

REVIEW OF EXPERIENCES  
WITH  
SELF-HELP FAMILY LATRINE PROJECT  
AT  
BAN KHUAN OF HANG CHAT DISTRICT  
AND  
POSSIBLE APPLICATION OF THESE EXPERIENCES  
IN  
ENVIRONMENTAL HEALTH PROJECT

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Bangkok, 13th March, 1981.

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REVIEW OF EXPERIENCES WITH SELF-HELP FAMILY LATRINE PROJECT AT BAN KHUAN OF HANG CHAT DISTRICT AND POSSIBLE APPLICATION OF THESE EXPERIENCES IN ENVIRONMENTAL HEALTH PROJECT.

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Abbreviations

|            |     |   |
|------------|-----|---|
| Decade     | ... | International Drinking Water Supply and Sanitation Decade, in Thailand during 1982-1991 period. |
| DOH        | ... | Department of Health  |
| EH Project | ... | Environmental Health Project  |
| MPH        | ... | Ministry of Public Health   |
| NESDB      | ... | National Economic and Social Development Board  |
| PVC        | ... | Poly-vinyl-chloride   |
| PHC        | ... | Primary Health Care   |
| PCMO       | ... | Provincial Chief Medical Officer  |
| RTG        | ... | Royal Thai Government   |
| UNDP       | ... | United Nations Development Programme  |
| WHO        | ... | World Health Organization.  |

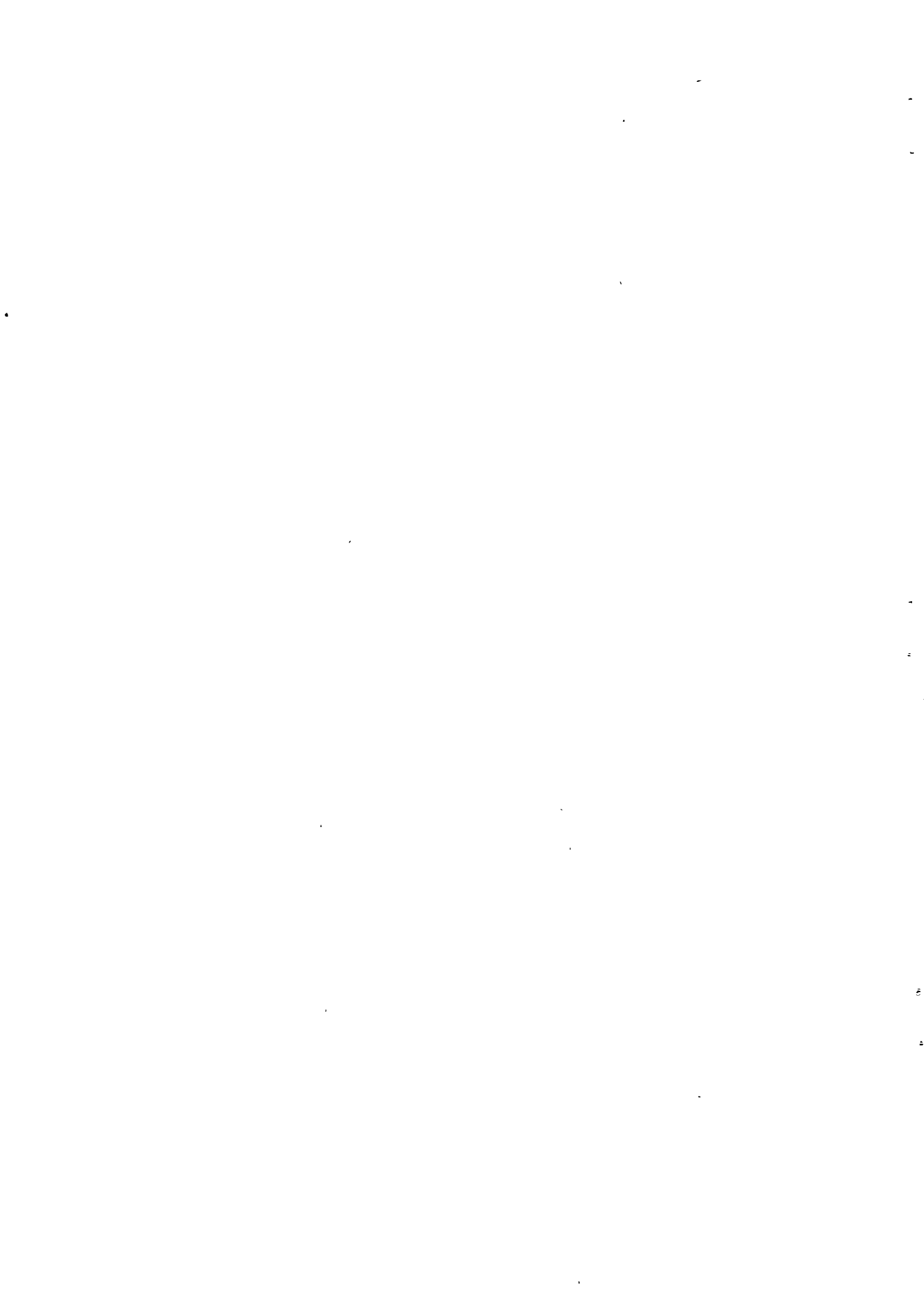
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Summary.

Early in 1980, the Provincial Chief Medical Officer at Lampang lent Baht 3,000 (about US.\$ 150) to the village Ban Khuan, at the Hang Chat District, to construct family latrines on a self-help basis.

The Sanitation Region 5 at Lampang assisted the village by lending to it three sets of steel forms for making of concrete rings and by demonstrations of how to make a water-seal latrine.

With this assistance the Village Committee arranged a programme of a self-help latrine construction. The loan of Baht 3,000 was used in a revolving fund. Fifty family latrines of a water-seal type were constructed in six months. After nine months the Committee repaid the loan to the Provincial Chief Medical Officer, who it is understood has already lent this sum to another village for a similar programme.

For some time now, no cases of diarrhoea were recorded in this village. However, it is not certain whether this is a seasonal phenomenon, or not.

The experience gained by this village project is very useful indeed. It shows that villagers are interested to construct on a self-help basis with a help of a loan inexpensive water-seal latrines. At the end of the project the cost of one latrine excluding the cost of superstructure was Baht 156, or US.\$ 7.74.

This experience also draws attention to the unresolved problem of the poorest or incapable part of the village population which could not afford the loan repayments, or could not carry out the work needed to construct a latrine.

Perhaps one of the most important conclusions from the Decade point of view is that villagers are capable to manage a self-help project with a minimum support from outside. At Ban Khuan they handled very well the management of loans through a revolving fund and they repaid the RTG loan at the first opportunity. They needed to be shown how to construct a latrine and they needed a loan of steel forms to make concrete rings.

The collaborating authorities must be congratulated for resisting a temptation to give more assistance, or guidance to the village than that which was absolutely necessary. The purpose of this report is to make available the experiences gained at Ban Khuan to the proposed self-help family latrine programme of the Environmental Health Project.

Using these experiences for the preparation of the proposed programme in a few pilot project districts it is possible to recommend a more effective utilization of the UNDP grant by increasing the number of households in three districts which will participate in this programme from 5,134 to 13,269. In these districts all families which do not have yet sanitary latrines will be invited to construct these latrines on a self-help basis with assistance of a loan from the revolving fund provided by the EH Project. The proposed programme is expected to be completed before the end of 1981.



1. Introduction.

The Environmental Health (EH) Project is in operation since January 1979. It is being implemented by the Department of Health (DOH) in the Ministry of Public Health (MPH) of the Royal Thai Government (RTG). UNDP provides the financial assistance (\$ 2.4 million) and WHO provides technical collaboration to the EH Project.

The report was prepared by Sanan Na Chiang Mai, a senior sanitarian and deputy chief of the Sanitation Region 5 at Lampang, and by Boleslaw Jan Kukielka, a sanitary engineer and WHO team leader of the EH Project.

The aim of this report is to make available to the EH Project the experiences already existing in Thailand for the implementation of the family latrine programme on a self-help basis in three pilot project districts. It is intended to achieve in these three districts the sanitation objective of the Decade\* for all the inhabitants of these districts.

The second section of this report includes a number of photographs from Ban Khuan.

The experiences from the implementation of the family latrine programme at Ban Khuan are described in section three.

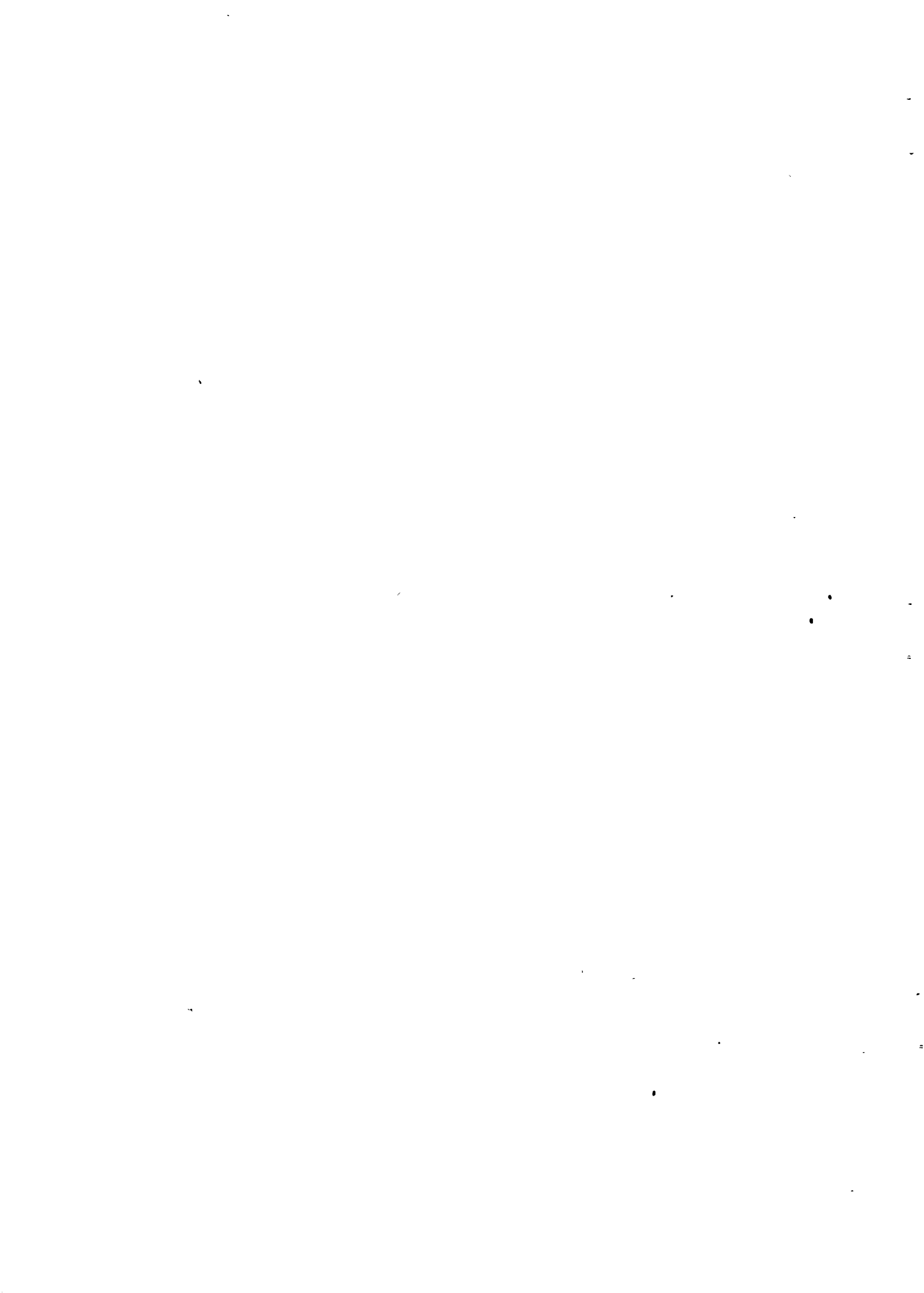
The fourth section deals with the proposed pilot projects at the Praputhabath, Si Racha and Chana Districts.

The conclusions derived from the experiences at Ban Khuan are included in section five.

The sixth section contains the recommendations for the proposed pilot projects.

This report reflects only the views of the authors. It has not been approved by the Royal Thai Government, United Nations Development Programme and World Health Organization.

The authors also retain sole responsibility for any errors which might have been included in the report.





2. Photographs.



Above. Mr. Savang Yapeen is one of eight members of the Village Committee. of the concrete elements used in the water-seal latrine rings were made by villagers and cover plate with the water seal was purchased in a near by town.

Below. One of the constructed latrines.



1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for transparency and accountability, particularly in the context of public administration and financial management. The text highlights that without reliable records, it becomes difficult to track expenditures, identify inefficiencies, and ensure that resources are being used effectively for the benefit of the community.

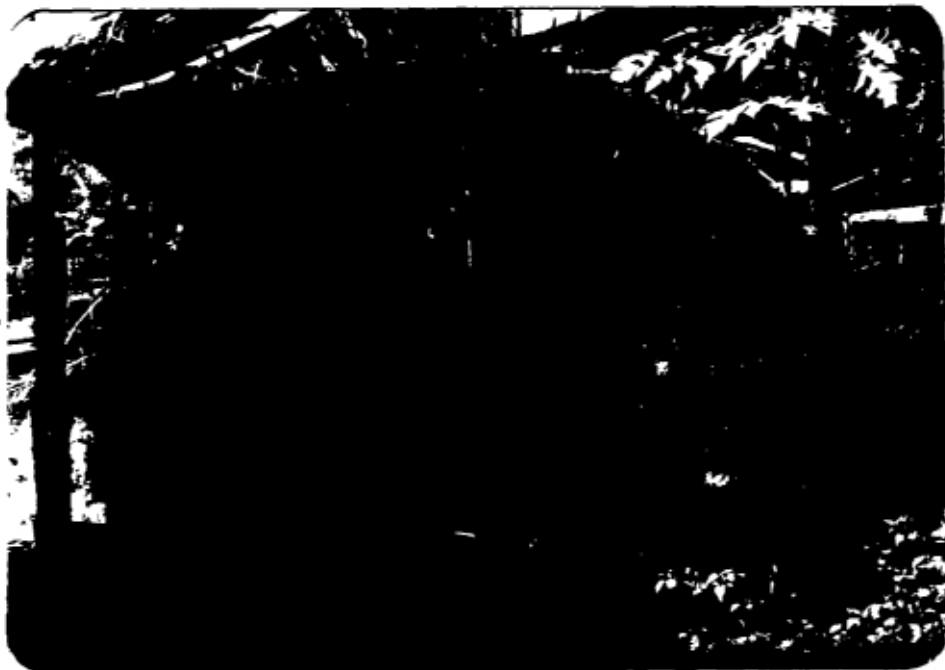
2. The second part of the document addresses the challenges associated with data collection and analysis. It notes that while modern technology offers powerful tools for data management, the quality and consistency of the data itself can be a significant barrier. Incomplete or outdated information can lead to flawed decision-making and hinder the development of effective policies. The document suggests that investing in training and infrastructure to improve data accuracy is a critical step towards more informed governance.

3. The final section of the document focuses on the role of stakeholders in the process of data-driven decision-making. It argues that successful outcomes require the active participation and collaboration of various groups, including government officials, citizens, and private sector partners. By fostering a culture of openness and shared responsibility, organizations can leverage the collective insights and resources of all stakeholders to address complex challenges and drive positive change.

2. Photographs - cont'd.



One of the simpler latrine superstructures. It is considered adequate by the users. It meets the objective of the Decade by providing sanitary excreta disposal.





2. Photographs- cont'd.



House and latrine of Mrs. Amphon Legay, village health volunteer. She purchased bamboo for the superstructure for Baht 60 (US.\$ 3).





2. Photographs -cont'd.



These latrines are already in use by the families. Completion of construction in brick awaits additional funds, which may be available after the next harvest.





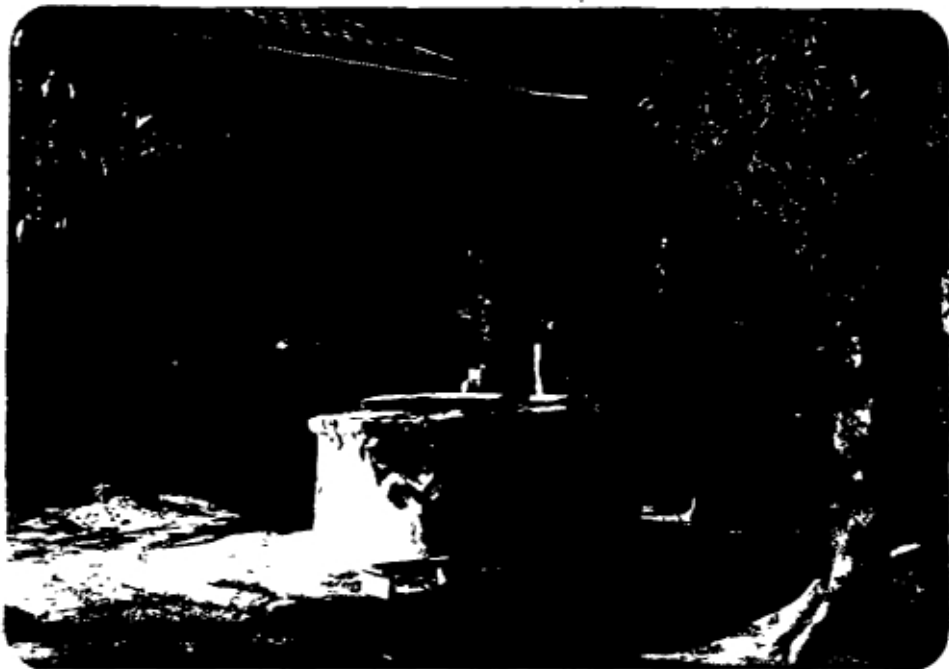


2. Photographs- cont'd.



Above. Owner of this latrine was in a position to complete this fine super-structure.

Below. One of seven dug-wells which are used in this village as sources of the drinking water. Three of these wells were already converted by the villagers into protected dug-wells equipped with one, or more simple PVC hand-pumps.





### 3. Implementation of a latrine project in one village.

#### 3.1. General information about the village.

Ban (village) Khuan is located at the Tambon (sub-district) Pong Yong Koke of the Amphoe (district) Hang Chat of the Changwat (province) Lampang.

Its population of 599 people lives in 138 houses. At the beginning of the project in 1980, 68 of these houses, or 49% had family latrines.

Villagers have a number of dug-wells, but only 7 of these wells are used as sources of the drinking water. Three of these wells were already converted by the villagers on a self-help basis into the protected wells. One such well is illustrated on page 6. Because the Hang Chat district is one of the pilot project districts of the EH Project for the drinking water protected dug-well programme the remaining four drinking water wells at Ban Khuan are expected to be protected before the end of 1981. One of the three already protected wells has two pumps. This was done to prevent the villagers opening the manhole cover of the well to use buckets when more people come for the water at the same time. Villagers appear to be not very patient to wait their turn at the pump. More information about the protected dug-well programme is available in the EH Project's Interim Report on the Drinking Water Protected Dug-Well Programme.

Since May 1975 (2518) Ban Khuan has the Village Committee comprising of eight members. The Village Headman is an ex-officio member of the Committee. The remaining seven members are elected by the villagers for life.

#### 3.2. Implementation of the village project.

Early in 1980, the Provincial Chief Medical Officer (PCMO) at Lampang made available to the villagers of Ban Khuan a loan of Baht 3,000 (about US.\$ 150). The loan was intended for the construction of family latrines of a water-seal type, and was meant to be used as a revolving fund.

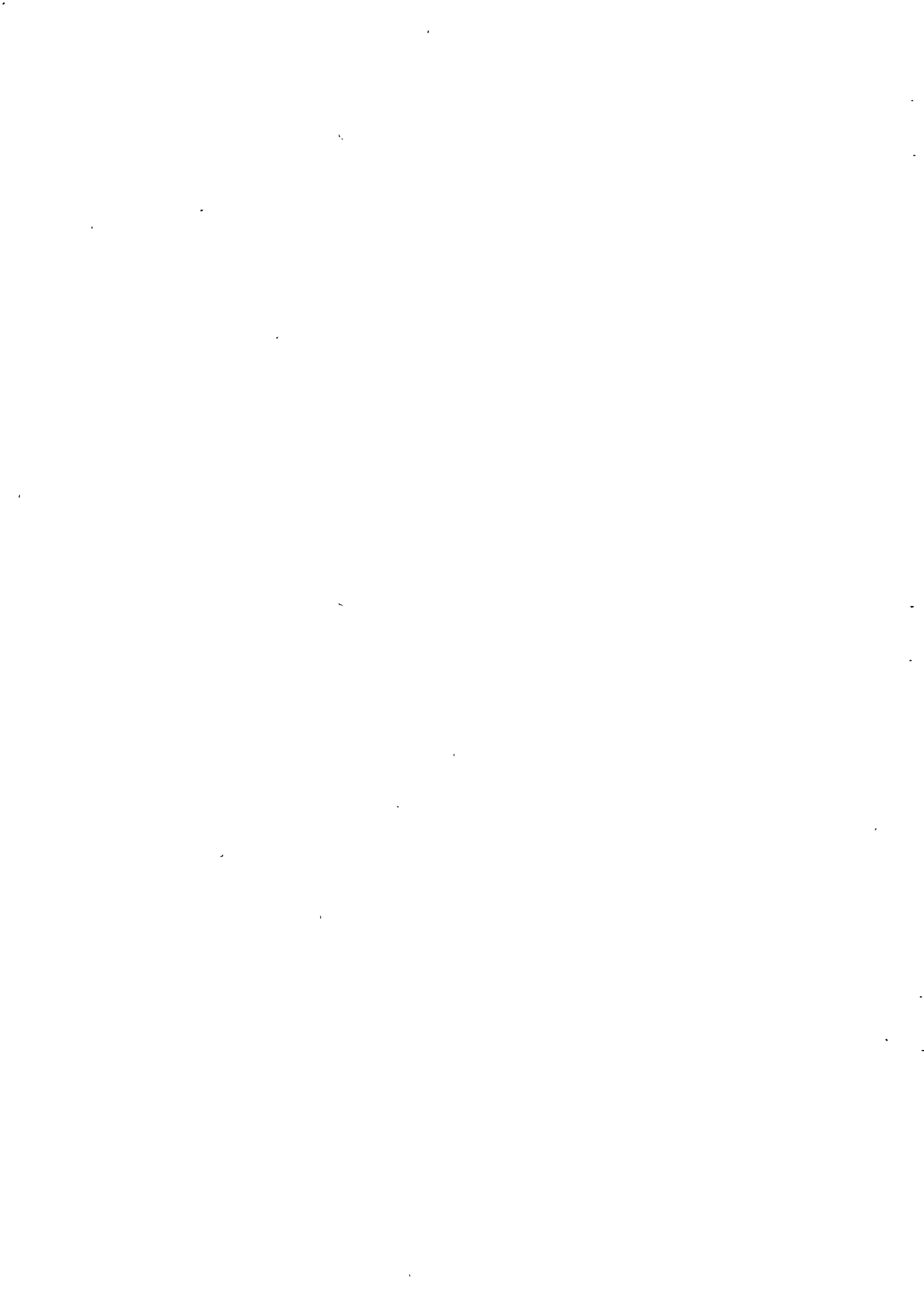
At the start of the village latrine project a meeting of the Village Committee was called at which four working groups were formed. These groups visited all the households without latrines and informed people about the proposed project.

The Sanitation Region 5 at Lampang arranged in the village three demonstrations of the latrine construction. Each household delegated one person to attend one of these demonstrations.

For the first round of the project the committee selected twenty households from amongst those which were interested to participate in the project.

The necessary materials were purchased by the committee. Details of these procurements per one latrine are shown below.

REF  
I Ref  
M.V.



3.2. cont'd.

TABLE 1. COSTS OF MATERIALS FOR ONE LATRINE.\*

|  | <u>Initially</u> | <u>At the middle</u> | <u>At the end</u> |
|--|------------------|----------------------|-------------------|
| i. Cover slab ... ..                           | ฿ 50             | ฿ 55                 | ฿ 65              |
| ii. Cement                                     |                  |                      |                   |
| 50 kg. bag ... ..                              | ฿ 58             | ฿ 65                 | ฿ 68              |
| iii. No.12 reinforcing<br>wire for 3 rings ... | ฿ 10             | ฿ 10                 | ฿ 10              |
| iv. Gravel at                                  |                  |                      |                   |
| ฿ 3 per 20 litres ...                          | ฿ 12             | ฿ 12                 | ฿ 12              |
| v. Used engine oil for<br>treating forms ...   | ฿ <u>1</u>       | ฿ <u>1</u>           | ฿ <u>1</u>        |
| Cost of materials<br>per one latrine*          | ฿ 131            | ฿ 143                | ฿ 156             |

\* excluding cost of latrine superstructure.

Mr. Sawang Yapeen, member of the Village Committee responsible for the procurement, shown on a photograph on page 2, transported free of charge 50 bags (2.5 tons) of cement on his motorcycle.

The gravel was procured from the village children.

In addition, villagers supplied free of charge all necessary labour, sand, wood, bamboo and roofing materials.

The Sanitation Region 5 lent to the villagers three sets of steel forms for casting of the concrete rings.

The responsibility for the construction of a latrine superstructure was left to each household.

Mrs. Amphon Legay, the village PHC volunteer, paid Baht 60 for the bamboo which her family used to construct the superstructure of her latrine. This latrine is illustrated on page 4.

Generally, concrete rings were kept in the forms for 3 to 4 days. Afterwards, rings were kept wet for seven days.

The artist impression of the latrine is shown in Annex 1.

3.3. Loan repayments.

The Village Committee made the loans to the villagers in a form of materials which were procured by the Committee. If a loan was taken for 10, or 20 months the repayments were Baht 200. A half, or 25 loans were long term. Loans repayed within three months period were reduced to Baht 150. There were 25 of these loans.

The Village Committee keeps a record of loans and loan repayments in a simple book. Extracts from this book are shown in Annex 2.



3.3. cont'd.

The revolving fund made five rounds of loans. A summary of the repayments and of the expenditures are given below.

TABLE 2. SUMMARY OF REPAYMENTS.  
(For details see Annex 2).

|                   | Repaid up to the end of October 1980 (Baht) |           |           |           |           |           |           |           |            |                  |
|-------------------|---|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------------|
|                   | <u>2.</u>                                   | <u>3.</u> | <u>4.</u> | <u>5.</u> | <u>6.</u> | <u>7.</u> | <u>8.</u> | <u>9.</u> | <u>10.</u> | <u>Sub-total</u> |
| <u>1st round,</u> |   |           |           |           |           |           |           |           |            |                  |
| 20 loans ..       | 1,560                                       | 440       | 265       | 105       | 105       | 105       | 105       | 105       | 105        | 2,895            |
| <u>2nd round,</u> |   |           |           |           |           |           |           |           |            |                  |
| 10 loans ..       |   | 500       | 150       | 100       | 100       | 100       | 100       | 100       | 100        | 1,250            |
| <u>3rd round,</u> |   |           |           |           |           |           |           |           |            |                  |
| 11 loans ..       |   |           | 850       | 100       | 190       | 80        | 80        | 60        | 40         | 1,400            |
| <u>4th round,</u> |   |           |           |           |           |           |           |           |            |                  |
| 6 loans ..        |   |           |           | 260       | 200       | 80        | 30        | 30        | 30         | 630              |
| <u>5th round,</u> |   |           |           |           |           |           |           |           |            |                  |
| 3 loans ..        |   |           |           |           |           | 30        | 30        | 30        | 30         | 120              |
| Total for         |   |           |           |           |           |           |           |           |            |                  |
| 50 loans ..       | 1,560                                       | 940       | 1,265     | 565       | 595       | 395       | 345       | 325       | 305        | 6,295            |

TABLE 3. SUMMARY OF ESTIMATED EXPENDITURES (Baht)

|   | <u>1.</u> | <u>2.</u> | <u>3.</u> | <u>4.</u> | <u>5.</u> | <u>6.</u> | <u>Sub-total</u> |
|---|-----------|-----------|-----------|-----------|-----------|-----------|------------------|
| <u>1st round,</u>                       |           |           |           |           |           |           |                  |
| 20 x Baht 131 ..                        | 2,620     |           |           |           |           |           | 2,620            |
| <u>2nd round,</u>                       |           |           |           |           |           |           |                  |
| 10 x Baht 131 ..                        |           | 1,310     |           |           |           |           | 1,310            |
| <u>3rd round,</u>                       |           |           |           |           |           |           |                  |
| 11 x Baht 143 ..                        |           |           | 1,573     |           |           |           | 1,573            |
| <u>4th round,</u>                       |           |           |           |           |           |           |                  |
| 6 x Baht 143 ..                         |           |           |           | 858       |           |           | 858              |
| <u>5th round,</u>                       |           |           |           |           |           |           |                  |
| 3 x Baht 156 ..                         |           |           |           |           |           | 468       | 468              |
|   |           |           |           |           |           |           |                  |
| <u>Total estimated expenditure Baht</u> |           |           |           |           |           |           | 6,829            |

During the implementation of the latrine project the Village Committee received Baht 1,800 from the government doctor who performed a number of sterilizations. This sum represented the doctor's fee from the family planning programme for operations performed in this village. This sum was included by the Committee in the latrine project fund.





3.3. cont'd.

An estimate of flow of money during the implementation of the latrine project until October 1980 is shown below.

TABLE 4. ESTIMATE OF FLOW OF MONEY.

|   |     |     |     |      |              |
|---|-----|-----|-----|------|--------------|
| 1. Received loan for latrine revolving fund                   | ... | ... | ... | Baht | 3,000        |
| 2. Lent in 1st round, materials for 20 latrines               | ... | ... | ... | Baht | <u>2,620</u> |
| 3. Balance left   | ... | ... | ... | Baht | 380          |
| 4. Repayments in Feb. 1980                                    | ... | ... | ... | Baht | <u>1,560</u> |
| 5. Available for 2nd round                                    | ... | ... | ... | Baht | <u>1,940</u> |
| 6. Lent in 2nd round, materials for 10 latrines               | ... | ... | ... | Baht | <u>1,310</u> |
| 7. Balance left   | ... | ... | ... | Baht | 630          |
| 8. Repayments in Mar. 1980                                    | ... | ... | ... | Baht | <u>940</u>   |
| 9. Available for 3rd round                                    | ... | ... | ... | Baht | <u>1,570</u> |
| 10. Lent in 3rd round, materials for 11 latrines              | ... | ... | ... | Baht | <u>1,573</u> |
| 11. Balance left  | ... | ... | ... | Baht | (-) 3        |
| 12. Repayments in Apr. 1980                                   | ... | ... | ... | Baht | <u>1,265</u> |
| 13. Available for 4th round                                   | ... | ... | ... | Baht | <u>1,262</u> |
| 14. Lent in 4th round, materials for 6 latrines               | ... | ... | ... | Baht | <u>858</u>   |
| 15. Balance left  | ... | ... | ... | Baht | 404          |
| 16. Repayments in May and Jun. 1980                           | ... | ... | ... | Baht | <u>1,160</u> |
| 17. Available for 5th round                                   | ... | ... | ... | Baht | <u>1,564</u> |
| 18. Lent in 5th round, materials for 3 latrines               | ... | ... | ... | Baht | <u>468</u>   |
| 19. Balance left  | ... | ... | ... | Baht | 1,096        |
| 20. Repayments in Jul, Aug, Sept. and Oct. 1980               | ... | ... | ... | Baht | <u>1,370</u> |
| 21. Balance left  | ... | ... | ... | Baht | <u>2,466</u> |
| 22. Received from sterilization activities                    | ... | ... | ... | Baht | <u>1,800</u> |
| 23. Cash available at the end of Oct. 1980                    | ... | ... | ... | Baht | <u>4,266</u> |
| 24. Repayment of loan to Provincial Chief Medical Officer     | ... | ... | ... | Baht | <u>3,000</u> |
| 25. Cash left after repayment of loan                         | ... | ... | ... | Baht | <u>1,266</u> |
| 26. Future repayments during 1980 and 1981                    | ... | ... | ... | Baht | <u>2,305</u> |
| 27. Estimated to be available at the end of latrine programme | ... | ... | ... | Baht | <u>3,571</u> |

3.4. Households left without latrines.

Fifty households participated in the self-help latrine project supported by a loan from the PCMO. In October 1980, when the loan was repaid, 118 households, or 86% had family latrines. Only 20 households or about 14% remain without the family latrines. Households without latrines belong to old or very young people, i.e., a 16 year old boy living alone, and to poor people who cannot repay the loans.

This problem was discussed with two members of the Village Committee. The members agreed that it is the community's interest to ensure that all households have latrines. However, they consider that making of grants, from whatever source would result in people who had loans refusing to make repayments of loans. They suggested that this problem should be solved after all loan repayments are completed. The committee already decided to make grants available for five latrines.



### 3.5. Effectiveness of the project.

The village Ban Khuan is included in the epidemiological surveillance of the EH Project. The results of the epidemiological evaluation will be known later on.

However, the village primary health care volunteer who participates in the epidemiological surveillance stated that for a few months now there were no diarrhoea cases in the village. It is understood that for each case of the reported diarrhoea a packet of the oral rehydration salt is being given to the reporting person.

### 4. Proposed family latrine pilot projects.

In preparation for the Decade the EH Project was expanded by a few additional activities, one of which is the self-help family latrine programme.

#### 4.1. Sanitation requirements of the Decade.

Situation with regard to sanitary excreta disposal in Thailand was well illustrated by the 1976 Housing Survey. Summaries of this survey are given on pages 2/3 and 3/3 of Annex 3.

If a family pit latrine is accepted as a minimum standard of sanitary excreta disposal during the Decade then the survey can be summarized further as follows.

TABLE 5. HOUSEHOLDS WITH SANITARY EXCRETA DISPOSAL FACILITIES AVAILABLE

|   | <u>Households with sanitary excreta disposal facilities</u> |              |
|---|---|--------------|
|   | <u>No.</u>  | <u>%</u>     |
| <u>1. Bangkok</u>                                       |   |              |
| 1.1. Municipalities ...                                 | 515,690   | 99.2%        |
| 1.2. Sanitary Districts                                 | 47,820  | 93.2%        |
| 1.3. Villages ...                                       | <u>65,600</u>   | <u>91.7%</u> |
| Total Bangkok ...                                       | 629,110   | 97.8%        |
| <u>2. Municipalities</u><br>(excluding Bangkok) ...     | 448,810   | 91.3%        |
| <u>3. Sanitary Districts</u><br>(excluding Bangkok) ... | 550,600   | 74.8%        |
| <u>4. Villages</u><br>(excluding Bangkok) ...           | <u>1,824,580</u>  | <u>36.5%</u> |
| <u>Whole Kingdom ...</u>                                | <u>3,453,100</u>  | <u>50.3%</u> |

It can be said that the picture given by the 1976 Housing Survey of the existing sanitary excreta disposal situation in Thailand appears to be very encouraging for the Decade.



4.1. cont'd.

The 1976 population which requires family sanitary excreta disposal facilities is summarized in the following table.

TABLE 6. HOUSEHOLDS WHICH REQUIRED SANITARY EXCRETA DISPOSAL FACILITIES IN 1976

|  | <u>Households without sanitary excreta disposal facilities</u> |   |
|--|--|---|
|  | <u>No.</u>   | <u>percent of each sub-sector Total</u> |
| 1. <u>Bangkok</u>  |  |   |
| 1.1. Municipalities ... ..                                 | 4,410 ...  | 0.8% ... 0.1%                           |
| 1.2. Sanitary Districts ... ..                             | 3,500 ...  | 6.8% ... 0.1%                           |
| 1.3. Villages ... ..                                       | <u>5,960</u> ...   | <u>8.3%</u> ... <u>0.2%</u>             |
| Total Bangkok ... ..                                       | 13,870 ...   | 2.2% ... 0.4%                           |
| 2. <u>Municipalities</u><br>(excluding Bangkok) ... ..     | 42,510 ...   | 8.7% ... 1.2%                           |
| 3. <u>Sanitary Districts</u><br>(excluding Bangkok) ... .. | 185,330 ...  | 25.2% ... 5.4%                          |
| 4. <u>Villages</u><br>(excluding Bangkok) ... ..           | <u>3,151,880</u> ...   | <u>63.5%</u> ... <u>92.4%</u>           |
| Whole Kingdom ... ..                                       | <u>3,410,160</u> ...   | <u>49.7%</u> ... <u>100.0%</u>          |

As far as family latrine programme is concerned the priorities are very clear. Table 6 illustrates this very well.

However, the Decade sanitation objective cannot be resolved by the family latrine programme alone. Such a programme is inadequate for very densely populated urban areas, i.e., certain areas in Bangkok and in a few other municipalities. The problem in these areas may have to be solved by application of sewerage and sewage disposal. This problem will not be considered further in this report which only registers its existence.

It should be possible now to attempt to make a very preliminary cost estimate of the sanitation part of the Decade covering the rural areas and fringes of the urban areas.

The 1990 target population was estimated by the NESDB at 60,310,000 people.

Before one proceeds with the cost estimate it is necessary to make certain assumptions. It may be more accurate to say that it will not be a cost estimate but rather an estimate of an order of the cost. Needless to say, the validity of the assumptions used will determine the accuracy of the estimate.



4.1. cont'd.

The assumptions are as follows.

- i. Using the same number of people per household as in 1976, the target population will live in about 10,818,500 households.
- ii. Thus, 5,376,800 households, or 49.7%, will require family latrine in 1990.
- iii. Using the cost of materials at village Ban Khuan (page 8) in 1980 Baht 156 and assuming an average 10% inflation during each year of the Decade the materials for one water-seal latrine (without superstructure) would cost Baht 189 in 1982, Baht 445 in 1991, or Baht 317 on average.
- iv. Each family latrine will be constructed on a self-help basis.
- v. Each latrine will be of a water-seal type with one chamber.

Using the above assumptions the cost of the family latrine programme during the Decade, excluding costs of labour and of latrine superstructures, may be of the order of Baht 1,700 million, or US.\$ 85 million.

It should be possible to implement most of the programme by, providing loans from a revolving fund. Only about one quarter, or one third of the programme may have to be financed by a grant to enable the participation in the programme of the poorest sections of the rural and urban population.

4.2. Proposed pilot projects.

The RTG is carrying out the family latrine programme for at least two decades with very good results as was illustrated in Table 5 on page 11.

The purpose of the self-help family latrine pilot projects is to provide experience with the implementation of this programme on an area basis, which would be similar to the Decade only on a reduced scale, i.e., a few whole districts instead of the whole country. It is hoped that the EH Project will be able to identify the associated problems and to find solutions for these problems. At the end of the EH Project the objectives of the Decade are expected to be achieved in the pilot project districts. The safe drinking water supply programmes are already being implemented in these districts by the EH Project. Thus, all people of these districts will have access to safe drinking water sources and sanitary excreta disposal.

The self-help family latrine pilot projects of the EH Project will be implemented in three whole districts, at the Praputhabath District of the Saraburi Province, at Si Racha District of the Chonburi Province and at the Chana District of the Songkhla Province.





4.2. cont'd.

Information relating to the family latrine situation in the pilot project districts is shown on page 1/3 of Annex 3. This information is summarized below.

TABLE 7. SUMMARY OF LATRINE SURVEYS IN THREE PILOT PROJECT DISTRICTS.

| <u>District</u>  | <u>No. of villages</u> | <u>Households (numbers)</u> |                        | <u>Households (per cent)</u> |                         |
|------------------|------------------------|-----------------------------|------------------------|------------------------------|-------------------------|
|                  |                        | <u>with latrine</u>         | <u>without latrine</u> | <u>with latrines</u>         | <u>without latrines</u> |
| Praputhabath ... | 88 ...                 | 5,138 ...                   | 2,270 ...              | 69.4% ...                    | 30.6%                   |
| Si Racha ...     | 39 ...                 | 5,548 ...                   | 2,864 ...              | 66.0% ...                    | 34.0%                   |
| Chana ...        | 123 ...                | 1,651 ...                   | 8,135 ...              | 16.9% ...                    | 83.1%                   |
| <u>Total ...</u> | <u>250 ...</u>         | <u>12,337 ...</u>           | <u>13,269 ...</u>      | <u>48.2% ...</u>             | <u>51.8%</u>            |

Villagers in three pilot project districts who will participate in this programme on a self-help basis will be assisted by loans from a revolving fund.

This programme will be supported by the following inputs from UNDP.

TABLE 8. UNDP INPUTS TO FAMILY LATRINE PROGRAMME.

|      |  |            |  |
|------|--|------------|--|
| i.   | Grant for training of :-   |            |  |
| a.   | officers, 3 courses<br>at Baht 10,075 (\$500)<br>each ... ..   | ...        | Baht 30,225, or US.\$ 1,500            |
| b.   | villagers, 3 courses<br>at Baht 10,075 (\$500)<br>each ... ..  | ...        | Baht 30,225, or US.\$ 1,500            |
| ii.  | Grant for establishing<br>Latrine Revolving Fund ... ..  | ...        | Baht 1,209,000, or US.\$ 60,000        |
| iii. | Grant for supporting<br>activities of sanitation<br>centres, 4 districts<br>at Baht 2,015 (\$100)<br>each ... .. | ...        | Baht 8,060, or US.\$ 400               |
|      | <u>Total ... ..</u>  | <u>...</u> | <u>Baht 1,277,510, or US.\$ 63,400</u> |



5. Conclusions from the village project.

Ban Khuan villagers demonstrated that given a small financial assistance in form of a loan and the necessary technical assistance from the RTG in a form of a demonstration and a loan of steel forms they can effectively implement a substantial part of the family latrine programme.

It is commendable that apart from provision of the necessary assistance there was no interference with the way the villagers managed the implementation of the project.

The family latrines which were constructed are adequate to meet the objective of the Decade, even if the superstructures of some of these latrines do not provide a complete privacy.

The cost of the constructed latrines was very low indeed. Without superstructure, it was at the end of the project Baht 156, or US.\$ 7.74, which with a household of say 5 persons makes the per capita cost of Baht 31.20, or US.\$ 1.55. These costs do not include the cost of interest on the loan made to the village nor the costs of health education and demonstration activities.

As the result of the experiences from Ban Khuan it was possible for the EH Project to revise the coverage of the proposed self-help family latrine pilot project by 158 per cent, from 5,134 to 13,269 households.

The RTG is very successfully implementing the family latrine programme for at least two decades. The Ban Khuan project is a part of this programme. The methodology and technology which are used appear to be adequate. However, it may be advisable to carefully review the designs of the water-seal latrine which are in use now for a long time, particularly with respect to the latrine chamber, i.e., whether there exists a need for two chambers.

The village project has highlighted the problem of the last 15 per cent of households which for a variety of reasons could not participate in the project.

This problem is ment to be receiving special attention of the EH Project in the proposed self-help family latrine pilot projects.



6. Recommendations for the pilot projects.

6.1. With regard to the scope of the proposed pilot projects as the result of the experience of Ban Khuan it is proposed to increase the coverage of the pilot projects from 5,134 households to 13,269 households, by adding the Chana District to the Praputhabath and Si Racha Districts.

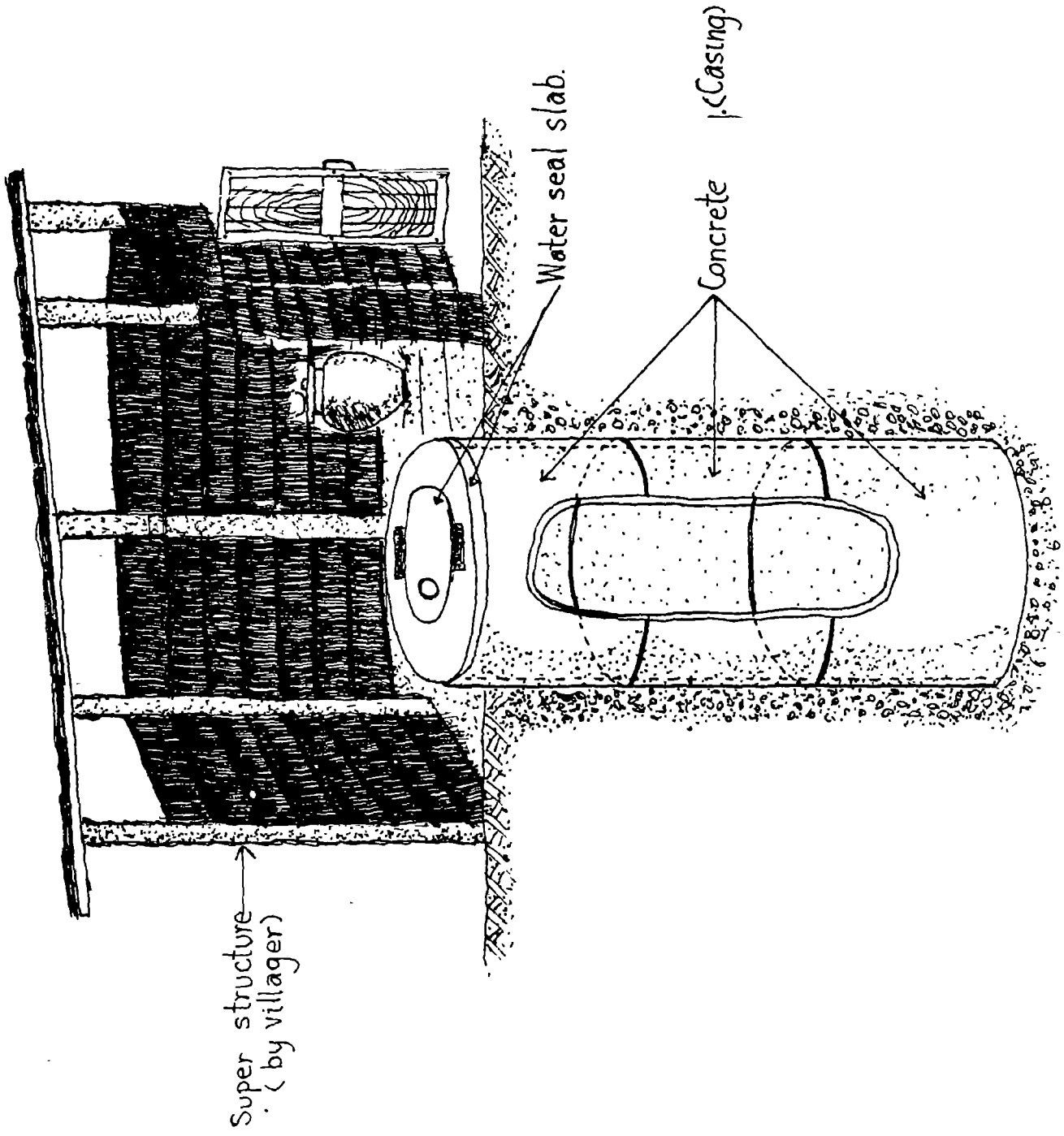
Should this recommendation be accepted the grant for the revolving fund could be distributed as follows :-

| <u>District</u>         | <u>Number of latrines</u> | <u>Grant for revolving fund</u> |
|-------------------------|---------------------------|---------------------------------|
| <u>Already approved</u> |                           |                                 |
| Praputhabath ... ..     | 2,270 ...                 | Baht 207,000                    |
| Si Racha ... ..         | 2,864 ...                 | Baht 261,000                    |
| <u>Proposed</u>         |                           |                                 |
| Chana ... ..            | <u>8,135</u> ...          | <u>Baht 741,000</u>             |
| <u>Total</u> ... ..     | <u>13,269</u> ...         | <u>Baht 1,209,000</u>           |

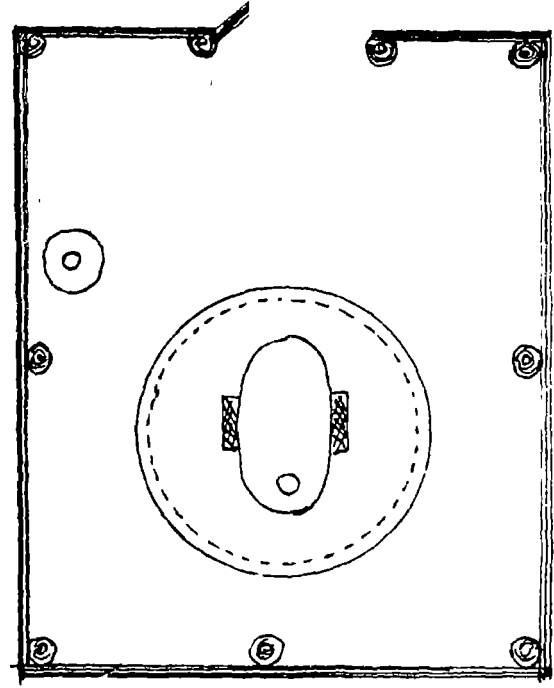
6.2. With regard to the technological aspects it is proposed that the problem of one or two latrine chambers be investigated and if necessary solved.

6.3. It is recommended that a special attention be paid during the implementation of the pilot projects to the last 15% of households in each community, to identify the possible problems and to solve these problems.





Privy slab



Top View

Side View





ABSTRACTS FROM THE VILLAGE COMMITTEE BOOK SHOWING LOANS AND LOAN REPAYMENTS UP TO OCTOBER 1980.

First loan

| Household*     | loan**<br>Baht  | Repayments made (Baht) |                |                |                |                |                |                |                |                |                | Balance**<br>Baht |             |
|----------------|-----------------|------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------------|-------------|
|                |                 | 2.                     | 3.             | 4.             | 5.             | 6.             | 7.             | 8.             | 9.             | 10.            |                |                   |             |
| 1 ..           | 200 ..          | 10 ..                  | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 10 ..             | 110         |
| 2 ..           | 150 ..          | 10 ..                  | 140 ..         | ..             | ..             | ..             | ..             | ..             | ..             | ..             | ..             | ..                | -           |
| 3 ..           | 200 ..          | 20 ..                  | 20 ..          | 20 ..          | 20 ..          | 20 ..          | 20 ..          | 20 ..          | 20 ..          | 20 ..          | 20 ..          | 20 ..             | 20          |
| 4 ..           | 200 ..          | 20 ..                  | 10 ..          | 15 ..          | 15 ..          | 15 ..          | 15 ..          | 15 ..          | 15 ..          | 15 ..          | 15 ..          | 15 ..             | 65          |
| 5 ..           | 200 ..          | 20 ..                  | 20 ..          | 20 ..          | 20 ..          | 20 ..          | 20 ..          | 20 ..          | 20 ..          | 20 ..          | 20 ..          | 20 ..             | 20          |
| 6 ..           | 200 ..          | 10 ..                  | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 10 ..             | 110         |
| 7 ..           | 200 ..          | 20 ..                  | 20 ..          | 20 ..          | 20 ..          | 20 ..          | 20 ..          | 20 ..          | 20 ..          | 20 ..          | 20 ..          | 20 ..             | 20          |
| 8 ..           | 200 ..          | 10 ..                  | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 10 ..             | 110         |
| 9 ..           | 150 ..          | 20 ..                  | 20 ..          | 110 ..         | ..             | ..             | ..             | ..             | ..             | ..             | ..             | ..                | -           |
| 10 ..          | 150 ..          | 20 ..                  | 130 ..         | ..             | ..             | ..             | ..             | ..             | ..             | ..             | ..             | ..                | -           |
| 11 ..          | 150 ..          | 150 ..                 | ..             | ..             | ..             | ..             | ..             | ..             | ..             | ..             | ..             | ..                | -           |
| 12 ..          | 150 ..          | 150 ..                 | ..             | ..             | ..             | ..             | ..             | ..             | ..             | ..             | ..             | ..                | -           |
| 13 ..          | 150 ..          | 100 ..                 | 50 ..          | ..             | ..             | ..             | ..             | ..             | ..             | ..             | ..             | ..                | -           |
| 14 ..          | 150 ..          | 100 ..                 | ..             | 50 ..          | ..             | ..             | ..             | ..             | ..             | ..             | ..             | ..                | -           |
| 15 ..          | 150 ..          | 150 ..                 | ..             | ..             | ..             | ..             | ..             | ..             | ..             | ..             | ..             | ..                | -           |
| 16 ..          | 150 ..          | 150 ..                 | ..             | ..             | ..             | ..             | ..             | ..             | ..             | ..             | ..             | ..                | -           |
| 17 ..          | 150 ..          | 150 ..                 | ..             | ..             | ..             | ..             | ..             | ..             | ..             | ..             | ..             | ..                | -           |
| 18 ..          | 150 ..          | 150 ..                 | ..             | ..             | ..             | ..             | ..             | ..             | ..             | ..             | ..             | ..                | -           |
| 19 ..          | 150 ..          | 150 ..                 | ..             | ..             | ..             | ..             | ..             | ..             | ..             | ..             | ..             | ..                | -           |
| 20 ..          | 150 ..          | 150 ..                 | ..             | ..             | ..             | ..             | ..             | ..             | ..             | ..             | ..             | ..                | -           |
| <b>Total**</b> | <b>3,350</b> .. | <b>1,560</b> ..        | <b>.440</b> .. | <b>.265</b> .. | <b>.105</b> .. | <b>.105</b> .. | <b>.105</b> .. | <b>.105</b> .. | <b>.105</b> .. | <b>.105</b> .. | <b>.105</b> .. | <b>.105</b> ..    | <b>.455</b> |

Second loan

| Household*   | loan<br>Baht    | Repayments made (Baht) |                |                |                |                |                |                |                | Balance**<br>Baht |
|--------------|-----------------|------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------------|
|              |                 | 3.                     | 4.             | 5.             | 6.             | 7.             | 8.             | 9.             | 10.            |                   |
| 1 ..         | 200 ..          | 10 ..                  | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 120               |
| 2 ..         | 200 ..          | 10 ..                  | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 120               |
| 3 ..         | 200 ..          | 10 ..                  | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 120               |
| 4 ..         | 200 ..          | 20 ..                  | 20 ..          | 20 ..          | 20 ..          | 20 ..          | 20 ..          | 20 ..          | 20 ..          | 40                |
| 5 ..         | 200 ..          | 20 ..                  | 20 ..          | 20 ..          | 20 ..          | 20 ..          | 20 ..          | 20 ..          | 20 ..          | 40                |
| 6 ..         | 200 ..          | 10 ..                  | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 10 ..          | 120               |
| 7 ..         | 200 ..          | 20 ..                  | 20 ..          | 20 ..          | 20 ..          | 20 ..          | 20 ..          | 20 ..          | 20 ..          | 40                |
| 8 ..         | 150 ..          | 150 ..                 | ..             | ..             | ..             | ..             | ..             | ..             | ..             | -                 |
| 9 ..         | 150 ..          | 150 ..                 | ..             | ..             | ..             | ..             | ..             | ..             | ..             | -                 |
| 10 ..        | 150 ..          | 100 ..                 | 50 ..          | ..             | ..             | ..             | ..             | ..             | ..             | -                 |
| <b>Total</b> | <b>1,850</b> .. | <b>500</b> ..          | <b>.150</b> .. | <b>.100</b> .. | <b>.100</b> .. | <b>.100</b> .. | <b>.100</b> .. | <b>.100</b> .. | <b>.100</b> .. | <b>.600</b>       |

\* In the village book names of householders are recorded in Thai. For simplicity only numbers are used in this abstract.

\*\* This columns or lines were not included in the village book.



ABSTRACTS FROM THE VILLAGE COMMITTEE BOOK SHOWING LOANS AND LOAN REPAYMENTS UP TO OCTOBER 1980.

Third loan

| House-<br>hold* | loan**<br>Baht  | Repayments made (Baht) |               |               |              |              |              |              |            | Balance**<br>Baht |
|-----------------|-----------------|------------------------|---------------|---------------|--------------|--------------|--------------|--------------|------------|-------------------|
|                 |                 | 4.                     | 5.            | 6.            | 7.           | 8.           | 9.           | 10.          |            |                   |
| 1 ..            | 150 ..          | 150 ..                 | ..            | ..            | ..           | ..           | ..           | ..           | ..         | -                 |
| 2 ..            | 200 ..          | 20 ..                  | 20 ..         | 20 ..         | 20 ..        | 20 ..        | 20 ..        | 20 ..        | ..         | 80                |
| 3 ..            | 150 ..          | 150 ..                 | ..            | ..            | ..           | ..           | ..           | ..           | ..         | -                 |
| 4 ..            | 200 ..          | 20 ..                  | 20 ..         | 20 ..         | 20 ..        | 20 ..        | 20 ..        | 20 ..        | 20 ..      | 60                |
| 5 ..            | 150 ..          | 150 ..                 | ..            | ..            | ..           | ..           | ..           | ..           | ..         | -                 |
| 6 ..            | 150 ..          | 150 ..                 | ..            | ..            | ..           | ..           | ..           | ..           | ..         | -                 |
| 7 ..            | 150 ..          | 150 ..                 | ..            | ..            | ..           | ..           | ..           | ..           | ..         | -                 |
| 8 ..            | 200 ..          | 20 ..                  | 20 ..         | 20 ..         | 20 ..        | 20 ..        | ..           | ..           | ..         | 100               |
| 9 ..            | 150 ..          | 20 ..                  | 20 ..         | 110 ..        | ..           | ..           | ..           | ..           | ..         | -                 |
| 10 ..           | 200 ..          | 10 ..                  | 10 ..         | 10 ..         | 10 ..        | 10 ..        | 10 ..        | 10 ..        | 10 ..      | 130               |
| 11 ..           | 200 ..          | 10 ..                  | 10 ..         | 10 ..         | 10 ..        | 10 ..        | 10 ..        | 10 ..        | 10 ..      | 130               |
| <b>Total</b>    | <b>1,900 ..</b> | <b>850 ..</b>          | <b>100 ..</b> | <b>190 ..</b> | <b>80 ..</b> | <b>80 ..</b> | <b>60 ..</b> | <b>40 ..</b> | <b>500</b> |                   |

Fourth loan

| House-<br>hold* | loan**<br>Baht  | Repayments made (Baht) |               |              |              |              |              | Balance**<br>Baht |
|-----------------|-----------------|------------------------|---------------|--------------|--------------|--------------|--------------|-------------------|
|                 |                 | 5.                     | 6.            | 7.           | 8.           | 9.           | 10.          |                   |
| 1 ..            | 200 ..          | 10 ..                  | 10 ..         | 10 ..        | 10 ..        | 10 ..        | 10 ..        | 140               |
| 2 ..            | 200 ..          | 10 ..                  | 10 ..         | 10 ..        | 10 ..        | 10 ..        | 10 ..        | 140               |
| 3 ..            | 150 ..          | 150 ..                 | ..            | ..           | ..           | ..           | ..           | -                 |
| 4 ..            | 200 ..          | 10 ..                  | 10 ..         | 10 ..        | 10 ..        | 10 ..        | 10 ..        | 140               |
| 5 ..            | 150 ..          | 30 ..                  | 120 ..        | ..           | ..           | ..           | ..           | -                 |
| 6 ..            | 150 ..          | 50 ..                  | 50 ..         | 50 ..        | ..           | ..           | ..           | -                 |
| <b>Total</b>    | <b>1,050 ..</b> | <b>260 ..</b>          | <b>200 ..</b> | <b>80 ..</b> | <b>30 ..</b> | <b>30 ..</b> | <b>30 ..</b> | <b>420</b>        |

Fifth loan

| House-<br>hold* | loan**<br>Baht | Repayments made (Baht) |              |              |              | Balance**<br>Baht |
|-----------------|----------------|------------------------|--------------|--------------|--------------|-------------------|
|                 |                | 7.                     | 8.           | 9.           | 10.          |                   |
| 1 ..            | 150 ..         | 10 ..                  | 10 ..        | 10 ..        | 10 ..        | 110               |
| 2 ..            | 150 ..         | 10 ..                  | 10 ..        | 10 ..        | 10 ..        | 110               |
| 3 ..            | 150 ..         | 10 ..                  | 10 ..        | 10 ..        | 10 ..        | 110               |
| <b>Total</b>    | <b>450 ..</b>  | <b>30 ..</b>           | <b>30 ..</b> | <b>30 ..</b> | <b>30 ..</b> | <b>330</b>        |

\* In the village book names of householders are recorded in Thai. For simplicity only numbers are used in this abstract.

\*\* This columns or lines were not included in the village book.



SUMMARY OF LATRINE SURVEYS IN THREE PILOT PROJECT DISTRICTS.

| Sub-district | No. of villages | Population | Households (numbers) |              |                 | Households (as percent) |                  |
|--------------|-----------------|------------|----------------------|--------------|-----------------|-------------------------|------------------|
|              |                 |            | Total                | With latrine | Without latrine | With latrines           | Without latrines |

PRAPUTHABATH DISTRICT

|                      |           |               |              |              |              |              |              |
|----------------------|-----------|---------------|--------------|--------------|--------------|--------------|--------------|
| 1.Praputhabath...    | 12        | 11,271        | 1,757        | 1,492        | 265          | 84.9%        | 15.1%        |
| 2.Khun Klone ...     | 10        | 5,658         | 875          | 855          | 20           | 97.7%        | 2.3%         |
| 3.Khao Wong ...      | 8         | 1,389         | 526          | 15           | 511          | 2.9%         | 97.1%        |
| 4.Huai Pa Whai...    | 13        | 2,344         | 584          | 198          | 386          | 33.9%        | 66.1%        |
| 5.Pugrang ...        | 8         | 2,874         | 520          | 292          | 228          | 56.2%        | 43.8%        |
| 6.Nong Gae ...       | 12        | 3,836         | 624          | 511          | 113          | 81.9%        | 18.1%        |
| 7.Na Yao...          | 7         | 2,738         | 501          | 278          | 223          | 55.5%        | 44.5%        |
| 8.Than Kasem ...     | 10        | 8,466         | 1,442        | 993          | 449          | 68.9%        | 31.1%        |
| 9.Pu Khumehan ...    | 8         | 3,129         | 579          | 504          | 75           | 87.0%        | 13.0%        |
| <u>Sub-total</u> ... | <u>88</u> | <u>41,705</u> | <u>7,408</u> | <u>5,138</u> | <u>2,270</u> | <u>69.4%</u> | <u>30.6%</u> |

SI RACHA DISTRICT

|                      |           |               |              |              |              |              |              |
|----------------------|-----------|---------------|--------------|--------------|--------------|--------------|--------------|
| 1.Bang Pra ...       | 8         | 11,830        | 2,119        | 1,797        | 322          | 84.8%        | 15.2%        |
| 2.Bung ...           | 8         | 9,059         | 1,519        | 750          | 769          | 49.4%        | 50.6%        |
| 3.Surasak ...        | 6         | 6,920         | 1,171        | 917          | 254          | 78.3%        | 21.7%        |
| 4.Tung Sukla ...     | 6         | 6,647         | 1,283        | 1,061        | 222          | 82.7%        | 17.3%        |
| 5.Bon Nong Kam...    | 6         | 8,965         | 1,497        | 668          | 829          | 44.6%        | 55.4%        |
| 6.Khao Kun Sung...   | 5         | 4,968         | 823          | 355          | 468          | 43.1%        | 56.9%        |
| <u>Sub-total</u> ... | <u>39</u> | <u>48,389</u> | <u>8,412</u> | <u>5,548</u> | <u>2,864</u> | <u>66.0%</u> | <u>34.0%</u> |

CHANA DISTRICT

|                      |            |               |              |              |              |              |              |
|----------------------|------------|---------------|--------------|--------------|--------------|--------------|--------------|
| 1.Banna ...          | 15         | 10,201        | 1,887        | 570          | 1,317        | 30.2%        | 69.8%        |
| 2.Sakom ...          | 6          | 4,435         | 696          | 57           | 639          | 8.2%         | 91.8%        |
| 3.Klong Pia ...      | 10         | 3,672         | 653          | 244          | 409          | 37.4%        | 62.6%        |
| 4.Janong ...         | 10         | 5,147         | 807          | 90           | 717          | 11.2%        | 88.8%        |
| 5.Natub ...          | 10         | 5,913         | 1,127        | 95           | 1,032        | 8.4%         | 91.5%        |
| 6.Paching ...        | 9          | 3,341         | 563          | 34           | 529          | 6.0%         | 94.0%        |
| 7.Nawa ...           | 10         | 3,800         | 748          | 58           | 690          | 7.8%         | 92.2%        |
| 8.Ku ...             | 9          | 3,030         | 548          | 49           | 499          | 8.9%         | 91.1%        |
| 9.Khun Tad Wai...    | 9          | 2,082         | 431          | 113          | 318          | 26.2%        | 73.8%        |
| 10.Nam Khao ...      | 11         | 2,658         | 533          | 238          | 295          | 44.7%        | 55.3%        |
| 11.Kae ...           | 7          | 1,977         | 369          | 21           | 348          | 5.7%         | 94.3%        |
| 12.Tamosai ...       | 9          | 3,843         | 746          | 44           | 702          | 5.9%         | 94.1%        |
| 13.Sapan Maikaen     | 8          | 3,216         | 678          | 38           | 640          | 5.6%         | 94.4%        |
| <u>Sub-total</u> ... | <u>123</u> | <u>53,315</u> | <u>9,786</u> | <u>1,651</u> | <u>8,135</u> | <u>16.9%</u> | <u>83.1%</u> |

SUMMARY OF THREE DISTRICTS

|                  |            |                |               |               |               |              |              |
|------------------|------------|----------------|---------------|---------------|---------------|--------------|--------------|
| Praputhabath ... | 88         | 41,705         | 7,408         | 5,138         | 2,270         | 69.4%        | 30.6%        |
| Si Racha ...     | 39         | 48,389         | 8,412         | 5,548         | 2,864         | 66.0%        | 34.0%        |
| Chana ...        | 123        | 53,315         | 9,786         | 1,651         | 8,135         | 16.9%        | 83.1%        |
| <u>Total</u> ... | <u>250</u> | <u>143,409</u> | <u>25,606</u> | <u>12,337</u> | <u>13,269</u> | <u>48.2%</u> | <u>51.8%</u> |



PRIVATE HOUSEHOLDS IN THAILAND BY TYPE OF TOILET FACILITIES

| Toilet Facility    | Whole Kingdom |        | Bangkok* |        | Municipalities |        | San. Districts |        | Villages  |        |
|--------------------|---------------|--------|----------|--------|----------------|--------|----------------|--------|-----------|--------|
|                    | No.           | %      | No.      | %      | No.            | %      | No.            | %      | No.       | %      |
| 1. Flush toilet    | 36,320        | 0.5%   | 31,270   | 4.9%   | 4,310          | 0.9%   | 740            | 0.1%   | 0         | 0%     |
| 2. Latrine         |               |        |          |        |                |        |                |        |           |        |
| 2.1. water-seal... | 2,617,610     | 38.1%  | 591,170  | 91.9%  | 426,750        | 86.9%  | 446,800        | 60.7%  | 1,152,890 | 23.1%  |
| 2.2. pit ...       | 799,170       | 11.6%  | 6,670    | 1.0%   | 17,750         | 3.6%   | 103,060        | 14.0%  | 671,690   | 13.5%  |
| Sub-total (2)      | 3,416,780     | 49.8%  | 597,840  | 93.0%  | 444,500        | 90.5%  | 549,860        | 74.7%  | 1,824,580 | 36.5%  |
| Sub-total (1+2)    | 3,453,100     | 50.3%  | 629,110  | 97.8%  | 448,810        | 91.3%  | 550,600        | 74.8%  | 1,824,580 | 36.5%  |
| 3. Other           | 3,385,150     | 49.3%  | 10,790   | 1.7%   | 40,600         | 8.3%   | 181,880        | 24.7%  | 3,151,880 | 63.1%  |
| 4. Unknown         | 25,010        | 0.4%   | 3,080    | 0.5%   | 1,910          | 0.4%   | 3,450          | 0.5%   | 16,570    | 0.3%   |
| TOTAL              | 6,863,260     | 100.0% | 642,980  | 100.0% | 491,320        | 100.0% | 735,930        | 100.0% | 4,993,030 | 100.0% |

|                |     |        |     |      |     |      |     |       |     |       |
|----------------|-----|--------|-----|------|-----|------|-----|-------|-----|-------|
| As percent of  | ... | 100.0% | ... | 9.4% | ... | 7.2% | ... | 10.7% | ... | 72.8% |
| all households | ... | 100.0% | ... | 9.4% | ... | 7.2% | ... | 10.7% | ... | 72.8% |

Source : Housing Survey 1976

\* Within the boundaries of the BMA includes municipal areas, sanitary districts and villages. For details of different areas within BMA see Annex 3 page 2/2.





PRIVATE HOUSEHOLDS IN BANGKOK BY TYPE OF TOILET FACILITIES

| Toilet Facility              | Bangkok (total) |        | Municipalities |        | San.Districts |        | Villages |        |
|------------------------------|-----------------|--------|----------------|--------|---------------|--------|----------|--------|
|                              | No.             | %      | No.            | %      | No.           | %      | No.      | %      |
| 1. Flush toilet              | ...             | 4.9%   | 30,100         | 5.8%   | 1,170         | 2.3%   | 0        | 0%     |
| 2. Latrine                   | ...             | 91.9%  | 485,060        | 93.3%  | 44,090        | 85.9%  | 62,020   | 86.7%  |
| 2.1. water-seal              | ...             | 1.0%   | 530            | 0.1%   | 2,560         | 5.0%   | 3,580    | 5.0%   |
| 2.2. pit                     | ...             | 93.0%  | 485,590        | 93.4%  | 46,650        | 90.9%  | 65,600   | 91.7%  |
| Sub-total (2)                | ...             | 97.8%  | 515,690        | 99.2%  | 47,820        | 93.2%  | 65,600   | 91.7%  |
| 3. Other                     | ...             | 1.7%   | 1,330          | 0.3%   | 3,500         | 6.8%   | 5,960    | 8.3%   |
| 4. Unknown                   | ...             | 0.5%   | 3,080          | 0.6%   | 0             | 0%     | 0        | 0%     |
| <b>TOTAL</b>                 | ...             | 100.0% | 520,100        | 100.0% | 51,320        | 100.0% | 71,560   | 100.0% |
| As percent of all households | ...             | 100.0% | ...            | 80.9%  | ...           | 8.0%   | ...      | 11.1%  |



1. PEOPLE INTERVIEWED AND MET

1.1. At Ban Khuan

- 1.1.1. Mr. Swang Yapeen, member of the Village Committee.
- 1.1.2. Mrs. Peenphet Utnoenin, member of the Village Committee, and PHC communicator.
- 1.1.3. Mrs. Amphon Legay, PHC village volunteer.

1.2. At Lampang

- 1.2.1. Dr. Jumroon Mikhanorn, Deputy Provincial Chief Medical Officer.
- 1.2.2. Mr. Pateep Siribodhi, Director, Sanitation Region 5.

2. DOCUMENTARY INFORMATION USED

- 2.1. "Housing Survey 1976", National Statistical Office, Bangkok 1978.
- 2.2. "Interim Report on Survey of Existing Drinking Water Sources and Family Excreta Disposal Methods in Four Pilot Project Districts" by B.J. Kukielka, Bangkok, December 1980.
- 2.3. Unpublished survey results
  - 2.3.1. Praputhabath District, Saraburi Province
    - N/10/10 of Aug. 1979
    - N/10/23 of Jul. 1980
  - 2.3.2. Si Racha District, Chonburi Province
    - N/11/23 of Sept. 1979
    - N/11/27 of Oct. 1979
  - 2.3.3. Chana District, Songkhla Province
    - N/28/2 of Sept. 1979.
- 2.4. "Interim Report on Drinking Water Protected Dug-well Programme in Four Pilot Project Districts in Thailand" by B.J. Kukielka, December 1980.

