

図4.2.1 計画作付体系

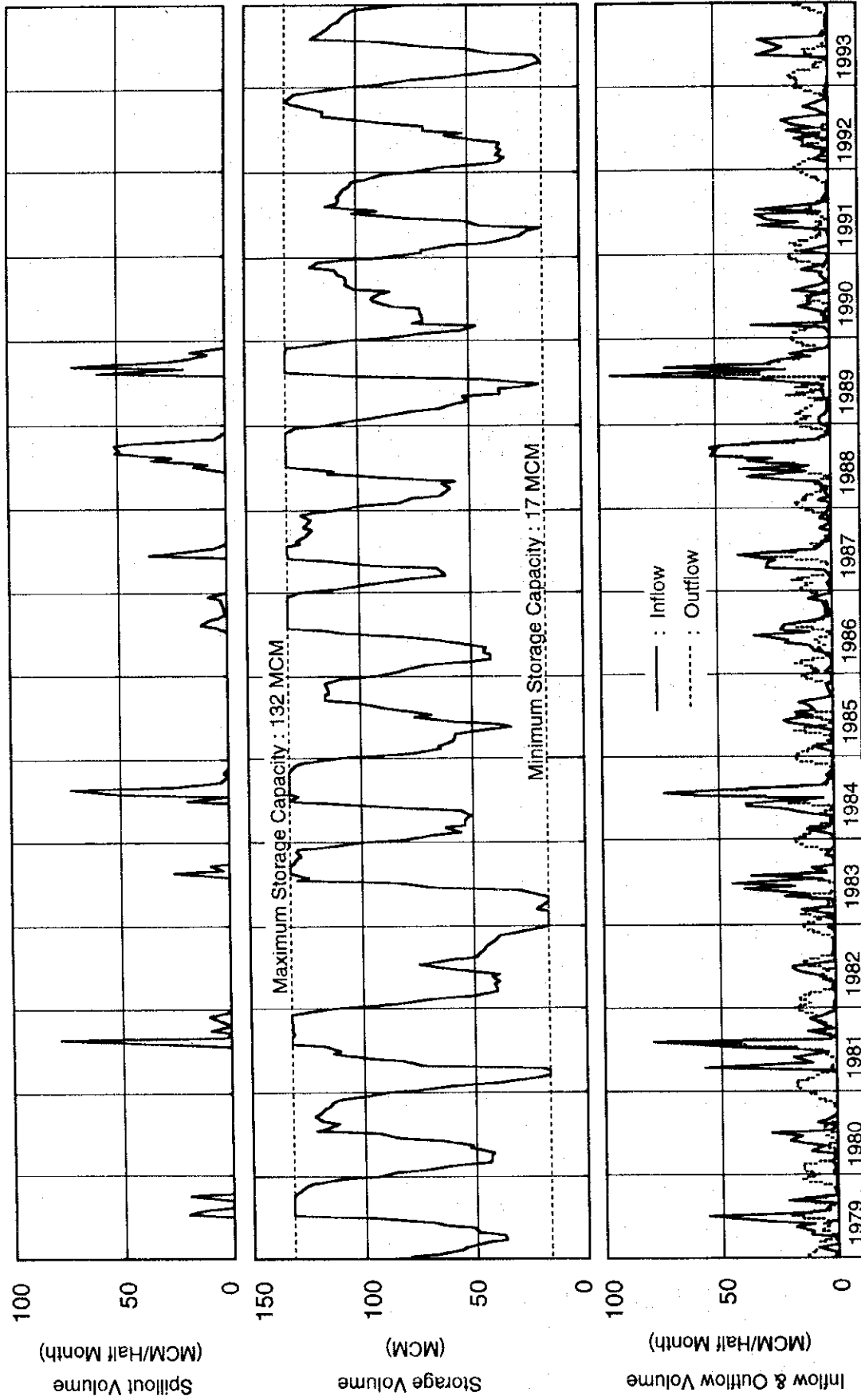


図4.2.2 パセロレン・ダムの水収支解析結果 (代替案-I)

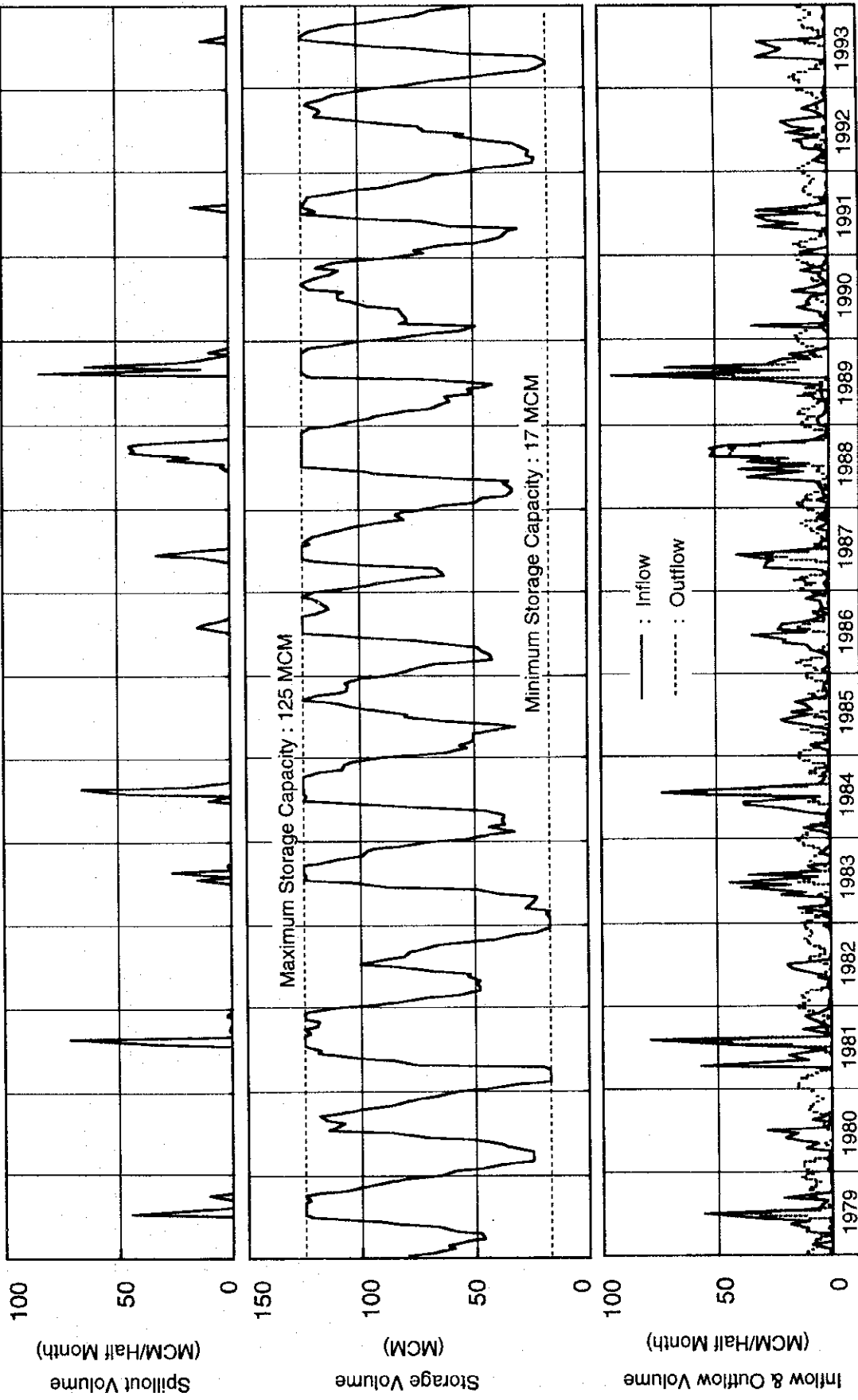


図4.2.3 パセロレン・ダムの水収支解析結果 (代替案-II)

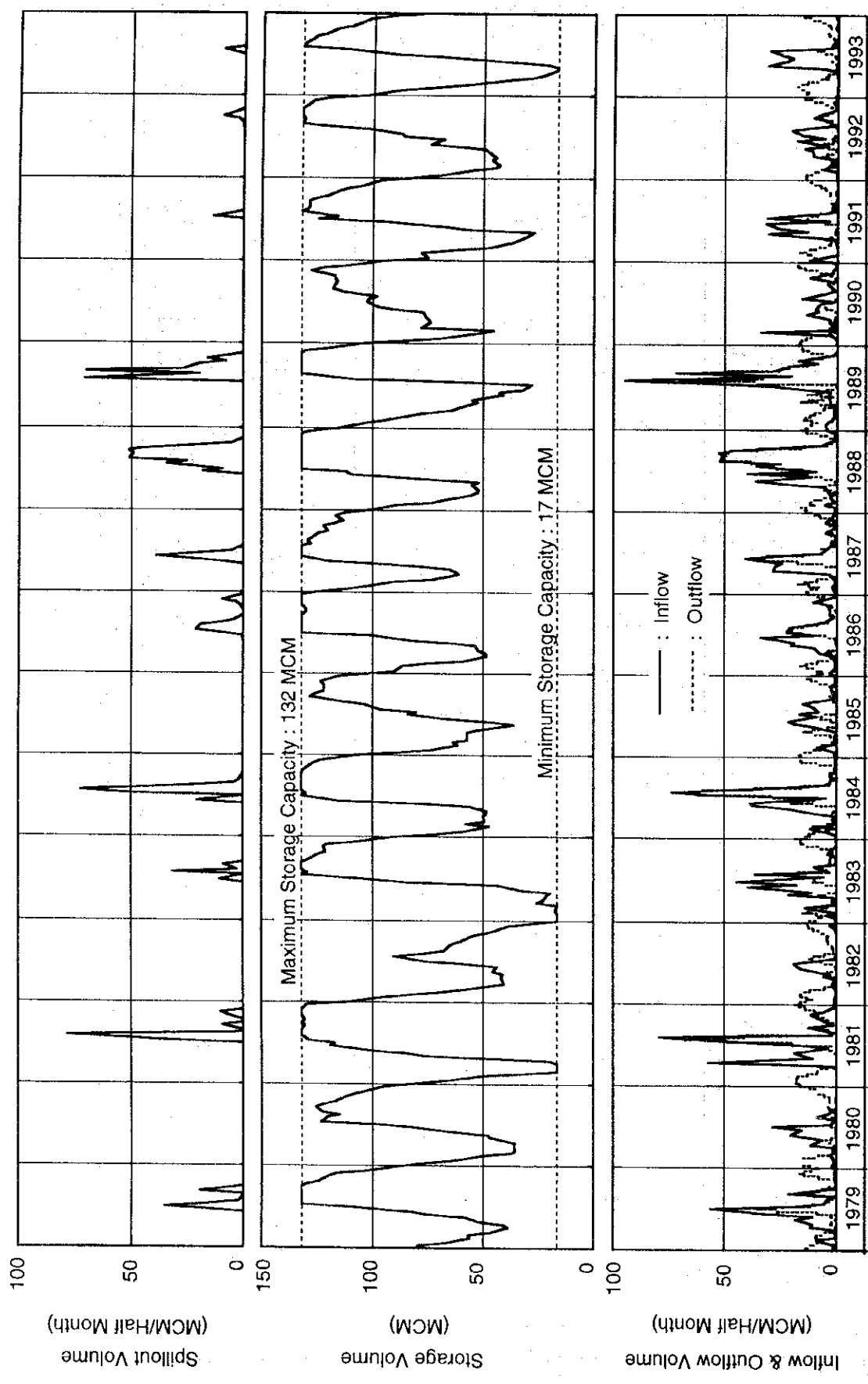


図4.2.4 パセロレン・ダムの水収支解析結果 (代替案-III)

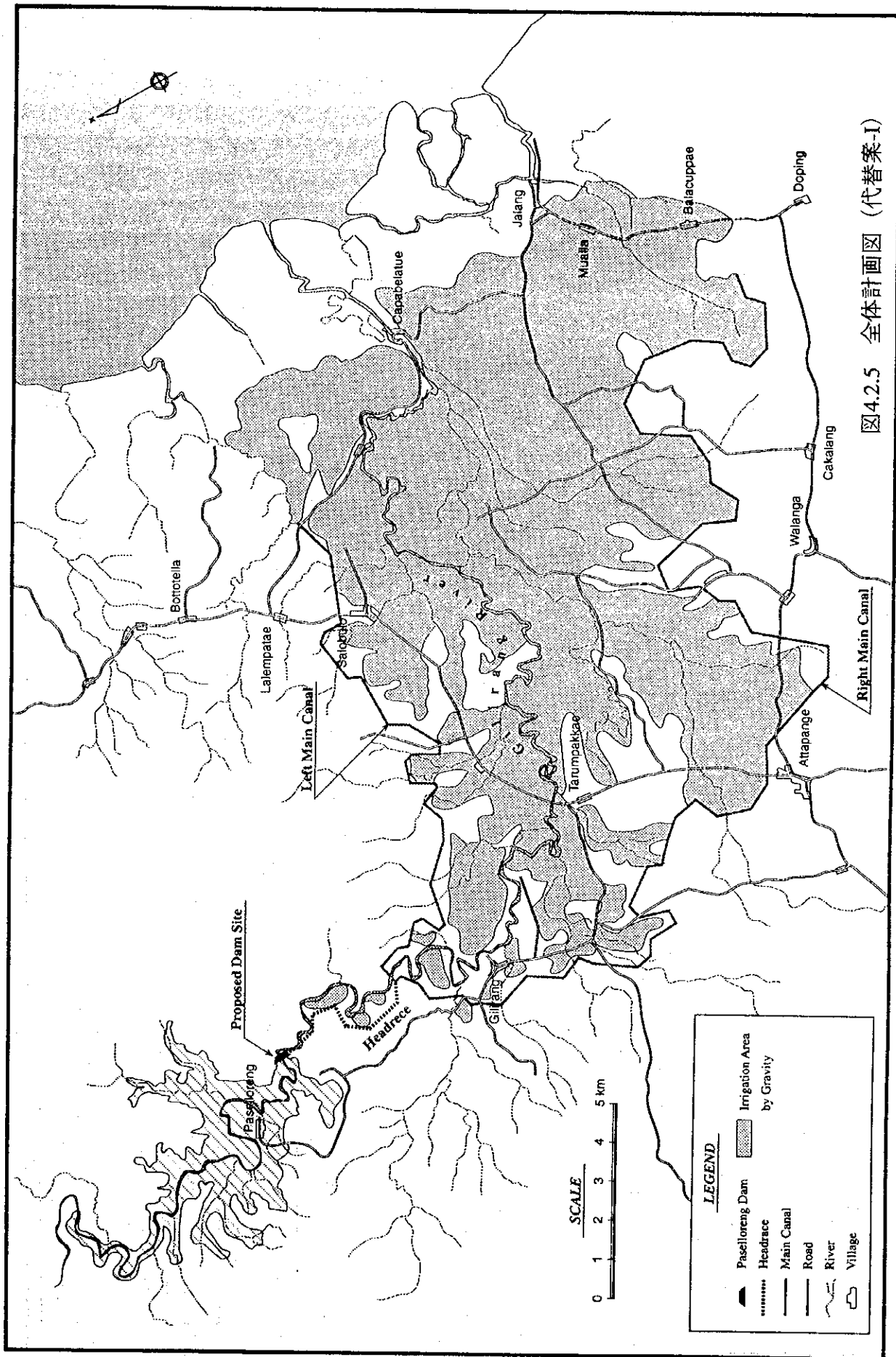


图4.2.5 全体計画図 (代替案-I)

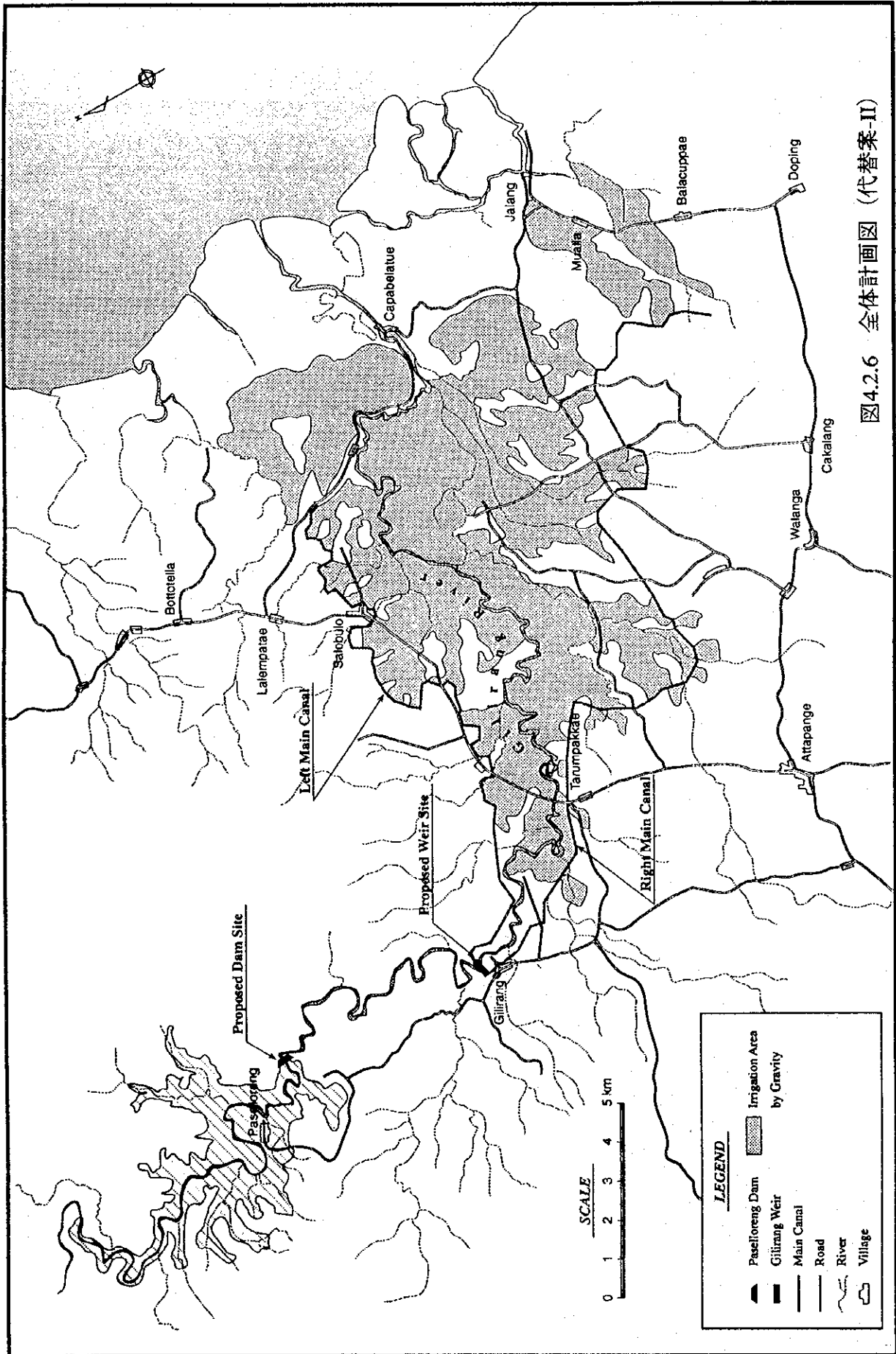


图4.2.6 全体計画図 (代替案-II)

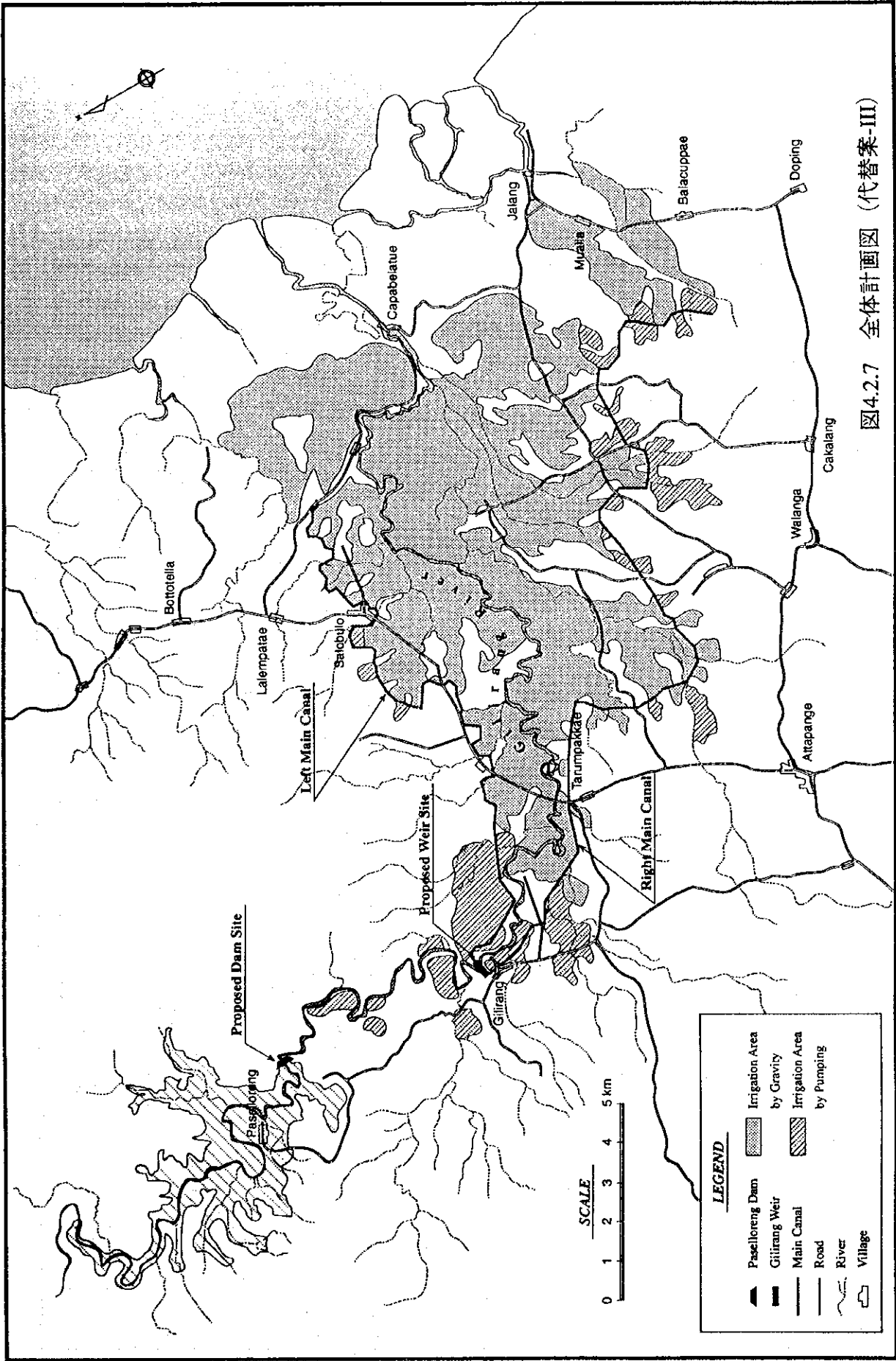


图4.2.7 全体計画图 (代替案-III)

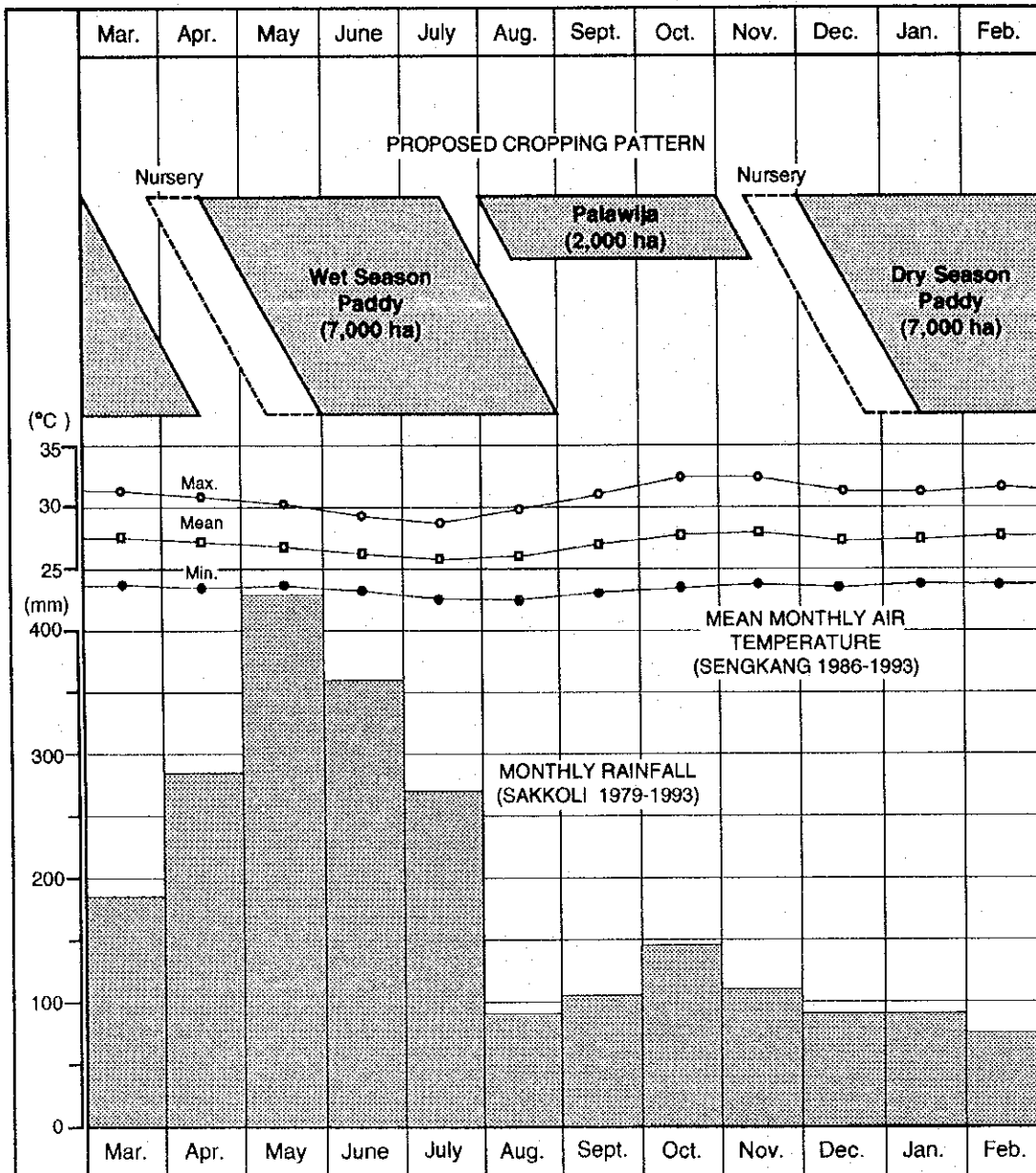


図5.1.1 計画作付体系

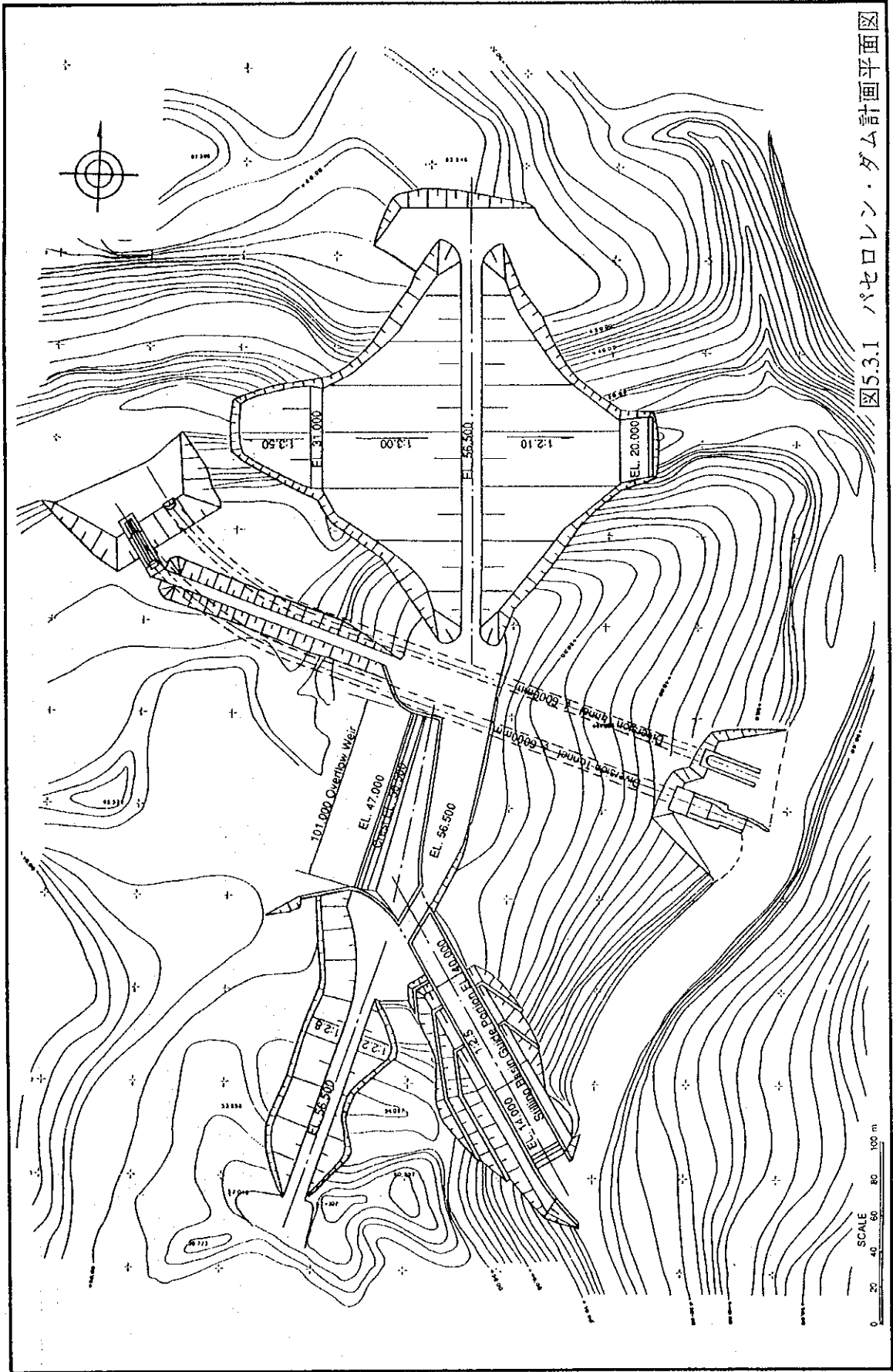


図5.3.1 パセロレン・ダム計画平面図

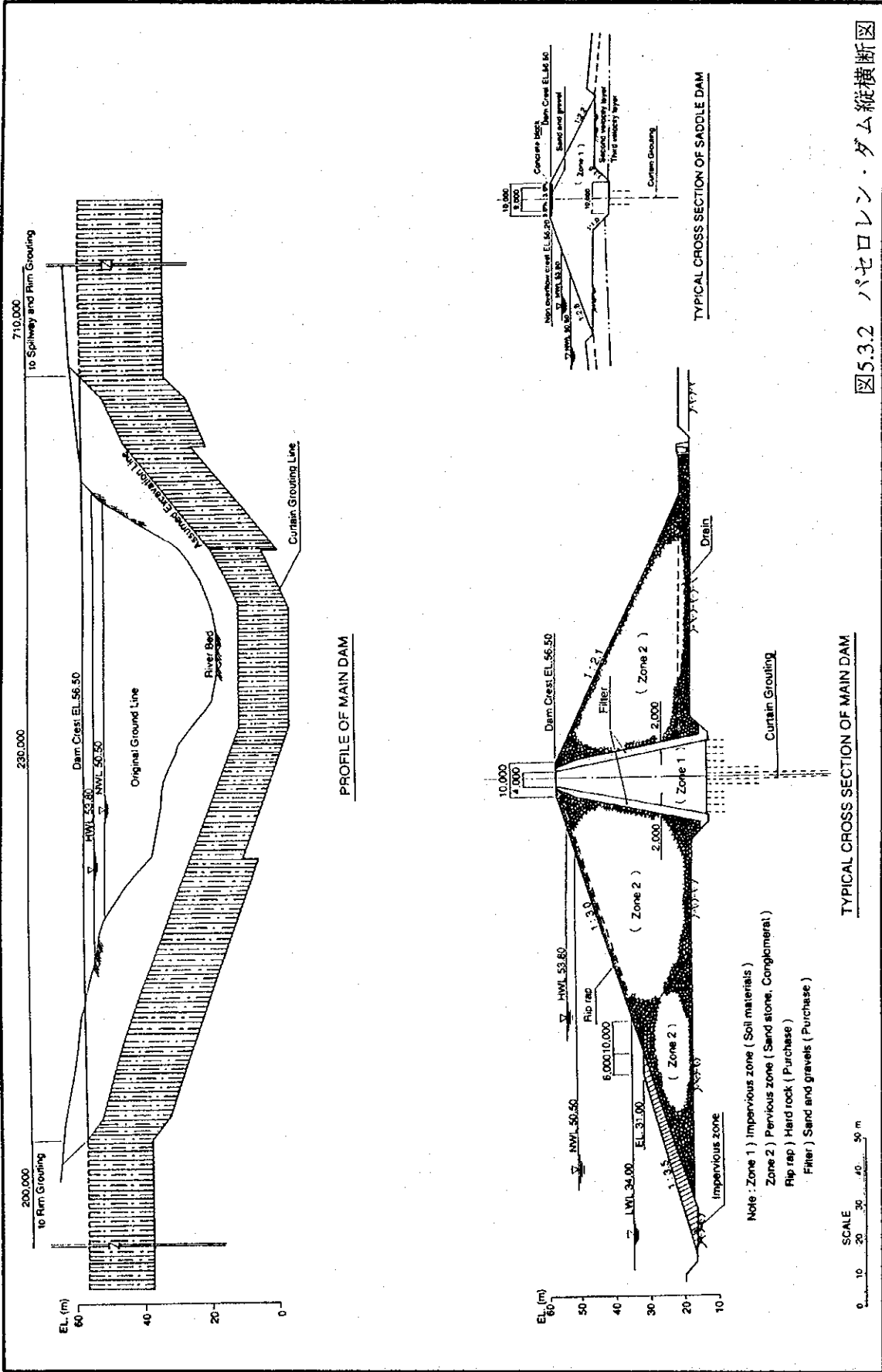


図5.3.2 パセロレン・ダム縦横断面図

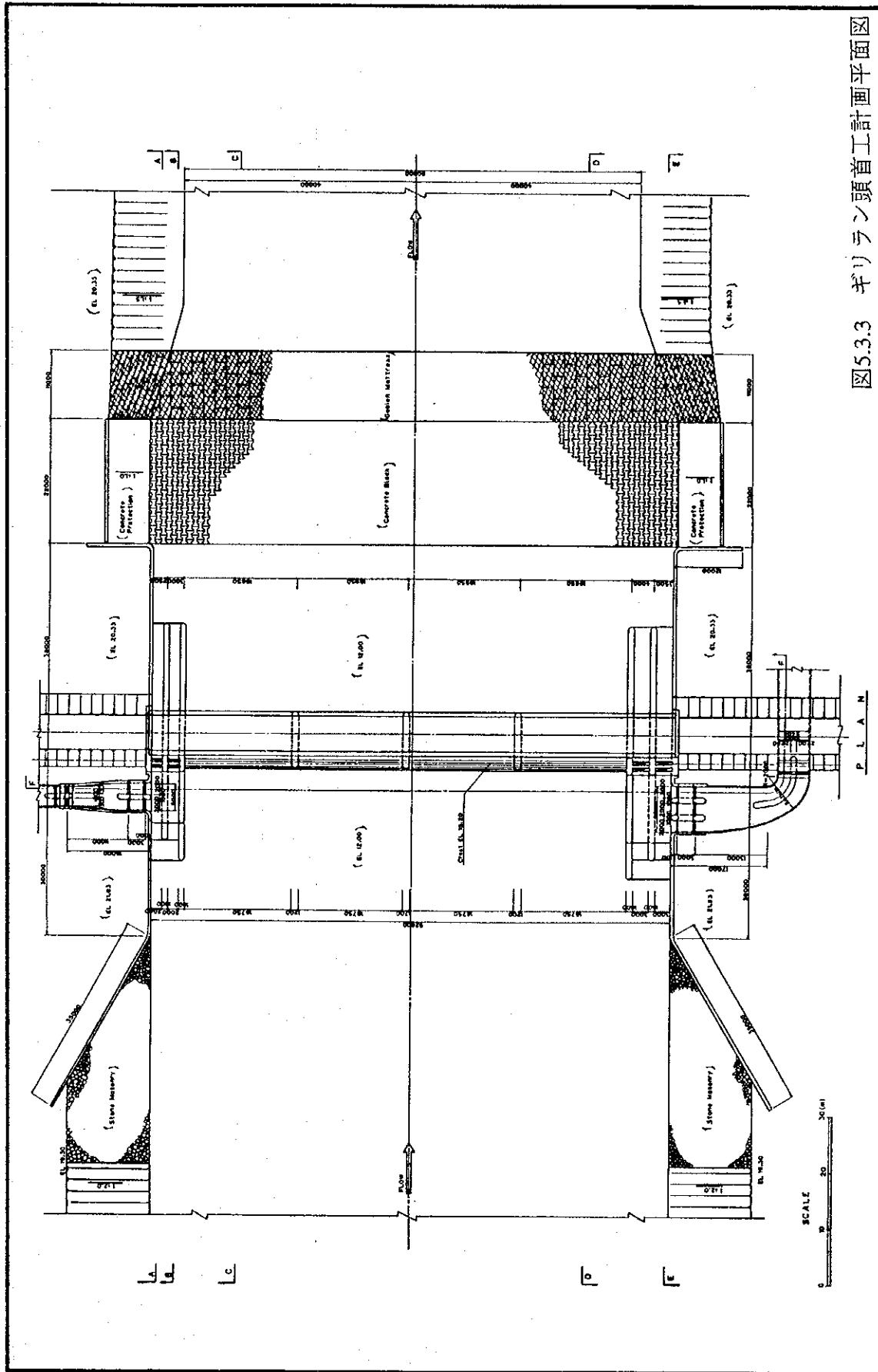


図5.3.3 ギリラン頭首工計画平面図

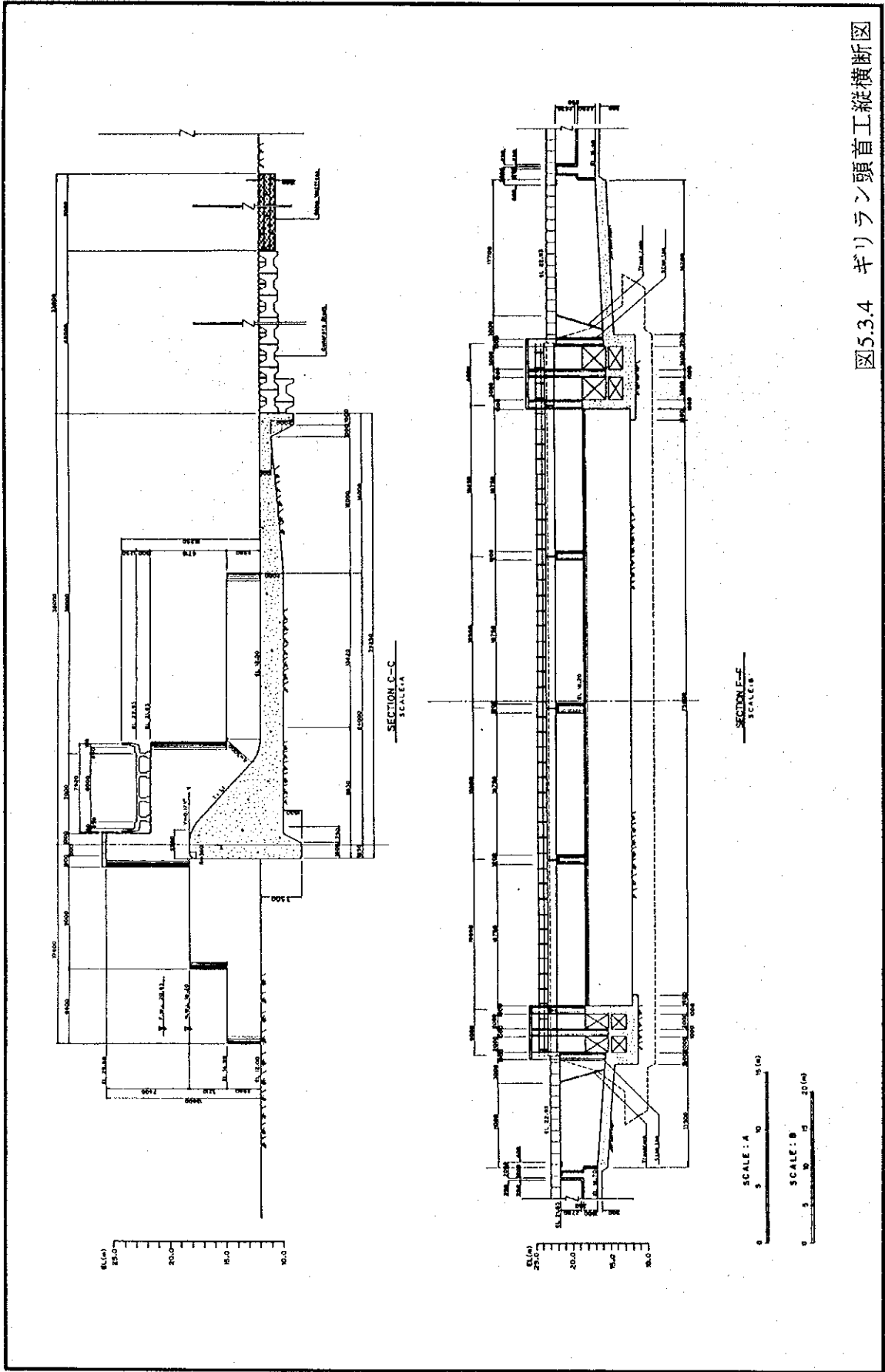
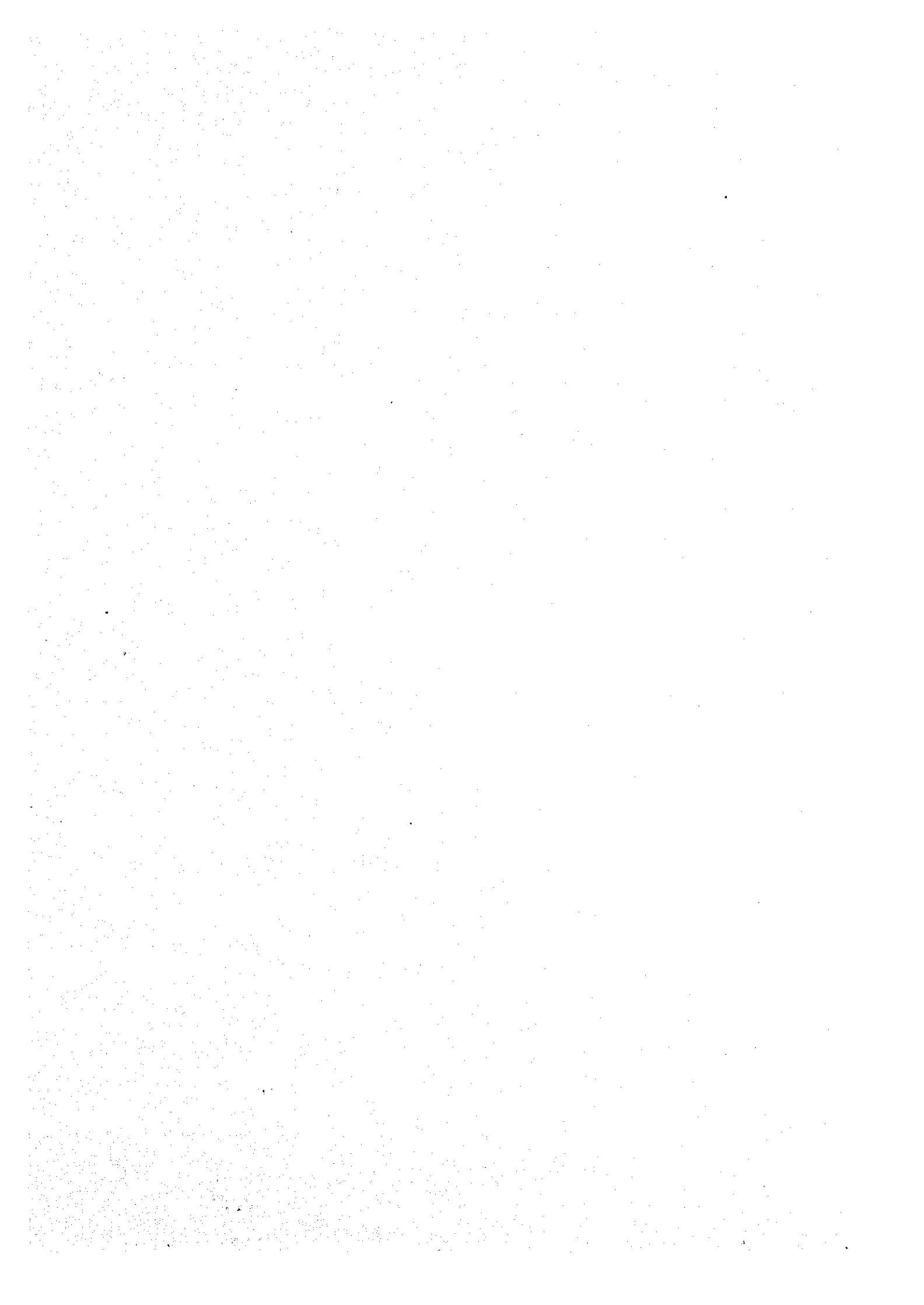
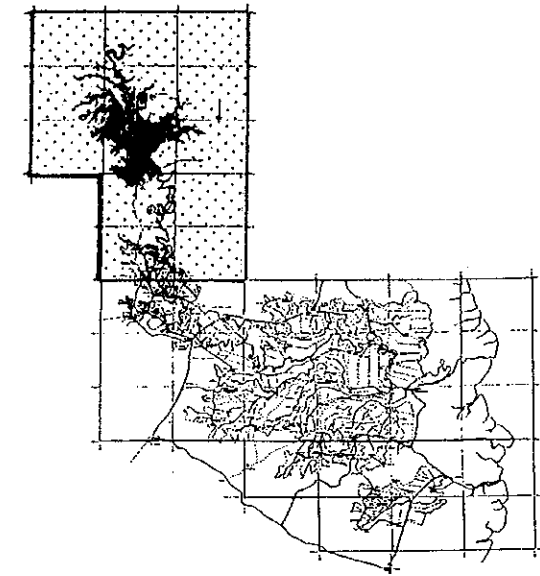
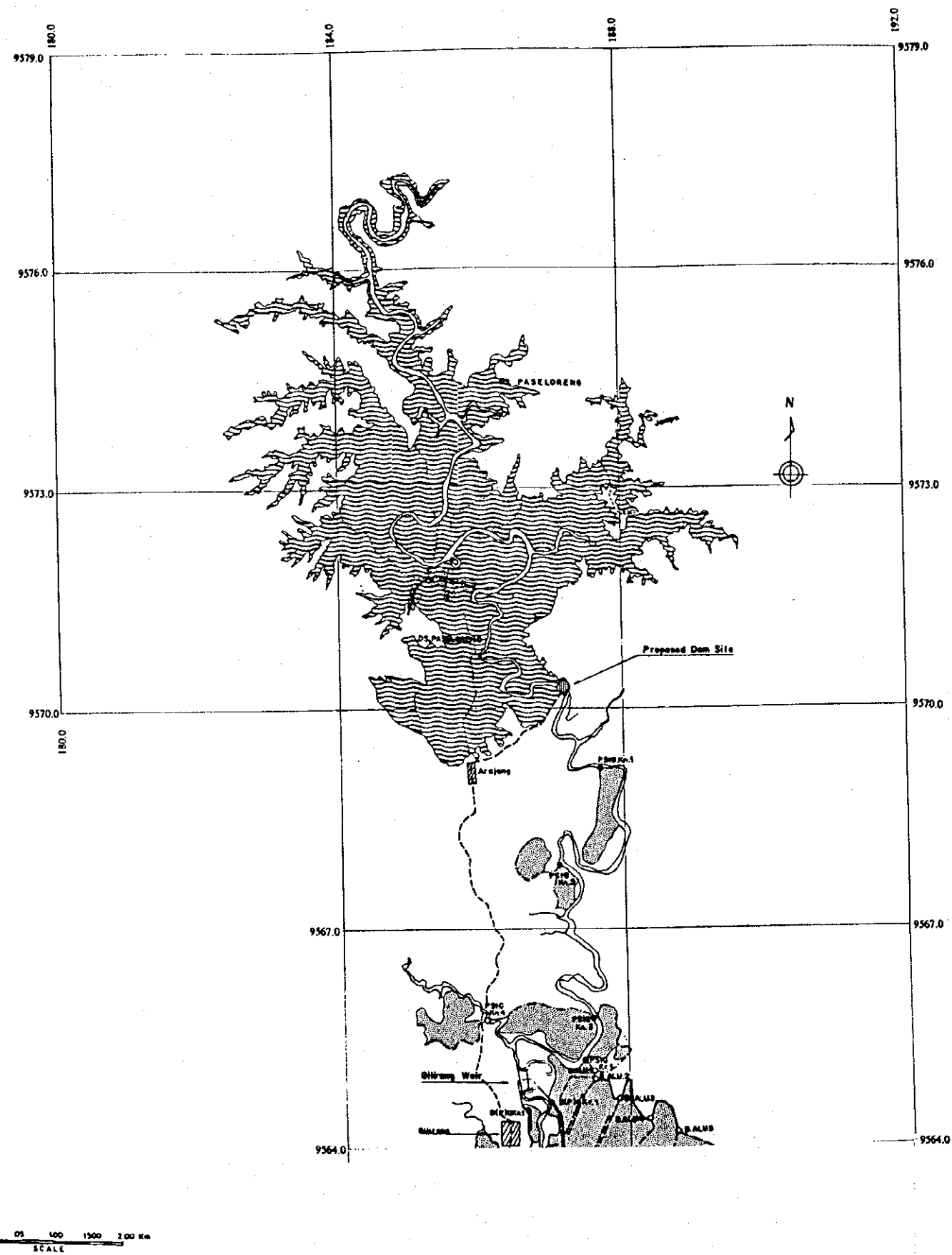


図5.3.4 ギリラン頭首工縦横断面図





- LEGEND**
- Main Irrigation Canal
 - Secondary Irrigation Canal
 - Tertiary Canal
 - Proposed Major/Tertiary Branch Canal
 - Turnout for Gravity Irrigation
 - Turnout for Pumping Irrigation
 - Existing Road
 - Proposed Road
 - Irrigation Area by Gravity
 - Irrigation Area by Pumping
 - Natural River/Stream
 - Reservoir and Ghirang Dam
 - Ghirang Weir
 - Village



図5.4.1 灌漑システム計画図 (1/2)

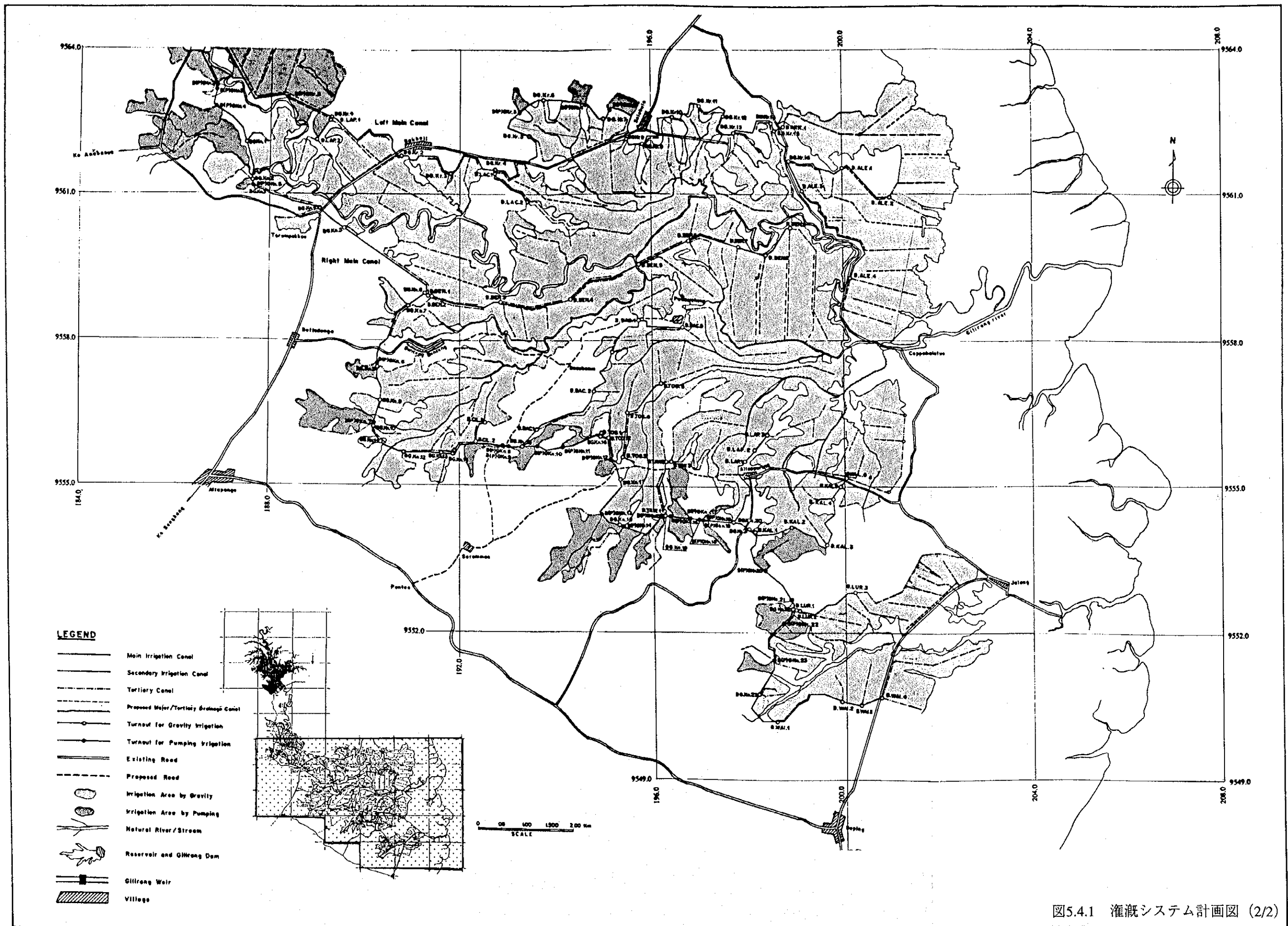
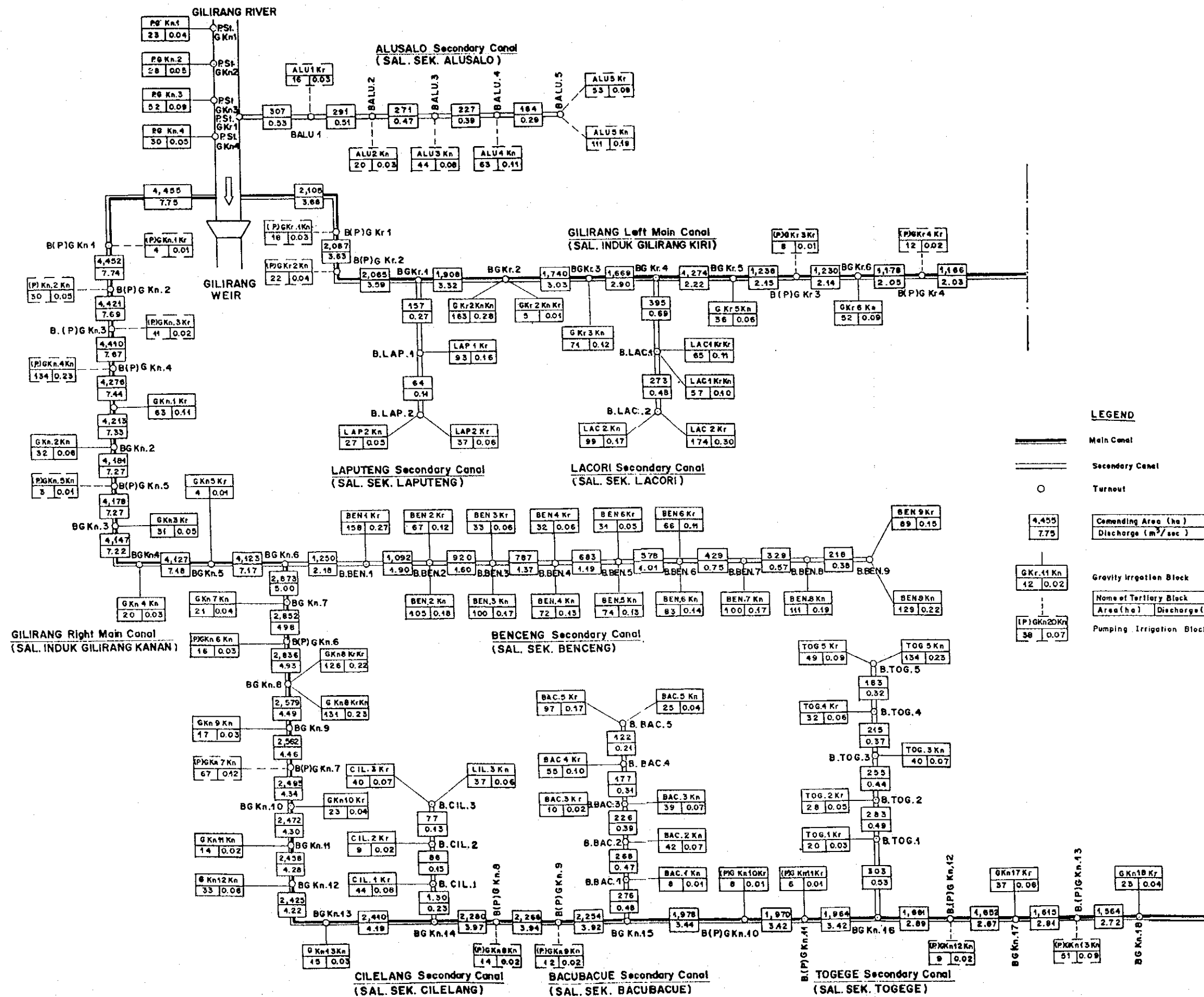


図5.4.1 灌漑システム計画図 (2/2)



LEGEND

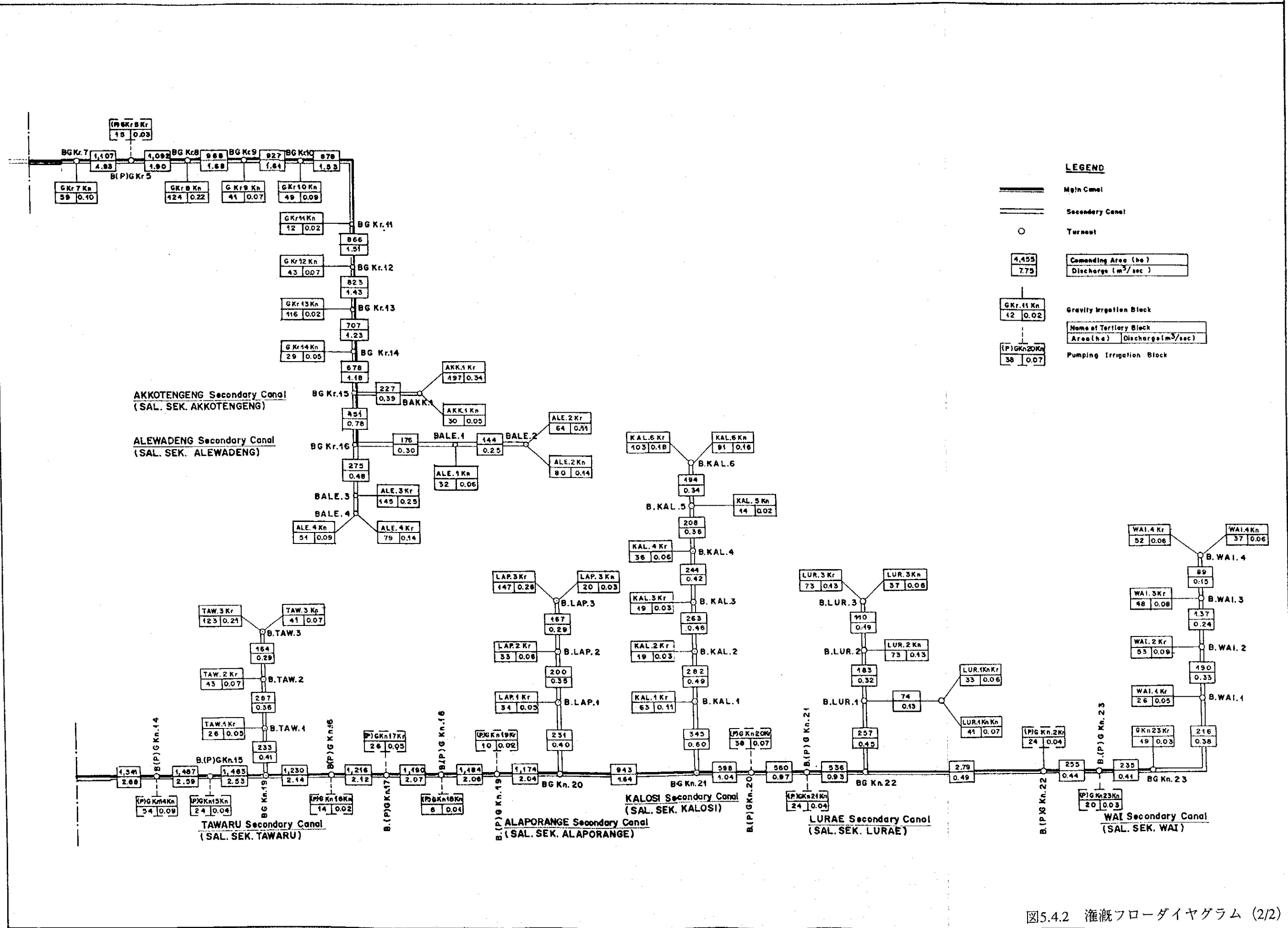
- Main Canal
- Secondary Canal
- Turnout
- | |
|-------|
| 4,455 |
| 7.75 |

 Commanding Area (ha)
Discharge (m³/sec)
- | |
|-----------|
| GKr.11 Kr |
| 12 |
| 0.02 |

 Gravity Irrigation Block
- | | |
|------------------------|---------------------------------|
| Name of Tertiary Block | |
| Area (ha) | Discharge (m ³ /sec) |
- | |
|--------------|
| (P)GKr.20 Kr |
| 38 |
| 0.07 |

 Pumping Irrigation Block

図5.4.2 灌漑フローダイヤグラム (1/2)



LEGEND

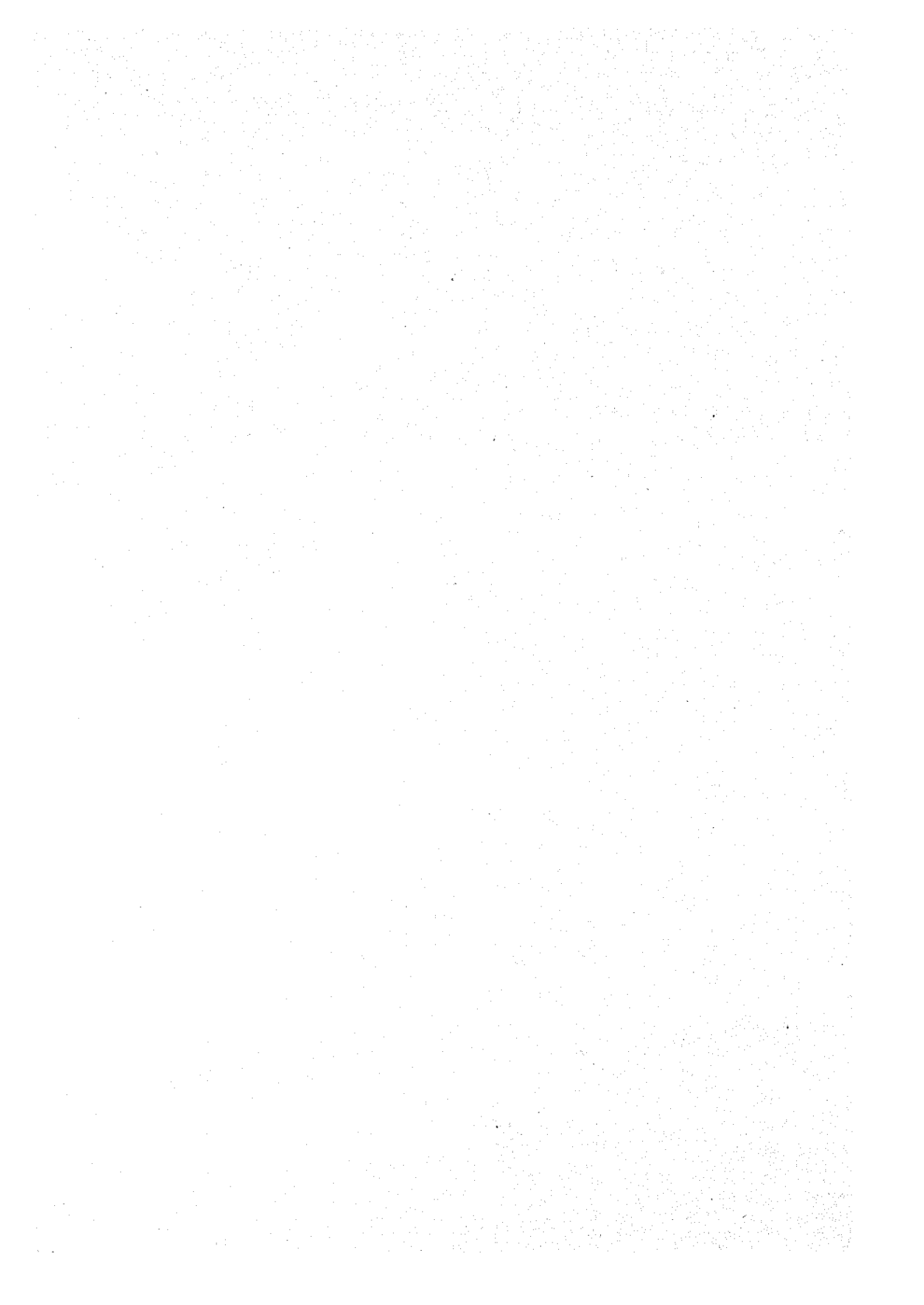
- Main Canal
- Secondary Canal
- Turnout
- | |
|-------|
| 4,455 |
| 7.75 |

 Commanding Area (ha)
Discharge (m³/sec)
- | |
|-----------|
| GKr.11 Kr |
| 12 0.02 |

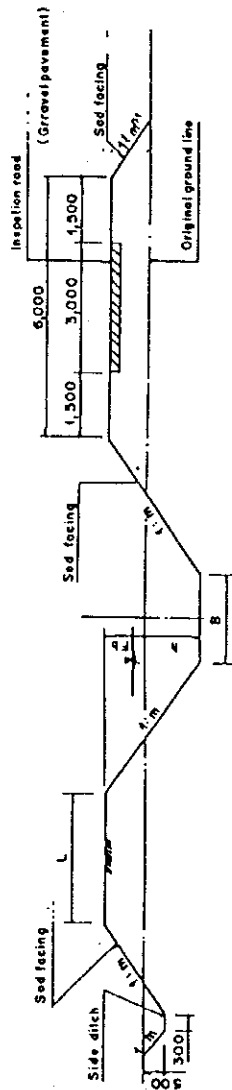
 Gravity Irrigation Block
- | | |
|------------------------|---------------------------------|
| Name of Tertiary Block | |
| Area (ha) | Discharge (m ³ /sec) |
- | |
|--------------|
| (P)GKn.20 Kn |
| 38 0.07 |

 Pumping Irrigation Block

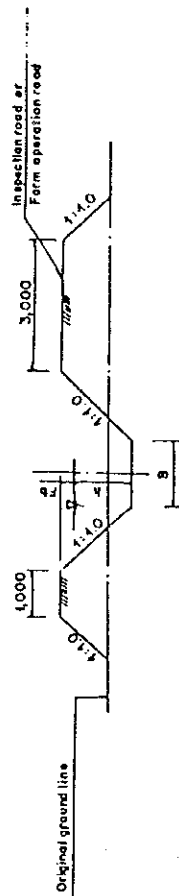
図5.4.2 灌漑フローダイヤグラム (2/2)



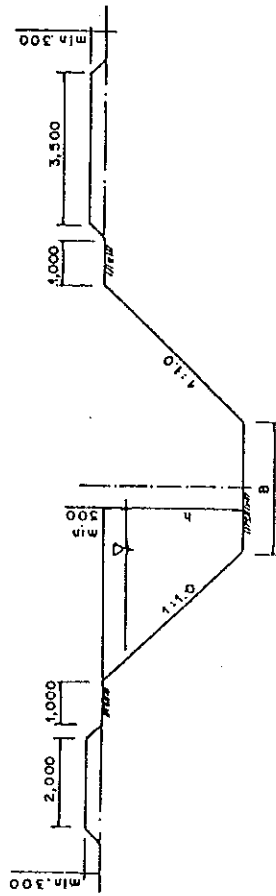
TYPICAL CROSS SECTION MAIN & SECONDARY IRRIGATION CANAL



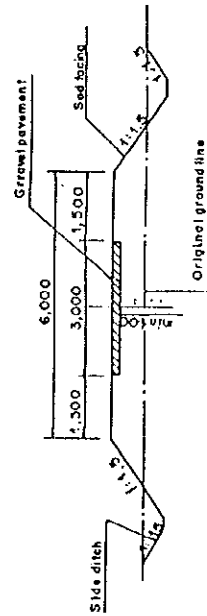
TYPICAL CROSS SECTION OF TERTIARY IRRIGATION CANAL



TYPICAL CROSS SECTION OF DRAINAGE CANAL



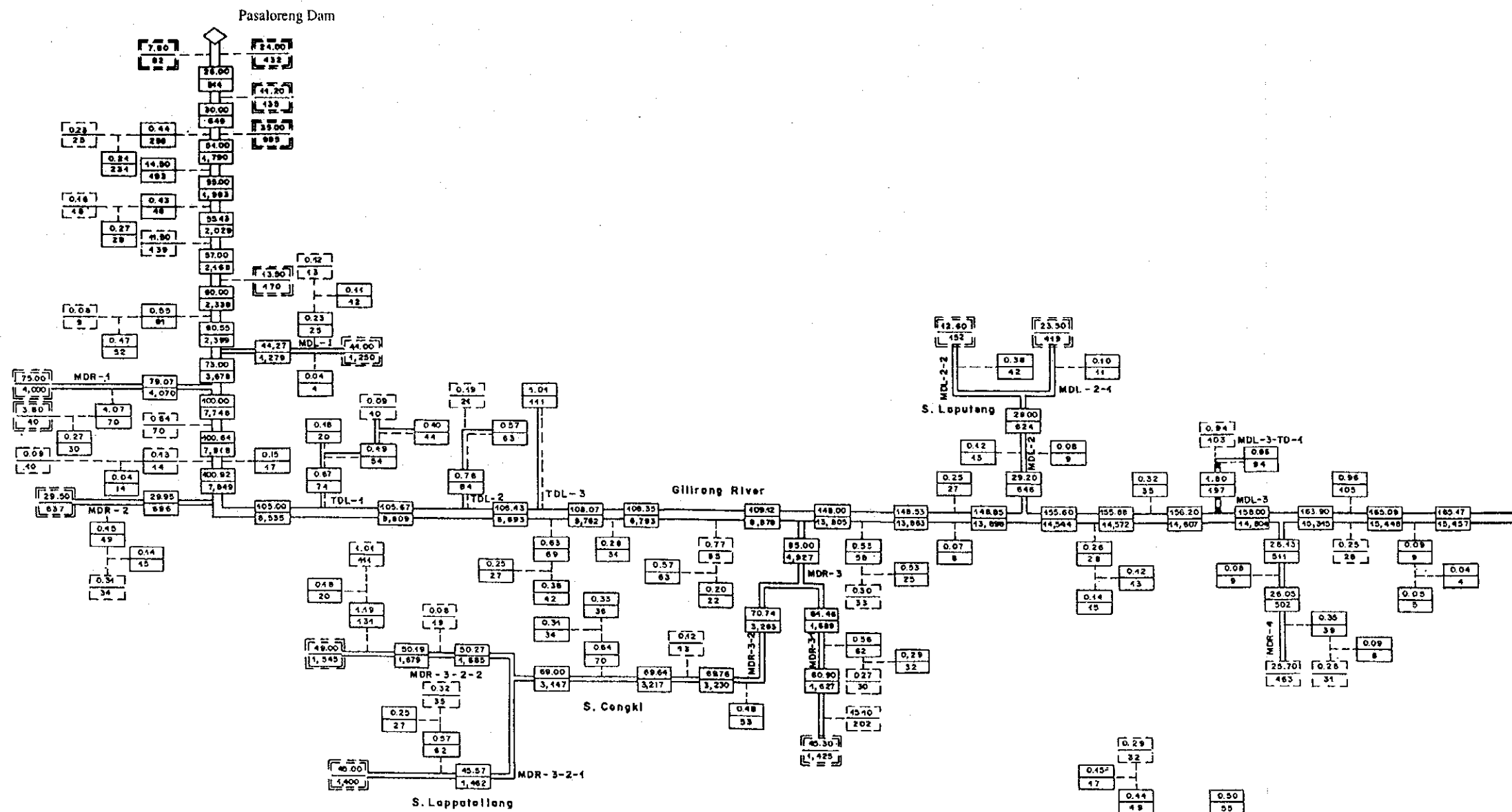
TYPICAL CROSS SECTION OF FARM ROAD



DIMENSION TABLE OF CANAL AND FARM ROAD

Discharge Q (m ³ /sec)	Slope		Free Board F B (mm)	Width of Bank L Main C Secondary C (mm)	Ratio B/A	
	1: m	1: n				
0.4-0.8	1.0	1.5	300	2 500	1 500	4.8
0.8-1.6	1.0	1.5	300	2 800	1 800	5.0-5.2
1.6-3.2	1.0	1.5	300	3 000	1 800	5.2-5.8
3.2-6.4	1.0	1.5	300	3 200	1 800	5.8-6.5
6.4-12.8	1.0	1.5	300	3 500	2 000	6.0-7.0
12.8-25.6	1.0	1.5	300	3 800	2 200	6.5-7.5
25.6-51.2	1.0	1.5	300	4 000	2 400	7.0-8.0
51.2-102.4	1.0	1.5	300	4 500	2 600	7.5-8.5
102.4-204.8	1.0	1.5	300	5 000	2 800	8.0-9.0
204.8-409.6	1.0	1.5	300	5 500	3 000	8.5-9.5
409.6-819.2	1.0	1.5	300	6 000	3 200	9.0-10.0

図5.4.3 水路及び道路標準断面図



LEGEND

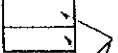
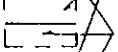
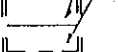
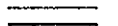
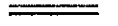



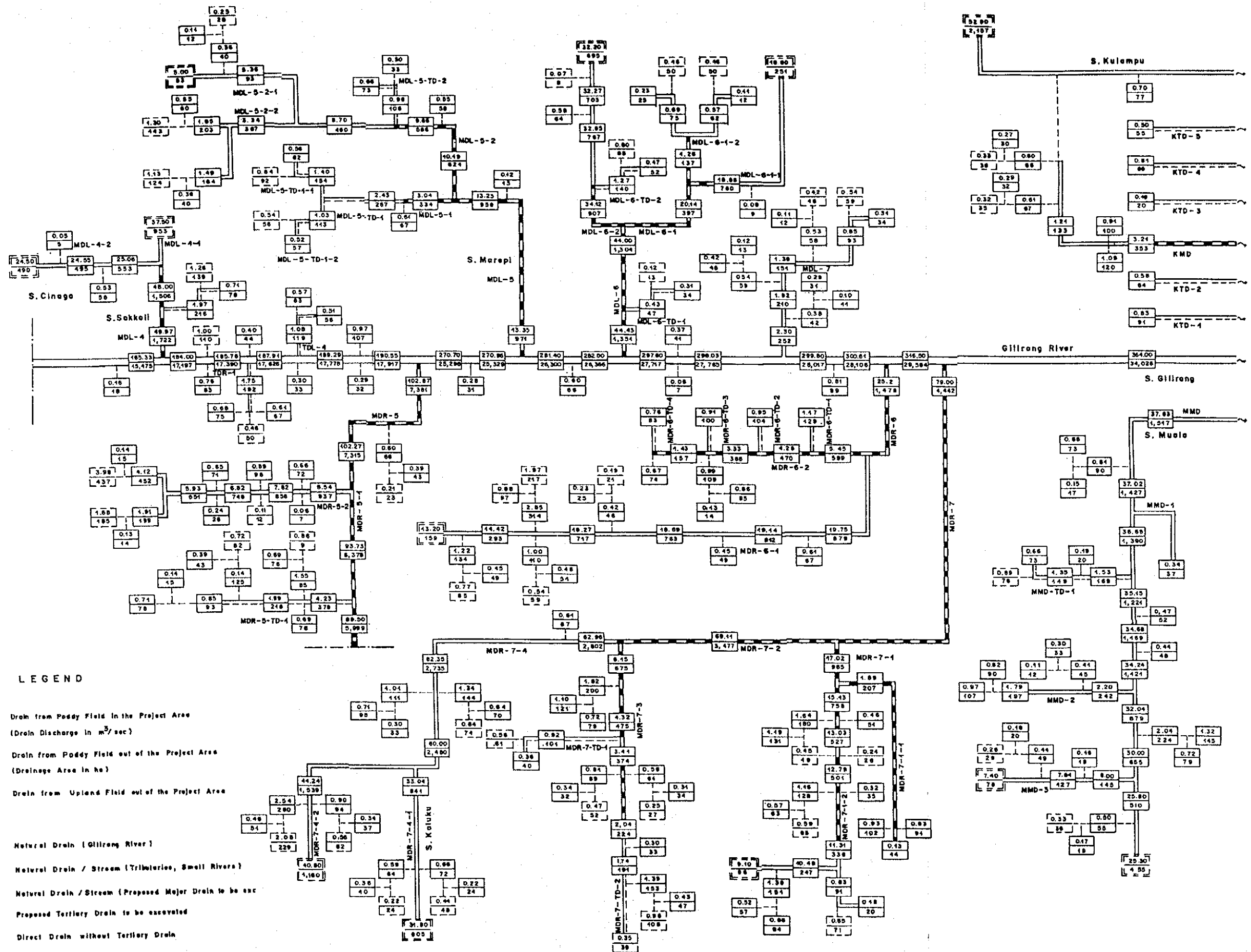
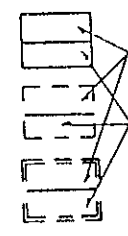
-  Drain from Paddy Field in the Project Area
(Drain Discharge in m^3/sec)
-  Drain from Paddy Field out of the Project Area
(Drainage Area in ha)
-  Drain from Upland Field out of the Project Area
-  Natural Drain (Gillirong River)
-  Natural Drain / Stream (Tributaries, Small Rivers)
-  Natural Drain / Stream (Proposed Major Drain to be excavated)
-  Proposed Tertiary Drain to be excavated
-  Direct Drain without Tertiary Drain

図5.4.4 排水フローダイアグラム (1/2)

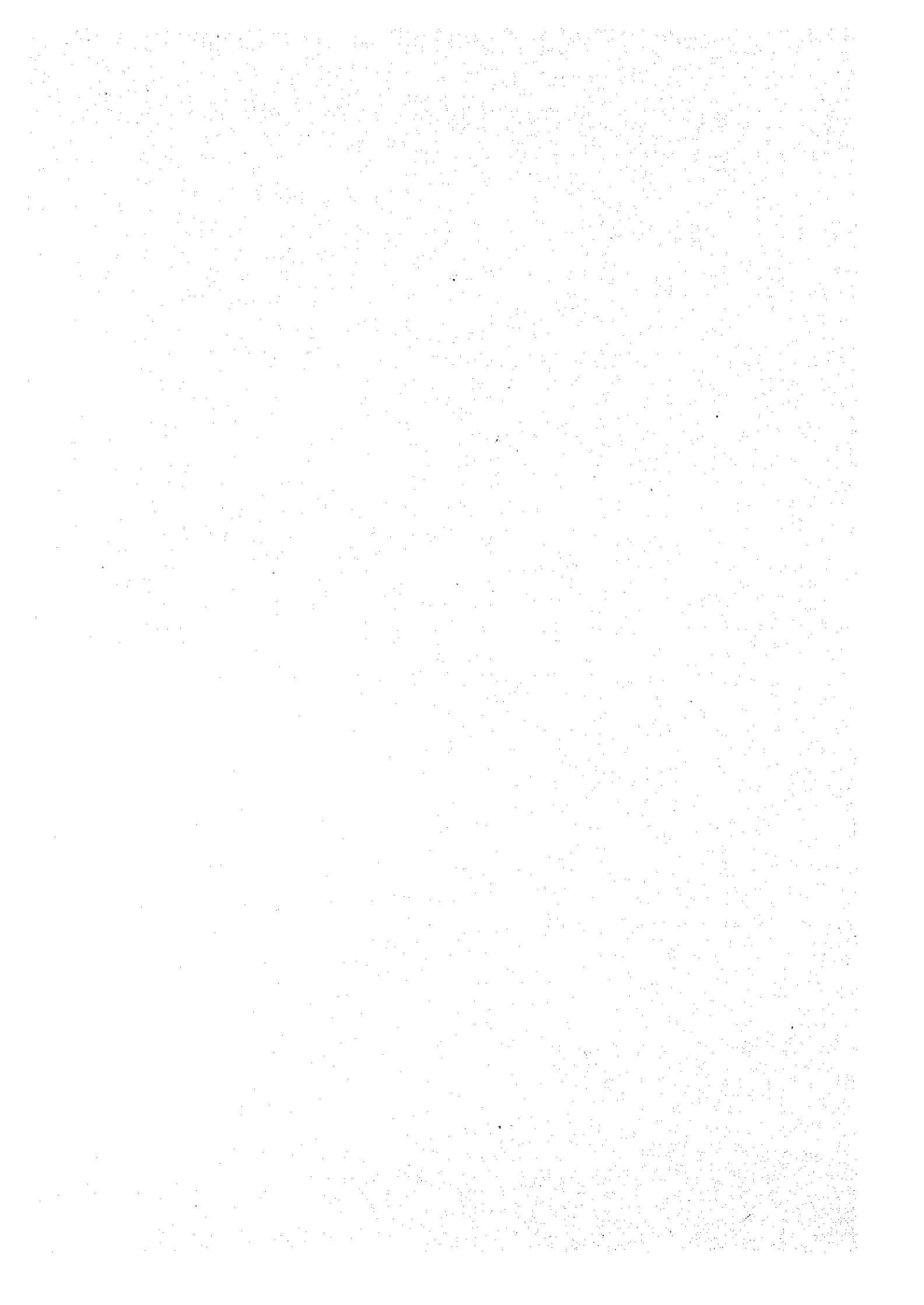


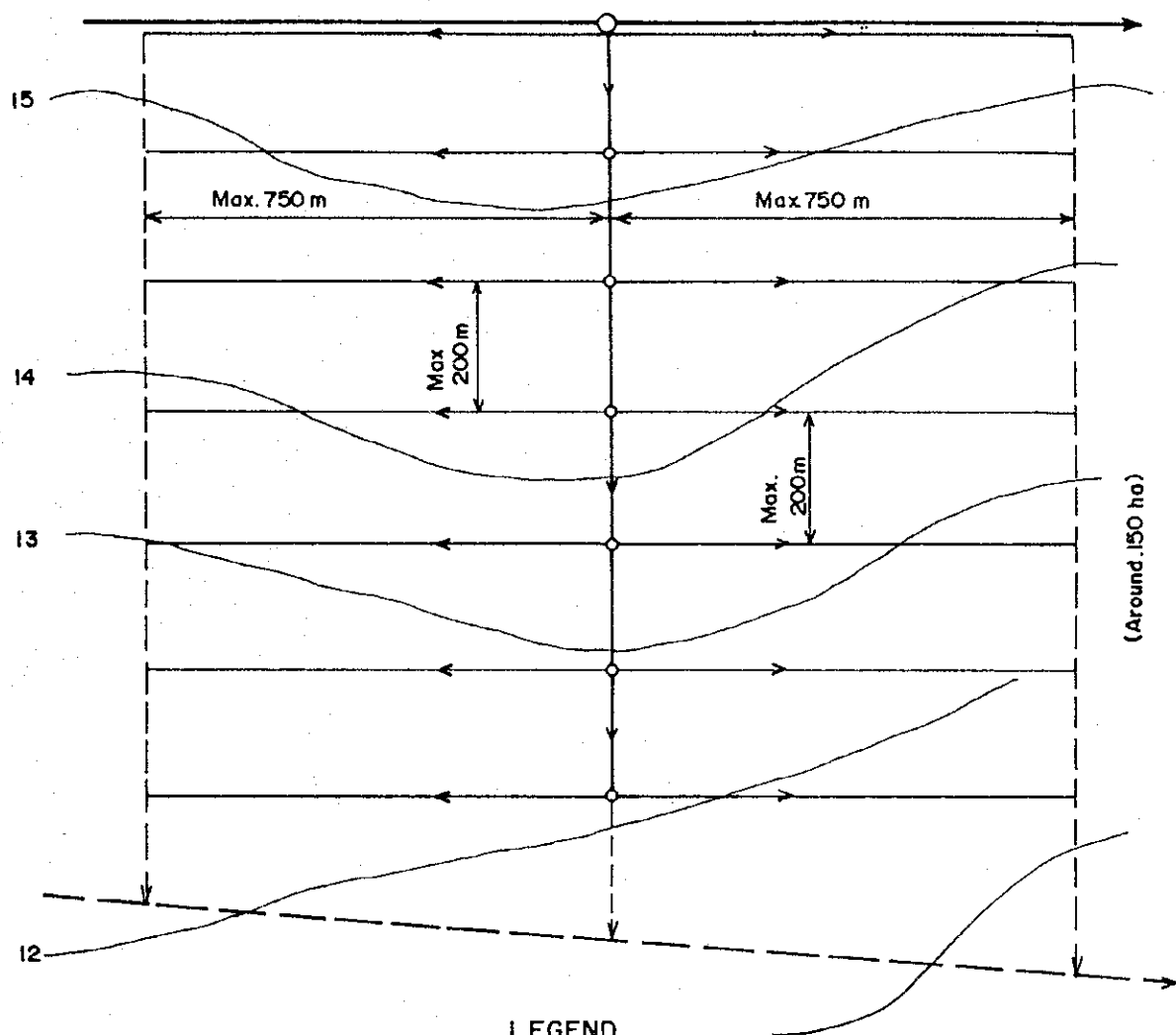
LEGEND



- Drain from Paddy Field in the Project Area
(Drain Discharge in m^3/sec)
- Drain from Paddy Field out of the Project Area
(Drainage Area in ha)
- Drain from Upland Field out of the Project Area
- Natural Drain (Gilirang River)
- Natural Drain / Stream (Tributaries, Small Rivers)
- Natural Drain / Stream (Proposed Major Drain to be exc.)
- Proposed Tertiary Drain to be excavated
- Direct Drain without Tertiary Drain

図5.4.4 排水フローダイヤグラム (2/2)





LEGEND

- Main or Secondary Canal (W/Inspection road)
- > Tertiary Canal (W/Inspection road)
- > Quaternary Canal (dual purpose)
- - - - - Main or Secondary Drain
- - - - - Tertiary Drain
- Turnout for Tertiary Canal
- Tertiary Division Box

図5.4.5 末端システム標準図

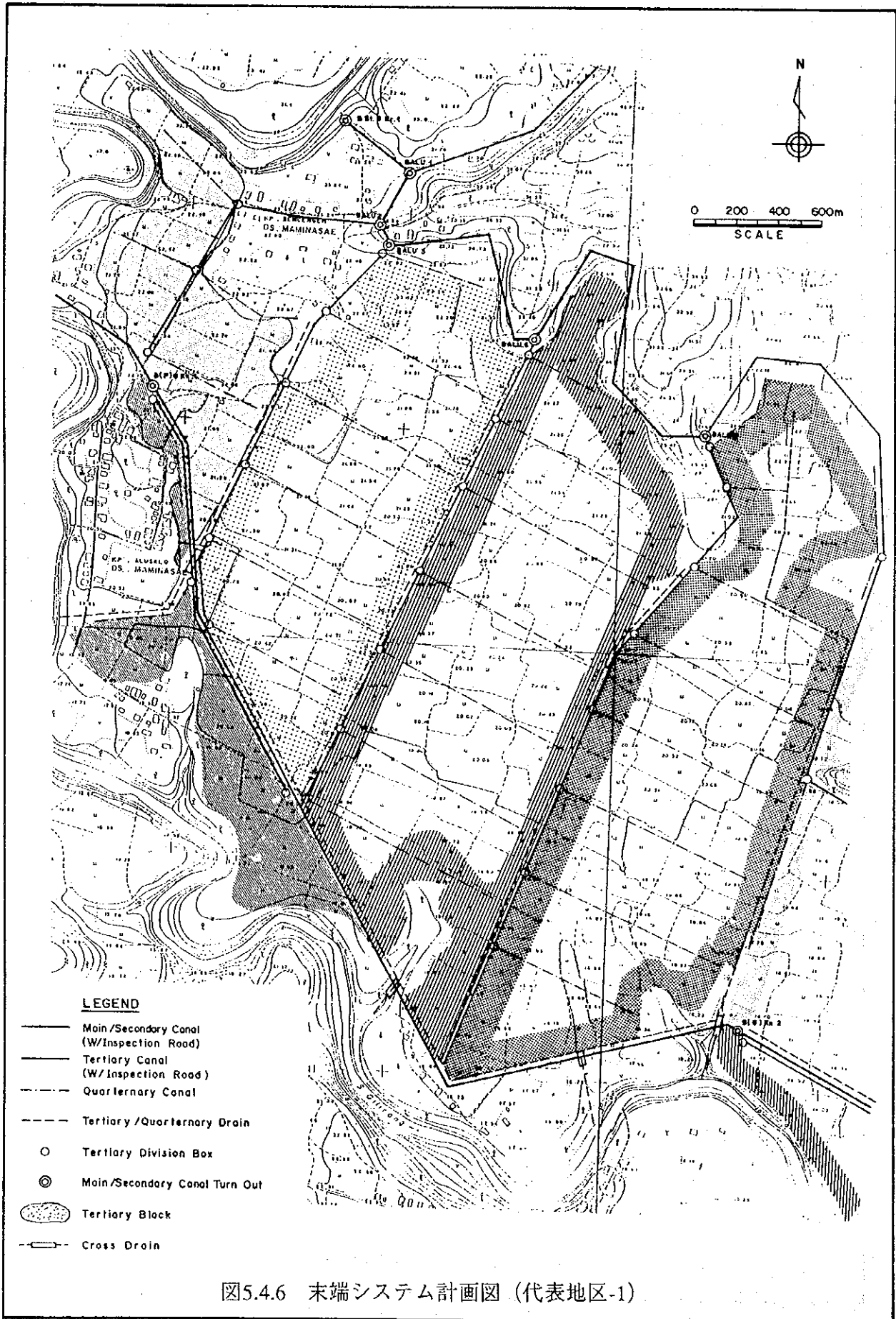


図5.4.6 末端システム計画図 (代表地区-1)

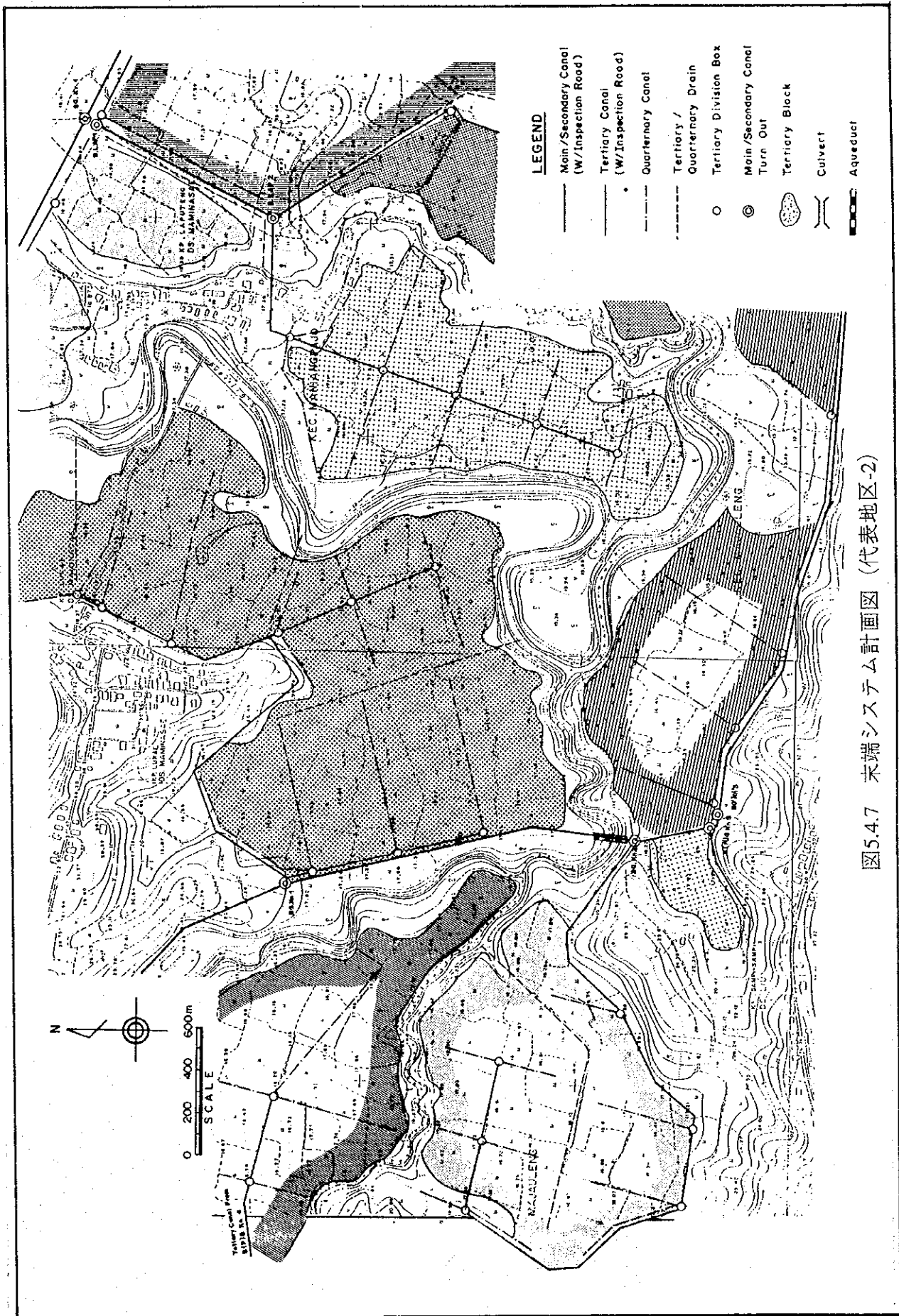


図5.4.7 末端システム計画図 (代表地区-2)

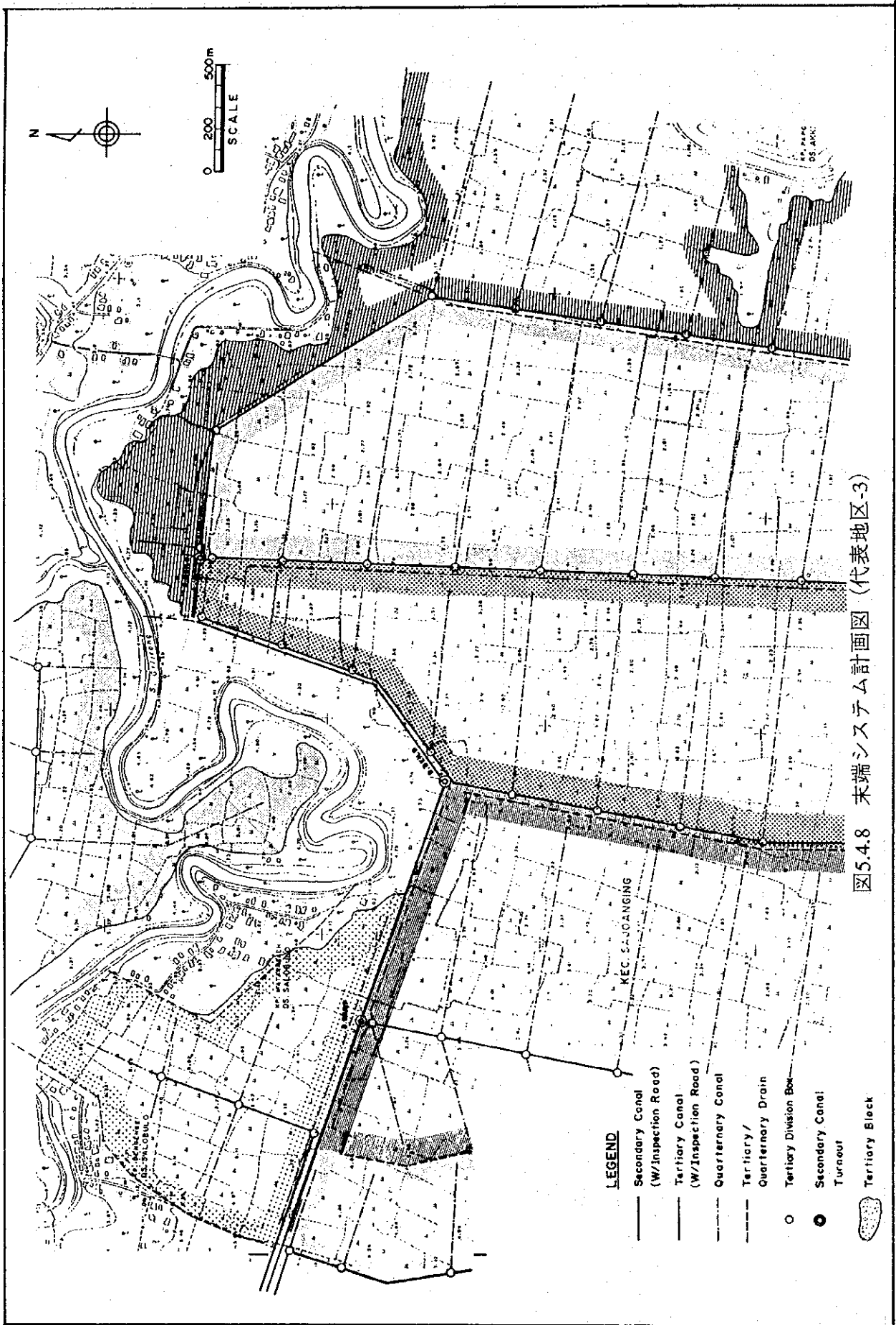
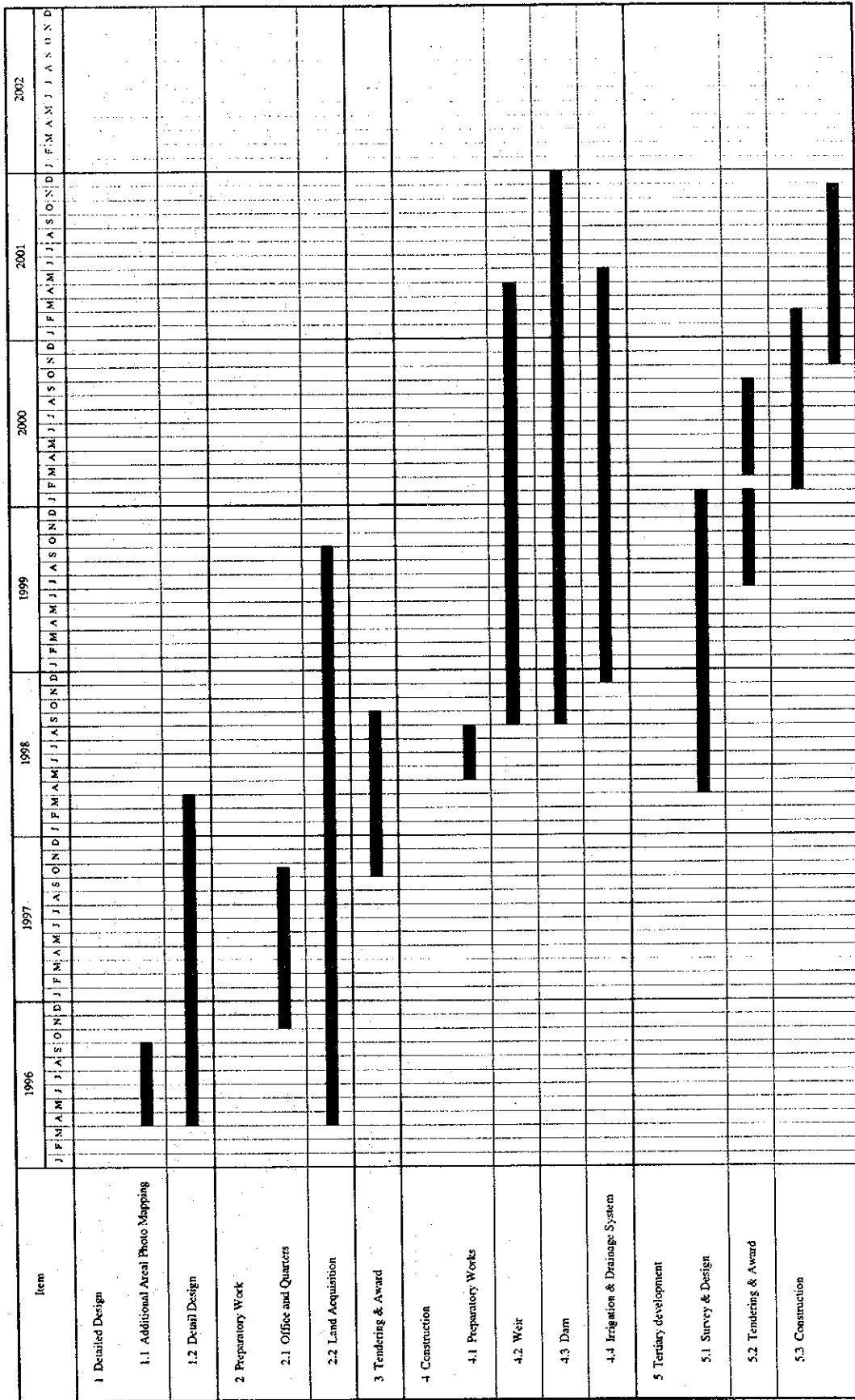
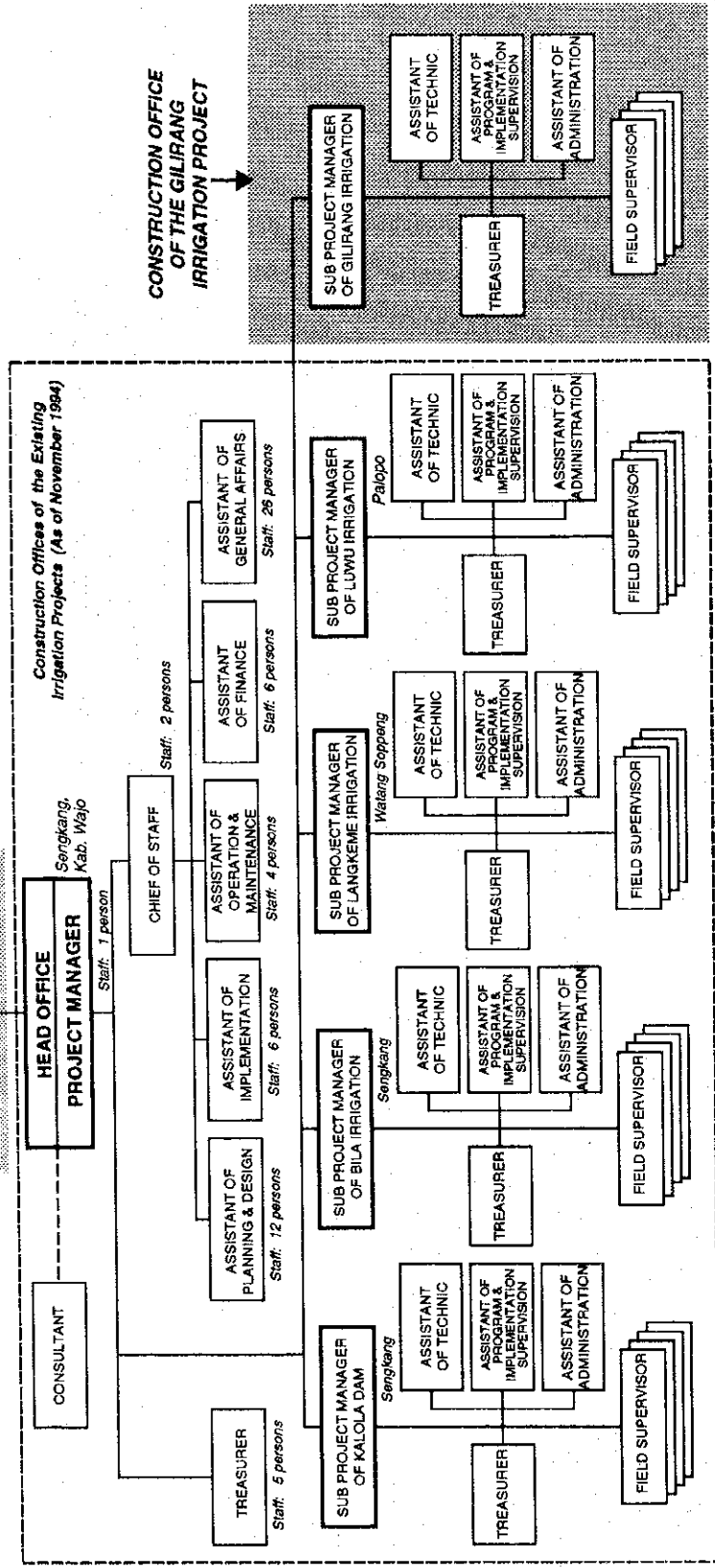
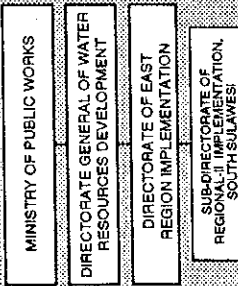


図5.4.8 末端システム計画図 (代表地区-3)

図5.5.1 事業実施計画



PU Head Office, Jakarta
(As of November 1994)



CONSTRUCTION OFFICE
OF THE GIRIRANG
IRRIGATION PROJECT

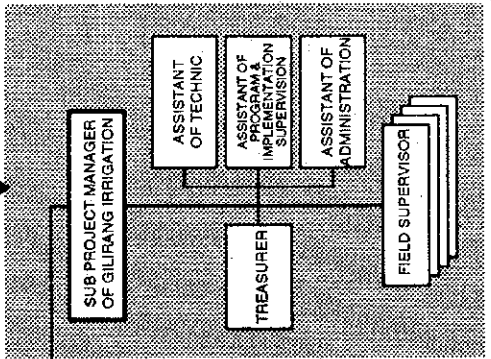


図6.1.1 事業実施組織

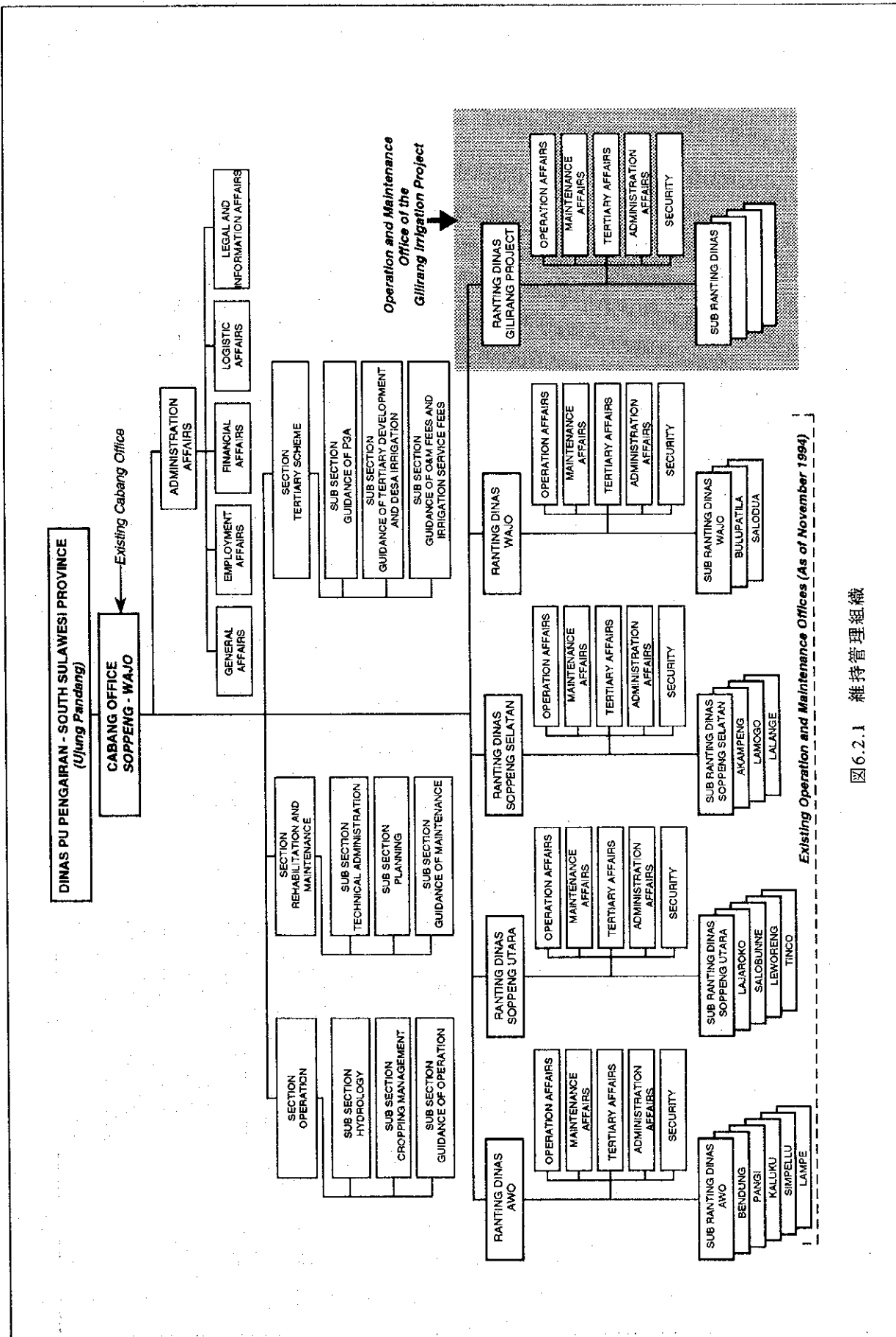


圖 6.2.1 維持管理組織

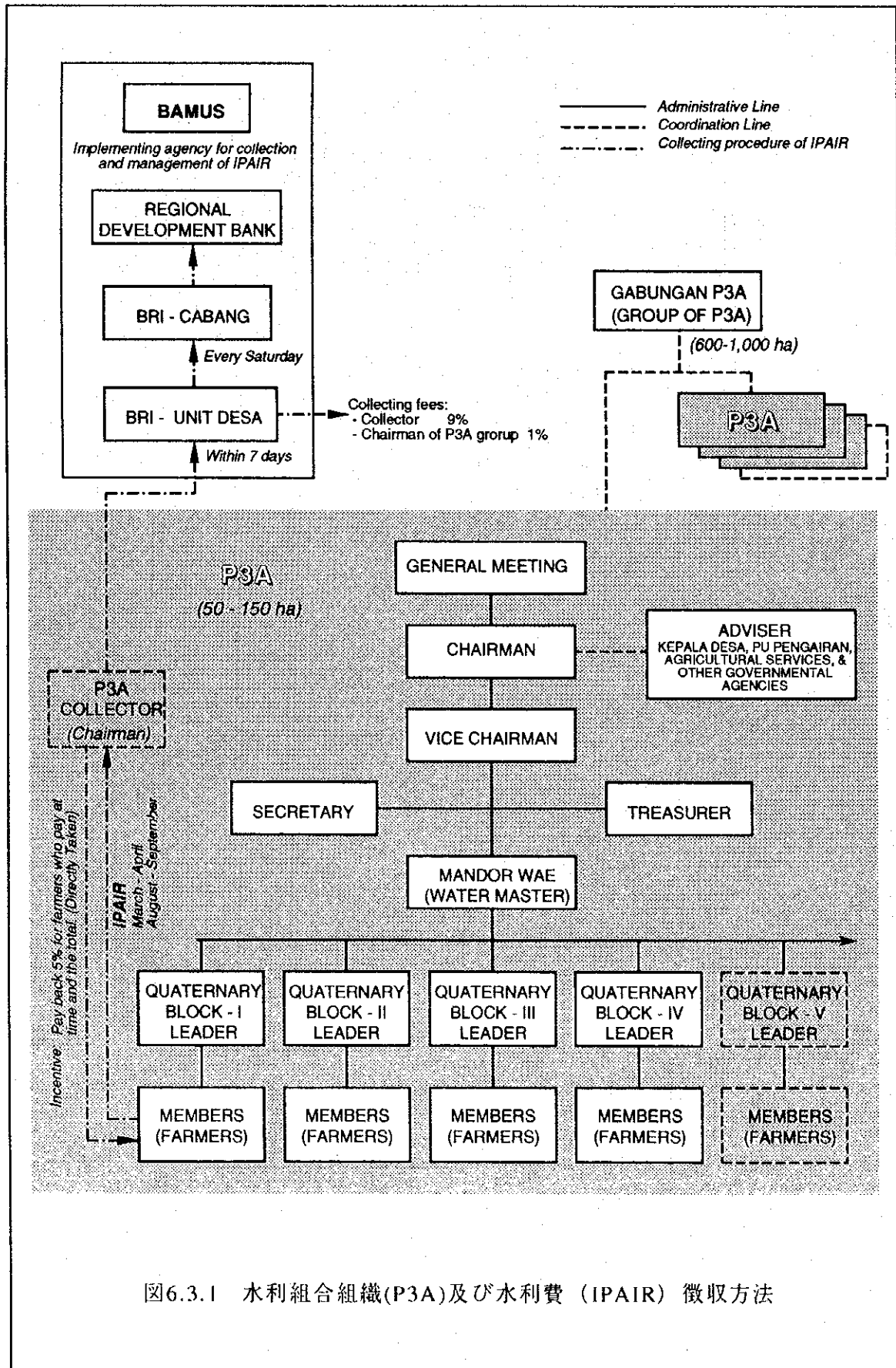
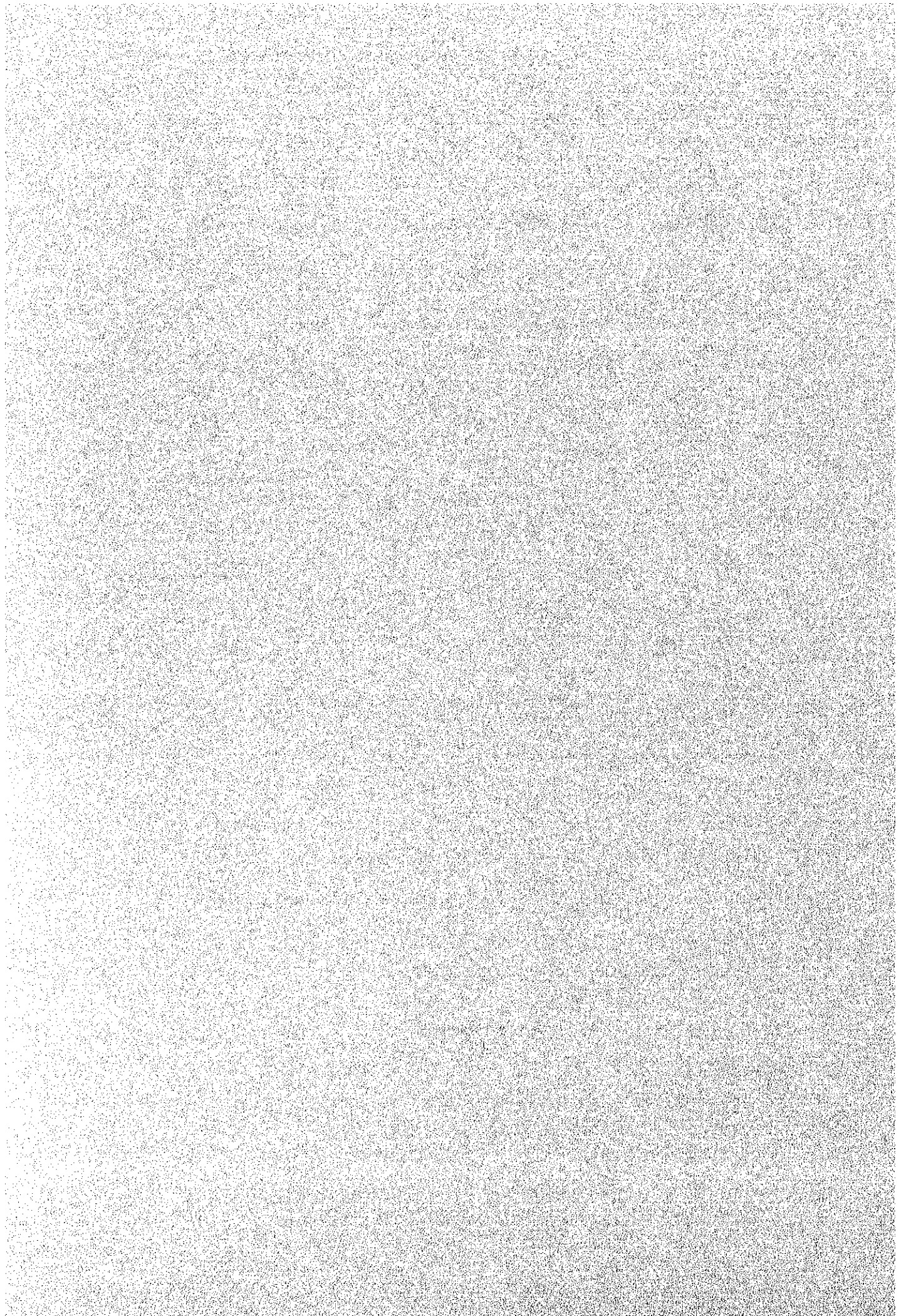


図6.3.1 水利組合組織(P3A)及び水利費 (IPAIR) 徴取方法

付属資料



Field Investigation Conducted by Local Contractors

During the First and Second Stage Survey Periods, the following seven (7) kinds of investigation works have been conducted by local contractors under supervision of the JICA Study Team. These subtleted works have completed successfully, and those results were used as basic data in the development plan of the Project.

First Stage Survey Period

1) Geological Investigation

Contractor: P.T. BRANTAS ABIPRAYA

Objective: To clarify characteristics of foundation.

To obtain basic data for analyzing foundation of structures on ground.

Scope:	a) Boring	Upstream Dam site	50 m x 1 hole
		Downstream Dam site	50 m x 2 holes
			30 m x 2 holes
		Auxiliary Dam site	25 m x 1 hole
		Spillway site	20 m x 1 hole
			30 m x 1 hole
		Quarry site	30 m x 1 hole
			<u>20 m x 1 hole</u>
		Total	340 m
	b) Seismic prospecting		
		Downstream dam site	400 m
		<u>Upstream dam site</u>	<u>600 m</u>
		Total	1,000 m

2) River channel survey and topographic survey and cross section survey for dam axes

a. River channel survey

Contractor: P.T. INDAH KARYA

Objective: To obtain the information on topographic condition of the Gilirang river for hydrological examination.

Scope: Longitudinal survey with cross section (scale: H=1/2,500, V=1/500)
Total length = 21.5 km

b. Topographic survey and cross section survey for dam axes

Contractor: P.T. INDAH KARYA

Objective: To obtain the information on topographic condition of the proposed dam sites for preliminary design.

Scope: a) Topographic survey 60 ha (proposed dam site, scale: 1/500)
b) Cross section survey 600 m x 2 sections (scale: 1/500)

3) Soil mechanical test

Contractor: P.T. BRANTAS ABIPRAYA

Objective: To clarify characteristics of soil materials

To obtain basic data for analyzing foundation of structures on ground

Scope: Total 55 samples
(moisture content test, grain size analysis, compaction test, etc.)

4) Water quality analysis

Contractor: STASIUM PENELITIAN TANAH, MAROS
DEPARTMENT PERTANIAN

Objective: To clarify the water quality of the Gilirang river

Scope: Total 6 samples
(ph, EC, suspended solid, chemical analysis, etc.)

Second Stage Survey Period

5) Canal route survey and Topographic survey

Contractor: P.T. INDAH KARYA

Objective: To obtain the information on topographic condition of the proposed canal route and weir sites for preliminary design.

Scope: a) Longitudinal survey (scale: H=1/2,500, V=1/500) Total length 84.7 km
b) Cross section survey 634 sections (scale: 1/200)
c) Topographic survey 20 ha (proposed weir site, scale: 1/500)

6) Soil analysis

Contractor: STASIUM PENELITIAN TANAH, MAROS
DEPARTMENT PERTANIAN

Objective: To investigate soil and land condition in the Study area
To assess land capability for agricultural development

Scope: Total 50 samples
(physical and chemical analyses)

7) Environmental Impact Assessment

Contractor: PUSAT STUDI LINGKUNGAN (Center for Environmental Studies)
UNIVERSITAS HASANUDDIN

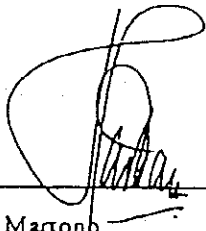
Objective: To assess the environmental impact by the Project

Scope: EIA following the Guideline of Indonesia, data collection, questionnaire survey, analysis of data and information

SCOPE OF WORK
FOR
THE FEASIBILITY STUDY
ON
THE GILIRANG IRRIGATION PROJECT
IN
THE REPUBLIC OF INDONESIA

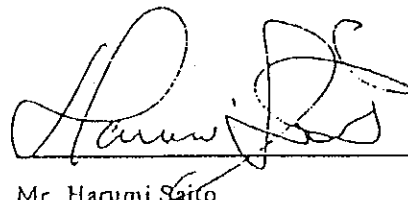
AGREED UPON BETWEEN
DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT,
MINISTRY OF PUBLIC WORKS
AND
JAPAN INTERNATIONAL COOPERATION AGENCY

JAKARTA, 16 March, 1993



Ir. Martono

*Director of Irrigation II,
Directorate General of Water Resources Development,
Ministry of Public Works*



Mr. Harumi Saito

*Leader,
Preparatory Study Team,
Japan International Cooperation Agency*

I. INTRODUCTION

In response to the request of the Government of the Republic of Indonesia (hereinafter referred to as "the Government of Indonesia"), the Government of Japan has decided to conduct a Feasibility Study on the Gilirang Irrigation Project (hereinafter referred to as "the Study"), in accordance with the relevant laws and regulations in force in Japan.

Accordingly, the Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of the technical cooperation programs of the Government of Japan, will undertake the Study in close cooperation with the authorities concerned of the Government of Indonesia.

The present document sets forth the Scope of Work with regard to the Study.

II. OBJECTIVES OF THE STUDY

The objectives of the Study are:

1. To conduct a feasibility study on irrigation development for the Gilirang Irrigation Project (hereinafter referred to as "the Project"), and
2. To carry out technology transfer to the Indonesian counterpart personnel through on-the-job training in the course of the Study.

III. STUDY AREA

The Study covers the area along the Gilirang river in Central South Sulawesi, which is approximately 16,000ha.

IV. SCOPE OF THE STUDY

The Study will consist of two (2) works and will cover the following.

1. Work I

To prepare topographic map covering the study area.

- conduct topographical surveying necessary for mapping
- preparation of topographic map

2. Work II

2-1. To collect and review existing data and information in the study area :

A. natural condition

- a) meteorology
- b) hydrology
- c) geology
- d) soil
- e) topography
- f) others

B. agriculture

- a) land use
- b) cropping pattern and yield
- c) agro-economy and marketing
- d) farmers organization and supporting services
- e) others

C. agricultural infrastructure

- a) irrigation and drainage facilities
- b) farm roads
- c) others

D. socio-economic situation

- a) population
- b) employment
- c) household and farmers
- d) regional socio-economy and household economy
- e) social organizations
- f) others

E. other information related to the Project

- a) administrative organizations related to the Project
- b) environmental impacts
- c) others

2-2. To carry out field survey on the items mentioned in IV.2-1.

2-3. To carry out household survey

2-4. To review other relevant projects and studies

2-5. Identification of potentials, Problems and constraints against development of the Project area

2-6. Formulation of irrigated agricultural development plan ;

- a. agricultural development plan,
- b. water resources development plan, and
- c. irrigation and drainage development plan

2-7. Preliminary design of major structures

2-8. Preparation of implementation schedule

2-9. Preparation of operation and maintenance plan for major structures

2-10. Preparation of environmental preservation plan

2-11. Estimation of project costs and benefits

1-12. Recommendations

ADP 8

V. STUDY SCHEDULE

The study will be carried out in accordance with the attached tentative schedule.

VI. REPORTS

JICA shall prepare and submit following reports in English to the Government of Indonesia.

1. Inception Report

Twenty (20) copies at the commencement of the Study.

2. Progress Report (1)

Twenty (20) copies at the end of the first period of Work II study in Indonesia.

3. Interim Report

Twenty (20) copies at the end of the second period of Work II study.

4. Progress Report (2)

Twenty (20) copies at the end of the third period of Work II study in Indonesia.

5. Draft Final Report

Twenty (20) copies at the end of Work II study. The Government of Indonesia will provide JICA with its comments on the Draft Final Report within one (1) month after receipt of the Draft Final Report.

6. Final Report

Fifty (50) copies within two (2) months after receiving the Government of Indonesia's comments on the Draft Final Report.

VII. UNDERTAKING OF THE GOVERNMENT OF INDONESIA

1. To facilitate smooth conduct of the study, the Government of Indonesia shall take necessary measures ;
 - 1-1. to secure the safety of the Japanese study team,
 - 1-2. to permit the members of the Japanese study team to enter, leave and sojourn in the Republic of Indonesia for the duration of their assignment therein, and exempt them from foreign registration requirements and consular fees,
 - 1-3. to exempt the members of the Japanese study team from taxes, duties, fees and any other charges on equipment, machinery and other materials brought into the Republic of Indonesia for the conduct of the study,
 - 1-4. to exempt the members of the Japanese study team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Japanese study team for their services in connection with the implementation of the Study,
 - 1-5. to provide necessary facilities to the Japanese study team for the remittance as well as utilization of the funds introduced into the Republic of Indonesia from Japan in connection with the implementation of the Study,
 - 1-6. to secure permission for entry into private properties or restricted areas for the conduct of the Study when it is required,
 - 1-7. to secure permission for the Japanese study team to take all data and documents related to the Study out of the Republic of Indonesia to Japan,
 - 1-8. to provide medical services as needed. Its expense will be chargeable on the members of the Japanese study team.

2. The Government of Indonesia shall bear claims, if any arises, against the members of the Japanese study team, resulting from, occurring in the course of, or otherwise connected with the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or willful misconduct on the part of the members of the Japanese study team.

TENTATIVE SCHEDULE

MONTH ITEM	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
WORK I																				
WORK II																				
REPORTS	△ IC/R	△ P/R (1)						△ IT/R					△ P/R (2)	△ DF/R						△ F/R

(Remarks) IC/R : Inception Report P/R (1) : Progress Report (1)
 IT/R : Interim Report P/R (2) : Progress Report (2)
 DF/R : Draft Final Report F/R : Final Report

- Work in Indonesia
- Home Office Work in Japan
- Comments on DF/R by the Indonesian side

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MINUTES OF MEETING
ON
SCOPE OF WORK
FOR
THE FEASIBILITY STUDY
ON
THE GILIRANG IRRIGATION PROJECT

The preparatory study team (hereinafter referred to as "the Team") organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA"), and headed by Mr. Harumi Saito, visited the Republic of Indonesia from March 7 to 21, 1993 for the purpose of discussing and confirming the Scope of Work for the Feasibility Study on the Gilirang Irrigation Project (hereinafter referred to as "the Study").

The team had a series of discussions with the officials concerned of the Directorate General of Water Resources Development, Ministry of Public Works (hereinafter referred to as "DGWRD") on the Scope of Work for the Study. The list of participants in a series of meetings is attached in the Annex.

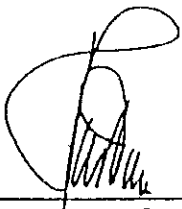
As a result of the discussions, DGWRD and the Team agreed on the Scope of Work for the Study.

The following are the main issues discussed and agreed upon by both sides in relation to Scope of Work for the Study.

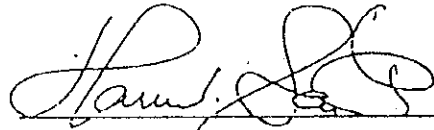
1. DGWRD shall carry out a household survey in consultation with the Japanese study team.
2. DGWRD shall carry out the Environmental Impact Assessment according to the Indonesian laws and regulations. The Japanese study team shall provide DGWRD with basic data and information on environmental issues in the course of the Study.
3. Article IV-1, mentioned in the Scope of Work, the topographic map shall be prepared in the scale of 1 / 5,000, for the area necessary for the Study.
4. In order to accelerate the electrification of dam and irrigation facilities, DGWRD requested that the possibility on mini-hydroelectricity by using the irrigation water from the Gilirang Dam, shall be examined in the Study.

5. DGWRD shall supply the Japanese study team offices equipped with electricity, water supply, and telephones in Jakarta, Sengkang and Watansoppeng.
6. DGWRD shall provide necessary numbers of counterpart personnel, who are governmental officials, during the whole Study period.
7. The steering committee organized by the Indonesian side shall give its comments on each preceding of the Final Report.
8. DGWRD requested that the following equipments necessary for the Study be procured by JICA and be donated to DGWRD after the termination of the Study.
The Team promised to convey its request to the Government of Japan.
 - survey equipments for water discharge, etc.
9. DGWRD requested the counterpart training in Japan. The Team promised to convey its request to the Government of Japan.

Jakarta, 16 March, 1993



Ir. Martono
*Director of Irrigation II,
Directorate General of Water Resources Development,
Ministry of Public Works*



Mr. Harumi Saito
*Leader,
Preparatory Study Team,
Japan International Cooperation Agency*

LIST OF PARTICIPANTS

Directorate General of Water Resources Development

Mr. R. Zainuddin	Chief of Subdirectorale of Planning & Design
Mr. M. Subianto	Chief of Subdirectorale of O & M, DOI II
Mr. Pudjiono K.	DOI II
Mr. S. Soekirno	DOI II
Mr. Kusumo Respatyo	DOI II
Mr. Bambang Prihono	DOI II
Mr. Agus Jati W.	DOI II
Mr. Tisna S.	DOI II
Mr. Subarto	BPP
Mr. Guridno	BPP

The Team

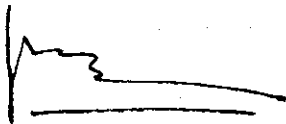
Mr. Harumi Saito	Leader
Mr. Toshiyasu Yamashita	Member
Mr. Kozo Sato	Member
Mr. Mitsuru Takahashi	Member
Mr. Yutaka Nozaki	Member
Mr. Akira Shimizu	Member

JICA Expert

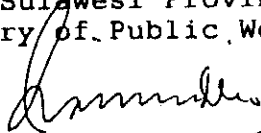
Mr. Unosuke Uematsu	DOI II
Mr. Hiroshi Kudo	DOI II
Mr. Toshiki Saito	BPP

MINUTES OF MEETING
FOR
INCEPTION REPORT
ON
THE FEASIBILITY STUDY
ON
THE GILIRANG IRRIGATION PROJECT

February 23, 1994
Ujung Pandang, Indonesia

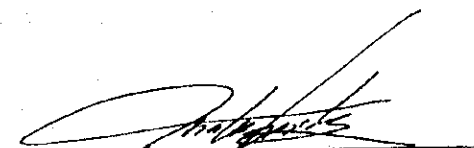


Ir. Bambang Kuswidodo, Dipl. HE
Head of Regional Office,
South Sulawesi Province,
Ministry of Public Works



Mr. H. Yamamoto
Leader, JICA Study Team

Ir. R. Zainuddin Dipl. AIT
Chief of Subdirectorates of Planning
and Design, Director of Irrigation II,
DGWRD, Ministry of Public Works



Dr. M. Inaba
JICA Advisory Team

1. Date: First Meeting; February 21, 1994 (12:00pm-14:00pm)
Second Meeting; February 22, 1994 (12:30pm-13:30pm)
2. Place: First Meeting; Meeting Room of DGWRG
Second Meeting; Office of Head of KANWIL
3. Attendants: see attached list
4. Summary of Discussions:

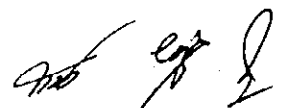
The JICA Study Team submitted 20 copies of the Inception Report to DGWRD on February 21, 1994 in accordance with the "Scope of Works (S/W) for the Feasibility Study on the Gilirang Irrigation Project" agreed upon between DGWRD and JICA on March 16, 1993.

The meetings on the Inception Report between DGWRD and JICA Study Team were held two times. The first meeting was held at Jakarta, and the second meeting was held at Ujung Pandang. The first meeting was chaired by Ir. R. Zainuddin, Chief of Subdirector of Planning and Design and the second meeting was chaired by Ir. Bambang Kuswidodo, Head of Regional Office of South Sulawesi Province.

In the both meetings, Dr. M. Inaba, JICA Advisory Team, explained the background of the technical assistance for the Project and Mr. H. Yamamoto, Leader of the JICA Study Team, presented contents of the report to the attendants at the meeting. After the presentation of Mr. Yamamoto, various discussions were made between DGWRD and the JICA Study Team. The following were confirmed in the discussions:

- (1) The Inception Report was accepted by DGWRD with the following observations:
 - 1) The JICA Study Team should examine release water from dam to the downstream in due consideration of existing fish culture at the coastal areas.
 - 2) The JICA Study Team should examine the possibility of development of mini-hydropower for the electrification of dam and irrigation facilities.
 - 3) The JICA Study Team should examine the possibility of potable water supply to Senkang.
- (2) JICA will arrange the budget for the environmental impact assessment in the second stage study, and DGWRD will arrange that for the household survey in the first stage study.
- (3) DGWRD should nominate a candidate for JICA training in Japan among the counterpart personnel who would be assigned for the JICA Study Team.
- (4) The resettlement issue has been discussing among the Indonesian side. DGWRD should establish the policy on this issue as soon as possible. DGWRD promised to inform details on the policy to the JICA Study Team at the early stage of the Study.

- (5) Steering committee should be arranged at provincial level chaired by Head of KANWIL. The Head of BAPPEDA, South Sulawesi Province should appoint members of the committee.
- (6) The Head of DINAS Pengairan, South Sulawesi Province should appoint the counterpart personnel for each experts of the JICA Study Team.
- (7) DGWRD should arrange the required offices for the JICA Study Team in the Bila Project Office at Senkang.
- (8) DGWRD should, at own expense, provide the JICA Study Team one vehicle with driver based on the requirement of the Study.



LIST OF ATTENDANTS

Directorate General of Water Resources Development,
Ministry of Public Works

Mr. R. Zainuddin	Chief of Subdirectorates of Planning and Design, DOI-II
Mr. Kusumo Respatyo	DOI-II
Mr. Hiroshi Kudo	DOI-II
Mr. Winpi Suhendi	BPP
Mr. Toshiki Saito	BPP
Mr. Sjamsul Bachri	Chief of Staff, Bila Irrigation Project

Regional Office, South Sulawesi Province,
Ministry of Public Works

Mr. Bambang Kuswidodo Head

BAPPEDA, South Sulawesi Province

Mr. Sayadi Deputy Chairman

DINAS Pengairan, South Sulawesi Province

Mr. Sanapati Tarebbang Head

JICA Advisory Committee

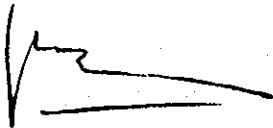
Dr. M. Inaba JICA Advisory Team

JICA Study Team

Mr. H. Yamamoto	Team Leader/ Irrigation and drainage Engineer
Mr. M. Ishizuka	Co-leader/Agronomist
Dr. J. Nozaka	Meteorologist/Hydrologist

MINUTES OF MEETING
ON
PROGRESS REPORT (I)
FOR
THE FEASIBILITY STUDY
ON
THE GILIRANG IRRIGATION PROJECT

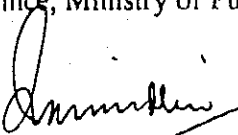
May 16, 1994
Ujung Pandang, Indonesia



Ir. Bambang Kuswidodo, Dipl. HE
Head of Regional Office, South Sulawesi
Province, Ministry of Public Works



Mr. Hiroshi Yamamoto
Leader, JICA Study Team



Ir. R. Zainuddin Dipl. AIT
Chief of Subdirectorate of Planning and Design,
Director of Irrigation II, DGWRD, Ministry of Public Works



Drs. H. Masnawi AS
Chief of BAPPEDA, South Sulawesi Province

1. Date and Time : May 16, 1994
9:00 a.m. - 11:50 a.m.
2. Place: Meeting Room of Governor,
South Sulawesi Province
3. Attendants: see attached list
4. Summary of Discussions:

The JICA Study Team submitted 20 copies of the Progress Report (I) to DGWRD in accordance with the "Scope of Work (S/W) for the Feasibility Study on the Gilirang Irrigation Project in the Republic of Indonesia" agreed upon between DGWRD and JICA on March 16, 1993.

The meeting on the Progress Report (I) were held at Ujung Pandang between DGWRD/ Steering Committee for the Project and JICA Study Team (organization of the Steering Committee is shown in the attached paper). The meeting was chaired by Mr. H. Masnawi AS, Chief of BAPPEDA, South Sulawesi Province. Mr. H. Yamamoto, Leader of the JICA Study Team, explained contents of the report to the attendants at the meeting. After the presentation of Mr. H. Yamamoto, various discussions were made between DGWRD/ Steering Committee and the JICA Study Team. The following were confirmed in the discussions:

- (1) The Progress Report (I) was accepted by DGWRD/ Steering Committee with the observations that , as an additional alternative, cropping pattern of Paddy-Palawija-Palawija should be examined in the Interim Report.
- (2) DGWRD should arrange a team for the execution of household survey in the Second Stage Study.
- (3) The JICA Study Team expects that the Indonesian side will submit written comments on the Progress Report (I) within one month through JICA Jakarta, if any.

LIST OF ATTENDANTS

Directorate General of Water Resources Development, Ministry of Public Works

Mr. Zainuddin	Chief of Subdirectorate of Planning and Design, DOI-II
Mr. T. Matsushima	DOI-II

Regional, Provincial, and District Governments

Mr. H. Masnawi AS	Chief of BAPPEDA, Sul-Sel
Mr. H. Sanapati Tarebbang	Chief of DPU Pengairan, Sul-Sel
Mr. H. Tadjuddin Noer	Regional Secretary of Kabupaten Wajo
Mr. Surachyo	Chief of Technical Division, KANWIL PU, Sul-Sel
Mr. H. Abd. Yantahin	Project Manager, Bila Irrigation Project
Mr. Sessu Sennang	Chief of Sub-DINAS Planning, DPU Pengairan, Sul-Sel
Mr. Supriya Triwiwana	Project Manager, River Development Project
Mr. Pudjihardjo	Project Manager, Jene Berang Project
Mr. Surwanda W.	KANWIL Maining and Energy, Sul-Sel
Mr. Rahim Tamko	KANWIL Transmigration, Sul-Sel
Mr. Arsyad	DINAS Agriculture
Mr. Sugirman DJ	KANWIL Dep. Agriculture
Mr. A.B. Mapaudin	KABID PGT, KANWIL BPN, Sul-Sel
Mr. Djoko Santosa	Planning of Irrigation Project, Sul-Sel
Mr. H. Sjahdan	BAPPEDA, Sul-Sel
Mr. Purwoko	Chief Counterpart, DPU Pengairan, Sul-Sel
Mr. Hasanuddin Thaha	Counterpart, DPU Pengairan, Sul-Sel
Mr. Abd Wahab	Counterpart, Chief of PME, DPU Pengairan, Sul-Sel
Mr. Syarifuddin	Counterpart, DPU Pengairan, Sul-Sel
Mr. Irhan Abu	Counterpart, DPU Pengairan, Sul-Sel
Mr. M. Ilyas Nuntung	Counterpart, DPU Pengairan, Sul-Sel

JICA Study Team

Mr. H. Yamamoto	Team Leader/ Irrigation and Drainage Engineer
Mr. M. Ishizuka	Co-leader/ Agronomist
Mr. K. Shimazaki	Construction/ Survey Supervisor

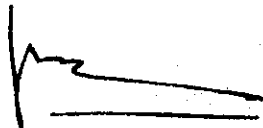
ORGANIZATION OF THE STEERING COMMITTEE

The Steering Committee was established on May 4, 1994 with the following organisation:

- | | |
|------------------|---|
| 1. Chairman | Chief of BAPPEDA |
| 2. Vice-chairman | KAKANWIL, PU, Sul-Sel |
| 3. Secretary | Chief of DINAS PU. Pengairan, Sul-Sel |
| 4. Member | KAKANWIL, BPN, Sul-Sel |
| 5. Member | KAKANWIL, Dep. Agriculture, Sul-Sel |
| 6. Member | KAKANWIL, Dep. Mining and Energy, Sul-Sel |
| 7. Member | KAKANWIL, Dep. Forestry, Sul-Sel |
| 8. Member | KAKANWIL, Dep. Transmigration, Sul-Sel |
| 9. Member | Chief of DINAS Food Crops, Sul-Sel |
| 10. Member | Secretary of Kab. Wajo |
| 11. Member | Chief of Subdirectorate of Planning, DOI-II |

MINUTES OF MEETING
ON
INTERIM REPORT
FOR
THE FEASIBILITY STUDY
ON
THE GILIRANG IRRIGATION PROJECT

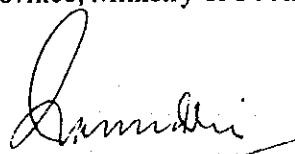
September, 01 1994
Ujung Pandang, Indonesia



Ir. Bambang Kuswidodo, Dipl. HE
Head of Regional Office, South Sulawesi
Province, Ministry of Public Works



Mr. Hiroshi Yamamoto
Leader, JICA Study Team



Ir. R. Zajnuddin Dipl. AIT
Chief of Subdirector of Irrigation,
DIT BINA TEKNIK, DGWRD, Ministry of Public Works

1. Date and Time : September 1, 1994
10:00 a.m. - 12:30 a.m.
2. Place: Meeting Room of DPU Pengairan,
South Sulawesi Province
3. Attendants: see attached list
4. Summary of Discussions:

The JICA Study Team submitted 20 copies of the Interim Report to DGWRD in accordance with the "Scope of Work (S/W) for the Feasibility Study on the Gilirang Irrigation Project in the Republic of Indonesia" agreed upon between DGWRD and JICA on March 16, 1993.

The meeting on the Interim Report was held at Ujung Pandang between DGWRD/ Steering Committee for the Project (the Committee) and JICA Study Team (the JICA Team). The meeting was chaired by Ir. H. Sanapati Tarebbang, Head of Regional Office, South Sulawesi Province, Ministry of Public Works, South Sulawesi Province. Mr. H. Yamamoto, Leader of the JICA Team, explained contents of the report to the attendants at the meeting. After the presentation of Mr. H. Yamamoto, various discussions were made between the Committee and the JICA Team, and the Interim Report was accepted by the Committee with the mutual confirmation on the following points:

- (1) The Committee requested the JICA Team to explain the countermeasures required for the activation of agricultural supporting services. The JICA Team answered that the study on such countermeasures would be carried out in this Second Stage Study as programmed in the Inception Report.
- (2) The Committee requested the JICA Team to make further study on Alternative 3C which is excluded from the economic comparison for the project scale. The JICA Team answered that the elevation of right bank at dam site would be surveyed for about 1 km in this Second Field Works to confirm whether the elevation is high enough for the required crest elevation for Alternative 3C.
- (3) The Committee requested the JICA Team to make further study on the proposed intake weir to reduce its cost and simplify its operation. The JICA Team answered that further study would be carried out in due consideration of such aspects.
- (4) The Committee pointed out that the JICA Team should make study on environmental

aspects of the project. The JICA Team answered that the environmental impact assessment would be carried out in this Second Stage Study on sub-contract basis with local consultant.

- (5) The Committee asked the JICA Team the reasons of selection of paddy-palawija-paddy cropping pattern instead of paddy-paddy-palawija pattern. The JICA Team answered that the water requirement is smaller and expected damages to palawija due to rain are less under the proposed paddy-palawija-paddy pattern.
- (6) The Committee requested the JICA Team to make inquiry to the farmers to confirm their intention on pump irrigation for which the farmers themselves should invest to irrigate their farms where no water from the gravity irrigation system of the project is available. The JICA Team answered that such inquiry would be made in the course of household survey.
- (7) The Committee requested the JICA Team to make plan to provide water to the fish culture practiced in the downstream areas and estimate its benefit. The JICA Team answered that release the river maintenance flow from dam to the downstream would basically fulfil the present requirement for fish culture, and accordingly, no tangible benefit is expected from fish culture.

LIST OF ATTENDANTS

Directorate General of Water Resources Development,
Ministry of Public Works

Mr. R. Zainuddin Chief of Sub Dit Irrigasi, Dit Bina Teknik,
DGWRD

Regional, Provincial, and District Governments

Mr. H. Sanapati Tarebbang Chief of DPU Pengairan, Sul-Sel
Mr. Surachyo Chief of Technical Division, KANWIL PU,
Sul-Sel
Mr. Sessu Sennang Chief of Sub-DINAS Planning, DPU
Pengairan, Sul-Sel
Mr. Yus Suyono Project Manager of Project Irrigation, Sul-Sel
Mr. Surwanda W. KANWIL Maining and Energy, Sul-Sel
Mr. A.B. Mapaudin KABID PGT, KANWIL BPN, Sul-Sel
Mr. Djoko Santosa Chief of Planning Section, DPU Pengairan,
Sul-Sel
Mr. Tamzil Tadijuddin Transmigration & PPH
Mr. Trismo Hasis BAPPEDA, TKT-I
Mr. Agustinus P. KANWIL Pertanian
Mr. Tom Abbel Sid KANWIL Pertanian
Mr. Olleke Jassini KANWIL, Dep. of Mining and Energy
Mr. MK Silalahi Proyek Induj PWS Jeneberang
Mr. M.Akbar Dinas Pertanian, TK-I
Mr. Karel Paranoan Chief of Planning Division, River
Development Project
Mr. Subandi Perenc Umum PI PWS Jeneberang
Mr. Bambang Soeyono Chief of Technical Staff, Project Irrigation,
Sul-Sel
Mr. Soeparto Budisantoso Chief of Program and Planning Division, PISS
Mr. Purwoko Chief Counterpart, DPU Pengairan, Sul-Sel
Mr. Abd Wahab Counterpart, Chief of PME, DPU Pengairan,
Sul-Sel
Mr. Abd Latif Kadir Counterpart, DPU Pengairan, Sul-Sel
Mr. Hasanuddin Thaha Counterpart, DPU Pengairan, Sul-Sel
Mr. Syarifuddin N Counterpart, DPU Pengairan, Sul-Sel
Mr. M. Ilyas Nuntung Counterpart, DPU Pengairan, Sul-Sel

Mr. Irham Abu
Mr. Samuel Tandisosang

Counterpart, DPU Pengairan, Sul-Sel
Counterpart, DPU Pengairan, Sul-Sel

JICA Study Team

Mr. H. Yamamoto
Mr. M. Ishizuka
Mr. K. Shimazaki
Mr. K. Kameyama

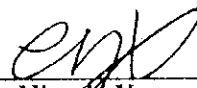
Team Leader/ Irrigation and Drainage Engineer
Co-leader/ Agronomist
Construction/ Survey Supervisor
Dam Planner//Soil Mechnics

MINUTES OF MEETING
ON
PROGRESS REPORT (II)
FOR
THE FEASIBILITY STUDY
ON
THE GILIRANG IRRIGATION PROJECT

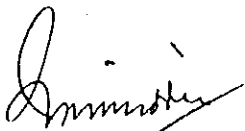
December, 05 1994
Ujung Pandang, Indonesia



Ir. H. Sanapati Tarebbang
Head of Regional Office, South Sulawesi
Province, Ministry of Public Works



Mr. Hiroshi Yamamoto
Leader, JICA Study Team



Ir. R. Zainuddin Dipl. AIT
Chief of Subdirector of Irrigation,
DIT BINA TEKNIK, DGWRD, Ministry of Public Works

1. Date and Time : December 5, 1994
10:00 a.m. - 13:00 a.m.
2. Place: Meeting Room of DPU Pengairan,
South Sulawesi Province
3. Attendants: see attached list
4. Summary of Discussions:

The JICA Study Team submitted 20 copies of the Progress Report (II) to DGWRD in accordance with the "Scope of Work (S/W) for the Feasibility Study on the Gilirang Irrigation Project in the Republic of Indonesia" agreed upon between DGWRD and JICA on March 16, 1993.

The meeting on the Progress Report (II) was held at Ujung Pandang between DGWRD/ Steering Committee for the Project (the Committee) and JICA Study Team (the JICA Team). The meeting was opened by Ir. H. Sanapati Tarebbang, Head of Regional Office, South Sulawesi Province, Ministry of Public Works, South Sulawesi Province and chaired by Ir. Sessu Sennang, Dipl. HE, Chief of Sub-DINAS Planning, DPU Pengairan, South Sulawesi Province. Mr. H. Yamamoto, Leader of the JICA Team, explained contents of the Report to the attendants at the meeting. After the presentation of Mr. H. Yamamoto, various discussions were made between the Committee and the JICA Team, and the Progress Report (II) was accepted by the Committee with the mutual confirmation on the following points:

- (1) The Committee requested the JICA Team to explain environmental impacts of the Project to brackish water ponds which extend downstream of the Gilirang river. The JICA Team answered that the result of the assessment made on brackish water ponds will be presented in the Draft Final Report, because the study on EIA is still on-going.
- (2) The Committee requested the JICA Team to review the project cost. The JICA Team answered that the project cost would be reviewed in the home office work.
- (3) The Committee requested the JICA Team to use actual price instead of the official price decided by the BUPATI office, Kabupaten Wajo in the estimate of land compensation cost. The JICA Team answered that it is impossible to decide actual price of land at this feasibility study stage.

- (4) The Committee requested the JICA Team to prepare a map which shows areas with critical condition in the catchment area in order to make proper watershed management program. The JICA Team answered that it is difficult to prepare such map because of no availability of detailed map and aerial photo at this moment.
- (5) The appropriateness of anticipated paddy yield of 6.0 tons/ha was discussed among the Committee members and the JICA Team. Both sides confirmed that the anticipated paddy yield of 6.0 tons/ha in the Report is reasonable, because present yields in the irrigation schemes in South Sulawesi Province are ranging from about 5.0 tons/ha to 7.0 tons/ha according to the PME result.
- (6) The Committee requested the JICA Team to evaluate the project separately for the development of gravity irrigation system and pump irrigation system. The JICA Team answered that such evaluation would be made in the home office work.
- (7) The Committee informed the JICA Team that the proposed dam and weir of the project had been named as Paselloreng dam and Gilirang weir.
- (8) The JICA Team expressed their expectation that the Committee will submit written additional comments on the Progress Report (II) within 10 days through JICA Jakarta, if any.

LIST OF ATTENDANTS

Directorate General of Water Resources Development, Ministry of Public Works

Ir. Zainuddin Rapiali, Dipl. AIT Chief of Sub-Dit Irigasi, Dit Bina Teknik,
DGWRD

Regional, Provincial, and District Governments

Ir. H. Sanapati Tarebbang Chief of DPU Pengairan, Sul-Sel
Ir. H. Abdul Yantahin, Dipl. HE Chief of Bila Irrigation Project
Ir. H. Syamsul Arida, Dipl. HE Chief of Sub-DINAS Irrigation, DPU
Pengairan, Sul-Sel
Ir. H. Sessu Sennang, Dipl. HE Chief of Sub-DINAS Planning, DPU
Pengairan, Sul-Sel
Ir. Yus Suyono Project Manager of Project Irrigation, Sul-Sel
Mr. Thamrin Kuba, BIE KANWIL PU, Sul-Sel
Drs. Nakhruddin Mardang Chief of Bappeda, Wajo
Ir. Husain Hasan DINAS Pertanian Tanaman Pangan,
Sul-Sel
Mr. Muh Aras DINAS Pertanian Tanaman Pangan,
Kab. Wajo
Mrs. Sri Anggraeni BAPEDA, Sul-Sel
Ir. Surwanda Wijaya KANWIL Dep. Pertambangan Dan Energi,
Sul-Sel
Mr. Arifin P. KANWIL BPN, Sul-Sel
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Mr. Agustinus P. KANWIL Pertanian, Sul-Sel
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Drs. Abdul Wahab, CES Ing. Counterpart, Chief of PME, DPU Pengairan,
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Drs. Abdul Latif Kadir Counterpart, DPU Pengairan, Sul-Sel
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Mr. Hasanuddin Thaha, BE Counterpart, DPU Pengairan, Sul-Sel
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JICA Study Team

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Co-leader/ Agronomist

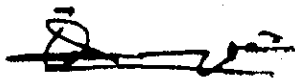
Agro-economist

Construction/ Survey Supervisor

Meteorologist/ Hydrologist

MINUTES OF MEETING
ON
DRAFT FINAL REPORT
FOR
FEASIBILITY STUDY
ON
THE GILIRANG IRRIGATION PROJECT

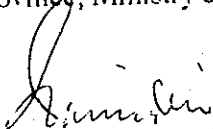
March 20, 1995
Ujung Pandang, Indonesia



Ir. H. Sanapati Tarebbang
Head of Regional Office, South Sulawesi
Province, Ministry of Public Works



Mr. Hiroshi Yamamoto
Leader, JICA Study Team



Ir. R. Zainuddin Dipl. AIT
Chief of Subdirector of Irrigation,
DIT BINA TEKNIK, DGWRD, Ministry of Public Works



Dr. M. Inaba
JICA Advisory Team

1. Date and Time : March 20, 1995
9:15 a.m. - 11:30 a.m.
2. Place: Meeting Room of BAPPEDA,
South Sulawesi Province
3. Attendants: see attached list
4. Summary of Discussions:

The JICA Study Team submitted 20 copies of the Draft Final Report to DGWRD on the middle of March 1995 in accordance with the "Scope of Work (S/W) for the Feasibility Study on the Gilirang Irrigation Project in the Republic of Indonesia" agreed upon between DGWRD and JICA on March 16, 1993.

The meeting on the Draft Final Report was held in Ujung Pandang between DGWRD/ Steering Committee for the Study (the Committee) and JICA Study Team (the JICA Team). The meeting was opened by Mr. Alwi gani, Secretary of BAPPEDA, South Sulawesi Province and chaired by Ir. Sessu Sennang, Dipl. HE, Chief of Sub-DINAS Planning, DPU Pengairan, South Sulawesi Province. Mr. H. Yamamoto, Leader of the JICA Team, explained contents of the Report to the attendants at the meeting. After the presentation of Mr. H. Yamamoto, various discussions were made between the Committee and the JICA Team, and the Draft Final Report was basically accepted by the Committee with the mutual confirmation on the following points:

- (1) The Committee requested the JICA Team to use actual price in the estimate of land compensation cost. The JICA Team answered that it is difficult to decide actual price of land at this feasibility study stage and the official price decided by the BUPATI Office, Kabupaten Wajo was used in the estimate of the Draft Final Report.
- (2) The Committee suggested that the Indonesian Government will not pay land acquisition cost for tertiary canal, although it is included in the cost estimate of the Draft Final Report.
- (3) The Committee pointed out some discrepancies in the cost estimate of concrete works of the Draft Final Report. The JICA Team answered that those will carefully be reviewed in the Final Report.
- (4) The Committee proposed the JICA Team to add another project impact from reduction

of inundation due to dam construction. The JICA Study Team agreed to include such impact in the Final Report as one of indirect benefits and/or socio-economic impacts.

- (5) The Committee requested the JICA Team to present the study results of hydropower and domestic water supply development in the Main Report, although those are presented in the Annex of Draft Final Report. The JICA Team agreed to present those in the Main Report of the Final Report adding a new Chapter.
- (6) The Committee proposed to add some more legends on the Regional Geological Map in the Draft Final Report. The JICA Team agreed to revise it in the Final Report.
- (7) The Committee pointed out that the Indonesian side will confirm the maintenance flow proposed in the Draft Final Report based on their criteria.
- (8) The Committee requested the JICA Team to estimate the project cost separately for the development of gravity irrigation system and pump irrigation system supposing that the development of these systems will be implemented on stage-wise basis. The JICA Team answered that such estimate will be carried out in the Final Report.
- (9) The Committee pointed out that the O&M organization proposed by the JICA Team in the Draft Final Report will be revised by the Indonesian side.

At the end of the meeting, Dr. M. Inaba, JICA Advisory Team expressed the following points:

- (1) The Indonesian side is requested to handle properly the environmental matter, including the resettlement issue, paying much attention to the results of environmental study presented in the Draft Final Report.
- (2) In the further stages of this Gilirang Project, the Indonesian side is requested to pay much attention to O&M of the Project referring experiences from preceding projects around the Gilirang area, e.g. Bila and Langkeme projects.
- (3) The Committee is requested to submit written comments on the Draft Final Report within one month, before April 14, 1995, through the JICA Indonesia Office.

LIST OF ATTENDANTS

Directorate General of Water Resources Development, Ministry of Public Works

Mr. R. Zainuddin Chief of Sub Dit Irrigasi, Dit Bina Teknik,
DGWRD
Mr. A. Kudo JICA Expert, Bina Teknik, DGWRD

Regional, Provincial, and District Governments

Mr. Alwi Gani Secretary of BAPPEDA, Sul-Sel
Mr. Surachyo Chief of Technical Division, KANWIL PU,
Sul-Sel
Mr. Sessu Sennang Chief of Sub-DINAS Planning, DPU
Pengairan, Sul-Sel
Mr. Bangbang Soeyono Project Manager of Project Irrigation, Sul-Sel
Mr. Imran Musa KANWIL Maining and Energy, Sul-Sel
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Sub-DINAS, Bina Program, DPU Pengairan

JICA Advisory Committee

Dr. M. Inaba

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Mr. H. Yamamoto
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JICA