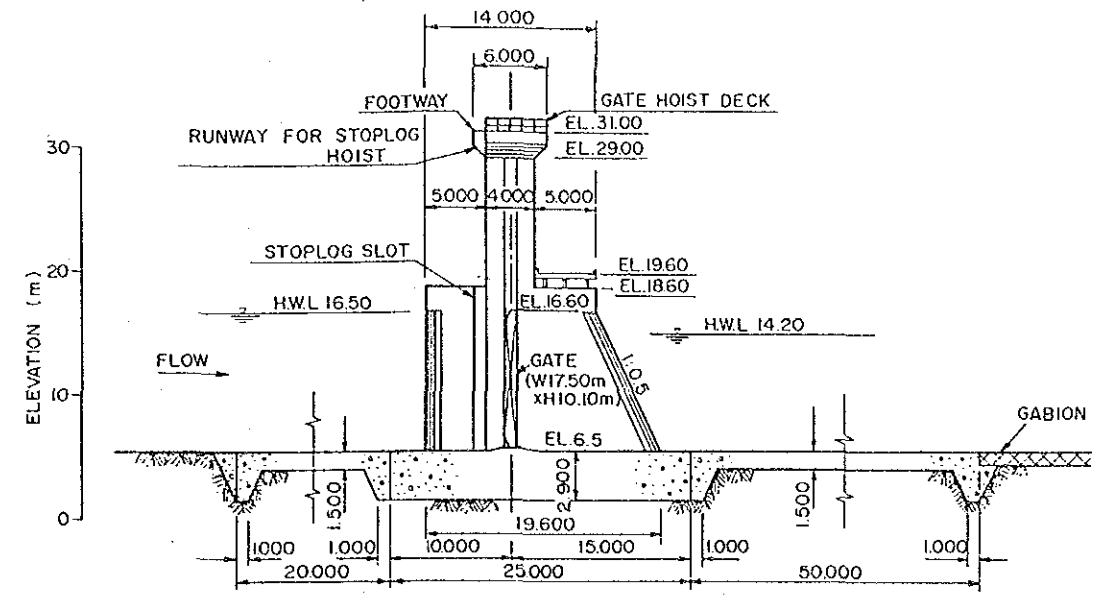




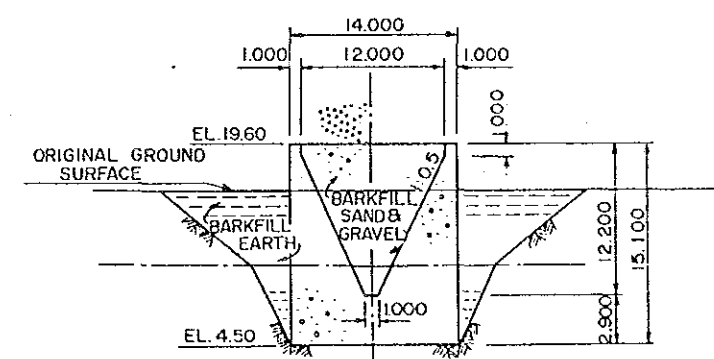




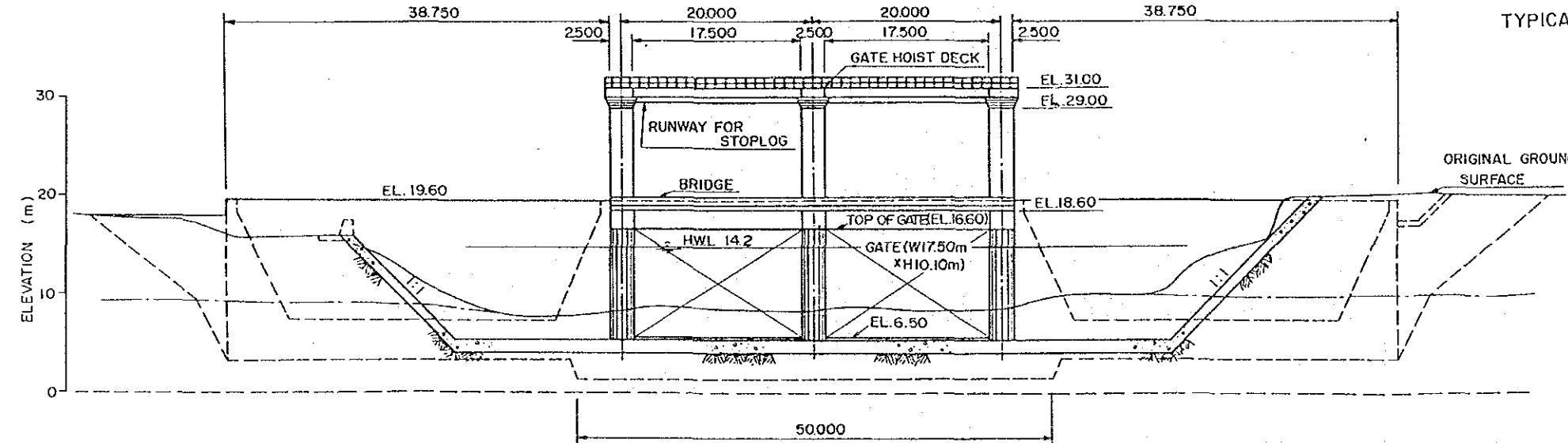
PLAN (SCALE A)



CROSS SECTION OF PIER (SCALE B)



TYPICAL SECTION OF ABUTMENT (SCALE B)

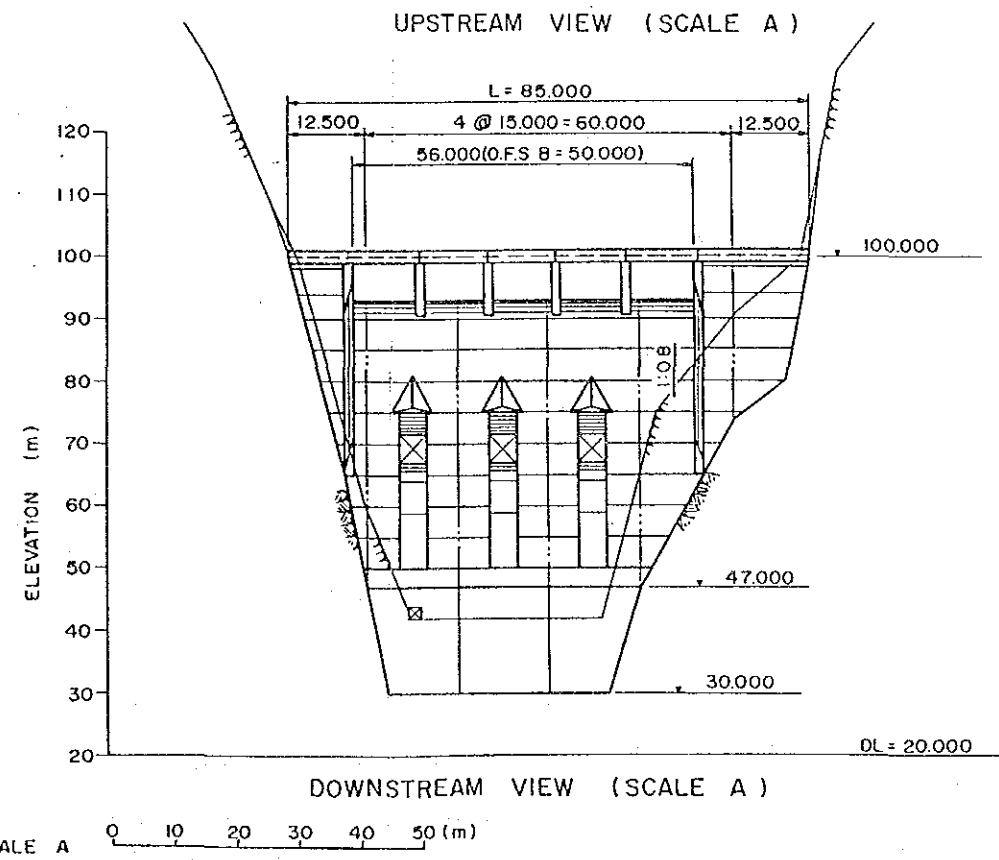
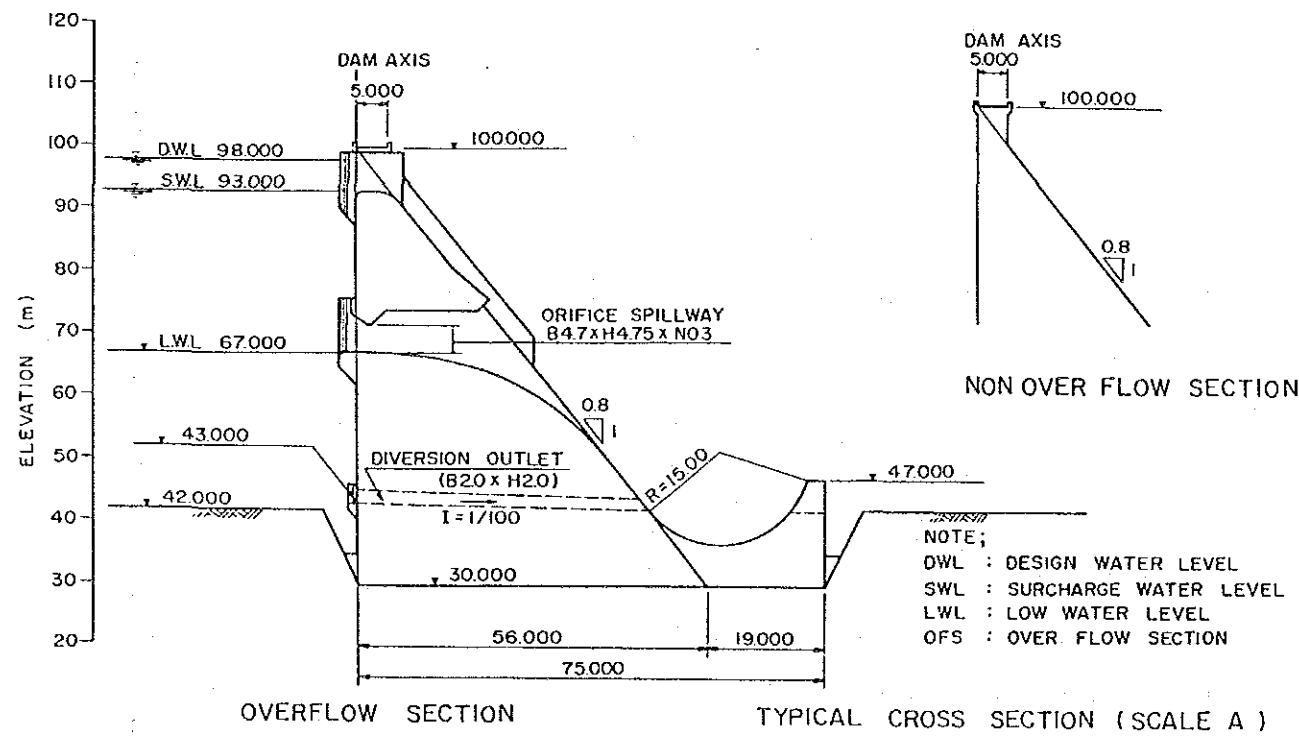
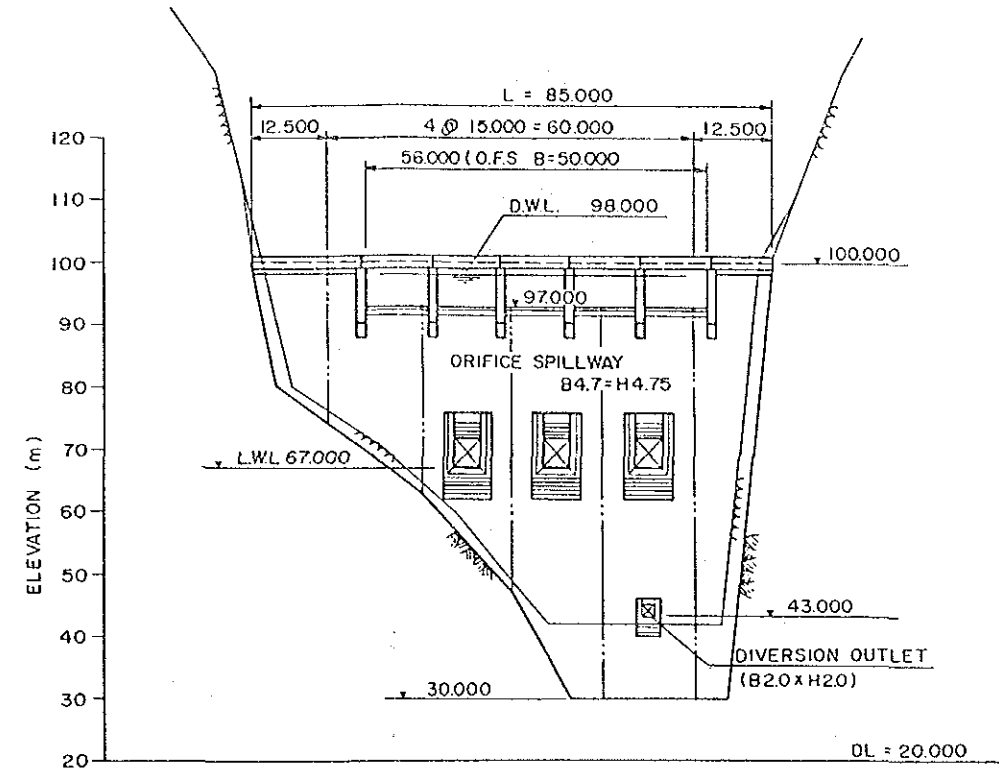
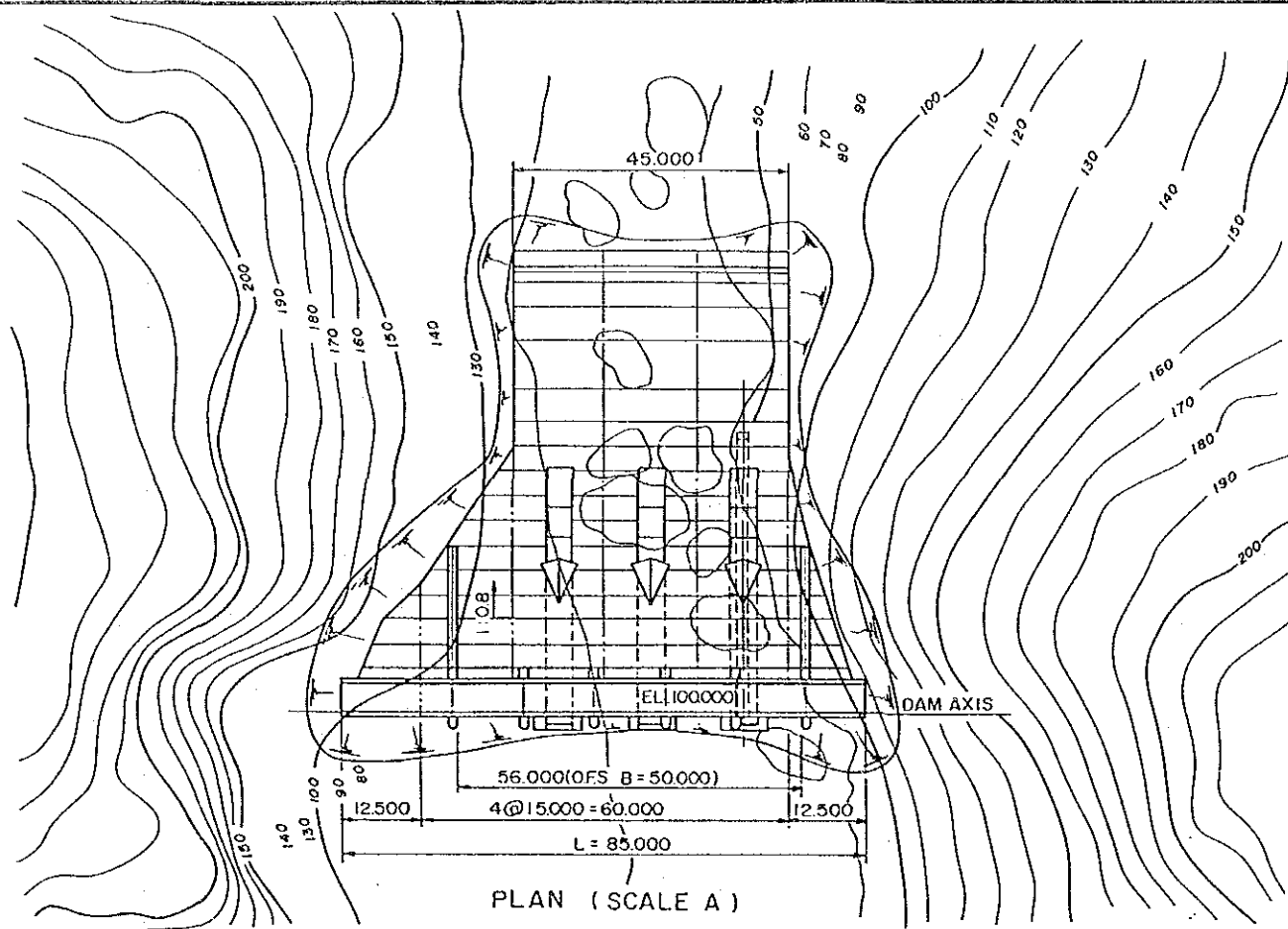


DOWNSTREAM ELEVATION (SCALE B)

SCALE A 0 10 20 30 40 (m)  
 SCALE B 0 10 20 (m)

THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
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 JAPAN INTERNATIONAL COOPERATION AGENCY

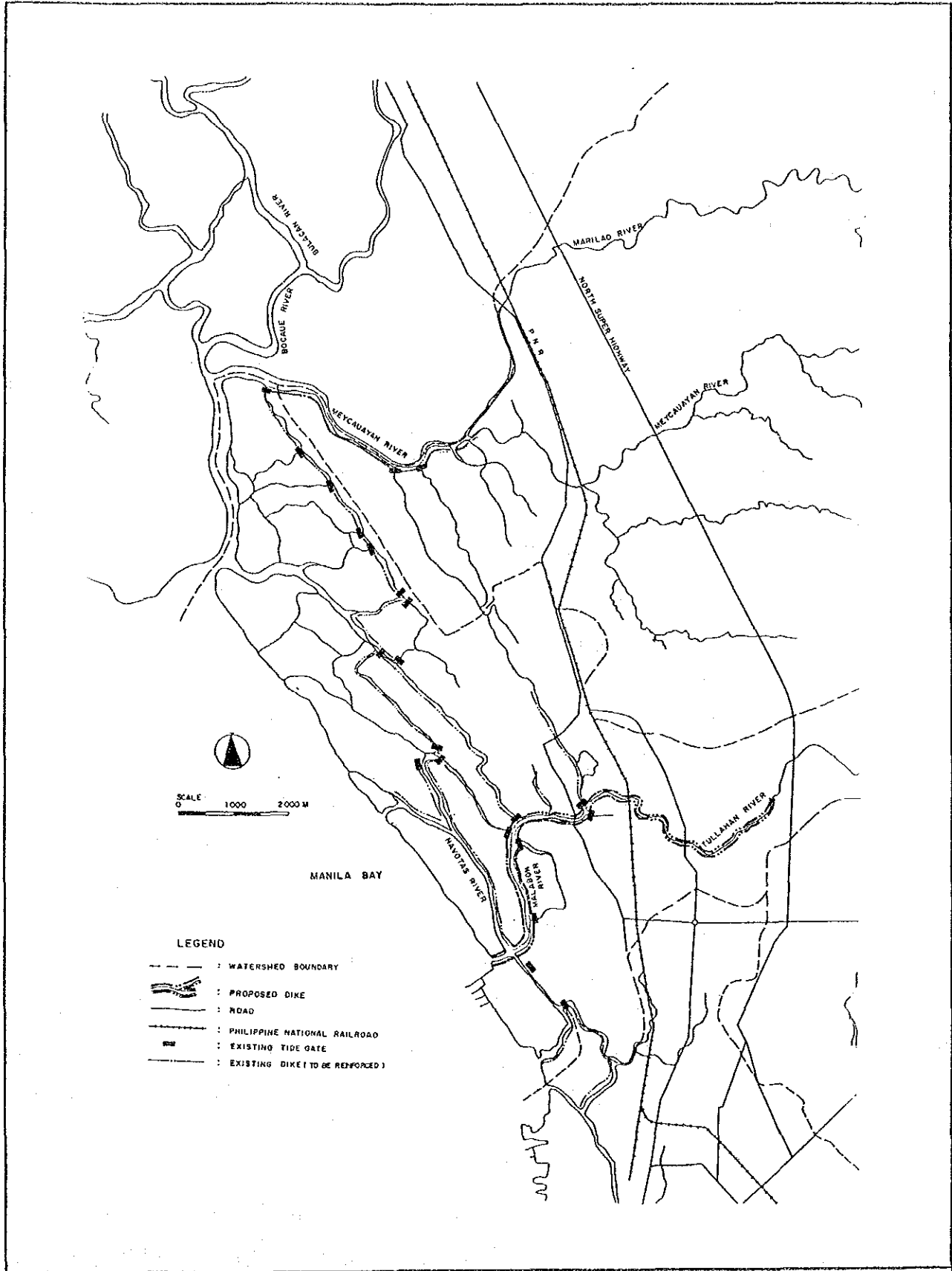
図 5. 2-2 マリキナ水門(MCGS)



THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
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 JAPAN INTERNATIONAL COOPERATION AGENCY

図 5. 2-3 マリキナダム

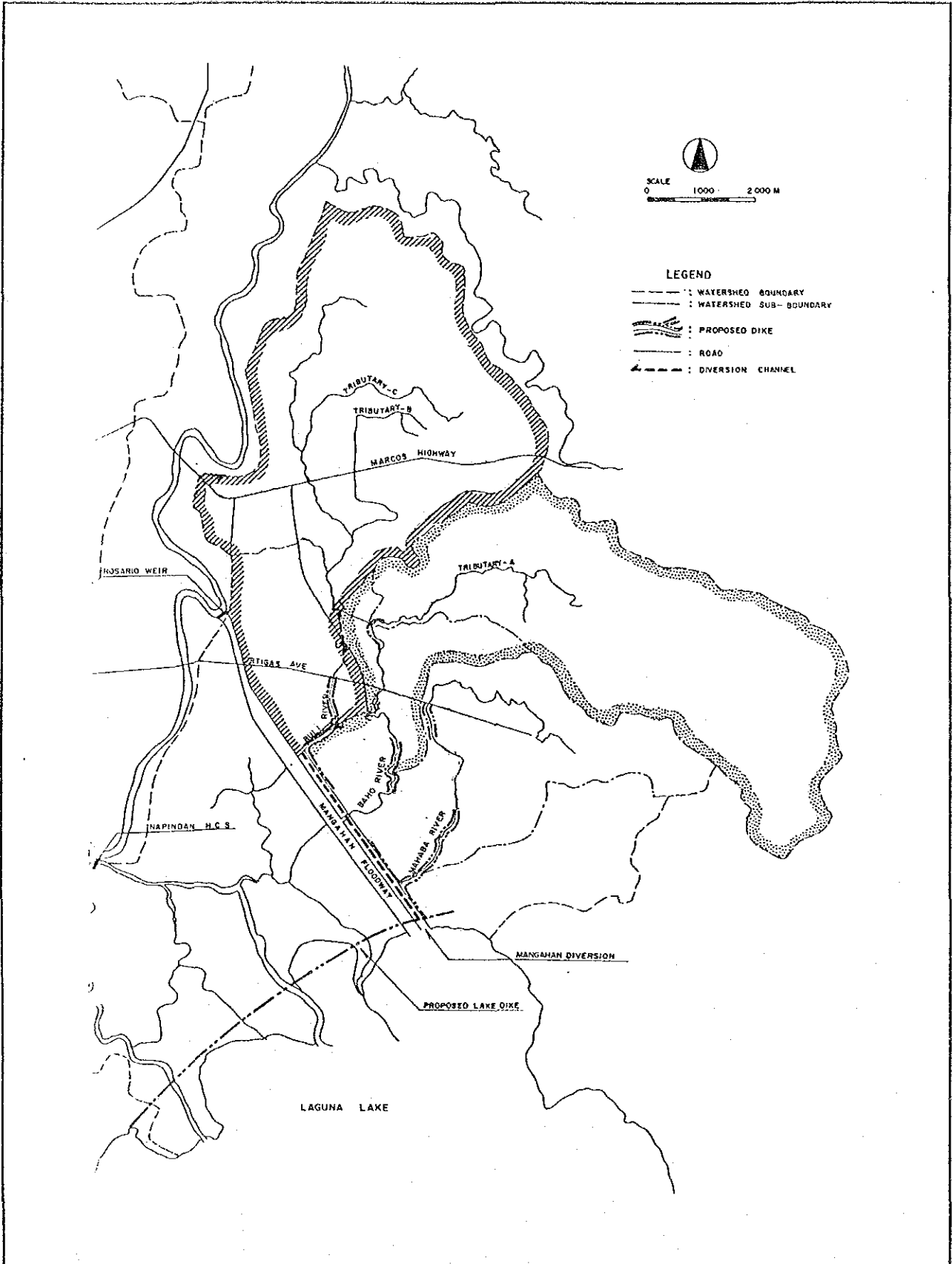




THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
 IN METRO MANILA, PHILIPPINES

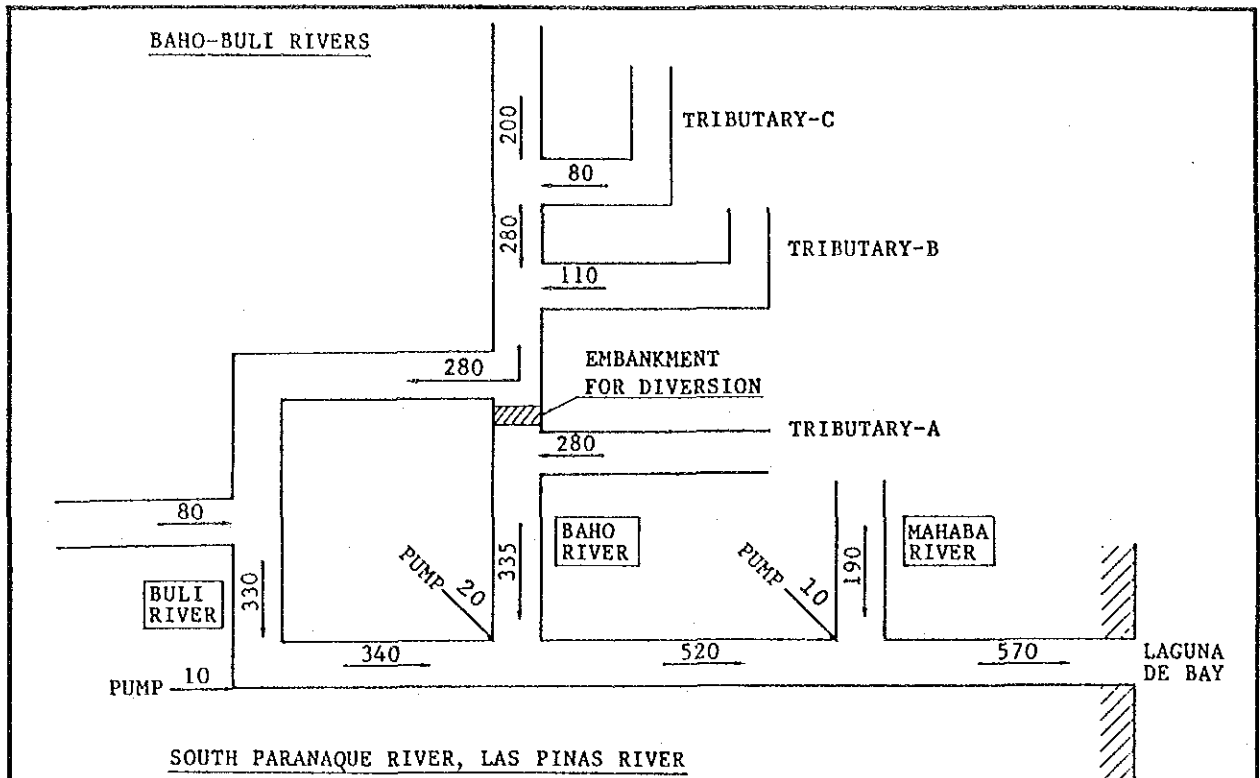
JAPAN INTERNATIONAL COOPERATION AGENCY

図5. 2-4 マラボン・トゥリヤハン川流域  
 のフレームワークプラン

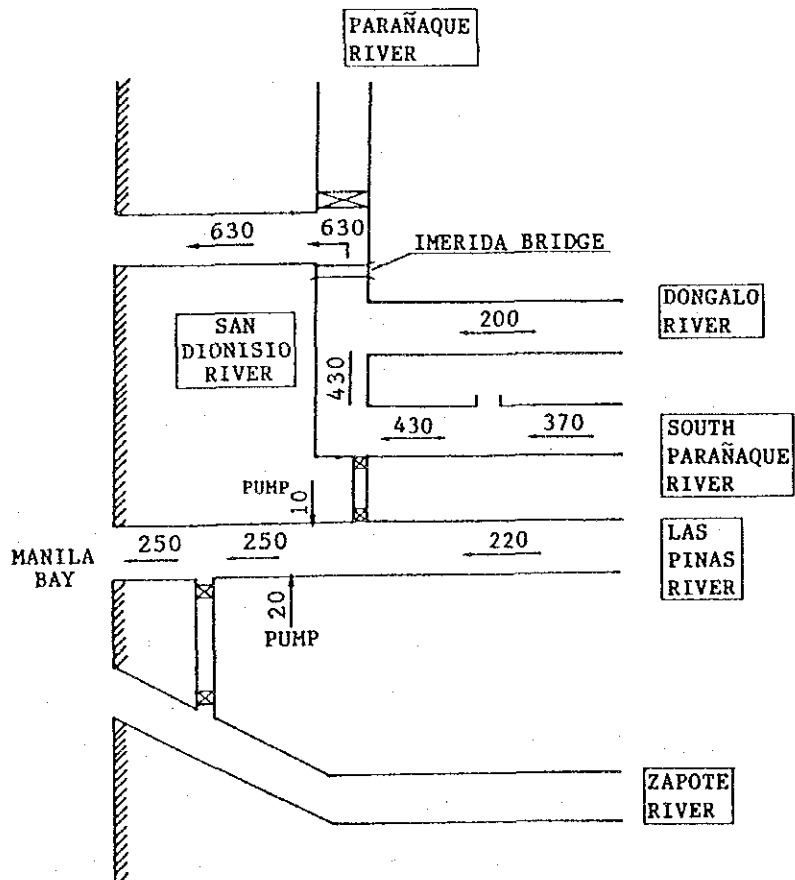


THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
 IN METRO MANILA, PHILIPPINES  
 JAPAN INTERNATIONAL COOPERATION AGENCY

図5. 2-5 プリ・バホ・マハバ川流域のフ  
 レームワークプラン



SOUTH PARANAQUE RIVER, LAS PINAS RIVER

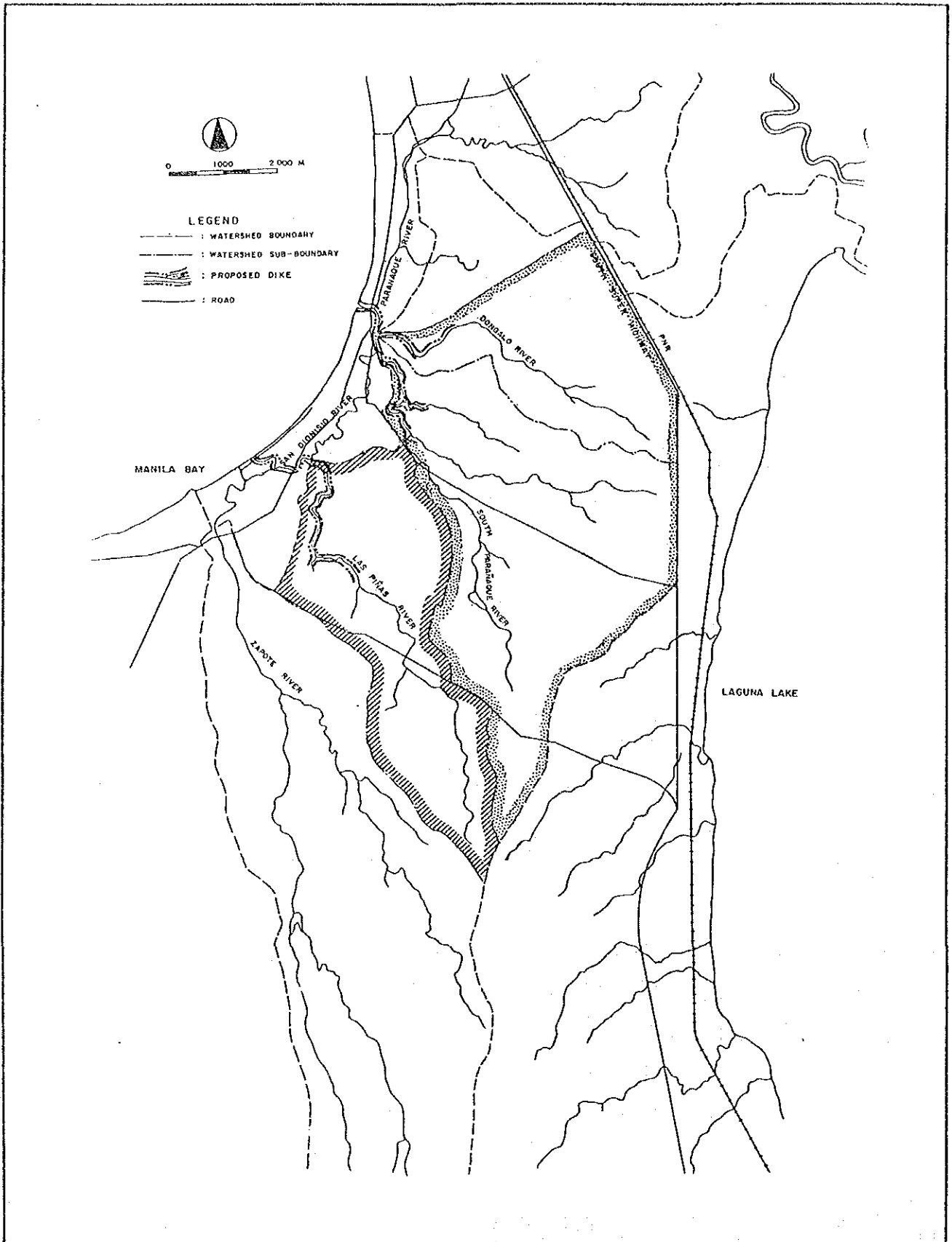


NOTE: FIGURES SHOW PEAK DISCHARGE OF 100-YEAR RETURN PERIOD (UNIT:  $m^3/s$ )

THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
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図5. 2-6 フレームワークプランの計画  
洪水流量(プリ・バホ・マハバ川、サウスパ  
ラニャケ・ラスピニャス川)

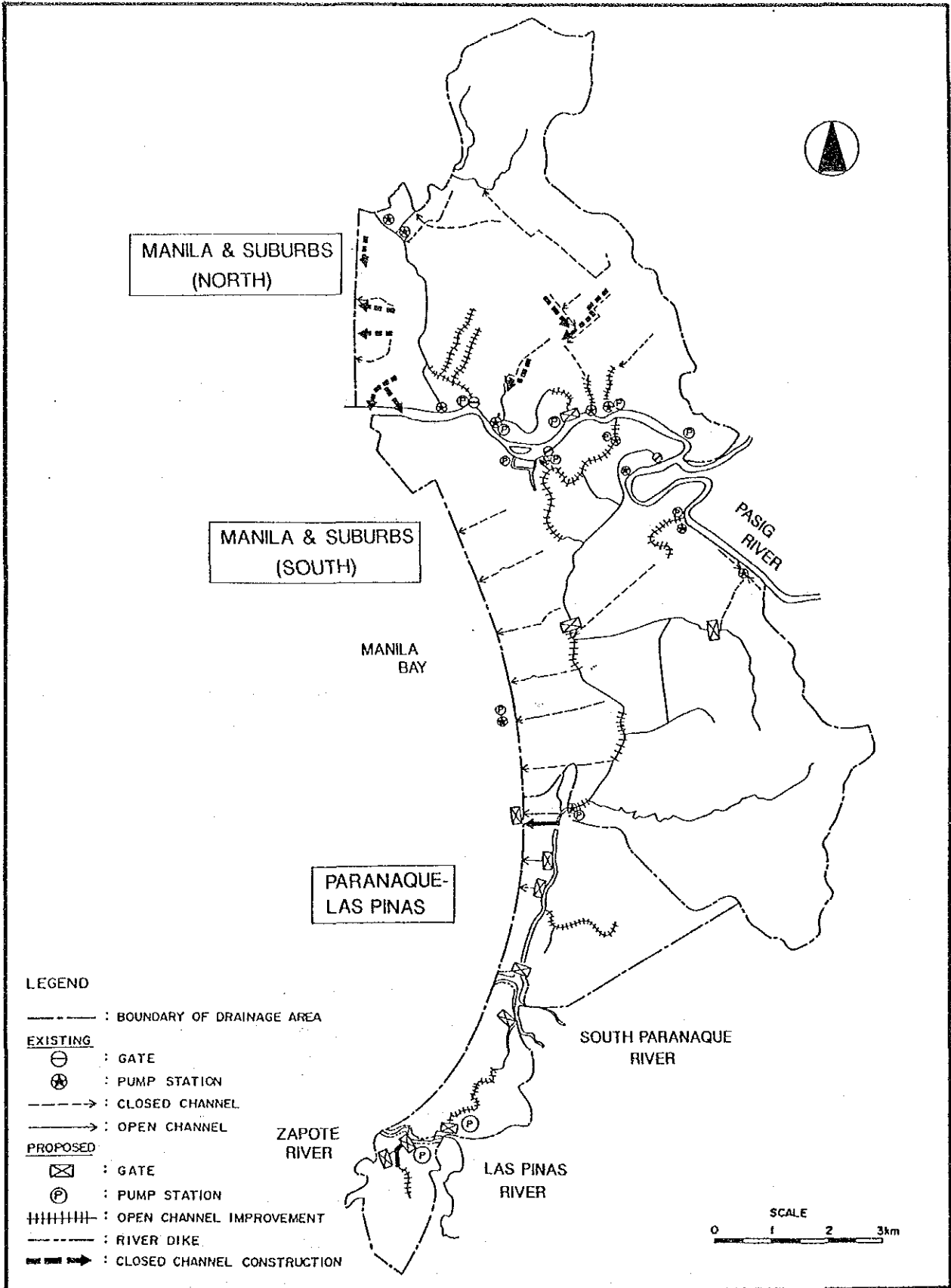


THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
 IN METRO MANILA, PHILIPPINES

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JAPAN INTERNATIONAL COOPERATION AGENCY

図 5. 2—7 サウスパラニャケ・ラスピニャス川流域のフレームワークプラン



THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
 IN METRO MANILA, PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

図 5. 2-8 (1/4) 提案排水システムのレイアウト



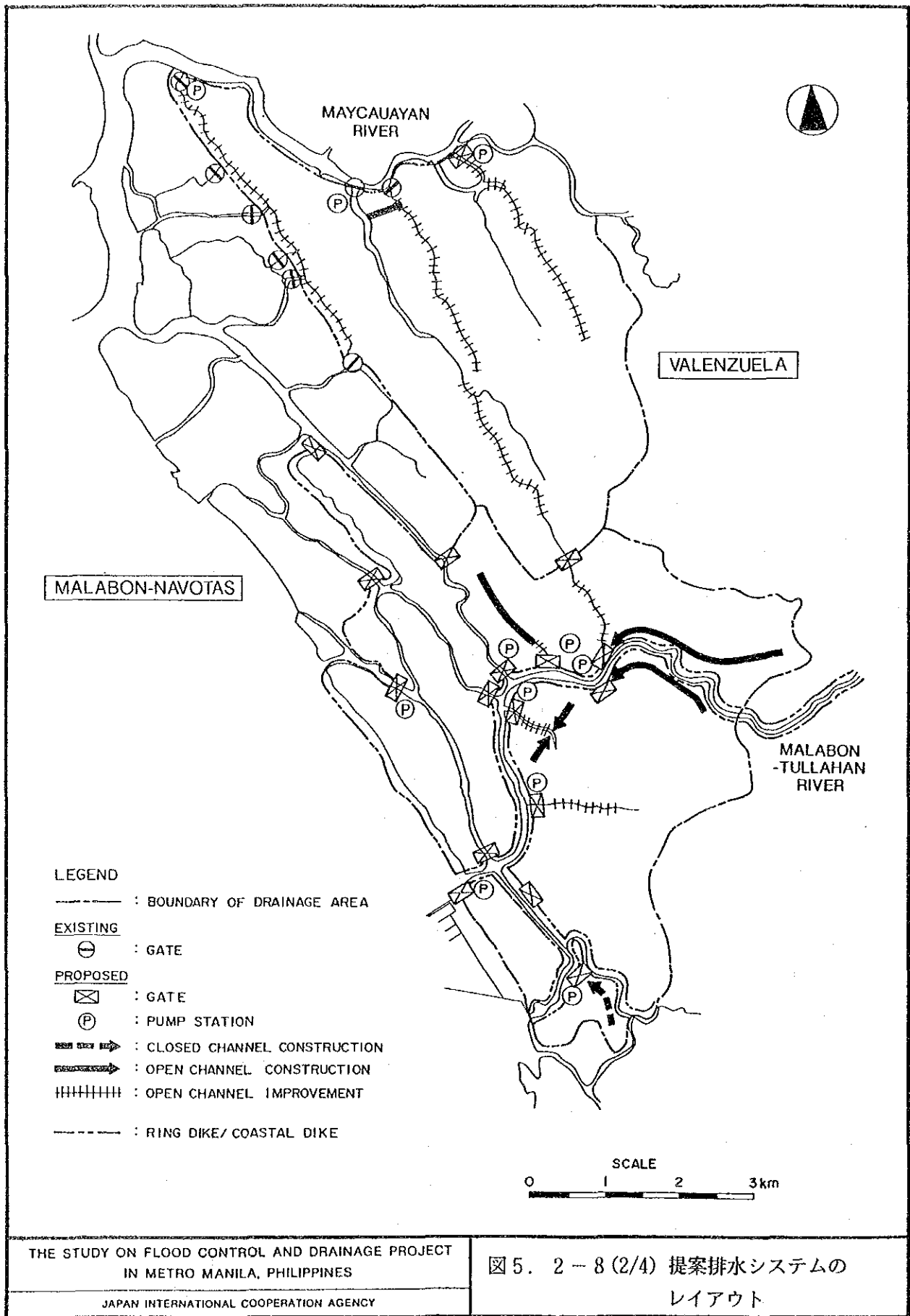
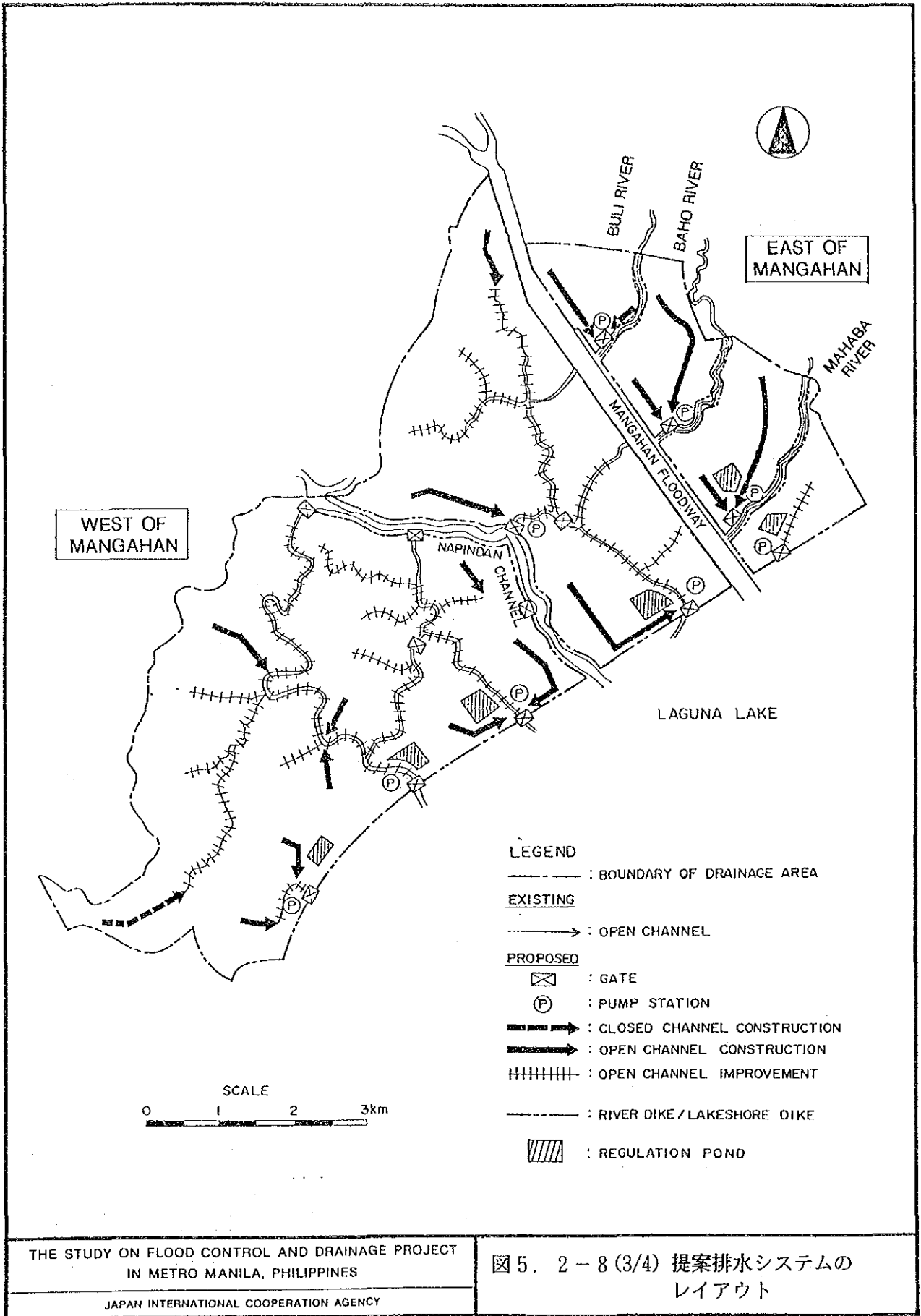
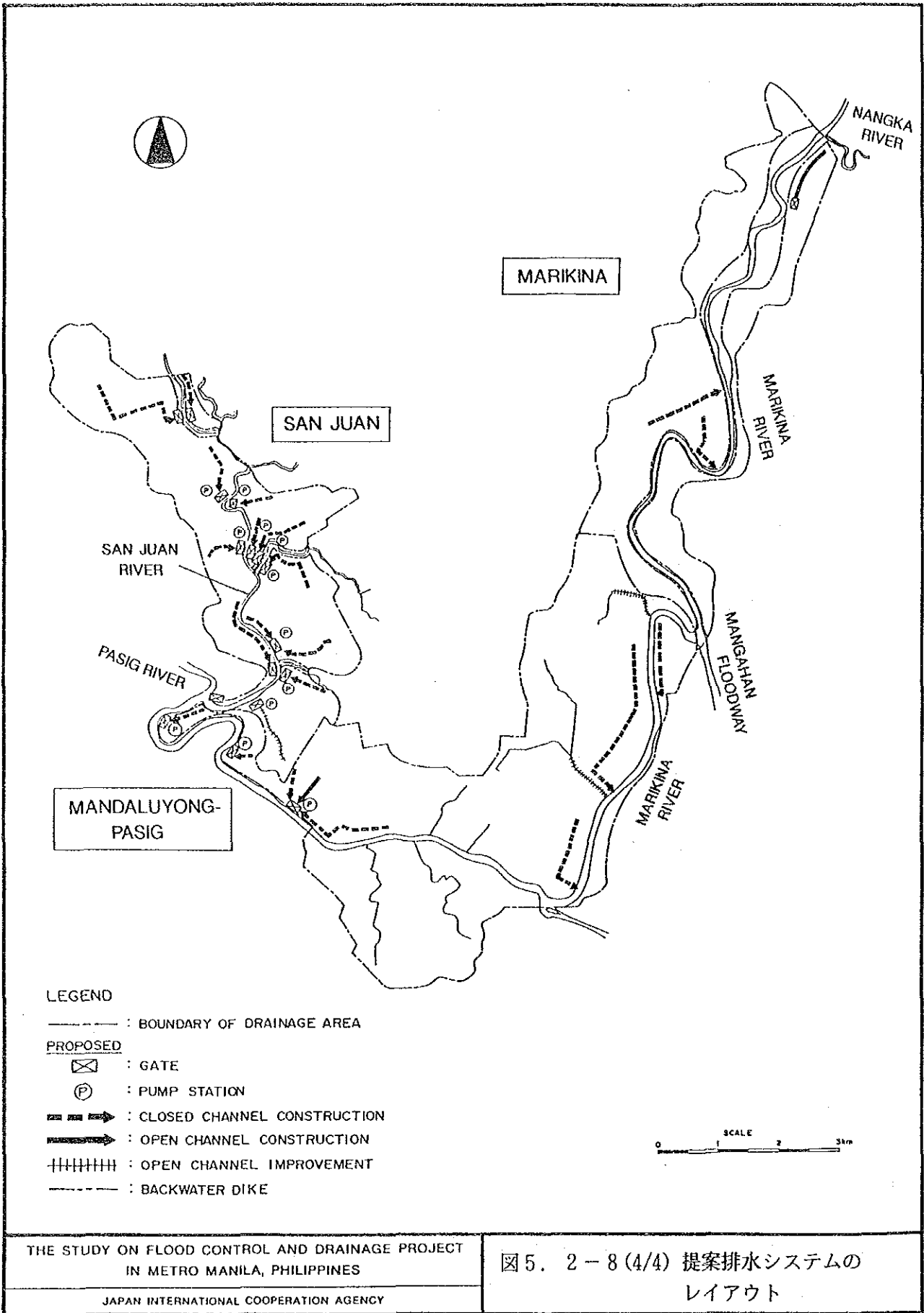


図5. 2-8 (2/4) 提案排水システムのレイアウト





LEGEND

--- : BOUNDARY OF DRAINAGE AREA

PROPOSED

⊠ : GATE

Ⓟ : PUMP STATION

▬➔ : CLOSED CHANNEL CONSTRUCTION

▬➔ : OPEN CHANNEL CONSTRUCTION

+++++ : OPEN CHANNEL IMPROVEMENT

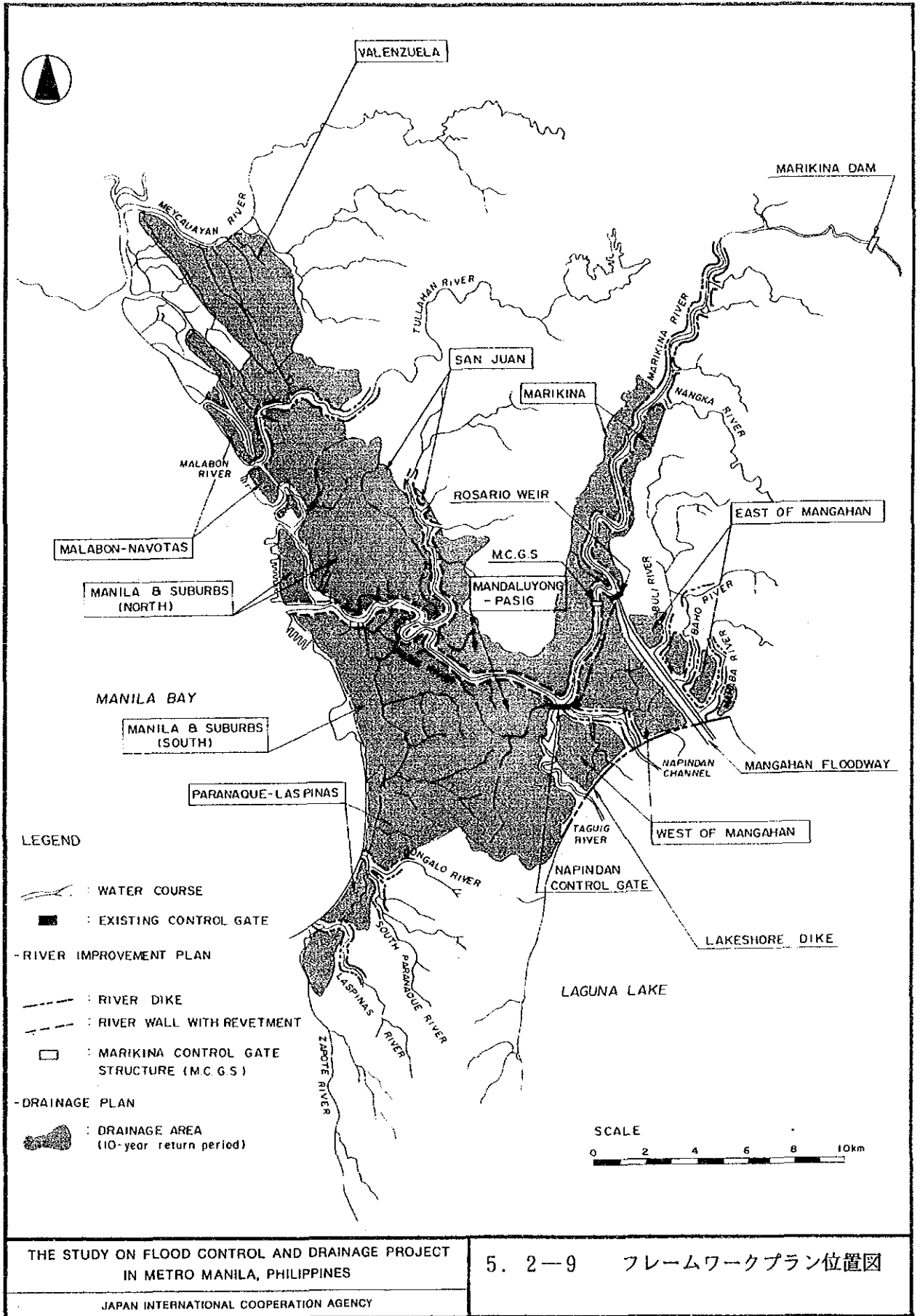
--- : BACKWATER DIKE

SCALE 0 1 2 3km

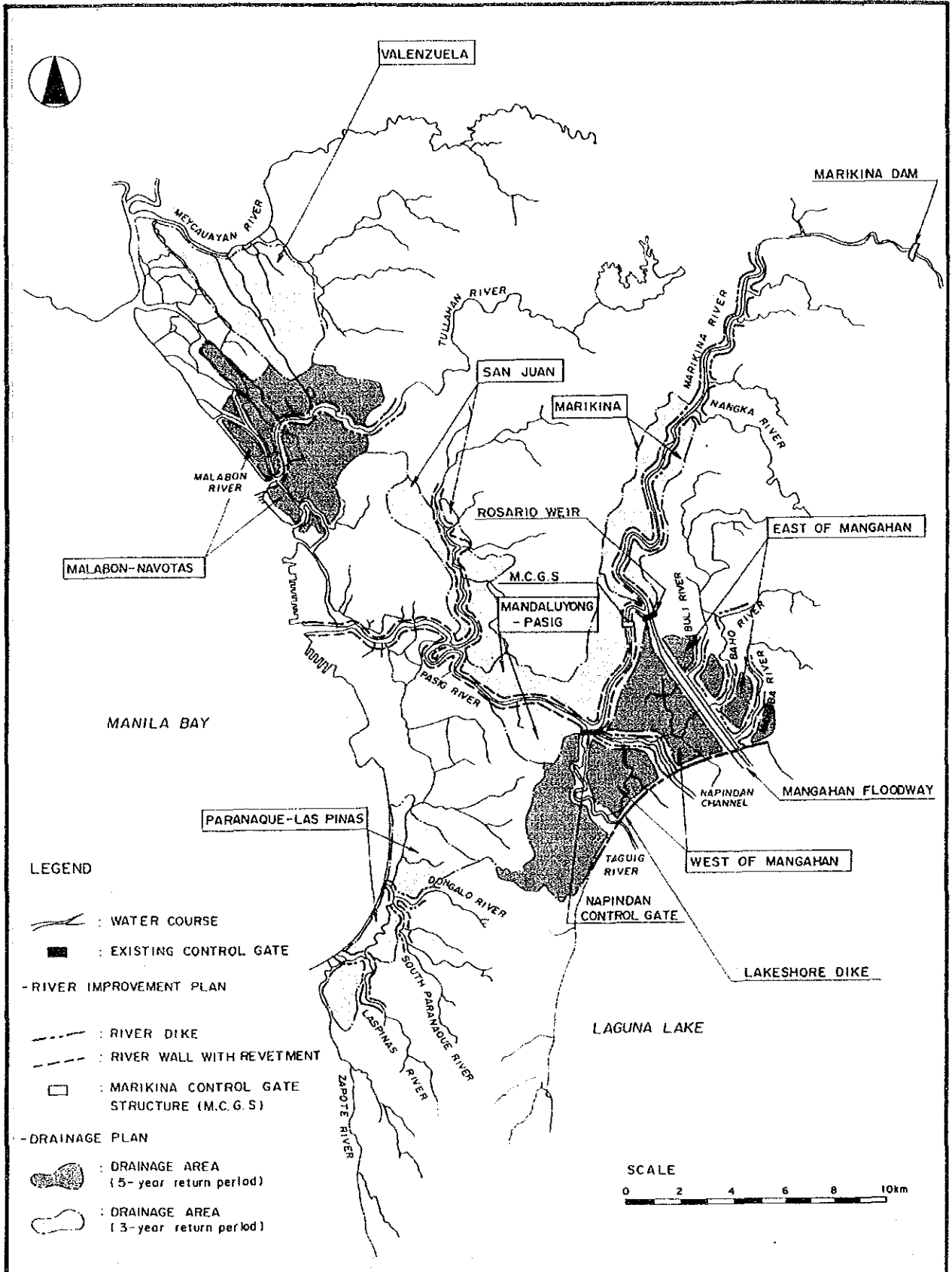
THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
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JAPAN INTERNATIONAL COOPERATION AGENCY

図5. 2-8(4/4) 提案排水システムのレイアウト



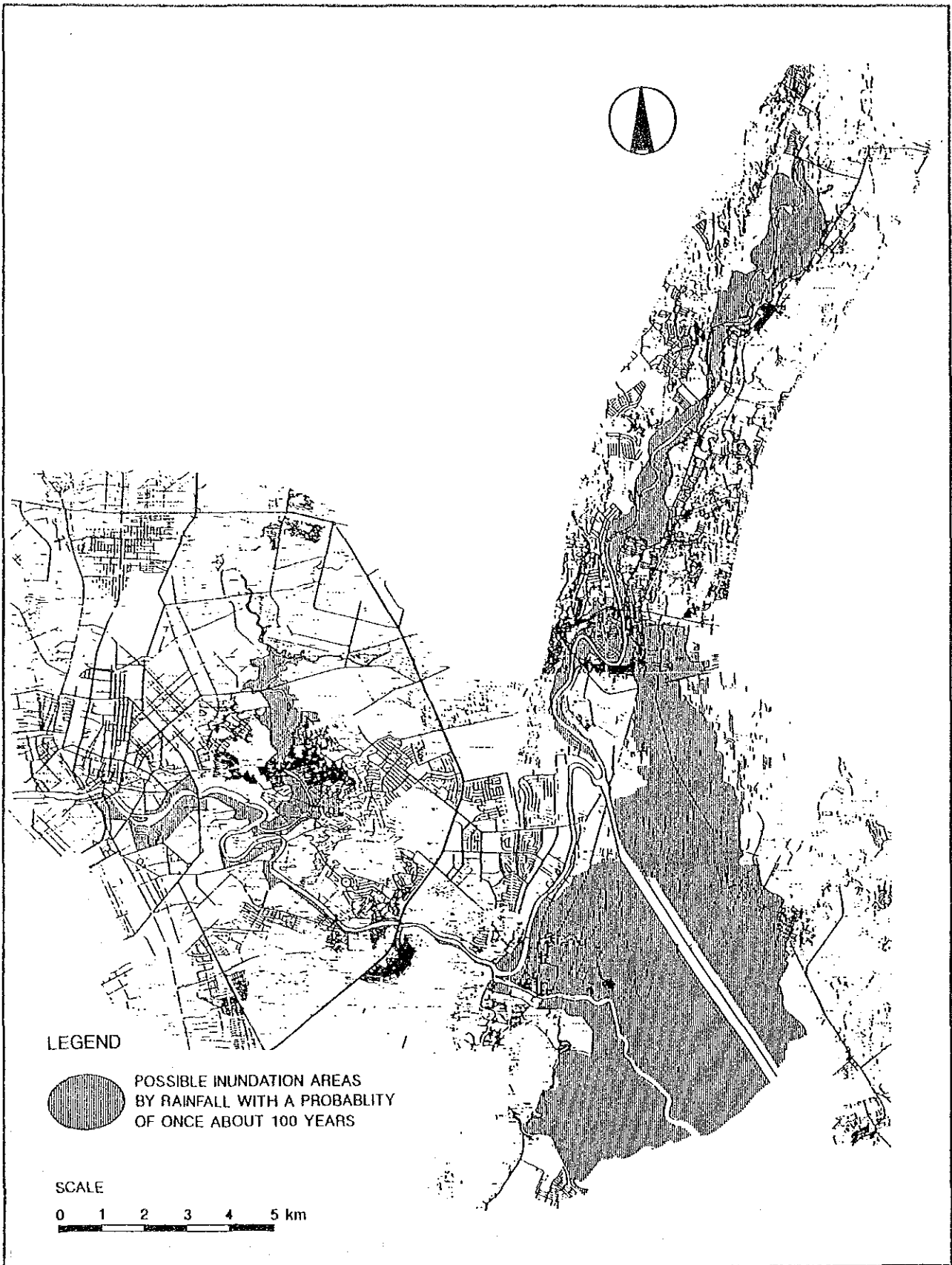
5. 2-9 フレームワークプラン位置図



THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
IN METRO MANILA, PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

6. 4-1 最適案位置図 (マスタープラン)

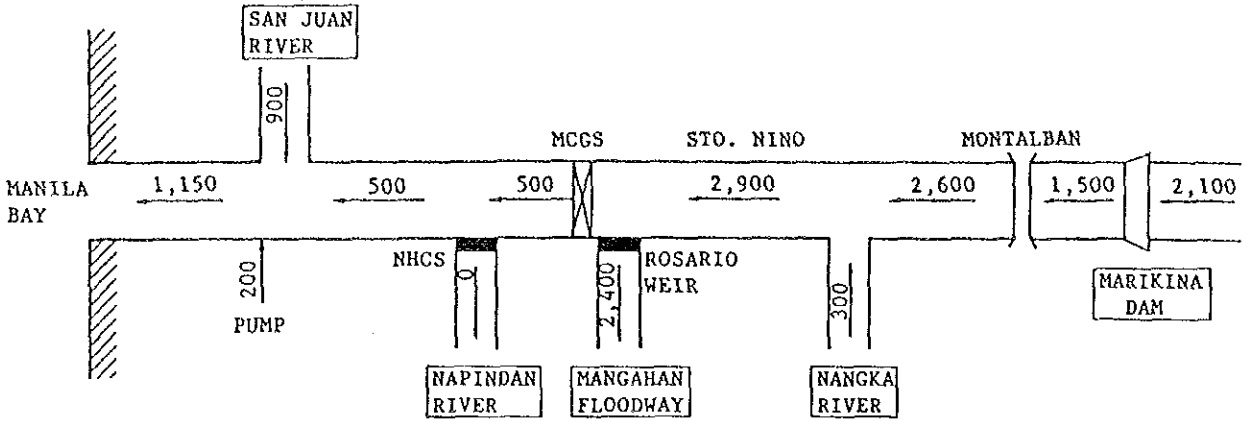


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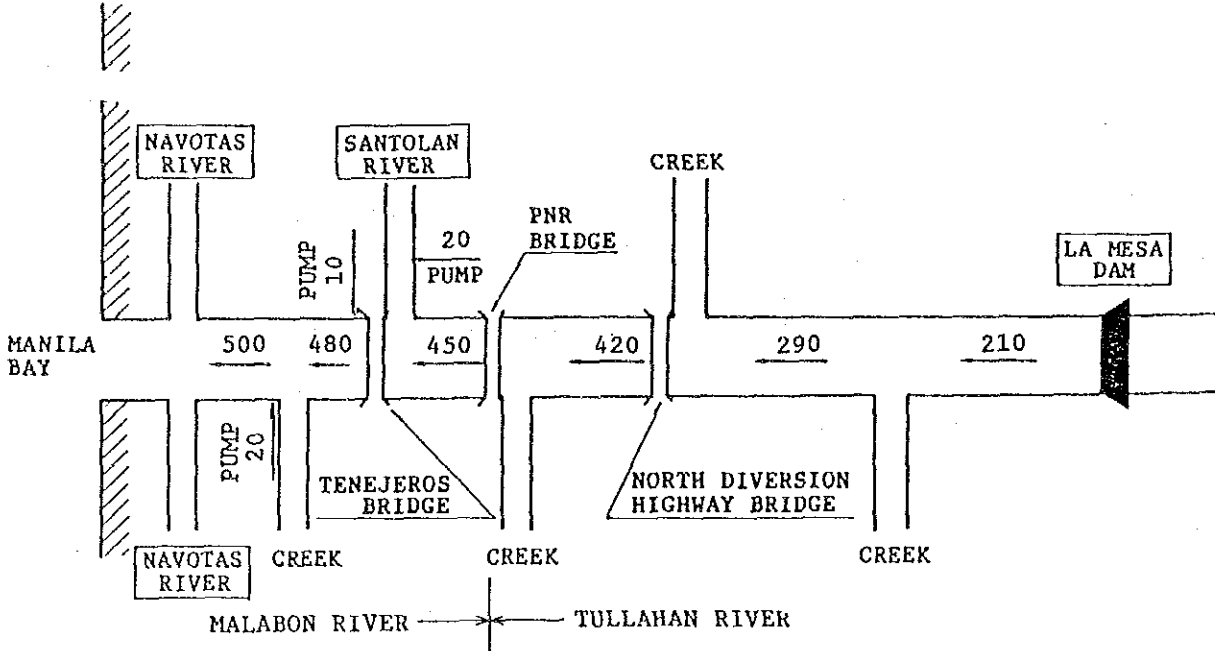
図 6. 4-2 パシグ・マリキナ、サンフアン川の100年確率氾濫域図

PASIG-MARIKINA RIVER



NOTE: FIGURES SHOW PEAK DISCHARGE OF 100-YEAR RETURN PERIOD (UNIT:M<sup>3</sup>/S)

MALABON-TULLAHAN RIVER

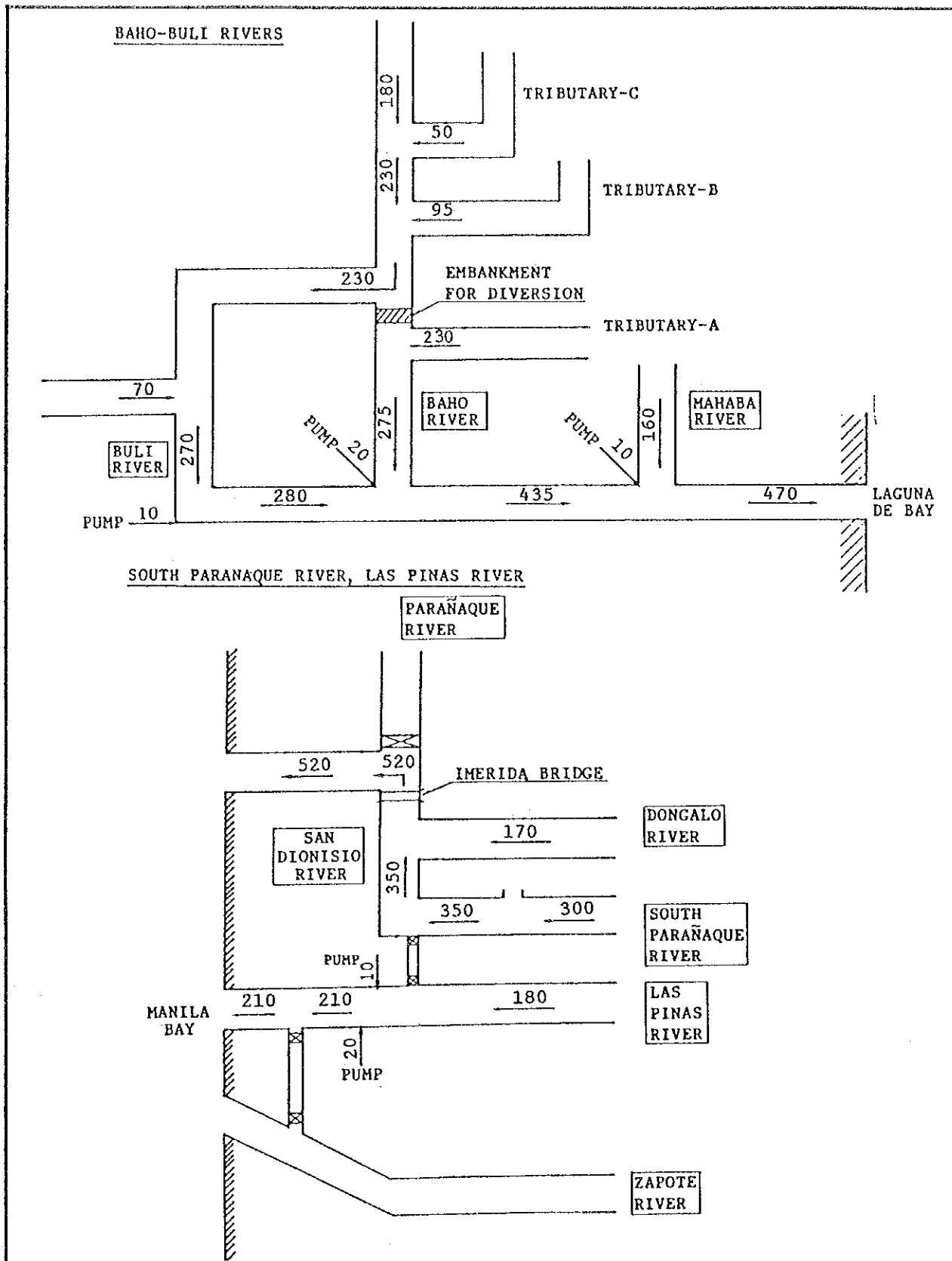


NOTE: FIGURES SHOW PEAK DISCHARGE OF 30-YEAR RETURN PERIOD (UNIT:m<sup>3</sup>/s)

THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
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図6. 4-3(1/2) 流量配分図 (河川計画用)



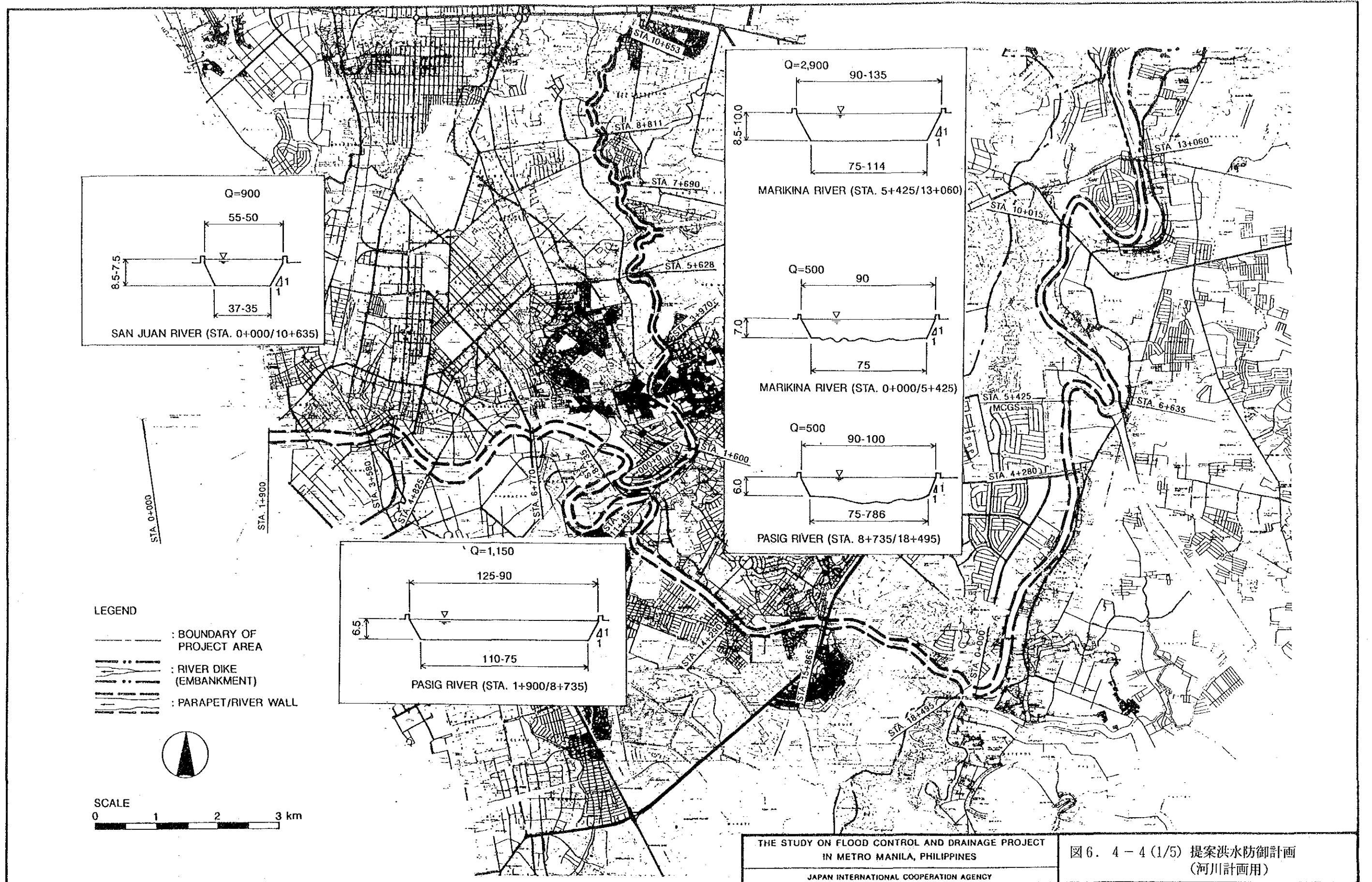
NOTE: FIGURES SHOW PEAK DISCHARGE OF 30-YEAR RETURN PERIOD (UNIT:  $m^3/s$ )

THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
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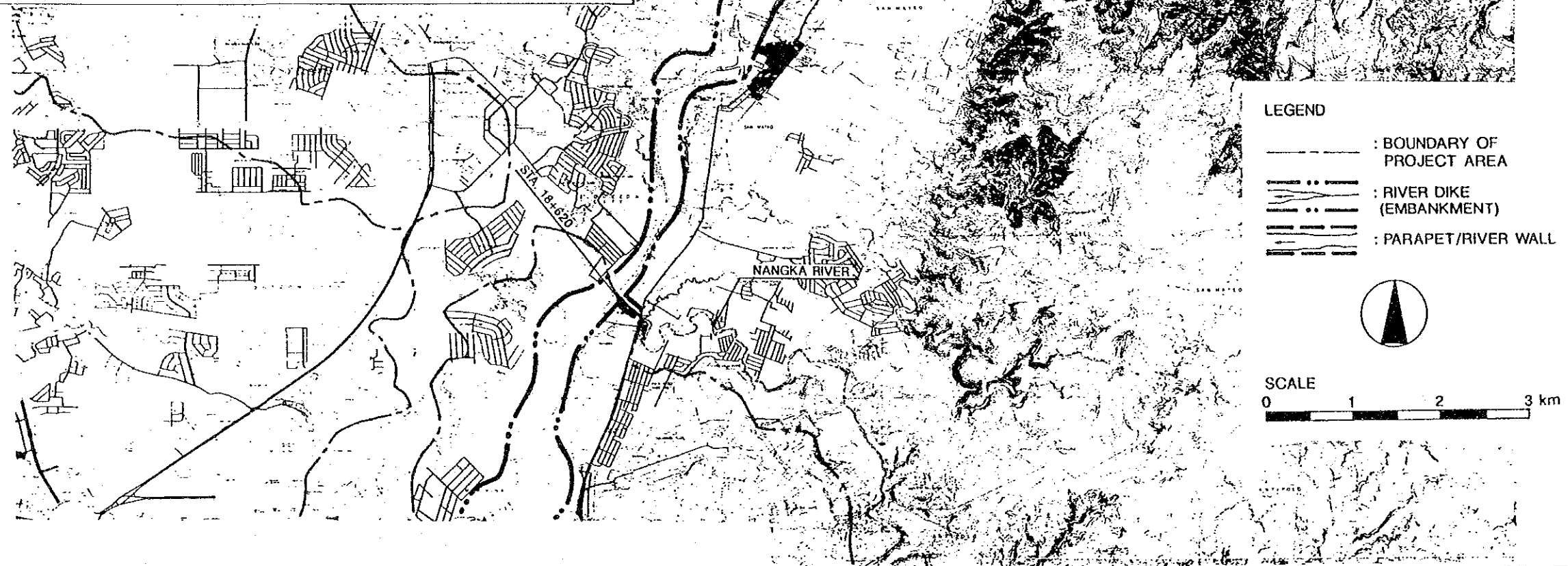
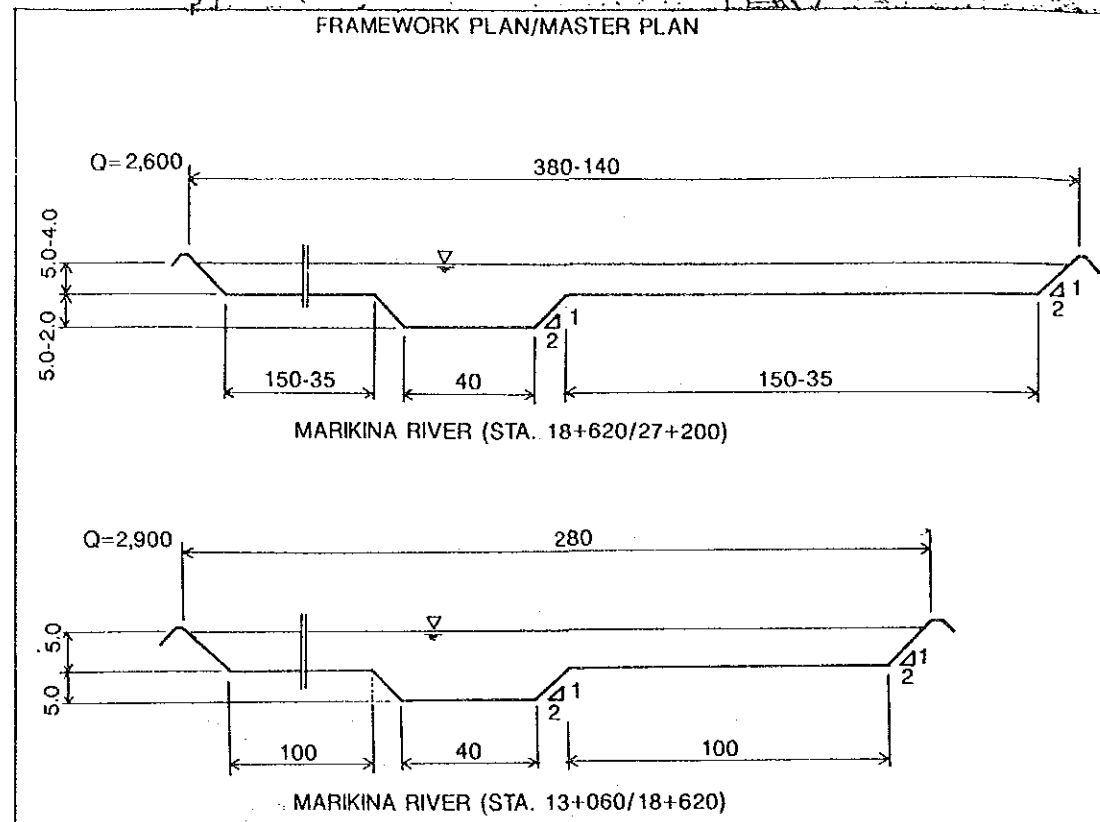
図 6. 4 - 3 (2/2) 流量配分図 (河川計画用)





THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
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図6. 4-4 (1/5) 提案洪水防御計画  
 (河川計画用)



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JAPAN INTERNATIONAL COOPERATION AGENCY

図 6. 4 - 4 (2/5) 提案洪水防御計画  
(河川計画用)

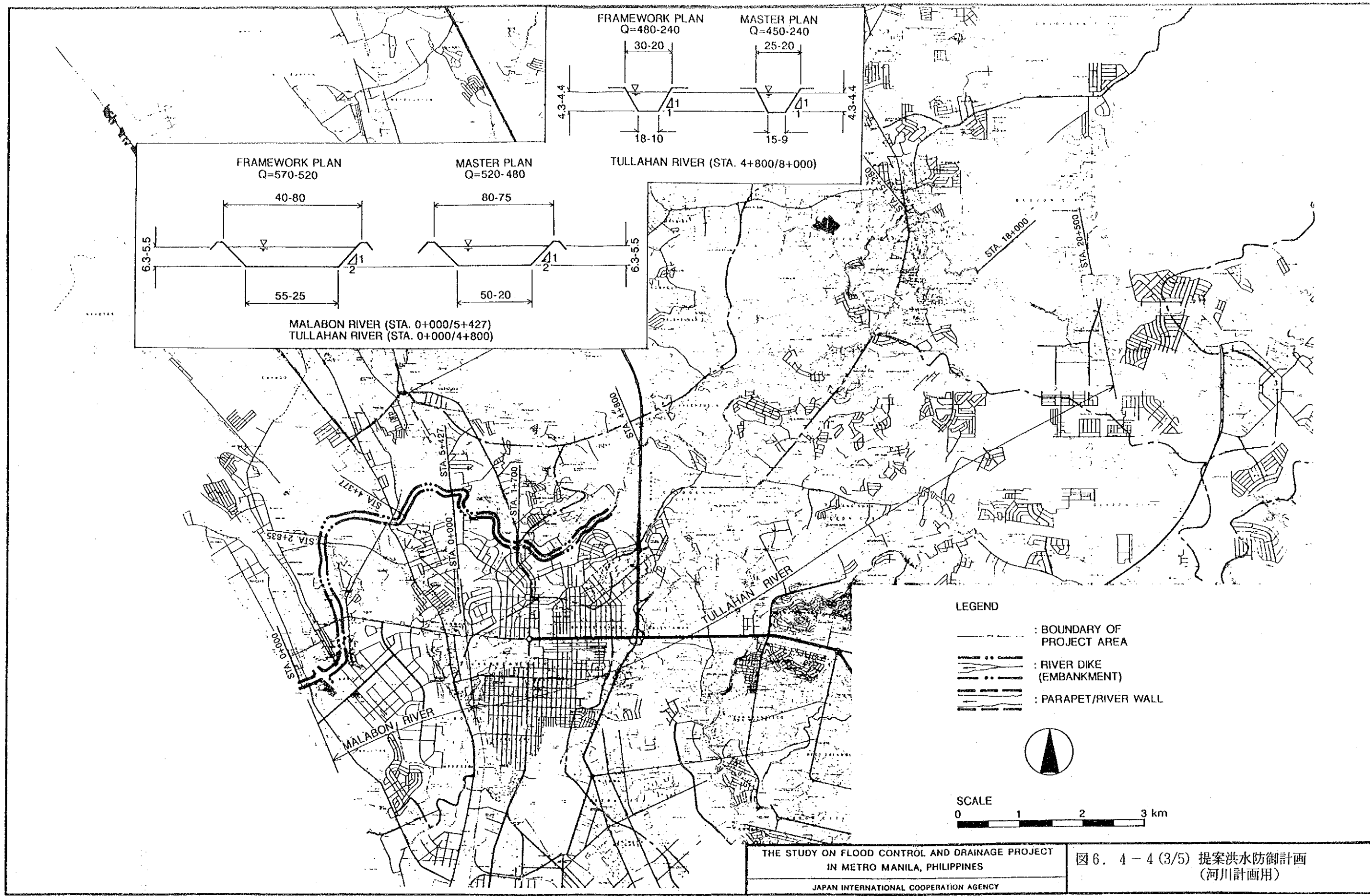
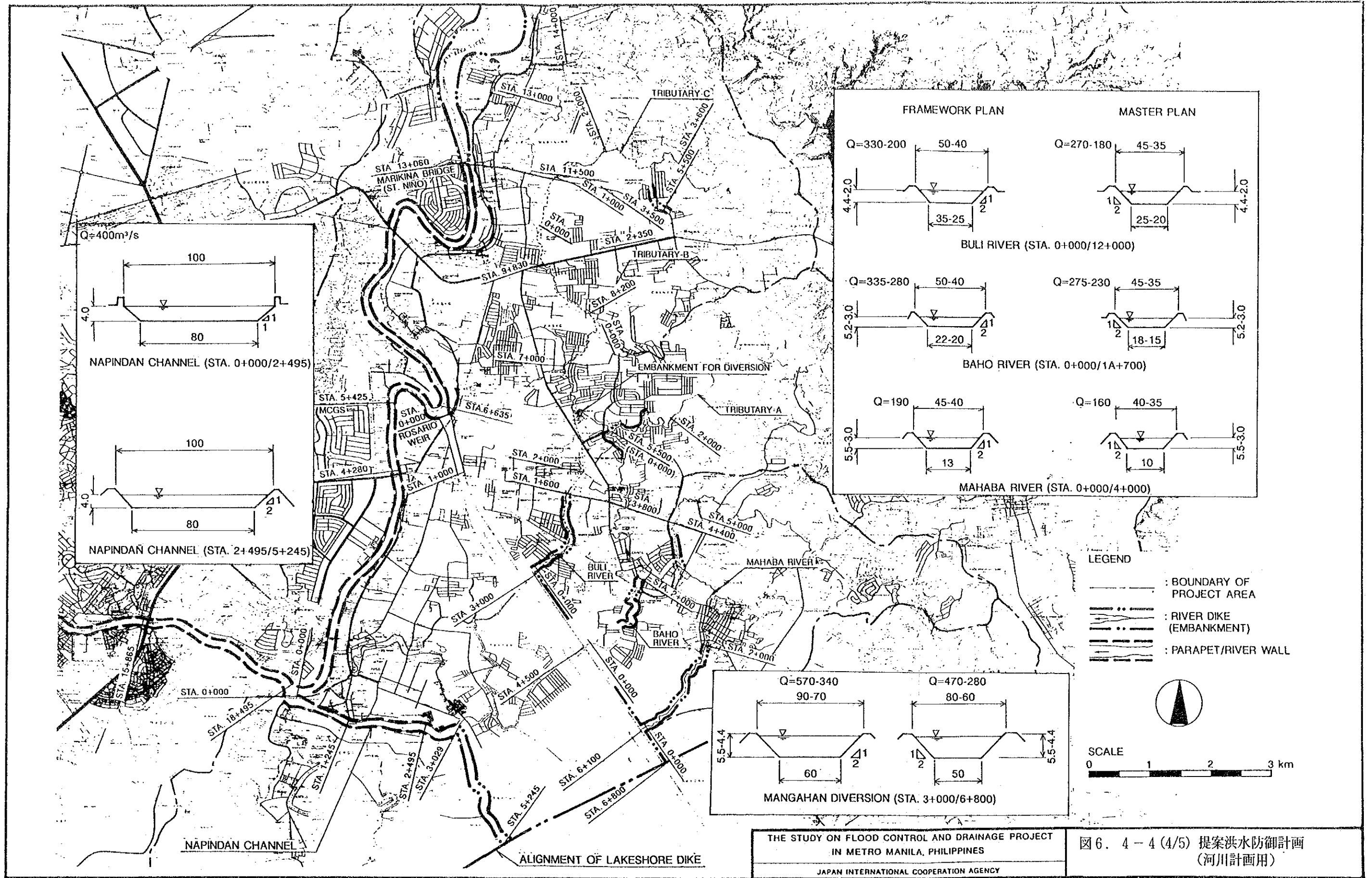


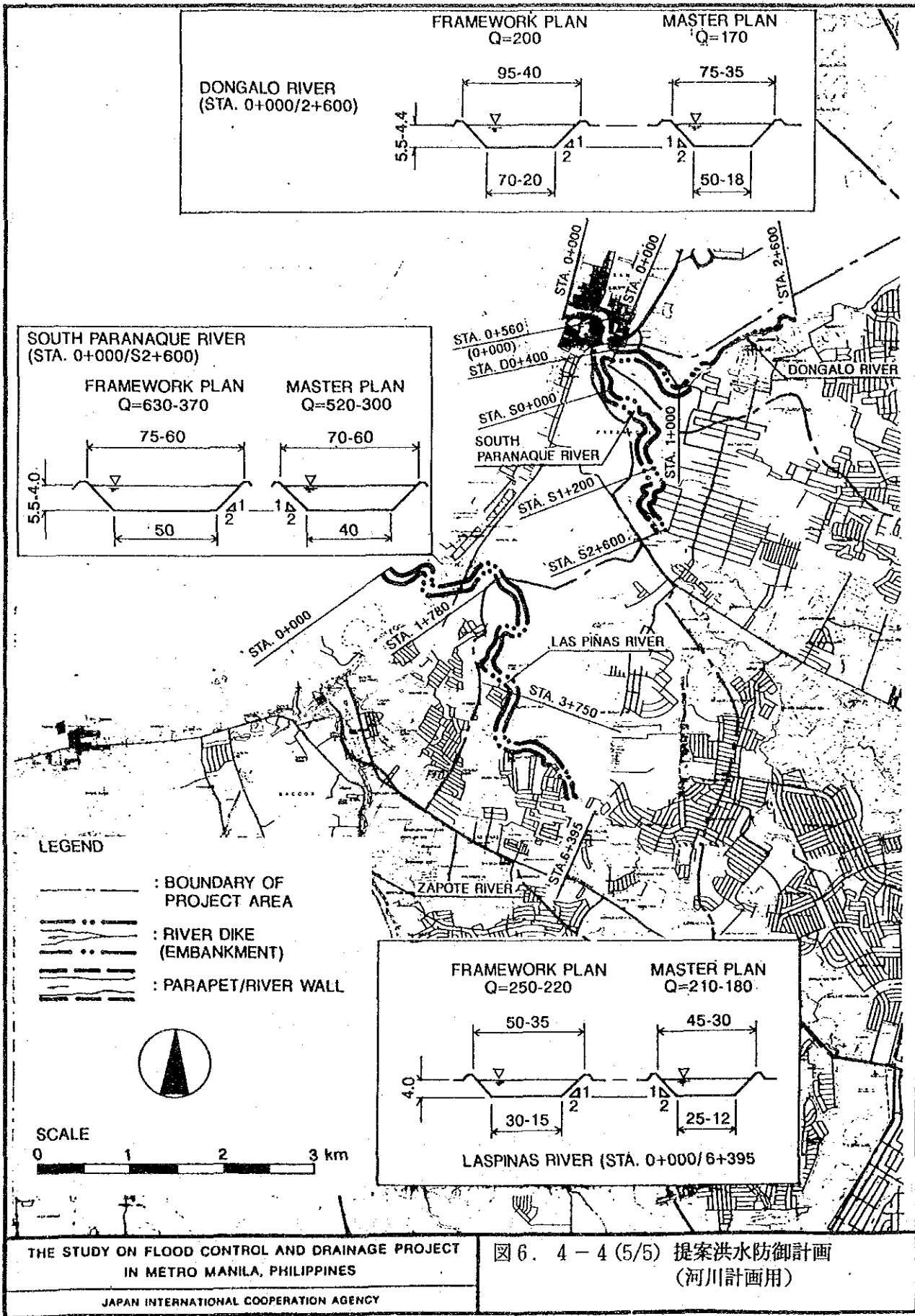
図6. 4-4(3/5) 提案洪水防御計画 (河川計画用)



THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
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 JAPAN INTERNATIONAL COOPERATION AGENCY

図 6. 4 - 4 (4/5) 提案洪水防御計画 (河川計画用)

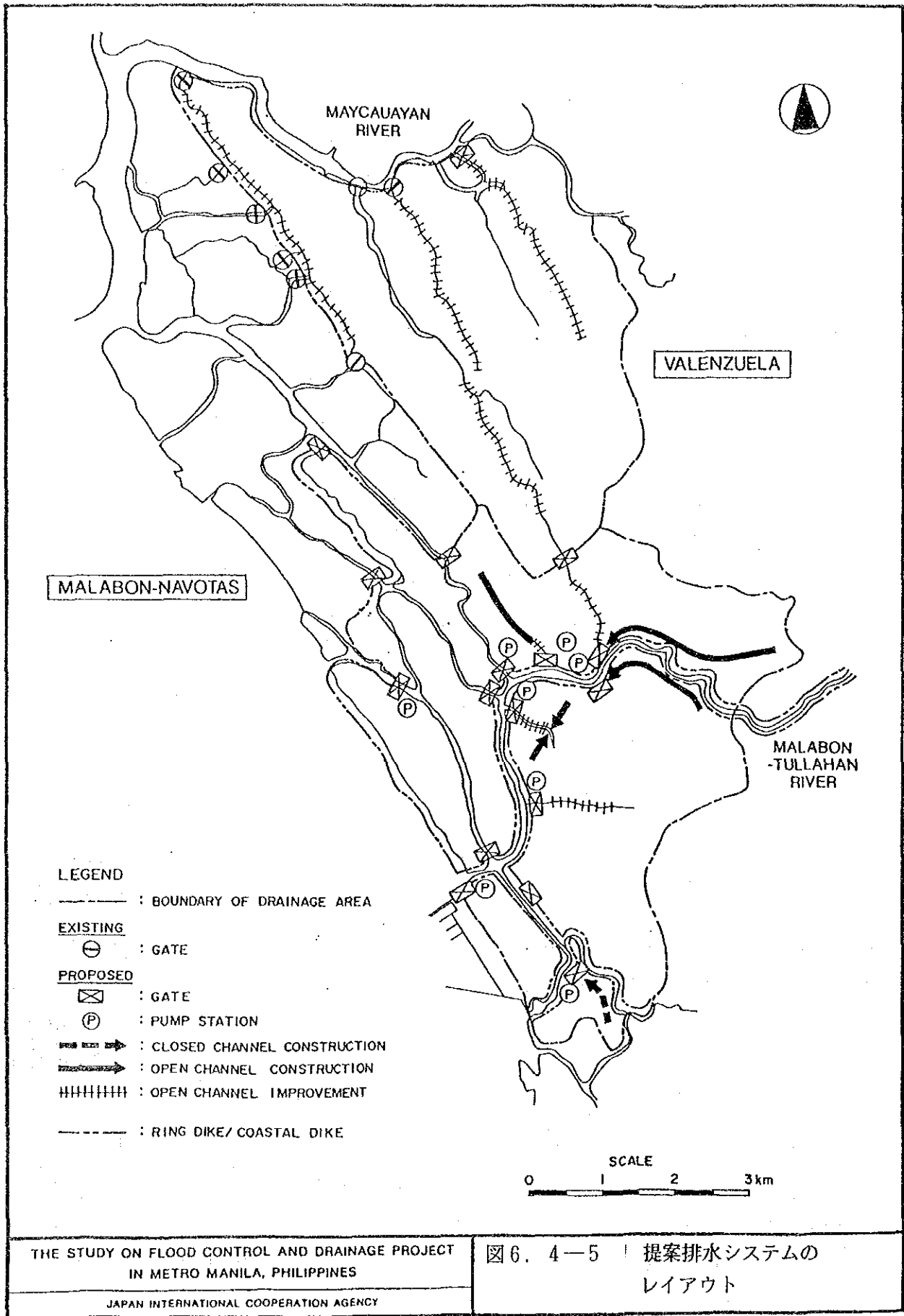




THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
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JAPAN INTERNATIONAL COOPERATION AGENCY

図 6. 4 - 4 (5/5) 提案洪水防御計画  
 (河川計画用)



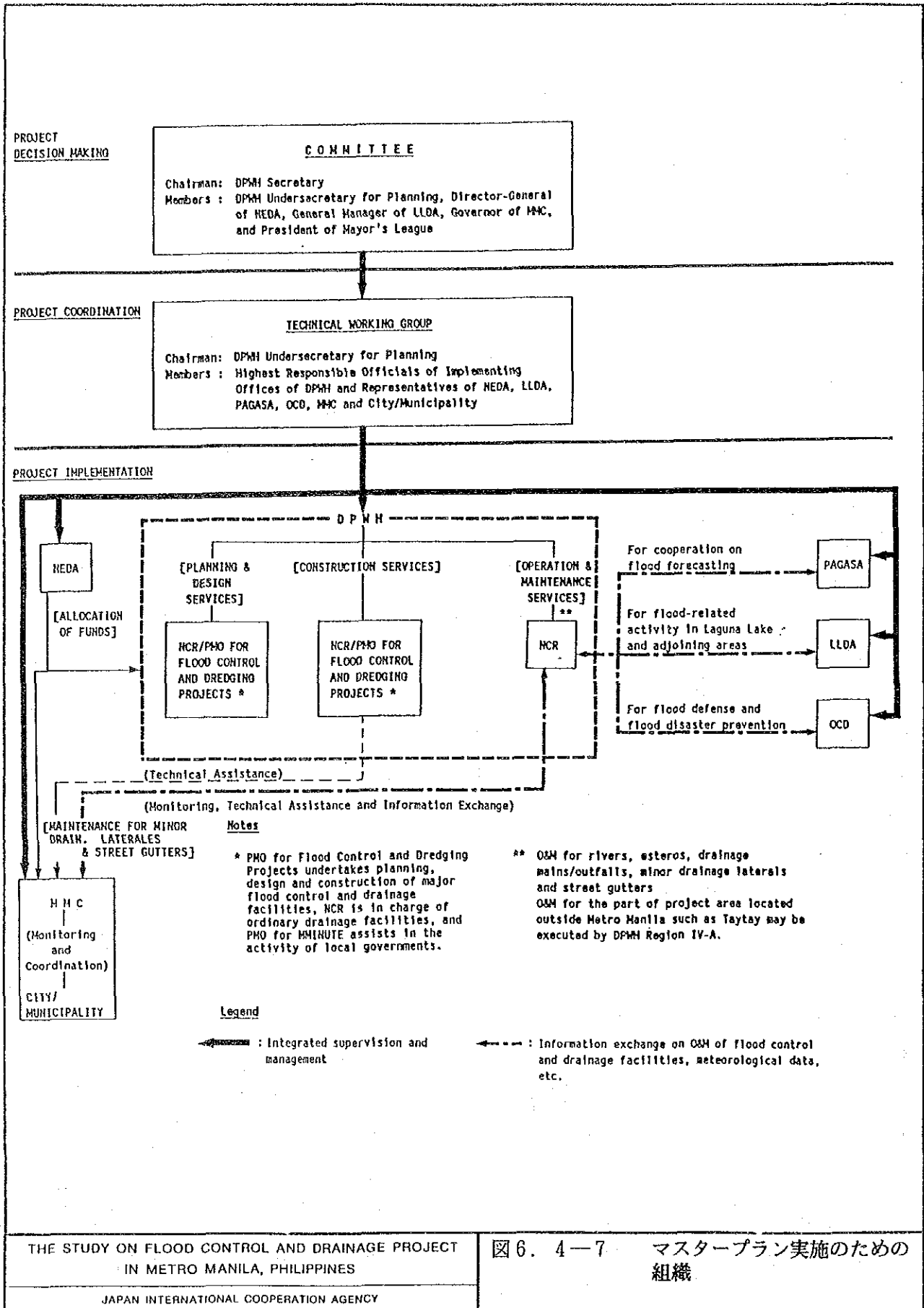
| PROJECT                         | PROJECT SCALE | CONSTRUCTION COST (million pesos) | Y E A R                               |  |   |
|---------------------------------|---------------|-----------------------------------|---------------------------------------|--|---|
|                                 |               |                                   | 1991-2000                             | 2001-2010                              | 2011-2020                               |
| <b>RIVER IMPROVEMENT</b>        |               |                                   |                                       |  |   |
|                                 |               | 7,390                             |                                       |  |   |
| Pasig River                     | 100-Yr        | 963                               |                                       |  |   |
| Lower Marikina River            | 100-Yr        | 143                               |                                       |  |   |
| Marikina Control Gate Structure | 100-Yr        | 184                               | P1,290                                |  |   |
| Upper Marikina River            | 100-Yr        | 1,566                             |                                       | P1,566                                 |   |
| San Juan River                  | 100-Yr        | 757                               |                                       |  |   |
| Marikina Dam                    | 100-Yr        | 800                               |                                       |  |   |
| Baho, Buli, Mahaba Rivers       | 30-Yr         | 1,542                             |                                       |  |   |
| Matabon-Tullahan River          | 30-Yr         | 655                               |                                       |  |   |
| South Parañaque-Las Piñas River | 30-Yr         | 780                               |                                       |  | P4,534                                  |
| <b>DRAINAGE IMPROVEMENT</b>     |               |                                   |                                       |  |   |
|                                 |               | 6,133                             |                                       |  |   |
| Matabon-Navotas (First Stage)   | 5-Yr          | 1,062                             |                                       |  |   |
| East & West of Mangahan         | 5-Yr          | 2,325                             | P3,387                                |  |   |
| Matabon-Navotas (Remaining)     | 5-Yr          | 89                                |                                       |  |   |
| San Juan                        | 3-Yr          | 962                               |                                       |  |   |
| Mandaluyong-Pasig               | 3-Yr          | 721                               |                                       |  |   |
| Marikina                        | 3-Yr          | 184                               |                                       |  |   |
| Parañaque-Las Piñas             | 3-Yr          | 573                               |                                       |  |   |
| Valenzuela                      | 3-Yr          | 217                               |                                       |  |   |
| <b>T O T A L</b>                |               |                                   |                                       |  |   |
|                                 |               | 13,523                            | PHASE I = P4,677<br>(@ P468 x 10 yrs) | PHASE II = P4,312<br>(@ P431 x 10 yrs) | PHASE III = P4,534<br>(@ P453 x 10 yrs) |

THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
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JAPAN INTERNATIONAL COOPERATION AGENCY

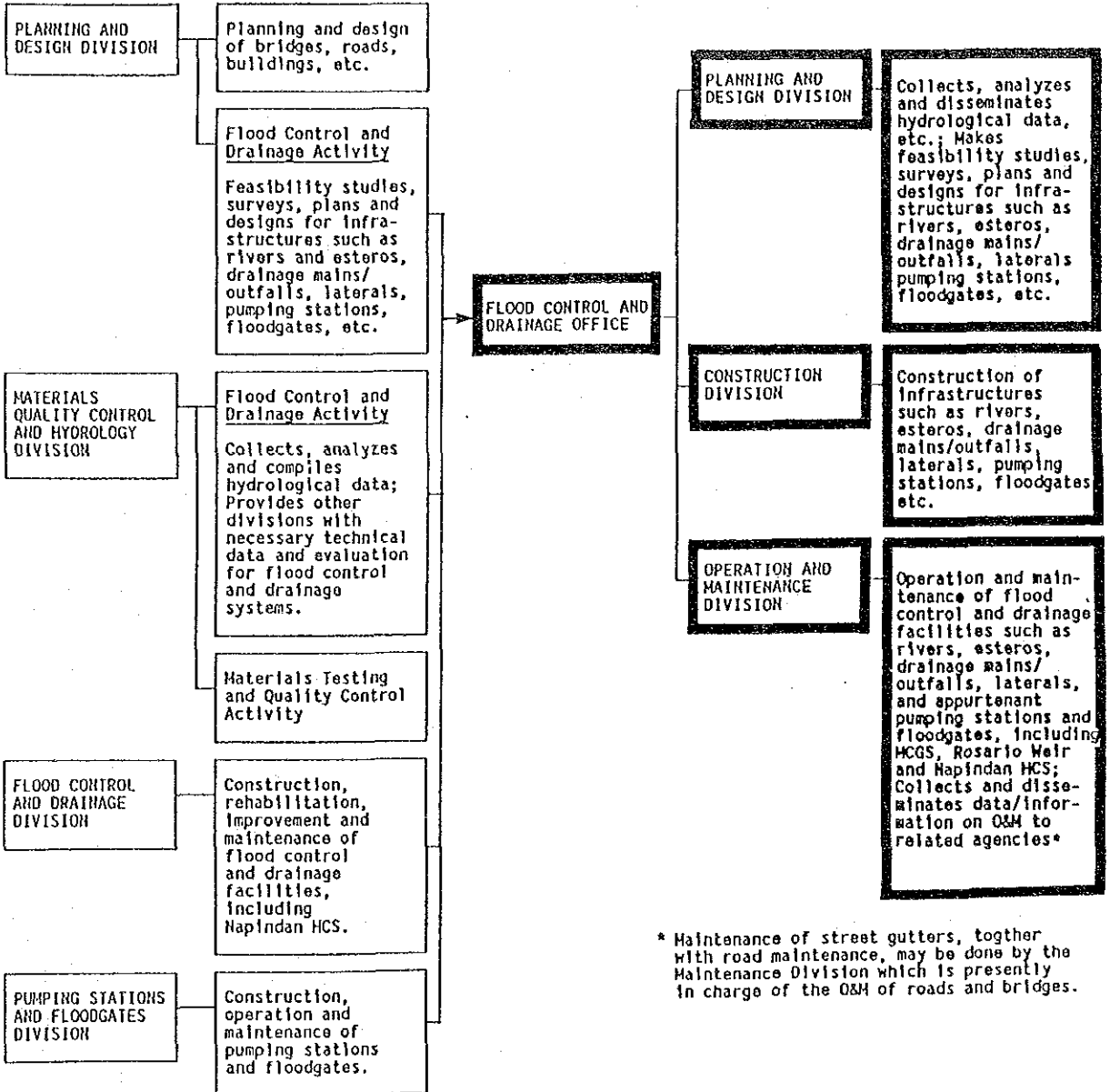
図6. 4-6 マスタープラン実施計画





EXISTING ORGANIZATION/RESPONSIBILITIES

PROPOSED ORGANIZATION/RESPONSIBILITIES



\* Maintenance of street gutters, together with road maintenance, may be done by the Maintenance Division which is presently in charge of the O&M of roads and bridges.

Legend:

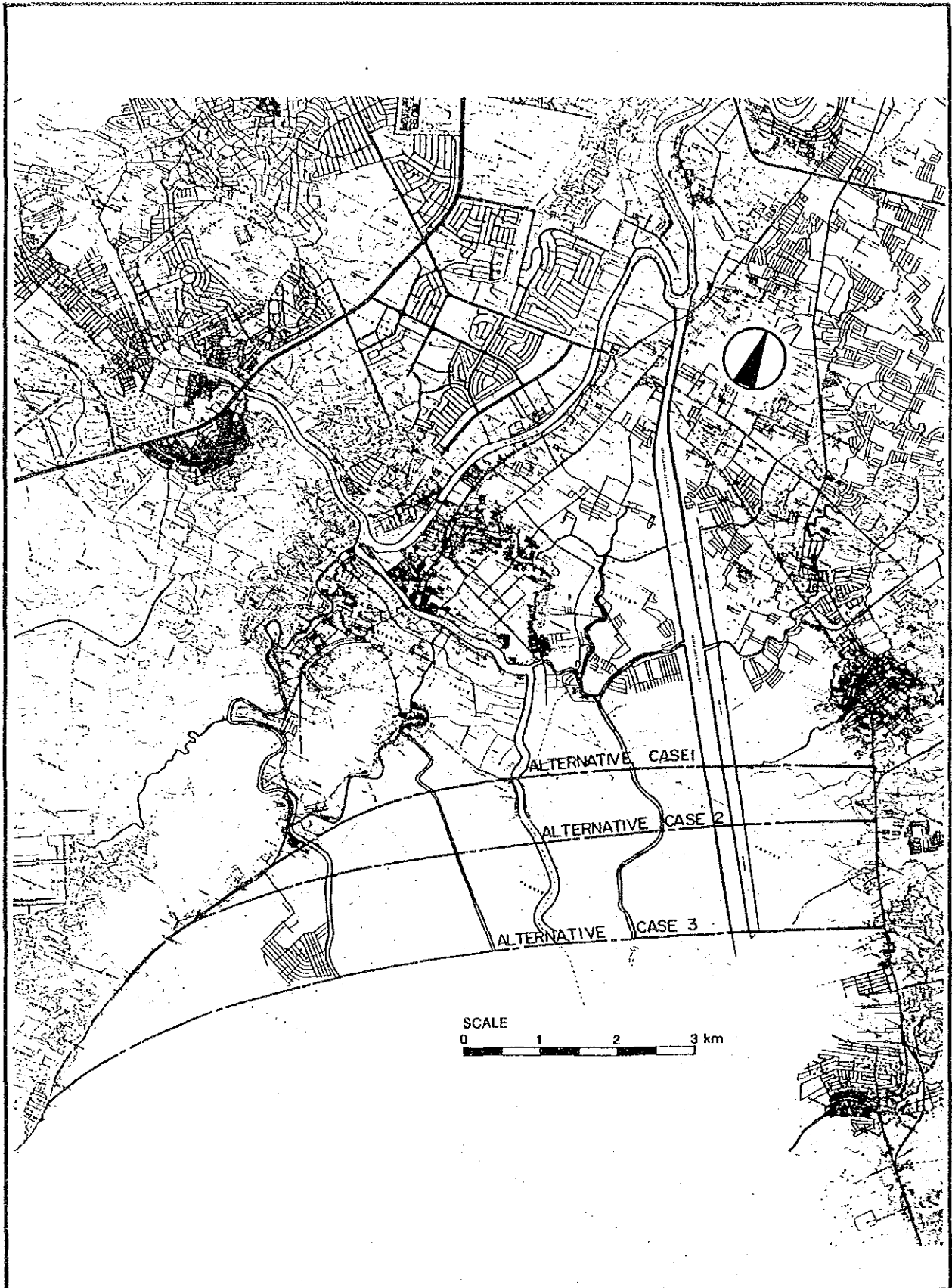
: Newly created office/division

THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
IN METRO MANILA, PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

図 6. 4-8

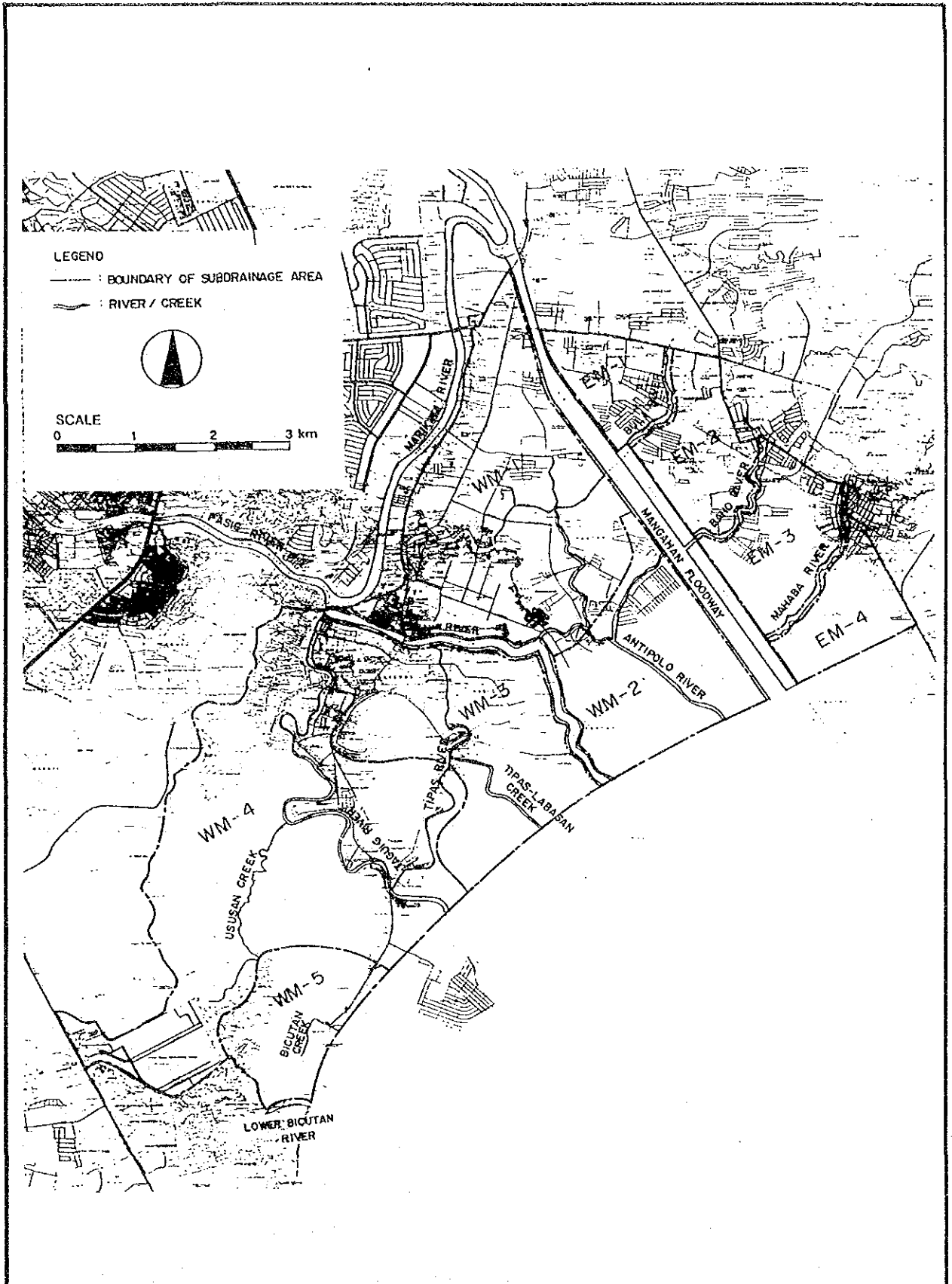
DPWH-NCRの洪水防御・排水関連の提案組織



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IN METRO MANILA, PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

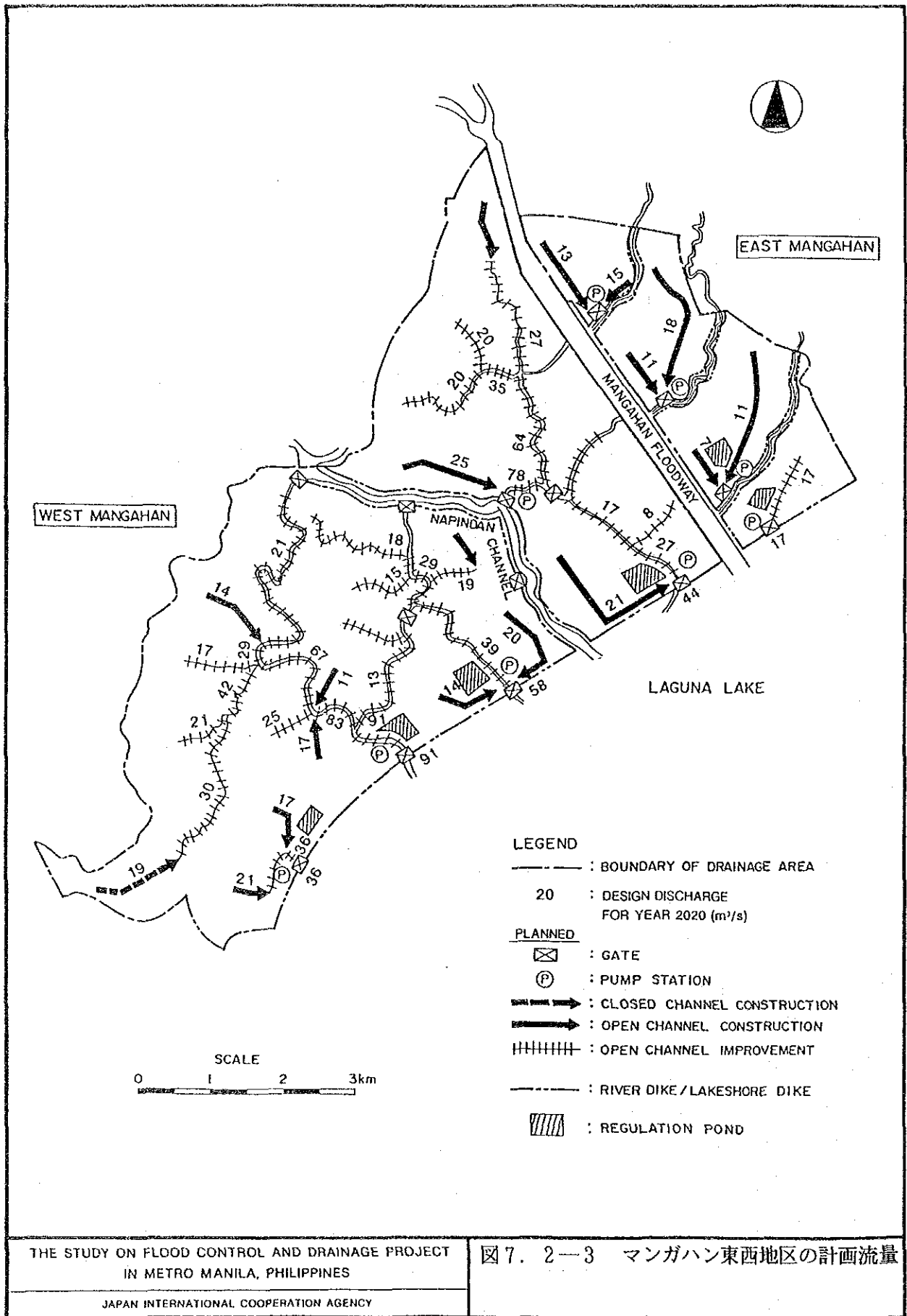
図 7. 2—1 湖岸堤の線形の代替案



THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
IN METRO MANILA, PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

図7. 2-2 マンガハン東西地区の小排水域

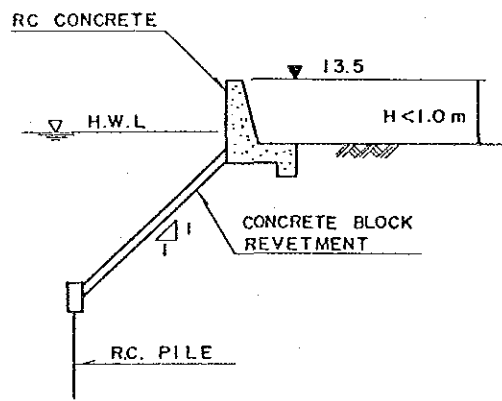
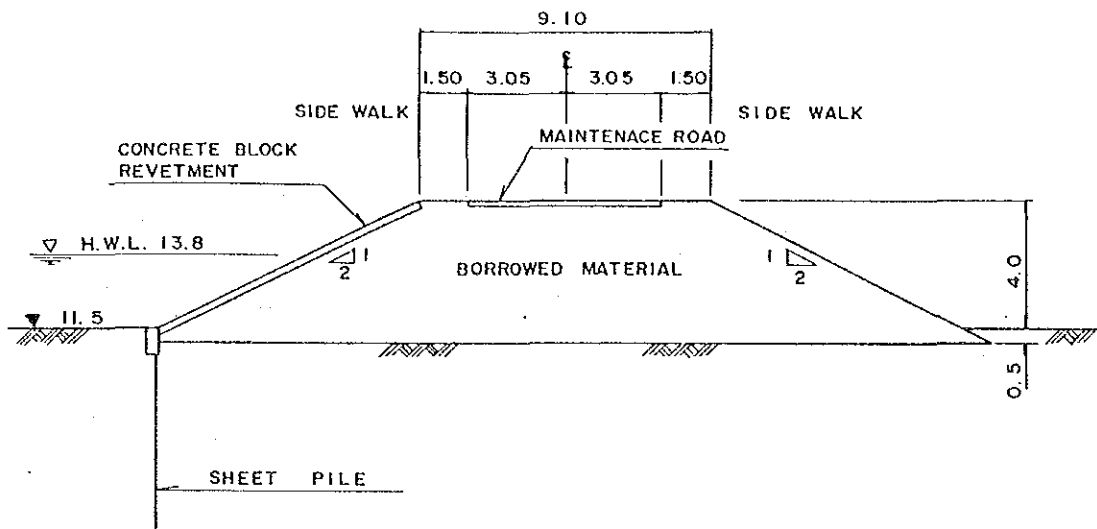










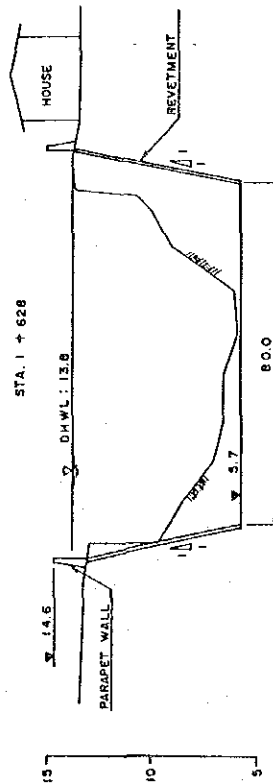
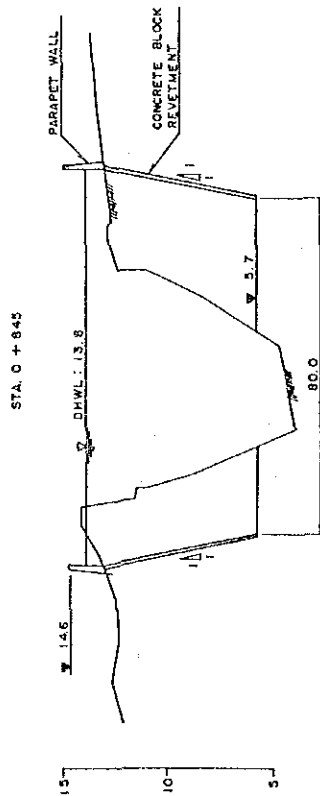
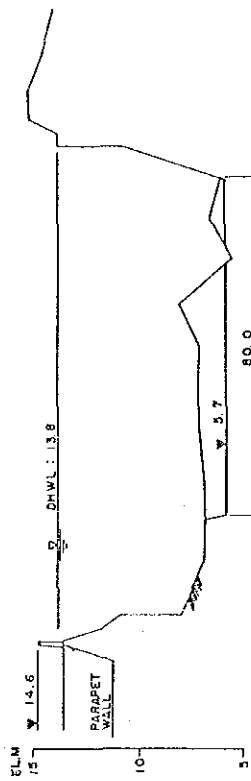
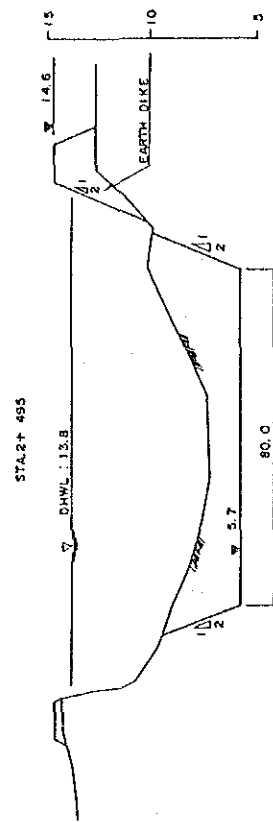
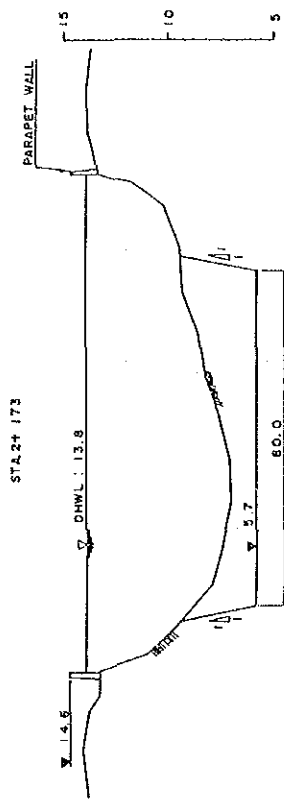
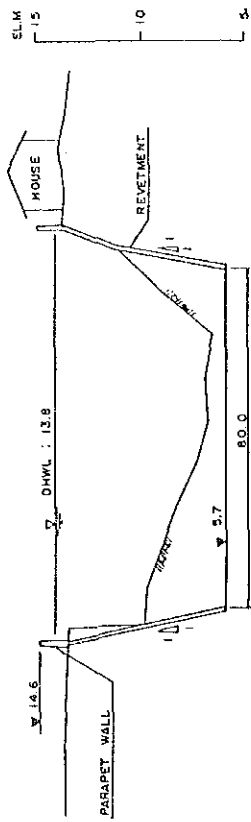


PARAPET WALL

THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
IN METRO MANILA, PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

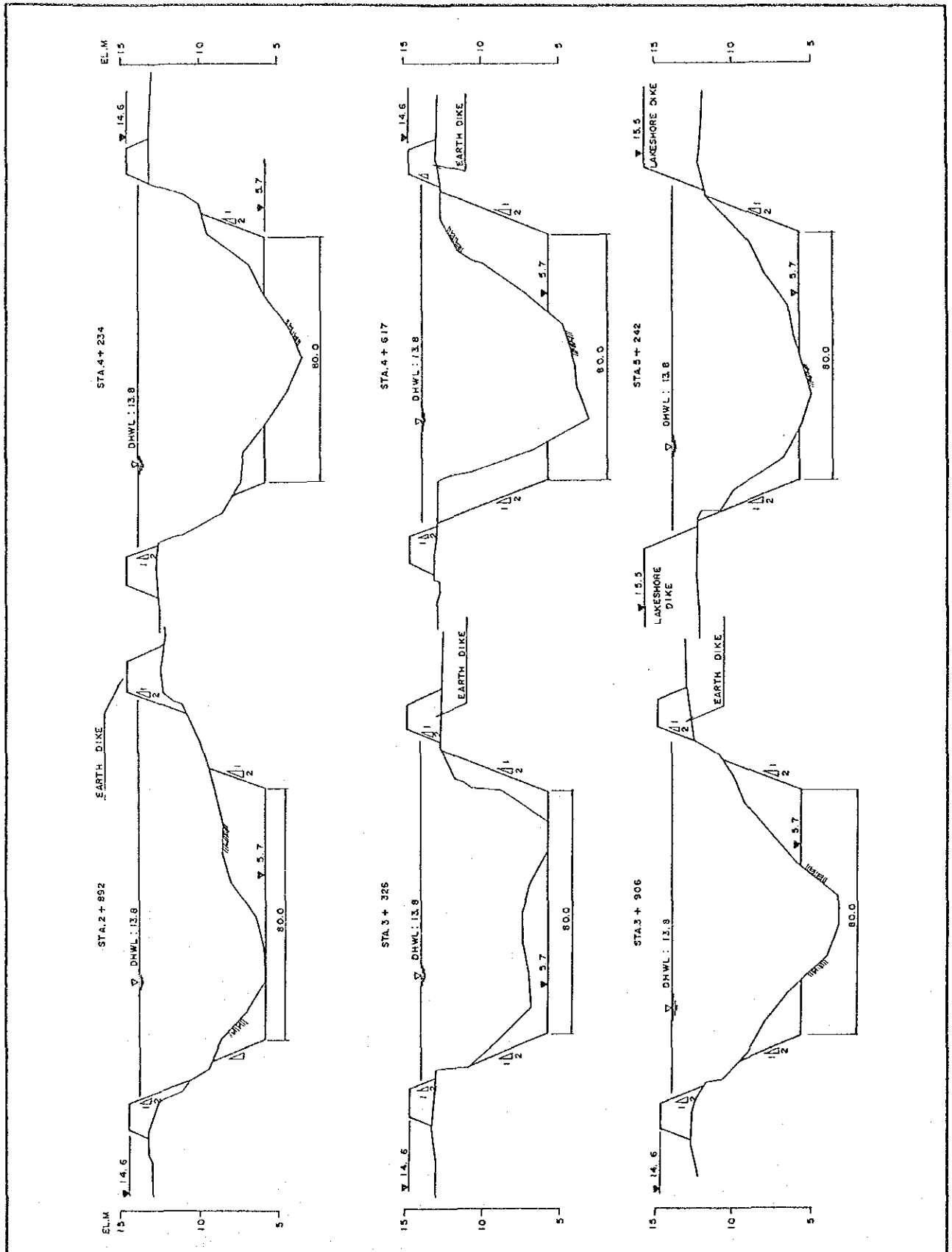
図 7. 2—5 湖岸堤の標準断面



THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
IN METRO MANILA, PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

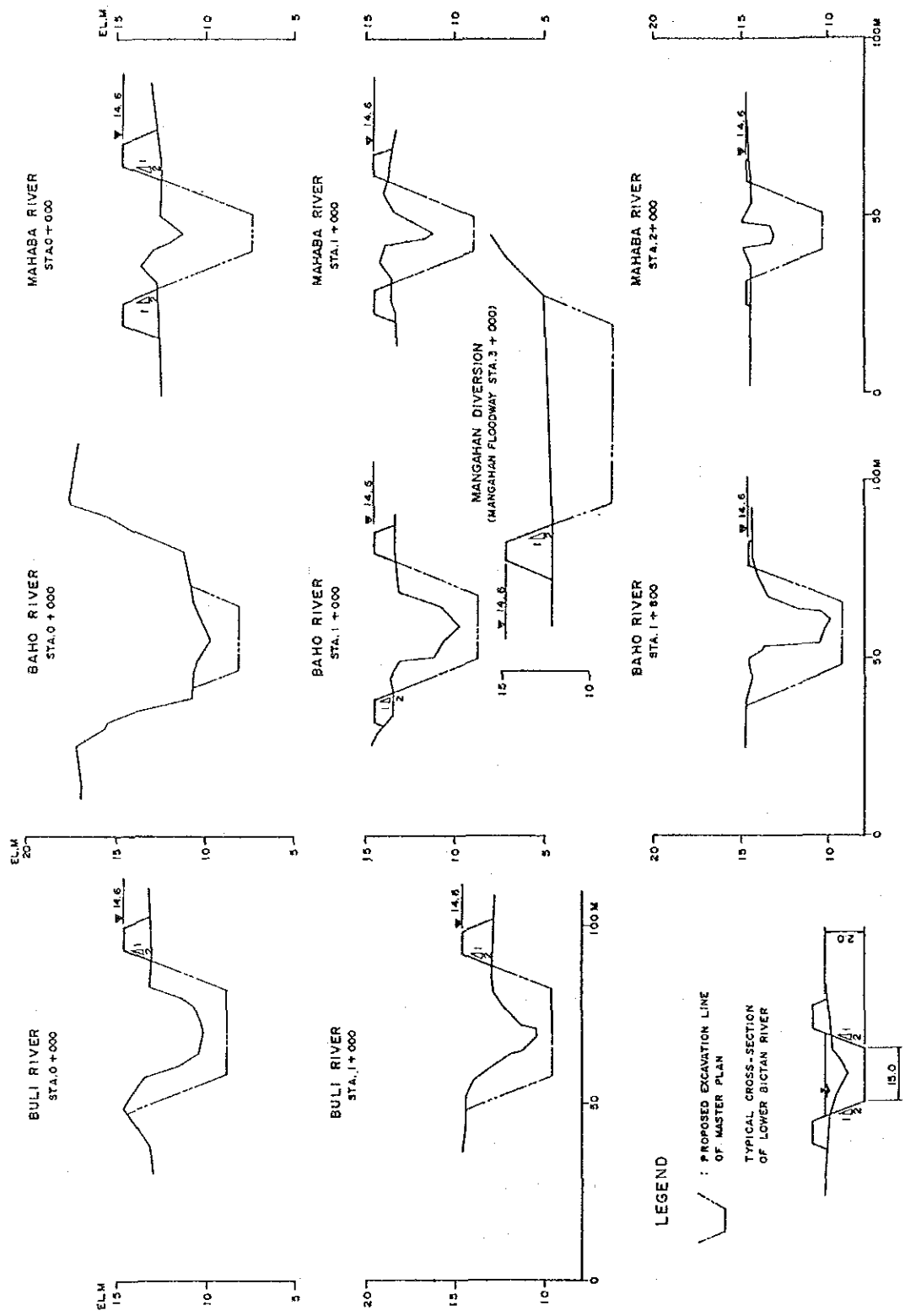
図 7. 2 - 6 (1/3) 背水堤の計画断面



THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
IN METRO MANILA, PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

図 7. 2 - 6 (2/3) 背水堤の計画断面



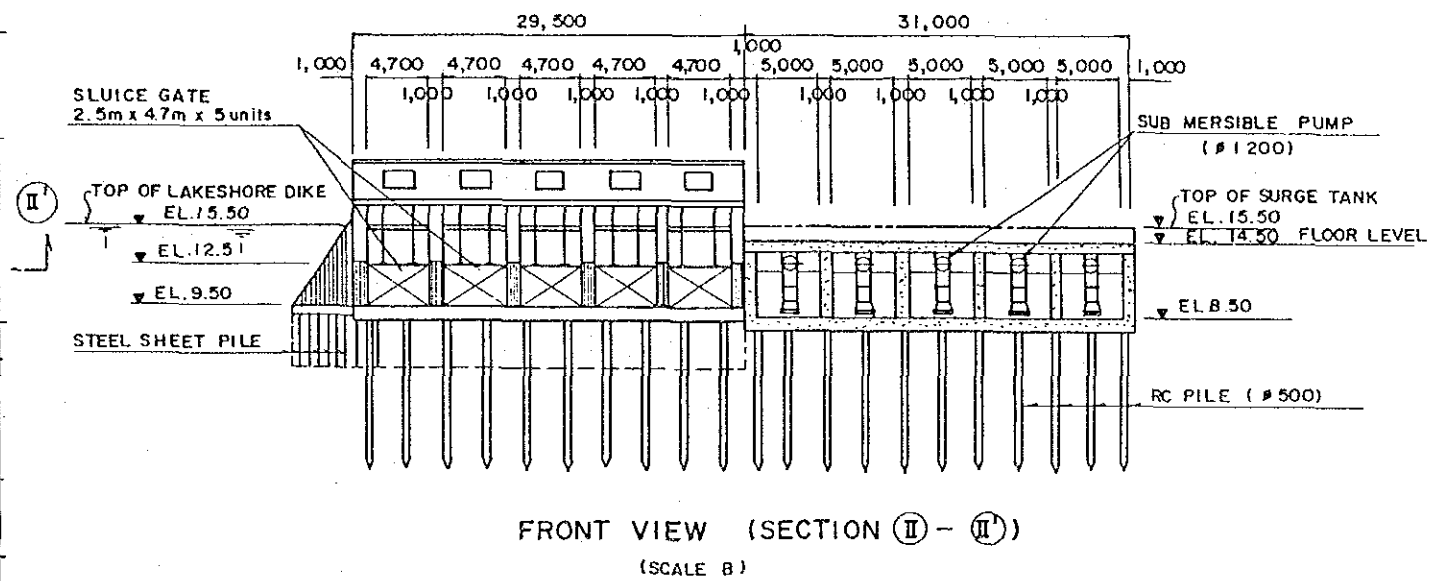
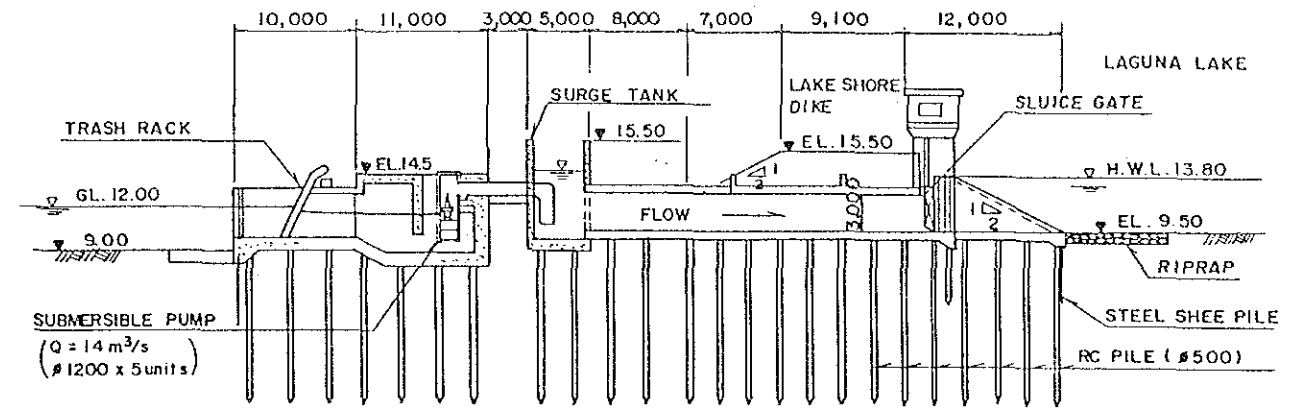
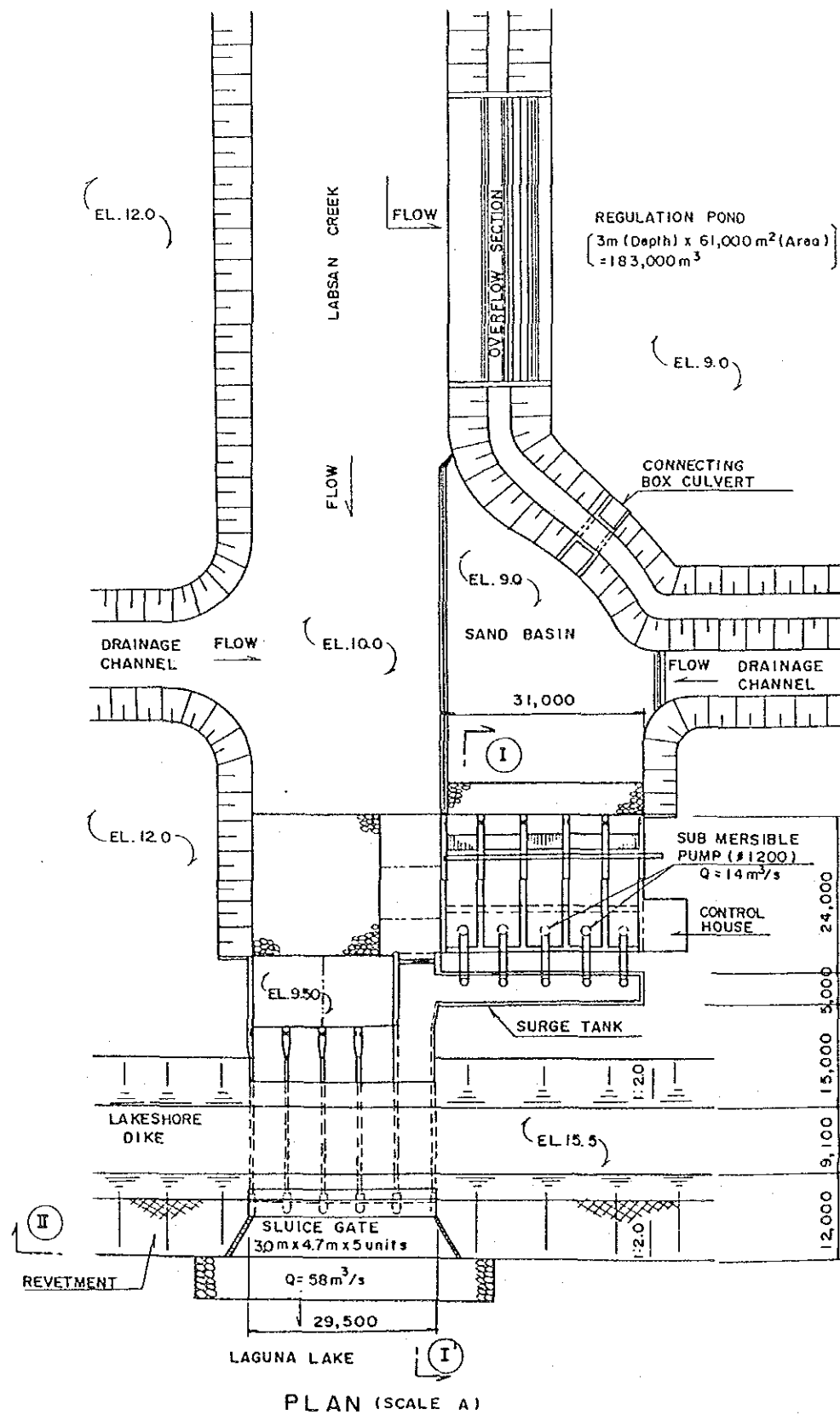
THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
IN METRO MANILA, PHILIPPINES

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図 7. 2 - 6 (3/3) 背水堤の計画断面







SCALE A : 0 10 20 30 40 50M.

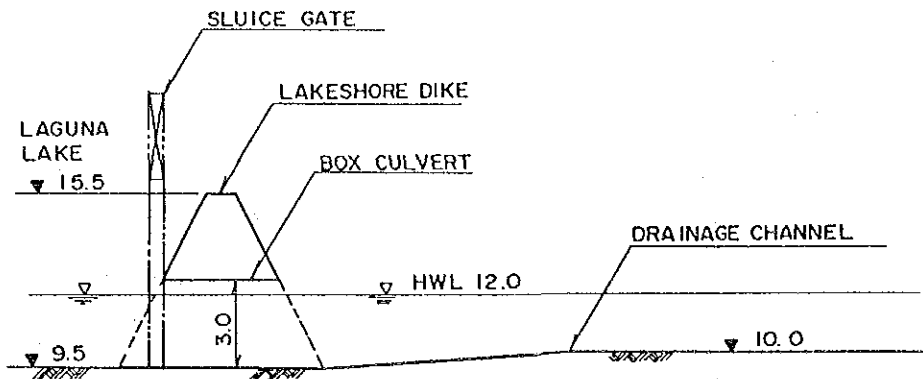
SCALE B : 0 10 20 30 M

THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
IN METRO MANILA, PHILIPPINES  
JAPAN INTERNATIONAL COOPERATION AGENCY

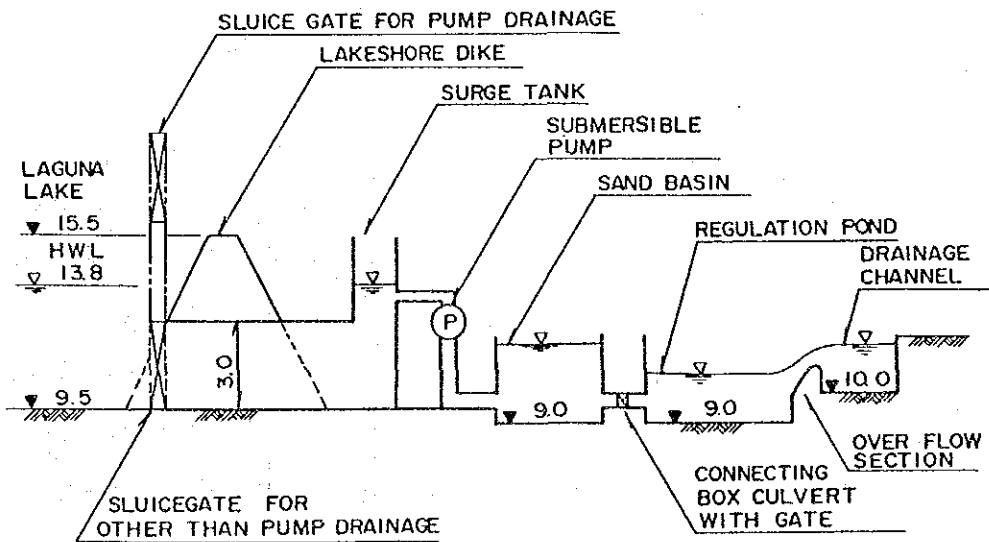
図 7. 2-8 調整池、ポンプ場及び樋門  
(管)の一般配置図







GRAVITY FLOW DRAINAGE

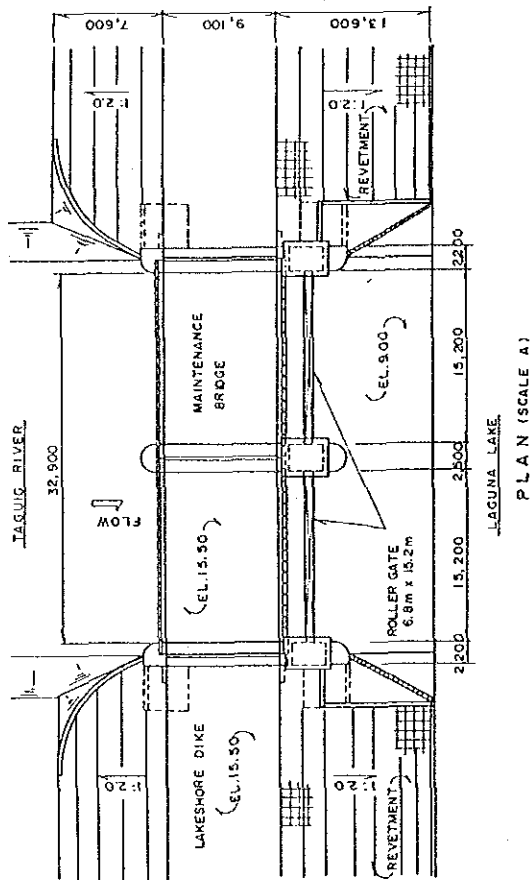


PUMP DRAINAGE

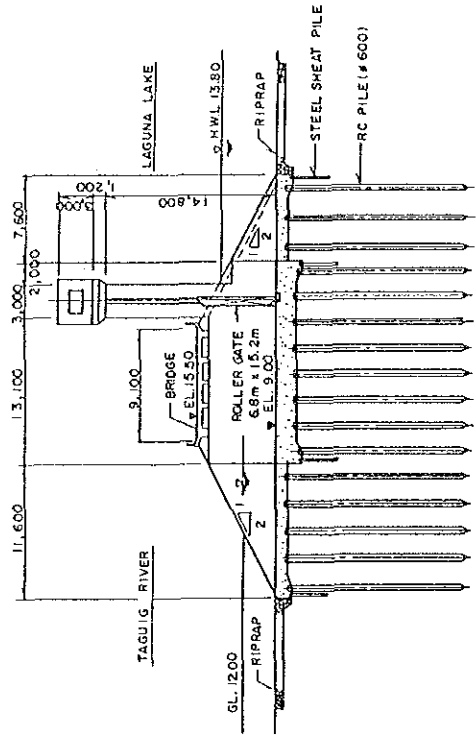
THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
IN METRO MANILA, PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

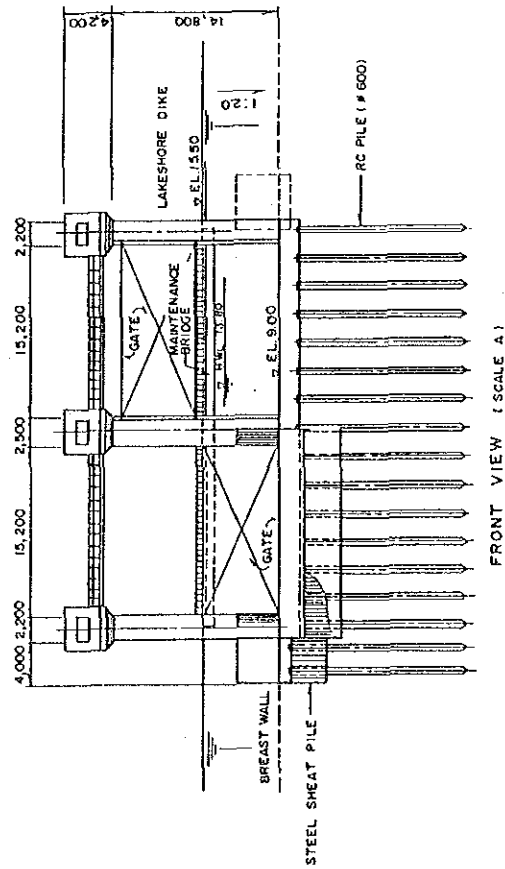
図 7. 2-9 調整池、ポンプ場及び樋門  
(管) の概念図



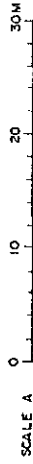
PLAN (SCALE A)



PROFILE OF SLUICE GATE (SCALE A)



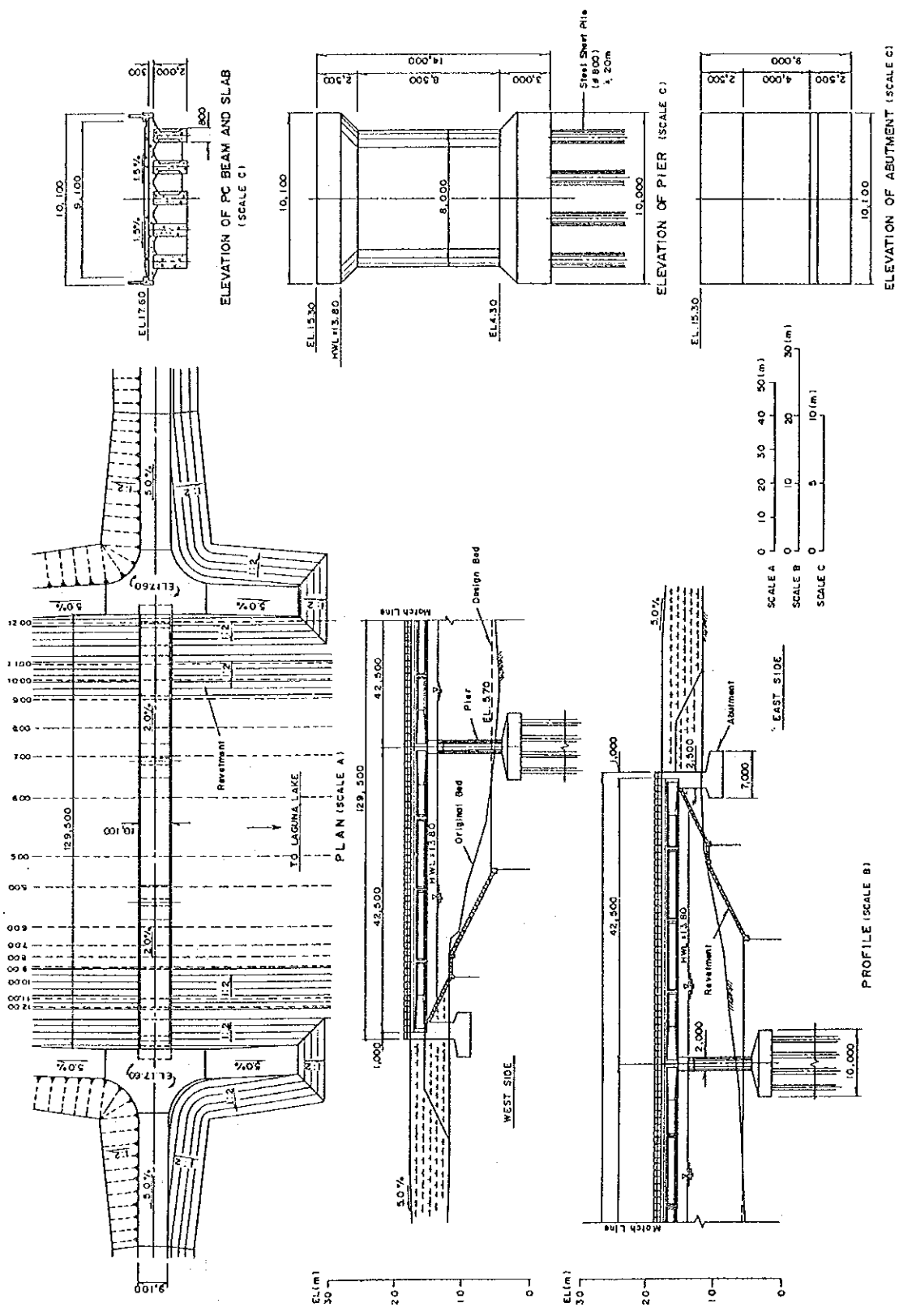
FRONT VIEW (SCALE A)



THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
IN METRO MANILA, PHILIPPINES

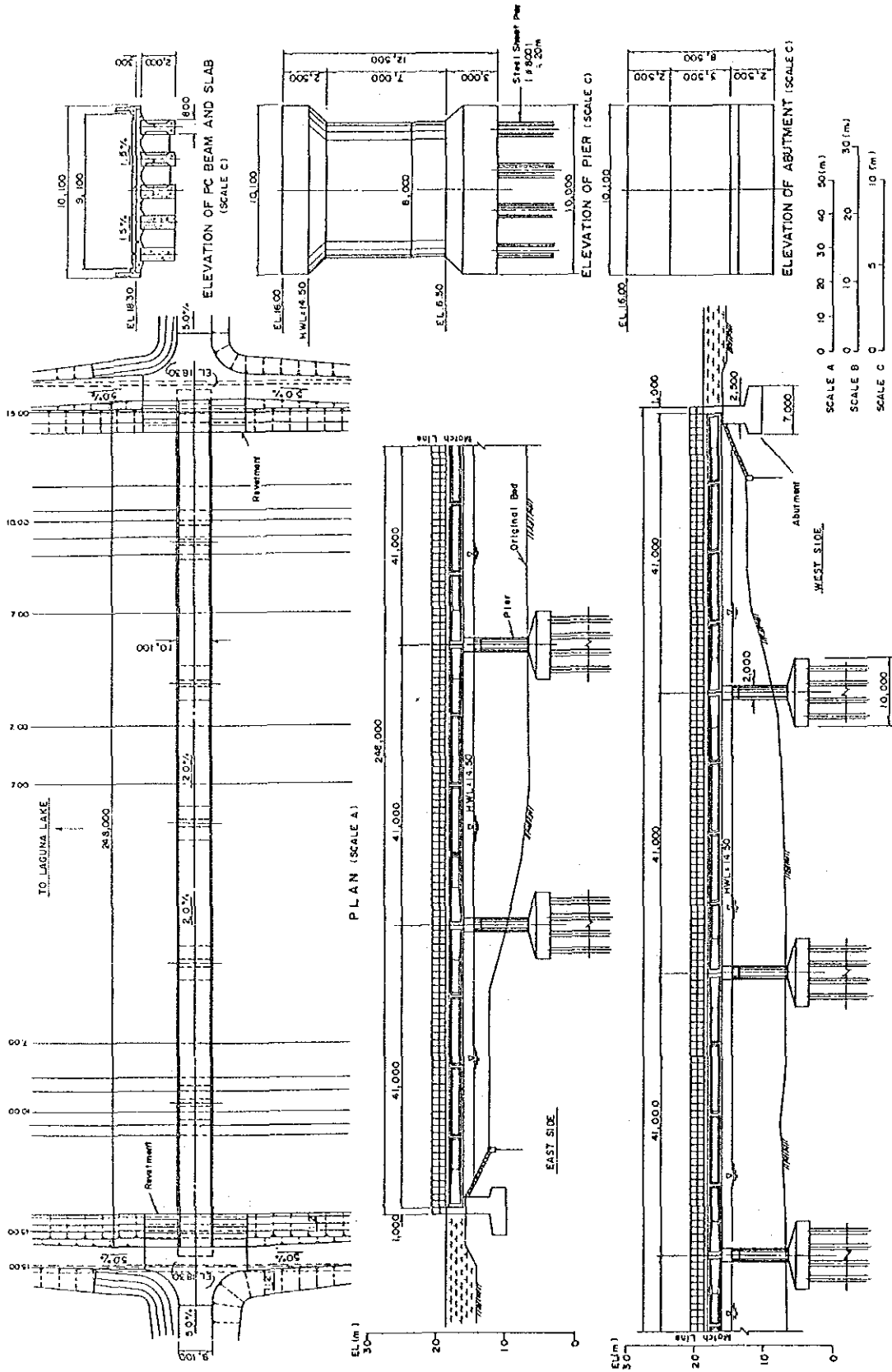
JAPAN INTERNATIONAL COOPERATION AGENCY

図7. 2-10 樋門(管)の標準図



THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
 IN METRO MANILA, PHILIPPINES  
 JAPAN INTERNATIONAL COOPERATION AGENCY

図 7. 2 - 1 1 (1/2) 管理橋一般図



THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
IN METRO MANILA, PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

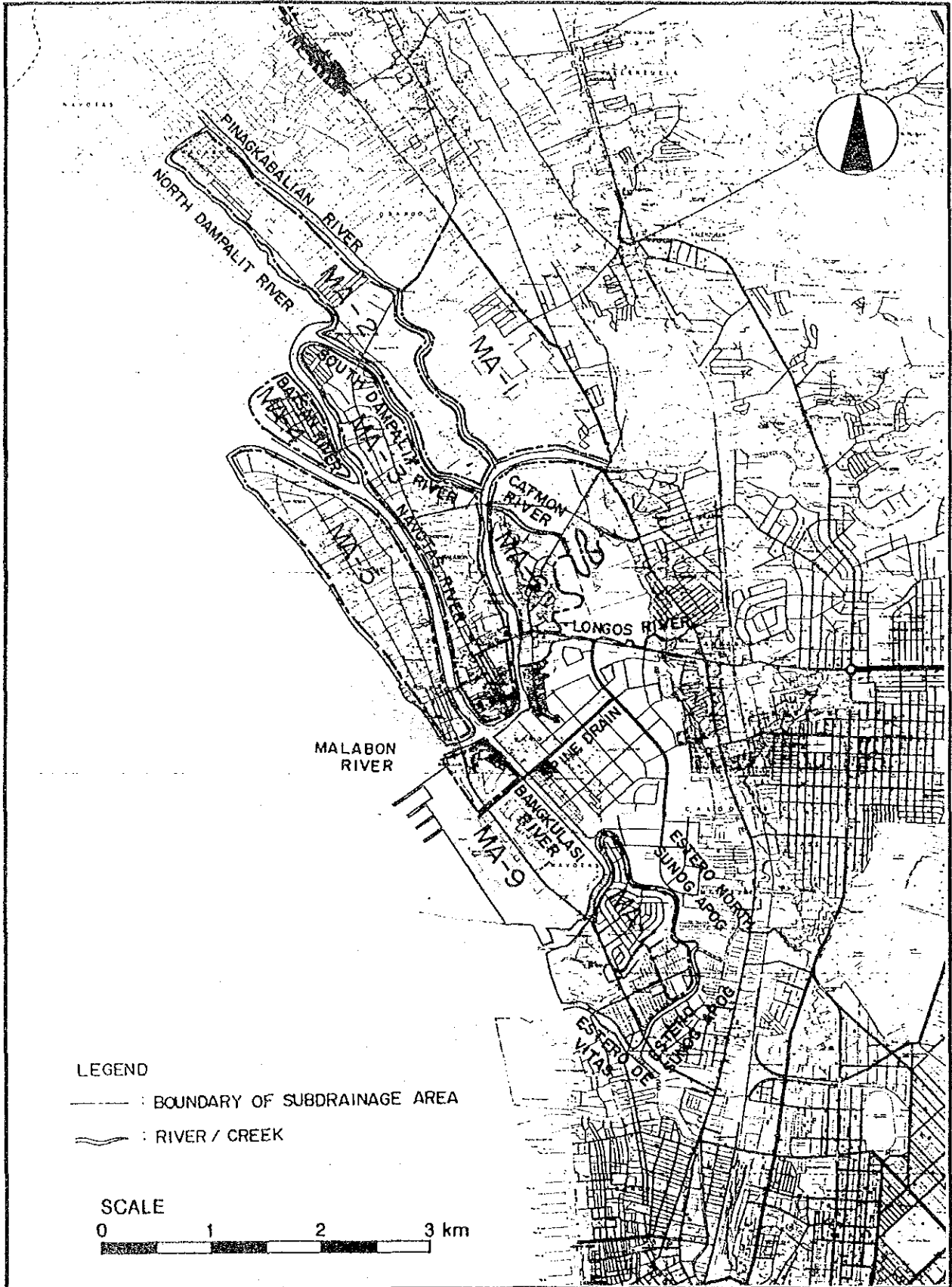
図 7. 2 - 1 1 (2/2) 管理橋一般図

| WORK ITEM                    | QUANTITY | UNIT           | Y E A R |      |      |      |
|------------------------------|----------|----------------|---------|------|------|------|
|                              |          |                | 1991    | 1992 | 1993 | 1994 |
| 1. LAKESHORE DIKE            |          |                |         |      |      |      |
| PREPARATORY WORKS            | 1        | L/S            |         |      |      |      |
| EXCAVATION                   | 145,000  | m <sup>3</sup> |         |      |      |      |
| EMBANKMENT                   | 872,000  | m <sup>3</sup> |         |      |      |      |
| REVTMENT                     | 80,000   | m <sup>2</sup> |         |      |      |      |
| SLUICE GATE                  | 5        | Site           |         |      |      |      |
| MAINTENANCE BRIDGE           | 4        | Site           |         |      |      |      |
| 2. RIVER CHANNEL IMPROVEMENT |          |                |         |      |      |      |
| PREPARATORY WORKS            | 1        | L/S            |         |      |      |      |
| NAPINDAN RIVER               | 5,242    | m              |         |      |      |      |
| MANGAHAN DIVERSION           | 3,900    | m              |         |      |      |      |
| BULI, BAHO, MAHABA RIVERS    | 5,800    | m              |         |      |      |      |
| LOWER BICUTAN RIVER          | 800      | m              |         |      |      |      |
| 3. DRAINAGE IMPROVEMENT      |          |                |         |      |      |      |
| PREPARATORY WORKS            | 1        | L/S            |         |      |      |      |
| CHANNEL WORKS                | 55,000   | m              |         |      |      |      |
| SLUICE GATE                  | 9        | Site           |         |      |      |      |
| REGULATION POND              | 6        | Site           |         |      |      |      |
| PUMP STATION                 | 9        | Site           |         |      |      |      |
| LATERAL                      | 114,500  | m              |         |      |      |      |

THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
IN METRO MANILA, PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

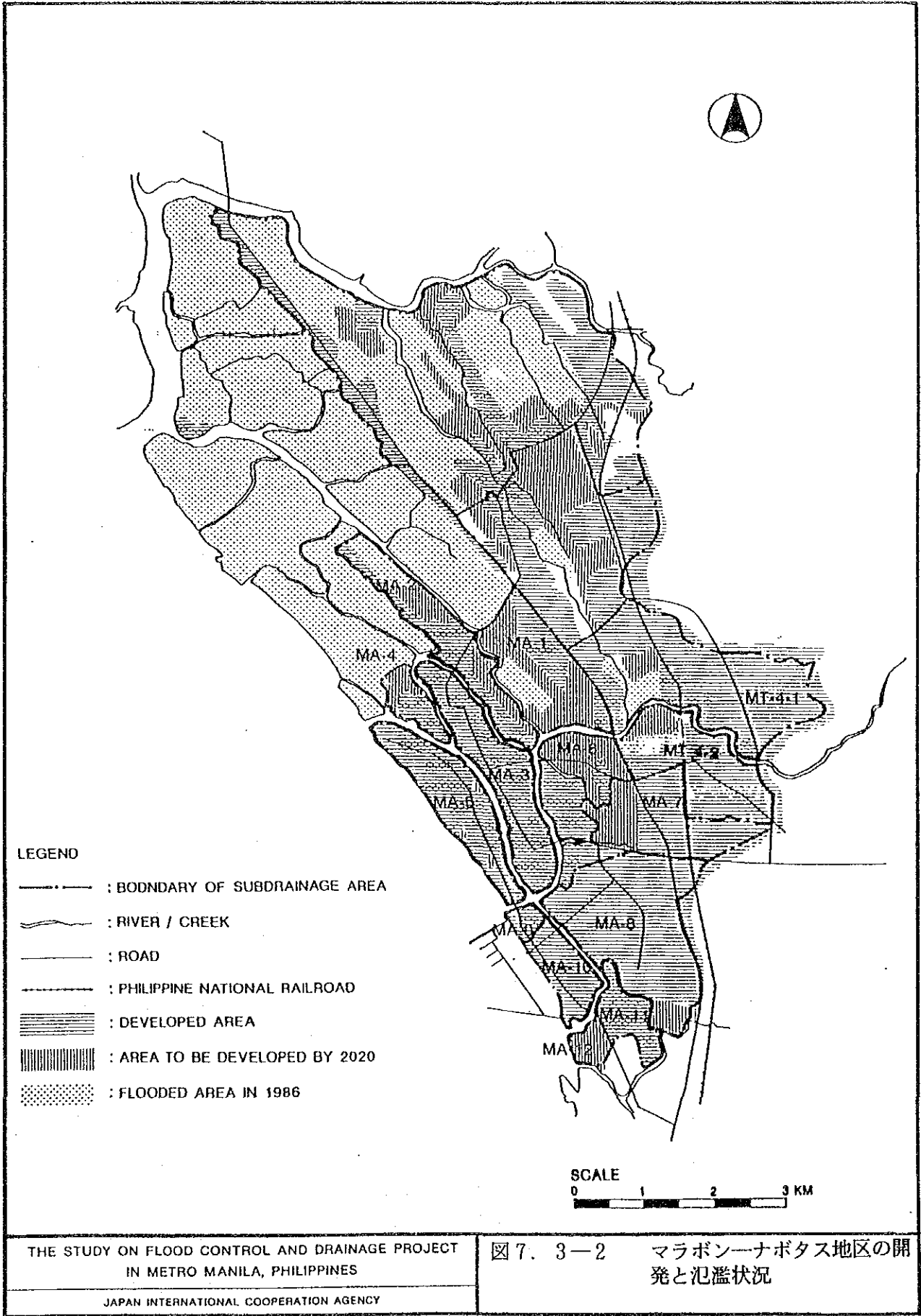
図 7. 2-12 マンガハン東西地区排水改善  
プロジェクトの工事工程



THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
IN METRO MANILA, PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

図 7. 3-1 マラボン-ナボタス地区の小排水域



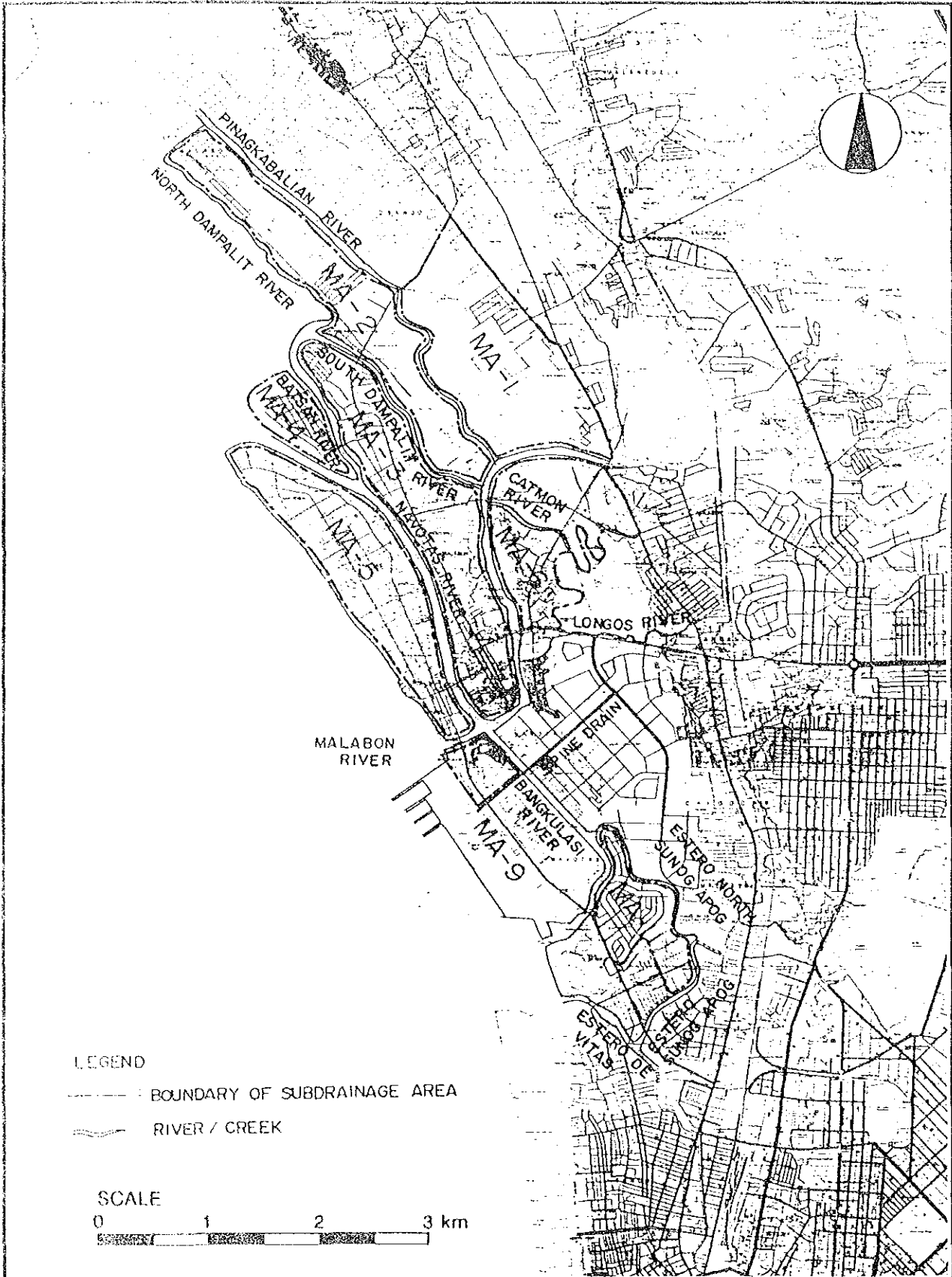
LEGEND

- : BODNDARY OF SUBDRAINAGE AREA
- ~~~~~ : RIVER / CREEK
- : ROAD
- - - - : PHILIPPINE NATIONAL RAILROAD
- ||||| : DEVELOPED AREA
- ||||| : AREA TO BE DEVELOPED BY 2020
- ..... : FLOODED AREA IN 1986

SCALE  
0 1 2 3 KM

THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
IN METRO MANILA, PHILIPPINES  
JAPAN INTERNATIONAL COOPERATION AGENCY

図 7. 3-2 マラボナーナボタス地区の開発と氾濫状況



THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
IN METRO MANILA, PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

図 7. 3-1 マラボーンナボタス地区の小排水域



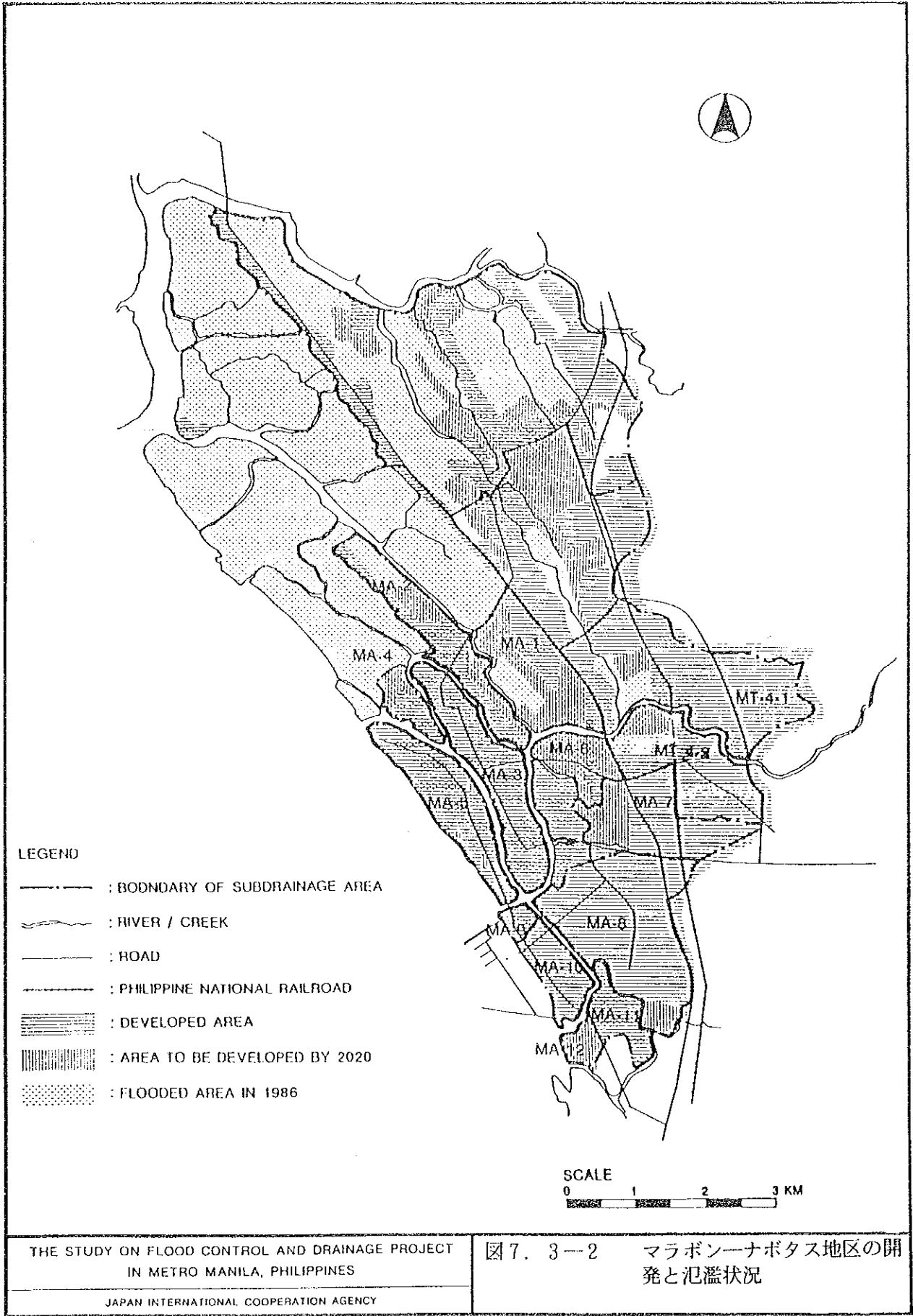
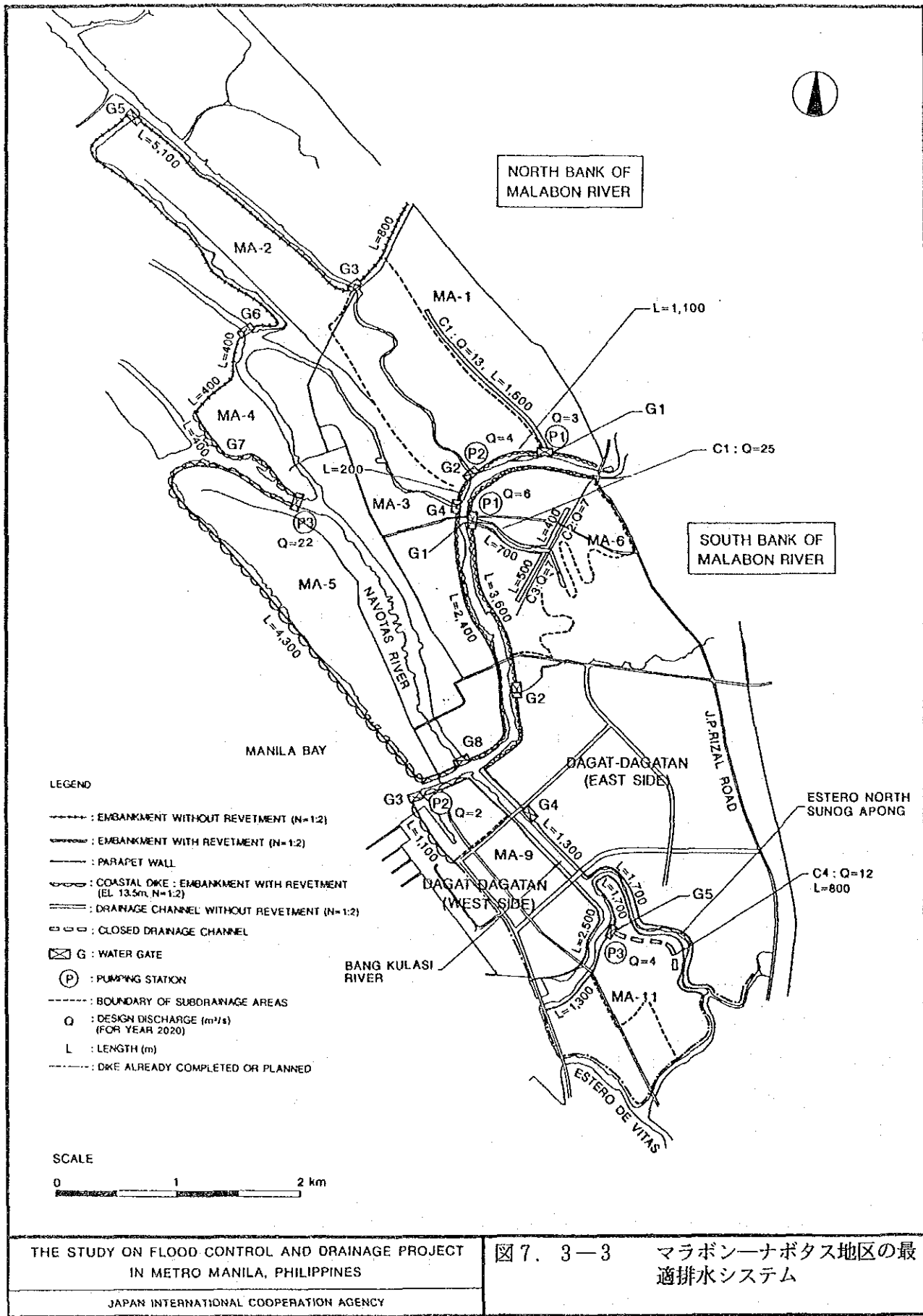


図7. 3-2 マラボン-ナボタス地区の開発と氾濫状況



THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
IN METRO MANILA, PHILIPPINES

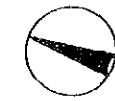
JAPAN INTERNATIONAL COOPERATION AGENCY

図 7. 3-3 マラボーンナボタス地区の最適排水システム

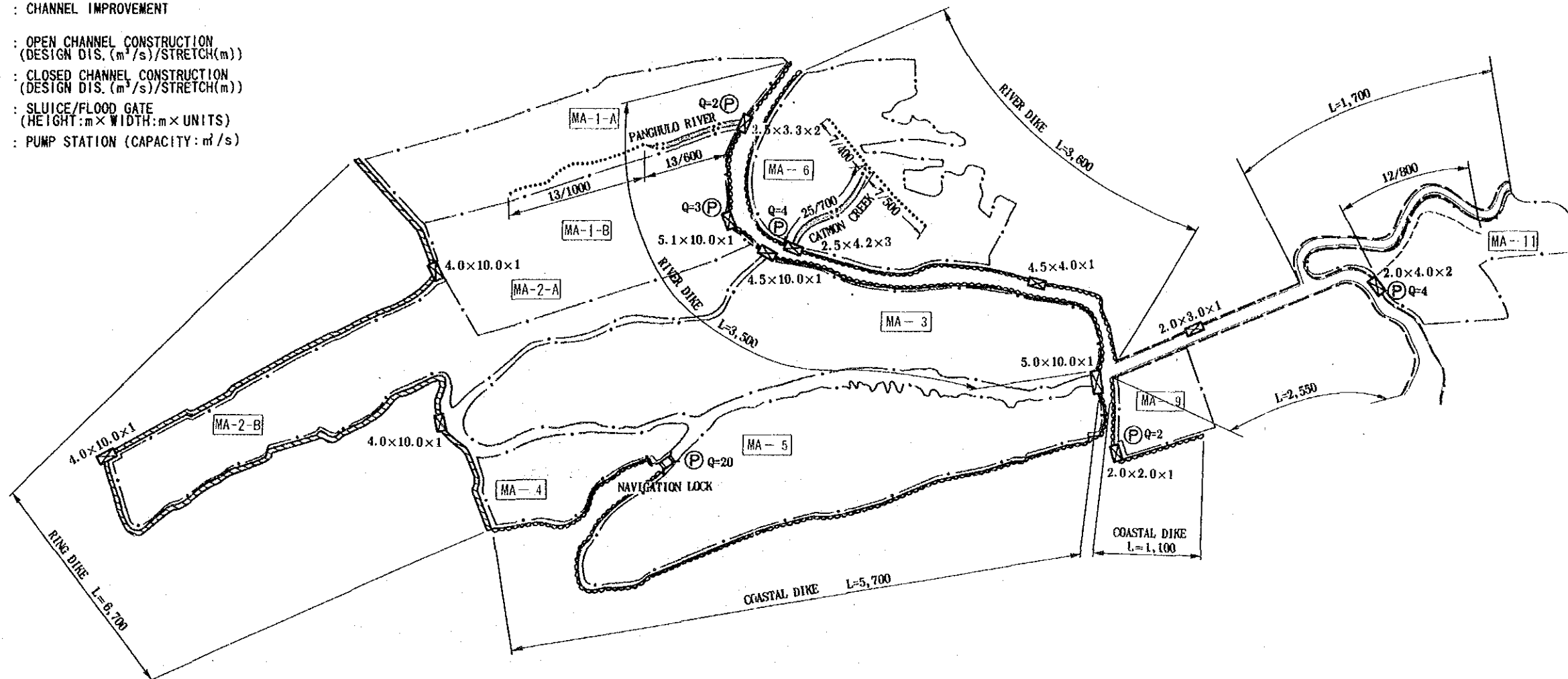


LEGEND

- : BOUNDARY OF DRAINAGE AREA
- ▨ : RING DIKE (EMBANKMENT W/O REVETMENT)
- ▧ : RIVER DIKE/COASTAL DIKE (EMBANKMENT W/ REVETMENT)
- ▩ : PARAPET/RIVER WALL
- : CHANNEL IMPROVEMENT
- ⋯ : OPEN CHANNEL CONSTRUCTION (DESIGN DIS. (m<sup>3</sup>/s)/STRETCH(m))  
10/800
- : CLOSED CHANNEL CONSTRUCTION (DESIGN DIS. (m<sup>3</sup>/s)/STRETCH(m))  
15/900
- ▣ : SLUICE/FLOOD GATE (HEIGHT:m×WIDTH:m×UNITS)  
2.5×3.3×2
- ⊕ : PUMP STATION (CAPACITY: m<sup>3</sup>/s)  
Q=3



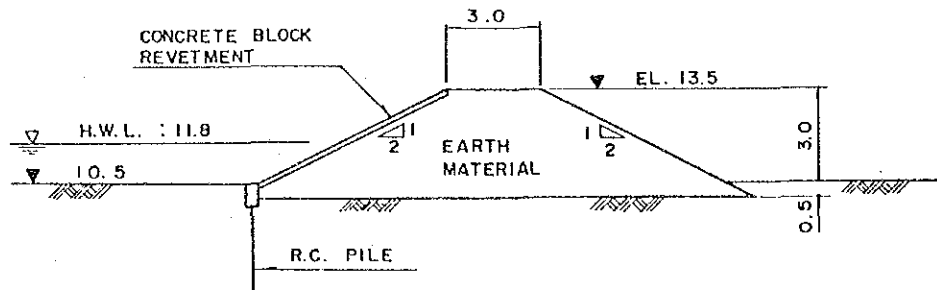
SCALE  
0 1 km



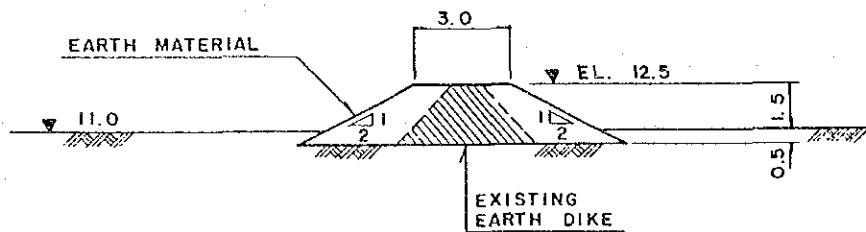
THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
IN METRO MANILA, PHILIPPINES  
JAPAN INTERNATIONAL COOPERATION AGENCY

図 7. 3-4 マラボン-ナボタス地区の  
施設配置

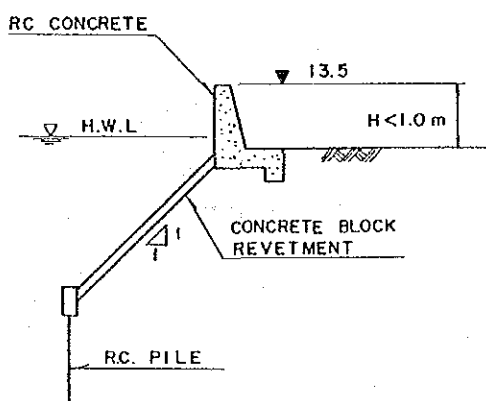




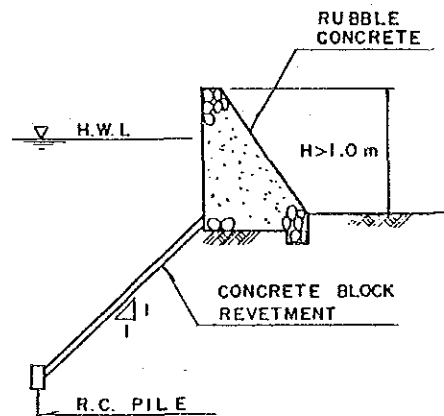
COASTAL DIKE



RING DIKE



PARAPET WALL

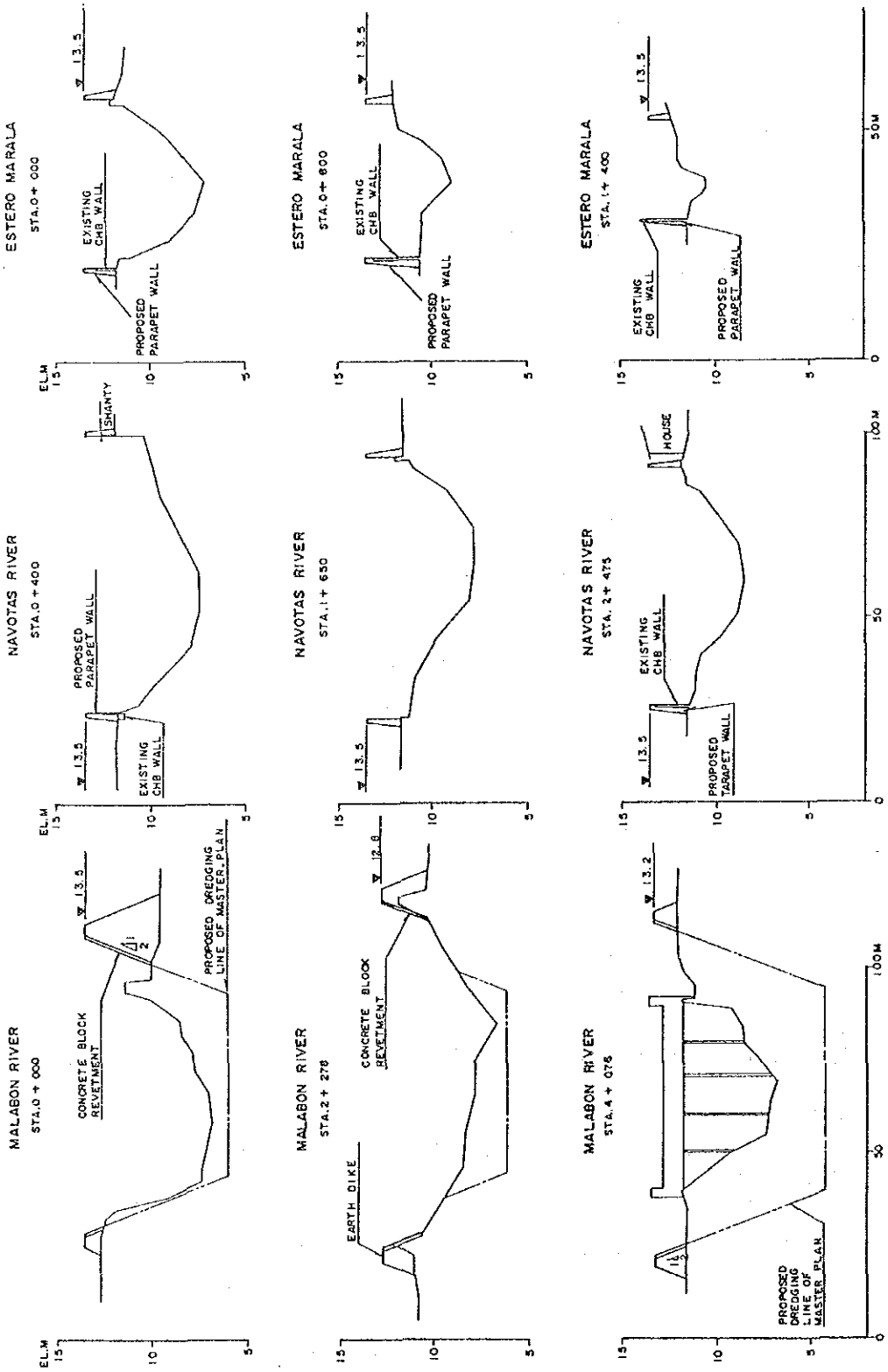


RIVER WALL

THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
IN METRO MANILA, PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

図 7. 3—5 輪中堤の標準断面



THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
IN METRO MANILA, PHILIPPINES

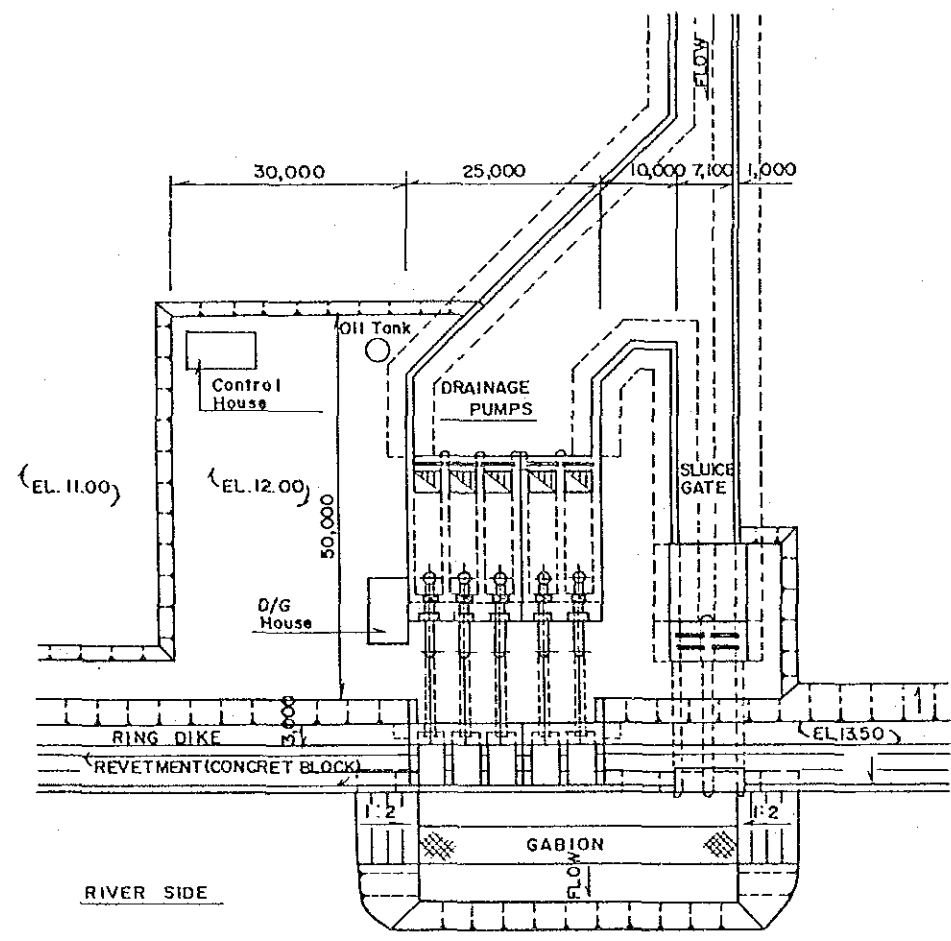
JAPAN INTERNATIONAL COOPERATION AGENCY

図 7. 3-6

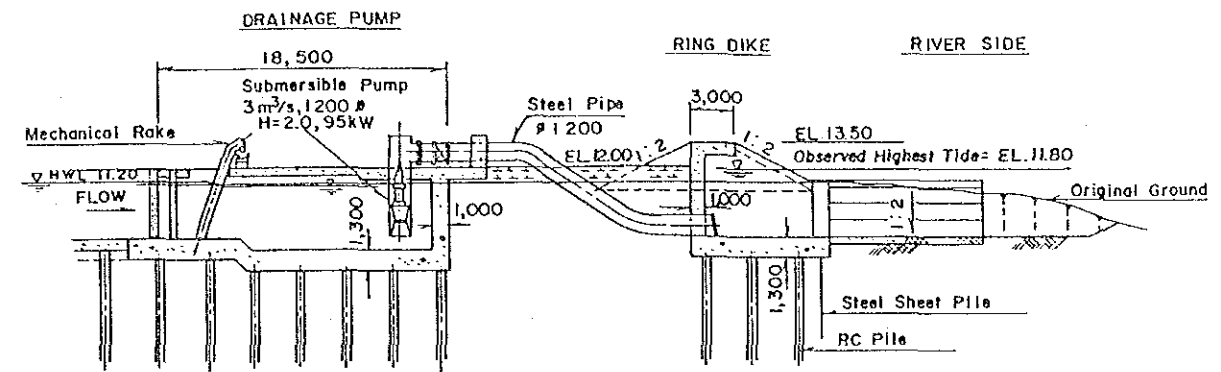
計画河川堤防とパラペット  
ウォール



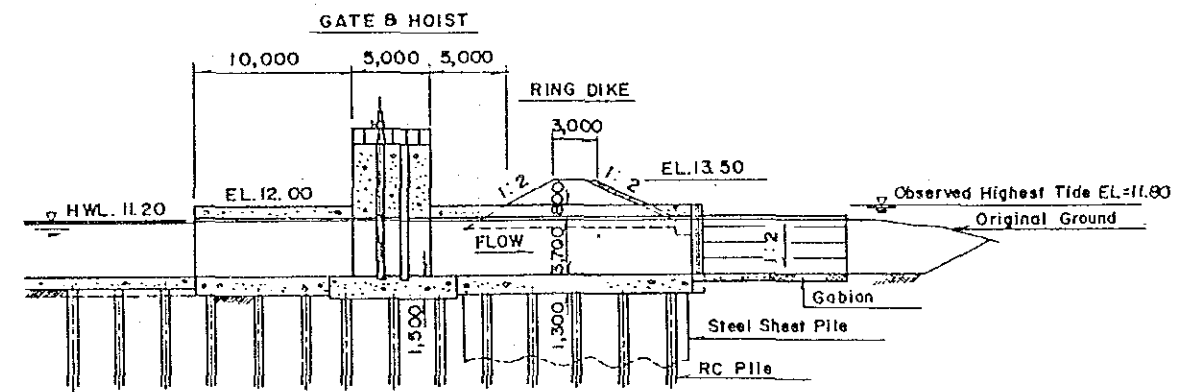




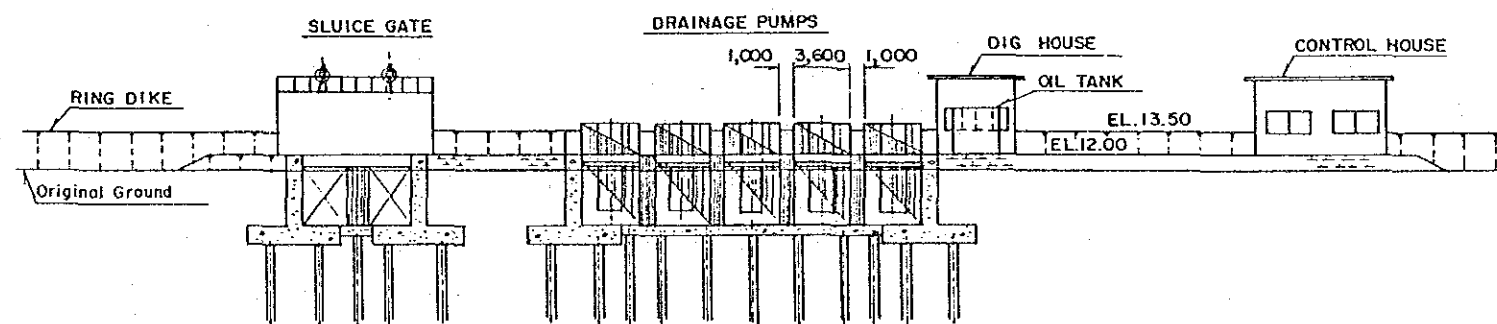
PLAN (SCALE A)



PROFILE OF DRAINAGE PUMP (SCALE B)



PROFILE OF SLUICE WAY (SCALE B)



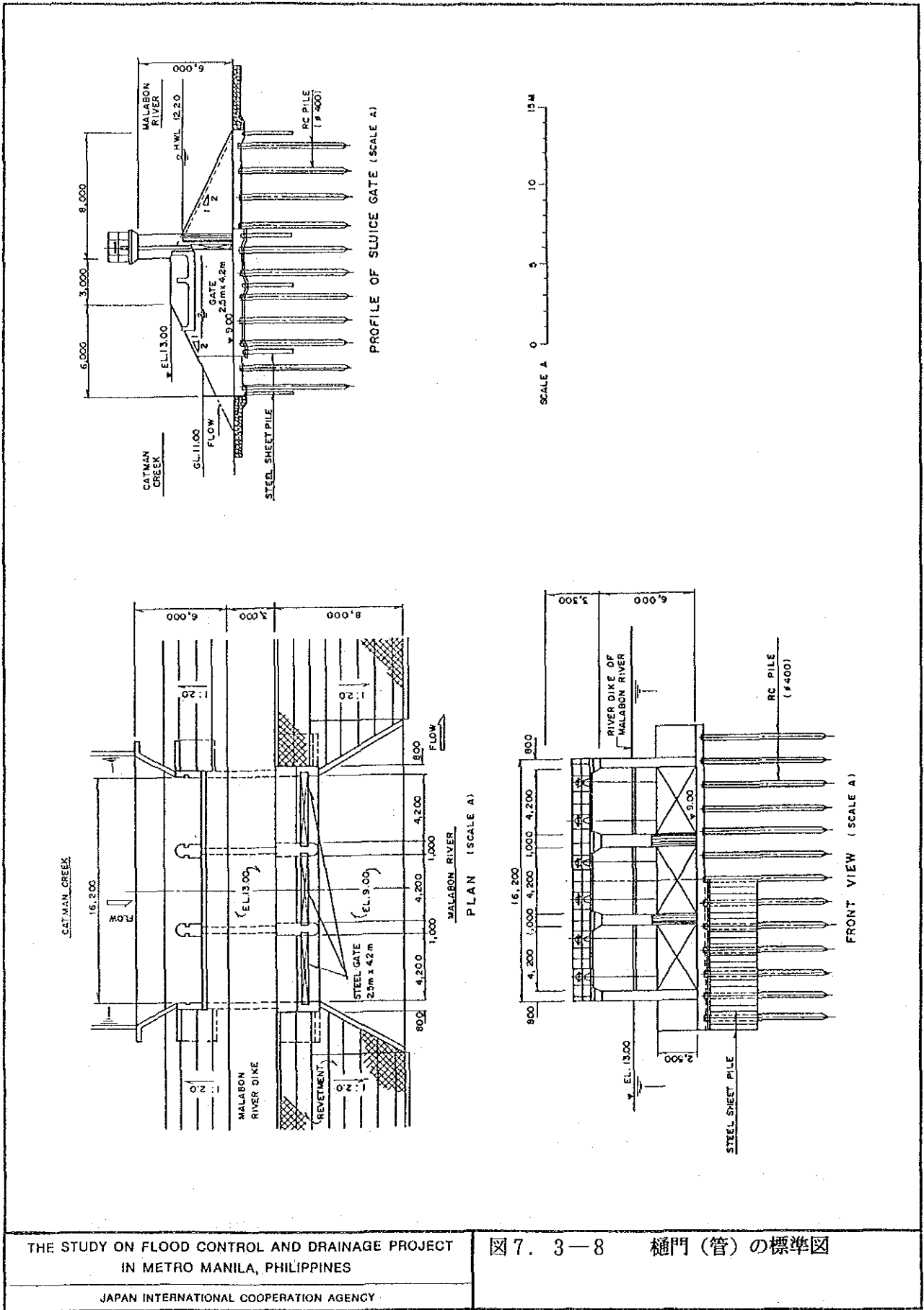
FRONT VIEW (SCALE B)

SCALE A 0 10 20 30 40 50m

SCALE B 0 10 20 30m

COMPARISON STUDY OF PUMP STATION  
 TYPICAL MODEL OF SUBMERSIBLE-TYPE PUMP STATION  
 FOR MALABON-NAVOTAS  
 (Q = 15.0 m³/s)

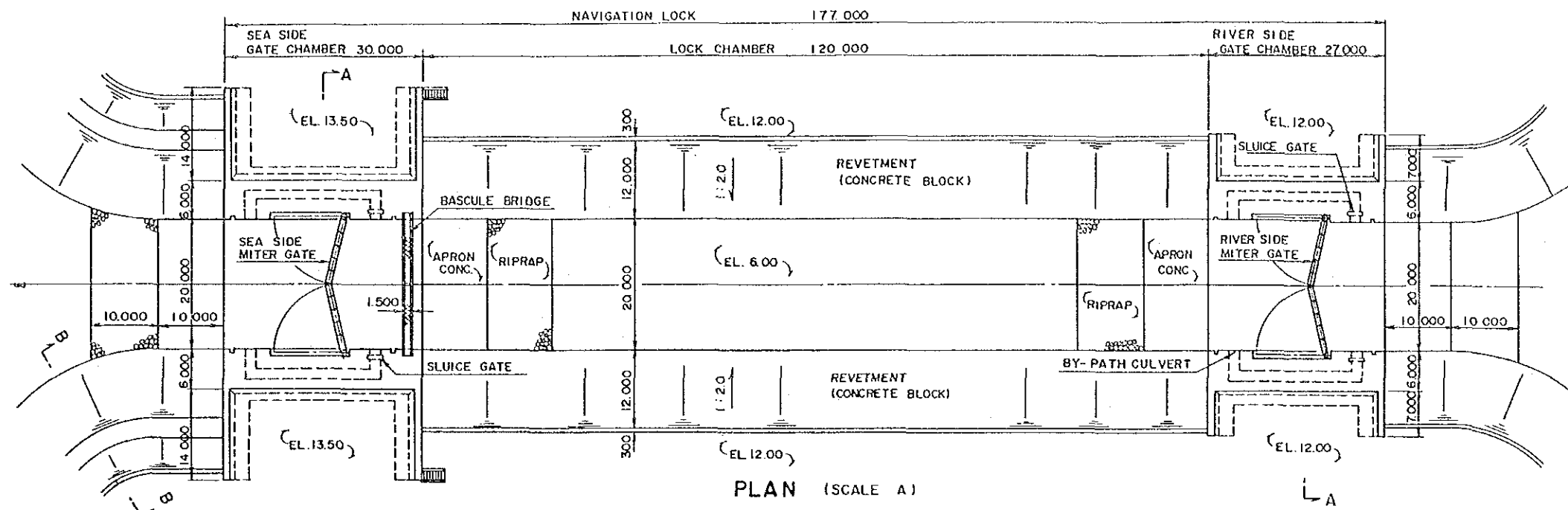




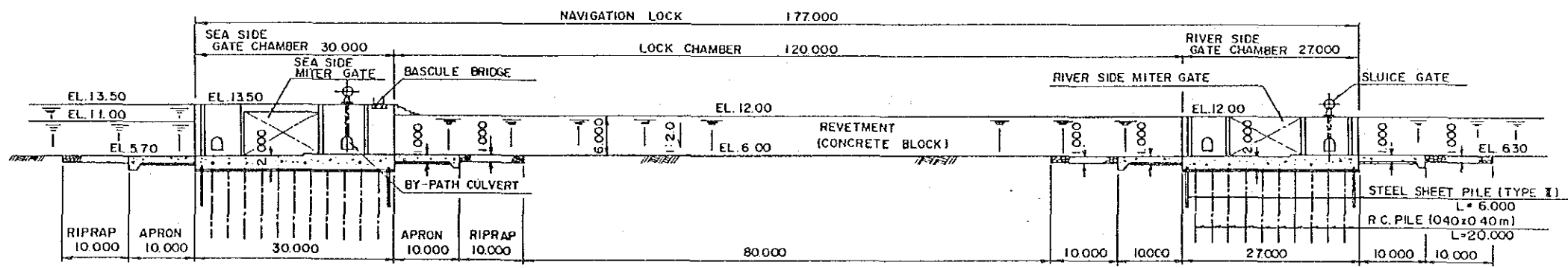
THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
IN METRO MANILA, PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

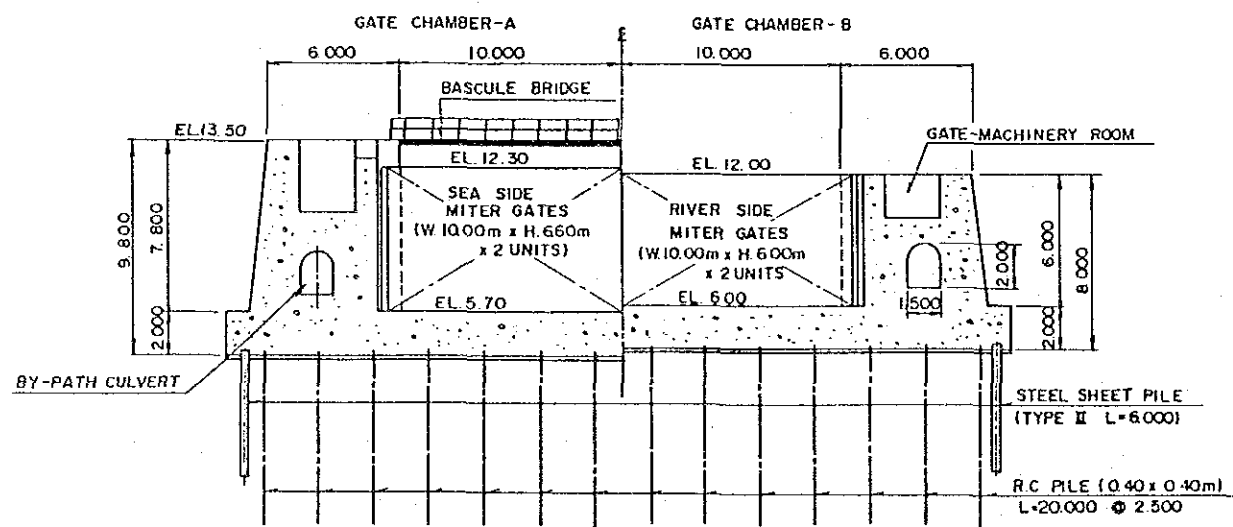
図 7. 3-8 樋門 (管) の標準図



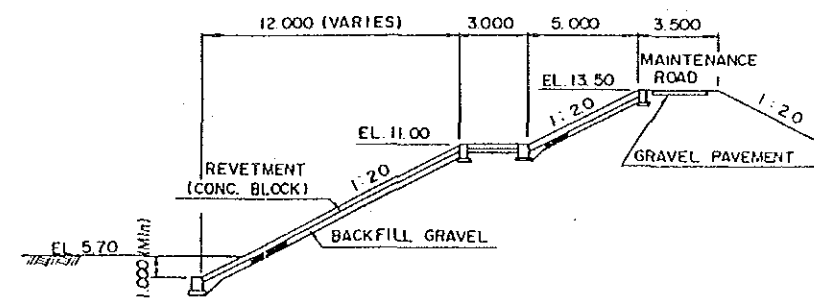
PLAN (SCALE A)



ELEVATION (SCALE A)



SECTION A-A (SCALE B)



SECTION B-B (SCALE B)

SCALE A 0 5 10 15 20 25 (m)  
 SCALE B 0 2 4 6 8 10 (m)

THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
 IN METRO MANILA, PHILIPPINES  
 JAPAN INTERNATIONAL COOPERATION AGENCY

図 7. 3-9 ナボタス閘門の一般図

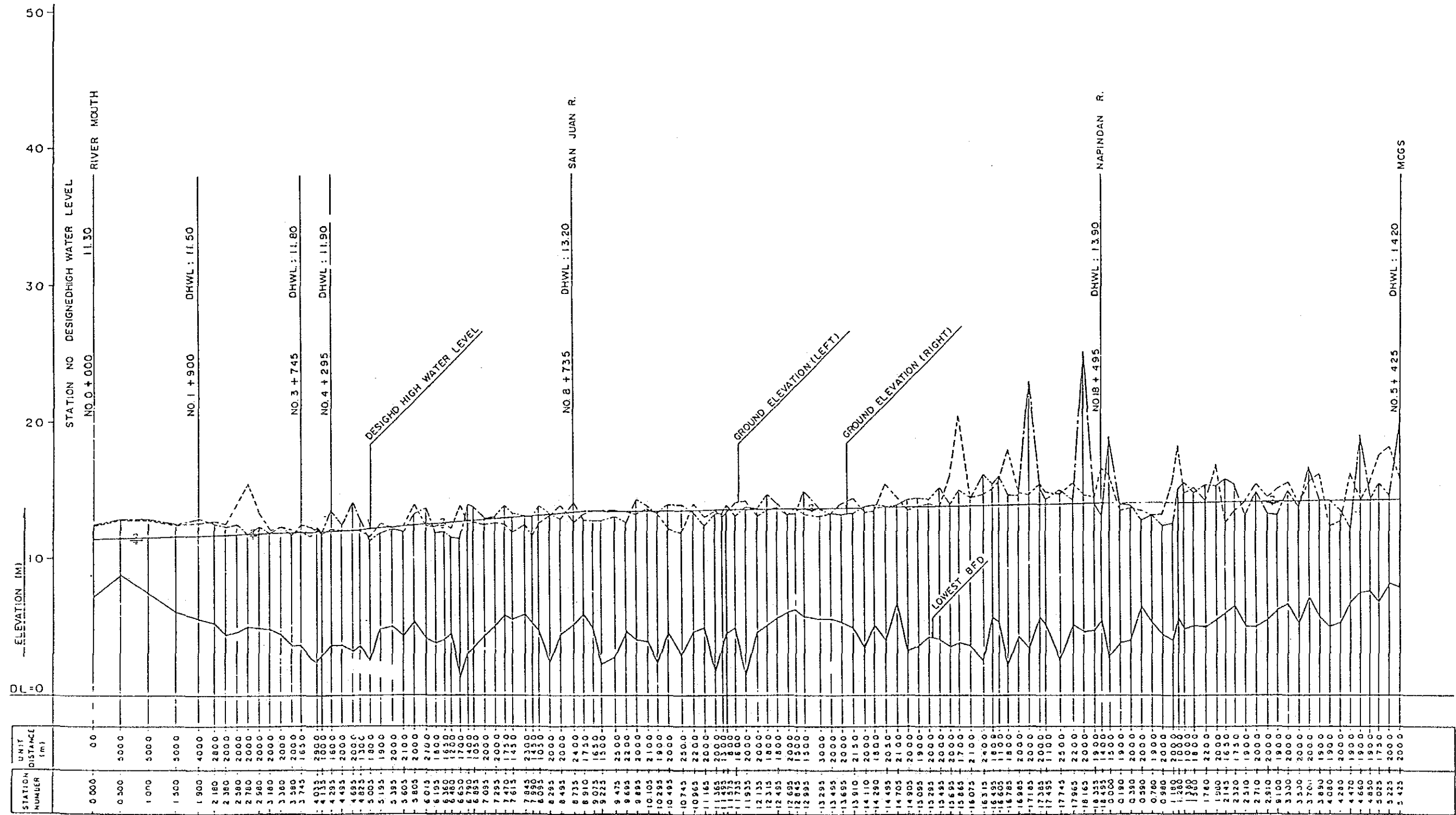


| WORK ITEM                 | QUANTITY | UNIT | Y E A R |      |      |      |
|---------------------------|----------|------|---------|------|------|------|
|                           |          |      | 1991    | 1992 | 1993 | 1994 |
| 1. NORTH OF MALABON RIVER |          |      |         |      |      |      |
| PREPARATORY WORKS         | 1        | L/S  |         |      |      |      |
| RING DIKE                 | 15,900   | m    |         |      |      |      |
| CHANNEL WORKS             | 1,600    | m    |         |      |      |      |
| GATE                      | 7        | Site |         |      |      |      |
| PUMP STATION              | 3        | Site |         |      |      |      |
| LATERAL                   | 31,200   | m    |         |      |      |      |
| 2. NAVIGATION LOCK        |          |      |         |      |      |      |
| PREPARATORY WORKS         | 1        | L/S  |         |      |      |      |
| EARTHWORKS                | 1        | L/S  |         |      |      |      |
| CONCRETE WORKS            | 1        | L/S  |         |      |      |      |
| GATE/EQUIPMENT            | 1        | L/S  |         |      |      |      |
| 3. SOUTH OF MALABON RIVER |          |      |         |      |      |      |
| PREPARATORY WORKS         | 1        | L/S  |         |      |      |      |
| RING DIKE                 | 13,200   | m    |         |      |      |      |
| CHANNEL WORKS             | 2,400    | m    |         |      |      |      |
| GATE                      | 5        | Site |         |      |      |      |
| PUMP STATION              | 3        | Site |         |      |      |      |
| LATERAL                   | 5,900    | m    |         |      |      |      |

THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
IN METRO MANILA, PHILIPPINES

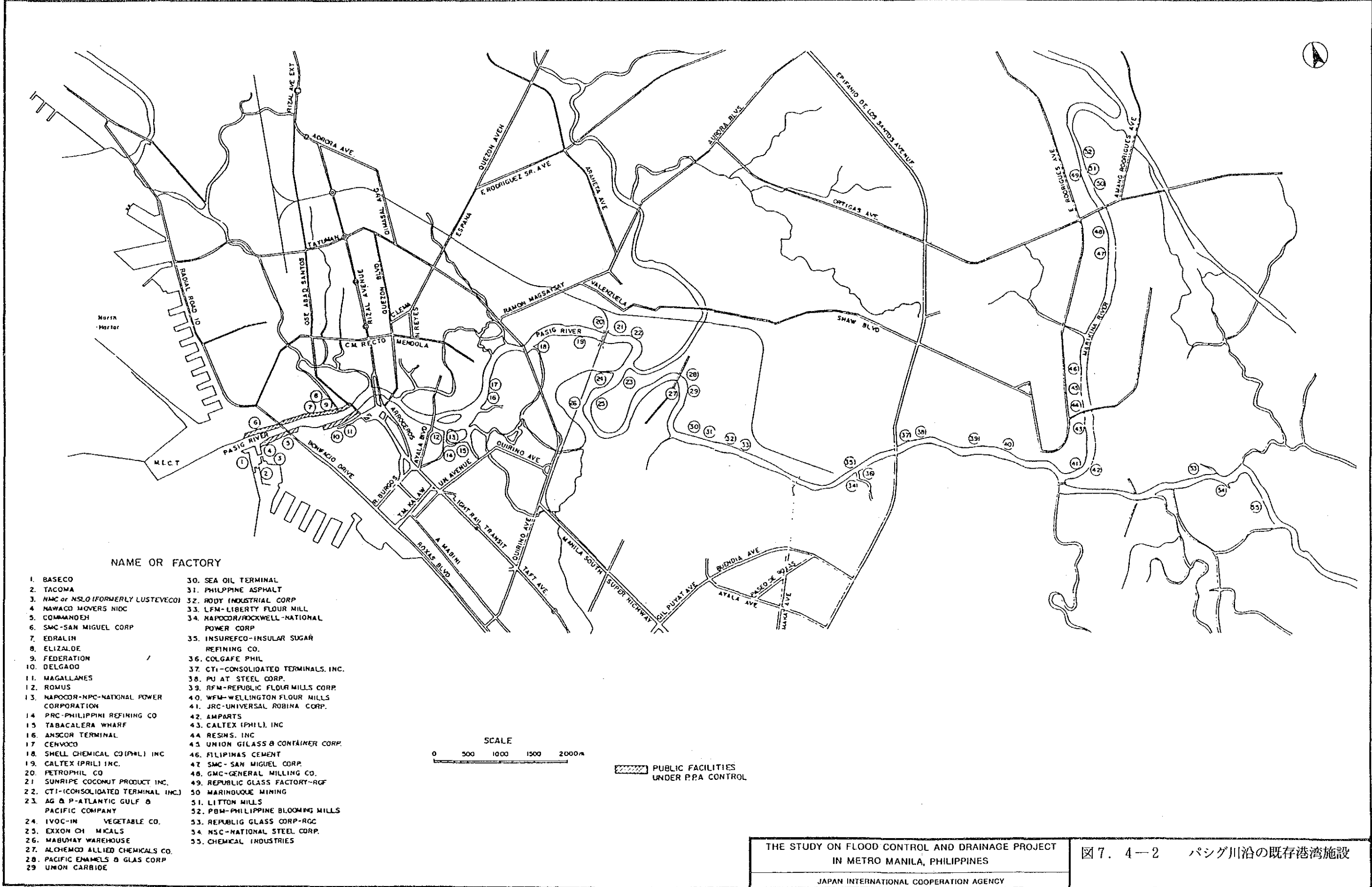
JAPAN INTERNATIONAL COOPERATION AGENCY

図7. 3-10 マラボン-ナボタス排水改善  
プロジェクトの工事工程



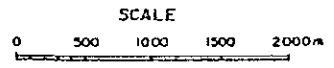
THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
 IN METRO MANILA, PHILIPPINES  
 JAPAN INTERNATIONAL COOPERATION AGENCY

図 7. 4-1 計画高水位



NAME OR FACTORY

- |  |  |
|--|--|
| 1. BASECO                                  | 30. SEA OIL TERMINAL                     |
| 2. TACOMA                                  | 31. PHILIPPINE ASPHALT                   |
| 3. NMC or NSLO (FORMERLY LUSTEVECO)        | 32. RODY INDUSTRIAL CORP                 |
| 4. HAWACO MOVERS NIOC                      | 33. LFM-LIBERTY FLOUR MILL               |
| 5. COMMANDER                               | 34. NAPOCOR/ROCKWELL-NATIONAL POWER CORP |
| 6. SMC-SAN MIGUEL CORP                     | 35. INSUREFCO-INSULAR SUGAR REFINING CO. |
| 7. EDRALIN                                 | 36. COLGAFE PHIL                         |
| 8. ELIZALDE                                | 37. CTI-CONSOLIDATED TERMINALS, INC.     |
| 9. FEDERATION                              | 38. PU AT STEEL CORP.                    |
| 10. DELGAO                                 | 39. RFM-REPUBLIC FLOUR MILLS CORP        |
| 11. MAGALLANES                             | 40. WFM-WELLINGTON FLOUR MILLS           |
| 12. ROMUS                                  | 41. JRC-UNIVERSAL ROBINA CORP.           |
| 13. NAPOCOR-NPC-NATIONAL POWER CORPORATION | 42. AMPARTS                              |
| 14. PRC-PHILIPPINE REFINING CO             | 43. CALTEX (PHIL), INC                   |
| 15. TABACALERA WHARF                       | 44. RESINS, INC                          |
| 16. ANSCOR TERMINAL                        | 45. UNION GLASS & CONTAINER CORP.        |
| 17. CENVOCO                                | 46. FILIPINAS CEMENT                     |
| 18. SHELL CHEMICAL CO (PHIL) INC           | 47. SMC-SAN MIGUEL CORP.                 |
| 19. CALTEX (PHIL) INC.                     | 48. GMC-GENERAL MILLING CO.              |
| 20. PETROPHIL CO                           | 49. REPUBLIC GLASS FACTORY-RGF           |
| 21. SUNRIPE COCONUT PRODUCT INC.           | 50. MARINOQUE MINING                     |
| 22. CTI-(CONSOLIDATED TERMINAL INC)        | 51. LITTON MILLS                         |
| 23. AG & P-ATLANTIC GULF & PACIFIC COMPANY | 52. PBM-PHILIPPINE BLOOMING MILLS        |
| 24. IVOC-IN VEGETABLE CO.                  | 53. REPUBLIC GLASS CORP-RGC              |
| 25. EXXON CHEMICALS                        | 54. NSC-NATIONAL STEEL CORP.             |
| 26. MABUHAY WAREHOUSE                      | 55. CHEMICAL INDUSTRIES                  |
| 27. ALOHEMO ALLIED CHEMICALS CO.           |  |
| 28. PACIFIC ENAMELS & GLAS CORP            |  |
| 29. UNION CARBIDE                          |  |

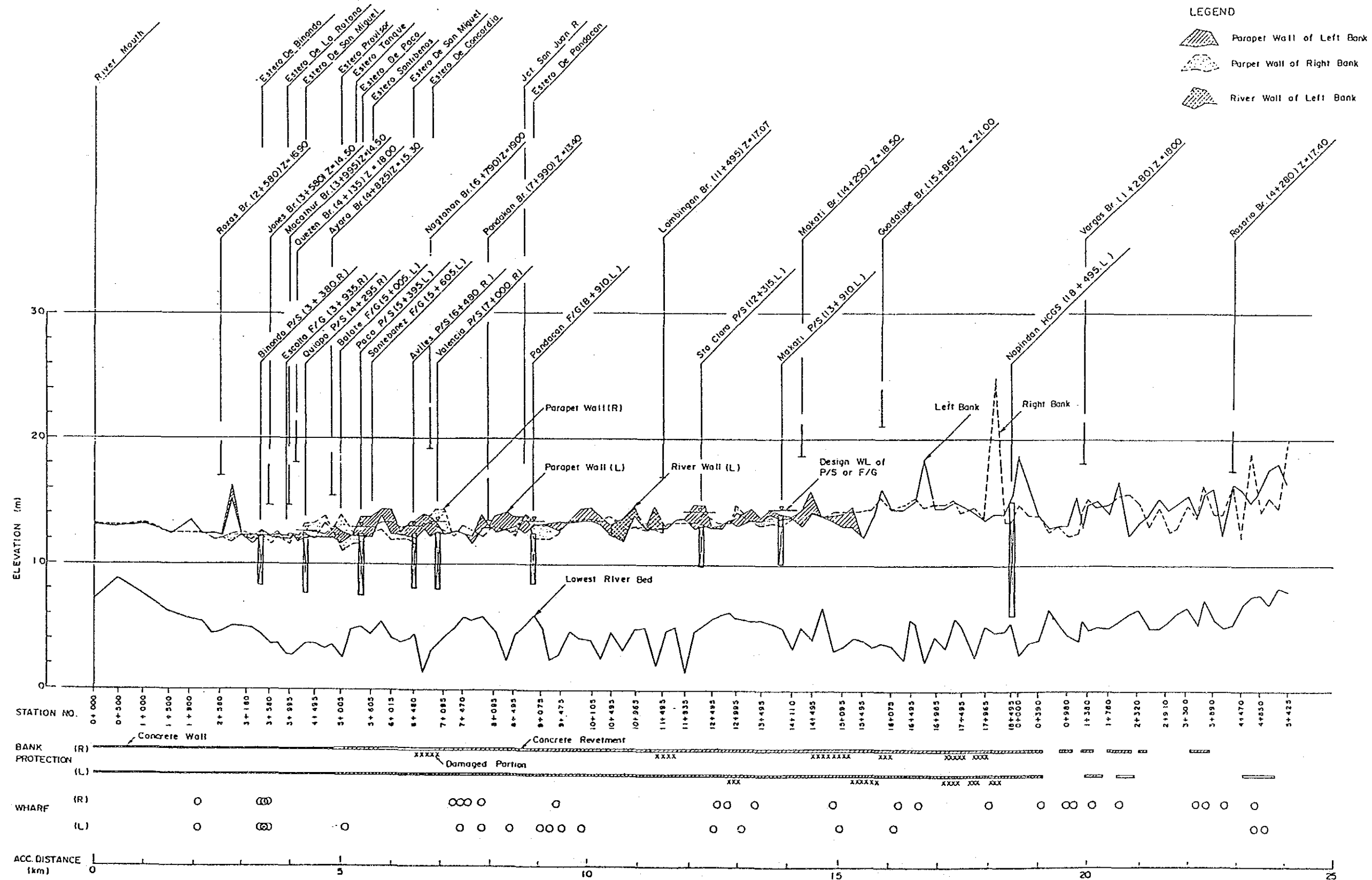


Public Facilities Under PPA Control

THE STUDY ON FLOOD CONTROL AND DRAINAGE PROJECT  
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図 7. 4-2 パシグ川沿の既存港湾施設

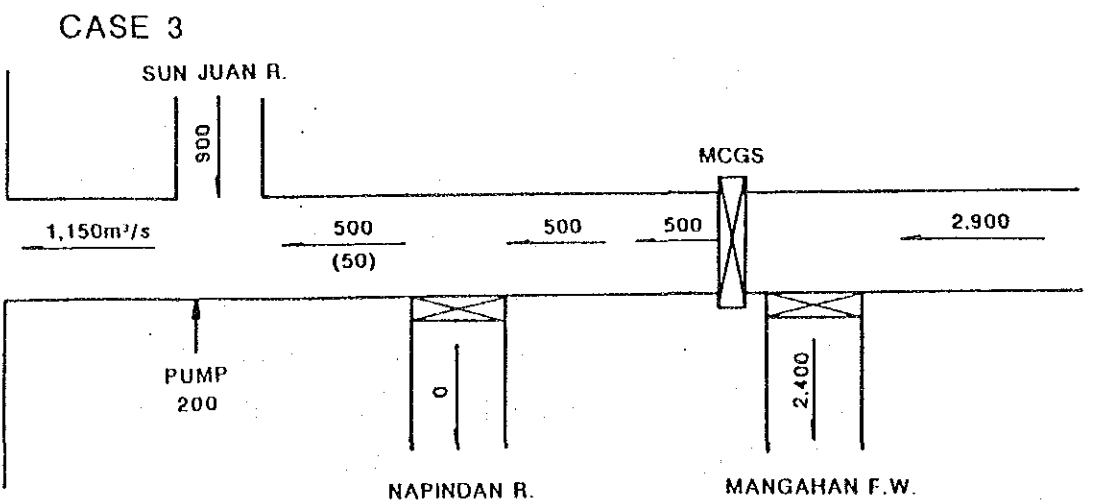
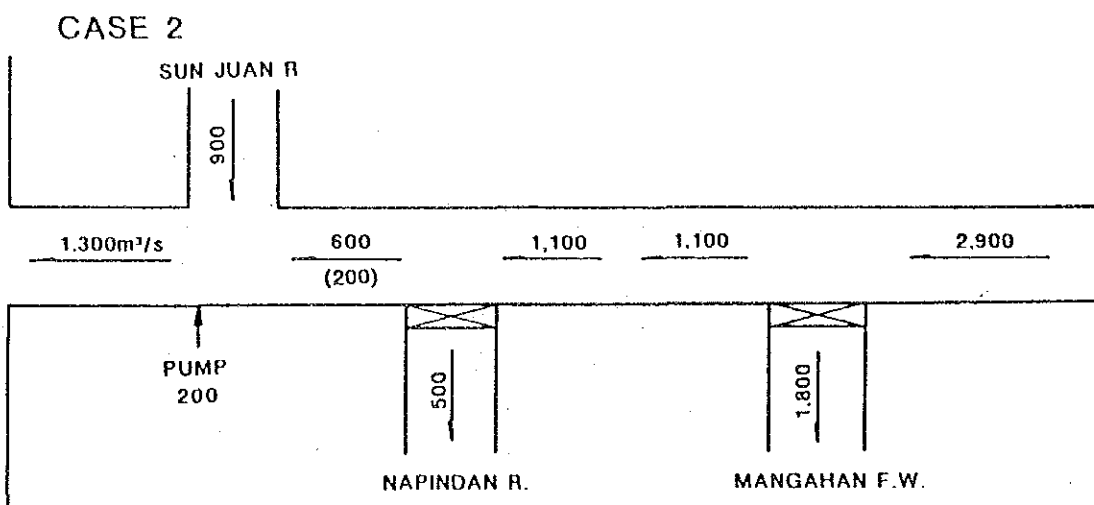
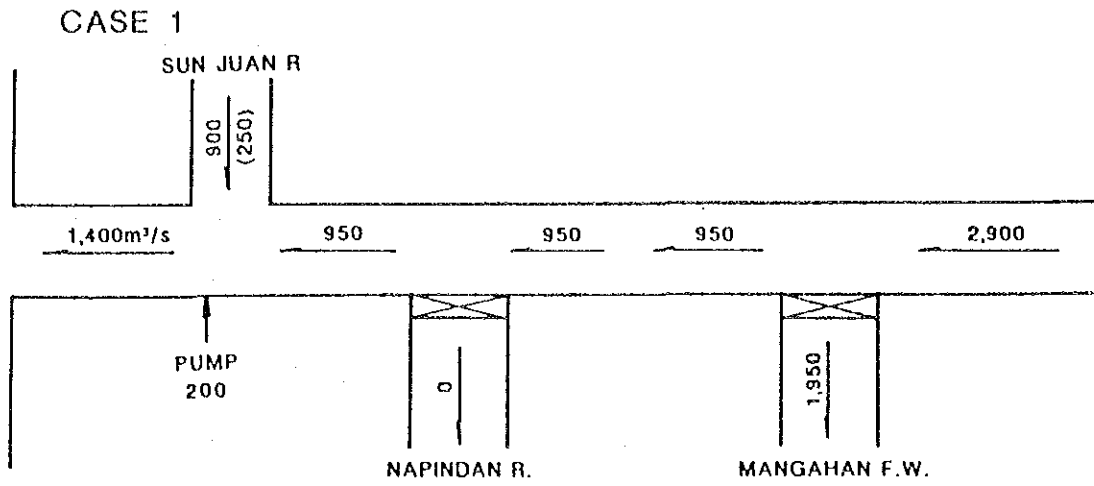




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JAPAN INTERNATIONAL COOPERATION AGENCY

図 7. 4-3 パシグ川沿の既存河川施設

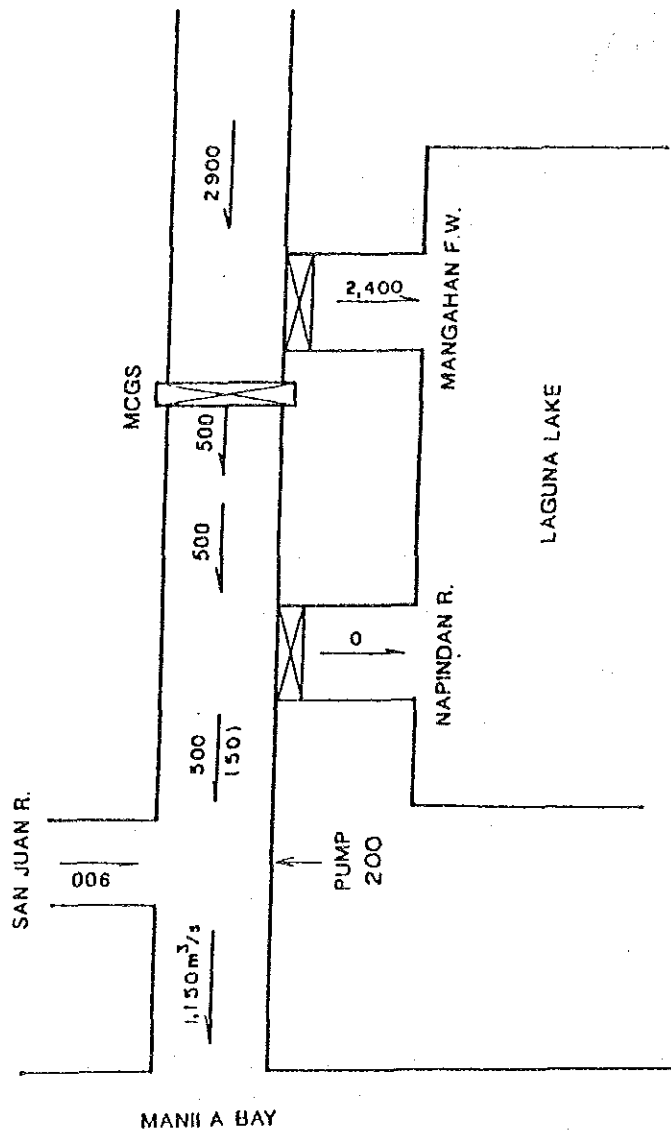




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図 7. 4-4 三検討ケースの流量配分



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図 7. 4-5 計画流量配分図

