

図21 チャミン砂糖プロジェクトの位置図

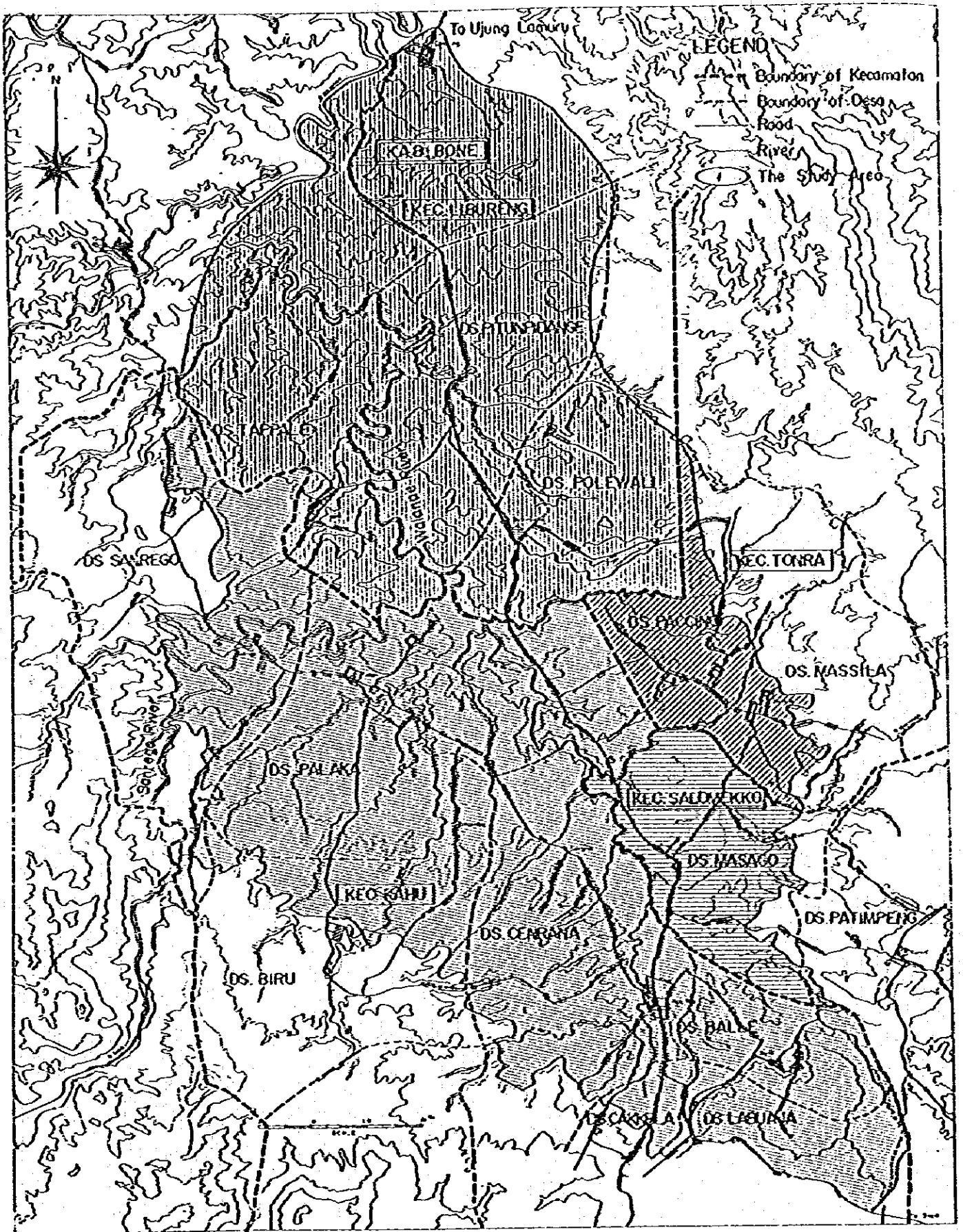


图 3.1 計劃地区行政区分图

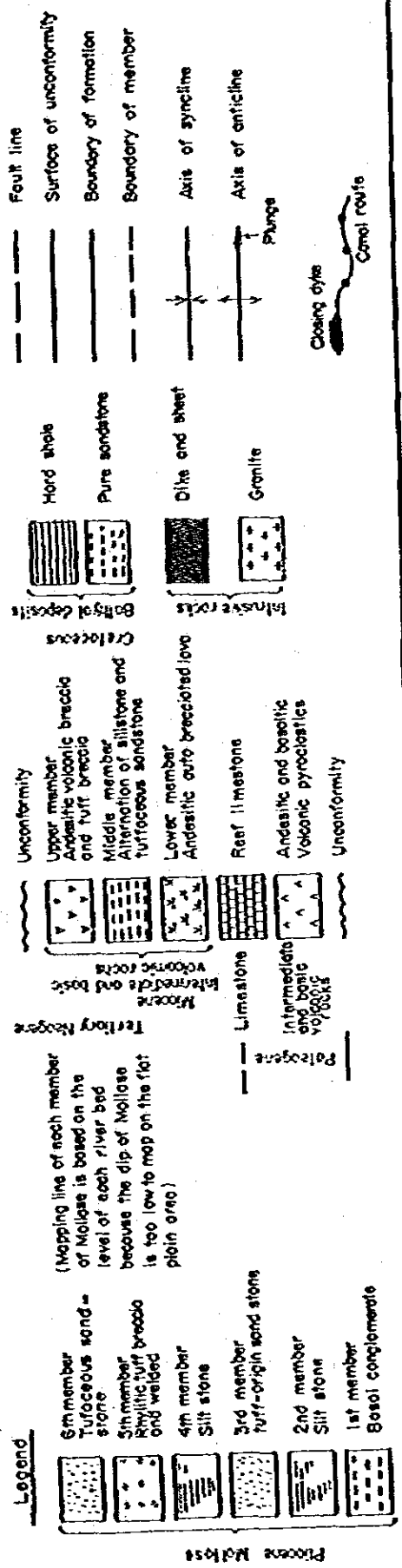
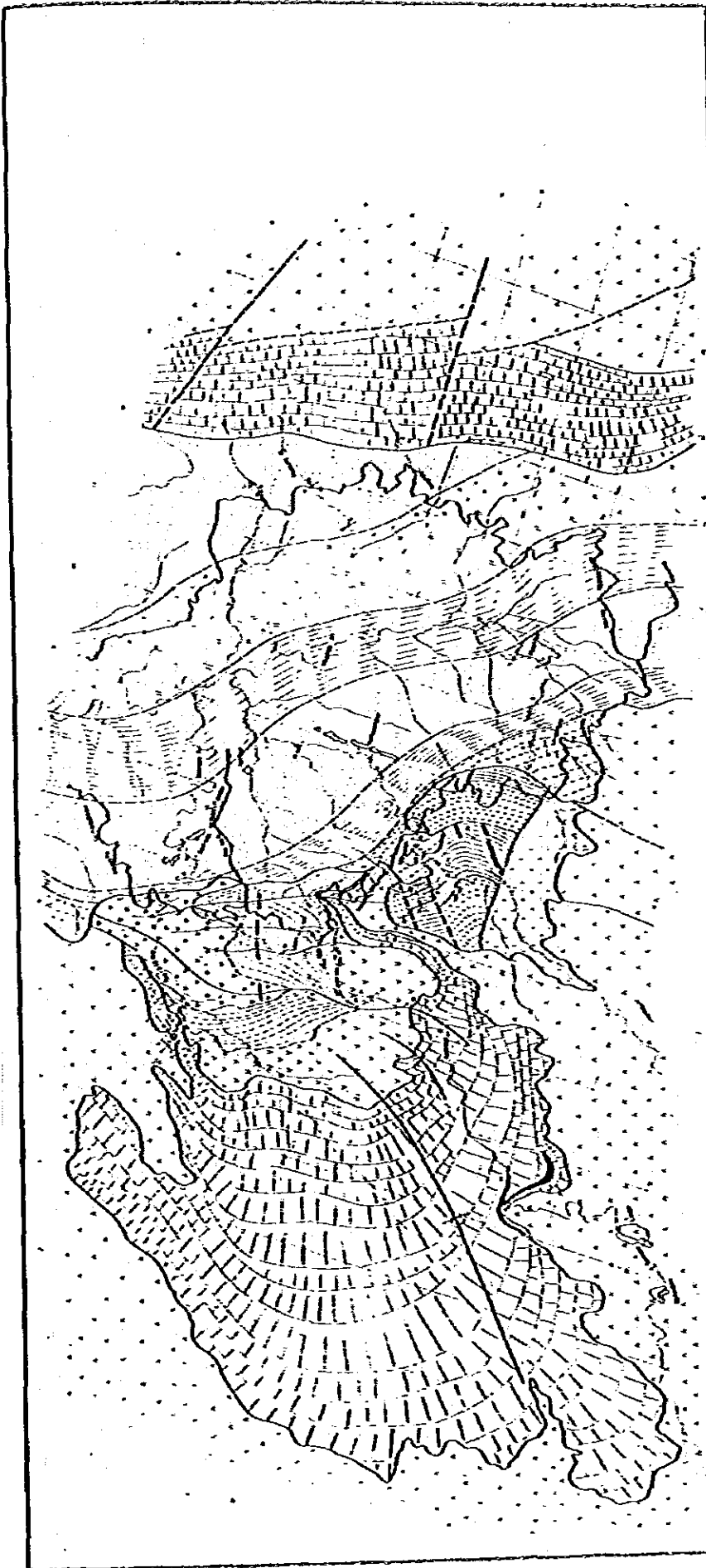
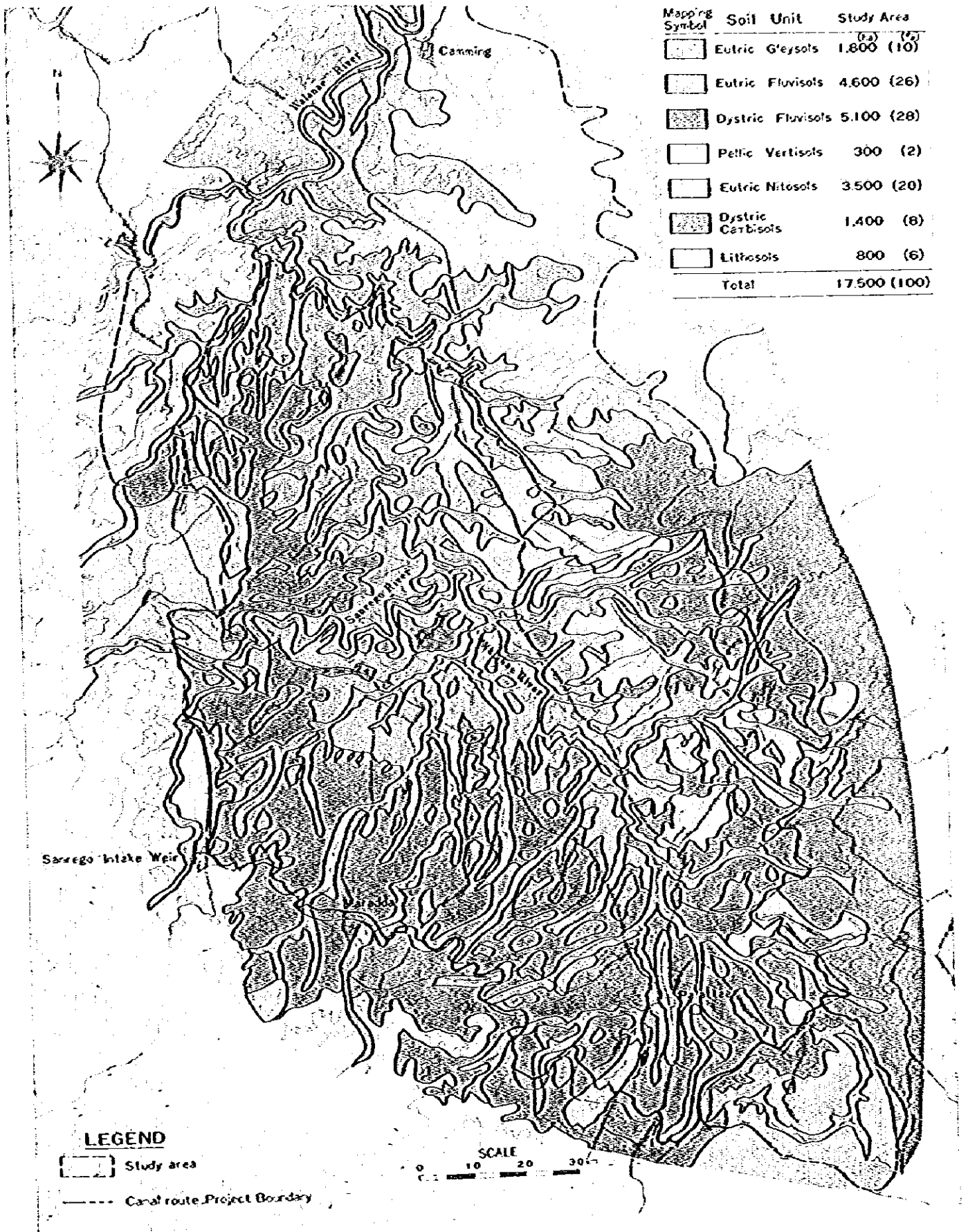
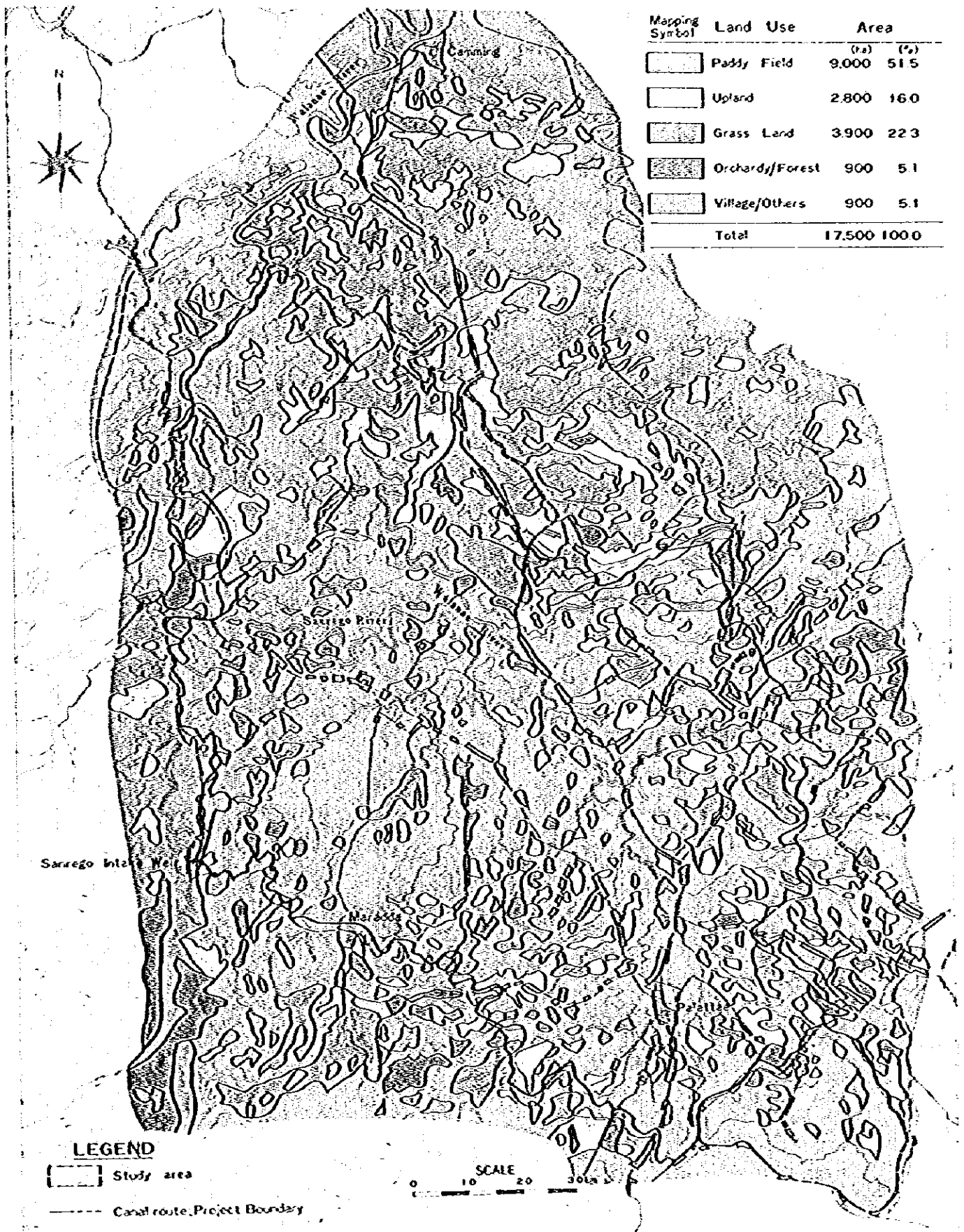


图 3.2 地 質 圖



图·3·3土壤图



图·3·4 土地利用图

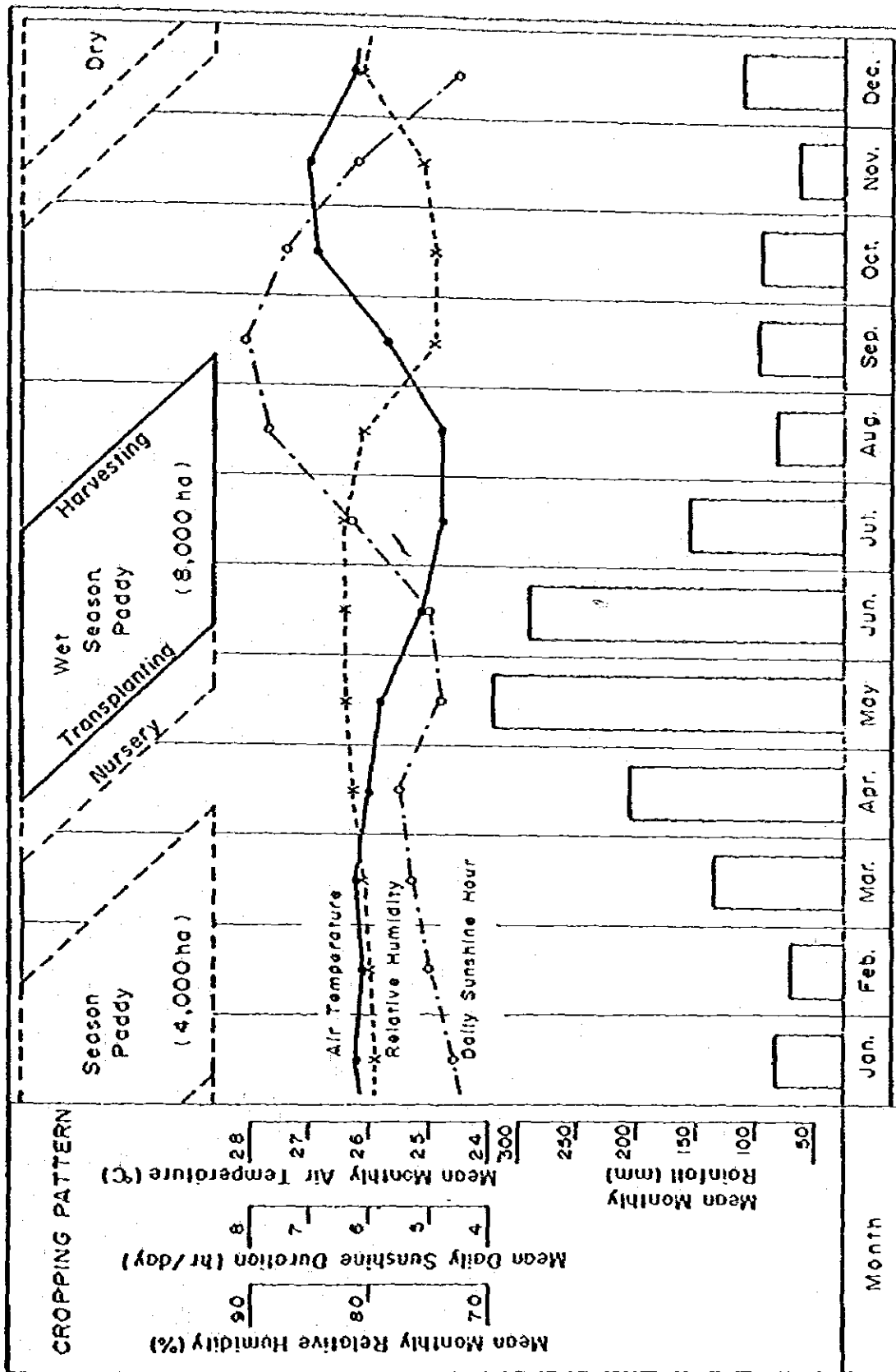


图 5.1 計劃作付表

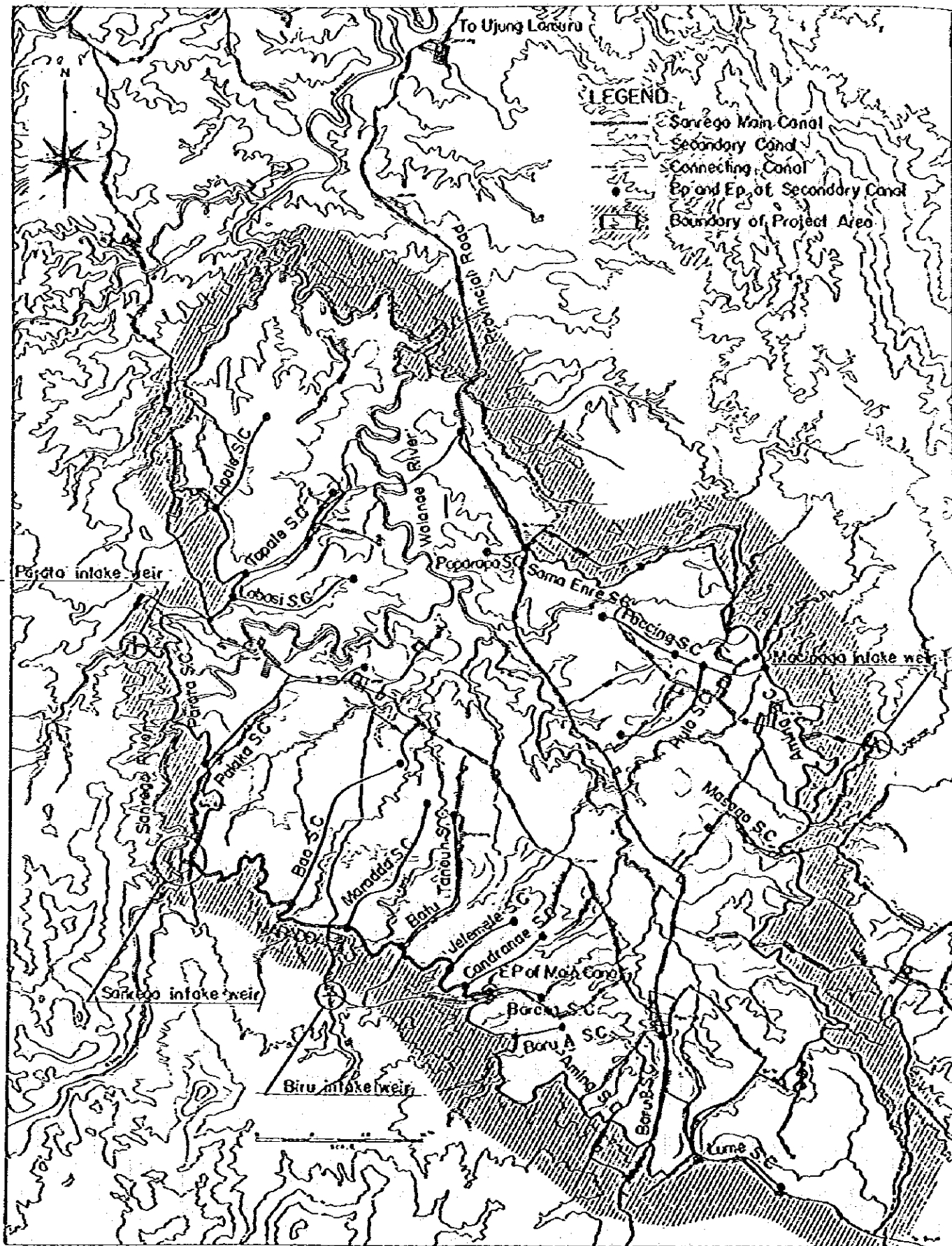


図 5.2 かんがい水路組織図

Description	1981/82		1982/83		1983/84		1984/85		1985/86		1986/87		1987/88		1988/89			
	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7		
I. Engineering Services																		
1. Detailed Design	4	6	8	10	12	2	4	6	8	10	12	2	4	6	8	10	12	
2. Construction Supervision	5	7	9	11	1	3	5	7	9	11	1	3	5	7	9	11	1	3
II. Construction																		
1. Land Acquisition																		
2. Preparatory Works																		
3. Sanrego Intake Weir																		
4. Main Canal System																		
5. Secondary Canal System																		
6. Small-Scaled Intake Weirs on Tributaries																		
7. Farm Road Network																		
8. Tertiary Development																		
9. Reclamation Works																		
10. Purchase of O & M Equipment																		

P/O & Tendering (I.C.B.)

Excavation of Coupure Channel, Construction of Intake Weir and Closing Dike without Loan

Note: I.C.B. = International Competitive Bidding

图 5.3 專案實施計畫圖

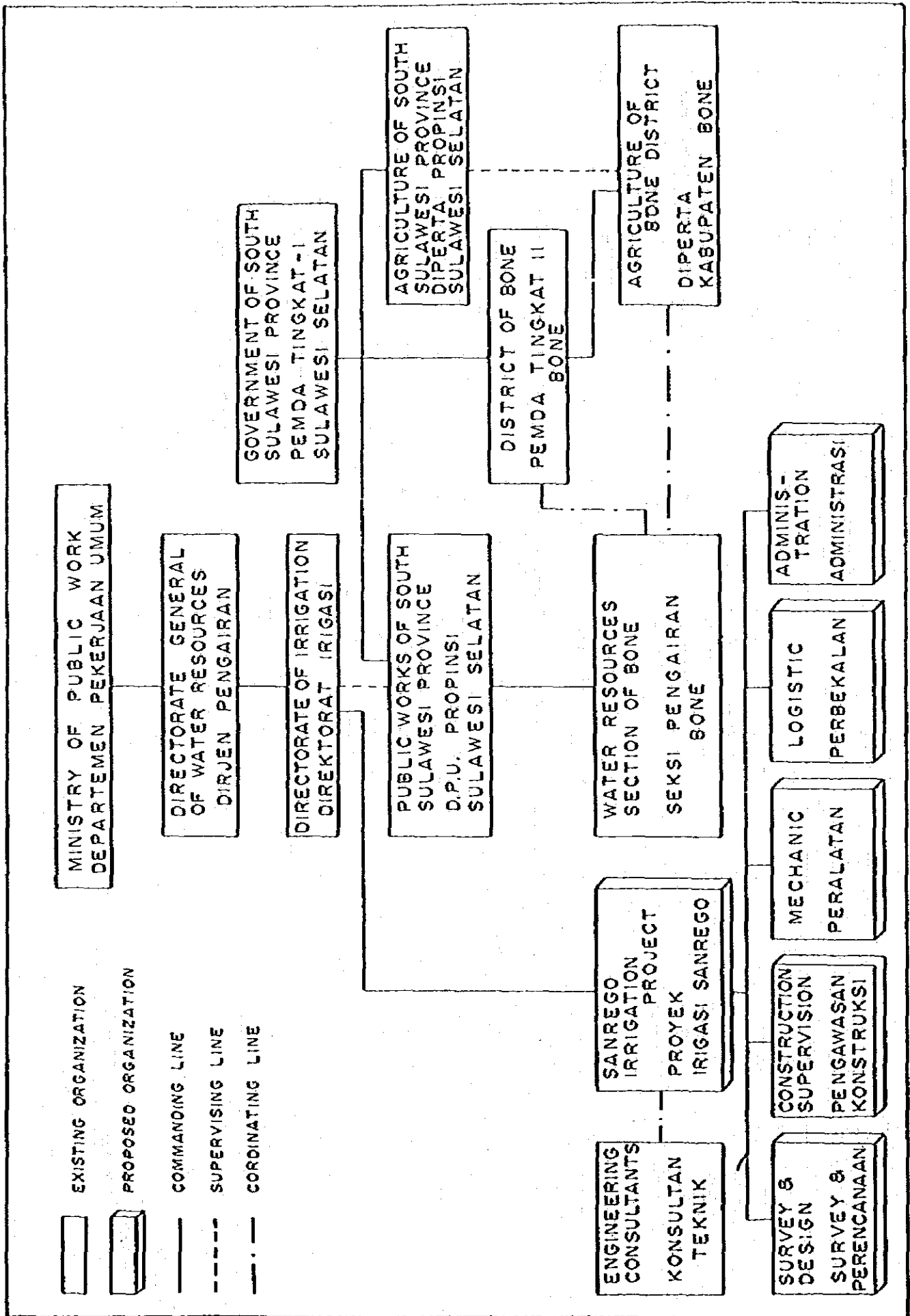


图 6.1 灌溉工程组织

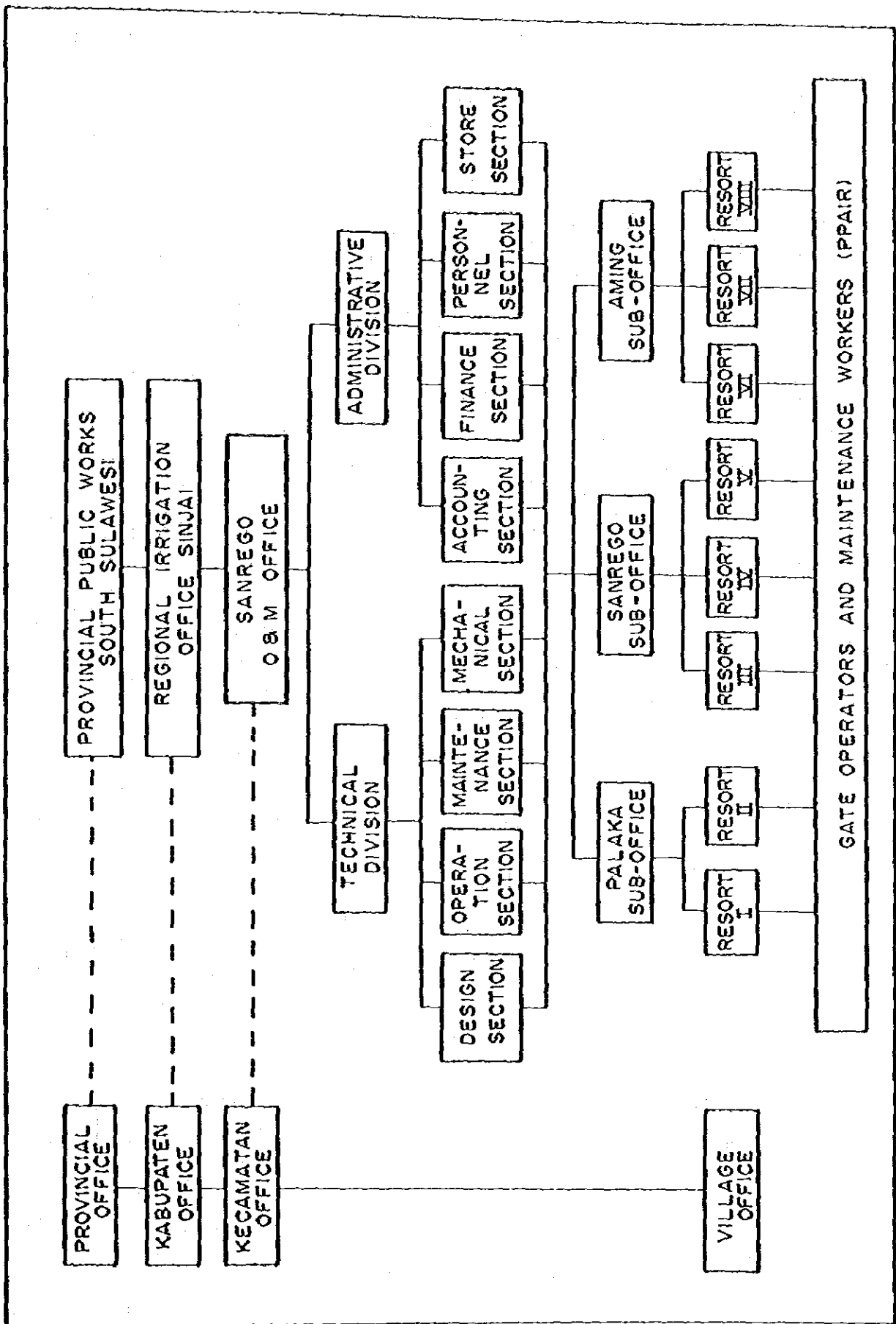


图 6.2 維持・管理組織

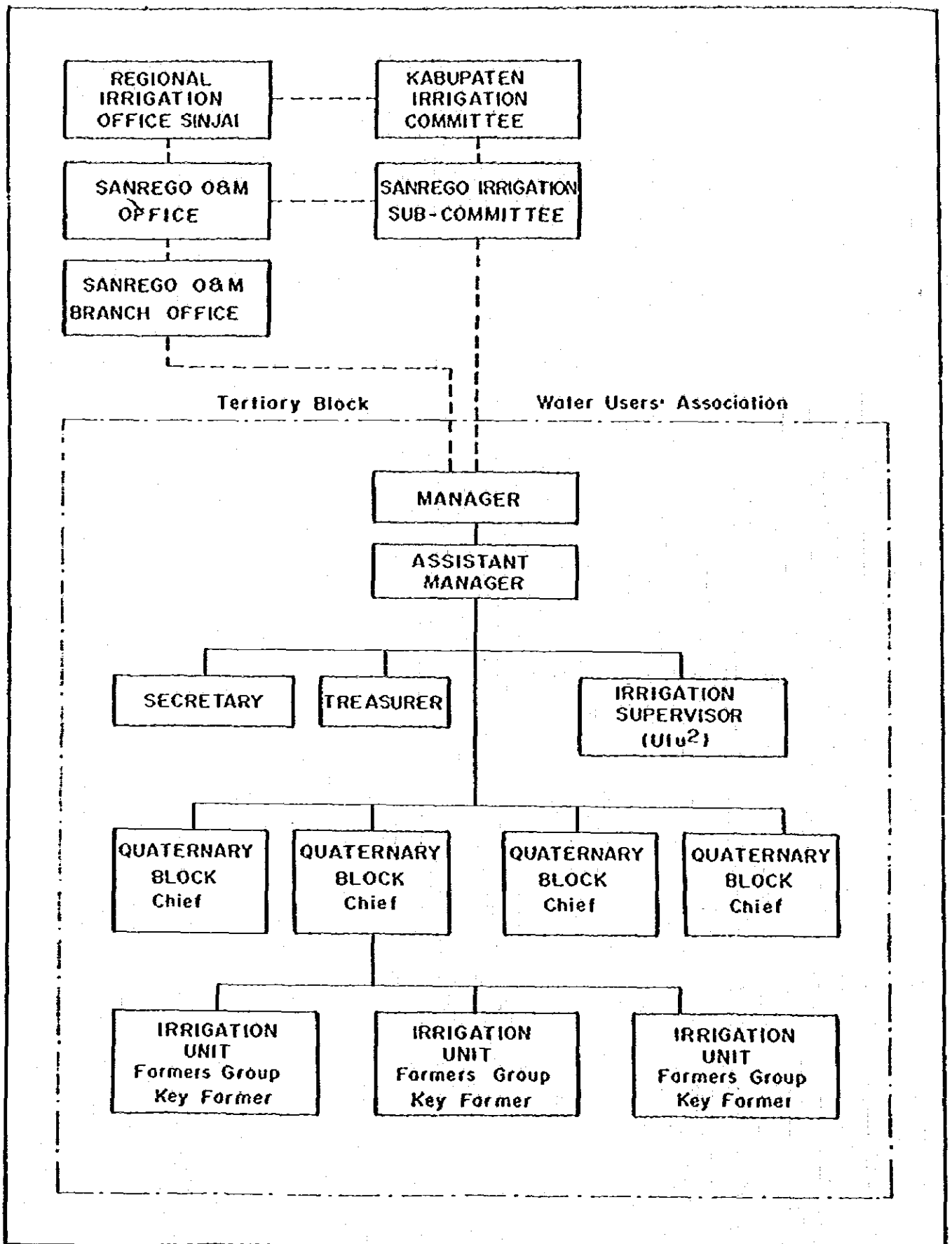


图 6.3 水利組合

付録-1 SCOPE OF WORKS

I. INTRODUCTION

In 1978 the Government of Japan dispatched the survey team to Indonesia to prepare the master plan for the Central South Sulawesi Water Resources Development Project with principal emphasis on irrigation, flood control and inland fisheries development. The study in the master plan identified irrigation development potential for the land of eighty-one thousand (81,000) hectares, the necessity of the flood control in the irrigation development area and hydropower potential of the Walanae River. It is concluded in the study that promising nine (9) development projects including irrigation, flood control, multi-purpose dam and their compound projects are proposed to be implemented for national and regional economic development and raising public welfare for the people in the Central South Sulawesi. As a result of the study, the high priority is given to the agricultural development in the upper area of the Walanae River Basin.

In accordance with the results of the previous studies and also considering the earnest request from local people, the Government of Indonesia (hereinafter referred to as "the Government") has decided to promote the realization of the Sanrego Irrigation Project (hereinafter referred to as "the Project") as the initial step of the development of the region and requested the Government of Japan the technical assistance for the feasibility study on the Project.

In response to the request of the Government, the Government of Japan has decided to offer the technical services of the Japanese Experts Team (hereinafter referred to as "the Team") for feasibility study on the Project as a part of the technical cooperation of the Government of Japan.

Japan International Cooperation Agency (JICA), the government agency responsible for execution of the technical cooperation program, will be the executing agency for the feasibility study on the Project.

This document presents the scope of works for the feasibility study to be conducted by the Team in close cooperation with the authorities concerned of the Government.

II. OBJECTIVE OF THE STUDY

The objective of the study will be:

- (1) to verify the technical and economic feasibility of the Project, and
- (2) to undertake on-job training and transfer of knowledge of the Indonesian counterparts in the course of the survey and study.

III. OUTLINE OF THE STUDY

3.1 The Study Area

The study area is about ten thousand (10,000) hectares of land lying along the Walanae and the Sanrego rivers, which was covered by the master plan for the Central South Sulawesi Water Resources Development Project.

3.2 Scope of Works

The scope of works to be carried out will be divided into four stages as mentioned below:

- (1) Topographic Mapping
- (2) Preparatory Works
- (3) Field Works and Office Works in Indonesia
- (4) Home Office Works

3.2.1 Topographic Mapping

Topographic maps on scales of 1:25,000 and 1:5,000 are available for the investigation and study. The study should be supported with aerial photo interpretation and field checking of the maps.

In addition, orthophoto maps on a scale of 1:5,000 shall be produced for the irrigation system planning.

3.2.2 Preparatory Works

The preparatory works will be covered by collecting the data and information concerned such as:

- | | | |
|----------------|--------------|----------------|
| a. Topography | b. Hydrology | c. Meteorology |
| d. Agriculture | e. Soil | f. Geology |

3.2.3 Field Works and Office Works in Indonesia

The activities will comprise the following:

- (1) Collection and review of the data on investigation and design conducted by the Government in addition to the data collected through the previous studies such as:
 - a. Topographic maps and survey results
 - b. Geology
 - c. Soil mechanics
 - d. Hydrology and meteorology
 - e. Agriculture

- f. Regional economy and agricultural institution
 - g. Present design of facilities
- (2) Execution of the field investigation and survey including:
- a. Topographic survey to check and confirm the present design of canals and structures and additional survey required for:
 - irrigation canal routes
 - major structure sites of the Project
 - b. Ground control survey (both horizontal and vertical) to produce the orthophoto map
 - c. Water requirement survey
 - d. Soil survey
 - soil profile survey
 - physio-chemical analysis for representative soils
 - preparation of soil and land capability maps
 - e. Agriculture and agro-economic survey
 - farm budget survey for representative farmers
 - preparation of land use map
 - analysis of present farming practice and production, and existing institutional support systems
 - f. Relevant investigation for irrigation, drainage and farm road planning
 - present conditions of irrigation, drainage and road in the Project area
 - inventory survey of the irrigation facilities provided so far in the project area
 - g. Geological and soil mechanical investigation on canal routes and major structure sites
 - h. Construction material survey
 - availability and quantities of concrete aggregates, masonry, embankment materials and other construction materials
 - i. Upper watershed management

- (3) Execution of the analysis and the study:
 - a. Establishment of cropping pattern and improved irrigation farming practice and assessment of farmers' economy
 - b. Assessment of irrigation water requirements and water availability of the Sanrego River and the other tributaries, and water balance
 - c. Technical review of the present design of head work, canals, and related structures, and of on-going construction works
 - d. Delineation of the irrigation area
 - e. Project formulation
 - f. Cost estimate of the Project
 - g. Project benefit
 - h. Preparation of the implementation schedule, and
 - i. Economic and financial evaluation
- (4) On-job training of the Indonesian counterparts in the course of the field works.

3.2.4 Home Office Works

The home office works will comprise the following:

- (1) Preparation of the orthophoto maps
- (2) Finalization of the feasibility report, and
- (3) Transfer of knowledge and technology to the Indonesian counterpart in the course of the home office works

IV. WORKING SCHEDULE

The working schedule is shown in the attached sheet. To carry out the study, the Government of Japan will dispatch the experts for the following specialities.

- (1) Project planning
- (2) Irrigation and drainage design
- (3) Structural design
- (4) Pedology
- (5) Agronomy/Agro-economy
- (6) Soil mechanics/Geology
- (7) Hydrology

- (8) Construction engineering
- (9) Topographic survey
- (10) Orthophoto map preparation
- (11) Specialists as required

V. REPORTS

The following reports will be prepared and submitted to the Government.

5. Inception Report

Thirty (30) copies in English within one (1) month after the commencement of the preparatory works in Indonesia, presenting the inception approaches to the project planning, the proposed plan of operation, survey method and criteria, etc.

5.2 Interim Report

Thirty (30) copies in English at the end of the field works, presenting the findings of field investigations the results of analysis and study at the site and the tentative conclusion of the project formulation.

5.3 Draft Final Report

Thirty (30) copies in English within three (3) months after the end of the field works, presenting the proposed project formulation based on the office works.

5.4 Mapping Report

Thirty (30) copies of mapping report in English and orthophoto maps (1 set duplicable film/paper and 2 sets of printed paper) at the same time of submitting the Draft Final Report.

5.5 Final Report

Fifty (50) copies in English within two (2) months after receiving the comments of the Government on the Draft Final Report, consisting of executive summary report, main report, supporting report, drawings/maps, and ten (10) copies of data book.

VI. UNDERTAKINGS OF THE GOVERNMENT

For the purpose of the study, the Government is requested to:

- (1) provide for the Team necessary entry and exit visa, resident and works permit, and travel permit for their stay in Indonesia and to arrange the usual procedure to the Kabupaten office,
- (2) facilitate the customs clearance of any equipment, materials and supplies required for the field works and of the personal effects of the survey team,
- (3) exempt the members of the Team from income tax and any kind of charges imposed on the instruments, equipment and materials required for the field works and on the personal effects of the members,
- (4) allow the Team to take all data and materials concerned out of Indonesia according to the security regulation of the Government and return after use,
- (5) provide for the Team suitable office space with equipment and utencils for the experts in Ujung Pandang and at the job site,
- (6) arrange the lodging facilities to accommodate the experts in Ujung Pandang and at the job site,
- (7) provide for the Team five (5) vehicles with drivers according to the expert assignment schedule without charging any cost to the Team and arrange additional vehicles during the peak period,
- (8) provide for the Team of available documents such as drawings, maps, statistics, data and information concerning the study,
- (9) provide the counterparts with their facilities (houses and vehicles) to cooperate and assist for the survey team during the study period,
- (10) provide for the Team additional topographic surveyors with their facilities (houses and vehicles) to assist the Team timely in accordance with the finding and necessity of the field check survey,
- (11) provide for the Team other materials required for the execution of the field works,
- (12) carry out the following investigations and laboratory tests:
 - a. geological investigations of major structure sites
 - b. chemical and mechanical analysis of the sampled soil and construction materials taken from the project area
 - c. water quality analysis on the check items
 - d. hydrological observation at the sites

- (13) arrange the required numbers of labourers for carrying out the field works,
- (14) secure the Japanese Team members and their reported properties against injury and damage except for the damages arising from the willful misconduct or gross negligence of the members during their stay in Indonesia, and
- (15) arrange for the Team medical services during their stay in Indonesia, if necessary.




VII. UNDERTAKING OF THE GOVERNMENT OF JAPAN

For the purpose of the study, the Government of Japan will:

- (1) send the Team to conduct the study,
- (2) undertake on the job training and transfer of knowledge to the Indonesian counterparts during the period of the survey and study by the Team as well as by the advisory group,
- (3) prepare the equipments necessary for the execution of the field works,
- (4) bear the charge of accommodation for the Team, and other necessities arranged by the Government,
- (5) provide orthophoto maps (including necessary ground control survey) of the Sanrego irrigation area covering about 170 km² on scale of 1:5,000, and
- (6) transfer of knowledge and technology to the Indonesian counterpart in the course of the home office works.

Work Item	1982					1983					
	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.
1. Topographic Mapping											
2. Preparatory Works											
3. Field Works and Office Works in Indonesia											
4. Home Office Works											
5. Explanation & Discussion O.F.R.											
6. Study & Preparation Comments for O.F.R. by the Government											
7. Submission of Reports											
8. Advisory Group Visit to Indonesia											

(Remarks)

 : In Indonesia
 : In Japan
 : activity by the Government

Inc. R. : Inception Report
 Int. R. : Interim Report
 O.F.R. : Draft Final Report
 F.R. : Final Report
 M.R. : Mapping Report

作 業 工 程

付録一 作業監理委員、調査団およびカウンターパート名簿

1. ADVISORY COMMITTEE

- | | | |
|---------------------|---------------------|---|
| (1) Leader | Mr. Shin NAGAO | Deputy Director of Land Reclamation Division, Agriculture and Fisheries Department, Hokkaido Development Bureau, Hokkaido Development Agency. |
| (2) Agro-Economy | Mr. Seifichi KONDO | Deputy Director of Land Development Division, Agriculture and Fisheries Department, Hokkaido Development Bureau, Hokkaido Development Agency. |
| (3) Irrigation | Mr. Kenzo TAKEUCHI | Chief Irrigation Engineer of Investigation and Research Development, The Japanese Institute of Irrigation and Drainage. |
| (4) Agronomy | Mr. Kiyoshi SAKAI | Deputy Director of Natural Resources Division, Planning Department, Kyushu Regional Administration Bureau, Ministry of Agriculture, Forestry & Fisheries. |
| (5) Project Economy | Mr. Shigeru TAKEDA | Deputy Manager of Second Technical Appraisal Division, Economic Research & Technical Appraisal Department, The Overseas Economic Cooperation Fund. |
| (6) Coordination | Mr. Koji INOUE | Officer of Technical Affairs Division, Agricultural, Forestry & Fisheries Planning & Survey Department, Japan International Cooperation Agency. |
| (7) Coordination | Mr. Teruhisa TAJIRI | Officer of Technical Affairs Division, Agricultural, Forestry & Survey Department, Japan International Cooperation Agency. |

2. JICA STUDY TEAM

(1) Team Leader	Mr. Tadashi SAKAMOTO
(2) Deputy Team Leader/ Irrigation & Drainage Planner	Mr. Takeshi KAWAGUCHI
(3) Irrigation & Drainage Design Engineer	Mr. Kiyotaka MIZUSHIMA
(4) Agronomist/Agro-Economist	Mr. Fumihiro NAGAO
(5) Structural Design Engineer	Mr. Kiyoshi SHINOZAKI
(6) Pedologist	Mr. Naoki ARIGA
(7) Soil Mechanical Engineer	Mr. Masahiro YAMAGUCHI
(8) Geologist	Mr. Kazuo CHOSHI
(9) Hydrologist	Mr. Takashi KURAUCHI
(10) Construction Planner	Mr. Yoshimitsu YUKAWA
(11) Survey/Design Engineer	Mr. Teruo KAJIMOTO
(12) Survey/Design Engineer	Mr. Kenichiro KONDO

3. COUNTERPARTS

P3SA, SUL-SEL.

(1) Chief Counterpart	Ir. Abd. Yantabin
(2) Chief Counterpart	Ir. Syamsul Arida
(3) Irrigation Planner	Ir. Purwoko
(4) Irrigation Planner	Mr. Kamrin
(5) Irrigation Design Engineer	Ir. Djoko Santoso
(6) Irrigation Design Engineer	Mr. Suharman Mattone
(7) Agronomist/Agro-Economy	Drs. Syafiuddin
(8) Agronomist/Agro-Economy	Miss. Syamsiah Ras
(9) Structural Design Engineer	Ir. Supriya Triwayana
(10) Structural Design Engineer	Mr. Amrullah
(11) Soil Mechanical Engineer/ Construction Planner	Ir. Islamuddin
(12) Geologist	Mr. Sriyatno BE
(13) Hydrologist	Drs. Suwarno
(14) Hydrologist	Mr. Syamsul Qamar
(15) Survey/Design Engineer	Mr. Abd. Wahab
(16) Survey/Design Engineerr	Mr. Abd. Rauf
(17) Survey/Design Engineer	Mr. Abd. Rasyid
(18) Survey/Design Engineer	Mr. Arifin

P.T. DACREA

- | | |
|--|--------------------------|
| (1) Chief Counterpart | Mr. Ramly Sjarief BE |
| (2) Irrigation Planner | Mr. Benny Rahim BE |
| (3) Irrigation Design Engineer | Mr. Andrias Parabang BE |
| (4) Agronomist | Ir. Meagaung A. Daud |
| (5) Agro-Economist | Ir. Agnes D. Rampisela |
| (6) Structural Design Engineer | Mr. Benyamin G. Rombe BE |
| (7) Pedologist | Ir. Idham Hasib |
| (8) Soil Mechanical Engineer | Mr. Moh. Husni Thamrin |
| (9) Hydrologist/
Construction Planner | Mr. Frans Rahmat BE |
| (10) Survey/Design Engineer | Mr. Harjono |
| (11) Survey/Design Engineer | Mr. Hengky |

JICA

