Government of Egypt
Governorate of Fayoum

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International Cooperation

FAYOUM DRINKING WATER AND SANITATION PROJECT

SOCIO-ECONOMIC ASPECTS OF DRINKING WATER AND SANITATION IN FAYOUM RURAL COMMUNITIES

Results of a survey in five villages and attached hamlets

December 1992

EL AZAB WATER WORKS, FAYOUM in cooperation with

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The Netherlands

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Fayoum, December 1992

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GLOSSARY AND ABBREVIATIONS

Ezbah	Hamlet
Izaab	Plural: hamlets
Markaz	District
Omda	Village eldest of an attached village. He functions as a mayor without getting salary. An 'omda" is elected every four years and is a job of honour.
Shaykh Al Balad	Village eldest of an hamlet, elected by all men of the hamlet older than 18 years.
Zir	Earthen drinking water container

AW	Al Azab Water Works
ECG	Engineering Consultants Group S.A.
HC	House Connection
HH	Household
PT	Public Tap
tn	Through neighbour
NOPWASD	National Organisation of Potable Water and Sanitary Drainage
ORDEV	Organisation for the Reconstruction and Development of Egyptian Villages

SUMMARY OF SURVEY RESULTS

In the period of February - September 1992 a survey on present water supply and sanitation conditions in five Pilot Villages was held in the context of the Fayoum Drinking Water and Sanitation Project.

This report presents the survey results. The detailed tables, which provide the background for the figures in the text, are contained in Annex 2, 3, and 4, which correspond with the respective Chapters in the main report.

In total 315 households[1] were interviewed in 5 main villages and their 47 hamlets of 5 Local Units in each of the 5 Districts of the Governorate of Fayoum. From all households 58.1% were interviewed in the main villages against 41.9% in the hamlets.

The 315 households represent 2727 persons. Of them 115 households, or 36.5%, have a house connection. These house connections serve in total 1060 persons.

Between main village and hamlets essential differences exist in household size, water consumption and service level patterns, the population in hamlets being less served. However, the main socio-economic difference is not always found between inhabitants of the main village and of hamlets, but between owners of a house connection and public tap users.

The water consumption pattern in the five Local Units is summarized in the table below. Of all water users 36.5% are owners of house connections, 61.6% are public tap users and 1.9% collect their water at their neighbour's connection.

Canal water is used only as a secondary source.

Distribution of consumers according to primary and secondary water source in main villages and hamlets

Habitation	Households		HC+PT +Tn	HCs		PTs		Through neighbour		Canal users	
	No	%		No	%	No	%	No	%	No	%
Main villages	183	58.1	100%	82	44.8	96	52.5	5	2.7	74	40.4
Hamlets	132	41.9	100%	33	25.0	98	74.2	1	0.8	89	67.4
TOTAL	315	100	100%	115	36.5	194	61.6	6	1.9	163	51.7

Households, being all persons sharing the same house, in main villages are smaller than

[1] "Household" in this report is used for all persons sharing the same house. "Family" is used to indicate the members of a nuclear family.

in hamlets. Also families are smaller in main villages than in hamlets.

Key figures on water use, consumption patterns and billing are:

- The average household size is in the main villages 8.03 persons, in hamlets 9.7 persons and in the total population 8.7 persons. The family size in main villages is 5.6, in hamlets 6.4 and in the total population 5.95 persons per family.

- The average number of users per house connection appears to be slightly higher than the average household size namely 9.2. This may be a statistic deviation. The average number of users of a public tap amounts to 598.

- The average consumption of water found is 80.3 l/c/d for users of house connections and 16.2 l/c/d for public tap users. By comparison with public tap users, house connection customers consume 5 times as much water from the piped system. The figures should be considered with some caution.[2]

- The findings do not confirm that water consumption by users of house connections increases when the house is sewer-connected. However, because the water consumption has been calculated from the water bills paid by people, it may be that the billing does not reflect the consumption correctly. This is confirmed by the FADWS water demand study which shows higher consumption figures for sewered areas.

- All house connections are metered. There are 113 meters against 115 house connections, because two households have access to piped supply through extension of their neighbour's connection.
  Of the meters 42.2% are read once a year, 27.4% twice or more a year, and 30.1 % is never read. If the households with new connections and water cut are subtracted from the total "never read" then only 23.9% are never read.

- Of the 113 meters there are 9 meters, or 8% of the total, out-of-order. This may be an underestimate. A more adequate figure will be derived from a water meter survey to be carried out in Sennoures in the framework of the FADWS Revenue Improvement Pilot Project.

- Of the 115 house connections 67.2% are billed. The majority pays yearly, 52.2% of all house connections owners, and 15% pay twice or more per year. One-third, or 32.7%, never has been billed. Subtracting the new connections and the two connections where water has been cut, a nett category of 26.5% has never paid.
  The billing is better in the village of Kalamshah where payment is arranged through the Local Unit. In Kalamshah 82.8% pay, while Tersa scores second with 75%.

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[2] Actual measurements in the FADWS water demand study show a, variation in water consumption figures from public taps between 4.6 and 27.2 l/c/d. Actual consumption appears to depend on factors such as: water pressure, service hours and crowdedness at the tap.

- From all 194 public tap users 70% prefer to have a house connection, for which two-thirds of them could pay. There are three equally important constraints for getting this house connection:

  - for one-third a piped supply connection is technically impossible because there is no pipe-line yet;
  - another one-third is on the waiting list: the present policy in Fayoum Governorate restricts allocations of new connections, resulting in growing waiting lists;
  - one-third of households cannot afford the house connection.

- The 30% public tap users who explicitly do not want a house connection cannot afford it. Nearly half of the public tap users, 44.8%, confirm that lack of money or their opinion that a connection is too expensive withhold them from applying for a house connection.

A house connection costs in 1992 in average £E 205, which is more than a monthly salary of an average government employee.

Of all public tap users 38% agreed to pay for tap improvement, while nearly one quarter would prefer a house connection.

Use of canal water

Of the total population nearly 52% use the canal water. One would expect to find more canal users in the hamlets than in the main villages. Of all our main village households 40.4% use the canal, while of all hamlet households 67.4% use the canal as a secondary water source.

Of the 115 households with a house connection a substantial part of 20% is also user of canal water, mainly for washing clothes and doing dishes. Of the persons who collect water through the neighbour only 1 uses the canal. More comfort for washing and doing dishes is the main reason for using the canal.

Over two-thirds of the 194 public tap users, or 72%, use the canal as secondary water source. Public tap users give different reasons for using the canal as a secondary water source:

- negative experiences with the use of a public tap by 56.7% of the public tap users. These negative experiences include finding the tap too crowded (25%), no water at the tap (20%) or the public tap is too far from home (12%);
- positive preference for the canal for washing and bathing by in total 64.4% of the public tap users.

Since it is expected that the positive preference for the canal will not disappear with the improvement of public taps, people will continue using the canal. Therefore, to decrease the public health risks, certain facilities for washing and bathing on the canal banks, such

as washing steps, could be created. These help in minimizing body contact with water.

Public health aspects

The main characteristics on public health in the pilot villages are the following:

- Of all households 87% use a *zir* for storage of cool drinking water and nearly all these zirs (97.4%) are covered to protect the water.[3]
- All HC users and many public tap users have a special basin for washing hands. Hardly any household or public utility has a piece of soap available with the basin.
- The present use of the canal for washing and bathing by 52% of the households provides a serious health risk.
- The undercapacity of sanitary facilities at schools is causing great concern.
- Undercapacity for emptying of cess pits may provide an underestimated health risk, in particular in densely populated areas and at school court-yards.
- Dumping the waste water in canals, by public and private trucks with truckloads of sludge and by allowing groundwater lowering pipes to be used as sewers, increases contamination of surface waters.

Sanitation

Sanitation facilities are unequally divided over the households. Of the households in main villages 43.2% have a cess pit, while this is less than one-third of the households in hamlets (see table below).

Distribution of sanitary facilities in main villages and hamlets

Habitation	Households		Cess pit		Pipe-line		Nothing	
	No	%	No	%	No	%	No	%
Main villages	183	100%	79	43.2	22	12.0	82	44.8
Hamlets	132	100%	41	31.1	13	9.8	78	59.1
TOTAL	315	100%	120	38.1	35	11.1	160	50.8

The availability of a house connection is a more important factor than being resident of a main village or a hamlet for having any sanitary facility.

[3] This does not mean that the water quality in the zir is always reliable. Other surveys indicate contamination of this water (see: R. Platenburg, Magdi Zaki "Patterns of Water Quality in Rural Areas of Assyut Governorate").

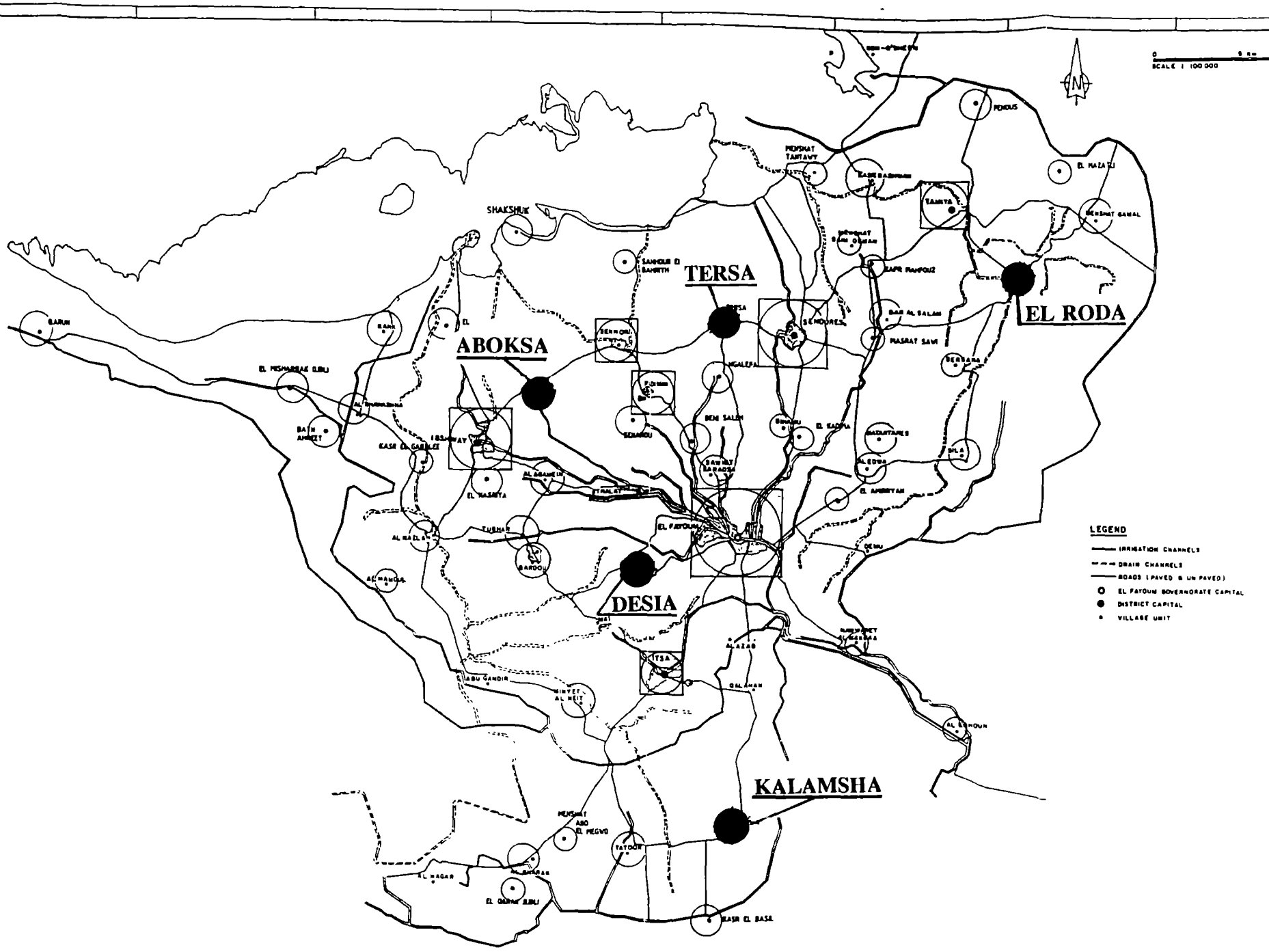
- Of the families with house connections 20.9% have access to a "sewer"-pipe, 57.4% have a cess pit and 21.7% have no sanitary facility.
- Of the public tap users only 5.7% have a "sewer", 26.3% of the families have a cess pit and the majority of 68% have no facility.

The connection to a sewer is mainly limited to 2 villages: Tersa and Al Roda, where 86% of the sewer connections are found. In the other villages the cess pit system is the near-only facility. The main villages Tersa and Al Roda both have a ground water lowering pipe in the village centre, which is used as a sewerage system.

In hamlets 37.1% "sewer"-connected houses were found. Most of these have house connections. Several larger house-owners in hamlets have constructed a waste water pipe directly leading to the irrigation or drainage canal.

Nearly 70% of the households are willing to pay for a sewerage connection. In particular households and Local Unit administrations in villages with water table problems are eager to get a sewerage system.

Because the exact connection costs are not known, people may assume that connection costs would be similar to the cost of a water supply connection. At present cess pit holders pay in average £E 50 per year for emptying. Therefore a one-time connection cost of £E 200 (average) and an annual payment for sewerage maintenance up to £E 50, or alternatively 50% of the waterbill, would be acceptable and justifiable.



LOCATION OF PILOT VILLAGES

1. INTRODUCTION

1.1 BACKGROUND

This report presents the results of a field survey on water supply and sanitation conditions in five pilot villages selected by the Governorate of Fayoum. The survey was held from February till September 1992.

The study concentrates on the main villages and hamlets of five Local Units out of the 39 in Fayoum Governorate, one in every *Markaz* (District):

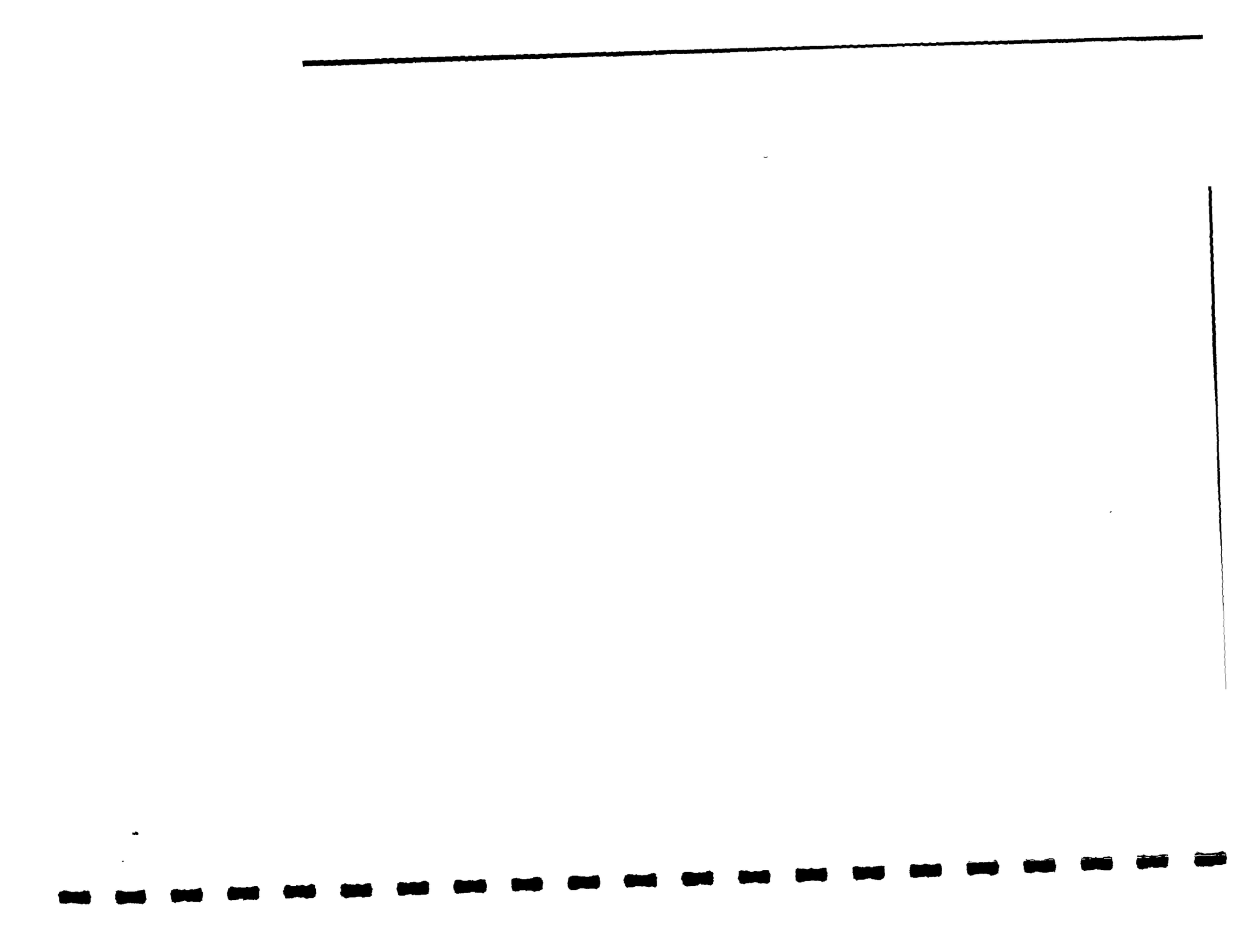
1. Aboksah in Ibshway District
2. Kalamshah in Itsa District
3. Tersa in Senoures District
4. Desia in Fayoum District
5. Al Roda in Tamiyya District

A staged programme has been outlined for the pilot villages. The present survey is part of the second stage.

Stage 1:
General data collection and a complementary reconnaissance field survey. (This was part of the inception phase of the project).

Stage 2:
Specific data collection, including:
- technical inspection of actual water supply and waste water facilities and connections in houses of residents, randomly around 60 per village;
- inspection of public taps, selected taps in each village plus every tap situated in the hamlets;
- a survey of public facilities;
- inventory of health and hygiene conditions, with help of the local health centre;
- preparation of a topographical village map, or upgrading of the existing map;
- soil and groundwater investigation;
- institutional assessment of relevant organisations.

Stage 3:
Implementation of improvements. These may include the following:
- leak detection and reduction programme
- customer relations, billing improvement plan
- upgrading of public taps
- hygiene education activities
- on-site sanitation improvements, etc.



1.2 OBJECTIVES OF THE SURVEY

The main objective of Fayoum Drinking Water and Sanitation Project is: " *To improve the drinking water supply and sanitation in Fayoum Governorate to such an extent that it has a long lasting impact on public health and the well being of the rural population in Fayoum Governorate.* "

The objectives of the Pilot Villages Survey are:
- to obtain more detailed information on water supply and sanitation facilities at village and household level in Fayoum;
- to identify priorities for water and sanitation improvements;
- to identify organisational structures at the Local Unit level for project implementation.

The information collected will be used for the following project activities:
- integrating socio-economic aspects in water supply and waste water Master Planning
- feasibility studies for village sewerage systems
- solid waste studies
- billing and revenue improvement programme
- hygiene education pilot programme
- background and reference data for future project activities.

1.3 METHODOLOGY

The study team was introduced to the villages by two official letters. The first letter from the Project leader, approved by the Governor of Fayoum, stated that this village is selected by the Governorate for a detailed study in the Fayoum Drinking Water and Sanitation Project. The second one contained a recommendation from the Director of Al Azab Water Works to the village mayor.

At the start of the study the team visited the mayor of the Local Unit to introduce the project.

In all villages the team got the full support of local officials and was, during the field work, accompanied by Local Unit personnel.

The methodology of the study consist of observation supported by three types of structured interviews:
- Home visits served to observe the different water supply, sanitary and hygiene conditions in different social groups of the main villages and their hamlets.
- Interviews were conducted with public tap users.
- Information sources were also staff of the Local Unit, the health centre, schools, youth club, and other public facilities.

Official statistics were often said or found to deviate from reality. Hence, figures describing the conditions in the villages are based on a combination of estimates provided by the concerned personnel or key informants and own observations. In all cases where the source of figures is not obvious, the source is mentioned.

The table below shows how the key informants are distributed over the various areas.

Table 1.1 Information sources in five pilot villages

Local Unit	Households visited (House connections in brackets)	Public facility	Public Taps visited
Abokshah - main village - hamlets (10)	 34 (15 HC) 30 (6 HC)	4	 4 4 (6 hamlets without PT)
Kalamshah - main village - hamlets (11)	 30 (19 HC) 30 (11 HC)	8	 1 11 (1 hamlet without PT)
Tersa - main village - Naqalifa[1] - hamlets (3)	 30 (10 HC) 10 (5 HC) 9 (1 HC)	8	 8 1 3 (1 hamlet without PT)
Desia - main village - hamlets (6)	 40 (14 HC) 18 (4 HC)	7	 3 6 (all 6 hamlets have PT)
Al Roda - main village - hamlets (17)	 40 (19 HC) 44 (10 HC)	5	 2 14 (3 hamlets without PT)
TOTAL - main village = 5 - hamlets = 47	 183 (82 HC) 132 (33 HC)	32	 19 38

1) Naqalifa is one of the six attached villages to Tersa and the only attached village included in the survey. Reasons for inclusion are the size of Naqalifa, being nearly as big as Tersa, and the limited number of hamlets of Tersa mother village. Results are grouped with those of the main village.

Fieldwork was done in the period between February and September 1992.

Kalamshah was the first Local Unit to be studied. Here two teams were formed consisting each of three persons, from Al Azab Water Works (AW), NOPWASD and the consultants' team. One or two staff of the Local Unit joined each team. The total field work period covered nearly two weeks.

Aboksha and Tersa were surveyed by an all-female team consisting of three persons: two persons of AW and one of the consultants' team. The total field work period covered more than two weeks.

In Desia and Al Roda a team of three persons performed the fieldwork: two of AW and one of the Fayoum Sanitation Department. The data collection forms used in the study are attached as annex 1.

Data were processed with help of Paradox software, for which ECG developed the computer programme.

1.4 STRUCTURE OF THE REPORT

Chapter 2 contains information on the Local Units, its main villages and hamlets and their population. The water supply and sanitary situation of public facilities of the Local Units are described and the socio-economic conditions of the population are also discussed. Detailed data tables are attached as annex 2. More detailed location maps of the villages and hamlets can be found in annex 5.

Chapter 3 reports on the drinking water conditions of house connection and public tap users and the needs for improvements as expressed by the public. Chapter 4 describes the sanitary facilities of the population. Annexs 3 and 4 provide the detailed tables.

Chapter 5 gives recommendations for improvements in the fields of drinking water, sanitation and solid waste. The last chapter 6 discusses a management set up for community projects and provides the planning of one such project: the pilot hygiene education programme.

The contents of information in Annexes 1 to 4 correponds with that in the chapters 1 to 4.

2. THE VILLAGES

This chapter describes the composition of the five Pilot Local Units, their public facilities, the water supply and sanitation conditions and responsibilities for maintaining them, their population and the socio-economic conditions of their population.
Characteristics of the general population and sample population are compared.

2.1 COMPOSITION OF THE LOCAL UNIT

An overview of the pilot Local Units plus their attached villages and hamlets of the mother village is given below.

Table 2.1 Mother villages with attached villages and hamlets

Local Unit	**Aboksah**	**Kalamshah**	**Tersa**	**Desia**	**Al Roda**
District	Ibshway	Itsa	Senoures	Fayoum	Tamiyya
Attached villages (20)	1 Zeed 2 Kafr Aboud 3 Menshat Howeidi 4 Tahawi 5 Shakshouk 6 Al Gilani	1 Hamdiyya 2 Kasr Al Basil	1 Abheet Al Haggar 2 Al Zawih Al Khadra 3 Kafr Fazara 4 Al Saidiya 5 Manshat Al Sadat 6 Naqalifa	1 Manshat Fteah 2 Al Sounbat 3 Manshat Al Asheery 4 Mnashi Al Khatib	1 Al Rubiat 2 Fargas
Hamlets of mother village (47)	1 Gindi 2 Sidnawi Gadida 3 Fabrika 4 Sidnawi Kadima 5 Husayyen Barakat 6 Dardir Barrani 7 Al Saba'a 8 Al Adli 9 Al Rabbat 10 Abu Hammad	1 Sirsinawi 2 Al Rufaya 3 Al Gabal 4 Al Burah 5 Al Hatab 6 Burayyik 7 Duba'a 8 Manakli 9 Ramis 10 Al Muftah 11 Halfeyya	1 Abu Khachaba 2 Al Sini 3 Mangud	1 Mahmud Bey 2 Mahrus 3 Al Mi'alim Ibrahim 4 Khatib 5 Al Kum Al Ahmer 6 Ali Khalil	1 Salim Ali 2 Bashir Salih 3 Sakan Al Nokta 4 Nagati 5 Abdal Razik Musa 6 Makersha 7 Saluha 8 Al Hariri 9 Salim Habib 10 Al Boghdady 11 Ali Abdal Mina'm 12 Husain Mustafa 13 Awad Zidan 14 Abdal Nabi Husain 15 Girgawi Shihab 16 Al Lafy 17 Shafi Abu Husain Musa

All selected villages in the survey are the main villages of the Local Units. Each main village has some attached villages and hamlets. Besides a mother village with hamlets a Local Unit contains attached villages with their own hamlets. The number of attached villages and hamlets differs from Unit to Unit.

2.2 LOCAL ADMINISTRATION

2.2.1 Administration

Chief authority of the Local Unit is the mayor. Traditionally the *Omda* is the head of an attached village. The *Omda* is chosen by the villagers and because his is a job of honour he does not receive salary for it. The *Shaykh Al Balad* acts as the local authority of an hamlet or *ezbah*.

The village mayor is appointed by the Governor (Law 43/1979, art. 139), and has the authority of a unit head (*ra'is al-wahda al-mahaliyyah*). Secondly, he is chairman of the Executing Council, consisting of six heads of services at the village level, being representatives of the Ministry of Education, Health (doctor), Agriculture, Social Affairs (social worker), Housing (head of Technical Unit), Interior (or public utilities) and the village secretary.

Thirdly, he is competent to call the Local Popular Council (*Maglis al-Sha'abi*) for a meeting and has to cooperate with the Local Council in the execution of tasks. Finally and most importantly he is chief of the Local Unit' office, an office consisting of between 40 - 80 staff in larger villages in Fayoum, which has the task to prepare and execute policies.

A main task of the village mayor is the coordination of different government services in his Local Unit. Next to that he is co-responsible for public works, such as drinking water supply, electricity supply, roads and transport, for economic development projects and food distribution. Most public institutions and public servants in a village are part of their own ministerial hierarchy. Therefore this coordination is not a small task.
A Local Unit counts around eight to ten different public institutions and many more public buildings, without the mosques:
- Local Unit Office
- Agricultural Department
- Village bank, or branch
- Veterinary Centre
- Schools
- Health Centre
- Social Centre
- Police Station
- Youth and Sports Centre
- Telephone/post Office

The Local Unit is responsible for the distribution of subsidized consumer goods. The programme for schoolfeeding is executed by the Ministry of Education for government schools and Al-Azhar for Islamic schools.

The Local Council (*Maglis Al Sha'abi*) consisting of sixteen chosen representatives and one woman has a policy-making and coordinating task for the complete area of the Local Unit.

An extensive description of the competency and working of institutions at the Local Unit level in Egypt is provided by J.M. Otto in his dissertation of 1987 (Otto, 1987: 141-185).

2.2.2 Finance

The attached villages and hamlets have no separate annual budget and are for all governmental and administrative operations dependent on the Local Unit and its administrative staff in the mother village.

The planning and budgeting of the local public institutions have to be combined into one document. It is common practice that the municipal budget is prepared by the Local Unit, while the budgets for local branches of the different ministries are added by the District administration.

The government budget in Egypt has four chapters, covering respectively:
1. salaries, wages etc.
2. recurrent expenditures
3. investments
4. installments of loans

Local Units prepare the required budget for the chapters one and two only. This budget is sent to the *Markaz*. The *Markaz* on its turn prepares the budget for the Markaz town and Local Units for the chapters 1, 2 and 4. The Governorate, by its financial directorate, subsequently prepares a budget for the whole Governorate in which also investments for chapter 3 are included. This budget has to be discussed and approved by the Governorate's Popular Council before the Governor sends it to the Ministry of Finance.

The Local Unit has three sources of income.

The first source consists of contributions to the local fund for development and services or "*sanduq al-tanmiyyah wa al-khidmat*". Each person requesting a service of the Local Unit in preparation of certificates or applications for electricity or water connection, a housing permit etc. contributes a small amount to the *sanduq*, each according to possibility, for example between £E 2 - 5 for an application for water connection.

Since 1990 this *sanduq*, or special fund for service and development, is no longer used for any small project, but is spent for rehabilitation of water and sanitation facilities. The fund can also receive development funds of foreign donors, such as matching funds for local investments, granted by USAID and managed by the Organisation for the Reconstruction and Development of Egyptian Villages (ORDEV). The Local Council decides on priorities for spending of the *sanduq*.

A second source is the Governorate budget, which allocates a general budget for each Local Unit. This budget caters for 90% or more for salaries, while the other 10% are recurrent costs. However, public facilities don't pay the water bill and often don't pay the

electricity bill, because the budget doesn't contain enough provisions for these. Public services bills are part of a cross-debt arrangement with the Ministry of Finance. Remarkably, often a large part of the budget for recurrent costs is reserved for payment of the electricity bill.

The mayor of **Kalamshah** spent this electricity budget last year on replacement of streetlight bulbs and he deducted these expenditures from the budget line for electricity consumption. The budget for recurrent costs hardly allows Local Units to meet the bills for consumption of electricity, water and for emptying sanitation pits of public buildings.

A third source of income are local taxes which can be levied if the Local Council decides so. For example, income can be collected by providing permits, for example for slaughtering, quarrying, shopkeeping, a permit to market vendors and taxi drivers, who rent places at a market or transport terminal. Taxes can also be raised on houses, land and tractors.

The Local Unit of **Desia** has some other sources of income. One is the workshop, which fabricates wooden doors and windows and does flagstones, pavements and painting. It also started a nursery plant for plants and trees to save money.

In **Al Roda** the Local Unit started a flower selling project.

2.2.3 Water bill collection and maintenance of water supply and sanitation facilities

Per 1st of July the Governor of Fayoum transfered the responsibility for meter reading and collection to the Local Units, with the aim of increasing billing efficiency.

Until then the Local Unit office of **Kalamshah** played an intermediate role in collecting the fees of private users for drinking water and electricity. In **Kalamshah** and **Al Roda** once a year, often in July and August, the fee collector of AW collected the fees from the private users at the Local Unit. Consumers living in **Aboksah**, **Tersa** and **Desia** had to go to AW to pay their bills.

Regarding maintenance of public facilities the Technical Department (*kism al-fanni*) of the Local Unit is responsible for maintenance of water provisions by pipes of less than 2", as it is also responsible for maintenance of roads and transport. Funds for maintenance are collected often ad hoc from the public.

The mayor should also supervise the maintenance of public buildings, such as mosques and schools, and the cleaning of streets.

2.2.4 Role of ORDEV

The main role of ORDEV in Egypt is to support investments of Local Units directly via

the national Ministry of Finance. ORDEV has been active in Fayoum since 1973.

ORDEV matches government funds for local investments in water supply and sanitation from donor funds, mainly coming from USAID. End of 1992 a third phase of ORDEV co-financing will start focusing on the rehabilitation of drinking water and sanitation provisions.

2.3 POPULATION

2.3.1 House connection coverage of total and surveyed population

A proper determination of whether the survey sample is representative for the whole population is difficult for mainly two reasons:

a) The actual 1992 population figures for the Local Units have to be extrapolated from the 1986 CAPMAS census data assuming a population growth rate of 2.5% annually. Estimates made on the population of the hamlets of the main villages may indicate much higher population figures (see table 2.4).

b) In most hamlets explicitly one house connection owner has been included in the survey, because it was the intention to know the conditions of house connection owners in hamlets. This might give a rosier picture of the facilities in hamlets than exists in reality.

We have tried to discover whether house connection owners were overrepresented in the survey. Therefore first an overview is presented of the coverage by house connections of the total population of the five Local Units. (Annex 2 contains an overview of the water supply facilities per Local Unit.) These findings can be compared with the findings of the survey.

Table 2.2 Coverage of five Local Units by water supply facilities (including all attached villages and hamlets)

Local Unit	Population 1992 [1]	Hamlets	PTs 1992	HCs 1992	Coverage by HCs (%)	Average no. of users/PT
Aboksah	61,929	44	54	2,480	36.8	724
Kalamshah	43,585	27	40	1,805	38.1	674
Tersa	53,918	25	44	3,249	55.4	546
Desia	31,682	27	37	1,412	41.0	505
Al Roda	33,828	39	39	1,599	43.5	490
Total	224,942	162	214	10,545	43.1	598

1) Based on Master Plan projections, taking low growth CAPMAS projection of 2.5% growth/year for 1990-1995

The coverage percentage is achieved by multiplying the total number of house connections in one Local Unit with 9.2, which is the average number of users of a house connection as found in the survey (see chapter 3). Subsequently all other inhabitants are dependent on a public tap.

All functioning public taps have been checked in October 1992 by the head of the Ibshway maintenance centre of AW. Dividing the number of taps by all inhabitants who are dependent on them provides an average figure of 598 public tap users per tap.

Comparing these figures with the survey findings provides the following picture.

Table 2.3 House connection coverage of total population and surveyed population

Local Unit	% HC coverage of total population	% HC coverage in survey	Difference
Aboksah	36.8	35	- 1.8
Kalamshah	38.1	50	+ 11.9
Tersa	55.4	33	- 22.4
Desia	41.0	31	- 10.0
Al Roda	43.5	35	- 8.5
TOTAL	43.1	36.6	- 6.5

Hence, the survey rather slightly underrepresents house connection users. Villagewise there are certainly deviations.

2.3.2 The population of main villages and their hamlets

It is our impression that the population of hamlets is underestimated in official population figures of the main villages. Reasons for this are threefold:

- The Local Unit services do not always extend in practice to all hamlets; therefore not all hamlets are known to the staff.
- Inhabitants of hamlets do not systematically use the public services in the main village; school drop out is large in hamlets and e.g. a health centre had only data on births and deaths of one of its hamlets.
- The methods for population projections do not take the differences for hamlets and main villages into account.

The population of main villages and hamlets is presented in the summary table 2.4.

Table 2.4 Populations of main villages and hamlets in five Local Units

Local unit	1986 (CAPMAS)	1990 (Master Plan)	1992 (survey) *
1.Aboksah			
-main village	16,077	18,165	22,836
-hamlets	n.a.	n.a.	10,250
-attached villages	36,092	40,780	
-total	52,169	58,945	
2.Kalamshah			
-main village	18,017	20,357	18,350
-hamlets	n.a.	n.a.	16,650
-attached villages	18,699	21,128	..
-total	36,716	41,485	
3.Tersa			
-main village	13,412	15,153	17,900
-hamlets	n.a.	n.a.	7,100
-attached villages	32,010	36,167	
-total	45,422	51,320	
4.Desia			
-main village	8,149	9,207	10,500
-hamlets	n.a.	n.a.	7,000
-attached villages	18,540	20,948	
-total	26,689	30,155	
5.Al Roda			
-main village	14,161	16,000	20,000
-hamlets	n.a.	n.a.	14,130
-attached villages	14,336	16,198	
-total	28,497	32,198	
TOTAL	189,493	214,103	

* These figures were estimated for 1991/1992 by the mayors either inclusive hamlets or exclusive hamlets of the main village

The total population estimated in hamlets is 55.130. The figures for hamlets' population are arrived at by subtracting around one third from the estimates given by at least two spokes persons in the hamlet, among whom most often the *Shaykh Al Balad*. Reason for doing so is that a project rises expectations, and therefore villagers might estimate their population on the high side. To verify the figure the surveyors have estimated the number of houses and multiplied this by nine or ten, which is the average household size (9.7) in hamlets.

The survey results suggest that population figures of the hamlets of the main villages are not adequately included in the census figures. This conclusion however, should be considered with caution, in the absence of reliable figures.

2.3.3 Average family size and number of people per house

The survey involves in total 315 respondents from 315 different households, representing together 458 families and 2727 persons. Of these 315 households, 184 were visited in the main villages and 129 in hamlets. They represent 262 families from main villages and 196 families from hamlets and 1477 persons from main villages and 1250 persons from hamlets.

Most respondents are female, in total 71.9%. Reasons for this are that most surveyors were female and that during daytime normally more women are found in the house than men. Women appeared to be excellent informants on the the conditions of public taps, on water quality, pressure and water storage. Male informers are more aware about frequency of meter reading and the annual payments made to AW, because they are usually the ones who do the payment.

Table 2.5 Respondents by sex and total number of families represented

Village	Total no of respondents	Male respondent		Female respondent		Number of families represented by respondents
		No	%	No	%	
1 Aboksah	62 [1]	22	35.5	40	64.5	85
2 Kalamshah	60	23	38.3	37	61.7	87
3 Tersa	49	10	20.4	39	79.6	58
4. Desia	58	13	22.4	45	77.6	89
5 El Roda	84	20	23.8	64	76.2	139
TOTAL	313	88	28.1	225	71.9	458

1) Two forms of Aboksah are missing these data

The average family in hamlets has more members than that in main villages, namely 6.4 members per family against 5.6 members per family in main villages. This last figure does not deviate much from the 1986 CAPMAS census figure found of 5.4.

The average number of people living in the same house is more, because often more families share the house. In hamlets this is about 1.7 persons more than in main villages: 9.7 in hamlets against 8.0 in the main villages. The reason is the larger size of families in hamlets (see also figure 2.1 for graphic presentation).

Table 2.6 Household composition, average family and household size and number of families living in a house

Local Units	No of Households	Families per house	Children per house	Adults per house	Average family size	Average no of people in house
1 Aboksah	62*				6.56	9.00
- main	33	1.24	3.61	3.94	6.07	7.55
- hamlets	29	1.52	4.93	5.72	7.02	10.66
2 Kalamshah	60				6.60	9.57
- main	31	1.42	5.61**	3.48	6.41	9.10
- hamlets	29	1.48	5.90	4.17	6.79	10.07
3 Tersa	49				5.93	7.02
- main	40	1.22	3.61	3.44	5.73	7.05
- hamlets	9	1.00	4.11	2.89	7.00	7.00
4 Desia	58				5.09	7.78
- main	40	1.55	4.58	2.80	4.46	7.38
- hamlets	18	1.50	4.22	4.44	5.78	8.67
5 Al Roda	84				5.76	9.52
- main	40	1.65	4.40	4.85	5.61	9.25
- hamlets	44	1.66	4.48	5.30	5.89	9.77
TOTAL:						
MAIN	184	1.42	4.33	3.70	5.64	8.03
HAMLETS	129	1.52	4.84	4.85	6.38	9.69
BOTH	313	1.46	4.54	4.18	5.95	8.71

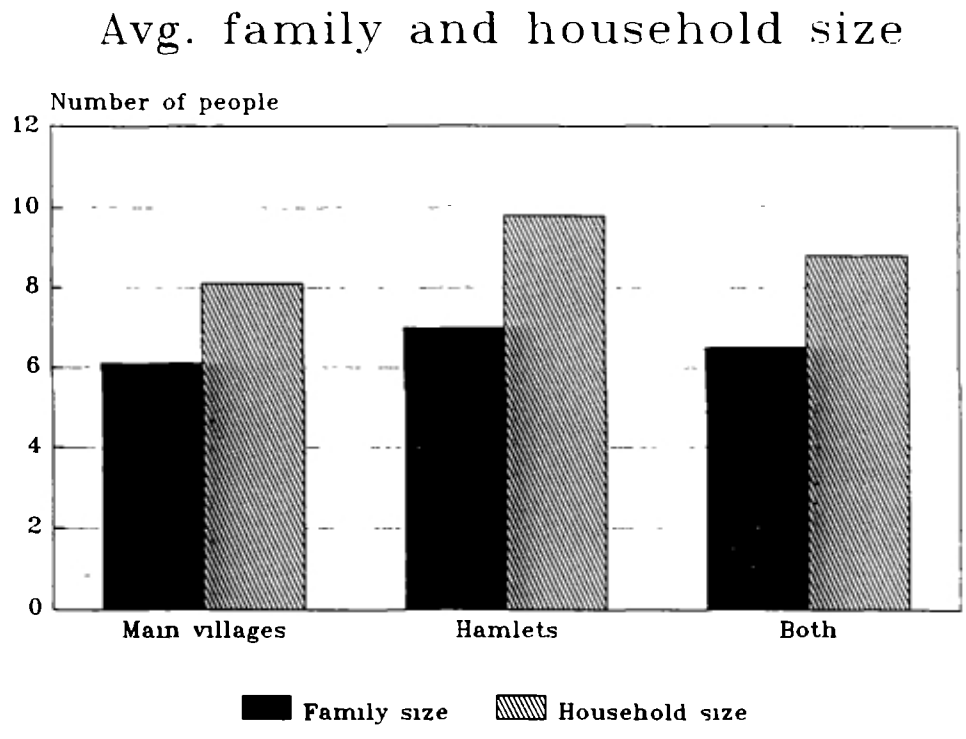
* Two forms of Aboksah have missing data

** The high average number of children in Kalamshah may be due to interpretation of the survey team. Rural Egyptian respondents count boys above 15 years of age and girls above 14 years of age as adults. The Egyptian law declares any person above 16 as an adult.

About half of the persons of a household are adults and the other half children. Respondents count boys above 15 and girls above 14 as adults. Therefore the category adults may be slightly higher than when the dividing line for everybody was above 15 years of age.

The average number of families per house is nearly 1.5 in both main villages and hamlets. While houses in main villages are generally bigger and therefore could accomodate more people the living style in hamlets differs. People perform more activities outside the home.

Figure 2.1 Average family and household size



Key data in summary:

Average family size:	5.95 members
Average household size:	8.71 people
Average number of families per house:	1.46 families/house

The infrastructural facilities are nearly always shared by all inhabitants of the house. Therefore the average number of users of one sewerage connection or house connection for water supply is 8.7.

2.4 SOCIO-ECONOMIC CONDITIONS

Overall figures on living standards in rural Fayoum are not available. To estimate the feasibility of certain options for water supply and sanitation improvements it is is necessary to know what people can afford.

Therefore the survey used four indicators for living standard: the building materials from which the house is constructed, having animals or not, having facilities such as a piped connection, sanitation and electricity, and finally having electrical appliances and household assets. No income nor expenditure questions were asked.

Table 2.7 Household facilities

Village	No. of HH	Electricity		HCs		Latrine		Cess pit		Drainage pipe		Kitchen	
		No	%	No	%	No	%	No	%	No	%	No	%
Aboksah	64	57	89.1	22	34.3	48	75.0	48	75.0	0	0.0	23	23.4
Kalamshah	60	35	58.3	30	50.0	32	53.3	29	48.3	4	6.7	25	25.0
Tersa	49	47	95.9	16	33.0	15	30.6	5	10.2	17	34.7	18	18.4
Desia	58	45	77.6	18	31.0	27	46.6	25	43.1	1	1.7	5	5.2
Al Roda	84	69	82.1	29	35.0	23	27.4	13	15.5	12	14.3	1	1.2
TOTAL	315	253	80.3	115	36.5	145	46.0	120	38.1	34	10.8	73	13.7

Facilities, such as having a separate kitchen, are rare. Aboksah appears to be the richest village, while in Kalamshah different facilities are rather equally distributed. While Tersa has the highest electricity coverage it scores lowest in latrine availability.

A TV-set is the most desired consumer good: 56.8% of the households in the sample have one. Of other electrical appliances over one-third has a washing machine, and the same number has a refrigerator. Nearly one-quarter can afford having a gas stove and a tape player. A telephone is still a rare phenomenon in rural Fayoum: only 7.3% of the people have one.

The rural character of villages is expressed in the use of building materials and having animals. One-third, or 34.3%, lives in a mud house, 61.6% in a house made of bricks or concrete and people near the desert in Kalamshah live in stone houses (4.1%).
Having a *zaribah* or in-house animal shed is common practice: 48.3% have this. Only 23.8% of the households don't keep animals at all, while all others keep at least poultry.

However, whatever the findings, these assets cannot be relied upon as indicators for the current living standard and income, because of widespread labour migration to the Gulf. No rural resident could afford to build a new house or acquire certain assets, unless he saved money as Gulf worker.

A combination of approaches have to be used to arrive at a reliable picture of the socio-economic status of rural households and their spending capacity if desired.

The results of the CAPMAS expenditure survey 1991 will be helpful, being a repetition of an earlier expenditure survey held in 1981/82.

The 1981/82 survey indicates that the annual expenditure of lowest quarter of rural households in Fayoum was less than £E 600 per year, the next quarter spent £E 600-800, 23.1% spent £E 1000-1500 and the last 11.4% up to £ 2500. Results of the 1991 survey are not yet known.

2.5 PUBLIC FACILITIES

2.5.1 General water and sanitation situation

In each Local Unit a selected number of public facilities have been visited with the aim to observe the present water supply and sanitation conditions and to suggest improvements which would contribute to a better public health.

Table 2.8 Public facilities visited during the survey

Public facility	Kalamshah	Aboksah	Tersa	Desia	Al Roda	Total
Primary school	1	0.5*	1	1	1	4.5
Preparatory school	1	0.5*	1	1	1	4.5
Islamic school	1		1			2
Secondary school			1			1
Health centre	1	1	1	1	1	5
Mosque	1	1	1	1	1	5
Youth centre	1					1
Women's project	1		1	1		3
Veterinary centre				1		1
Local Unit	1	1	1	1	1	5
TOTAL	8	4	8	7	5	32

* combined school

The total number of public facilities in the five Local Units amounts to 255. Mosques amount to half this number, so excluding mosques the five Units have the responsibility for the sanitary conditions of 127 facilities. Schools rank second in number with 82 schools.

The survey always included the health centre, the Local Unit building, one primary school, one preparatory school and a mosque. Where a women's project exists, such as the women's sewing club in Kalamshah, the women's centre as part of the development centre in Tersa and the women's development society in Desia, these were also visited.

The responsibility for maintenance of buildings and utilities rests with the Local Unit, including payment of their water, electricity and sanitary bills. Sometimes the Health or Education Department and often the users contribute funds, in particular for repair of taps or emptying cess pits.

In particular mosques, which provide public sanitary facilities for men and boys, prove to be well-maintained with help of funds of worshippers.

Two institutions are particularly important for the public health: schools and health centres.

2.5.2 Schools

As the population of Egypt continues to grow by 2.8 % annually, students are entering the school system at an astounding rate. The absorption of these students is handicapped by a critical shortage of facilities. Many schools operate in two shifts, as is the case in the pilot villages.

There are two types of schools: government schools under the Ministry of Education and Islamic schools which fall under Al Azhar University.

The five Local Units possess eighty two schools. Mostly these are primary schools, being 57, followed by a lower number of 14 preparatory, 6 Islamic and 5 secondary schools. These schools are housed in a lesser number of buildings. Most school buildings operate in two shifts, from 7 - 12 in the morning and from 12 - 5 in the afternoon.

With numbers of pupils of 782 (Desia primary school), and 985 (Tersa preparatory and secondary) up to 1,372 (Kalamshah preparatory school) and a relatively limited number of class rooms per schoolbuilding it is evident that schools are overcrowded.

Adding the dual shift system to crowded schools means that the buildings, the desks and its sanitary facilities and playgrounds are intensively used.

School sanitation

Upon inspection of eleven schools in the pilot villages, the classrooms look relatively clean, but most toilets are in a lamentable condition, smelly and run down. There are not enough toilets for the fast growing number of students. Soap is not available.

Regular emptying of the cess pit, repair of latrines, and repair of leakages in the piped water system are responsibilities of the Local Unit.
Funds for repair are hardly available and when a school has collected money amongst the parents the utmost priority is expansion of class rooms, not improvement of sanitation.

While, in general, a rural school will be blessed with more outdoor play space than many urban schools, in **Kalamshah** 50% of the school play grounds cannot be used due to leaking or overflowing cess pits, which spread a bad smell and cause health hazards. One play ground, accommodating a sports field, contained over 40cm water, due to a leaking pipe.

One school in **Tersa** has such a small cess pit that it has to be emptied three times every month. This cess pit does not only collect the waste water from toilet and sinks, but also the waste from the lab. A pipe-line from the lab, which runs into the cess pit, leaks and causes bad smell and pollution.

In **Aboksah** interruptions in water supply cause the biggest sanitary problem. Daily the water is cut from 1:00 to 6:00 p.m. The toilets have no water storage so they are not flushed during this period.

In **Desia** the toilets of the primary school visited cannot be used. Five toilets are closed, three are broken and for the others there is no water to flush them and if there would be, the cesspit would overflow. Also the preparatory school, which was visited, has unusable toilets, due to lack of water to flush them during daytime.

Also **Al Roda** primary school has sanitary problems. The waste water is led through a pipe-line to a main pipe-line. This main pipe-line gets blocked several times per year. The waste water then overflows the land as well as the classrooms.
The capacity of waste water discharge is outdated. Constructed for a school with 6 classes it cannot cope with waste water of 27 classes.

These examples illustrate that sanitary problems in schools may differ, but all result in health hazards for a high number of young people. Many of the facilities were constructed in a time that schools were much smaller and have no capacity for dealing with the fast growing school population.

Creating a healthier environment for the youth of Fayoum at schools can be an important contribution to the general improvement of public health conditions.

Scope for hygiene education at schools

The original emphasis in Egyptian educational policy on increasing the number of schools has shifted in recent years to improving the quality of education.

While the government syllabus emphasizes the accumulation of information and rote-memorization rather than analysis, reform of the curriculum and testing system has started recently in 1991. In September 1991 a new subject "environmental studies", -a combination of science, home economics, agriculture and social studies-, was introduced to grade 1-3.

Till now, in none of the visited schools of the pilot villages curriculum innovation has started yet. The only entrance for hygiene education are the home economics classes for girls, in grade 1-3, during which the boys are taught outdoor practical agricultural lessons. Because class time is limited in schools with multiple shifts there is no time for recreation or for extra curricular activities.

Teachers explained their desire for better materials on hygiene and drugs addiction.

2.5.3 Mosques

All mosques in the centres of the pilot villages are well equipped with faucets and toilets, which are clean and in a good condition. These facilities are only visited by the male part of the population. Emptying of the large cess pits, is done regularly and paid for by regular visitors of the mosque. The money is collected when needed. Only a small percentage of the mosques pay for their water supply. El Azab estimates this at 5%.

2.5.4 Health centres

Every Local Unit has at least one health centre located in the mother village. The centre is staffed by one or two medical doctors, a dentist and around eight nurses. Not all nurses work full-time in the health centre. Some work in schools as health supervisors. Next to the medical staff a health centre employs lab assistants, administrative staff and some workers.
A health centre receives around 70 to 150 outpatients per day. Besides receiving outpatients the health centre supervises a school immunization and school health programme, designed to detect especially bilharzia. Water borne or water related diseases with a high incidence are bilharzia, skin disease, eye diseases due to flies and contaminated or chemically polluted water and infections.

Aboksah reports a high salt rate in blood of children, due to the wrong use of Oral Rehydration Salt (ORS). The doctors of the health centres of Tersa and Desia mentioned cases of typhoid and hepatitis, which they ascribe to the bad hygiene and sanitary practices, such as no proper cleaning of utensils, use of contaminated water etc.

Material on hygiene education is absent (Kalamshah, Desia and Al Roda) or limited (Aboksah and Tersa). During the vaccination days, which are once or twice a week, doctors and nurses give health and hygiene education.

According to the doctors the vaccination programme reaches $\pm$ 80% of all women with little children. Most likely mothers from hamlets are among the most difficult to reach.

The sanitary conditions in the health centres are generally poor. Toilets are low in number and suffer from water cuts. To make the hygiene education successful first sanitary improvements have to be adopted in health centres. Emptying of the cess pits is paid by the Local Unit, while the water bill of some centres is paid by the Health Department.

2.6 GROUND WATER LOGGING PROBLEMS

The primary cause of water logging is the high water table due to intensive irrigation around the Fayoum villages in combination with low soil permeability. As a consequence the clustered cess pit cannot leak their water in the soil and overflow.

Table 2.9. Health centres in five pilot villages

Village	Staff, main diseases and no. of outpatients					Sanitary facilities			Hygiene Education
	Prof. staff	Nurses*	Others**	Main diseases	Public	Toilets	State	Cess pit	
Aboksah	2 doctors, 1 dentist	8 (3)	17	Bilharzia, Skin, Eye and Chest diseases	± 1000 per month or 250 per week	9	Unhygienic. No water from 13:00-18:00 hours	72m³, three cess pits	Few material at hand. Basic health education and family planning is given.
Kalamshah	2 doctors, 1 dentist	7	83 (70 administrative staff)	Bilharzia, Skin and Eye diseases, Salt in blood due to wrong ORS-use	70 per day or 500 per week	12 (6 for staff, 6 for visitors)	Reasonable	3 septic tanks 40m³	No materials Family planning is given.
Tersa	1 doctor	10 (6)	21	Bilharzia, Typhoid, Skin and Eye diseases	150 per day or 1000 per week	4	Unhygienic and broken	4*3.75m³ (septic tank)	Few materials Some education is given
Desia	1 doctor, 1 dentist	5 (1)	17***	Bilharzia, Esclaris, Eye diseases, De-hydration, Rheumatism, Hepatitis, Typhoid	Sat. Wed. 150; Tue. 50; Sun Mon.Thu. 100 = 650 per week	11 (one for the staff)	Reasonable No water in day-time, only after 11:00 p.m.	Pipe-line to the cess pit of Local Unit 64m³ and 40m³	On Saturday and Wednesday family planning and health education is given
Al Roda	1 doctor, 1 dentist	9 (6)	6	Eye diseases, Bilharzia, Dehydration and diarrhoeal diseases	± 600 per week	3 (one for staff only)	Unhygienic	Pipe-line to drain behind the health unit	During family planning session sometimes health education is given.

* Some 16 nurses work during school trimestres also as health supervisors in schools

** Others are administrative staff, workers and laboratory assistants

*** Including a cook for the patients who have to stay overnight

The ground water table fluctuates seasonally. While lower in summer it rises during winter time, in lower parts of villages even above ground level. Some houses suffer from water ponding during 3 or 4 months. Often the water, containing waste water from higher situated cess pits, smells awkward.

While the ground water table in Aboksah is 1.5 meter below ground surface in summer and in winter just below surface, in Tersa, Desia and Al Roda it is 0.2 meter below ground surface. The water table is highest in those areas located besides the drain or canal running through the village.
Low lying Kalamshah has most ground water problems, raising in lower parts of the village 0.1-0.3 meter above ground surface and causing in the irrigation season flooding nuisance in about 70% of the village. Due to this walls are wet till 2-3 meters above plint level and often there is a pool of dirty cess pit water in the houses even (see photos on the following page).

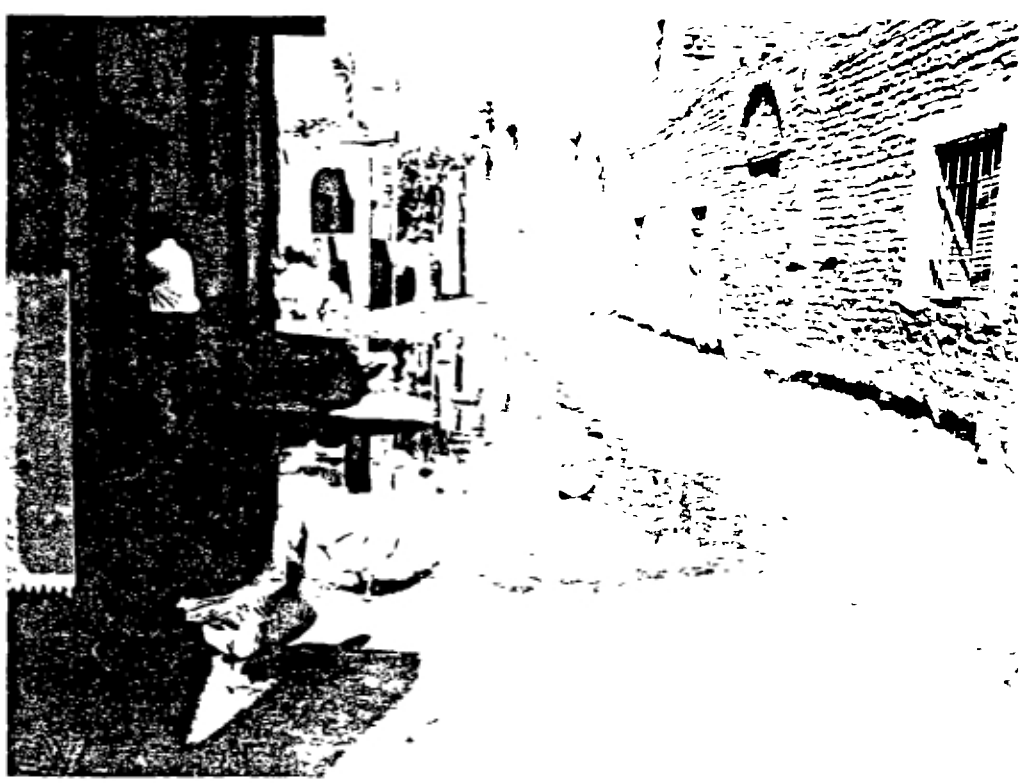
In areas with logging problems, some houses have been destructed and built anew, or inhabitants have raised their floors sometimes by 1 or 2 meters. House doors are moved upwards or their height is reduced.

In Tersa and Al Roda ground water lowering systems have been constructed. Four pipe-lines, to which 80% of the households in Tersa centre are attached, transport waste water from houses to the canal, *Bahr Tandud*, or to the Tersa drain. Al Roda has a 808m pipe draining waste water of about 300 houses of in the Baselus drain or Albats drain.
People in Kalamshah, Desia and Aboksah report to have most problems.

Table 2.10 Water logging around the house

Village	No of respondents	Yes, its a problem		Problem in winter only		No problem	
		No	%	No	%	No	%
1 Aboksah	64	25	39.1	11	17.2	28	43.8
2 Kalamshah	60	36	60.0	0	0.0	24	40.0
3 Tersa	49	5	10.2	8	16.3	36	73.5
4 Desia	58	31	53.4	5	8.6	22	37.9
5 Al Roda	84	24	28.6	9	10.7	51	60.7
TOTAL	315	128	40.6	33	10.5	161	51.1

PROBLEMS WITH HIGH GROUNDWATER AND OVERLOWING CESS PITS IN KALAMSHA



3. DRINKING WATER: PRESENT SITUATION

3.1 PRIMARY WATER SOURCES

Primary water sources are divided as follows. Of the main village households 44.8% have a house connection, 52.5% is dependent on public taps and 2.7% gets its water through neighbours.

In the hamlets 25% has a house connection (which is an exaggerated figure, due to the intentions of the survey to cover also house connections in hamlets), 74.2% is dependent on public taps and 0.8% gets water through a neighbour.
Of all main village households 40.4% and of hamlet households 67.4% use canal water as a secondary water source.

3.2 HOUSE CONNECTIONS

3.2.1 Distribution of house connections

While in the survey population 44.8% of the main village households directly or indirectly through neighbours (2.7%) are served by piped supply, only 25% of the households in hamlets have a connection.

This last figure distorts the real percentage of the hamlet population having a house connection. In most hamlets there are only a few house connections. House connections in hamlets were consciously included to inventorize their situation and problems as well.

Table 3.1 House connection coverage in main villages and hamlets

Village	HHs	HCs	% coverage	Number of users per HC*
Aboksah main	34	15	44.1%	9.05
- hamlets	30	7	23.3%	
Kalamshah main	30	19	63.3%	11.85
- hamlets	30	11	36.7%	
Tersa main	40	15	37.5%	6.96
- hamlets	9	1	11.1%	
Desia main	40	14	35%	7.56
- hamlets	18	4	22.2%	
Al Roda main	40	19	47.5%	9.52
- hamlets	44	10	22.7%	
Total main	184	82	44.8%	9.5
-hamlets	131	33	25.0%	

* Numbers of users per house connection are averages for both main village and hamlets together.

The total population of Kalamshah is less covered (38.1%), than the sample population (50%), while the total population in Tersa is more covered (55.4%) than the sample population (33%). Compared to the total population the sample shows an overrepresentation of house connection owners in Kalamshah and a slight underrepresentation of them in other villages.

In Kalamshah hamlets, according to observations, only 6.6% of the households have a house connection. Also in hamlets in Desia very few inhabitants have a house connection. The 17 hamlets of Al Roda face different conditions: while in some nearly all houses are connected to piped supply, in other neither houses nor mosques do have a connection. Four hamlets even don't have a public tap inside their hamlet.

3.2.2 Water meters, reading and billing

All house connection are metered. Extensions from house connections are made after the water meter. In the survey only two such extensions to a neighbouring house were found. Hence, of the 115 house connections 113 had meters.

Of the 113 meters 9 (or 8%) were out of order during the survey, with the highest percentage of 17.2% found in Kalamshah. Later, after repeated inspection the project found much higher percentages. Sometimes the meters are protected with a plastic or cloth cover against dust and humidity and people treat them carefully. Sometimes the female respondents could not tell how often the meter is read and how much money is paid for the waterbill, since payments are made by their husbands.

In 50% of the cases also families, having a meter out of order, pay for the water use.

Of the 113 metered connections 69.9% is confirmed to be read, at least annually or more often. The gross percentage of meters never read amount to 30.1%. To arrive at the nett percentage of never read meters the newly installed connections (5) and two connections, where the water was cut (one in 1985 and one in 1990) should be subtracted. The nett percentage of meters never read amounts to 25.6%.

One quarter of the house connections, or 26.5 %, never pays for water use.
Of the 113 metered connections a total of 67.3% pay bills. The last 6.2% belong the mixed category of having newly installed connections and being cut from water for a longer time.
Most households, which actually pay, pay for water use once a year. Non-payment seems to be highest in Desia, 38.9%, and Al Roda, 41.4%.

Reading and payment is higher in Kalamshah and Tersa than in the other three Local Units. Kalamshah has a reading and paying coverage of 90.0% and 82.1% respectively.

Paying arrangements are different, - Kalamshah consumers went to an Al Azab billing officer at the Local Unit, while consumers of Aboksah, Tersa and Desia had to pay at Al

Azab headquarters. This arrangement has changed per first of July 1992, when the Governor of Fayoum shifted the responsibility for meter reading and collection to the Local Units.

Households also pay for water if served indirectly with water from a house connection. Either water is taken from neighbours in containers or, occasionally, an AW connection is extended. The meter of the original connection (if functioning) counts the amount of water used.

Role of Local Units

From the first of July 1992 two staff members of each Local Unit are responsible, respectively for meter reading and collection of bills. The register of house connections, identifyable by meter number, was transferred to the Local Units. The reading frequency is four times per year and the reading results are recorded in the register and send to AW. AW remains responsible for billing and adds the value of payment and sends the register back, usually after one month, after which the payments due are collected by the collector and put at an AW account in the Village Bank. These accounts are transferred automatically to AW main account in Fayoum City.

The consumer receives the receipt from the Local Unit staff.

Salaries for the Local Unit staff responsible for meter reading and collection of payment are borne by the Local Unit budget. Once the Local Units have performed this task during one year AW may pay the allowances.

The "FADWS Revenue Improvement Action Plan" strongly recommends to make all efforts to ensure that revenue management will be kept under AW control (p. 3). For the time being, until a customer database is computerized, the most efficient billing however may be achieved by cooperation between AW and the Local Units, whereby the Local Units are responsible for reading and collection and Al Azab for billing and maintaining records.

The survey indicates that the actual payment is best in the Local Unit which, already before the Governor's decision was taken, cooperated with AW in payment collection.

Defective meters

At the discovery of defective meters the Local Unit staff reports this to AW. AW should repair the meter at the cost of the customer, but the capacity of the meter repair workshop is limited.
Continuation of payment for consumption is assured. The bill for the period during which the water meter was defect is estimated on the basis of the last period of known consumption, or based on the consumption during the first three months after repair of the meter.

New entries

New house connections, whether illegal connections or new connections which are not yet entered into the customers register, are inserted by the Local Unit staff in the register. Billing is done according to the procedure described for defective meters.

3.2.3 Potential market for house connections

Of all 194 households depending on public tap 70%, in particular in the main village, state that they would like to have a house connection. Of them one-third is on the waiting list, one-third can technically not have one because there is no pipe-line nearby and the last third has no money at present.

The households not wanting a HC in Kalamshah and Tersa state financial reasons. Reasons are probably that Tersa is the most covered village already with 55.4%, while Kalamshah seems to be one of the poorer villages.

The wish for a house connection is distributed over the villages as follows:

	PT users wanting HC
Aboksah	: 71%
Kalamshah	: 25%
Tersa	: 61%
Desia	: 80%
El Roda	: 85%

Some people, especially in hamlets, are too poor to pay the installation cost of a house connection. Lack of money is the main reason why 30% of the people explicitly say they don't want a connection. Only 1% is satisfied with the present arrangement of using a public tap and 1% thinks that her house is not suitable for a private connection, while a few respondents in Al Roda mentioned that the pressure is too low.

In conclusion two-thirds of public tap users wanting a house connection, or 46% of all public tap users, may take a connection if the drinking water company could provide them with water. Because of the present restrictions in production and distribution capacity, expressed in restrictions of the Governorate to allow an annual installation of about 1000 connections only, in practice this does not happen.

Extrapolating the survey figures this implies a potential consumer market of around 27% of the rural households in Fayoum, being 43.838 house connections (1992 rural population of 1,414,186 divided by 8.71 times 0.27).
Responding to their demand would mean that 68% of the rural population could potentially be covered.

3.2.4 Water tariff and cost of a house connection

Public services tariffs, in particular water tariffs in Egypt are low. In Fayoum the basic tariff is presently 9.5 Pt/m^3. People don't complain about the water bill.

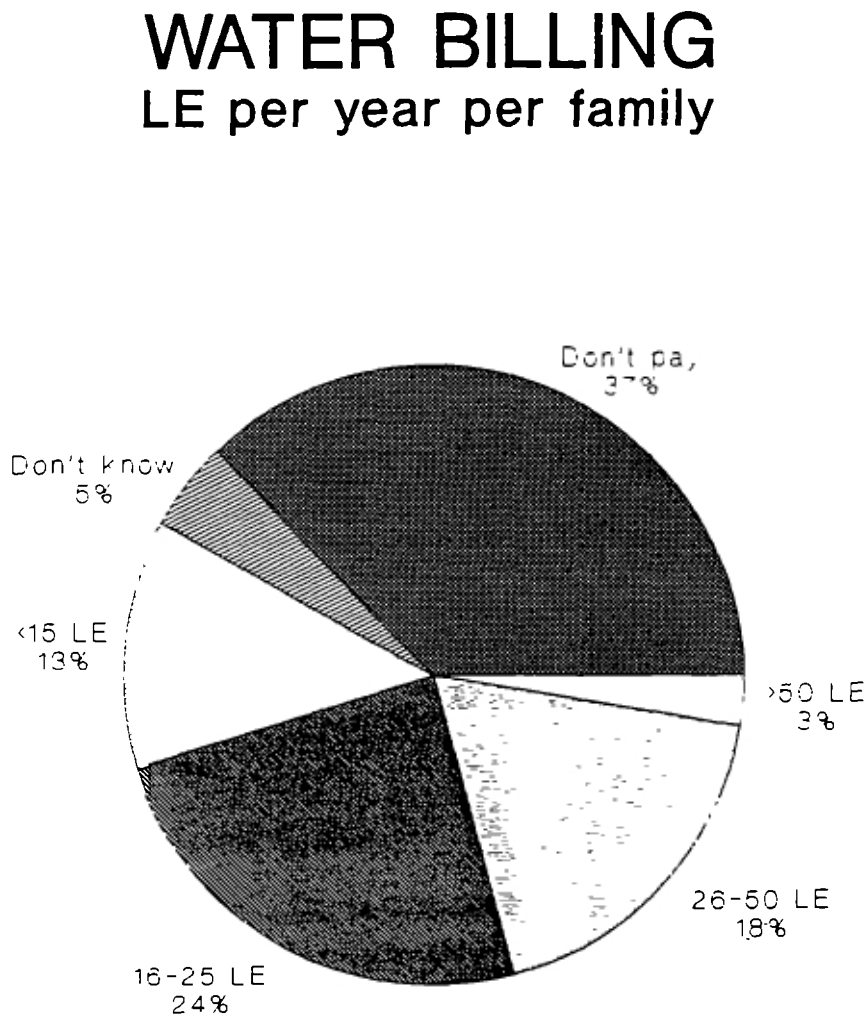
Of all house connection owners 13% pay less than £E 15, 24.3% pay £E 16-25, 18.3% pay £E 26-50 and 2.6% pay over £E 50 per year. A large percentage of 41.7% don't know. This category includes 37% of the owners who never pay (figure 3.1).

Monthly the present water bill varies therefore from £E 1.25 to around £E 4.20, which is between 1% and 3.5% of a clerks salary.

The water tariff does not yet reflect the financial target of an autonomous water supply company, which aims at revenues which cover at least operational expenditures and in a later stage depreciation costs.

To achieve this target payment for ALL water consumed, either by house connection or public tap, should be introduced to attach a price to water and avoid waste of water.

Figure 3.1.



Wastage of water by house connection holders in the pilot villages is very limited, due to the risk of water ponding in the house, except for Tersa and Al Roda household connected to to a pipe-line. Wastage at public taps is considerable, but this is less related to the consumers' behaviour than to leaking pipes and defective or absent faucets. The average water consumption by a public tap user is limited, being average about 16 l/c/d or one fifth of that of a house connection user. This amount is estimated on the basis of strict observations.

Hence, a switch to payment for public tap water consumption has to be postponed till the conditions of the public taps are improved.

Installation costs of a house connection

The cost of a house connection has risen substantially over the past ten years. While in 1982 the average cost, including watermeter, was £E 61, this rose to £E 97 in 1986. The last three years the average cost for a connection rose from £E 165 in 1989 to £E 205 in 1992, an increase of 60%. The price of a water meter only increased from £E 30 in 1982 to £E 100 in 1992, a hike of 233% in ten years time.

Consumers say they paid for installation of their house connections from less to £E 100 (27.8%) to over £E 300 (13%). The majority of 40% paid an amount between £E 100 and £E 300.

Of all consumers 44.3% had their connection installed before 1986, 26.1% had this done between 1986 and 1989 and 27% in the last three years.

Compared to the general rise of the price index water connections have been rising less. The index of consumer prices have risen with about 17% annually the past ten years, which amounts to 1992 prices being 4.7 as high as in 1982.

3.2.5 Water consumption

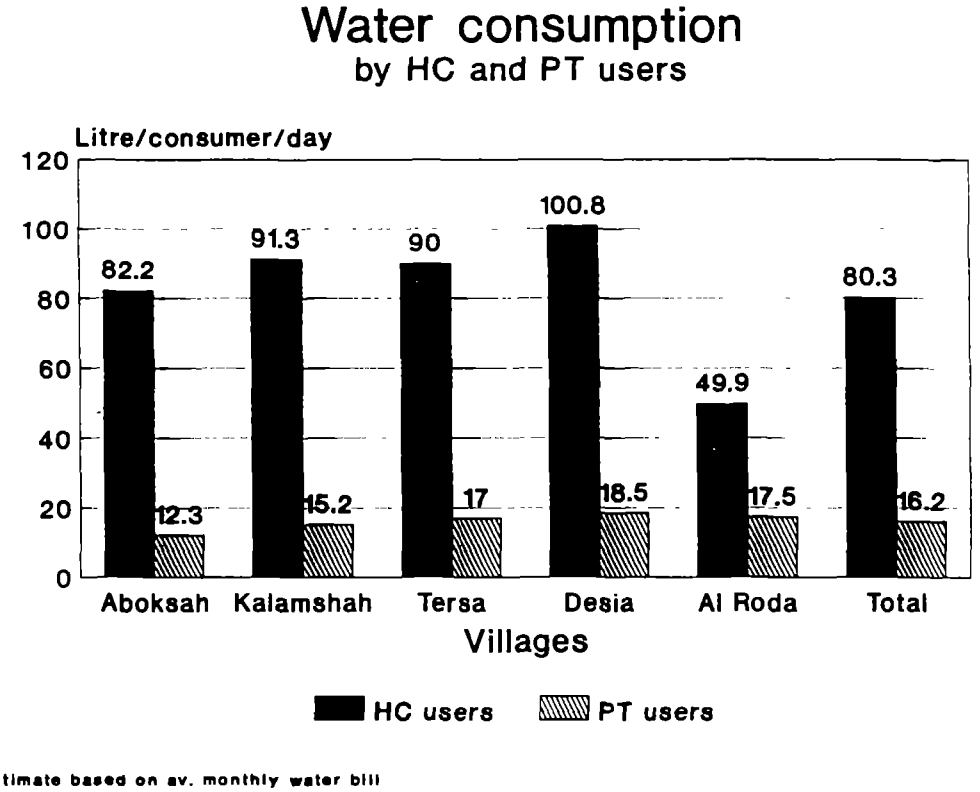
The average number of users per house connection is 9.0 in main villages, 9.9 in hamlets and 9.2 for both. Most house connections have an average of 6-10 users, but there is a substantial part having 11-20 users. The villages of Kalamshah and Al Roda have the highest number of users per connection.

The water consumption of house connection users is estimated to be in average 80.3 l/c/d, based on the water bills. Billing may not be accurate or not accurately remembered.

The FADWS water demand study which makes use of actual water meter reading reveals consumption figures ranging between 30-125 l/c/day. Consumption is the highest in sewered areas with 24 hours supply and lowest in areas with cess pits and high groundwater tables.

The water consumption of public tap users is only 16.2 l/c/d, based on in-house observations of storage and use of 194 households. (See for details Annex 3, table 3.1. and figure 3.2).

Figure 3.2. Water consumption by HC and PT users



Estimate based on av. monthly water bill

Number of in-house taps

The number of households having more than one or two in-house taps appears to be larger than expected. Of all house connection owners 21.7% have 4 or more in-house taps, 23.5% have 2 or 3 taps, and slightly over half have only one in-house tap.

Water consumption in relation to sewerage connection

Sewer connections incite to consume 50% more water than average. This assumption is hard to prove from the survey results. The households with sewer connections don't pay more for their water bill than others. Therefore, water bills are not a good indication of actual consumption. More light will be shed on this issue in the Revenue Improvement Pilot Project.

Water storage

Of all households 87% use a *zir* for the storage of drinking water and nearly all are covered.
Additional storage in containers and jerrycans is done by less households. Nearly half of the households, 47.9%, store water for other than drinking purposes. For the storage different vessels are used: most popular is the 20 ltr. jerrycan.

Especially if the water is cut frequently, like in Aboksah and Desia, people use a container on the roof of the house.

3.2.6 Implications of desired growth of house connections

The Master Plan calculated that in 1990 the population served by house connections is 40% in rural villages and 57% in district towns. In reality it may be somewhat higher in rural areas.

The main reason for the higher coverage is the average number of users per house connection in rural areas. Although the number of persons per connection in urban centres might be lower - an average number of 6.2 is mentioned - this number of users per connection in rural areas is 9.2. Extrapolation of the survey figure of 9.2 users per connection to all rural Fayoum shows a coverage of 43.1% of the population.

Adding the 27% rural population who are willing to have a connection and not having financial difficulties this would add up to a potential 68.3% coverage of the rural population.

AW has 83.000 house connections (1990) for the secondary urban centres or *markaz* and the rural population. The bottleneck for increasing the connections with the desired 44,000 is mainly the limited water production and distribution capacity.

3.3 PUBLIC TAPS

3.3.1 Use of public taps

Public taps are the primary water source for over half of the consumers in Fayoum Governorate. In the surveyed villages 61.2% of the households are dependent on public taps.
The average number of persons in a household using public tap is 8.52, with 7.2 persons found in Tersa and 9.31 persons per public tap using household in Al Roda.

Fetching water from the public tap is a women's job. In 79% of the households women collect the water, in 19% daughters and 2% husbands. Because of this women appear to be the best informants about water consumption and operational matters, such as the

preferred improvements at the public tap and her reasons for using canal water. Questions on financial matters, such as preparedness to pay for better public tap service, should be asked to their husbands.

In view of the poor condition of most taps preferences for improvements were discussed with the users. In hindsight a real exchange of ideas with women users would have required more time than the surveyors was allowed and would require an in-depth study.

Table 3.2 Number of public taps in main villages and hamlets, as checked by Al Azab maintenance centres in October 1992

Location	Aboksah	Kalamshah	Tersa	Desia	Al Roda	TOTAL
Main village	8	5	11	3	5	32
Hamlets	4 (10)	11 (11)	3 (3)	6 (6)	14 (17)	38 (47)
Attached villages	42	24	30	28	20	144
TOTAL	54	40	44	37	39	214

Bracketed figures refer to the number of hamlets.

Of all 214 taps the 70 taps in main villages and their hamlets are partly surveyed. Visited were all taps in the hamlets and two third of the taps in the main village, totalling to 57 out of 70 taps.

There are 11 out of 47 hamlets without any public tap (23.4% of the hamlets). One of them does not need a tap, being Al Muftah in Kalamshah. But there are six hamlets in Aboksah, Abu Khachaba in Tersa, and three in Al Roda without tap, while other hamlets have access to a tap located at over 0.5km of the hamlet, such as one hamlet in Desia.

The largest hamlet of Kalamshah, Al Buhra, has around 4000 inhabitants and was at the time of survey served by one public tap. In September 1992 two new taps were installed by the Local Unit.

3.3.2 Conditions of the public taps

Most public taps are in a bad condition, especially those in the hamlets, which is shown by table 3.11 in Annex 3:
- 61.4% have a broken faucet or no faucet at all
- 87.7% have a defect platform
- 78.9% have no drain or gutter
- 86% show a muddy and dirty environment.

Most preferred improvements by the users are: cleanliness, smaller distance to house, and more faucets in areas where taps are very crowded. Improvements like space for washing clothes or dishes as well as place for watering animals are hardly mentioned and even not

wanted by most consumers, who say: "We like an easy public tap that does not break down."

In ranking of priority the first five improvements are: having a clean tap (25.2%), having a faucet (24.5%), broken parts to be repaired (20.7%), public tap nearer to the home (16.9%) and better maintenance (5.7%).
More water pressure was mentioned by Al Roda users.

People do not consider cleaning of the public tap as their responsibility, although cleanliness rank as their highest priority. Not taking responsibility for cleaning is considered the correct attitude. At present the maintenance centres of AW in each *markaz* are responsible for the state of the public tap, including repair and cleaning. Asking the women if they are willing to keep the tap clean, most of them agreed. The responsibilities must be clear however.

People also express a desire for "better supervision" of the tap, meaning that the tap should be better maintained. Often people mention that the public tap should be repaired as soon as it was broken and not long time afterwards.

In Kalamshah two taps have been rehabilitated with financial support of the project, one in Halfaya and one in Rufaya. The improved design was received well by the users. Because of the 15cm rim around the platform there is no mud, while the users are motivated to keep the platform clean (see following page for photos).
Costs of such improved tap are £E 1500, which is one and a half time as much as the standard costs for construction of a public tap.
For the average tap user, which are 598 per tap, the construction cost of an improved tap amounts to £E 2.50 per user or about £E 20 per family.

3.3.3 Repair of public taps

Most people, 68.9%, contact AW or its district maintenance centre, when repairs are needed of house connection or public tap, while 16.7% contact the Local Unit. Also 13.3% mention that they contacted a private plumber to reduce the waiting time.

Public tap users differentiate according to problem. A leakage of the pipe is reported to AW, while replacement of a faucet is often done by a local plumber.

3.3.4 Water consumption and payment

Public tap water users consume far less than those having a house connection, namely average 16.2 l/c/d. The data collected in the survey and a subsequent public tap metering programme indicate that the water volume consumed by tap users is at least five times less as the water consumed by household connection users.

PUBLIC TAP IN NEED OF REHABILITATION

FADWS MODEL PUBLIC TAP UNDER TESTING

In this estimate the water spilled at the public tap and during transport is not accounted for.

One reason for the lesser use by public tap users is that 72% of them use the canal water as a secondary source for water demanding purposes.

The FADWS water demand study measured per capita water use from public taps ranging between 4.6 to 27.2 l/c/d. This includes water use at the tap, as well as water taken home.

Wastage at the tap is rarely caused by consumers, but rather an effect of the poor conditions of the public taps. Improvement of taps helps to reduce water spillage. Better quality faucets and a clean environment reduce spilling, as appears from preliminary observed at the two Project supported taps in Al Rufaya and Halfaya in Kalamshah.

3.3.5 Distance and waiting time

While the average number of users per public tap for the whole of Fayoum is estimated to be 500 and in the survey is estimated to 598, this number may amount to 1000 or more users in some hamlets. The FADWS water demand study arrives at an all Fayoum average of 525 users per tap.

Many taps are overcrowded, which results in long waiting times for fetching water. Nearly 60% of the respondents wait more than 15 minutes. This is especially the case in Aboksah, where 6 of the 10 hamlets are without public tap, and the water is cut during half of the day. This is also the case in Desia, where water is only available during the night.
In Desia 90% of the households have to wait more than 15 minutes at the public tap, while this is for Al Roda 67%.

For 71.1% of the households the tap is within a reasonable distance of 200 meter, but for the others the tap is far, for 17% even more than 300 meter from the house.

3.3.6 Improvement of public taps and users' willingness to pay

The survey results suggest that nearly 25% of the hamlets have no access to safe drinking water.
Ad hoc and in individual cases the Governorate approves the construction of a public tap in hamlets, such as in Abu Khachaba in Tersa. Lack of funds for extension of the pipeline presents usually the bottleneck for implementation, although communities are prepared to contribute to the costs, as in the case of Tersa.

Till present people in Egypt are hardly used to pay for public or shared facilities. The idea prevails that it is the responsibility of the government to offer these facilities, such as drinking water, electricity and sewerage, and take care for the costs. On the other hand

a growing cost consciousness can also be noticed, which expresses itself in a growing preparedness of people to pay.

Of all public tap users 38% agree to pay for a better service at the public tap, while 23% say they prefer to pay for a house connection. The remaining 39%, say they were too poor. In Tersa this is 60%. However, this preparedness to pay does not necessarily mean that one is also prepared to pay a price for the consumed water.

Kalamshah has the large group of tap users willing to pay (66.2%), while only 4.2% prefers a house connection. Al Roda public tap users show the opposite attitude. Only 27.3% wants to pay and 45.5% prefer having a house connection. In Aboksah and Desia around 40% are willing to pay, while Tersa public tap users appear to be the poorest.

Although it might seem difficult to introduce payments, when only 38% agree to pay, it is unavoidable and requests management, discipline and political support.

Before payment for water consumption from public taps is introduced the following conditions have to be fulfilled, because people cannot be forced to pay for technical deficiencies which cause water wastage:

- Written consent of the households using public taps that they will pay for water consumption after the public tap is improved and provided with a water meter.
- Decision on a system for fee collection.

El Azab supported by the project could already initiate the following activities.

- Introduction of a programme of overhaul and rehabilitation of present functioning public taps.
- Installation of water meters at upgraded taps.
- Including the public taps in a separate register of water consumers.
- Including the public taps in the regular visit schemes of meter readers and fee collectors.

3.4 QUALITY OF SUPPLY

In general the water delivery is good in Kalamshah and Tersa, in Al Roda the pressure is low, but there are seldom cuts, while the supply is intermittent in Aboksah and Desia. 29.6% of house connection users against 35.1% of public tap users report frequent water cuts.

Aboksah is supplied by AW water treatment plant and a compact unit at Aboksah. Water is only supplied during certain hours a day. Before reaching the compact unit the intake canal flows along the village of Aboksah, collecting some waste water and solid waste.

The compact unit has three time shifts:

- From 08:00 - 15:00 hours, producing 100 m^3/hour = 28 l/s. This water goes to the attached villages of Aboksah plus Qarun (Auberge);
- From 15:00 - 23:00 hours, producing 80 m^3/hour = 22 l/s. This goes to Aboksah village and its hamlets.
- From 23:00 - 08:00 hours the compact unit is closed.

Normally Aboksah gets no water between 1:00 and 6:00 p.m, according to its schools and health centre. The pressure is not constant, for some high (54.5 %), for some low (45.5 %).

Kalamshah receives 80% of its water from Al Azab water treatment plant, while the attached village Kasr Al Basl receives water from a compact unit at Kasr Al Basl, with a capacity of 30 l/s. The pressure is satisfactory and the water supply is constant.

Tersa has a good supply with a high pressure. The water has never been cut since the beginning of 1992, when a new pipe-line, going to Auberge crossing the village, was completed. Before the pressure was low and the water was often cut off.

The water supply in **Desia** is poor, the water is cut during a long period of the day, the health centre even reports there is only water after 11:00 p.m. and 100% of the people mention that the pressure is very low.

In **Al Roda** most households mention a low water pressure, 75.9 %, but the water cuts hardly ever.

3.5 USE OF CANAL WATER

Canal water is used by 52% of the surveyed households for a variety of purposes, mostly being washing dishes and clothes.

In average 20 % of the house connection users use also canal water. Mostly canal water is used for washing clothes or doing dishes. Reasons people give for use of canal water are besides avoiding water ponding in the house and reduction of the water bill, that it is more comfortable to use the canal to wash clothes and dishes.

Public tap users use in 72% of the cases the canal as well.

Reasons to use canal water next to public tap water are negative experiences with the use of public taps and at the other hand positive preference for the use of the canal.
Of the public tap users 56.7% uses the canal because of negative experiences with the public tap, such as crowd (24.7%), no water at the tap (20.1%) and a too large distance to the tap (11.9%).

Positive preference for the canal have 64.4% of the public tap users, because they find it more comfortable for washing. In view of the long distances women have to walk with their laundry of a nine persons household, sometimes over 500m, one can imagine why washing at the canal is more comfortable.

4. SANITATION: PRESENT SITUATION

4.1 SANITATION

4.1.1 Access to sanitary facilities

Many families in main villages have access to an in-house toilet, often shared with other families belonging to the same greater family. In the whole population 46% have a toilet. Children may use school latrines and men use the public toilets of the mosques. Households in poorer hamlets having no toilet and use fields and canals for defaecation. No in-house toilet presents especially a problem for women, who have to go out in the night or use the *zaribah.*

Of the households in main villages 43.5% have a cess pit against 30.5% of the households in hamlets. In average 38.1% has one. Aboksah scores highest with 75% of the households having a cess pit.

Each toilet has its own cess pit or discharges in Tersa and Al Roda in a pipe-line. Pit volumes range from 1 m^3 to 20 m^3.

Cess pits are located in house, in a small backyard or outside in front of the main entrance. - In **Kalamshah** half of the visited households has a cess pit.

- In **Tersa** village there are hardly any cess pits found. The 10.2% owners of a cess pit live in Naqalifa, an attached village of Tersa. In Tersa itself 36.8% near a drain have a pipe-line connection via a groundwater lowering pipe to the drain.
- In **Desia** 43.1% have a cess pit. Emptying is the problem. The narrow streets prevent the truck/tractor to reach these cess pits. In view of the growing number of cess pits the situation will rapidly worsen.
- In **Al Roda** 27.4% have a cess pit. Some other houses, mainly south-west of Al Roda, where a groundwater lowering pipe runs, use pipes to get rid of their sludge and waste water.

There are only few septic tank, one at the compound of the Local Unit in Kalamshah, shared by Health Centre and Local Unit offices, and another in Al Saba'a hamlet of Aboksah. The Project has improved a septic tank at an Islamic school in Kalamshah.

The rise of water table during the irrigation season sets cess pits out of function and causes overflow and a bad odour in streets, backyards and sometimes inside the house. This problem occurs in Kalamshah, Aboksah and Desia.

Sanitary facilities of public utilities suffer from lack of capacity, lack of water for flushing in Aboksah and Desia and lack of regular maintenance of pipes, toilets and pits. School toilets were mostly constructed at a time when the student population was much smaller.

4.1.2 Sanitation and house connections

The access of house connection users to sanitary facilities is inverse to that of public tap users. While 77.4% house connection owners have access to facilities, 68% of the public tap owners have no access to facilities.

- Of the families with house connections 20.9% have access to a "sewer"-line, 57.4% have a cess pit and 21.7% have no sanitary facility.
- Of the public tap users only 5.7% have a sewer, 26.3% of the families have a cess pit and the majority of 68% have no facility.

Having a-sewer connection is limited to Tersa and Al Roda, where 86% of the sewer-connections are found. But 35.2% (12) of the 34 sewer-connected houses were found in hamlets. Of these 8 have house connections. Several larger house-owners in hamlets have constructed a pipe directly to the irrigation canal or drain.

Figure 4.1 shows availability of sewer and cess pits in villages and hamlets.

4.1.3 Desludging of cess pits

Cess pits are emptied by a vacuum extracting truck, sometimes a private car, and manually by a horse cart.

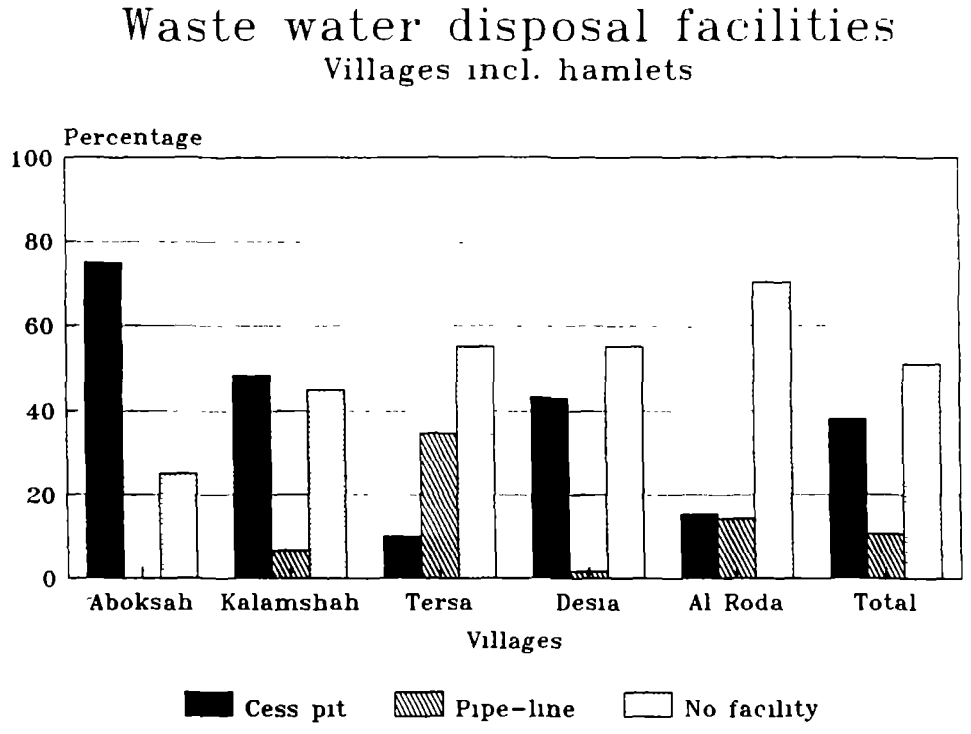
Generally each *markaz* Town Council has a sanitation workshop with five to seven vacuum extracting trucks. These trucks vary in capacity from 4 m^3 to 8m^3, depending on their make and trade-mark, and are used to empty the cess pits on requests. Villagers submit their demands to their Local Unit which transmit these to the *markaz*, while inhabitants of towns and the city submit the request directly to the Town or City Council.

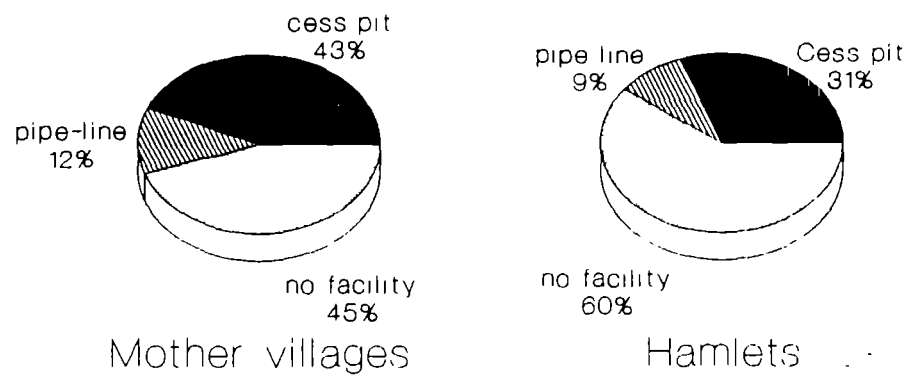
Admittedly, there is not enough capacity to serve all requests. In town demands may be met the same day, while villagers have to wait three to seven days. Itsa' workshop estimates its capacity on 70% of what would be needed.
One truck can make 4 trips per day and collect an average of 15m^3 per day.The sludge is discharged in the desert and sometimes in drains.

The survey shows that cess pits can be emptied in two ways:
1) By the vacuum truck of the *markaz* or Local Unit.
2) Manually by private donkey cart or car.

Two Local Units operate their own truck, being Aboksah and Tersa. Aboksah charges a rate of £E 10 per emptying operation. This "truck" consist of a tractor with vacuum tank with a volume of 4 m^3 behind it. Tractor and tank where bought with money from the village *sanduq*. The desludging charges are refunded to the *sanduq* after deduction of salary and benzine costs.

Figure 4.1. Sanitary facilities





The implementation of desludging by vacuum extracting trucks from the *markaz* is hampered by three problems:

1) undercapacity, resulting in (too) long waiting times for public buildings and house owners;
2) existing trucks are not fit for narrow streets;
3) lack of supervision on proper discharge of the sludge, in particular by private persons.

For customers the emptying system does not work satisfactorily. People and in particular public buildings and schools in Kalamshah have to wait sometimes one to two months before their pit is emptied, with the consequences of overflow and bad smell. Reasons are:

- lack of trucks for the whole district;
- public buildings don't pay always for emptying;
- a cumbersome administrative procedure;
- need to empty very often, due to groundwater seepage in the pits and low infiltration capacity of the soil.

To react more efficient on a request the Local Unit itself should have the disposal of a vacuum truck, as in Aboksah and Tersa.

In response to failure of *markaz* trucks to reach cess pits people use their own ways and means to get rid of the sludge. In average 25.8% of the people use their own private cars and carts, but in Desia this is 60%. The sludge is discharged in the canals and drains thereby causing highly polluted water, which is used by people to wash dishes or to bath.

Because many cess pits are not emptied in time they overflow and cause health hazards. Problems with cess pits are reported by 35.8%. Over one-third of the households have to deal with overflow, bad smell or a (too) small capacity of the pit for the circumstances.

Desludging interval

The desludging interval depends on:
- the capacity for emptying the pits;
- the volume of the cess pits;
- the size of the household, whereby a sludge rate is estimated at 60 l/c/year;
- the seepage of groundwater into the cess pit.;

The average volume of household cess pits is $13m^3$, the average number of emptying times per year is 3 times and the average cost per household is £E 50 per year, ranging from £E 37 in Aboksah to £E 86 in Al Roda.
In view of the varying circumstances it is recommended to adopt a village-wise and tailor-made approach for improvement of sludge and waste water removal.

Desludging costs

The present charges for one truckload of sludge removal, as reported by the *markaz*

workshops, are lower in towns than in villages, because the transport costs are added, and differ from district to district. The costs for one truckload sludge removal range in 1992 from £E 1.50 in Ibsway to £E 6 in Itsa villages. Costs have to be borne by the house owner.

The charges apparently vary from £E 10 per emptying operation in Abokshah to £E 15 or more. Having a pit of $12m^3$ in Itsa may cost the owner £E 18 for emptying.

Emptying costs of a pit depend on the pit volume. An average truckload is $4m^3$, while an average pit volume is $13m^3$. The average number of emptying per year is four times.

An average cess pit holder pays around £E 50 per year for emptying.

4.1.4 Willingness to pay for sewerage connection

Most people (69.5%) are prepared to pay for construction of a sewerage connection. Of them 35.6% is willing to pay a service fee, on top of the water bill for maintenance of the sewerage system. People's reaction was: "That is our dream".

Some people might expect that also the water table problems will be solved by a proper sewerage system. Water pounding problems caused by a high groundwater level, especially occurring in winter, will not disappear or not even diminish. But, sludge overflow and smell problems will disappear.

The Local Units in Aboksah, Kalamshah and Desia expressed their desire to have a sewerage system constructed.

4.2 SULLAGE

Waste water is discharged manually in a drain or canal running in front of the house (41 %) or in the street (25 %), those having a pipe-line or cess pit use this (33.9 %). A few households have individual connections to a drain or canal, constructed themselves.

Sullage is also discharged at Tersa main village drain and at the drain south-west of Desia, via a ground water lowering pipe-line.

People in the main village are reluctant to throw water at the street to avoid more water logging problems.

4.3 SOLID WASTE

Two-thirds of the households burn their solid waste in the household oven (67 %). Some burn it on the farmland (5 %) or use it as fertilizer (6 %). A limited number of cases throw waste on the street or in the drain or canal (16 %).

There is no solid waste collection system in villages, but there is is little awareness among the rural population regarding the hazards of dumping of solid wastes: 96.2% of the people do not care for a collection system.

Only in the village of Naqalifa, neighbourhood Mangud, people complained about the solid waste dumped next to their houses. They want the Local Unit to collect the solid waste or to install boxes to get rid of their solid waste.

Over half of the population takes care though for a clean house and environment. Of the houses visited 57.5% showed a clean environment. The dirty environment of the other 42.5% houses is caused by a mix of factors: garbage around the house (41.3%), animal faeces (24.4%) and mud or water ponding (21.3%).

5. PRIORITIES FOR IMPROVEMENT

5.1 PRIORITIES FOR IMPROVEMENT IN DRINKING WATER SUPPLY

Priorities for improvements in drinking water supply, as expressed by the inhabitants of the surveyed Local Units, can be grouped into three categories:

a) Improvements related to house connections, metering and revenue collection system;
b) Improvements related to the location and construction of public taps;
c) Improvements for canal water users.

These are briefly reviewed below.

5.1.1 Improvements related to house connections

From the consumers point of view the following shortcomings are stated with respect to their piped supply:

-	low pressures:	46%
-	no water during the day:	22%
-	frequent water cuts:	30%
-	no cess pit or drainage pipe:	22%
-	problems with cess pit:	35%

Therefore 20% of house connection users say they still need the canal besides their piped supply. In addition, all households with sanitation problems have to limit their water consumption in house.

Many households are on a waiting list to receive a household connection. Nearly 50% of the present public tap users would want a house connection and could afford it. The amounts involved in obtaining a connection (LE 200-300) however, are considerable and will be a bottleneck for many households. A system could be designed in which the new consumer gets the possibility to pay the connection fee in instalments.

The survey shows that there is a potential market with enough buying-power for 44,000 house connections. Because Fayoum Governorate has limited the total number of new connections to 100 per six months per district, the demand exceeds by far the supply and waiting times exceed two years.

There are two main factors which cause the abovementioned problems:

a) The insufficient water production and distribution capacity by El Azab;
b) The lack of sanitation facilities in the villages.

Both factors have to be tackled mainly by technical programmes which are described in the Drinking Water and Waste Water Master plans and other technical FADWS reports.

With respect to the metering of house connections, the following shortcomings have to be remedied:

- Water meters which are never read: 30%
- House connections which never pay: 26%
- Defective water meters (estimated): 20-30%

These problems will be dealt with in the "Revenue Improvement pilot project" which the FADWS is undertaking.

5.1.2 Improvements of public taps

Access to safe water in hamlets is severely restricted. Although the average number of users per public tap in rural Fayoum amounts to 500 (598 in this survey) the number of users in hamlets might rise to 1000 or even more. Some hamlets don't have a tap at all. At present still 50% of the rural population is dependent on public taps, which in view of the limited allocation of house connections is not likely to decrease at the short term.

Recommendations:

It is recommended to develop standards and targets for installation and use of public taps in hamlets, whereby the maximum number of users per tap shall not exceed 500, the walking distance has to be within a range of 300 meters from the houses. On the other hand however, construction of new public taps should be limited as much as possible, because of the risk of water losses. The first priority is rehabilitation of taps and improving the maintenance system.

It is recommended to adopt a phased programme for overhaul and rehabilitation of present public taps. The following phases could be distinguished:

1) rehabilitation of platform, drains and installing the faucets suitable for intensive community use. While the full costs of an improved tap are around £E 3 per consumer, the consumers could contribute partially. Project funds would be supplementary;
2) installation of a water meter at each tap;
3) including the taps in a separate register of water consumers;
4) including the taps in the regular visit schemes of meter readers and fee collectors;
5) taking a decision on the system for fee collection of water users.

It is recommended to take a decision on billing of public tap users to emphasize the principle that all public services have to be paid for. Fee collection for water consumption of public taps is a new phenomenon, and can be only introduced after endorsement of the

payment policy at the highest level. According to the survey, there is a willingness to pay by two-thirds of the public tap users.

The following division of responsibilities may apply:

a) El Azab constructs or rehabilitates the tap and meters it. Repairs of pipes, faucets and meter are the responsibility of El Azab;
b) The consumers use the tap in a proper way, take care of its cleanliness and pay a fee to the local unit for its use;
c) The Local Unit represents the users, collects the fees and reports to El Azab.

5.1.3 Improvements related to canal water use

The survey reveals that 20% of all house connection owners and over 72 % of public tap users use the canal for washing and doing dishes. It is not likely that this situation will change soon.
Although the people are aware that use of the canal water causes diseases, in particular bilharzia, they have no other option.

The health risks of canal water users could be reduced by construction of concrete "washing steps" in the canals on those locations, frequently used for washing. Those provide a firm footrest and limit the contact of the body with canal water.

In Fayoum no structures of this kind exist yet. The design of canal washing steps from those used in other Egyptian governorates, such as Beheira and Upper Egypt could be adapted.

5.2 PRIORITIES FOR IMPROVEMENTS IN SANITATION

The situation of the on-site sanitation in the pilot villages, and in the whole of Fayoum, is poor because of the following constraints:

- lack of small vacuum trucks for emptying cess pits in narrow and curved streets;
- lack of effective control on the growing number of private trucks which dump sludge into the nearest canal or drain. This number is growing because of lack of capacity and versatility of the public emptying service. Private action should not be discouraged, but guided. Therefore allowable dumping places have to be permitted and made known to private desludgers;
- more than 50% of the interviewed households have no latrine (range is 30-75%);
- overflow of cess pits in areas with high groundwater and low soil infiltration capacity;
- The high ground water level, which is still rising by water seepage of higher situated irrigation canals, undermines walls of houses and aggravates the problem of filthy water logging;

- The practice of ground water lowering systems used as sewers discharging untreated waste water into canals which are used by people for washing and bathing. Most village canals and drains are apparently polluted. (This problem is investigated more deeply by the "Environmental Impact Study", carried out in November/December 1992).

The consequences of the present situation are accumulation of bad smelling water in low lying grounds and a growing number of water borne diseases, as mentioned by the doctors of the health centres.

Recommendations are:

- To evacuate the sewage out of the village centre by a piped system and disposing it in a drain, starting with villages having high groundwater table problems. Prior treatment of the sewage is required when the water in the receiving drain would deteriorate beyond acceptable levels (see environmental impact study).

- To give Local Units the disposal of small and versatile emptying trucks suited for narrow streets for emptying the village cess pits timely.

- To provide more hygiene education by Local Units and health centres concerning the health risks of using canal or drain water. Illegal discharge of waste water and disposal of solid wastes in canals should be controlled.

- Execute latrine promotion campaigns.

Finally it is recommended to give the markaz workshops, now responsible for desludging private cess pits, the task of inspecting and controlling the disposal by the increasing number of private trucks and cars emptying cess pits (now 25%). In the future emptying of cess pits by markaz workshops may be limited to those of towns, while the Local Units become responsible for their own desludging operations.

The draft Master Plan on Waste Water mentions different technical options for waste water disposal related to the population distribution. In smaller settlements, on-site solutions may be the only short-term option.

Where on-site disposal is not satisfactory due to the high ground water table, the soil conditions and high population densities, piped disposal into drains (with or without prior treatment) seems to be the only alternative.

5.3 PRIORITIES FOR IMPROVEMENTS IN SOLID WASTE COLLECTION

The survey reveals that the awareness on risks of dumping the solid waste in drains, canals or streets is still limited.

Solid waste improvements are not seen by the people as a priority to improve their sanitary and health situation. Therefore service improvements have to be accompanied by population education to change habits.

The project has prepared a separate study on solid waste in Fayoum, in which recommendations are made for improvement. The study made use of the data collected in the present survey.

5.4 PRIORITIES FOR COMMUNITY INVOLVEMENT AND EDUCATION

A major part of the problems as perceived by the people, can only be solved by major infrastructural works, such as the construction of new water treatment plants, installation of pipelines, sewerage etc.

On the other hand, the survey reveals that there are two main priorities for community related activities in the field of water supply and sanitation. The first is education i.e. hygiene education (through health centres) and school sanitation programmes.

The outline for a pilot hygiene education activity in the FADWS is attached as annex 6.

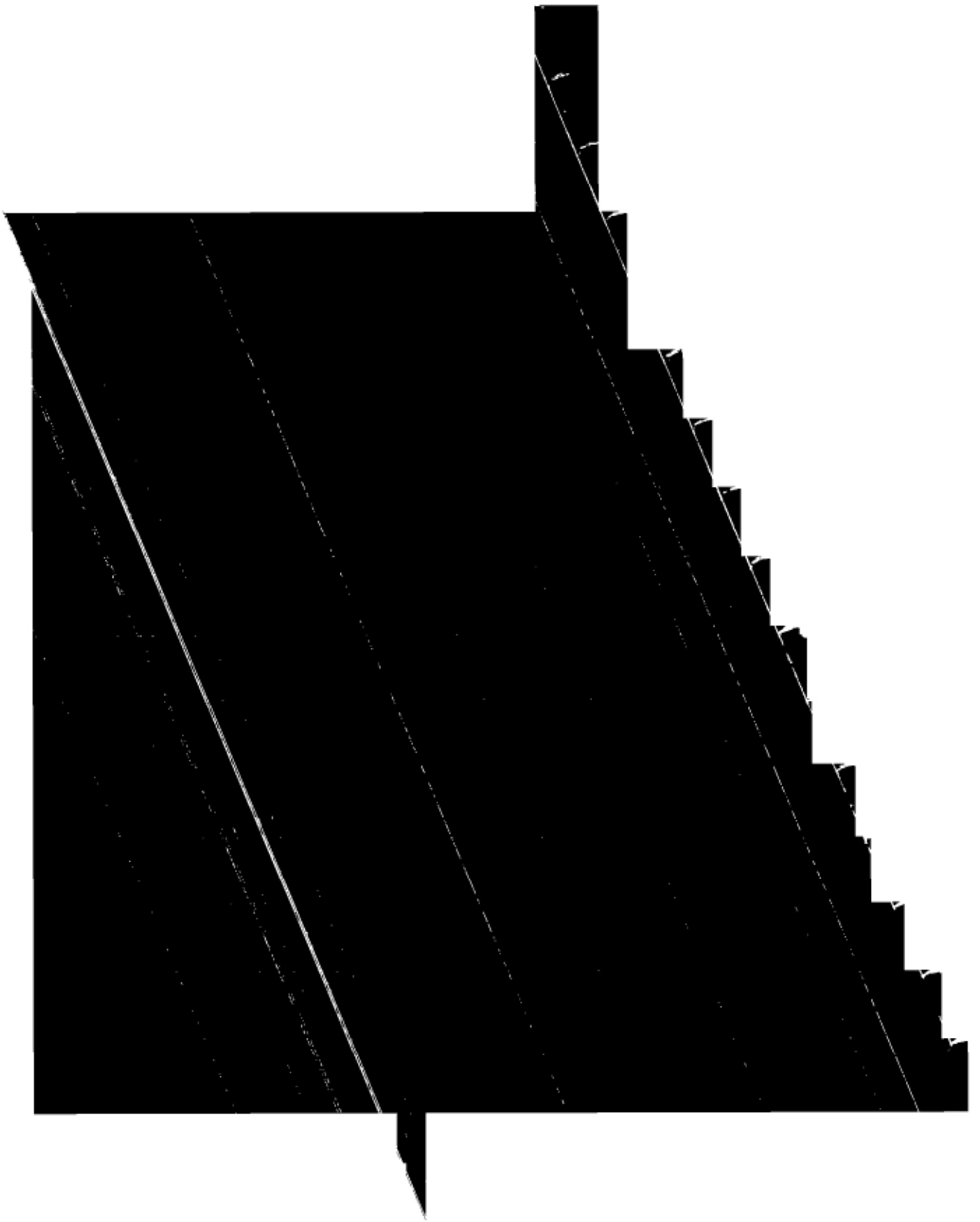
The second priority are the small improvement activities. Possibilities for community involvement in the big infrastructural programmes are not likely, but there remains sufficient scope for small scale activities at the village level for addressing local needs, and for which the community or its representatives can take the initiative. Examples are for instance:

- contributing to the extension of a service water pipeline, in order to reach a certain community;
- participation in public tap upgrading and maintenance;
- solving a local waste water problem;
- upgrading of toilet facilities in public buildings (especially schools and health centres);
- organize solid waste collection and disposal;
- cleaning a clogged drain;
- covering a drain inside a village;
- construction of washing steps in a canal.

Guiding principles in the implementation of small projects should be:

- flexibility in implementation;
- a tailor-made approach;
- a supervisory and monitoring role for consultants;
- commitment of the Local Unit to the implementation;
- consultation with the users and then active involvement;

For the project it is difficult to take up such projects directly, although contribution to their financing might be possible for instance through ORDEV. This organisation has a long experience in matching government funds for local investments in water supply and sanitation with donor funds, mainly coming from USAID.



DATA COLLECTION FORM

HOUSEHOLD SURVEY **1 Serial code:**

2	DISTRICT	6	HC REGISTRATION NUMBER:
3	VILLAGE	7	DATE .
4	EZBAH	8	DATA COLLECTOR
5	ORIENTATION ·	9	SUPERVISOR ·

(NAME.)

A.	RESPONDENTS WHO HAVE A WATER SUPPLY CONNECTION INSIDE THE HOUSE				**Table number**
1	The connection	1	El Azab connection	—	
		2	Through neighbour or other HH (extended)	—	
		3	Other connection	—	**(A 1)**

In case the answer is 2 (by containers) ask from section A only question A.2 no. 9, A.5 and A.10 and estimate the total daily transport in ltrs.

2	Type of connection costs and extensions	1	Metered	—	
		2	Unmetered	—	
		3	Electric pump	—	
		4	Other HH connected	—	
		5	Other HH outside house using this HC	—	**(A 2)**
		6	Year of installation	—	**(A 3)**
		7	Installation costs £E	—	**(A 4)**
		8	No. of taps in house	—	**(A 5)**
		9	No. of users	—	**(A 6)**
3	The water meter	1	Functioning	—	
		2	Out of order, since...	—	**(A 7)**
4	Meter reading interval	1	Yes, .times/year	—	
		2	Never	—	**(A 8)**
5	Water bills	1	Don't pay	—	
		2	Pay times/year	—	**(A 9)**
		3	Amount per year £E	—	**(A10)**
6	Quality of supply	1	24 hours	—	
		2	Day only	—	
		3	Night only	—	
		4	Good pressure	—	
		5	Low pressure	—	**(A11a)**
7	Water cut-offs	1	Frequent	—	
		2	Sometimes	—	
		3	Rarely	—	**(A11b)**
8	Warned in case of problems	1	El Azab	—	
		2	Local unit	—	
		3	Others (plumber/myself)	—	**(A12a)**

9	Repairs/maintenance	1	El Azab	—	
		2	Local unit	—	
		3	Others, ...	—	
		4	Have no problems	—	**(A12b)**
10	How do you store the water at home	1	Zir	—	**(A13a)**
		2	Container/Jerrycan, count total .ltr	—	**(A13b)**
		3	Covered	—	
		4	Uncovered	—	

In case the HH uses public tap and/or canal on a regular basis, ask:

11	For what purpose do you use the public tap?	1	Washing clothes	—	
		2	Washing dishes/utensils	—	
		3	Bathing	—	
		4	Other, ...	—	**(A14a)**
12	For what purpose do you use the canal?	1	Washing clothes	—	
		2	Washing dishes/utensils	—	
		3	Bathing	—	
		4	Other, ...	—	**(A14b)**
13	Why do you use the PT besides HC	1	To reduce the water bill	—	
		2	Waste water in house	—	
		3	It supplies more water	—	
		4	Social function	—	**(A15)**
14	Why do you use the canal besides the HC	1	To reduce the water bill	—	
		2	Waste water problems in house	—	
		3	Canal gives much water	—	
		4	Social function	—	**(A16)**

REMARKS:

B QUESTIONS FOR ALL REGULAR USERS OF PUBLIC TAPS

15	Public tap from house	1	< 50 meters	——	
		2	50 - 100 meters	——	
		3	100 - 200 meters	——	
		4	200 - 300 meters	——	
		5	> 300 meters	——	**(B 1)**
16	How many times daily does your family visit the PT	1	< 3 times	——	
		2	3-5 times	——	
		3	> .. times	——	**(B 2)**
17	Who in the family visits the PT	1	Wife	——	
		2	Children/daughters	——	
		3	Husband	——	**(B 3)**
18	What time of the day is most convenient	1	Early morning	——	
		2	Midday	——	
		3	Afternoon	——	
		4	Evening	——	**not in table**
19	Waiting time at the tap before having access	1	No waiting	——	
		2	Few minutes	——	
		3	> 15 minutes	——	**(B 4)**
20	How do you transport the water from the PT	1	Carry it by person	——	
		2	Carrying by donkey	——	**(B 5)**
			Estimate total transport/day-----ltr		**(E 1)**
21	How do you store the water at home	1	Zir	——	**(A13a)**
		2	Container/Jerrycan, count total . ltr	——	**(A13b)**
		3	Covered	——	
		4	Uncovered	——	
22	Water cut off from PT	1	Frequent	——	
		2	Sometimes	——	
		3	Rarely	——	**(B 6)**
23	What improvements do you prefer of the PT	1	A PT nearer to the house	——	
		2	More faucets on the PT	——	
		3	Space f washing clothes	——	
		4	Space for watering animals	——	
		5	Cleanliness	——	
		6	Better supervision	——	
		7	Other, ...	——	**(B 7)**
24	Would you be willing to pay for a better public tap	1	Yes, how much/month	——	
		2	No, I prefer HC	——	
		3	No, because	——	**(B 8)**

25	Why don't you have a HC now ?	1	Difficult to get	——	
		2	I have no money now	——	
		3	Have applied, but still waiting for connection	——	(B 9a)
		4	No, too expensive	——	
		5	Present situation is OK	——	
		6	Not suitable for this house	——	
		7	Other, ...	——	(B 9b)

Question for respondents, who have no HC and use the canal besides the PT

12	Why do you use the canal	1	PT is too crowded	——	
		2	PT sometimes has no water	——	
		3	PT too far	——	
		4	As much water as you like	——	
		5	Better for washing	——	
		6	Other, ...	——	(B10)

REMARKS:

C QUESTIONS ABOUT SANITATION FOR ALL

1	Water logging around/in house	1	Yes, its a problem	—	
		2	A problem only in winter	—	
		3	No problem	—	(C 1)
2	Waste water discharge	1	Connection pipe to open channel/drain	—	
		2	Connection to sewer in street	—	
		3	Cess pit/latrine	—	
		4	Throw in canal	—	
		5	Bucket on street	—	(C 2)
3	How often do you empty the cess pit / soakaway	1	Frequency (per year)	—	
		2	Costs/year £E	—	
		3	Vacuum truck Local Unit	—	
		4	By private tanker/horse	—	
		5	Manually	—	(C 3)
4	Estimated depth of the pit	1	1-2 meter	—	
		2	2-3 meter	—	
		3	3-4 meter	—	(C 4)
			Give volume	—	
5	Do you have problems with cess pit	1	Overflowing	—	
		2	Bad smell	—	
		3	Capacity too small	—	
		4	No problems	—	(C 5)
6	Why don't you have a sewage pipe installed now	1	Not necessary, vacuum truck service will do	—	
		2	Too expensive	—	
		3	Local unit should do it	—	(C 6b)
	Do you agree to pay for sewage pipe ?	4	Agree, for connection costs	—	
		5	Agree for monthly fee	—	(C 6a)
7	How do you dispose of solid waste ? (plastic, paper, glass etc.)	1	Often burned in stove	—	
		2	Burned	—	
		3	Thrown OUTSIDE village	—	
		4	Dispose in a street box	—	
		5	Throw in the drain/street	—	
		6	Burned on land	—	
		7	Fertilizer for land	—	(C 7)
8	Is garbage a problem for you ?	1	Yes, should be collected by Local Unit	—	
		2	Yes	—	
		3	No problem	—	(C 8)

D GENERAL DATA

QUESTIONS

1	Respondent	1	Male	—	
		2	Female	—	
	No. of household members (total living in same house)	3	Adults	—	
		4	Children	—	
		5	Total families in house	—	
		6	Total people in house	—	**(D 1)**
2	No. of households sharing HC outside house	1	One other HH	—	
		2	Two other HHs	—	
		3	Three or more HHs	—	
		4	Total no. of people (est)	—	
3	Facilities in house	1	Electricity	—	
		2	Water supply	—	
		3	Bath/WC	—	
		4	Cess pit	—	
		5	Drainage pipe	—	
		6	Separate kitchen	—	**(D 2)**
4	Which sources do you use for water (Rank from 1 onwards which is most important)	1	El Azab connection	—	
		2	Extension tap from neighbour	—	
		3	From neighbour in container	—	
		4	Public tap	—	
		5	Canal	—	
		6	Water vendor	—	
		7	Other source	—	**(D 3)**

OBSERVATIONS

5	Type of house	1	Mud	—	
		2	Brick	—	
		3	Concrete	—	
		4	Stones	—	**(D 4)**
6	Type of house	1	No. of floors	—	
		2	No. of rooms	—	**(D 5)**
7	Amenities in the house	1	TV	—	
		2	Refrigerator	—	
		3	Washing machine	—	
		4	Telephone	—	
		5	Gas stove	—	
		6	Tape player	—	**(D 6)**
8	Is there a special provision (zaribah)for animals in/around the house ?	1	HH has no animals	—	
		2	Yes, zaribah	—	
		3	Poultry . ..	—	**(D 7)**
	Where do you water animals?	1	In zaribah	—	
		2	In canal	—	
		3	They drink themselves	—	

9	OBSERVE cleanliness in/around house	1	Garbage in and around	—	
		2	Garbage and animal faeces around house	—	
		3	Mud/water pounding in and around house	—	
		4	Clean inside and outside	—	(D 8)

10 Scoring system for socio-economic classification of household·

Type of house (material)	mud = 1 brick/stone = 2 concrete = 3
Number of floors in house	· 1 point for each floor
Number of rooms in house	. 0.5 point for each room
Facilities	: 1 point for each mentioned available facility
Amenities	. 1 point for each mentioned amenity
Classification:	Low (A) score · < 8 Medium (B) score : 8-15 High (C) score : >15

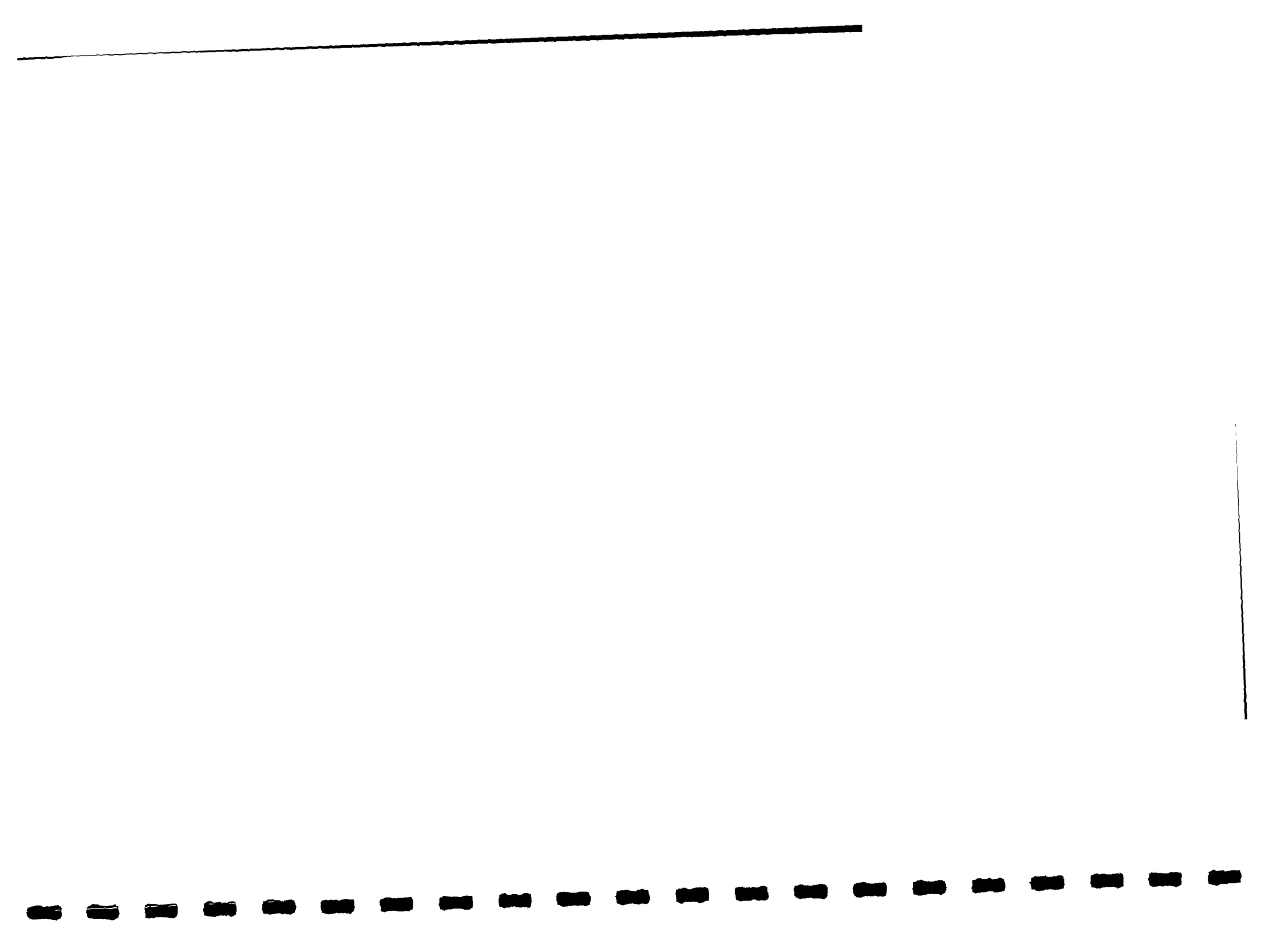
— (D 9)

REMARKS:

ANNEX 1.2

DATA COLLECTION FORM

PUBLIC TAP SURVEY



DATA COLLECTION FORM

PUBLIC TAP SURVEY **1 Serial code:**

2	DISTRICT	.	5	DATE	
3	VILLAGE	:	6	DATA COLLECTOR	:
4	EZBAH	:	7	SUPERVISOR	.

Describe location in ezbah/village:

I TAP CHARACTERISTICS

1 Tap location	1 Inside habitation	—	
	2 Outside habitation (mention distance in mtrs.	—	
2 Type of stand	1 Cast iron	—	
	2 Concrete stand	—	
	3 Diameter of connection	—	
3 Type of faucet	1 Turning tap	—	
	2 Self closing	—	
	3 Push-up/down	—	
	4 Open pipe, no tap	—	
	5 One open pipe, one tap	—	
4 Number of faucets	1 One	—	
	2 Two	—	
	3 One, second one broken and closed off	—	
5 Drainage	1 Open gutter/pool	—	
	2 Soak away	—	
	3 Drainage canal	—	
	4 Pipe	—	
6 Elevation of the tap (in metres)		—	
7 Tap installed in what year?		—	
8 Did any changes/improvements occur after the installation year	1 Concrete stand was made	—	....yr
	2 Tap was relocated	—	....yr
	3 Other,.....	—	

9 Condition of Ezbah	1 Total no of PTs	___
	2 Total no of HCs	___
	3 Latrines	___
	3 Electricity	___
	4 No of mosques	___
	5 No. other public facilities	___
	6 Est. no. of people	___
	7 Est. no. of households	___

II CONDITION OF TAP AND ENVIRONMENT

10 Faucet functioning	1 Free flowing	___
	2 Closes poorly	___
	3 Closes but leaks	___
	4 Functions well	___
	5 Water comes from pipe not connected to faucet	___
11 Leakage from pipes/fittings	1 None	___
	2 Little	___
	3 Substantial	___
12 Condition of drain	1 Mud/broken/clogged	___
	2 Fair	___
	3 Functions well	___
13 Condition of concrete stand	1 Broken	___
	2 Fair	___
	3 Functions well	___
	4 No concrete stand	___
14 Condition of platform	1 Broken	___
	2 Fair	___
	3 Functions well	___
	4 No platform	___
15 Water pounding/mud around the tap	1 Yes	___
16 Garbage around the tap	1 Yes	___
17 Are animals watered at the tap	1 Yes	___
18 Donkeys collecting water at tap	1 Yes	___

REMARKS

Improvements recommended:

III. USER STATEMENTS

19 Continuity of supply	1 Irregular	___
	2 Few hours daily	___
	3 All day	___
	4 Day and night	___
20 Water cut offs	1 Frequent	___
	2 Sometimes	___
	3 Rarely	___
21 Anybody takes care	1 Not known/nobody	___
	2 Shaykh Al Balad	___
	3 Local Unit	___
	4 Al Azab	___
22 How far do people come	1 Neighbourhood only	___
	2 From this ezbah only	___
	3 One family from ezbah	___
	4 From other places also	___
23 Number of families using this tap	1 Not known	___
	2 Estimated no. families	___
24 Has anything been improved by users	1 Mud wall around tap	___
	2 Faucet replaced	___
	3 Gutter improved	___
	4 Other,.....	___

REMARKS:

ANNEX 1.3

DATA COLLECTION FORM

PUBLIC FACILITIES SURVEY

DATA COLLECTION FORM

PUBLIC FACILITIES SURVEY **1 Serial code:**

2	DISTRICT :		6	NAME OF PF
3	VILLAGE		7	DATE
4	EZBAH		8	DATA COLLECTOR .
5	LOCATION		9	SUPERVISOR :

(Main informer:)

1 Type of public facility	1 Health Centre	—
	2 Primary School	—
	3 Prep school	—
	4 High school	—
	5 Mosque	—
	6 Local Unit	—
	7 Youth club	—
	8 Women's sewing club	—
	9 Other, ...	—
2 If school, operating in how many shifts	1 One shift	—
	2 Two shifts	—
	3 Name of school in second shift	—
3 Manpower of institution	1 Head	—
	2 Professional staff	—
	3 Administrative staff	—
	4 Workers	—
	5 Others, ...	—
4 Relevant data on diseases	1 Main diseases mentioned, ...	—
	2 Other problems,.	—
5 Total no. of users of facility:	1 Staff total, .	—
	2 Public (incl. students in case of schools)	—
6 Potable water connection	1 Distance to building	—
	2 Metered	—
	3 No. of faucets	—
	4 Gutter/drain	—
	5 Condition of sink(s)	—
	6 Availability of soap	—
	7 Condition of platform	—

7 The water meter	1 Functioning	—
	2 Non functioning, since ..	
	3 Frequency of meter reading. ...times/yr	
8 Water bills	1 ...times/yr	—
	2 Amount/yr	—
	3 Who pays, ...	—
9 Who is responsible for maintenance	1 Local Unit	—
	2 Responsible Department	—
	3 Ourselves	—
	4 Others, ...	—
10 Availability of latrines	1 No for women/girls	—
	2 No. for men/boys	—
	3 Number for staff only	—
Condition: good* = 1 reasonable*=2 unhygienic*=3 unhygienic/broken*=4	4 Condition	—
11 Emptying of cess pit	1 Size of cess pit	— m^3
	2 Emptying .../yr	—
	3 Waiting time for vacuum truck to come	—
Payment by: Local Unit = 1 Dept. = 2 Other = 3 Nobody = 4	4 Who pays for emptying	—
	5 Payment per year/emptying	—
	6 Bad smell	—
	7 Overflow of pit	—
	8 Small capacity	—
	9 Location not suited for vacuum truck	—
	10 Other,....	—
12 General hygiene conditions	1 Good	—
	2 Could better	—
	3 Not good	—
13 Activities to improve hygiene and cleanliness	1 Health/hygiene education	—
	2 Health/hygiene materials	—
	3 Special teaching	—
	4 Cleaning activities	—
	5 Flower planting	—

14 Priorities for improvement:

POPULATION DATA

Table 2.1 Respondents profile

Village	Total no. of respondents	Male respondent		Female respondent	
		No	%	No	%
1 Aboksah	62	22	35.5	40	60.5
2 Kalamshah	60	23	38.3	37	61.7
3 Tersa	48	10	20.8	38	79.2
4 Desia	58	13	22.4	45	77.6
5 Al Roda	84	20	23.8	64	76.2
TOTAL	312	88	140.8	224	71.8

Table 2.2 Household composition, average family and household size of families per house.

Village		Total resp	Avg no of HH	Avg no of children	Avg no of adults	Avg HH size	Avg no people in house
1 Aboksah	main	33	1.2	3.6	3.9	6.1	7.5
	hamlet	29	1.5	4.9	5.7	7.6	10.6
	both	62	1.4	4.2	4.8	6.8	9.0
2 Kalamshah	main	31	1.4	5.6	3.5	7.0	9.1
	hamlet	29	1.5	5.9	4.3	7.8	10.2
	both	60	1.4	5.8	3.9	7.4	9.7
3 Tersa	main	49	1.2	2.9	2.8	5.0	5.7
	hamlet	9	1.0	4.1	2.9	7.0	7.0
	both	58	1.2	3.1	2.8	5.3	5.9
4 Desia	main	40	1.5	4.4	4.2	6.3	8.6
	hamlet	18	1.6	2.8	4.6	5.3	7.4
	both	58	1.5	3.3	4.5	5.6	7.8
5 Al Roda	main	40	1.7	4.9	4.4	6.0	9.3
	hamlet	44	1.7	5.3	4.5	6.3	9.8
	both	84	1.7	5.1	4.4	6.2	9.5
TOTAL	main	183	1.5	4.1	4.0	6.1	8.1
	hamlet	129	1.5	5.2	4.6	7.0	9.8
	both	312	1.5	4.5	4.3	6.5	8.8

Table 2.3.1 The population of **Aboksah** and its attached villages per 1986

Village	Population 1986	Households 1986	Hamlets[1]	PTs[2] incl. 1992	Number of HCs (1992)
Aboksah	16,077	3,059	10	8+4=12	1,100
Zeed	6,278	1,123	8	9	170
Kafr Aboud	5,495	1,236	1	5	500
Menshat Howeidi	4,017	832	7	7	250
Tahawi	2,964	507	5	2	150
Shakshouk	11,694	2,505	7	11	310
Al Gilani	5,644	1,154	6	8	-
TOTAL	52,169	9,416	44	54	2,480

Source 1986: census data
1) Update: based on survey
2) Source: AW maintenance centre 1992

Table 2.3.2 The population of **Kalamshah** and its attached villages per 1986

Village	Population 1986	Households 1986	Hamlets	PTs incl. 1992	Number of HCs (1992)
Kalamshah	18,017	3,103	11	5+11=16	1,480
Al Hamdiyya	4,012	742	4	9	100
Kasr Al Basil	14,687	2,943	12	15	225
TOTAL	36,716	6,788	27	40	1,805

1) Together 1170 HCs

Table 2.3.3 Population of **Tersa** and its attached villages per 1986

Village	Population 1986	Households 1986	Hamlets	PTs incl. 1992	Number of HCs (1992)
Tersa	13,412	2,481	3	14	1,200[1]
Abheet Al Haggar	3,967	747	2	3	310
Al Zawih Al Khadra	3,281	649	1	2	139
Kafr Fazara	4,705	880	4	5	0,00[1]
Al Saidiya	5,314	902	8	12	400[2]
Manshat Al Sadat	2,378	410	-	2	0,00[2]
Naqalifa	12,365	2,232	7	6	1,200
TOTAL	45,422	8,301	25	44	3,249

1) Together 1200 HCs
2) Together 400 HCs

Table 2.3.4 Population of **Desia** and its attached villages per 1986

Village	Population		Households		Hamlets	PTs incl. hamlets	Number of HCs (1992)
	1986	1991[1]	1986	1991[1]			
Desia	8,149	10,500	1,610	2,150	8	3+6=9	375
Al Sounbat	7,525	9,800	1,209	1,400	4	7	600
Menshat Fteah	2,589	3,500	409	600	7	8	150
Menshat Al Asheery	4,032	4,500	669	650	7	7	47
Mnashi Al Khateep	4,385	5,000	802	800	3	6	240
TOTAL	26,689	33,300	4,699	5,600	27	37	1,412

1) Information from the mayor of Desia, population figure 1991 is excl. hamlets of main village

Table 2.3.5 Population of **Al Roda** and its attached villages per 1986

Village	Population 1986	Households 1986	Hamlets	PTs incl. 1992[1]	Number of HCs (1992)
Al Roda	14,161	3,019	17	5+14=19	900
Al Rubiat	6,680	1,376	15	}20	300
Fargas	7,556	1,526	7	}	399
TOTAL	28,493	5,921	39	39	1,599

1) Source: AW maintenance centre

Table 2.4.1 Number of inhabitants, households, household connections and public taps for **Aboksah** hamlets

Name of hamlet	Number of inhabitants[1]	Estimate of houses[1]	Number of HC's	Number of PT's	Electricity
Aboksah main	16,077[2]				
Gindi	2,400	250	15	-	yes
Fabrika	1,100	115	14	1	yes
Sidnawi kadima	1,000	104	5	-	yes
Sidnawi gadida	700	72	-	-	yes
Huzayyen Barakat	600	62	-	1	yes
Dardeer Barrani	900	94	6	1	yes
Al Saba'a	350	36	-	-	yes
Al Adli	2,000	208	3	1	yes
Al Rabbat	700	72	-[3]	-	yes
Abu Hammad	500	50	1	-	yes
TOTAL	10,250	1,063	44	4	

1) same numbers given by Shaykh Al Balads and the mayor, still only two-third of the number is written into the table
2) 1986
3) In the hamlet are no house connections, three houses along main road do have house connection.

Table 2.4.2 Number of inhabitants, households, house connections and public taps for **Kalamshah** hamlets

Name of hamlet	Estimated population[1]	Estimate no of houses[1]	Number of HC's	Number of PT's	Electricity
Kalamshah main	**18,015[2]**				
Sirsinawi	1,500	167	20	1	yes
Al Rufaya	2,000	222	-	1	-
Al Gabal	2,000	222	-	1	-
Al Burah	5,000	556	1	1	-
Al Hatab	500	55	-	1	-
Burayyik	1,000	111	25	2	-
Duba'a	1,000	111	20	1	-
Manakli	250	28	-	1	only mosque
Ramis	1,800	200	10	1	-
Al Muftah	600	67	30	-	yes
Halfeyya	2,000	222	60	1	-
TOTAL	17,650	1,961	166	11	

1) same numbers given by Shaykh Al Balads and the mayor, still only two-third of the number is written into the table
2) 1986

Table 2.4.3 Number of inhabitants, households, house connections and public taps for **Tersa** hamlets

Name of hamlet	Estimated population[1]	Estimate of houses[1]	Number of HC's	Number of PT's	Electricity
Tersa main	**13,412[2]**				
Abu Khachaba	1,600	200	-	-	yes
Al Sini	4,500	600	± 120	2	yes
Mangud	1,000	120	4	1	yes
TOTAL	7,100	920	124	3	

1) same numbers given by Shaykh Al Balads and the mayor, still only two-third of the number is written into the table
2) 1986

Table 2.4.4 Number of inhabitants, households, house connections and public taps for Desia hamlets

Name of hamlet	Estimated population[1]	Estimate no of houses[1]	Number of HC's	Public taps	Electricity
Desia main	10,500[2]				
Mahmud Bey	700	80	2	1	no
Mahrus	1,100	150	6	1	yes
Al Mi'alim Ibrahim	1,700	200	1	1[3]	yes
Khatib	1,000	180	15	1	yes
Al Kum Al Ahmer	2,000	250	-	1	no
Ali Khalil	420	60	-	1[4]	no
TOTAL	6,920	920	24	6	

1) same numbers given by Shaykh Al Balads and the mayor, still only two-third of the number is written into the table.
2) 1991
3) and another one out of order (pressure too low)
4) outside the hamlet

Table 2.4.5 Number of inhabitants, households, house connections and public taps for **Al Roda** hamlets

Name of hamlet	Estimated population[1]	Estimate of houses[1]	Number of HC's	Number of PT's	Electricity
Al Roda main	**16,000[2]**				
Beshir Saleh	1,200	120	10	1	yes
Nagati	1,000	100	-	1	yes
Abd Al Nabi Husain	4,000	500	50	-	yes
Girgawi Shihab	225	45	3	1	no
Al Lafy	2,000	250	6	2	yes
Shafi Abu Husain	1,700	180	5	1	yes
Abd Al Razek Moosa	600	80	-	1	yes
Al Makersha	1,300	140	-	1	yes
Saluha	600	60	1	1	no
Al Hariri	200	20	2	-	no
Salim Habib	600	60	20	1	yes
Al Boghdady	60	6	-	1	no
Ali Abd Al Mina'm	600	100	-	1	yes
Salim Ali	400	45	21	1	yes
Sakan Al Noktah	125	20	14	1	yes
Husain Mustafa	50	6	5	-	yes
Awad Zidan	50	6	1	-	no
	14,730	1,741	137	14	

1) same numbers given by Shaykh Al Balads and the mayor, still only two-third of the number is written into the table
2) 1986

Table 2.5 Public facilities in main villages and their Local Units

Public facility	K	K-L.U.	A	A-L.U.	T	T-L.U.	D	D-L.U.	R	R-L.U	Total
	5	16	3	12	2	13	3	9	4	7	57
Preparatory school	1	2	2	5	1	3	1	3	1	1	14
Islamic school	1	2	-	-	2	2	-	2	-	-	6
Secondary school	1	1	2	2	1	2	-	-	-	-	5
Health centre	1	2	1	5	1	4	1	3	1	3	17
Mosques	11	22[1]	6	27	7	26	13	35	8	18	128
Youth centre	1	2	1	2	1	2	1	3	1	3	12
Women project	1	1	1	2	1	5	1	3	-	-	11
Local Unit		1		1		1		1		1	5
Total		49		56		58		59		33	255

1) Estimate

Table 2.6 Sanitary condition of visited schools

Village	School-type	Shifts	Total no of staff	Total no. of pupils	No. of toilets	People/toilet		Condition of toilet
						staff	pupils	
Kalamshah	Primary	2	54	467	5+3= 8	18	94	BAD
	Primary and Preparatory	1	41	650	6		115	BAD
	Preparatory	2	79	678+694= 1,372	4		363	BAD
Aboksah	Primary and Preparatory	2	57	996	6+3= 9	19	166	BAD
Tersa	Primary and Preparatory	1	45	508	4		138	GOOD
	Preparatory and Secondary	2 1	74+20 94	880+105= 985	8+3=11	31	123	BAD
	Primary	2	87	366+694= 1,060	8+2=10	44	133	BAD
Desia	Primary	2	44	475+307= 782	10+2=12[1]	No toilets in use		BAD
	Preparatory	1	27	527	12+2=14	14	44	GOOD
El Roda	Primary	2	79	1,230	4+1= 5	79	310	BAD
	Preparatory	1	56	1,214	8+4=12	14	152	BAD

Table 2.7 Amenities in the house

Village	Tot. no of HH	TV		Refrigerator		Washing machine		Phone		Gas stove		Tape player	
		No	%	No	%	No	%	No	%	No	%	No	%
1 Aboksah	64	40	62.5	28	43.8	27	42.2	13	20.3	17	26.6	15	23.4
2 Kalamshah	60	27	45.0	21	35.0	26	43.3	2	3.3	18	30.0	1	1.7
3 Tersa	49	24	49.0	15	30.6	14	28.6	6	12.2	9	18.4	9	18.4
4 Desia	58	29	50.0	19	32.8	22	37.9	0	0.0	10	17.2	11	19.0
5 Al Roda	84	59	70.2	29	9.2	29	9.2	2	2.4	22	26.2	38	45.2
TOTAL	315	179	56.8	112	35.6	118	37.5	23	7.3	76	24.1	74	23.5

Table 2.8 Houses according to building materials

Village	Total no of HH	Mud		Brick		Concrete		Stones	
		No	%	No	%	No	%	No	%
1 Aboksah	64	22	33.3	25	39.7	17	27.0	0	0.0
2 Kalamshah	60	24	40.0	21	35.0	3	5.0	12	20.0
3 Tersa	49	14	28.6	27	55.1	8	16.3	0	0.0
4 Desia	58	11	19.0	43	74.1	4	6.9	0	0.0
5 Al Roda	84	37	44.0	37	44.0	9	10.7	1	1.2
TOTAL	315	108	34.3	153	48.6	41	13.0	13	4.1

Table 2.9 Animals in the house

Village	Total no of HH	Houses with zaribah		No animals at all		Poultry	
		No	%	No	%	No	%
1 Aboksah	64	16	25.0	17	26.6	47	73.4
2 Kalamshah	60	21	35.0	9	15.0	51	85.0
3 Tersa	49	13	26.5	13	26.5	36	73.5
4 Desia	58	42	72.4	15	25.9	43	74.1
5 El Roda	84	60	71.4	21	25.0	63	75.0
TOTAL	315	152	48.3	75	23.8	240	76.2

DRINKING WATER

Table 3.1 Water consumption by house connection and public tap users

Village	Total no of HH	Total no of HC	Litre/ consumer/ day (HC)	Total no of PT-users	Litre/ consumer /day (PT)	Through neighbour	HC consumption / PT consumption
1 Aboksah	64	22	82.2	42	12.3	0	6.7
2 Kalamshah	60	30	91.3	24	15.2	6[1]	6
3 Tersa	49	16	90.0	33	17.0	0	5.3
4 Desia	58	18	100.8	40	18.5	0	5.4
5 Al Roda	84	29	49.9	55	17.5	0	2.9
TOTAL	315	115	80.3[2]	194	16.2[2]	6	5.0

1) One buys water from a water vendor.
2) The water consumption of HC users is estimated by multiplying the annual water bill with the unit cost per m^3 (1000 liters cost £E 0.09) and dividing this by household members and days/year.
The figures for water consumption of public tap users are based on the estimated daily water transport per household divided by the household members.

Table 3.2 Average number of persons per house connection and public tap household.

Local Units	Average number of persons per house connection	Average no of persons in PT HH
1 Abokshah	9.05	8.93
2 Kalamshah	11.85	8.88
3 Tersa	6.96	7.2
4 Desia	7.56	7.88
5 Al Roda	9.52	9.31
AVERAGE	9.2	8.52

Table 3.3 Water meters out of order and meter reading

Village	Total of HC's	Total no of meters	Meter defect		Reading frequency					
					1 x yr		2 x yr		never	
			No	%	No	%	No	%	No	%
1 Aboksah	22	21[1]	1	4.8	9	42.8	4	19.1	8[2]	38.1
2 Kalamshah	30	29[1]	5[3]	17.2	15	51.7	11	37.9	3[4]	10.3
3 Tersa	16	16	1	6.2	8	50.0	4	25.0	4[5]	25.0
4 Desia	18	18	1	5.6	5	27.8	6	33.4	7[6]	38.9
5 Al Roda	29	29	1	3.4	11	37.9	6	20.7	12[7]	41.4
TOTAL	115	113	9	8.0	48	42.5	31	27.4	34	30.1

1) There are two extended house connections from the neighbour's meter
2) One has water cut since 1985. Two connections are newly installed.
3) Three out of 5 out-of-order meters pay.
4) One connection is newly installed.
5) One connection is newly installed.
6) One connection is newly installed.
7) Of the 12 households 6 don't know whether the meter is read or not.

If the seven households with new connections and water cut are subtracted from the total "never read" than only 27 meters, or 23.9%, are never read.

Table 3.4 Water billing

Village	Total number of meters	Billing frequency					
		Every 6 months		Every year		Never	
		No	%	No	%	No	%
1 Aboksah	21	4	19.1	9	42.8	8[1]	38.1
2 Kalamshah	29	6	20.7	18	62.1	5[2]	17.2
3 Tersa	16	2	12.5	10	62.5	4[1]	25
4 Desia	18	3	16.7	7	38.9	8[1]	44.4
5 Al Roda	29	2	6.9	15	51.7	12[3]	41.4
TOTAL	113	17	15.0%	59	52.2%	37	32.7%

1) Two connections in Abokshah, 1 in Tersa and 1 in Desia are newly installed. In Aboksah also one does not get water since 1985.
2) Of the 5 never paying in Kalamshah 1 meter is out-of-order, 1 connection newly installed and 1 doesn't get water since 1990
3) Of the 12 respondents 3 don't know whether they pay.

Subtracting the categories new connections and not getting water from the total "never paying" than 30 house connections, or 26.5%, remain never paying.

Table 3.5 Preference for house connection

Village	HH using PT	Total HC wanted		Yes prefer house connection but..					
				Difficult to get[1]		No money at the moment		Have applied but still waiting	
		No	%	No	%	No	%	No	%
1 Aboksah	42	30	71.4	10	23.8	11	26.2	9	21.4
2 Kalamshah	24	6	25.0	1	4.2	1	4.2	4	16.7
3 Tersa	33	20	60.6	9	27.3	6	18.2	5	15.2
4 Desia	40	32	80.0	8	20.0	7	42.5	7	17.5
5 Al Roda	55	47	85.4	17	30.9	10	18.2	20	36.4
TOTAL	194	135	69.6	45	23.2	45	23.2	45	23.2

1) "Difficult to get" is used for those cases that there, often in hamlets, is no drinking water pipe-line is in the vicinity.

Table 3.6 No preference for house connection

Village	HH use PT	HC not wanted		No, do not want house connection, because:							
				Too expensive		It is OK		Not suitable for this house		Other reason	
		No	%	No	%	No	%	No	%	No	%
1 Aboksah	42	12	28.6	11	26.2	0	0.0	0	0.0	1	2.4
2 Kalamshah	24	18	75.0	16	66.7	1	4.2	0	0.0	1	4.2
3 Tersa	33	13	39.4	11	33.3	0	0.0	1	3.0	1	3.0
4 Desia	40	8	20.0	4	10.0	1	2.5	0	0.0	3	7.5
5 Al Roda	55	8	14.5	0	0.0	0	0.0	1	1.8	7	12.7
TOTAL	194	59	30.4	42	21.6	2	1.0	2	1.0	13	6.7

Table 3.7 Average cost of a house connection, to be paid by the consumer[1]

Parts of connection	1982	1986	1989	1992
1. Water meter	30	40	60	100
2. Piping	10	25	40	50
3. Al Azab works	8	14	25	25
4. Saddle	5	6	10	10
5. Pieces, faucet	8	12	15	20
TOTAL	£E 61	£E 97	£E 150	£E 205

1) Estimate by Al Azab maintenance centre Ibshway, provided the distance of the house is less than 15 meter from the main

Table 3.8 Installation costs of connection

Village	Total no. of HC	Installation cost of HC							
		≤ £E 100		£E 101 - 299		≥ £E 300		Not known	
		No	%	No	%	No	%	No	%
1 Aboksah	22	9	40.9	11	50.0	2	9.1	0	0.0
2 Kalamshah	30	11	36.7	11	36.7	5	16.7	3	10.0
3 Tersa	16	1	6.3	7	43.8	4	25.0	4	25.0
4 Desia	18	5	27.8	8	44.4	2	11.1	3	16.7
5 Al Roda	29	6	20.7	9	31.0	2	6.9	12	41.4
TOTAL	115	32	27.8	46	40.0	15	13.0	22	19.1

"Not known" contains those people who do not know or do not want to tell the installation costs

Table 3.9 Age of connection

Village	Total no. of HC	Age of HC; installed in									
		1992-1989		1988 - 1986		1985 - 1982		Before 1982		Not known	
		No	%	No	%	No	%	No	%	No	%
1 Aboksah	22	5	22.7	3	13.6	5	22.7	9	40.9	0	0.0
2 Kalamshah	30	5	16.7	8	26.7	5	16.7	9	30.0	3	10.0
3 Tersa	16	6	37.5	3	18.8	6	37.5	0	0.0	1	6.3
4 Desia	18	4	22.2	6	33.3	7	38.9	1	5.6	0	0.0
5 Al Roda	29	11	37.9	10	34.5	5	17.2	3	10.3	0	0.0
TOTAL	105	31	27.0	30	26.1	29	25.2	22	19.1	4	3.8

Table 3.10 Amount of water bills

Village	Total number of HC's	Amount per year									
		≤ £E 15		£E 16 - 25		£E 26 - 50		> £E 50		Not known	
		No	%	No	%	No	%	No	%	No	%
1 Aboksah	22	2	9.1	3	13.6	5	22.7	1	4.5	11	50.0
2 Kalamshah	30	2	6.7	8	26.7	11	36.7	1	3.3	8	26.7
3 Tersa	16	1	6.3	8	50.0	1	6.3	1	6.3	5	31.3
4 Desia	18	2	11.1	5	27.8	2	11.1	0	0.0	9	50.0
5 El Roda	29	8	27.6	4	13.8	2	6.9	0	0.0	15	51.7
TOTAL	115	15	13.0	28	24.3	21	18.3	3	2.6	48	41.7

Table 3.11 Number of users

Village	Total no. of HC	Number of users								Average users/HC		
		≤ 5 users		6 - 10 users		11 - 19 users		≥ 20 users		main village	hamlet	both
		No	%	No	%	No	%	No	%			
1 Aboksah	22	3	13.6	11	50.0	4	18.2	4	18.2	7.7	12.3	9.2
2 Kalamshah	30	3	10.0	6	53.3	7	23.3	4	13.3	11.8	11.9	11.9
3 Tersa	16	5	31.3	9	56.3	2	12.5	0	0.0	7.0	2.0	6.7
4 Desia	18	7	38.9	7	38.9	4	22.2	0	0.0	7.6	7.5	9.2
5 Al Roda	29	2	6.9	17	58.6	9	31.0	1	3.4	10.4	7.9	9.5
TOTAL	115	20	17.4	50	43.5	26	22.6	9	7.8	9.0	9.9	9.2

Table 3.12 Number of taps in the house

Village	Total no. of HC	Number of taps in the house							
		One tap		2 - 3 taps		≥ 4 taps		Not given	
		No	%	No	%	No	%	No	%
1 Aboksah	22	10	45.5	4	18.2	8	36.4	0	0.0
2 Kalamshah	30	18	60.0	5	16.7	6	20.0	1	3.3
3 Tersa	16	7	43.8	4	25.0	5	31.3	0	0.0
4 Desia	18	11	61.1	2	11.1	5	27.8	0	0.0
5 El Roda	29	13	44.8	12	41.1	1	3.4	3	10.3
TOTAL	115	59	51.3	27	23.5	25	21.7	4	3.5

Table 3.13 Drinking water storage by all users

Village	Total number of HH	HH having zir in the house		Zir covered
		No	%	(%)
1 Aboksah	64	48	75.0	100.0
2 Kalamshah	60	56	93.3	96.4
3 Tersa	49	41	83.7	100.0
4 Desia	58	50	86.2	94.0
5 Al Roda	84	78	92.9	98.7
TOTAL	315	274	87.0	97.4

Table 3.14 Water stored for other purposes than drinking water by all users

Village	Total no. of HH	HH using container					HH using jerrycan				
		No	0-20 litre		> 20 litre		No.	0-20 litre		> 20 litre	
			No	%	No	%		No.	%	No	%
1 Aboksah	64	17	5	7.8	12	18.8	29	5	7.8	24	37.5
2 Kalamshah	60	12	7	11.7	5	8.3	10	4	6.7	6	10.0
3 Tersa	48	16	10	20.4	6	12.2	7	5	10.2	2	4.1
4 Desia	58	15	11	19.0	4	6.9	20	12	20.7	8	13.8
5 Al Roda	84	3	3	3.6	0	0.0	22	22	26.2	0	0.0
TOTAL	315	63	36	11.4	27	8.6	88	48	15.2	40	12.7

Table 3.15 Condition of public taps

Village		No of taps	No of surv. taps	Faucet[1] broken or no faucet		Platform defect		No drain or gutter		Dirty at & around tap	
				No	%	No	%	No	%	No	%
Aboksah	Main	8	4	3	75.0	3	75.0	3	75.0	3	75.0
	Hamlets (10)	4[2]	4	2	50.0	4	100.0	4	100.0	4	100.0
	Total	12	8	5	62.5	7	87.5	7	87.5	7	87.5
Kalamshah	Main	5	1	1	100.0	1	100.0	1	100.0	1	100.0
	Hamlets	11[3]	10	9	90.0	9	90.0	7	70.0	9	90.0
	Total	17	11	10	90.9	10	90.9	8	72.7	10	90.9
Tersa	Main	9	7	5	71.4	6	85.7	5	71.4	7	100.0
	Hamlet	3[4]	3	3	100.0	3	100.0	3	100.0	3	100.0
	Total	12	10	8	80.0	9	90.0	8	80.0	10	100.0
Desia	Main	3	3	1	33.3	2	66.7	3	100.0	2	66.7
	Hamlets	6	6	2	33.3	6	100.0	5	83.3	5	83.3
	Total	9	9	3	33.3	8	88.9	8	88.9	7	77.8
Al Roda	Main	5	5	2	40.0	5	100.0	3	60.0	4	80.0
	Hamlets (17)	14[5]	14	7	50.0	11	78.6	11	78.6	11	78.6
	Total	19	19	9	47.4	16	84.2	14	73.7	15	78.9
TOTAL	Main	30	20	12	60.0	17	85.0	15	75.0	17	85.0
	Hamlets	38	37	23	62.2	33	86.8	30	81.1	32	86.5
	Total	68	57	35	61.4	50	87.7	45	78.9	49	86.0

1) Sometimes one faucet is broken but there is still another one functioning.
2) Only four hamlets do have a public tap, six hamlets are without any source of drinking water within their hamlet.
3) One of the eleven hamlets (Burayyik) has two public taps, one public tap was not surveyed and one hamlet (Al Muftah) has no public tap.
4) Only two hamlets have a public tap, Mangud one and Sini two. Abu Khachaba, the third hamlet has no public tap.
5) Only fourteen hamlets have a public tap, the other three are without. One of these public taps has never water.

Table 3.16 Person of the family who visits the Public Tap

Village	Number of HH using PT	Person of the family who visits the Public Tap					
		Wife		Daughter		Husband	
		No	%	No	%	No	%
1 Aboksah	42	28	66.7	12	28.6	2	4.8
2 Kalamshah	24	18	75.0	6	25.0	0	0.0
3 Tersa	33	28	84.8	5	15.2	0	0.0
4 Desia	40	33	82.5	6	15.0	1	2.5
5 El Roda	55	46	83.6	8	14.5	1	1.8
TOTAL	194	153	78.9	37	19.1	4	2.1

Table 3.17 Preferred improvements[1]

Village	HH use PT	PT nearer		More faucets		Space for wash	Space for ani-mal	More clean		Better mainte-nance		Other	
		No	%	No	%	No	No	No	%	No	%	No	%
1 Aboksah	42	19	45	17	41	7	0	13	31	1	2	3	7
2 Kalamshah	24	13	54	14	58	0	1	13	54	3	13	0	0
3 Tersa	33	3	9	15	46	1	0	18	55	7	21	10	30
4 Desia	40	9	23	8	20	2	1	10	25	1	3	21	53
5 Al Roda	55	9	16	23	42	8	2	25	46	6	11	31	56
TOTAL	194	77	40	77	40	18	4	79	41	18	9	65	34

1) 120 households mentioned two improvements.

Table 3.18 Willingness to pay for better service at Public Tap

Village	HH using PT	Yes, will pay		No, prefer HC		Other reason[1)]	
		No.	%	No.	%	No.	%
1 Aboksah	42	17	40.5	8	19.0	17	40.5
2 Kalamshah	24	16	66.7	1	4.2	7	29.2
3 Tersa	33	8	24.2	5	15.2	20	60.6
4 Desia	40	17	42.5	6	15.0	17	42.5
5 Al Roda	55	15	27.3	25	45.5	15	27.3
TOTAL	194	73	37.6	45	23.2	76	39.2

1) This other reason is mostly that the people are too poor to pay for the water or construction of a new public tap.

Table 3.19 Repair/maintenance for house connection and public tap

Village	Total number of HH	Warned in case of problems					
		Al Azab		Local Unit		Plumber	
		No	%	No	%	No	%
1 Aboksah	64	47	73.4	10	15.6	5	7.8
2 Kalamshah	60	31	51.7	7	11.7	21	35.0
3 Tersa	49	34	69.4	7	14.3	6	12.2
4 Desia	58	42	72.4	10	17.2	3	5.2
5 Al Roda	84	56	66.7	19	22.6	7	8.3
TOTAL	315	217	68.9	53	16.8	42	13.3

Table 3.20 Distance of public tap from house

Village	No. of HH using PT	Distance, in meters, to the PT from the house									
		< 50		50 - 100		100 - 200		200 - 300		> 300	
		No.	%	No.	%	No.	%	No.	%	No.	%
1 Aboksah	42	12	28.6	3	7.1	8	19.0	6	14.3	13	31.0
2 Kalamshah	24	3	12.5	3	12.5	4	16.7	5	20.8	9	37.5
3 Tersa	33	12	36.4	8	24.2	7	21.2	3	9.1	3	9.1
4 Desia	40	8	20.0	10	25.0	9	22.5	7	17.5	6	15.0
5 El Roda	55	15	27.3	23	41.8	13	23.6	2	3.6	2	3.6
TOTAL	194	50	25.8	47	24.2	41	21.1	23	11.9	33	17.0

Table 3.21 Quality of supply to house connections

Village	No. of HC	24 hrs		Day only		Night only		Good pres.		Low pres.	
		No	%	No	%	No	%	No	%	No	%
1 Aboksah	22	11	50.0	5	22.7	6	27.3	12	54.5	10	45.5
2 Kalamshah	30	29	96.7	0	0.0	1	3.3	27	90.0	3	10.0
3 Tersa	16	16	100.0	0	0.0	0	0.0	16	100.0	0	0.0
4 Desia	18	2	11.1	0	0.0	16	88.9	0	0.0	18	100.0
5 Al Roda	29	27	93.1	0	0.0	2	6.9	7	24.1	22	75.9
TOTAL	115	85	73.9	5	4.3	25	21.7	62	53.9	53	46.1

Table 3.22 Quality of supply for house connection and public tap, frequency water cuts

Village	Total number of		Water cuts					
			Frequent		Sometimes		Rarely	
			No	%	No	%	No	%
1 Aboksah	HC	22	16	72.7	6	27.3	0	0.0
	PT	42	28	66.7	12	28.6	2	4.8
2 Kalamshah	HC	30	2	6.7	2	6.7	26	86.7
	PT	24	6	25.0	6	25.0	12	50.0
3 Tersa	HC	16	0	0.0	1	6.3	15	93.7
	PT	33	0	0.0	6	18.2	27	81.8
4 Desia	HC	18	16	88.9	1	5.6	1	5.6
	PT	40	27	67.5	7	17.5	6	15.0
5 Al Roda	HC	29	0	0.0	5	17.2	24	82.8
	PT	55	7	12.7	19	34.5	29	52.7
TOTAL	HC	115	34	29.6	15	13.0	66	57.4
	PT	194	68	35.1	50	25.8	76	39.2

Table 3.23 Use of canal besides house connection/public tap

Village	Total number of HH having			Make use from canal water next to other source					
				Number of people			Percentage		
	HC	PT	tn[1]	HC	PT	tn	HC	PT	tn
1 Aboksah	22	42	0	1	29	0	5	69	-
2 Kalamshah	30	24	6	6	15	1	21	63	14
3 Tersa	16	33	0	4	24	0	25	73	-
4 Desia	18	40	0	4	33	0	22	83	-
5 Al Roda	29	55	0	7	38	0	24	69	-
TOTAL	115	194	6	22	139	1	20	72	11

1) Within the category there are 5 in Kalamshah who collect water at the neigbour's tap, and 1 who buys from a water vendor.

Table 3.24 Reasons for using the canal besides public tap[1]

Village	HH using PT	Too crowded at tap		Sometimes no water at tap		More water in canal		Better for washing		Tap too far		Other[2]
		No	%	No	%	No	%	No	%	No	%	No
1 Aboksah	42	9	21.4	9	21.4	0	0.0	18	42.9	14	33.3	3
2 Kalamshah	24	4	16.7	6	25.0	3	12.5	10	41.7	0	0.0	1
3 Tersa	33	3	9.1	0	0.0	0	0.0	20	60.6	3	9.1	1
4 Desia	40	9	22.5	13	32.5	9	22.5	9	22.5	6	15.0	3
5 Al Roda	55	23	41.8	11	20.0	20	36.4	23	41.8	0	0.0	5
TOTAL	194	48	24.7	39	20.1	32	16.5	80	41.2	23	11.9	13

1) 41 Households gave more than one reason.
2) Another reason is mostly that the canal is better for bathing children

[redacted]

DATA ON SANITATION

Table 4.1 Distribution of sanitary facilities according to main villages and hamlets and having a house connection

Village	Resp		Cess pit		Pipe-line		Nothing	
			No	%	No	%	No	%
Aboksah	34	Main	28 (15HC)	82.4	0	0.0	6 (- HC)	17.6
	30	Hamlet	20 (6HC)	66.7	0	0.0	10 (1HC)	33.3
	64	Both	48 (21HC)	75.0	0	0.0	16 (1HC)	25.0
Kalamshah	30	Main	18 (13HC)	60.0	0	0.0	12 (6HC)	40.0
	30	Hamlet	11 (5HC)	36.7	4 (4HC)	13.3	15 (2HC)	50.0
	60	Both	29 (18HC)	48.3	4 (4HC)	6.7	27 (8HC)	45.0
Tersa	40	Main	5 (3HC)	12.5	13 (7HC)	32.5	22 (5HC)	55.0
	9	Hamlet	0	0.0	4 (1HC)	44.4	5 (- HC)	55.6
	49	Both	5 (3HC)	10.2	17 (8HC)	34.7	27 (5HC)	55.1
Desia	40	Main	22 (12HC)	55.0	0	0.0	18 (2HC)	45.0
	18	Hamlet	3 (2HC)	16.7	1 (1HC)	5.6	14 (1HC)	77.8
	58	Both	25 (14HC)	43.1	1 (1HC)	1.7	32 (3HC)	55.2
Al Roda	40	Main	7 (6HC)	17.5	9 (8HC)	22.5	24 (5HC)	60.0
	44	Hamlet	6 (4HC)	13.6	3 (2HC)	6.8	35 (4HC)	79.5
	84	Both	13 (10HC)	15.5	12 (10HC)	14.3	59 (9HC)	70.2
TOTAL	184	Main	80 (49HC)	43.5	22 (15HC)	12.0	82 (18HC)	44.6
	131	Hamlet	40 (17HC)	30.5	12 (8HC)	9.2	79 (8HC)	60.3
	315	Both	120 (66HC)	38.1	34 (23HC)	10.8	161 (26HC)	51.1

Table 4.2 Distribution of sewage type according to house connection and public tap users, while adding use of canal

Village	HH	No	Use canal		Type of sewage used					
			No	%	Cess pit*		Pipe-line		None	
					No	%	No	%	No	%
1 Aboksah	HC	22	1	5	20	90.9	0	0.0	1	4.5
	PT	42	29	69	28	66.7	0	0.0	15	35.7
2 Kalamshah	HC	30	6	21	18	60.0	4	13.3	8	26.7
	PT	24	15	63	8	33.3	0	0.0	16	66.7
	tn	6	1	14	3	50.0	0	0.0	3	50.0
3 Tersa	HC	16	4	25	3	18.8	8	50.0	4	25.0
	PT	33	24	73	2	6.1	9	27.3	22	66.7
4 Desia	HC	18	5	28	14	77.8	1	5.6	3	16.7
	PT	40	33	83	11	27.5	0	0.0	29	72.5
5 Al Roda	HC	29	7	24	10	34.5	10	34.5	9	31.0
	PT	55	38	69	3	5.4	2	3.6	50	90.9
Sub-total	HC	115	23	20	65	56.5	24	20.9	25	21.7
	PT	194	139	72	52	26.8	11	5.7	132	68.0
	tn	6	1	17	3	50.0	0	0.0	4	50.0
TOTAL		315	163	52	120	38.1	35	11.1	160	50.8

Table 4.3 Problems with cess pit

Village	HH with cess pit	Overflow		Bad smell		Small capacity		No problems	
		No.	%	No.	%	No.	%	No.	%
1 Aboksah	48	12	25.0	10	20.8	4	8.3	33	68.8
2 Kalamshah	29	7	24.1	10	34.8	0	0.0	17	58.6
3 Tersa	5	2	40.0	1	20.0	0	0.0	2	40.0
4 Desia	25	10	40.0	7	28.0	9	36.0	14	56.0
5 Al Roda	13	2	15.4	0	0.0	1	7.7	11	84.6
TOTAL	120	33	27.5	27	22.5	14	11.7	77	64.2

Table 4.4 Emptying of cess pit

Village	HH with cess pit	By truck (Local Unit or City Council)		By truck (private)		Manual	
		Freq.	%	Freq.	%	Freq.	%
1 Aboksah	48	37	77.1	3	8.1	8	16.7
2 Kalamshah	29	27	93.1	1	3.7	1	3.7
3 Tersa	5	4	80.0	1	20.0	0	0.0
4 Desia	25	10	40.0	12	48.0	3	12.0
5 Al Roda	13	11	84.6	1	7.7	1	7.7
TOTAL	120	89	74.2	18	15.0	13	10.8

Table 4.5 Willingness to pay for a sewage pipe

Village	Total no. of HH	Agree for sewage pipe				Why don't you have sewage pipe installed now					
		Agree to pay connection costs		Agree to pay monthly fee		Local Unit should do it		System is too expensive		Improved truck service will do	
		No	%	No	%	No	%	No	%	No	%
1 Aboksah	64	37	57.8	13	20.3	5	7.8	52	81.3	7	10.9
2 Kalamshah	60	42	70.0	41	68.3	5	8.3	53	88.3	2	3.3
3 Tersa	49	29	59.2	15	30.6	0	0.0	49	100	0	0.0
4 Desia	58	43	74.1	0	0 0	0	0.0	55	94.8	3	5.2
5 Al Roda	84	68	81.0	9	10.7	1	1.2	80	95.2	3	3.6
TOTAL	315	219	69.5	78	24.8	11	5.7	289	91.7	15	4.8

Table 4.6 Solid waste disposal

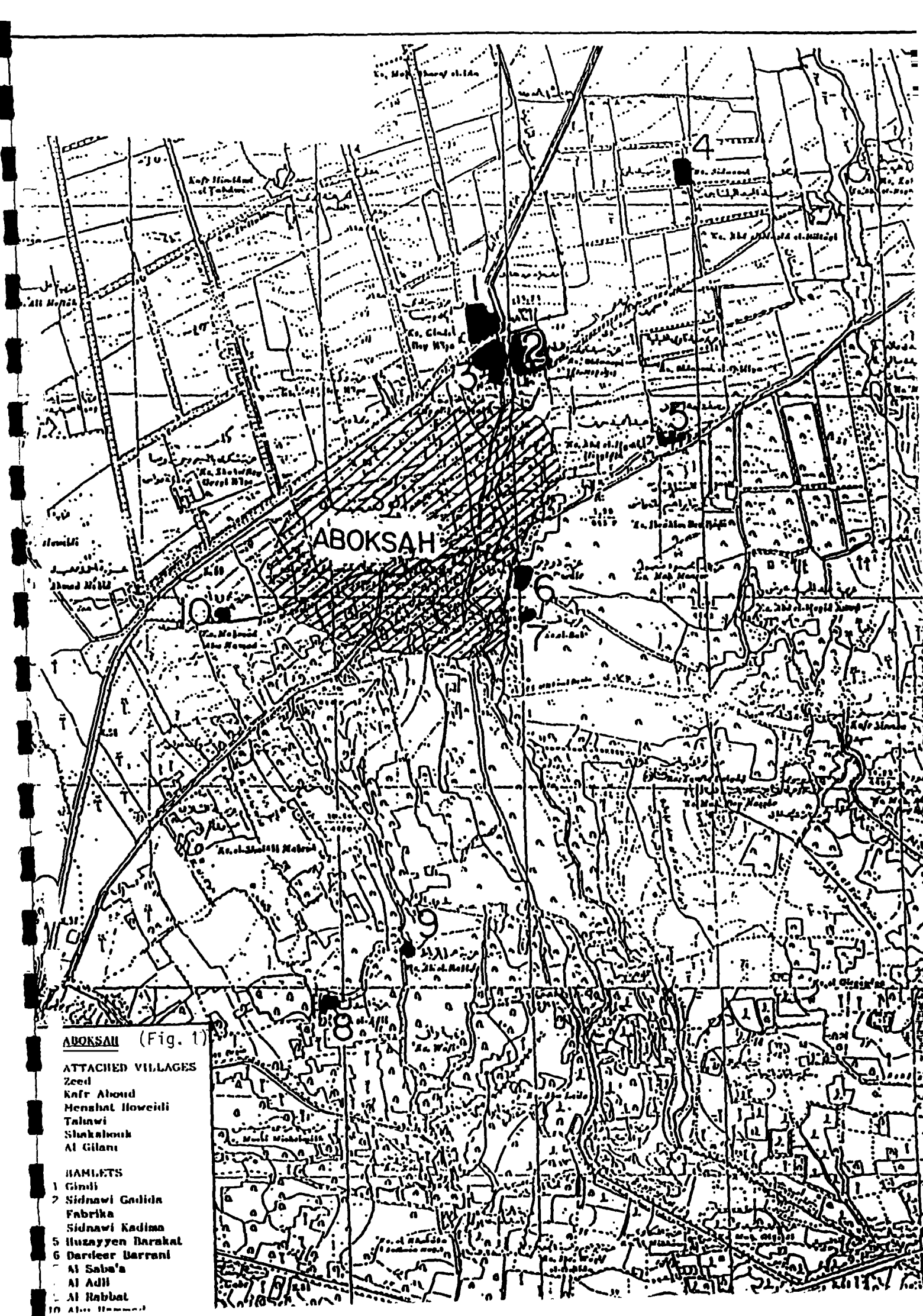
Village	Total no. of HHs	Burned in stove		Buried in ground		Thrown outside village		Disposed in street box		Throw in drain or street		Burned on land		Fertilizer for land	
		No	%	No	%	No	%	No	%	No	%	No	%	No	%
1 Aboksah	64	41	64	0	0	4	6	1	2	8	13	4	6	6	9
2 Kalamshah	60	33	55	0	0	1	2	0	0	18	30	8	13	0	0
3 Tersa	49	38	78	0	0	1	2	1	2	7	14	1	2	1	2
4 Desia	58	43	74	0	0	0	0	0	0	6	10	0	0	9	16
5 Al Roda	84	56	67	0	0	9	11	1	1	12	14	2	2	4	5
TOTAL	315	211	67	0	0	15	5	3	1	51	16	15	5	20	6

Table 4.7 Opinion about solid waste collection

Village	Total no of HH	Solid waste should be collected by LU		Yes it's a problem		It's not seen as a problem	
		No.	%	No.	%	No.	%
1 Aboksah	64	3	4.7	0	0.0	61	95.3
2 Kalamshah	60	3	5.0	1	1.7	56	93.3
3 Tersa	49	3	6.1	0	0.0	46	93.9
4 Desia	58	1	1.7	1	1.7	56	96.6
5 Al Roda	84	0	0.0	0	0.0	84	100.0
TOTAL	315	10	5.1	2	0.6	303	96.2

Table 4.8 Cleanliness in and around the house

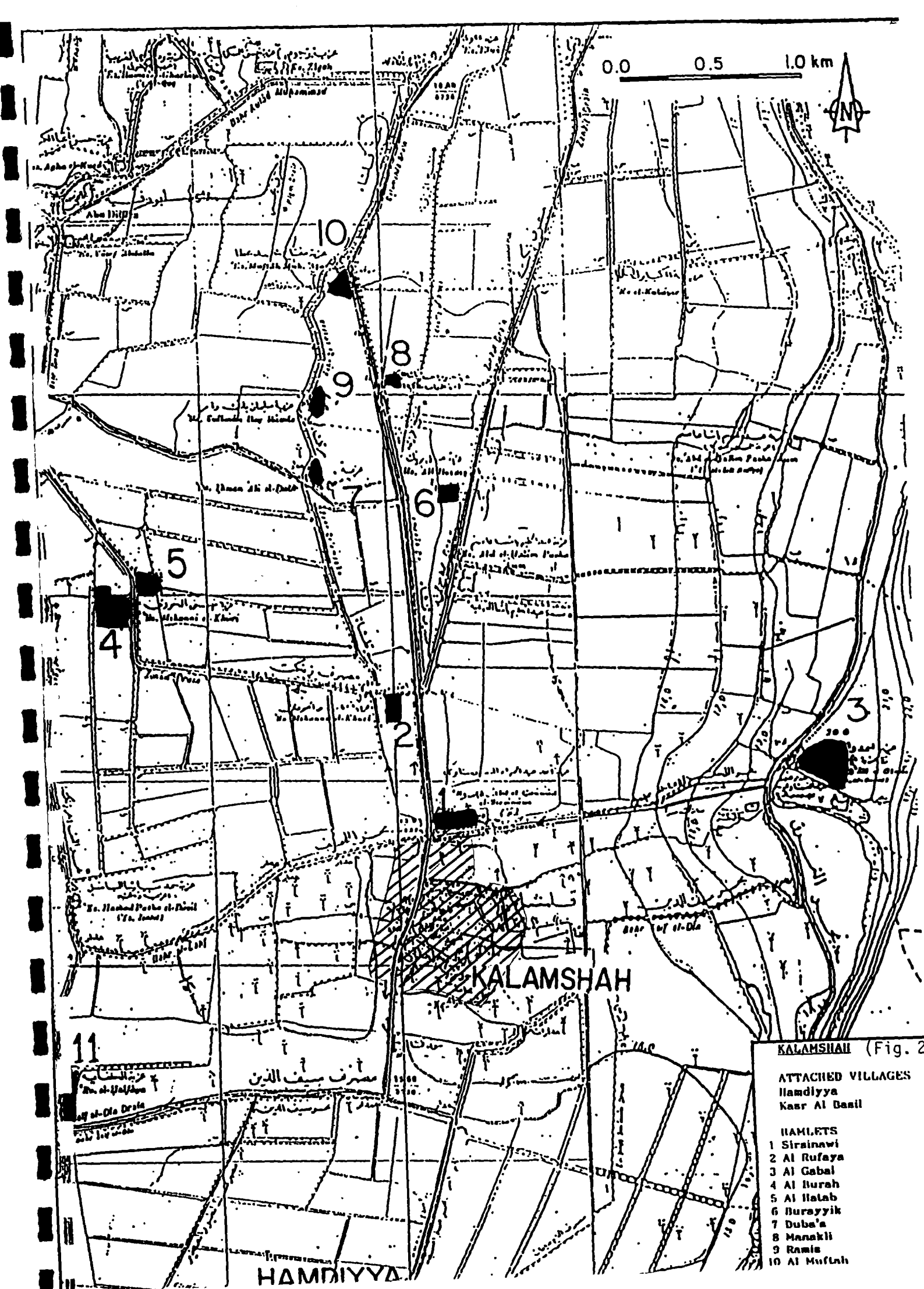
Village	Total no of HH	Garbage		Animal faeces		Mud/water pounding		Clean	
		No	%	No	%	No	%	No	%
1 Aboksah	64	25	39.1	15	23.4	12	18.8	38	59.4
2 Kalamshah	60	34	56.7	27	45.0	31	51.7	21	35.0
3 Tersa	49	30	61.2	13	26.5	8	16.3	19	38.8
4 Desia	58	26	44.8	12	20.7	10	17.2	34	58.6
5 Al Roda	84	15	17.9	10	11.9	6	7.1	69	82.1
TOTAL	315	130	41.3	77	24.4	67	21.3	181	57.5

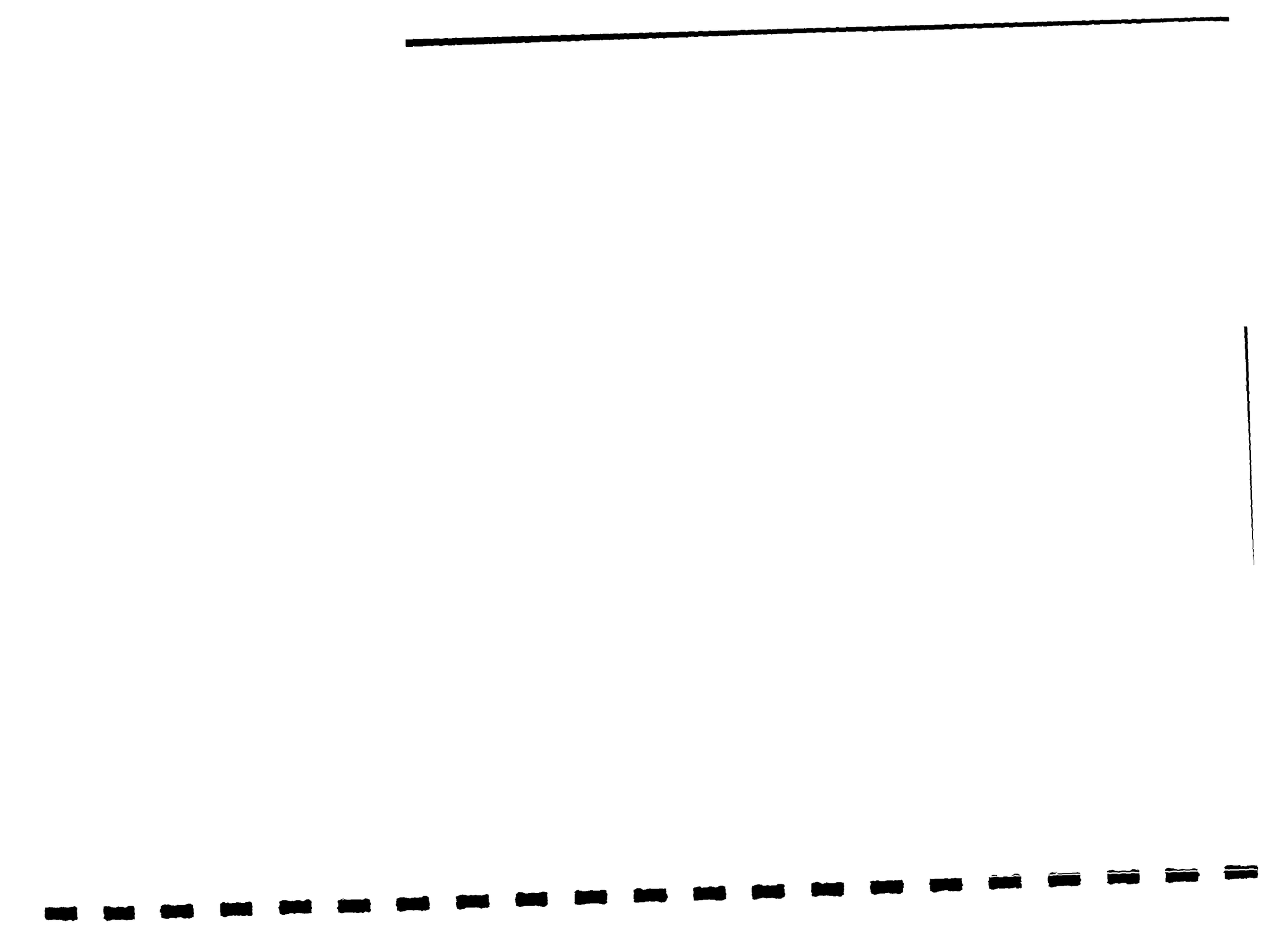


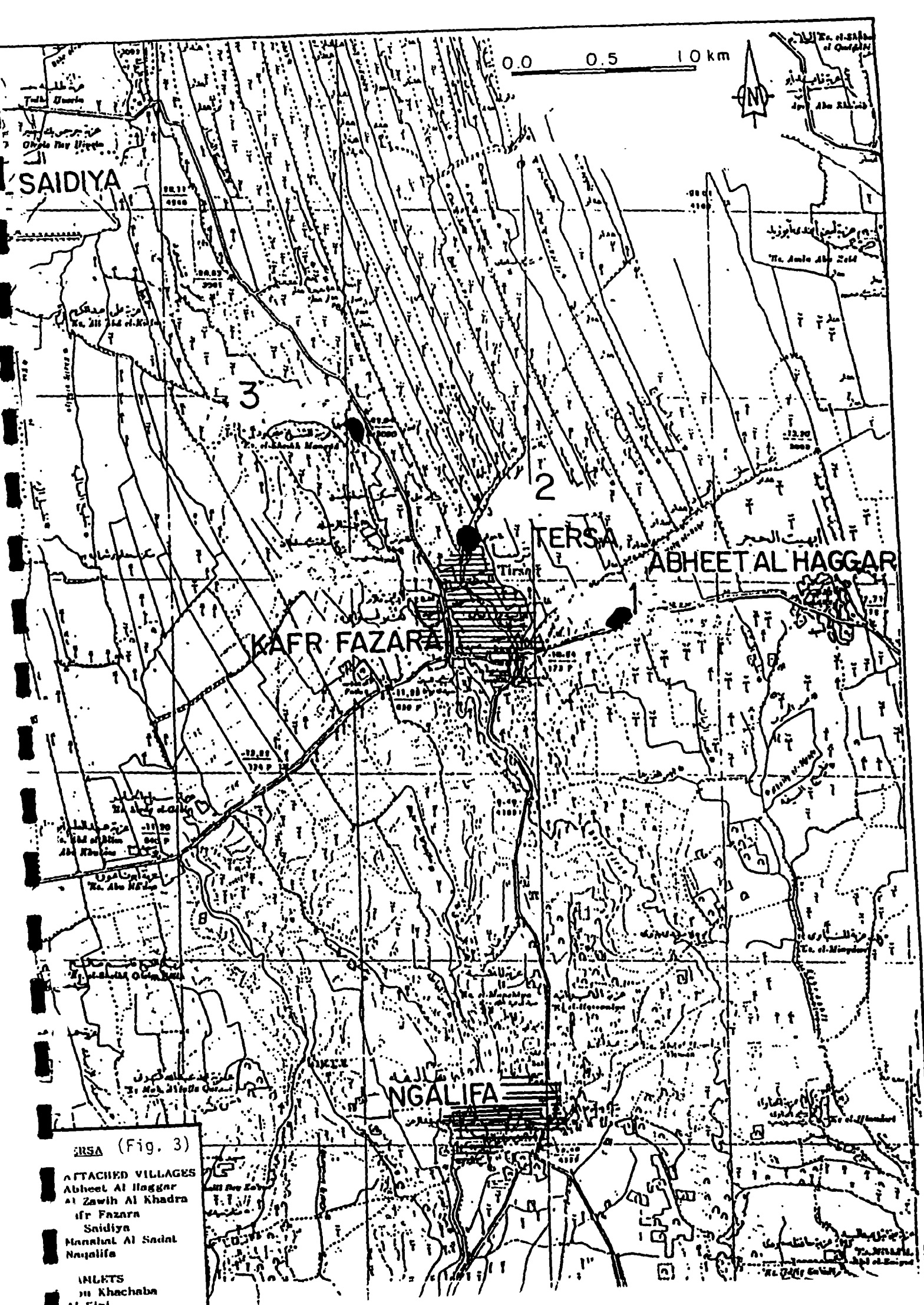
ABOKSAH (Fig. 1)

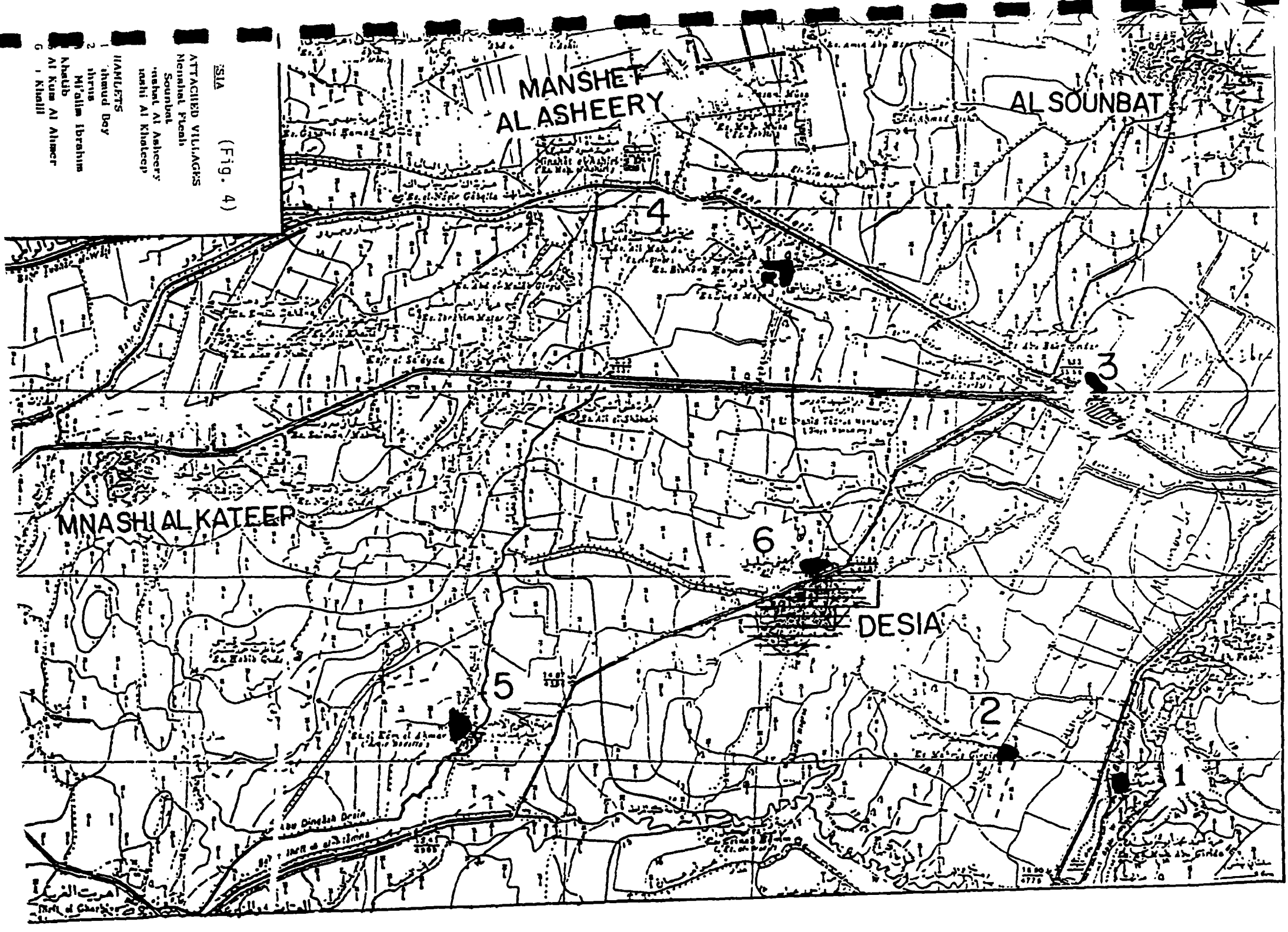
ATTACHED VILLAGES
Zeed
Kafr Aboud
Menshat Howeidi
Talawi
Shakalouk
Al Gilani

HAMLETS
1 Gindi
2 Sidnawi Gadida
Fabrika
Sidnawi Kadima
5 Huzayyen Barakat
6 Dardeer Barrani
Al Saba'a
Al Adli
Al Rabbat
10 Abu Hammad


0.0
0.5
1.0 km
N
KALAMSHAH
HAMDIYYA
KALAMSHAH (Fig. 2
ATTACHED VILLAGES
Hamdiyya
Kasr Al Basil
HAMLETS
1 Sirainawi
2 Al Rufaya
3 Al Gabal
4 Al Burah
5 Al Hatab
6 Burayyik
7 Duba'a
8 Manakli
9 Ramis
10 Al Muftah



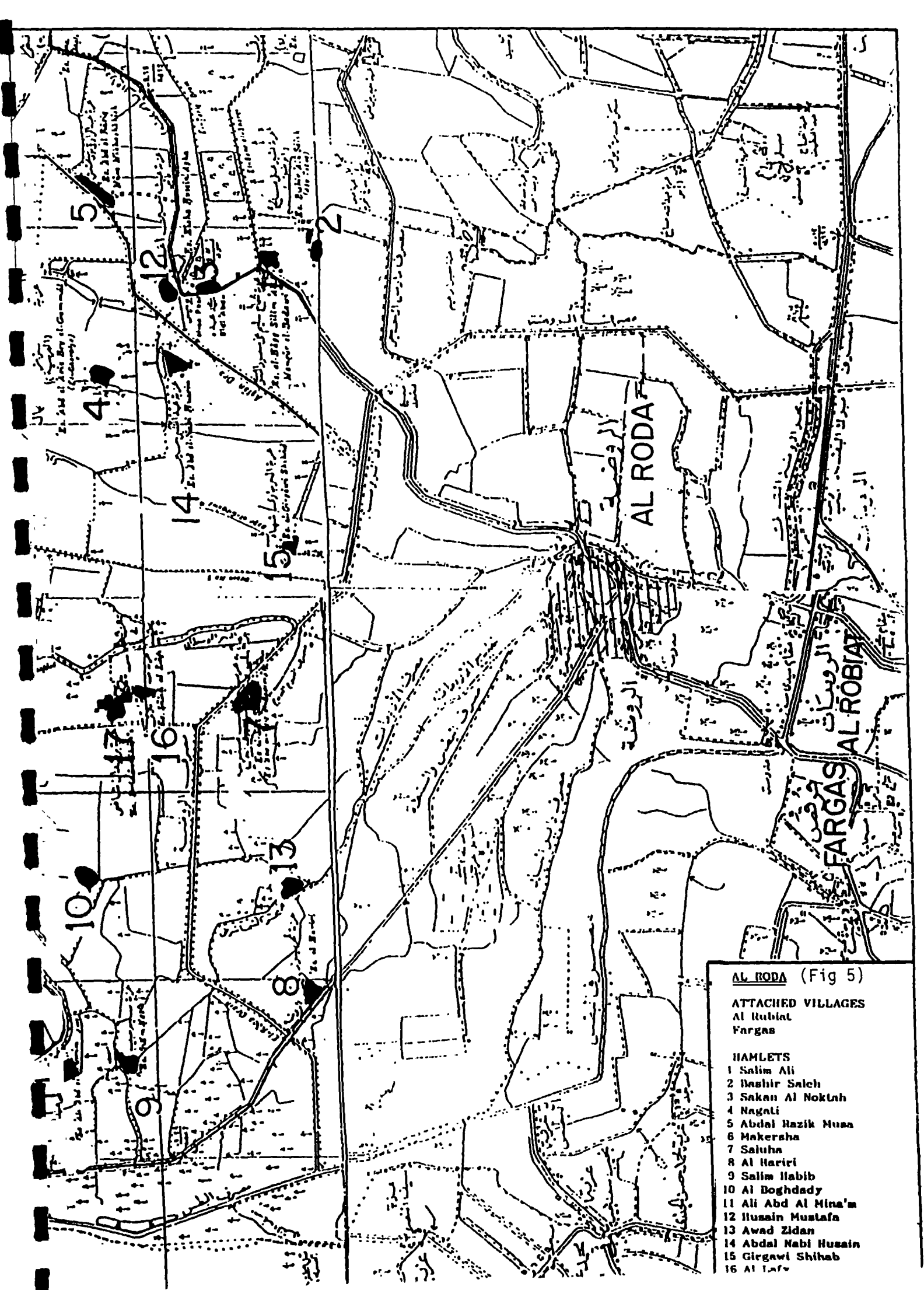

0.0 0.5 10km
N
SAIDIYA
3
2
TERSA
ABHEET AL HAGGAR
1
KAFR FAZARA
NGALIFA
ERSA (Fig. 3)
ATTACHED VILLAGES
Abheet Al Haggar
Al Zawih Al Khadra
afr Fazara
Saidiya
Manshat Al Sadat
Naqalifa
INLETS
ou Khachaba



SIA (Fig. 4)

ATTACHED VILLAGES
Menshat Fleah
Sounbat
Menshat Al Asheery
Menshi Al Khateep

HAMLETS
1 - Ishmoud Dey
2 - Ibrus
Mi'allim Ibrahim
Khatib
Al Kum Al Ahmer
Khalil



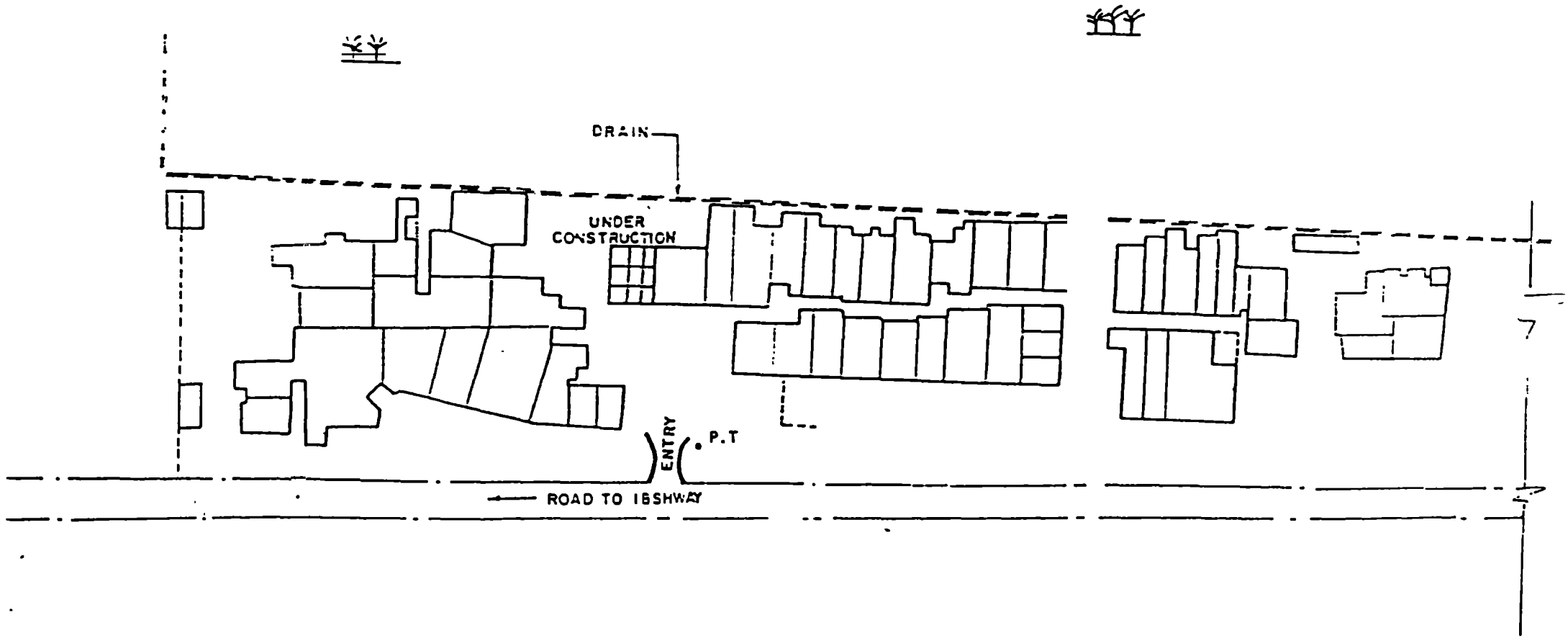
AL RODA (Fig 5)

ATTACHED VILLAGES
Al Rubiat
Fargas

HAMLETS
1 Salim Ali
2 Bashir Saleh
3 Sakan Al Noktah
4 Nagati
5 Abdal Razik Musa
6 Makersha
7 Saluha
8 Al Hariri
9 Salim Habib
10 Al Boghdady
11 Ali Abd Al Mina'm
12 Husain Mustafa
13 Awad Zidan
14 Abdal Nabi Husain
15 Girgawi Shihab
16 Al Tafa

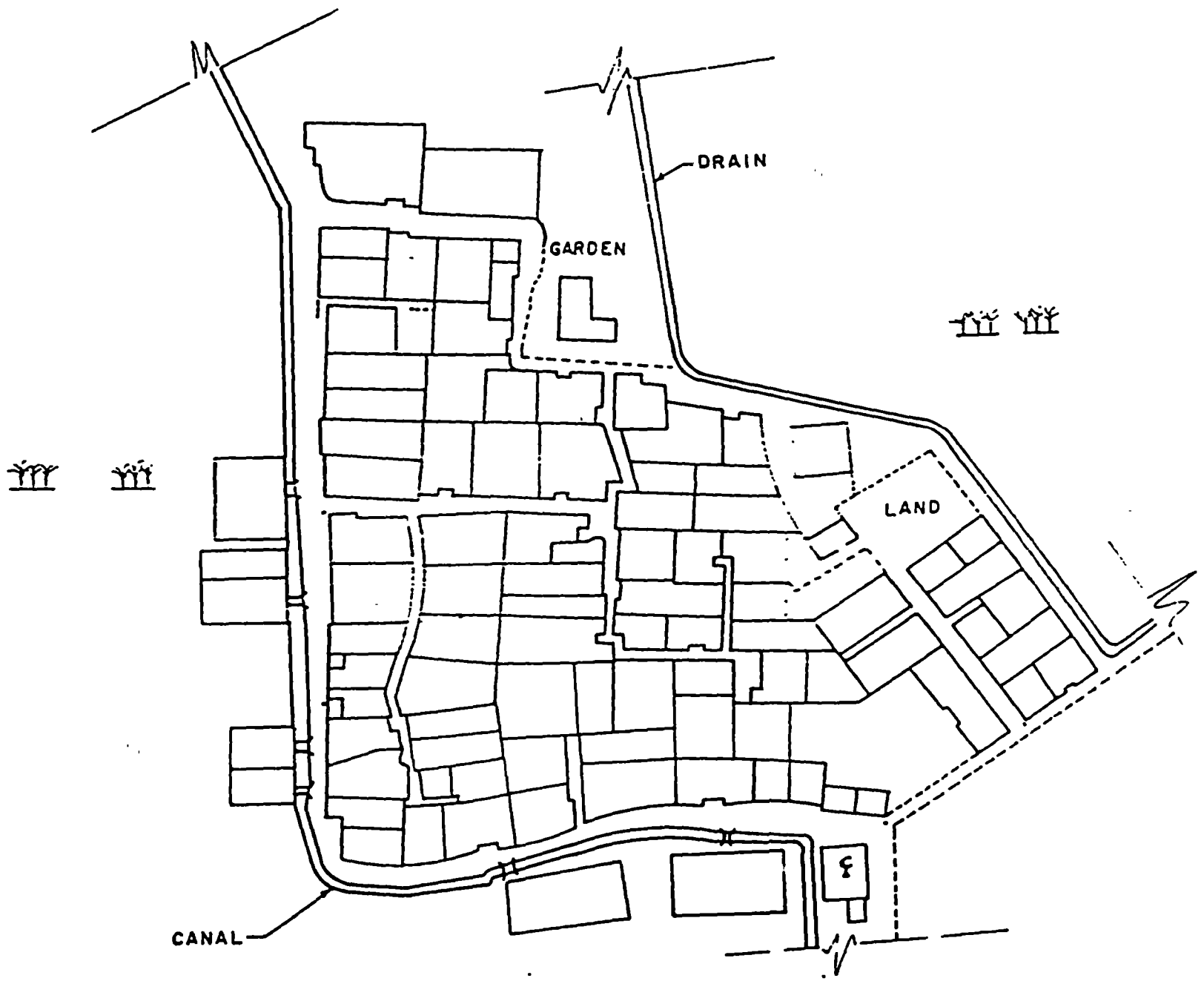
NOT TO SCALE

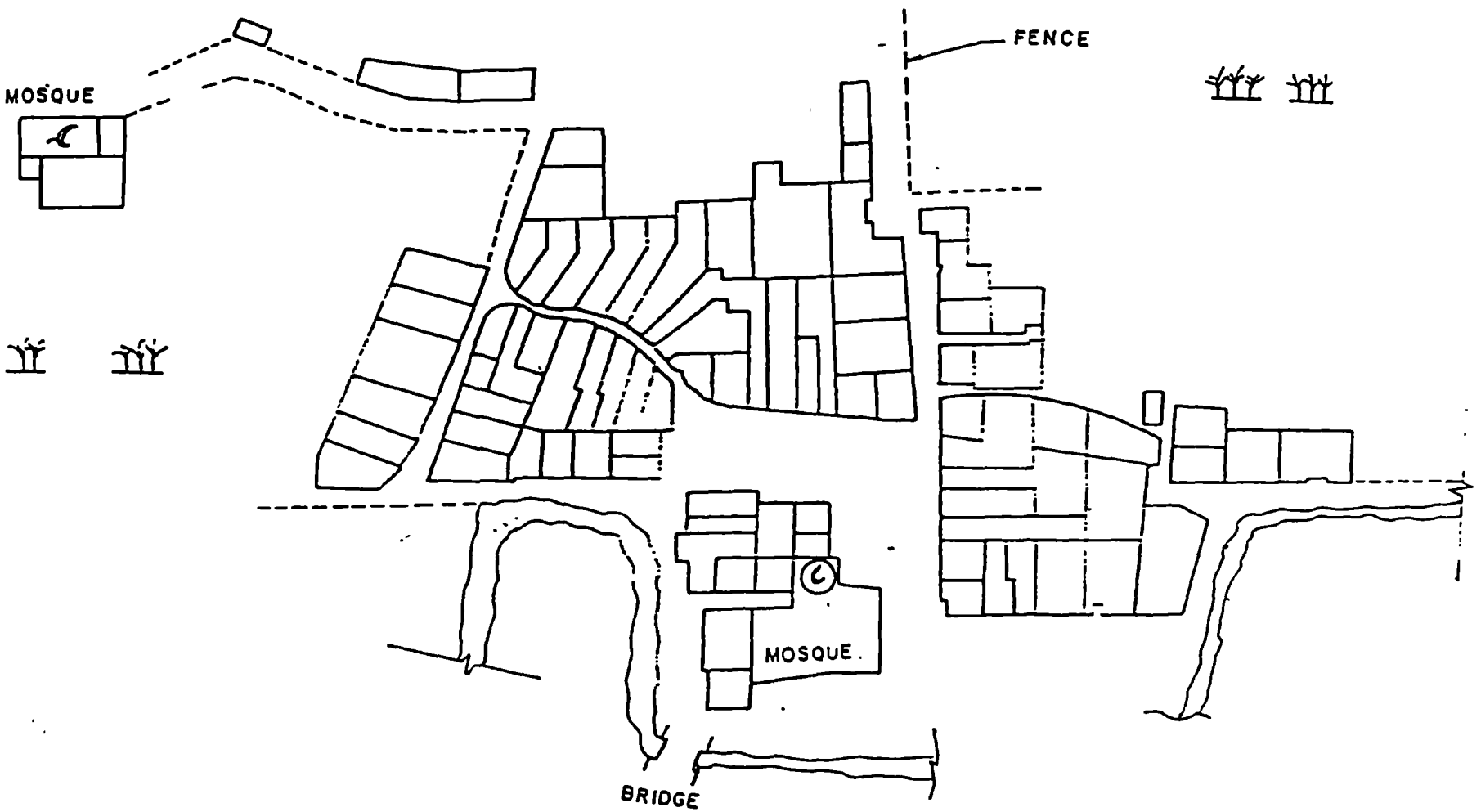
EZBET HOZAYEN "ABOKSA" (Fig. 6)



EL ADLI "ABOKSA" (Fig. 7)

NOT TO SCALE




MOSQUE
FENCE
MOSQUE
BRIDGE

1. INTRODUCTION AND BACKGROUND

Hygiene education may be defined as all activities aimed to change attitudes and behaviour in order to break the chain of disease transmission associated with inadequate hygiene and sanitation. As such, hygiene education is part of the wider concept of health education.

As part of the FADWS programme, a pilot hygiene education programme is proposed to start in two of the FADWS pilot villages, being Abokshah in Markaz Ibshway and Tersa in Markaz Sennoures. These two were selected because their health centres have already some health education experience. Besides, Tersa has a community hall, where many adult education activities are given. The activity is a follow-up on the household surveys which have taken place in the pilot villages, and which indicated clearly the need for increased awareness of the population with respect to environmental health aspects.

The Centre for Development Services, an Egyptian organisation, with expertise in communication, health and hygiene programmes in rural Egypt, has been invited by the project to draft a tentative programme, based on an orientation visit to the two villages in June '92.

Health centre staff said they had no previous training in hygiene education and were in favour of a hygiene approach. No school hygiene education programmes are given. Some health centres, during vaccination days, provide a minimal form of health education, but without having the educational materials and methods at hand.

The proposed programme for this activity, which concentrates on training of village staff, is briefly outlined below. A schedule of activities and budget are provided in the annex.

2. OBJECTIVES

The objective of a hygiene education programme in Local Units in Fayoum is to have a lasting favourable impact on personal and domestic hygiene. This can be reached when all relevant local agencies would share this same goal.

The expected output of the pilot project is twofold:

1) To have trained staff in different village bodies who are aware of health risks related to water and waste water use, and who stimulate their communities to adopt a more hygienic lifestyle.
2) To have more communications and cooperation between all parties in the Local Unit involved in water supply and sanitation improvements.

The concrete result of the course, aimed at, is that the trainees are able to plan, prepare and execute a health session with their own audience independently, for instance,

- teachers can prepare a lessons cycle;
- nurses can prepare a session with patients on hygiene improvements in the health centre or at home.

The approach of the pilot project shall be evaluated and recommendations shall be made for follow-up activities in this field.

3. TARGET GROUPS

Hygiene education will focus on two types of target groups:

a) trainers and informers of the population;
b) inhabitants of the village, to be subdivided into women, school children, and men.

By selecting staff from all village bodies it is intended that hygiene education reaches all population groups, also those with a lower income, less education and limited mobility.

Communication methods will have to be appropriate for different target groups of the population. Most hygiene education programmes tend to focus on **women** because they are responsible for the family and for water collection and disposal of household waste.

Undeniably women play a key role within the household and the community in relation to water and sanitation:

- as acceptors of new technology;
- as users/cleaners of improved facilities;
- as educators of their family.

Yet, the involvement of men and children is equally important because lasting improvements require their understanding and support as well.

In the first stage of the proposed hygiene education activity the target group will consist of around 20 trainees in each of the two Pilot Villages: nurses, school nurses, teachers, sanitary inspectors, family planning worker and religious leaders.

4. METHODOLOGY

The pilot project consists of three stages:

a) A training by CDS is provided in the form of 2 workshops for each one of the villages. The first workshop takes 4 days, the second 5 days. There is an interval between the two workshops of maximum one month.
b) Implementation of health sessions by the trainees. Guidance and monitoring by CDS is provided in the beginning but gradually decreasing.
c) Evaluation and reporting.

Two CDS trainers will guide the courses, the physicians of the health centres select the trainees and the training will be held at the health centre of each village.

In training, CDS focuses on training of trainers as it is believed that this is the means to reach the larger community, or grass roots. It is also a way of creating new cadres of

trainers in order to ensure the continuity of the project after the trainers leave. A major focus in the training is communication and adult education, which is the subject of the first workshop.

The second workshop focuses on subject content, i.e. diseases and related aspects. After that trainees are taught how to prepare simple teaching materials that they will use in training their own target groups. The methodology varies according to the target group and to subject content.

The course programme consists of two basic parts:

1) Workshop 1: Communication skills building
Dealing with adult education, presentation skills, team building, counselling, leadership and decision making.

2) Workshop 2: Hygiene education
Dealing with community health awareness, community health practices and treatment including traditional knowledge of rural mothers, water related or water borne diseases (bilharzia, ascaris, hookworm, skin diseases), personal hygiene (diarrhoea), acute respiratory diseases, nutrition and weaning.

The approach is based on participation. CDS believes that without the participatory method, the audience or target group cannot really learn and then carry the skills required, nor gain a thorough understanding of what is involved in terms of training approach or subject content. Methods used therefore include:

- group discussions;
- small working groups;
- role plays;
- case studies;
- practice in the field;
- audio-visual aids.

The course ends with planning and preparing a session with a group of villagers.

In order to guarantee the effectiveness of the training and evaluate its results, again CDS uses the method of participation. CDS participates as co-trainer or consultant with the trainees in the preparation and implementation of the first session they conduct after completion of the workshops.
The performance of the trainees while they actually conduct a session will be monitored by the professionals of the CDS.

5. FOLLOW-UP

The introduction of new water supply and sanitation facilities in the village during or after the pilot project, would provide an extra opportunity to effectuate improved hygiene behaviour and adequate use of facilities. Education in combination with technical improvements helps people to use public services in a proper way.

The project has limited means for the implementation of such facilities during the pilot project. Also after the pilot project, selection of Tersa or Aboksa for water supply or sanitation upgrading cannot be guaranteed at this stage. However, it may be expected that village institutions request project assistance for technical improvements.

As a follow-up activity therefore, it may be considered to facilitate the implementation of community supported water and sanitation facilities in the villages.

6. ORGANIZATION AND SCHEDULING OF THE ACTIVITIES

After the signing of the contract between CDS and the project, CDS will carry out a needs assessment in the two villages. After that CDS will prepare the two workshops in both villages.

The workshops will be held in January and February 1993; workshop 1 in Tersa and Aboksah with one week interval between execution in the two villages, and workshop 2, three to four weeks after the first workshops.

It is the target to have at least one follow-up consultation for the trainees while they carry out a session with their respective target group before the start of Ramadan (end of February 1993).

During April and May, 1993 one monthly follow-up consultation will be provided in every village. In June, the activities will be evaluated by CDS, and a draft report will be submitted to the FADWS teamleader.

Liaising between the activities in the two villages and the project is proposed to take place via two female engineers from El Azab and from the Sanitation Department of Fayoum Governorate. These ladies have conducted the earlier household surveys in the five pilot villages, and have established relationships with the Local Unit. At the same time they can function as resource persons during the workshops.

7. COST ESTIMATE

The pilot project is subcontracted to CDS. Based upon CDS fees and tariffs the costs are estimated as follows:

1.	Needs assessment	LE	2,305
2.	Village 1		
	Programme preparation	LE	11,652
	2 workshops	LE	18,991
3.	Village 2		
	Programme preparation	LE	6,129
	2 workshops	LE	18,991
4.	Follow-up consultations		
	3 times/ 2 days/ 2 CDS staff	LE	6,915
5.	Evaluation session		
	2 days/2 CDS staff	LE	2,305
6.	Reporting		
	3 days/2 CDS staff	LE	2,069
	Secretary	LE	1,000
	TOTAL	LE	70,357
	Contingencies 5%	LE	3,518
	GRAND TOTAL	**LE**	**73,875**

Costs related to the trainees, such as overtime allowances, transportation, administrative support etc. will be covered from the project and will not be included in the CDS budget. It is proposed to reserve a lumpsum amount of LE 10,000 for this purpose.

It is proposed to finance the total pilot project from the FADWS Training and Education budget.

وبسبب عدم المعرفة الحقيقية لتكاليف التوصيلات المنزلة للصرف الصحى فان الافراد يفترضون انها هى نفس تكاليف التوصيلات المنزلية للمياه وفى الوقت الراهن فان السكان الذين لديهم بيارات تصريف يدفعون فى المتوسط حوالى ٥٠ جنيه سنويا لتفريغ البيارات ومن ناحية اخرى فان تكاليف التوصيلة المنزلية مرة واحدة (متوسط ٢٠٠ جنيه) وتكاليف الصيانة سنويا تصل الى ٥٠ جنيه او ٥٠٪ (كحل بديل) تضاف الى فاتورة المياه ويعتبر هذا مرضى ومقبول وعادل .

الصـــرف الصحـــى

وسائل الصرف الصحى المتفاوتة العبر منتظمة مقسمة على المنازل حيث ٢ن منازل القرى الرئيسبه بها ٢ر٤٣% لديها بيارات صرف بينما يوجد ٢قل من ثلث هذا الرقم للمنازل فى العزب (انظر الجدول التالى) .

توزيع وسائل الصرف الصحى فى القرى الرئيسية والعزب

السكـــــان	المنـــــازل		بيـــــارات الصـــــرف		خطوط مواسير		لا شـــــىء	
	العدد	%	العدد	%	العدد	%	العدد	%
القرى الرئيسية	١٨٣	١٠٠	٧٩	٢ر٤٣	٢٢	١٢	٨٢	٨ر٤٤
العـــــزب	١٣٢	١٠٠	٤١	١ر٣١	١٣	٨ر٩	٧٨	١ر٥٩
المجمـــــوع	٣١٥	١٠٠	١٢٠	١ر٣٨	٣٥	١ر١١	١٦٠	٨ر٥٠

يعتبر العامل الأكثر ٢همية للسكان عن توصيلهم بوسائل الصرف الصحى هو توافر التوصيلات المنزلية لمياه الشرب سواء فى القرى الرئيسية ٢و العزب .

- ٩ر٢٠% من العائلات التى لديها توصيلات منزلية لديهم مواسير مجارى ، ٤ر٥٧ منهم لديهم بيارات تصريف ، ٧ر٢١% منهم لديهم وسائل صرف صحى.

- ٧ر٥% من مستخدمى الحنفيات المحلية لديهم مواسير مجارى ، ٤ر٣٦% منهم لديهم بيارات تصريف والغالبية ٦٨% منهم ليس لديهم وسائل صرف صحى .

التوصيلات لمواسير المجارى محدوده وموجودة فقط فى قريتين نرسا والروضة حيث وجد ٨٦% من مواسير المجارى ، وفى القرى الاخرى فان نظام بيارات التصريف تقريبا هى الوسيلة الوحيده وفى نرسا والروضه يوجد مواسير خص مياه الرشح فى وسط القريتين حيث تم استخدام هذا النظام للصرف الصحى .

- وجد ٢ن ١ر٣٧% من منازل العزب متصلة بمواسير مجارى معظمهم لديهم توصيلات منزلية للمياه ويوجد ملاك منازل كثيرة فى العزب يقومون بانشاء مواسير صرف مياه المجارى الى نزع الرى ٢و المصارف مباشرة .

حوالى ٧٠% من سكان المنازل لديهم الرغبة لدفع تكاليف توصيل الصرف الصحى لهم بصفة خاصة للمنازل والوحدات المحلية فى القرى حيث مشاكل مسوب مياه الرشح المرتفعة والرغبة فى ايجاد نظام للمجارى .

- حوالى ٤ر٦٤% من مستخدمى الحنفيات المحانية بفضلون الترع للغسيل والاستحمام .

- من المتوقع أن هؤلاء الذين يفضلون استخدام الترع سوف يستمرون فى استخدام الترع اذا لم يتم التحسين فى الحنفيات المحانية ، وعلى ذلك فانه لكى يتم تقليل المخاطر على الصحة العامة فلابد من عمل بعض التسهيلات لجسور الترع بغرض الغسيل والاستحمام وبتم ذلك عن طريق عمل درجات أو مصاطب للغسيل على الترع بغرض تقليل تلامس الاجسام بمياه الترع .

جوانب الصحة العامة

فيما يلى نورد السمات الرئيسية للصحة العامة فى القرى الرائدة :

- حوالى ٨٧% من المنازل تستخدم الزير لحفظ مياه الشرب رطبة وتقريبا كل هذه الازيره (٤ر٩٧%) تغطى لحماية المياه[٢] .

- كل مستخدمى التوصيلات المنزلية والحنفيات المحانية لديهم وعاء خاص لغسيل الايدى وصعوبة توافر قطعة صابون مع الوعاء لأى من المنازل أو المرافق العامة .

- الاستخدام الحالى للترع بغرض الغسيل والاستحمام (٥٢% من المنازل) يؤدى الى مخاطر صحية خطيرة .
- وسائل الصرف الصحى الغير كافية للمدارس تخلق قلق كبير .
- عدم كفاية نزح بيارات الصرف قد تؤدى الى مخاطر صحية غير مدوقعه وبصفة خاصة للمناطق الشعبية ذات الكثافة المرتفعة وفى فناءات المدارس .
- القاء مياه المجارى فى الترع بمعرفة سيارات الكسح العامة أو الخاصة والمحدوية على الخبث بالاضافة الى استخدام مواسير خفض مياه الرشح كمواسير صرف صحى تزيد من تلوث المسطحات المائية .

[٢] هذا لا يعنى أن جودة مياه الشرب فى الزير موثوق منها ، وهناك بعض أعمال المسح الميدانى أوضحت أن المياه بالزير ملوثة (انظر تقرير نموزج جودة مياه الشرب فى المناطق الريفية لمحافظة اسيوط مستر/ آر بلاتنبرج - ومجدى زكى)

ثلاثه عقبات هامه ومتساويه وذلك للحصول على تلك التوصيلات .

- الثلث لا يمكن توصيلهم فنيا لأنه لا يوجد خط مواسير مياه .
- ثلث آخر فى قائمة الانتظار حيث أن سياسة محافظة الفيوم هى بقليل عدد التوصيلات الجديدة وهذا أدى الى تراكم فى قائمة الانتظار .
- الثلث يستطيع دفع تكاليف التوصيلات المنزلية .

- من الـ ٣٠٪ من مستخدمى الحنفيات المجانية الذين لا يقدرون على دفع تكاليف التوصيلات المنزلية بعقد تقريبا نصفهم (٤٤ر٨٪) ، ويؤكدون أنها ضياع للأموال أو أن التكاليف الباهظة لعمل التوصيلات المنزلية تمنعهم من تركيبها بمنازلهم وهذا رأيهم الخاص .

وجد أن متوسط تكاليف التوصيلة المنزلية لسنة ١٩٩٢ هى ٢٠٥ جنيه مصرى وهو يعتبر أكبر من الراتب الشهرى لموظف الحكومة المتوسط .

٣٨٪ من مستخدمى الحنفيات المجانية على استعداد للدفع لتحسين الحنفيات بينما الربع تقريبا يفضلون التوصيلات المنزلية .

استخدام مياه الترع

من مجموع السكان فان تقريبا ٥٢٪ يستخدمون مياه الترع وهم أكثر فى العزب من القرى الرئيسية . ففى جميع المنازل بالقرى الرئيسية الخاضعة للدراسة فان ٤ر٤٠٪ منهم يستخدمون مياه الترع بينما فى العزب فان ٤ر٦٧٪ منهم يستخدمون الترع كمصدر ثانوى للمياه .

ومن الـ ١١٥ منزل الذين لديهم توصيلات منزلية لمياه الشرب فان جزء كبير منهم حوالى ٢٠٪ مستخدمين لمياه الترع ، بصفة خاصة لغسيل الملابس والأوانى ، ولمن يحصلون على المياه من توصيلة جيرانهم فان واحد منهم يستخدم مياه الترعة حيث الراحة الأكثر فى غسيل الملابس والأوانى وهما السببان الرئيسيان لاستخدام مياه الترع.

أكثر من ثلثى مستخدمى الحنفيات المجانية (١٩٤) أو ٧٢٪ يستخدمون الترع كمصدر ثانوى للمياه ومستخدمى الحنفيات المجانية لديهم أسباب مختلفة لاستخدام الترع كمصدر ثانوى للمياه .

- الخبرة بالسالبة مع استخدام الحنفيات المجانية لـ ٧ر٥٦٪ من المستخدمين والخبرة السالبة تشتمل على (٢٥٪) يخون الحنفيات مزدجة و (٢٠٪) لا يجدون مياه فى الحنفيات المجانية ، و(١٢٪) الحنفيات المجانية بعيدا جدا عنهم .

بعض التحذيرات[٢] .

- من النتائج التى تم التوصل اليها انه لا يمكن تأكيد ان استهلاك المياه لمستخدمى التوصيلات المنزلية سيزيد حين يتم توصيلهم بشبكة المجارى ومن ناحية اخرى فانه قد يكون حساب الاستهلاك تم من خلال الفواتير التى يدفعها الافراد او ربما ان هذه الفواتير لا تعكس الاستهلاك الصحيح وقد وقد اثبتت دراسة احتياج المياه لمشروع مياه الشرب والصرف الصحى للفيوم ان الارقام سترتفع للمناطق التى ستزود بشبكة المجارى .

- تم قياس كل التوصيلات المنزلية حيث يوجد هناك ١١٣ عداد قياس للمياه لـ ١١٥ توصيلة منزلية بسبب ربط توصيلتين من عدادات الجيران .
وقد وجد ان ٢ر٤٢% يتم قراءة العدادات لهم مرة فى السنة ، ٤ر٢٧% يتم القراءة لهم مرتين او اكثر فى السنة ، ١ر٣١% لا تقرأ العدادات مطلقا واذا كانت التوصيلات المنزلية جديدة وقطعت المياه فانه يتم الحصم من الاجمالى ولا تقرأ مطلقا وعلى ذلك فان نسبة ٩ر٢٣% لاتقرأ مطلقا .

- من الـ ١١٥ توصيلة منزلية فان نسبة ٢ر٦٧% لها فواتير والغالبية تدفع سنويا ، ٢ر٥٢% من كل التوصيلات المنزلية ملاك ، ١٥% يدفعون مرتين او اكثر فى السنة ، الثلث او ٧ر٣٢% لا توجد لها فواتير على الاطلاق ومع خصم التوصيلات الجديدة والتوصلتين اللتين قطع عنهما المياه فان صافى الاجمالى ٥ر٣٦% لم تدفع ابدا .
والفواتير فى قرية قلمشاه افضل حيث ان نم الترتيب لان الدفع من خلال الوحدة المحلية ففى قرية قلمشاه سجل الدفع ٨ر٨٢% بينما سجل فى نرسا ٧٥%

- من الـ١١٣ عداد يوجد ٩ او ٨% من المجموع لا تعمل وربما يكونون تحت الحصر ، والتقدير الوافى سوف يستنتج من المسح للعدادات الذى يجرى حاليا فى سنورس بالمشروع التجريبى لتنمية الموارد ضمن مشروع مياه الشرب والصرف الصحى للفيوم .

- من اجمالى ١٩٤ مستخدم للحنفيات المجانية وجد ان ٧٠% منهم يفضلون لو ان لهم توصيلات منزلية حيث ان ثلثيهم يستطيعون الدفع ، الا انه يوجد

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[٢] القياسات الحقيقية فى مشروع مياه الشرب والصرف الصحى للفيوم حيث تظهر دراسة احتياج المياه الاختلاف فى ارقام استهلاك المياه من الحنفيات المجانية فهى بين ٤ر٦ ، ٢ر٣٧ لتر/فرد/يوم والاستهلاك الحقيقى اتضح انه يعتمد على عدة عوامل مثل حفظ المياه وساعات الخدمة والازدحام حول الحنفية .

توزيع المستهلكين حسب مصدر المياه الرئيسى والثانوى فى القرى الرئيسية والعزب

السكان	المنازل		ت.م	ت.م +ح.م +خ.ج	ت.م		ح.م		خ.ج		مستعملوا الترع	
	العدد	٪	العدد		العدد	٪	العدد	٪	العدد	٪	العدد	٪
القرى الرئيسية	١٨٣	٥٨ر١	٨٢	١٠٠	٤٤ر٨	٩٦	٥٢ر٥	٥	٢ر٧	٧٤	٤٠ر٤
العزب	١٣٢	٤١ر٩	٣٣	١٠٠	٢٥	٩٨	٧٤ر٢	١	١ر	٨٩	٦٧ر٤
المجموع	٣١٥	١٠٠	١١٥	٢٠٠	٣٦ر٥	١٩٤	٦١ر٦	٦	١ر٩	١٩٣	٥١ر٧

ت م توصيلة منزلية
ح م حنفيه محانية
خ ج من خلال الجيران

سكان المنزل : حيث يشترك جميع الافراد فى نفس المنزل وعددهم اقل فى القرى الرئيسية عنها فى العزب ، وايضا عدد الافراد فى الاسرة فى القرى الرئيسية اقل من العدد فى العزب .

وفيما يلى مفتاح الارقام لاستخدام المياه والاستهلاك والفواتير

- متوسط حجم سكان المنزل فى القرى الرئيسية ٨ر٠٣ فرد وفى العزب ٩ر٧ فرد وباجمالى متوسط ٨ر٧ فرد ، اما حجم الاسرة فى القرى الرئيسية فهو ٦ر٤ فرد للاسرة الواحده بمتوسط اجمالى ٥ر٩٥ فرد فى الاسرة .

- يبدو ان متوسط العدد المستخدم لكل توصيلة منزلية اكبر قليلا عن متوسط عدد الافراد بالمنزل ٩ر٢ (وقد يكون هذا انحراف احصائى ، ومنه يبلغ عدد مستخدمى الحنفيات المجانية ٥٩٨) .

- وجد ان متوسط استهلاك المياه ٨٠ر٣ لتر/فرد/اليوم لمستخدمى التوصيلات المنزلية ، و ١٦ر٢ لتر/فرد/اليوم لمستخدمى الحنفيات المجانية وبمقارنة مستخدم الحنفيات المجانية مع المستهلكين للمياه خلال التوصيلات المنزلية وجد ان الاستهلاك خلال المواسير يعتبر ٥ اضعاف الاستهلاك من الحنفيات المجانية ، ولذلك يجب ان تؤخذ هذه الارقام مع

ملخص نتائج المسح الميدانى

اجريت اعمال المسح المبدانى فى الفترة من فبراير الى سبتمبر ١٩٩٢ لتحديد الاوضاع الحالبه لمياه الشرب والصرف الصحى فى خمسة قرى رائده تم اختيارها فى مشروع مياه الشرب والصرف الصحى للفيوم .

ويقدم التقرير نتائج هذا المسح الميدانى حيث ان الجداول التفصيلية تعطى خلفية الارقام فى هذا الموضوع وهى موضحة فى الملاحق ٢ ، ٣ ، ٤ التى تتبع الابواب الرئيسية من هذا التقرير .

ومن خلال اجمالى ٣١٥ مقابلة للمنازل[1] فى الخمسة قرى الرئيسية ، ٤٧ عزبة تابعة لتلك القرى الرائدة وهى وحدات محلية موجودة فى الخمسة مراكز بالمحافظة .

ومن اجمالى تلك المقابلات للمنازل فقد اختص منها ١ر٥٨٪ للقرى الرئيسية، فى مقابل ٩ر٤١٪ للعزب تم اجراء مقابلات لهم .
وتمثل الـ ٣١٥ منزل ٢٧٢٧ شخص ومنهم ١١٥ منزل لديهم توصيلات منزلية وهم يمثلون ٣٦٪، وتلك التوصيلات تخدم ١٠٦٠ شخص .

يوجد تباين جوهرى بين القرى الرئيسية والعزب فى كل من الحجم (عدد الافراد) - استهلاك المياه ومستوى الخدمات التقليدية وقد تبين ان العزب تحصل على خدمات اقل ومع ذلك لا يوجد اختلاف جوهرى بين القرى الرئيسية والعزب فى النواحى الاقتصادية والاجتماعية بل يوجد بين ملاك التوصيلات المنزلية ومستخدمى الحنفيات المجانية .

والجدول التالى يلخص نموزج لاستهلاك المياه فى الخمسة وحدات محلية حيث التقسيم لجميع مستخدمى المياه كما يلى :

٥ر٣٦ ٪ ملاك للتوصيلات المنزلية
٦ر٦١ ٪ يستخدمون الحنفيات المجانية
٩ر١ ٪ يحصلون على المياه من خلال التوصيلات المنزلية لجيرانهم .
ونستخدم مياه الترع فقط كمصدر ثانوى للمياه .

[1] المنزل فى هذا التقرير يعنى جميع الافراد المشتركيين فى نفس المنزل والعائلة تعنى الافراد فى الاسرة الواحدة فقط .