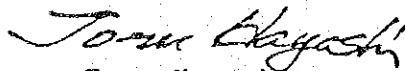
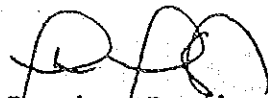


MINUTES OF MEETING
MUNICIPAL WATER SUPPLY PROJECT STUDY

Manila, June 18, 1986



Toru Hayashi
Study Team Leader
Japan International
Cooperation Agency



Borthos P. Alma Jose
Administrator
Local Water Utilities
Administration

MINUTES OF THE MEETING

A series of meeting between the JICA study team and LWUA officials regarding the Phase II Study Program for the Municipal Water Supply Project were held from June 9 to June 18, 1986 to confirm the placement of the Progress Report, scope of work and schedule of implementation of the study. Also discussed during the meeting were undertakings by both parties and approaches to the Phase II Study.

The following are the items agreed upon:

1. Progress Report

The study team submitted ten (10) copies of the Progress Report to LWUA on June 8, 1986.

2. Contents of the Phase II Study

2.1 Plan of Water Supply System

A plan of water supply system for the years 2010 and 1995 shall be prepared showing relationship of the major facilities and shall be incorporated in the Final Reports.

2.2 Basic Development Plan

The Basic Development Plan (2010) is recommended in the Progress Report as a result of the alternative study including potential water sources and required facilities. Supplemental description and schematic drawings will be prepared. Cost comparison between alternatives will be made based on the present cost.

2.3 Short Term Development Plan

The water supply system for the immediate improvement (1995) should be planned considering the relation to the Basic Development Plan.

2.4 Hydraulic Calculation

Hydraulic calculation on the recommended water supply system should be carried out.

2.5 Target Year

The target year for the immediate improvement is 1995. Required study for the fundamentals will be made for the year 1986 (base year), 1995 (immediate improvement) and 2010 (long term development), respectively. Implementation schedule for the year 1990 may also be included as the stage 1 of the immediate improvement program.

J.H.

A

M

2.6 Design Criteria

Design criteria for feasibility study should follow the LWUA guidelines. To some extent, however, alternatives may be accepted if reasons are justifiable.

2.7 Composition of Reports

Composition of Interim Report and Draft Final Report will be finalized through the discussion between the Study Team and LWUA during the Phase II Study period.

3. Arrangement for Phase II Study

3.1 Land acquisition for Test Well Sites

LWUA shall at its own expense, be responsible for the land acquisition for test wells prior to the scheduled test well drilling.

3.2 Preparation for Drilling Equipment

In accordance with the Minutes of Meeting between JICA and LWUA dated October 23, 1985, LWUA shall at its own expense, be responsible for the provision of equipment for test well drilling.

One drilling rig shall be provided within the month of June, and another one beginning July.

Test well drilling in the three study areas shall be completed within the Phase II Study period.

3.3 Safekeeping of Materials for Test Wells

LWUA shall be responsible for safekeeping of materials for test wells which are supplied by JICA.

3.4 Field Survey

1. Schedule of the LWUA Engineers

Required arrangements be made by the LWUA according to the following schedule:

Rodolfo Oamil	:	6/16 - 7/15 (Angeles City)
Allen Lowe	:	7/16 - 8/15 (Cabuyao, Sta. Rosa, Biñan)
Abelardo Buencamino	:	6/16 - 7/13 (Dagupan)
Melchor Casil	:	7/13 - 8/16 (Bayombong & Solano)

Schedule for the two hydrogeologists will be decided after making arrangement of drilling machine.

J.H.

2. Living allowance and travel cost for LWUA Engineers

LWUA is responsible for LWUA Engineer and well drillers.

In accordance with the schedule, they may work on Saturday/Sunday, if necessary.

3. Vehicle arrangement

Land Cruiser : LWUA will provide a vehicle (Land Cruiser) for the survey in Dagupan and Bayombong and Solano from June 16 (Mon) to August 15, 1986.

4. Preparation of road map for Cabuyao, Sta. Rosa and Biñan.

LWUA (Allen) will prepare and confirm (in the area) the road network for the subject area planned in the progress report. Aerial photograph be utilized for this purpose. This work should be completed by the beginning of July.

3.5 Market Survey

LWUA shall conduct the Market Survey for Angeles City on the third week of June.

3.6 Water Quality Analysis

Necessary arrangements for water quality analysis will be made at the LWUA laboratory or other institutions.

3.7 Electric Logging Equipment

LWUA will provide the study team with a set of electric logging equipment.

3.8 Data on Unit Cost

LWUA shall assist the study team in the collection of necessary data for unit cost.

S.H.

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MM

22 September 1986

MINUTES OF AGREEMENT BETWEEN LWUA AND JICA

Discussions on the Interim Report and the requirement for completion of the Draft Final Report were made between the two parties (JICA and LWUA) from September 18 to 22, 1986. Fundamentals for planning water supply system for the four study areas and basic approach/figures which were incorporated in the Interim Report were agreed upon discussions. In addition, the following major subjects were confirmed by the two parties:

(1) Completion of Test Well Construction

The scheduled test well construction at the three sites, Dagupan, Angeles, and Sta. Rosa is behind schedule due to the delay of procurement of well drilling equipment, repair of broken equipment, land acquisition for test well sites as well as unfavorable weather.

Under these circumstances, the parties agreed that LWUA will make all efforts to catch up with the delay of construction.

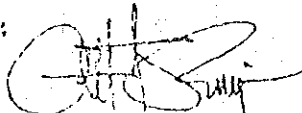
(2) Draft Final Report

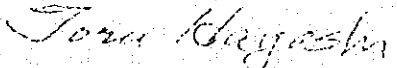
The major items to be included in the report are as follows:

- Chapter 1 Summary and Recommendations
- Chapter 2 General Background
- Chapter 3 Description of the Study Area
- Chapter 4 Existing System
- Chapter 5 Population and Water Demand Projections
- Chapter 6 Water Resources
- Chapter 7 Analysis and Evaluation of Alternatives
- Chapter 8 Recommended Plan
- Chapter 9 Financial Feasibility Analysis
- Chapter 10 Economic Feasibility Analysis
- Chapter 11 Organization and Management Study

Drawings to be prepared comprise general plan and standard drawings for major facilities.

Noted:


ALFREDO B. ESPINO
Planning Manager


TORU HAYASHI
Team Leader - JICA

MINUTES OF MEETING
MUNICIPAL WATER SUPPLY PROJECT STUDY

Manila, December 8, 1986

Toru Hayashi

Toru Hayashi
Study Team Leader
Japan International
Cooperation Agency

P. Alma Jose

Porthos P. Alma Jose
Administrator
Local Water Utilities
Administration

MINUTES OF THE MEETING

A series of meeting between JICA survey team and LWUA personnel regarding the Draft Final Report on Municipal Water Supply Project were held during the period December 2 to December 8, 1986 to present the report on the study and confirm its contents.

From Chapter 2 to Chapter 5, i.e., General Background, Description of the Study Area, Existing Water Supply and Sanitation Conditions, and Population and Water Demand Projections, no problem was noted since the contents of these chapters have already been discussed and concurred by both parties at the time the Progress Report and Interim Report were submitted.

The major items to be revised/supplemented are as follows:

Technical Aspect

1. Alternative study of transmission/distribution pipeline system

. Staged construction of pipeline:

An economic evaluation of staging construction of transmission and distribution mains will be studied and presented in the report. Two phases of construction should at least be considered taking into consideration the following recommended construction Phases:

Phase I	-	(1989-1995)
Phase II	-	(1996-2010)

. Alternative of pipeline routes: If there are available roads, 2 alternatives will be studied for major main routes. Others will be discussed and cancelled.

. Economic cost comparison

As per request of LWUA, economic evaluation will be made for the discount rate of 12 percent. The estimation using the rates of 10% and 15% will also be made for reference purpose.

2. Hydraulic calculation for the distribution network. The computation results of alternative and recommended distribution system will be incorporated in the Appendix.

3. Review and revise/supplement the alternative study, Chapter 7 with reference to the presentation.

4. Preparation of implementation schedule using bar-chart. Based on the implementation program shown in the Draft Final Report, bar-chart showing construction period by phase will be prepared for major facilities. That for Phase II is roughly prepared.

5. Preparation of a plan of water supply facilities showing the differences of construction phases. The scale of the plan may be approximately from 1/20,000 to 1/25,000.

6. Cost estimates

Required cost for the services of leakage detection and for repair/replacement of existing pipes and accessories will be added under the following conditions:

a) Old laterals: The subject length of the pipeline is 10-30% of the total length of existing laterals. Unit cost is that for new construction.

b) Service Connections: Required cost is estimated based on the unit cost given below

{ P850 (material) + labor cost } x No. of existing connections

c) Cost for leak detection: P240/connect x No. of existing connections

7. Study of economical sizing of pump transmission mains.

Financial Aspect

1. Financial scheme should not include government grant since the policy of the LWUA changed two months ago. The soft loan may be utilized to supplement regular loan. LWUA can extend soft loans up to a maximum of 50% of the total project cost.

A certain percent of Water District equity to the total construction cost may be considered depending on the ability-to-pay of the W.D.

2. Per latest policy Engineering cost is computed as a fixed percentage of estimated construction cost (ECC). ECC is equal to the summation of basic construction cost, physical contingencies and price contingencies. The percentages are:

ECC \leq P20M = Engineering cost is 13% of ECC

ECC $>$ P20M = Engineering cost is 10% of ECC

Construction supervision is 4% of ECC

3. Debt service table

a) Standard procedure = Regular loan can finance disbursements for the first four (4) years and soft loan for the next 4 years. However, the combination of the two types may be adopted.

b) Preparation of separate debt service tables for regular loan and for soft loan.

4. Preparation of a table for unescalated O & M costs

5. Equivalent volume of water sold

- Water consumption for the first 10 cu.m will be calculated using the total number of domestic connections and 10 cu.m/connection

- Range of water consumption maybe as follows:

- 1) First 10 cu.m,

- 2) 11-20

- 3) 21-35

- 4) over 35

The present percentages for the ranges from 11 cu.m to over 35 cu.m will be used for the calculation of the total equivalent volume.

6. Financial Internal Rate of Return (FIRR) computation

In conformance with LWUA procedure FIRR will be computed based on the total investment not just the portion funded by WD equity to measure the efficiency of the project as a whole.

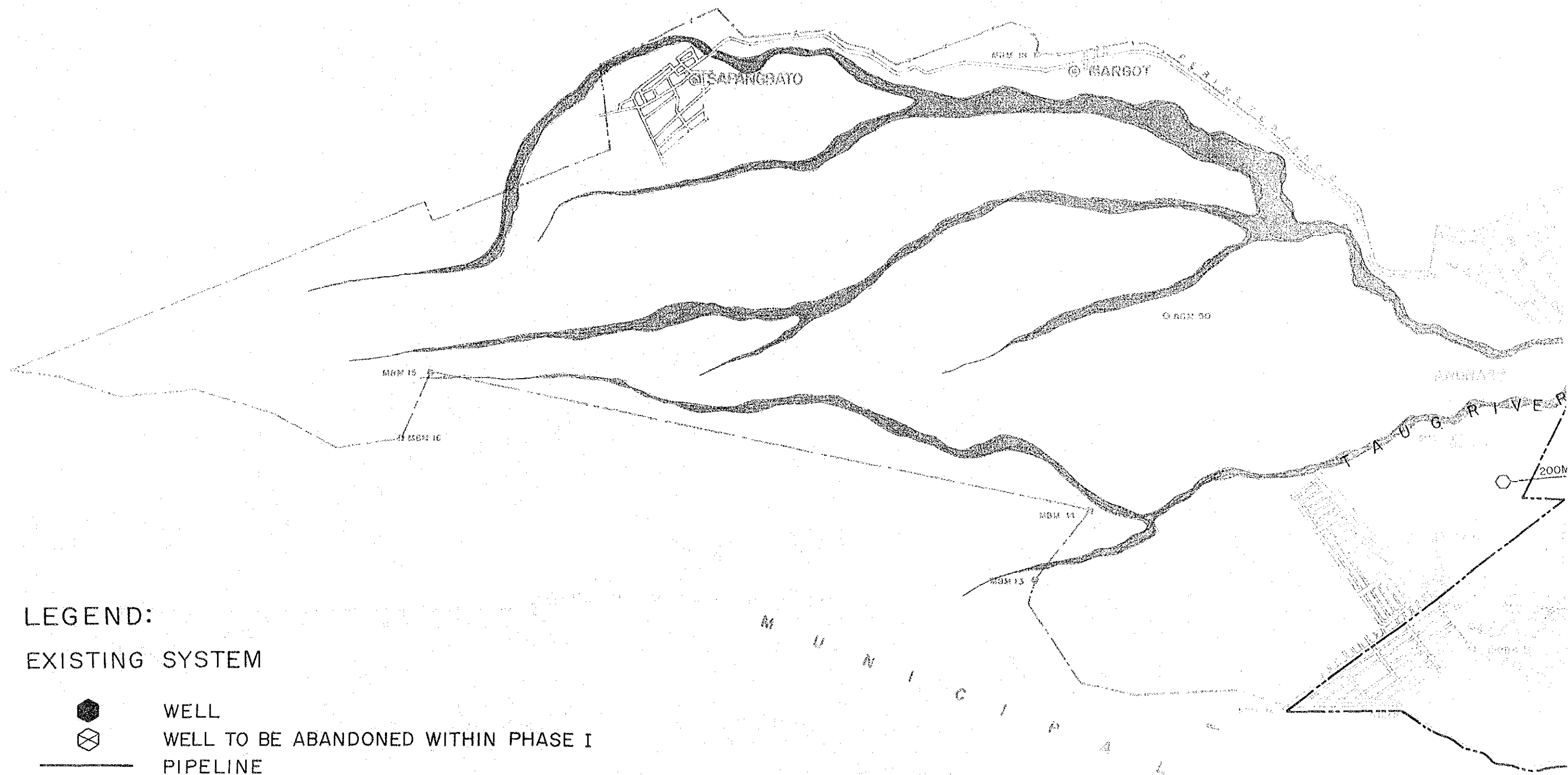
The FIRR may at least be equal to the weighted average of the interest rates of the loans (regular and soft loans). The period for this analysis can be extended (20 to 40 years).

7. As per LWUA standards, fifteen (15%) percent inflation rate is used.

8. Economic Analysis

In consideration of the characteristics of the project, IERR may be lower than the desired level.

C L A R K A I R B A R R I E R



LEGEND:

EXISTING SYSTEM



WELL

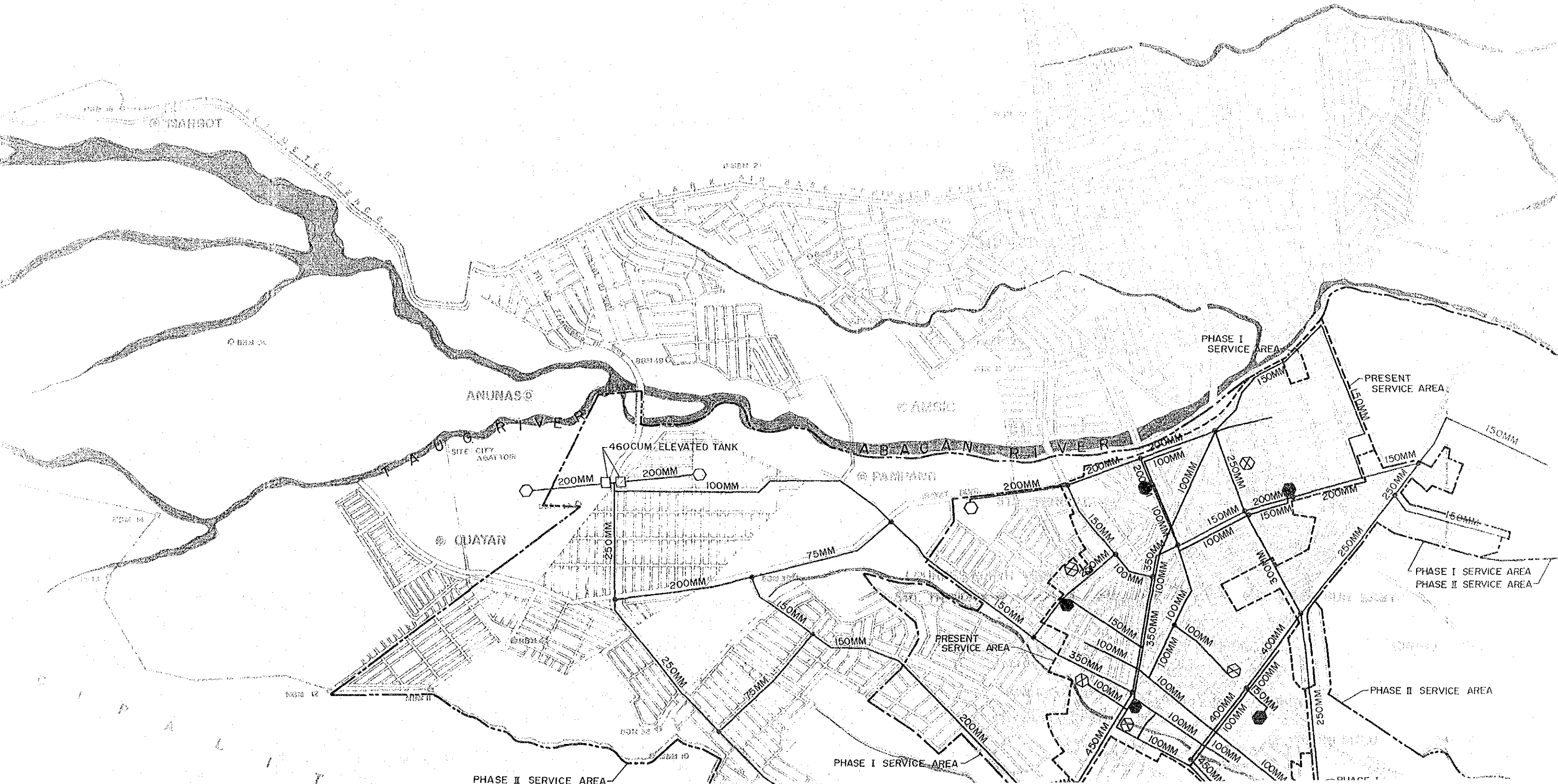


WELL TO BE ABANDONED WITHIN PHASE I



PIPELINE

R B A S E



PHASE II SERVICE AREA

PHASE I SERVICE AREA

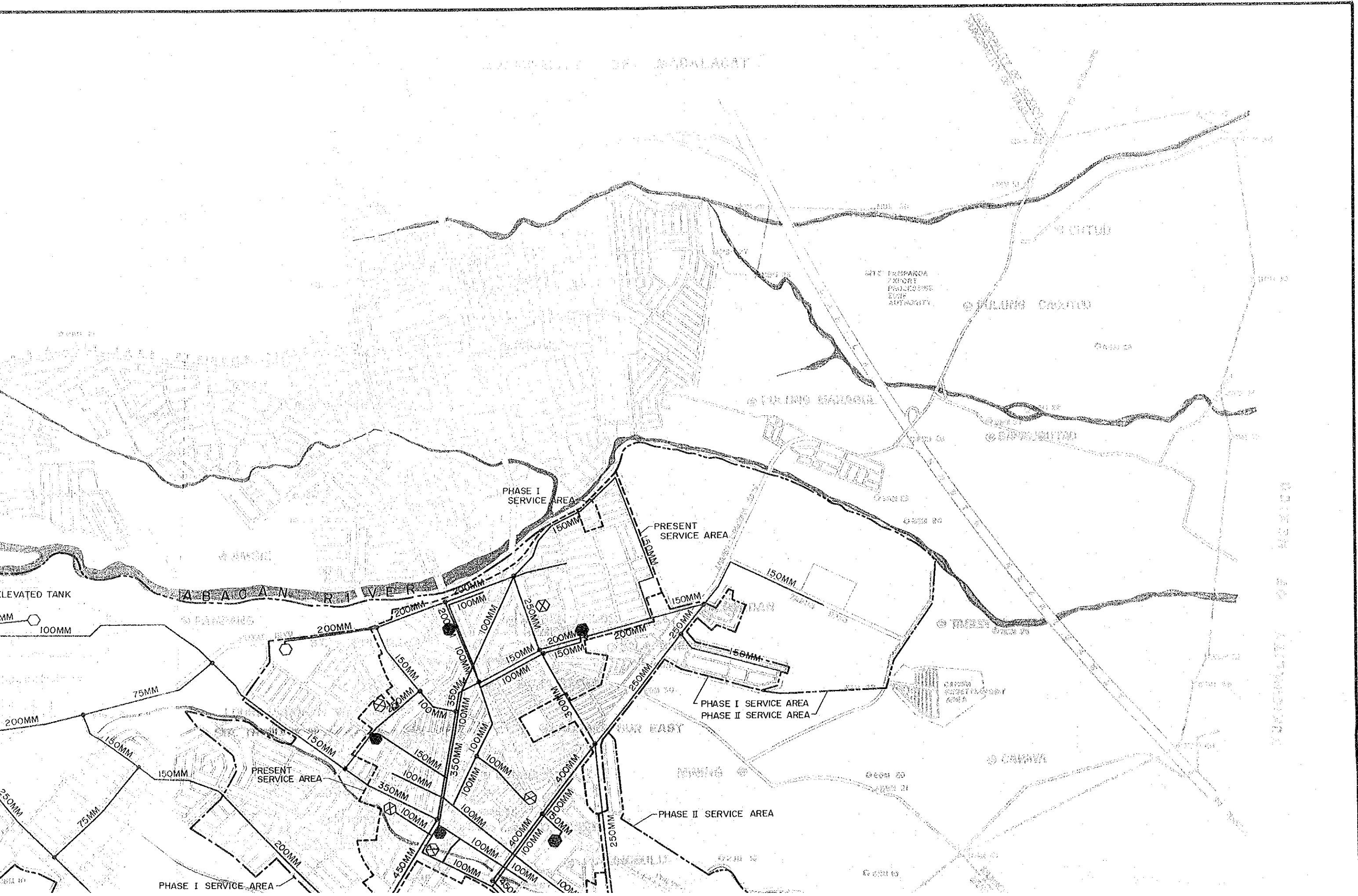
PHASE I SERVICE AREA

PRESENT SERVICE AREA

PHASE I SERVICE AREA
PHASE II SERVICE AREA




PHASE II SERVICE AREA

COMMUNITY OF ABALAGAT







LEGEND:






EXISTING SYSTEM

-  WELL
-  WELL TO BE ABANDONED WITHIN PHASE I
-  PIPELINE


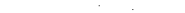

PHASE I PROJECT

-  WELL (2900CUM/D/WELL)
-  BOOSTER PUMP
-  RESERVOIR
-  PIPELINE

PHASE II PROJECT

-  WELL (2900CUM/D/WELL)
-  BOOSTER PUMP
-  RESERVOIR
-  ELEVATED TANK
-  PIPELINE

SERVICE AREA BOUNDARIES

-  PRESENT SERVICE AREA
-  PHASE I SERVICE AREA
-  PHASE II SERVICE AREA

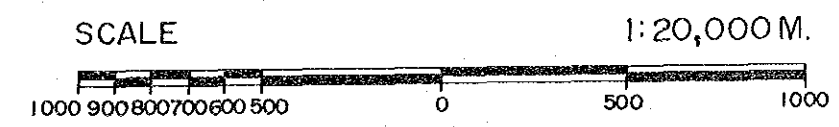
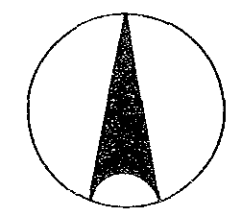
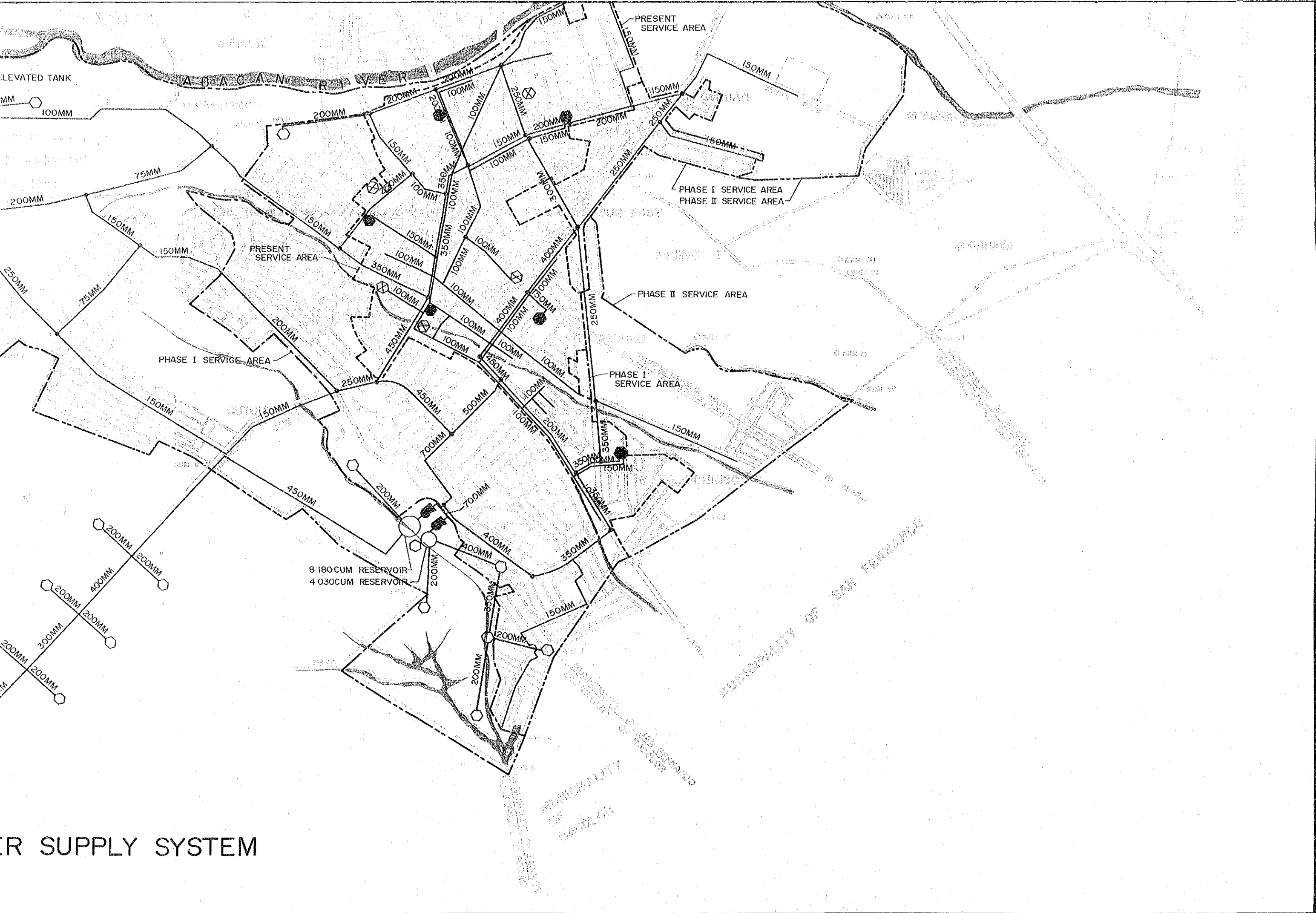


FIGURE 8.2.1
 GENERAL LAYOUT OF THE RECOMMENDED WATER SUPPLY SYSTEM
 ANGELES CITY, PAMPANGA
 MARCH 1987



WATER SUPPLY SYSTEM

JICA