

Appendix D COLLECTED DATA AND INFORMATION

I. Data on Natural Conditions

1) Meteorological data and information

- (1) Yearly record of temperature for each month at Chanthaburi station for past 2 years. (1979 - 1980)
- (2) Meteorological records in Chanthaburi Municipality. (1978 - 1980)
- (3) Total water-fall for each month (1979 - 1980)
- (4) Yearly record of wind conditions for each month at Chanthaburi station. (1976 - 1980)
- (5) Mean annual rainfall. (1951 - 1970)
- (6) Mean Maximum temperature. (1951 - 1970)
- (7) Mean monthly rainfall. (1951 - 1970)
- (8) Mean evaporation and mean relative humidity. (1951 - 1970)
- (9) Table of monthly hydrometric data in Chanthaburi province. (1975 - 1979)

2) Geological map

- (1) Hydrogeological map of the eastern part of Thailand. (1:250,000)
- (2) Hydrogeological map of Western, lower central and eastern Thailand. (1:500,000)

3) Topographic map

- (1) Topographic map of Changwat Chanthaburi, Changwat Rayong, Krong Khemarak Phoumin and Battambang at reduced scale of 1/250,000
- (2) Topographic map of Ban Bung chanang Klang (Ban Samroong), Amphoe Khao Saming (Ban Boo), Ban Khot Hoi (Tagad Ngao I), changwat Chanthaburi (Tagad Ngao II), and Amphoe Laem Sing (Laem Sing) at reduced scale of 1/50,000.
- (3) Topographic map of Khao Takrup, Khao Chamun, Ban Khun Song, Ban Noen Phun Sin and Ban Chan Khrem at reduced scale of 1/50,000.

- 4) Map of the model villages.
 - (1) Map of Toongbencha (village No.1)
 - (2) Map of Tagad-Ngao (village No.4)
 - (3) Map of Ban Bo (village No.5,6)
 - (4) Map of Ban Sam-Rong (village No.2)
 - (5) Map of Ban Sam-Rong (village No.8)
 - (6) Map of Ban Bo (village No.3)
 - 5) Map of major land uses
 - 6) Map of land use case studies
 - 7) Map irrigation (1974) and extension of states scheme Irrigated Area in Thailand 1907 to 1976.
 - 8) Topographic map of changwat Chanthaburi at reduced scale of 1/12,500.
2. Data on Planning and Designing
- 1) Plan of existing well facilities
 - (1) Plant layout of existing well facilities
 - (2) Plant layout of water intake facilities
 - 2) Layout plan of water supply in Chanthaburi city area
 - 3) Layout plan of Prapokklao Hospital Master plan
 - 4) New laboratory layout plan of Prapokklao Hospital
 - 5) Design criteria of Rural Water Supply
 - (1) The report of the community potable Water Project.
 - (2) Manual for small water supply facility
 - (3) Concrete Water Reserved-tank construction
 - 6) Well logging maps in Chanthaburi province
 - 7) Condition of ground water in Chanthaburi river area
 - 8) Water supply development in Thailand
 - 9) Memorandum of evaluation of well sites selected for A.D.B. Program.
 - 10) Preliminary Country Report for international drinking water supply and sanitation decade.

11) Population Report of villages in Chanthaburi province (1978)

12) Table control and Field villages in Chanthaburi province (1980)

3. Data on Work Performance

1) Memorandum March 25, 1977 Evaluation of Well Sites Selected for A.D.B. Program. Appendix VI-1

2) Memorandum May 29, 1977 Well site suitability Contract IAW-5. Appendix VI-2.

3) Well Inspection Forms. Appendix VI-3

4) Specification on Supply Well construction. Appendix VI-4

4. Data on Construction Cost

1) Raw materials cost in Chanthaburi province

2) Labour cost and transportation cost

3) Mechanical equipment cost in Chanthaburi and Bangkok

4) Estimation of deep well at Chanthaburi

5. Data on Operational System

1) Data forms on Well Operation and Maintenance. Appendix VI-5

2) Information of past periodical maintenance work.

Appendix E COLLECTED DATA FOR COST ESTIMATES

I. Materials and labour cost collected from construction company and work shop in Chanthaburi Province.

Materials

Cement (diamond label)		70	฿/50kg
" (tigar label)		60	฿/50kg
Brick	0.5 -	1	฿/pc
Gravel		210	฿/m ³
Sand		80	฿/m ³
Steel Bar			
2/8" (6.25mm)		20	฿/10m
3/8" (9.37mm)		42	฿/10m
4/8" (12.5mm)		75	฿/10m
5/8" (15.6mm)		120	฿/10m
6/8" (18.75mm)		185	฿/10m
Piping Materials			
PVC. 1/2"		35	฿/4m
1"		50	฿/4m
2"		80	฿/4m
3"		180	฿/4m
4"		370	฿/4m
Steel Pipe			
1/2"		100	฿/6m
1"		160	฿/6m
2"		310	฿/6m
3"		500	฿/6m
4"		720	฿/6m
Gate Valve			
1"		60	฿/pc
2"		120	฿/pc
3"		350	฿/pc
4"		600	฿/pc

Labour Cost

Steel Work (Ave. degree)	0.85 B/kg
Carpenter (Local labour)	50 B/day
(Ave. ")	70 B/day
(Chief ")	200 B/day
Civil Work (Local labour)	50 B/day
(Chief ")	200 B/day

II. General Estimates for water well construction quoted by Drillwng Company in Bangkok, December, 1980.

Cost of Drilling for 4" well, max. depth 100m
1,000B/m for soft formation
3,000 - 5,500 B/m for very hard formation

Cost of Materials

8" x 20' API casing	6,000 B/pc
4" x 20' API casing	3,000 B/pc
4" x 20' API steel slot	4,100 B/pc
4" x 10' API stainless	11,000 B/pc

III. Cost of Electric Power, Water Supply and Telecommunication

1. Metropolitan Electricity Authority

The Metropolitan Electricity Authority is generating and distributing agen of electricity for Bangkok, Nonthaburi and Samut Prakarn :

Monthly Power Rate

1.1 Power service for any business with a demand of 30 - 499 kilowatts.

A. Demand Charge :

Baht 98.00 per kw of billing demand

B. Energy Charge :

First 50 kwhr 0.9861 Bht/kwhr

Next 150 kwhr 0.9761 Bht/kwhr

Next 200 kwhr 0.9661 Bht/kwhr

Over 400 kwhr 0.9561 Bht/kwhr

1.2 Power service for any business with a demand of 500 kilowatts or over :

A. Demand Charge :

Baht 90.00 per kw of billing demand

B. Energy Charge :

First 200 kwhr 0.9761 Bht/kwhr

Next 280 kwhr 0.9661 Bht/kwhr

Over 480 kwhr 0.9461 Bht/kwhr

1.3 For those plants which require more than 1000 kilowatts of power, the applicant may apply for Off-Peak service. This service is available to those plants which either suspended or reduced their power load during the On-Peak hours (between 6.30 pm. and 8.30 pm.)

A. Off-Peak Period :

Demand Charge

Energy Charge

(billed per kilowatt) (billed per kilowatt)

65.00 Bht/kw

0.9361 Bht/kwhr

B. On-Peak Period :

Demand Charge (billed per kilowatt)	Energy Charge (billed per kilowatt)
115.00 Bht/kw	0.9361 Bht/kwhr

1.4 Stand-by Service :

A. In case the stand-by is not used during any billing month, the stand-by demand charged shall be :

Baht 30.00 per kw of stand-by demand

B. In case the stand-by is used during any billing month the charge shall be of either the regular schedule applicable or the stand-by charge, whichever is higher.

2. Provincial Electricity Authority

Monthly Power Rate

2.1 For business of a maximum demand of 30 - 499 kilowatts

A. Demand Charge

Fixed rate of 92.00 Bht/kw

B. Energy Charge (billed per kilowatt)

First 50kwhr	1.1353 Bht/kwhr
Next 150kwhr	1.1053 Bht/kwhr
Next 200kwhr	1.0253 Bht/kwhr
Over 400kwhr	1.0453 Bht/kwhr

2.2 For business of a maximum demand of 500-999 kilowatts.

A. Demand Charge

Fixed rate of 88.00 Bht/kw

B. Energy Charge (billed per kilowatt)

First 50 kwhr	1.1153 Bht/kwhr
Next 150 kwhr	1.0753 Bht/kwhr
Next 200 kwhr	1.0353 Bht/kwhr
Over 400 kwhr	0.9953 Bht/kwhr

2.3 For business of a maximum demand of 400 kilowatts and over.

A. Demand Charge

Fixed rate of 87.00 Bht/kwhr

B. Energy Charge

First 100 kwhr 1.0353 Bht/kwhr

Next 300 kwhr 1.0153 Bht/kwhr

Over 400 kwhr 0.9853 Bht/kwhr

3. The Metropolitan Water Works Authority

The metropolitan supply area consists of the three provinces of Bangkok, Nontaburi and Samut Prakarn.

3.1 Monthly Water Rates

<u>Cubic meters of Water Used Per Month</u>	<u>Rate Per Cubic Meter</u>
0 - 6 cubic meters	No Charge
6 - 12 "	฿ 0.50
12 - 25 "	฿ 1.00
25 - 50 "	฿ 1.50
50 - 200 "	฿ 2.00
Over 200 "	฿ 2.50

3.2 Demand Charge

The minimum charge of water rates even though the water does not reach the amount as shown in the following table :

<u>Meter Size</u>	<u>Demand Charge (Baht)</u>
1"	54
1½"	120
2"	215
2½"	335
3"	480
4"	850
6"	1900

4. The Provincial Water Works Division

Monthly Water Rates

4.1 The charge is fixed at 2 Baht per cubic meter. This is for water supply under the control of PWWA. In case the customer contacts with concessionaires, the charge varies with locality and is generally higher than installation in the municipal area. However, the charge for this service is regulated and supervised by PWWA.

5. Telecommunication

5.1 Request for Installation

Anyone wishing to install a telephone should file an application in person at the Commercial Section of the Telephone Organization of Thailand or at one of the Metropolitan Telephone Area offices. The application is required to buy the subscription bounds of the T.O.T. :

- at the rate of 30,000 Baht if the installation is to be done within three months
- at the rate of 10,000 Baht if the installation is to be done within one year

This excludes the telephone installation and deposit.

5.2 Monthly Telephone Rates in the Metropolitan Areas

Business and residence subscribers pay the same rate at the minimum charged of 50 Baht and 2 Baht for each call.

5.3 Monthly Telephone Rates in the Provincial Areas

The rent rate for the automatic type is the same as the telephone rate in the metropolitan areas. As for the telephones in the areas when the operator-connecting the lines system is used, the rent rate is 50 Baht.

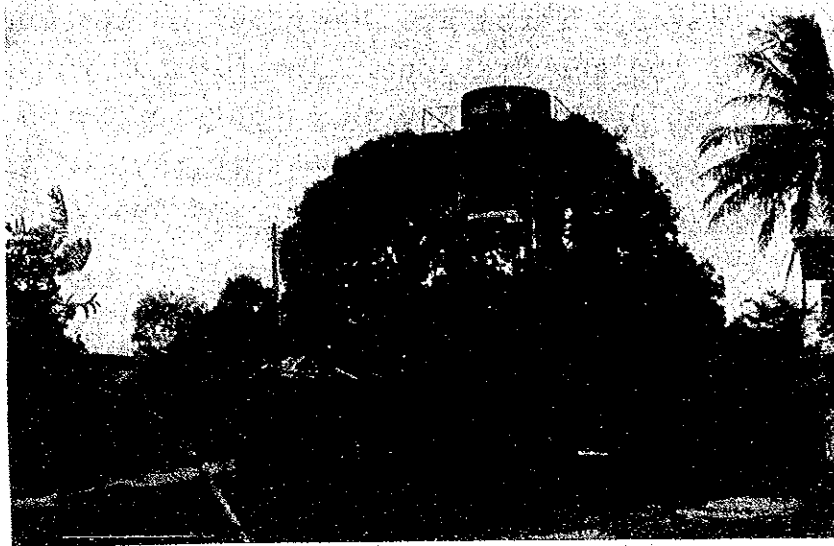
5.4 Long Distance Rates from Greater Bangkok Metropolitan Area

Long distance rates are dependent on the length of call and the distance. The minimum rate of the first 3 minute rate is 6 Baht and every next minute is 2 Baht. The highest charges of the first 3 minute rate is 36 Baht and every next minute is 12 Baht.

5.5 Overseas Long Distance Rates

The charges are dependent on the length of call and the distance. The minimum charge of the first 3 minute rate is 90 Baht and for every next minute is 30 Baht. The maximum rate of the first 3 minute rate is 375 Baht and every next minute is 125 Baht.

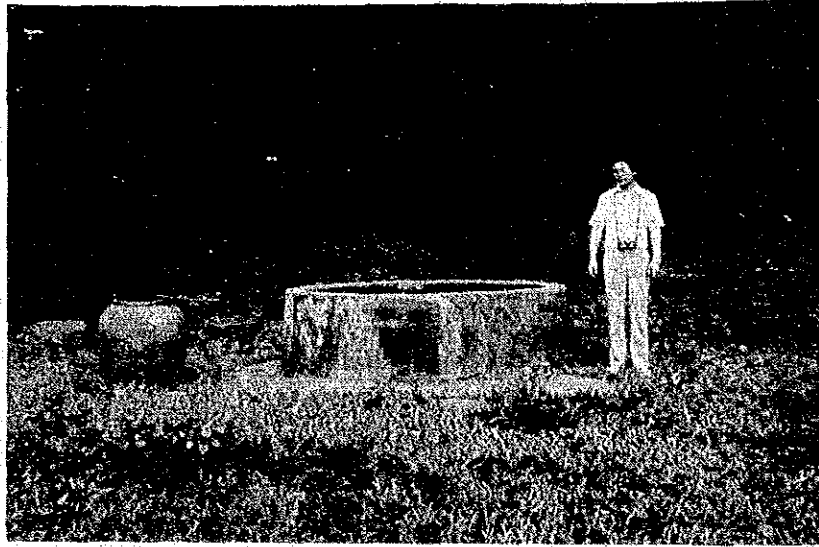
APPENDIX F: PHOTOGRAPH



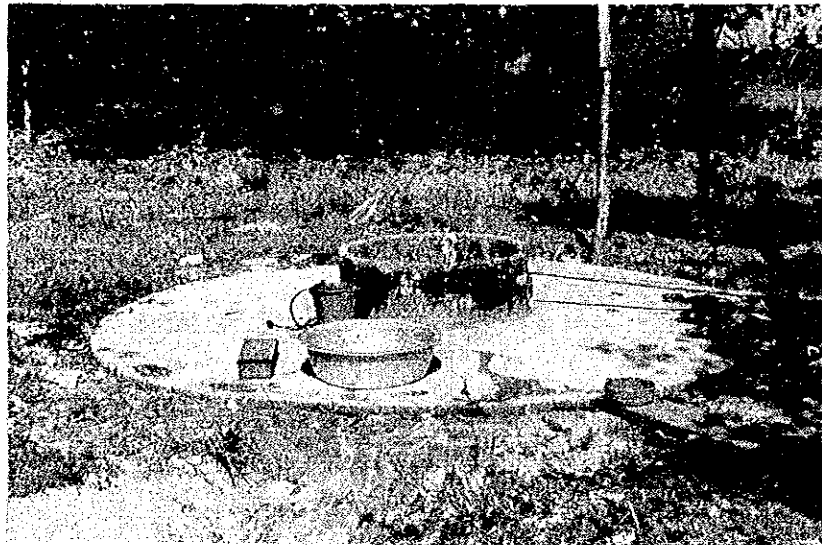
Pumping House and Elevated Water Tank
in Prapokklao Hospital



Rainfall Water Tank in Tagad Ngao



Existing Well in Ban Bo



Existing Well in Tagad Ngao



Rainfall Water Tank in Ban Samroong



Existing Well in Ban Samroong



Water Sampling from Samroong river



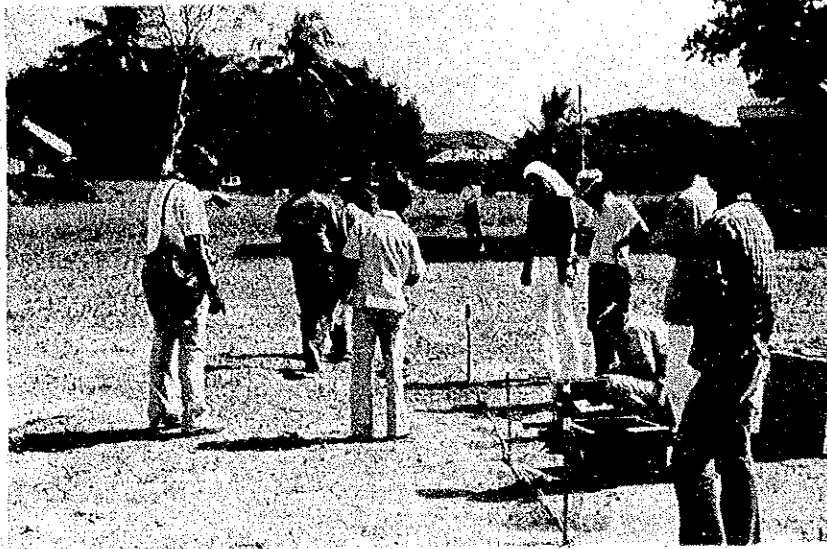
Water Analysis (PH) at Existing Well



Geoelectric Prospecting in Tagad Ngao



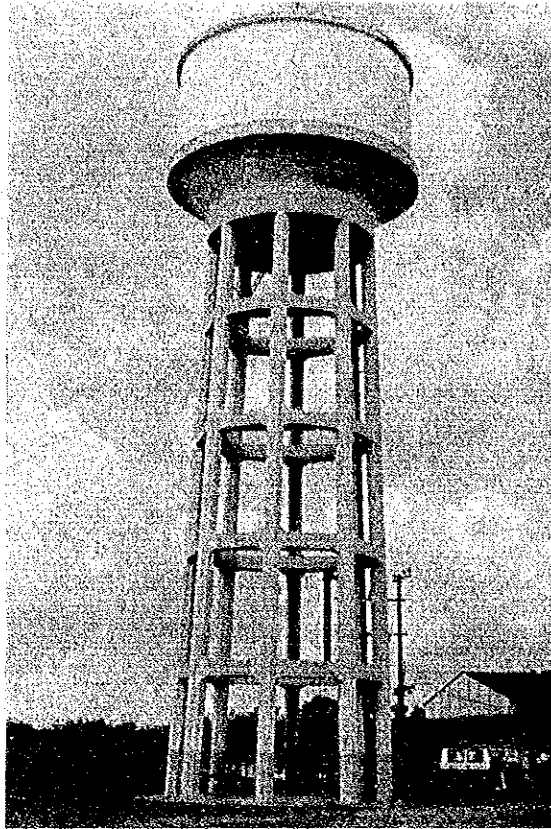
Geoelectric Prospecting in Ban Samroong



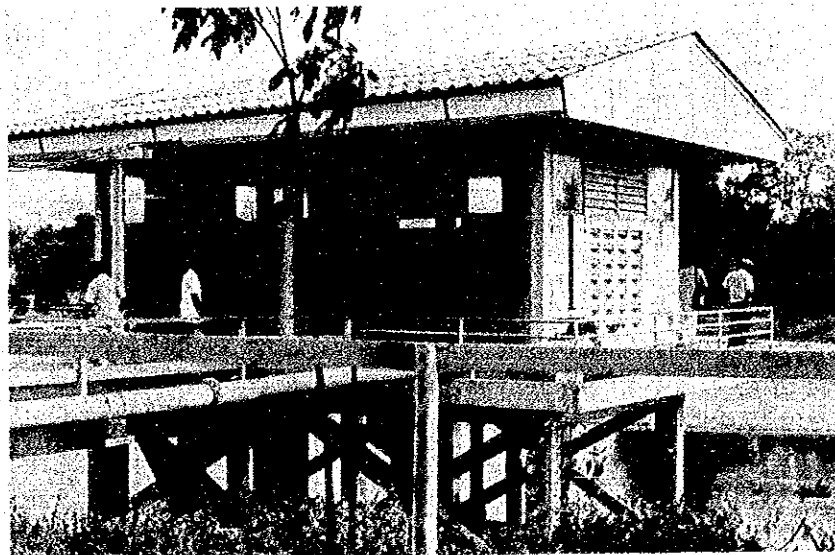
Geoelectric Prospecting in Prapokklao Hospital



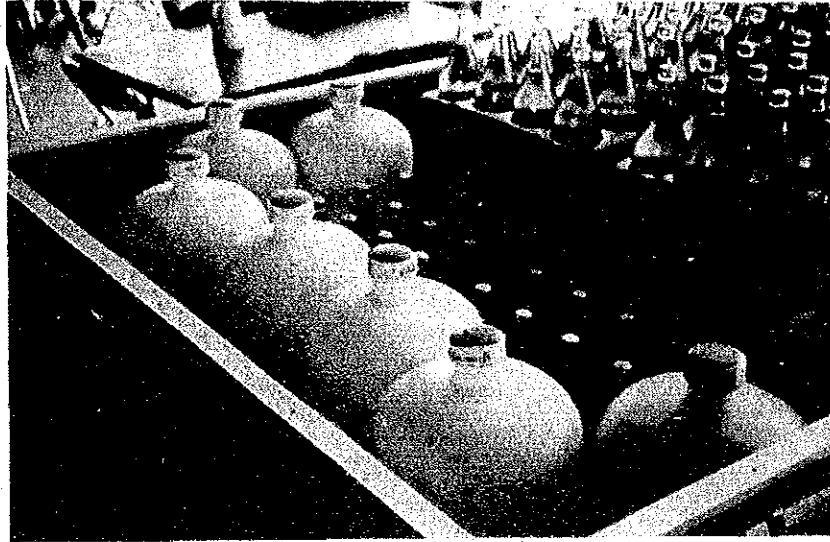
Geoelectric Prospecting in Ban Samroong



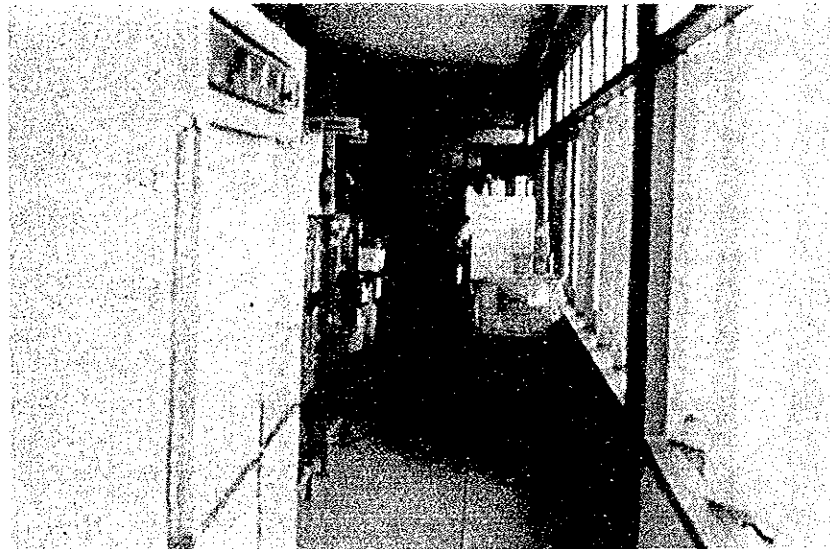
Elevated Water Tank at Water
Treatment Facility



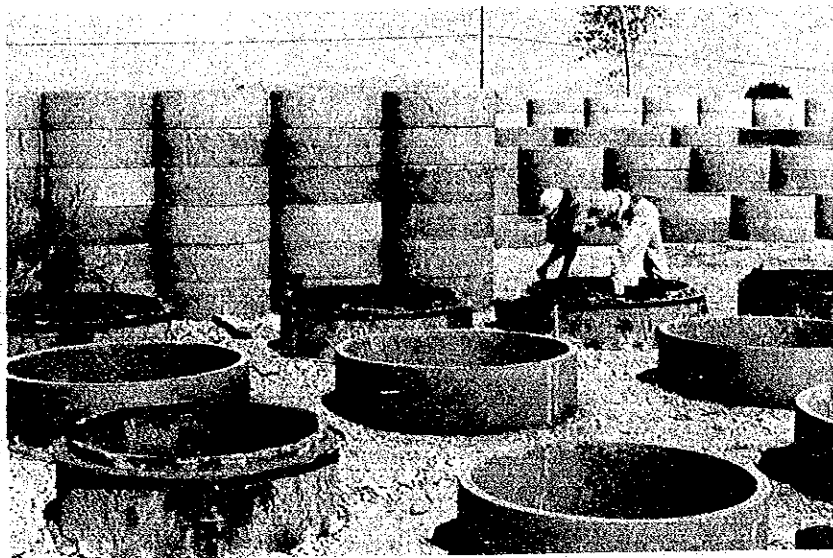
Pumping Station



Bottled Drinking Water on Market



Laboratory in Prapokklao Hospital



Local Factory of Well Construction Materials



New Type of Water Tank on Market

JICA