
**INTEGRATED RURAL WATER SUPPLY AND SANITATION PROJECT,
KARNATAKA, INDIA**
(Netherlands' assisted)

WATER USE, ENVIRONMENTAL SANITATION AND HEALTH

**BELIEFS AND PRACTICES,
FELT NEEDS AND PREFERENCES**

**Report on an in - depth village study in the
Dharwad and Bijapur Districts of Northern Karnataka**

THE
NATIONAL DIRECTOR OF RURAL
WATER SUPPLY AND SANITATION
BANGALORE

July 1994



PROJECT SUPPORT UNIT

BANGALORE

822-94-13113

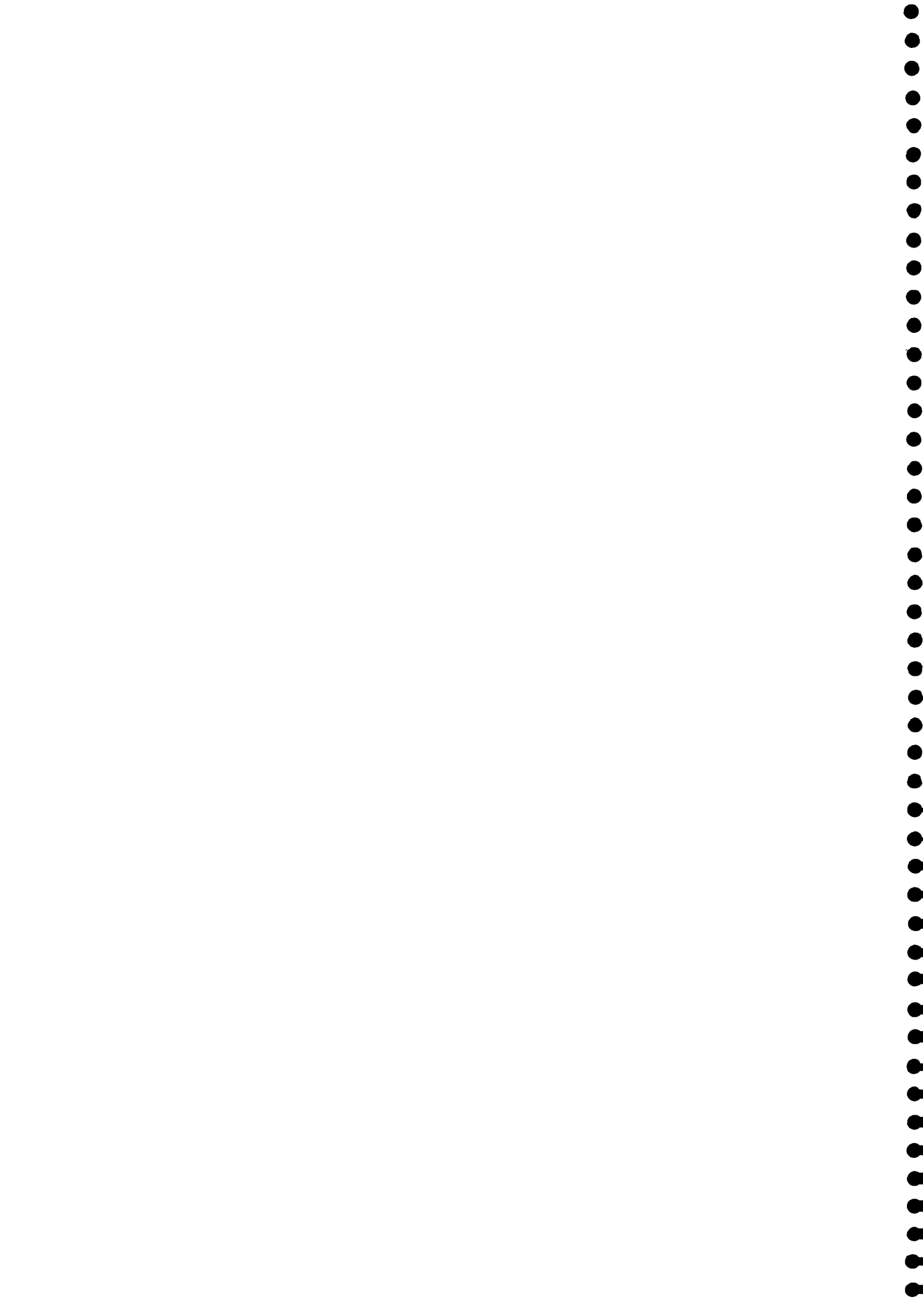
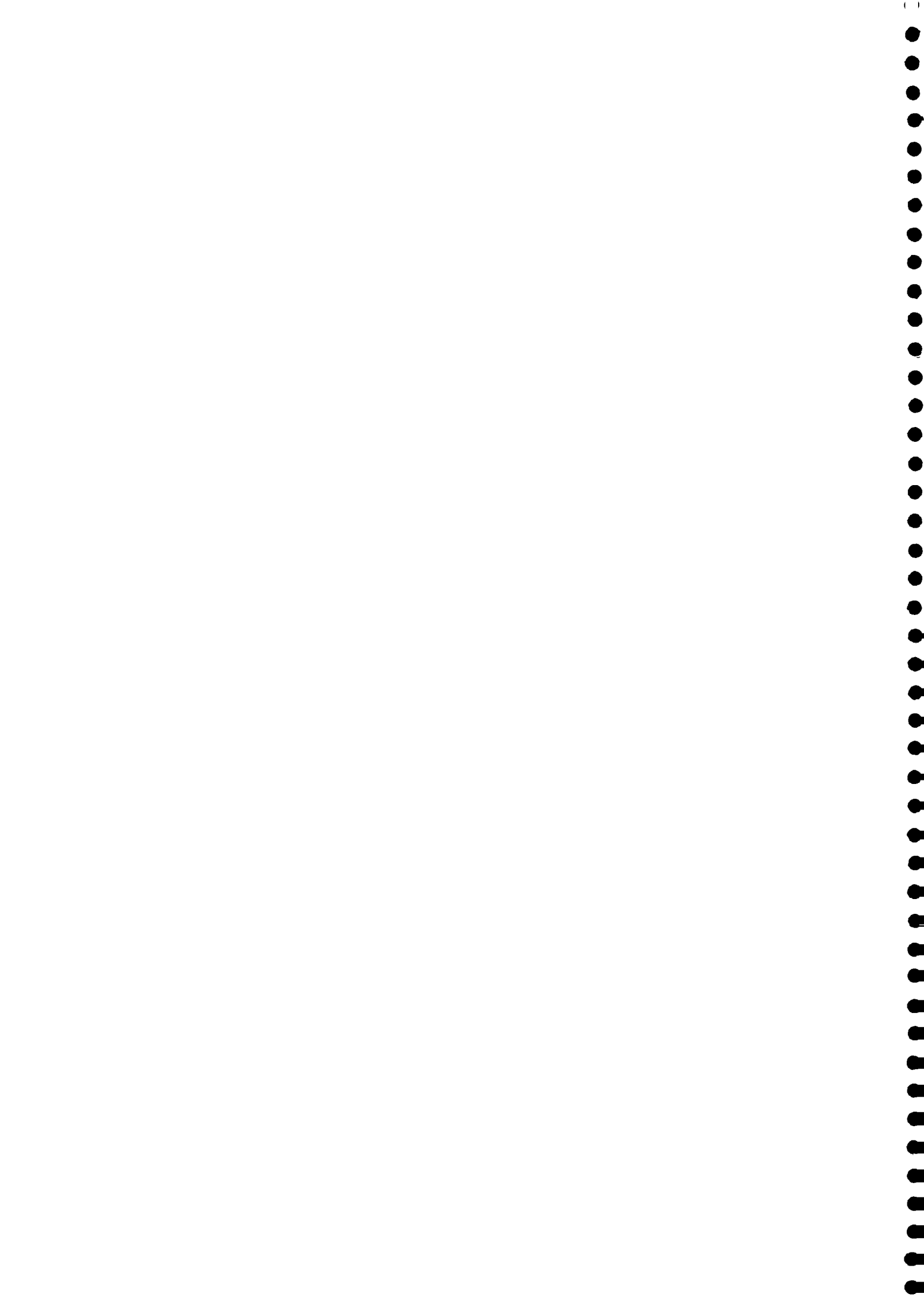
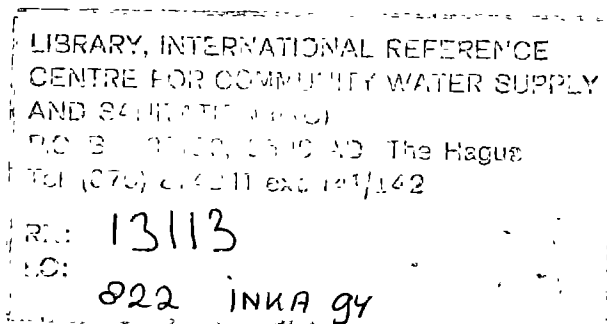


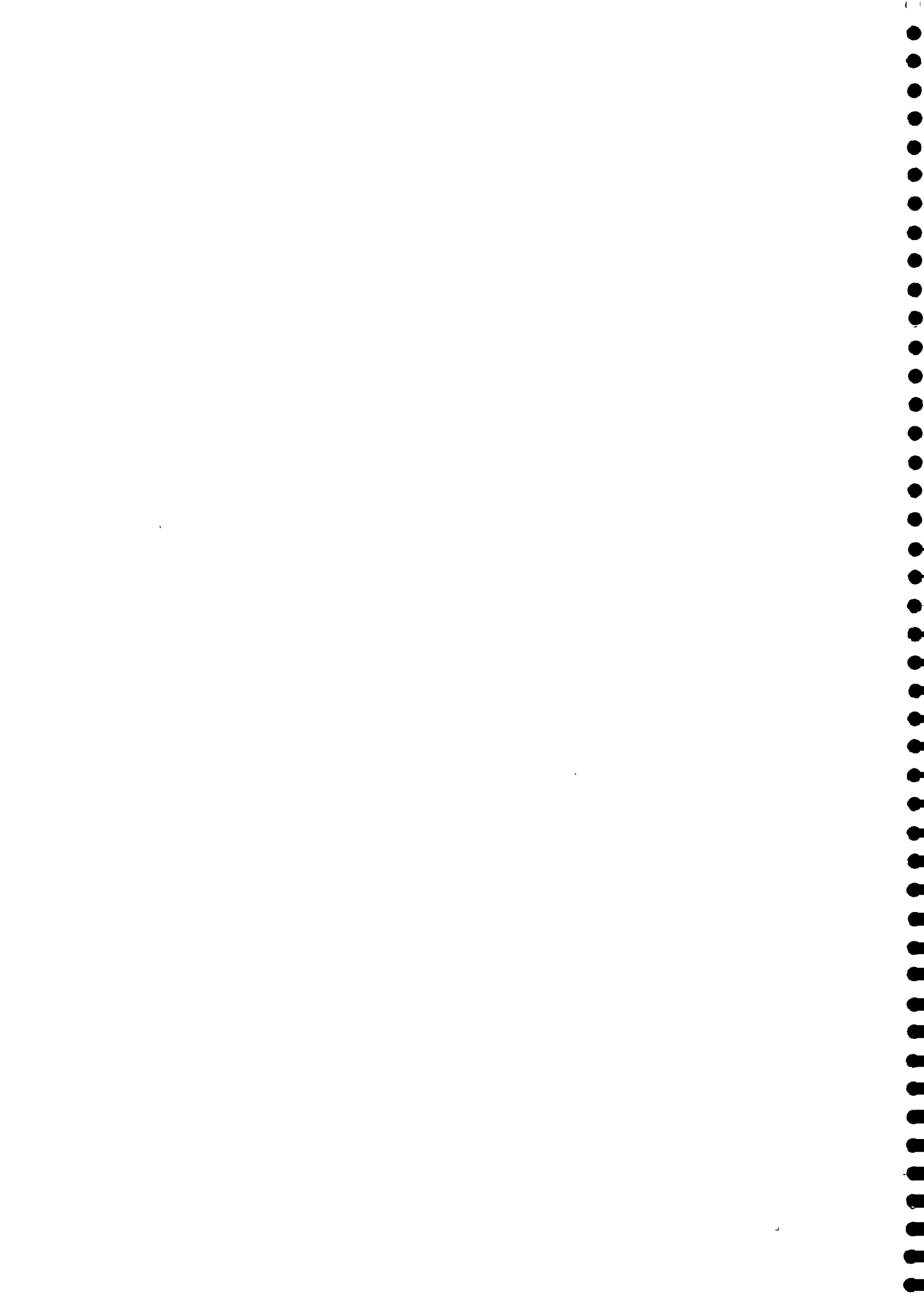
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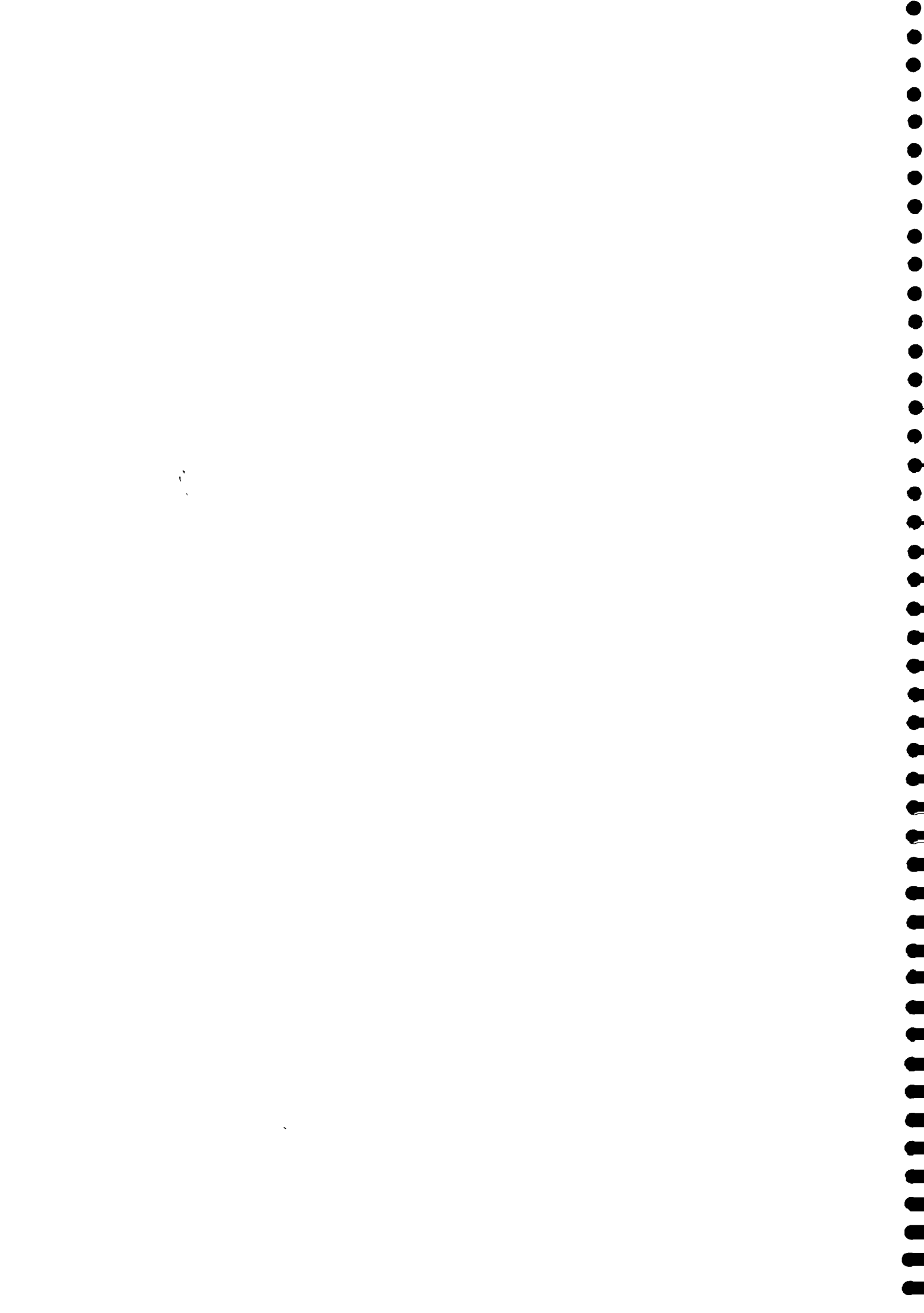


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1. INTRODUCTION

Provision of adequate drinking water and sanitation facilities has become an area of major concern the world over, in particular with reference to rural regions.

Until recently, providing drinking water was considered as the responsibility of engineers and technicians involved in tasks such as drilling, construction and installing pipes, etc. However, no efforts were made to match objectives to people's attitudes, preferences, priorities and, importantly, felt needs in the context of their socio-economic and cultural environment. This was due to the assumption that improved water supply would automatically benefit all sections of village communities. This approach has ultimately resulted in improper distribution of water across the communities; in the Indian context, the most affected appear to be the scheduled castes and other deprived groups

In this light, a new awakening has emerged among those involved in development activities, notably to consider socio-economic dynamics in planning drinking water provisions and to take account of people's priorities and felt needs at the levels of planning, implementation, operation and maintenance.

However, realization is still in its initial stage and efforts to internalize and reinforce the new approach in the official machinery appear to be wanting. Nevertheless, efforts are being made to consider socio-economic and cultural aspects of the rural society in engineering and other technical activities.

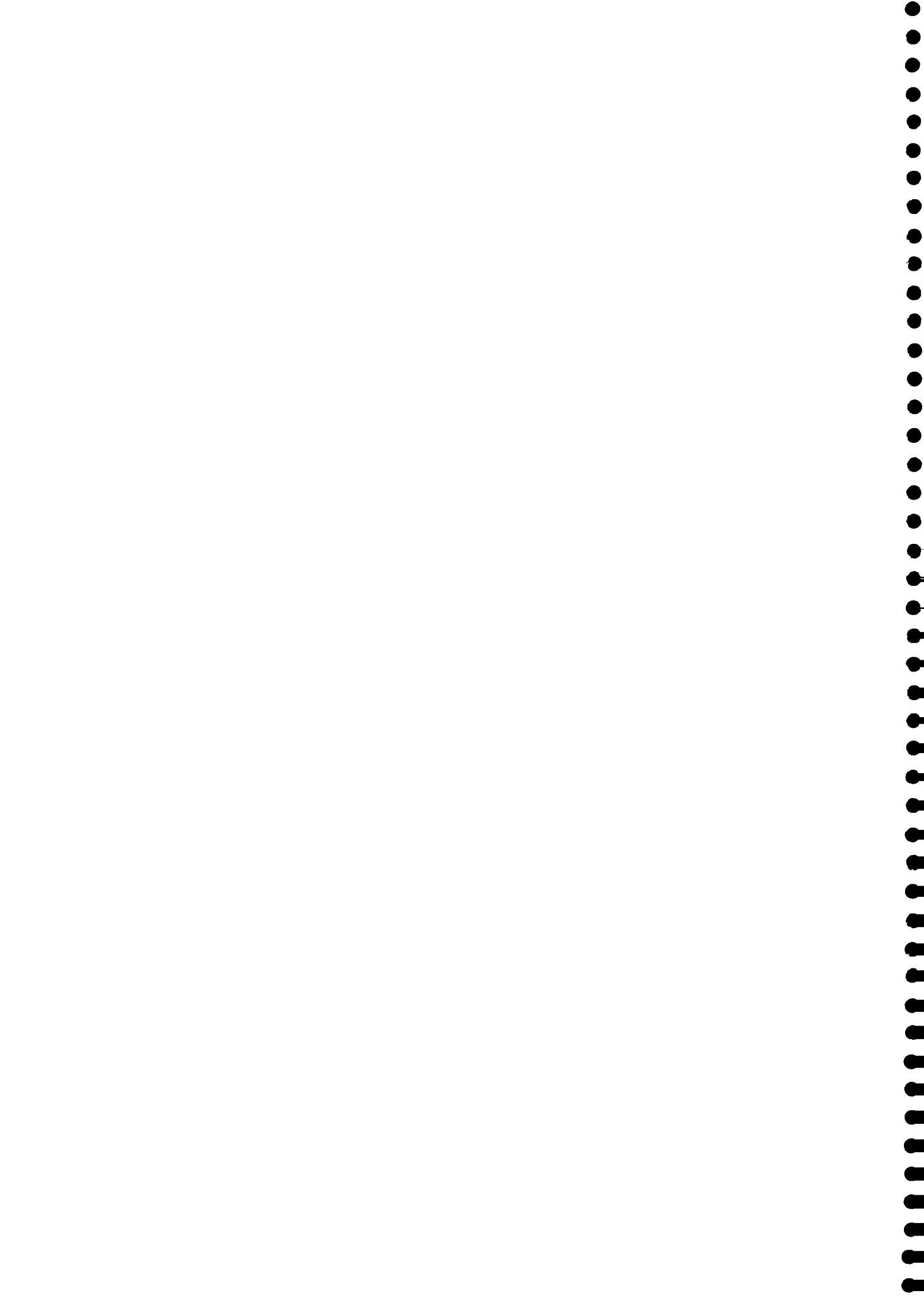
The Netherlands' assisted Integrated Rural Water Supply and Sanitation Project is one such attempt. The project is being implemented in the Dharwad and Bijapur Districts of the State of Karnataka, India, by the state government supported by a Project Support Unit for which BKH Consulting Engineers of Delft, The Netherlands, is in charge. The hallmark of the project is that community participation at all levels of implementation is envisaged by providing maximum opportunity for the target population to actively express its views and be involved.

1.1 Scope

To take-up an integrated rural water supply and sanitation project with a community-oriented approach, it is essential to collect basic information about problems and felt needs of the communities so as to prepare a Plan of Operations, which outlines the principles of the methodology and the proposed operational framework for viable and sustainable implementation

The Plan of Operations was prepared by, among others, undertaking three different types of surveys. The surveys are complementary one to another and are

- a) an inventory in all 163 villages initially listed for the project, aimed at collecting information related to population, religion, caste, existing infrastructure and village institutions
- b) a baseline survey in 36 randomly selected villages to cover more specific aspects regarding housing particulars, water sources, time-spending patterns, sanitation and hygiene practices and incidences of water-related diseases



c) an in-depth study in 8 selected villages, with objectives set out in Paragraph 1.2

The field work for all three surveys was carried out in the period May to October 1991.

1.2 Objectives of the In-Depth Study

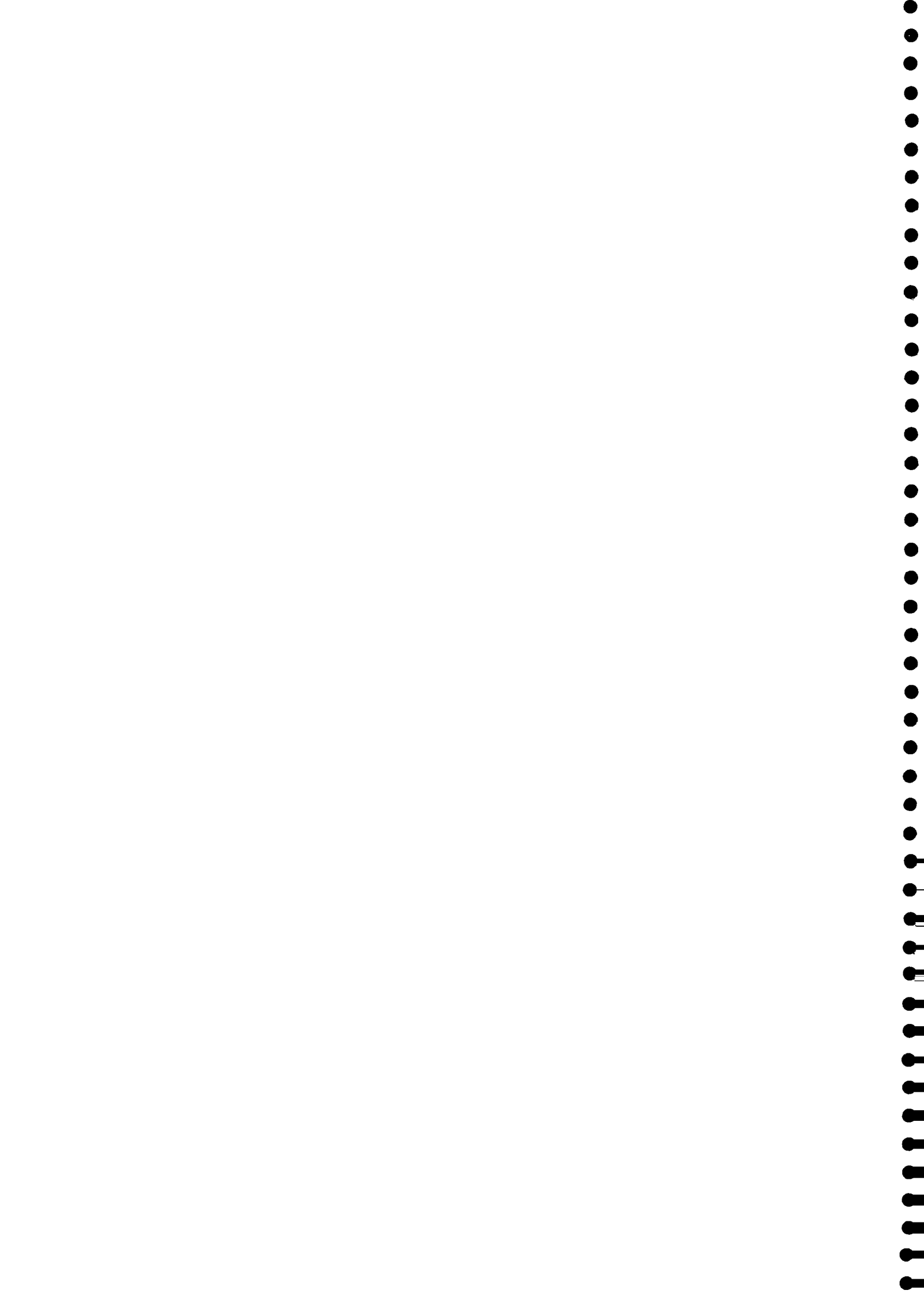
The objectives set to realise the basic purpose of the in-depth study are to

- assess aspects of water fetching and use by caste, class and gender
- identify environmental sanitation problems in terms of caste, class and gender
- ascertain problems, felt needs and priorities regarding water and sanitation
- learn about knowledge, attitudes and practices regarding the relationship between water, sanitation and health
- identify socio-cultural constraints and opportunities for planning purposes

1.3 Purpose and Structuring

The purpose of this report is to provide a background to the Plan of Operations by presenting the most interesting findings from the in-depth study, also taking into account those of the inventory and the baseline survey. A comprehensive reporting is not intended, however.

The methodology in collecting information during the in-depth survey is described in Section 2, which is followed by sections successively dealing with the characteristics of the sample villages, practices related to water use and environmental sanitation, problems and felt needs regarding water supply and finally, knowledge, concepts and practices in respect to the relationship water-sanitation-health. Some conclusions are drawn and recommendations given in Section 7.



2. METHODOLOGY

After a careful assessment of the information obtained during the inventory and the baseline survey details were worked out regarding

- the selection of sample villages and households
- the tools and techniques to be used in the in-depth study

2.1 Selection of Sample Villages

The eight villages were selected from both the project districts considering the following criteria

- 1) nature of water problems viz. scarcity, brackishness and fluoride
- 2) socio-economic and cultural characteristics
- 3) population size

The selection was made such that the sample reflects the proportioning of the listed villages in terms of nature of water problem; further, the selected villages reflect the general socio-economic and cultural characteristics of the region and have manageable-size populations. In addition, a village with relatively good water supply conditions, was included in the sample for control purposes.

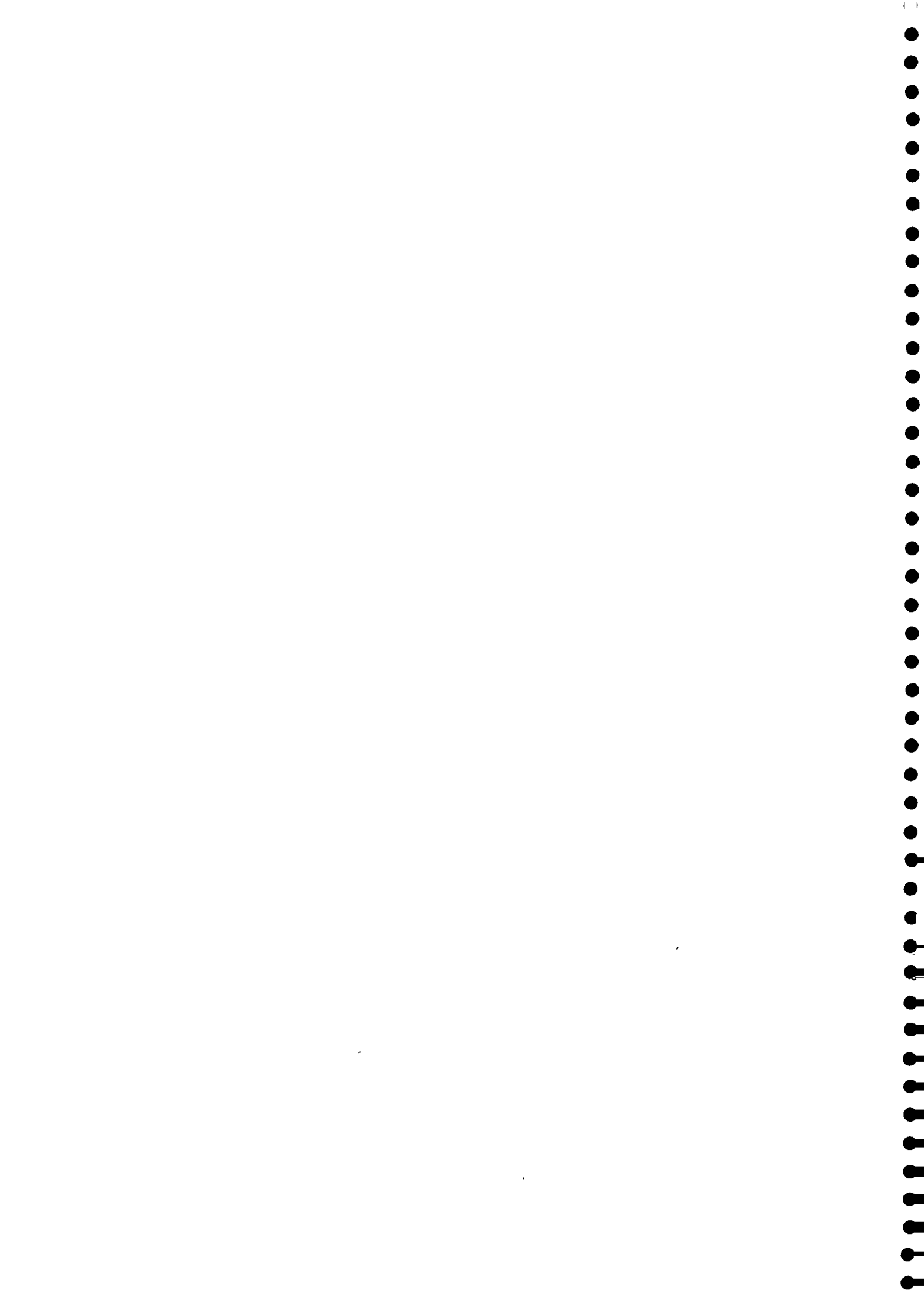
Table 2.1-1 provides the basic details regarding nature of water problem and population size, number of households and average family size, respectively for the sample villages.

Name of Village	Taluk	Nature of Problem	Approx. Popl.	No. of H/H	Avg. Fmly. Size
<u>DHARWAD DISTRICT</u>					
Yerinarayanapura	Kundgol	Brackish	1,350	151	8.9
Aladakatti	Ranibennur	Scarcity	1,406	228	6.2
Antaravalli	Ranibennur	Scarcity	4,000	412	9.7
Chillur	Savanur	Scarcity	950	113	8.4
Churchihalla	Mundargi	Fluoride	757	136	5.6
Kalasur	Savanur	Control	3,000	406	7.4
<u>BIJAPUR DISTRICT</u>					
Jeergal	Mudhol	Brackish	1,800	230	7.8
Sangapura	Bijapur	Scarcity	1,800	218	8.3
Total/Average	-	-	15,063	1,894	7.95

Table 2.1-1: Sample Villages: Location, Size of Population, Number of Households and Average Family Size

2.2 Techniques and Tools of Data Collection

To collect the required information, various techniques and tools including social mapping, transects, direct observations, household interviews, etc. were used. A team of two men and two women conducted the field work. While doing so, the team stayed for about 8 days in the bhajan mandir, youth club, school or other building in each village successively.



Participatory Rural Appraisal (PRA) was the main technique used (for a short history of the development of PRA, see Annex 1). Briefly, the technique of PRA involves the generation of thematic maps of village environs, socio-economic and physical conditions, as well as wealth ranking, preparing time lines and transects and drawing-up community action plans. Each village PRA comprised two phases, i.e. an initial phase of four days with village rounds to built-up rapport, social mapping and various related activities, followed by a second phase equally lasting four days and mainly oriented at developing a village action plan.

In each sample village, the entire exercise of PRA was conducted such that the villagers themselves were the performers with guidance of the study team and by using locally available material and simple objects. Thus, tamarind seeds were used to indicate the number of containers of water used for different purposes; salt crystals for identifying the extent of brackishness of the local groundwater and coins of different denomination for wealth ranking.

The PRA exercises were carried out in several localities within each village such that all sections of the community were given equal opportunity to articulate their opinions and participate. Initially, presuming time constraints, it was planned to involve 10% of the inhabitants from each caste group in the exercises. However, the proportion increased in the process as more people volunteered to participate.

The various tools used in the PRA exercises comprise

Social Mapping

Social maps of the villages were developed by initially preparing maps by quarter and joining the same subsequently. Issues considered while conducting the mapping exercise were

- social structure of the population
- number of borewells and their locations
- locations of public standposts
- locations of mini-water-schemes
- locations of drainage gutters
- locations of compost pits
- presence of bathing facilities
- number of households with toilets in terms of caste and class
- lengths of slushy lanes
- identification of households with front- and backyards
- preferences for water from different sources
- number of temples and institutions, with locations

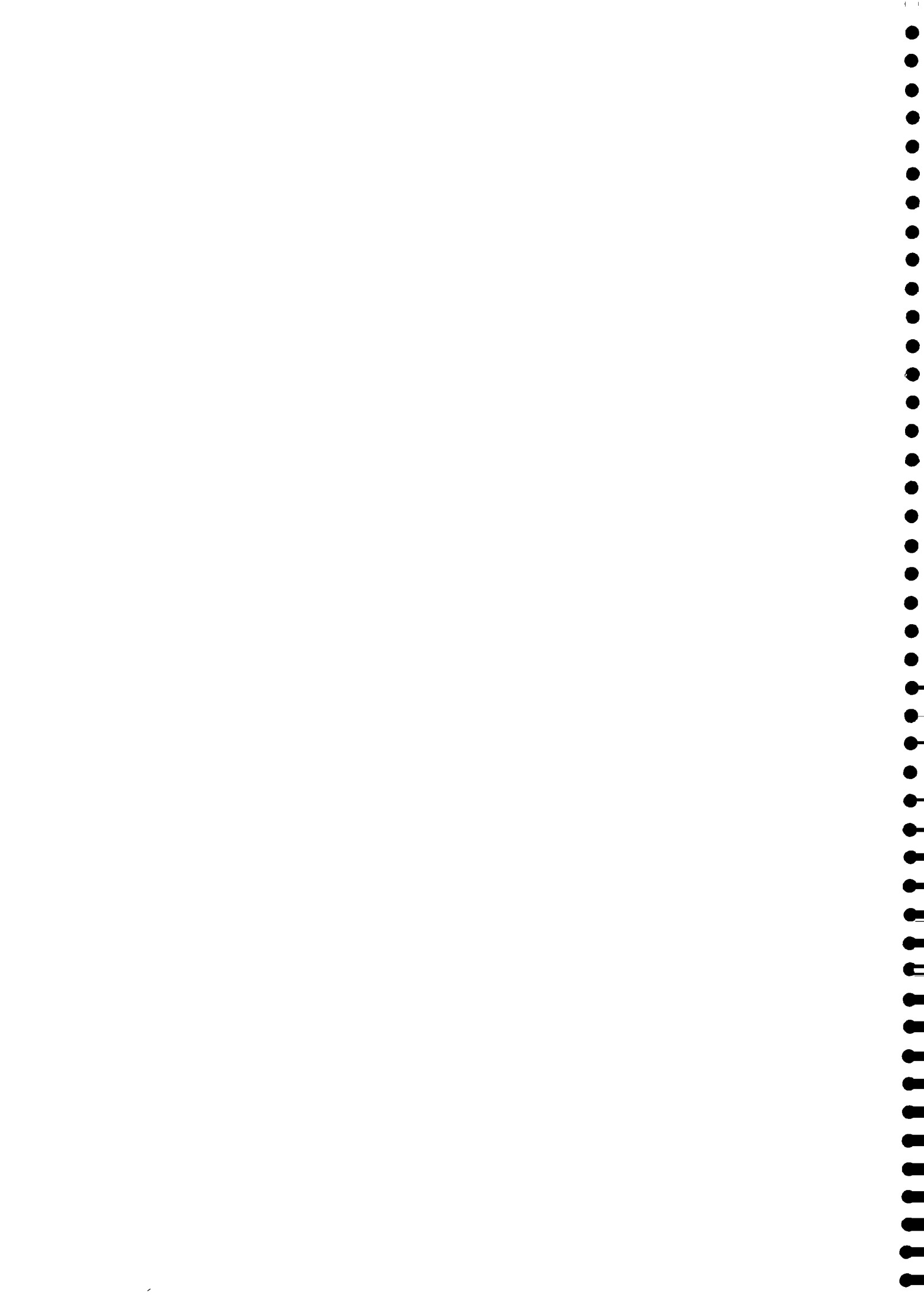
The social mapping was immediately followed by exercises in wealth ranking, time lines and trends, transects, etc.

Wealth Ranking

The wealth ranking exercises were conducted in order to see the extent of equality or inequality in economic terms across the sample village populations.

Time Lines and Trends

Issues like historical sources of water, accessibility to water in terms of distance, timing of supply and sourcewise quantity of water fetched, roles, responsibilities and participation of the community in management and maintenance of water supply schemes and environmental sanitation facilities were considered while using time line and trend exercises.



Transects

The information thus generated was cross-checked by using transect exercises. In addition, information concerning disease patterns, health issues, attitudes and practices followed in case of health problems and the role of men and women in water fetching by season was also collected through transects.

The information thus collected was further supplemented and cross-checked by using direct observations, semi-structured interviews and focus-group discussions

Direct Observations

Direct observations were used to collect information on work-cycle patterns including allocation of time for various household chores by women as well as establishing patterns of water use for drinking, cooking and other purposes.

Semi-Structured Interviews

Semi-structured interviews were essentially held for verification and to obtain intricate details regarding water use. The informal interviews were held with the village leaders, caste representatives, school teachers, elderly persons, anganwadi workers, office bearers of youth clubs, mahila mandals, farmers' associations, health workers and traditional medical practitioners.

Focus-Group Discussions

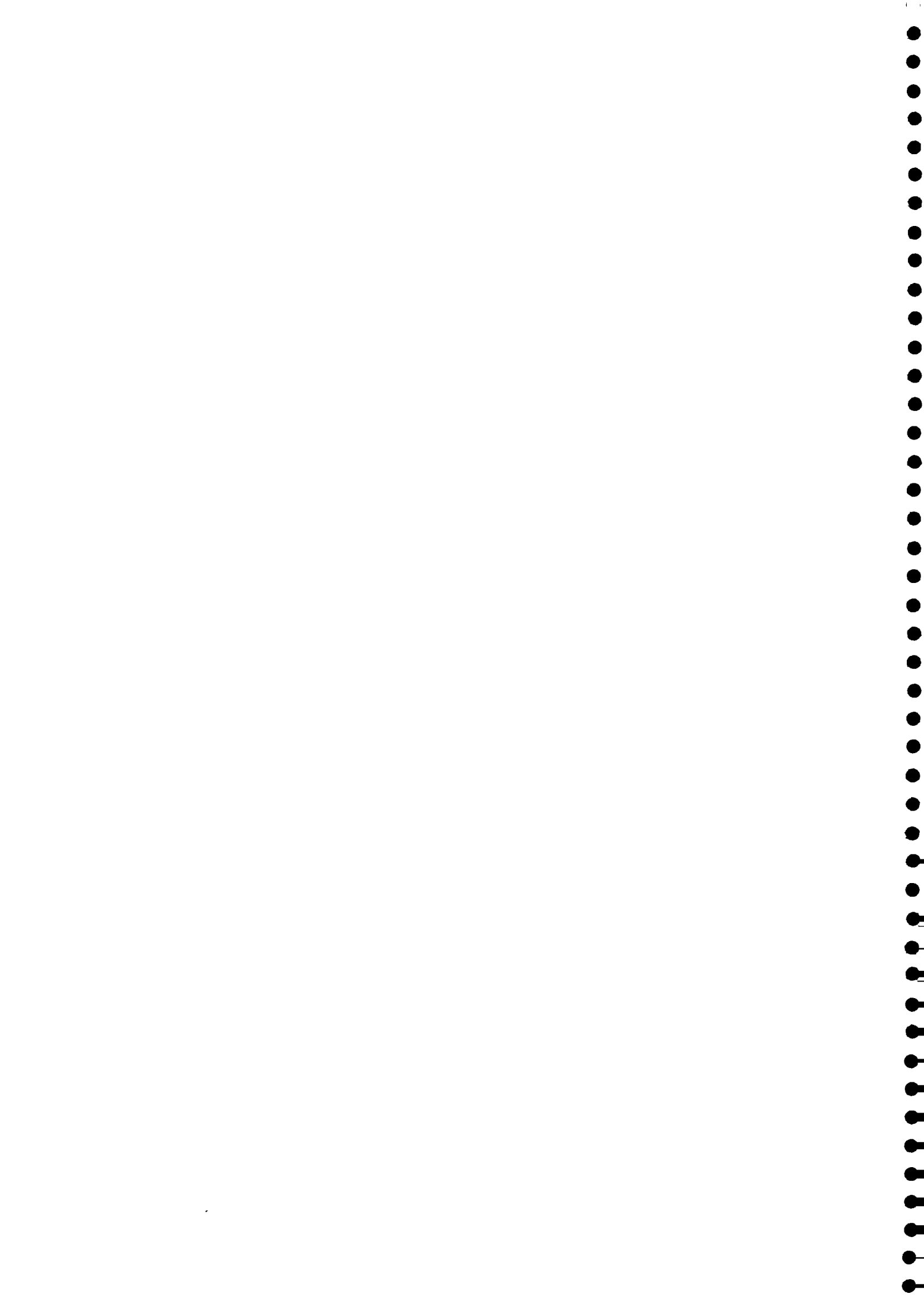
Focus group discussions were facilitated for women as, often, they are silent spectators hesitant to voice their views in public meetings. These group discussions provided rich information regarding the roles of men and women in fetching water, quantity and quality of water required, etc. The group discussions were usually held in different caste localities, tea shops, work places, vicinities of a temple, road-sides and other public places.

Household Interviews

Household interviews were held in sample households in the villages. Approximately 10% of the households were covered considering all caste and economic groups. Information concerning personal opinions, attitudes and beliefs about water, sanitation and health issues was collected. For the interviews, an unstructured checklist as reproduced in Annex 2 was used.

Community Action Plans

The second phase of the PRA was essentially meant to plug loopholes in the information collected and to develop community action plans with the help of the social maps. Further, to assess the probable extent of contributions of the communities towards material, labour and cash required for implementing the action plans



3 CHARACTERISTICS OF THE SAMPLE VILLAGES

Information pertaining to various characteristics of the sample villages was collected in the scope of the village inventory and the baseline survey as well as during the in-depth study.

The primarily socio-economic and institutional characteristics considered here comprise

- socio-cultural composition of the population
- economic status in terms of land-ownership, possession of farm equipment and irrigation facilities, cropping pattern and livestock
- household amenities
- village-level institutions and organisations

3.1 Composition of the Population

The socio-cultural composition of the population is such that the villagers belong to three religious groups, viz. Hindu, Muslim and Jain. The vast majority of the population of the sample villages is Hindu; among them, 15 castes are represented. For the purposes of this study, these have been grouped into three categories, viz. forward, backward and scheduled castes. This grouping reflects the relative status attached to each caste in the traditional stratified social system of the village communities. Muslims and Jains, who do not come under the Hindu social framework, are referred to separately.

The "forward" caste category includes Lingayats, Reddies and Brahmin. The "backward" group of castes comprises among others Talwars, Valmiki and Kuruba, while harijans and tribals make up the "scheduled" category.

Mostly, the various categories are also spatially separated as shown in Figure 3.1-1. In general, forward categories live in the village core, backward categories towards the periphery and scheduled castes physically separated from all others. This spatial separation, also in general, reflects the power structure in the villages.

Table 3.1-1 shows the percentage-wise distribution of households by village and according to religion and caste groups.

Religion/ Caste Group	Yerinarayana- pura	Allada- katti	Antara- valli	Chillur	Churchi- halla	Kalatur	Jeergal	Sangapur
<u>Hindu</u>								
Forward	53.6	61.8	48.1	33.6	68.3	7.6	24.0	49.0
Backward	24.5	21.9	33.7	11.5	7.4	72.7	32.6	26.3
Scheduled	16.6	13.2	12.1	10.6	18.4	12.3	13.0	22.9
<u>Muslim</u>	5.3	3.1	6.1	41.6	5.1	1.2	30.4	1.8
<u>Jain</u>	-	-	-	-	-	5.9	-	-
<u>Others</u>	-	-	-	2.6	0.7	0.2	-	-
No. of H/H	151	228	412	113	136	406	230	218

Table 3.1-1: Religion-/Castewise Composition of the Population (in percentages)

3.2 Economic Background

The prime occupation in the villages in the project districts in general and in the sample villages in particular is agriculture; livestock rearing constitutes the subsidiary occupation. As such, while assessing the economic status of households, landholding is an important indicator. In addition, other factors like types of crops grown, types of farm equipment owned, access to water and



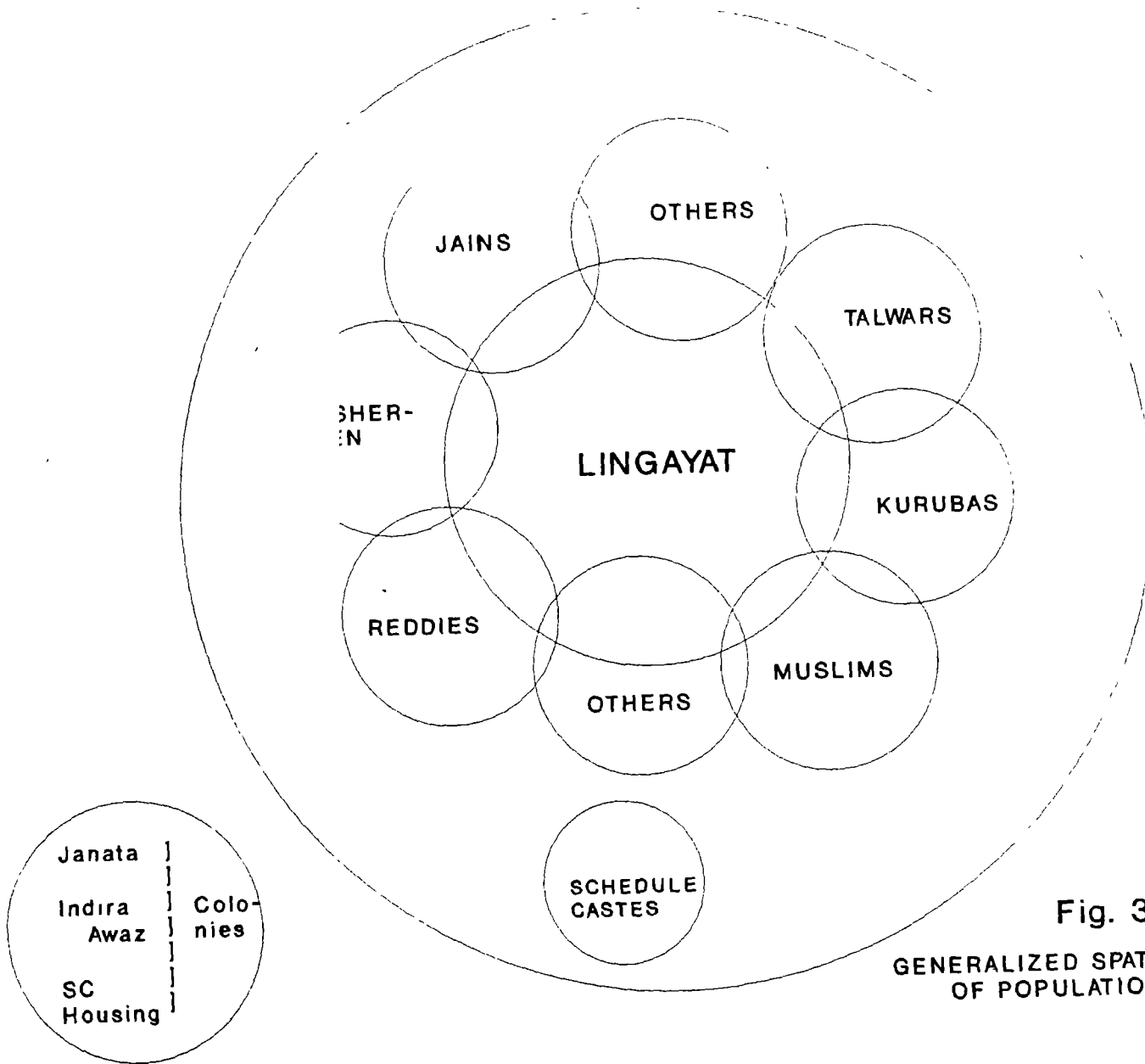


Fig. 3.1-1

GENERALIZED SPATIAL SEPARATION OF POPULATION CATEGORIES



irrigation facilities and cattle wealth constitute further indicators.

Table 3.1-2 shows the proportioning of households according to landholding. The table reveals that the households owning 50 to 100 acres of land constitute only 4% of the total number of households. The table further reveals that by and large the households owning large holdings come from forward and backward castes and the landless households from the scheduled castes.

Landholding (acres)	Religion/Caste Group				Total
	Forward	Backward	Scheduled	Muslim	
Landless	8.3	48.3	76.9	61.6	38.0
1 - 10	8.3	5.9	6.4	10.5	7.4
11 - 24	49.9	28.3	16.4	23.2	34.6
25 - 49	25.4	15.4	0.3	4.1	16.0
50 - 75	7.2	2.1	-	0.6	3.6
100	0.9	-	-	-	0.4

Table 3.1-2: Proportioning of Households according to Landholding (in percentages)

3.3 Ownership of Farm Equipment and Irrigation Facilities

It appears that the overwhelming majority of the landholding respondents owns at least a wooden or iron plough, a pair of bullocks and some cattle, either cows or buffalos or both. By and large, the findings reveal that with increasing size of their landholding, farmers own more cattle, have better farm equipment like a tractor, private irrigation facilities such as borewells or open wells with pumps attached, etc. Generally, ownership of a tractor is a symbol of affluence and all such households belong to the wealthy economic category. The proportioning of the households according to religious/caste background and ownership of irrigation facilities reveals the same.

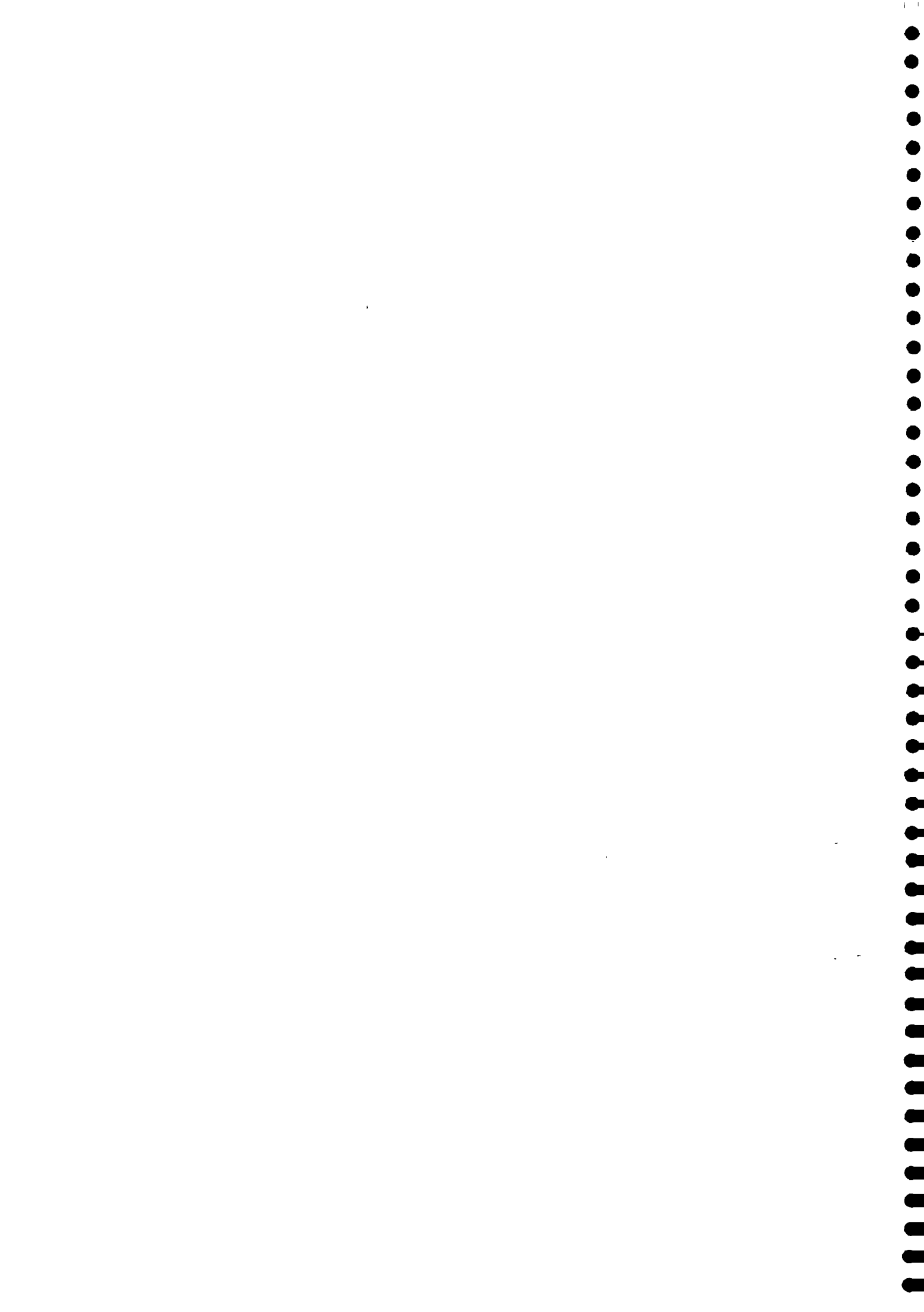
Type of Irrigation Facility	Religion/Caste Group				Total
	Forward	Backward	Scheduled	Muslims	
Borewell with pump	7.4	1.9	1.3	1.2	4.0
Surface water pump	7.6	5.0	0.3	7.0	5.5
Open well with pump	11.4	2.1	1.0	-	5.5
No facility	73.6	91.0	97.4	91.8	85.1

Table 3.1-3: Proportioning of Households according to Ownership of Irrigation Facilities (in percentages)

Hence, out of the households, only about 15% own some facility for irrigating their lands, while the remaining respondents depend solely on rainfed agriculture. Further, as the table indicates, from among those owning an irrigation facility, forward caste respondents form the majority.

3.4 Cropping Pattern

All eight sample villages are located in the arid agro-climatic zone where acute dependency on rainfall is felt among farmers. The situation is further accentuated with respect to small and marginal farmers who, with lesser landholding and inadequate farm equipment, become victim of the vagaries of the climate easily. The cropping pattern of the region is largely uniform. The main crops grown include jowar and pulses. However, while possessing irrigation facilities, for



rich farmers the pattern of cropping has shifted from subsistence to cash crops. They also cultivate commercial crops such as cotton, maize, groundnut, sunflower, chillies. Villages located near river banks or other perennial water bodies grow sugarcane. With adequate water for irrigation, some farmers grow three crops in a year and reap a much higher yield vis-a-vis those who pursue rainfed farming, with inadequate farm equipment, etc.

Jowar and pulses are the staple diet of the population in both the project districts, while rice is also consumed by more affluent sections. Dairy products such as milk, curd, etc. are also a part of the diet for those who own cattle or can afford to buy these products.

3.5 Cattle Wealth

The cattle wealth of a household in a village indicates, to a considerable extent, its economic status. In the sample, almost every forward caste household has a pair of bullocks, while the richer households sometimes own more of them. Besides, these households also own cows and buffaloes. Backward caste households own less bullocks, cows and buffaloes, but more goat and sheep.

Bullocks are the prime draught-animals in the rural areas. Since only few households own tractors and/or other mechanised equipment, the majority depends on animal power. The animals, besides draught-power, also provide manure, an important agricultural factor. Thus, cattle is an integral part of agricultural life so much so that they are housed in a part of the living space of the household.

Among the scheduled caste and muslim households, the cattle wealth is very limited. Being generally landless and poor, the majority of them suffer from lack of space to house animals. Further, they are constrained by inadequate grazing possibilities, time and other resources.

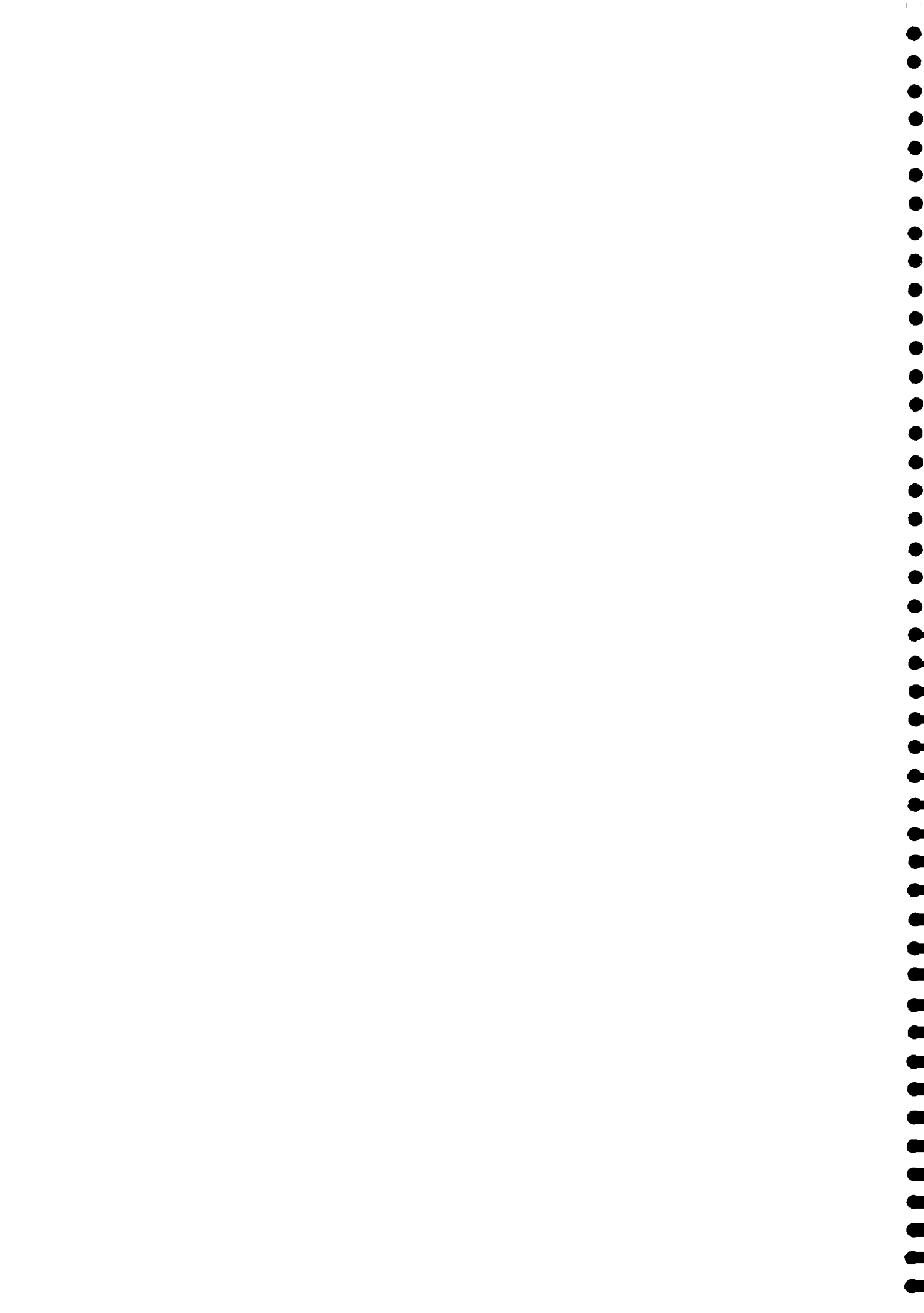
3.6 Household Amenities

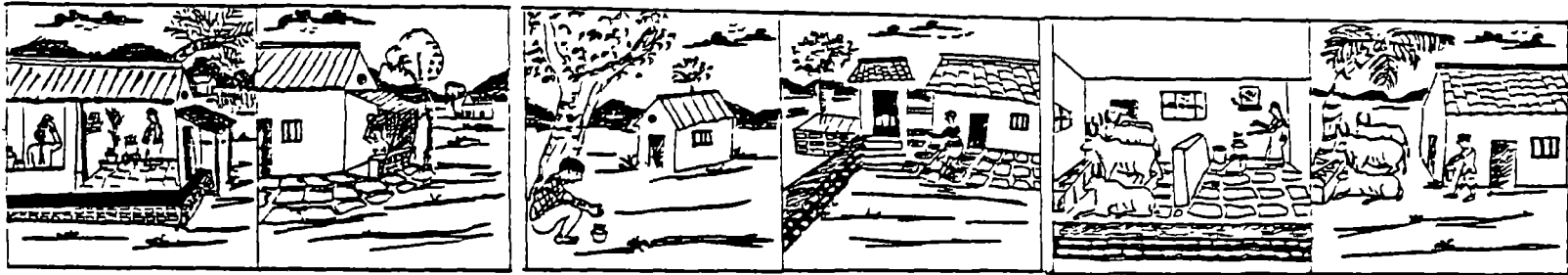
Practically all households have their own house, by and large with earthen floors, stone and/or mud walls and wooden and/or tiled roofs. During the field study, observations were made with regard to amenities available at the household level. The details of them are discussed in the following subparagraphs and presented in Table 3.6-1. A pictorial on page 3-5 presents the same details.

Religion/ Caste Group	Bathing Space			Defecation Space		Cattle Space		
	Inside House	Outside House	Without Bathing space	Open Field	Latrine	Inside House	Outside House	Without Cattle
Forward	84.1	12.8	3.1	97.2	2.8	68.7	28.7	2.6
Backward	93.5	3.1	3.4	99.3	0.7	43.9	1.5	54.7
Scheduled	78.5	3.8	17.6	100.0	0	15.7	0.9	83.3
Muslim	93.0	7.0	-	100.0	0	27.9	0	72.1
Average	87.3	7.5	5.3	98.6	1.4	47.9	12.2	39.9

Table 3.6-1: Amenities at Household Level (in percentages)

The survey undertaken with regard to the kind of facilities available for bathing indicates that some 87% of the households have separated a corner of their kitchen for the purpose. The floor of the bathing space is mostly a stone slab around which a cement or mud wall is built up to a height of 2 to 3 feet; a soakpit is often attached outside the house. Generally, this place is also used for washing kitchen utensils.





BATHING SPACE

DEFECATION SPACE

CATTLE SPACE

Religion/Caste Group
Forward
Backward
Scheduled
Muslims
Average

Inside House (Kitchen)	Outside House
84	13
93.5	3
78.5	4
93	7
87	7.5

Open Field	Latrine
97	3
99	1
100	-
100	-
99	1

Inside House	Outside House
69	29
44	1.5
16	1
28	-
48	12

FIGURE 3.6-1

AMENITIES AT HOUSEHOLD LEVEL
 LOCATION OF BATHING, DEFECATION AND CATTLE SPACES
 (in percentages)



Households having a separate bathing cubicle outside make up 7.5% of the total number, while only some 5% of the households do not possess any type of facility for the purpose of bathing.

On the contrary, latrines are rarely available even among forward caste households. But cattle keeping is an integral part of the rural households. Across religious/caste groups and social status, nearly 50% of the households live under common roof with their cattle. Depending on economic background, a separate space is reserved for holding cattle or the household members live side by side with their cattle. An additional 12% of the households have a special enclosure outside their house for keeping cattle.

3.7 Institutions and Organisations

Much in accordance with the prevalence of a heterogenous society structure, the inhabitants of the sample villages also have different types of social/cultural interests. The presence of various formal and informal institutions and organisations ranging from school, anganwadi centre, cooperative to bhajan mandal, labour union and balwadi centre, etc. reflects these different interests. Table 3.7-1 provides details about the institutions and organisations existing in the sample villages.

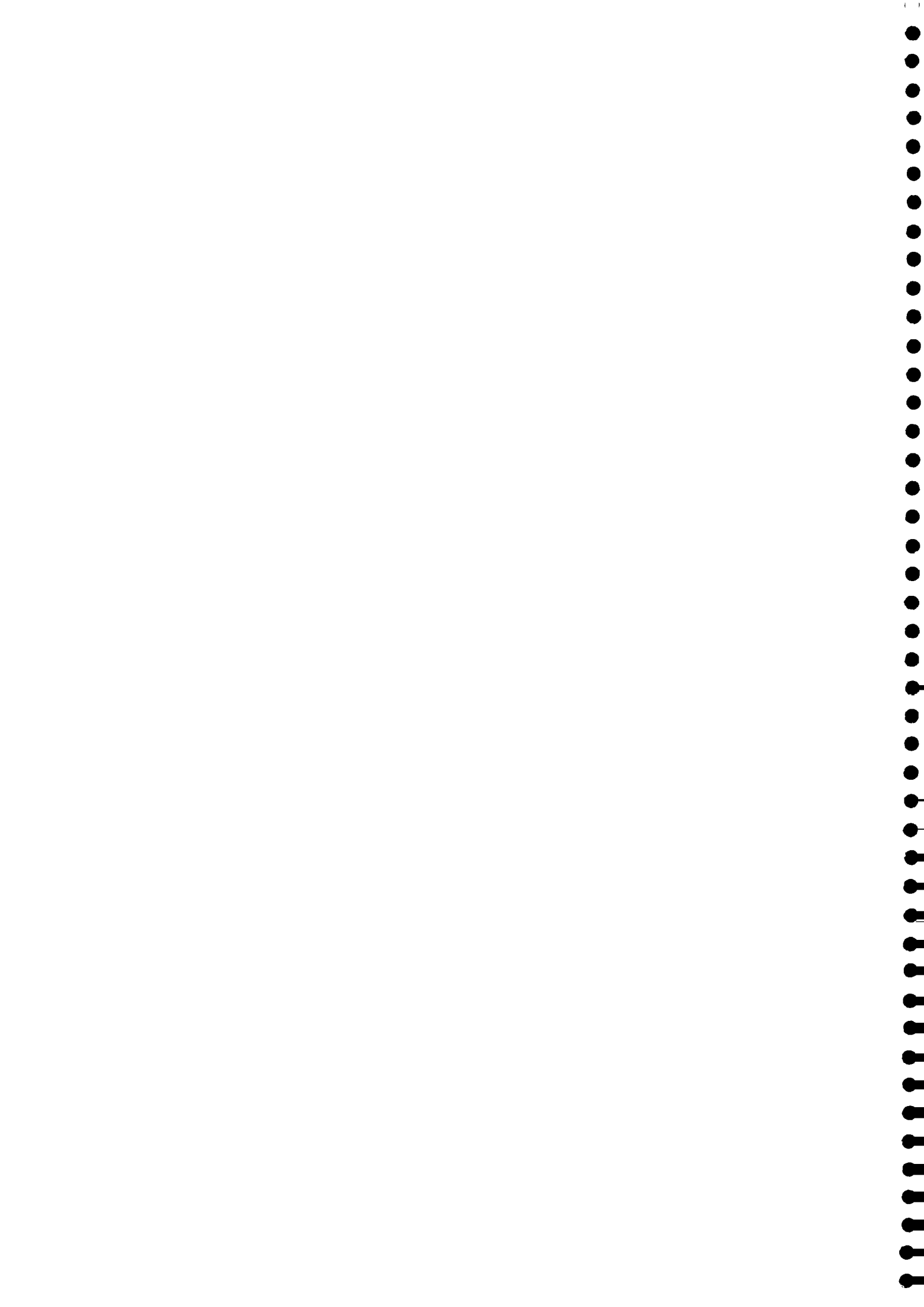
Institution/ organisation	Yerinarayana- pura	Alladi- katti	Antara- valli	Chil- lur	Churchi- hal	Kala- sur	Jeer- gal	Sanga- pura
School	-	1	-	1	1	1	1	-
Anganwadi Centre	-	1	-	-	-	-	1	-
Dairy Cooperative	-	-	1	-	-	1	-	-
Village Welfare Cooperative	1	-	-	-	-	-	-	-
Khadi Kendra	-	-	1	-	-	-	1	-
Bhajan Mandal	2	1	2	-	1	1	2	2
Yuvak Mandal	3	1	1	-	-	1	-	1
Mahila Mandal	-	1	1	-	1	-	1	-
Labour Union	-	-	-	-	-	1	-	-
Ryota Sangha	-	-	-	-	1	-	-	-
Balwadi	-	-	-	-	1	-	-	-
Adult Educ. Centre	-	-	1	-	-	-	-	-
Welfare Committee	-	-	-	-	-	1	-	-

Table 3.7 -1: Institutions and Organisations Existing in the Sample Villages

3.8 Summary of Findings

In summary, it appears that

- the sample villages are rather heterogenous in terms of caste and socio-economic conditions
- agriculture and livestock rearing constitute the main and the subsidiary occupation, respectively
- about 62% of the households own land, while the proportion of the land-owning households is highest among the dominant castes
- households with large landholdings have also better farm equipment like a tractor and private irrigation facilities
- approximately 4% of the households only use groundwater for irrigation by exploiting borewells; another 10% use surface water bodies and open wells
- apart from agriculture, livestock rearing is an important occupation; the forward caste households mainly rear buffaloes, cows and bullocks while other households rear all types of cattle including goat and sheep; however, the scheduled caste and muslim household hardly rear cattle
- with regard to amenities available at the household level, most families have a bathing space; very few, however, possess a latrine
- the sample villages have various institutions and organisations reflecting the different social and cultural interests of the villagers



4. PRACTICES RELATED TO WATER USE AND ENVIRONMENTAL SANITATION

The main parameters determining water use are availability, in both quantitative and qualitative terms, caste of user, distance to source and continuity of supply. In practice, water use varies between less than 10 lpcd and over 40 lpcd in project villages, regardless quality. Provided adequate availability and quality, total water use for both districts is 40 to 50 lpcd. This includes water used at home and carried from source to cattle, fields, etc. but does not include water used at source. The average quantity of water carried home is 28 lpcd in Dharwad villages and 23 lpcd in Bijapur villages. Water use differs significantly with caste. Members of wealthier households use some 20% more water than average use. For a retrospect on management of water supply, reference is made to Annex 3. Further, Annex 4 provides village details on water use.

Total water is used for the following purposes:

- 21% cooking and drinking,
- 25% washing and bathing,
- 28% washing household utensils and clothes,
- 14% livestock drinking and washing,
- 4% carried to fields, and
- 8% miscellaneous purposes

In more detail, viz. by nature of water problem and by population category, the breakdown of water use by purpose is also shown in the pictorial on page 4-2.

4.1 General Aspects of Water Use

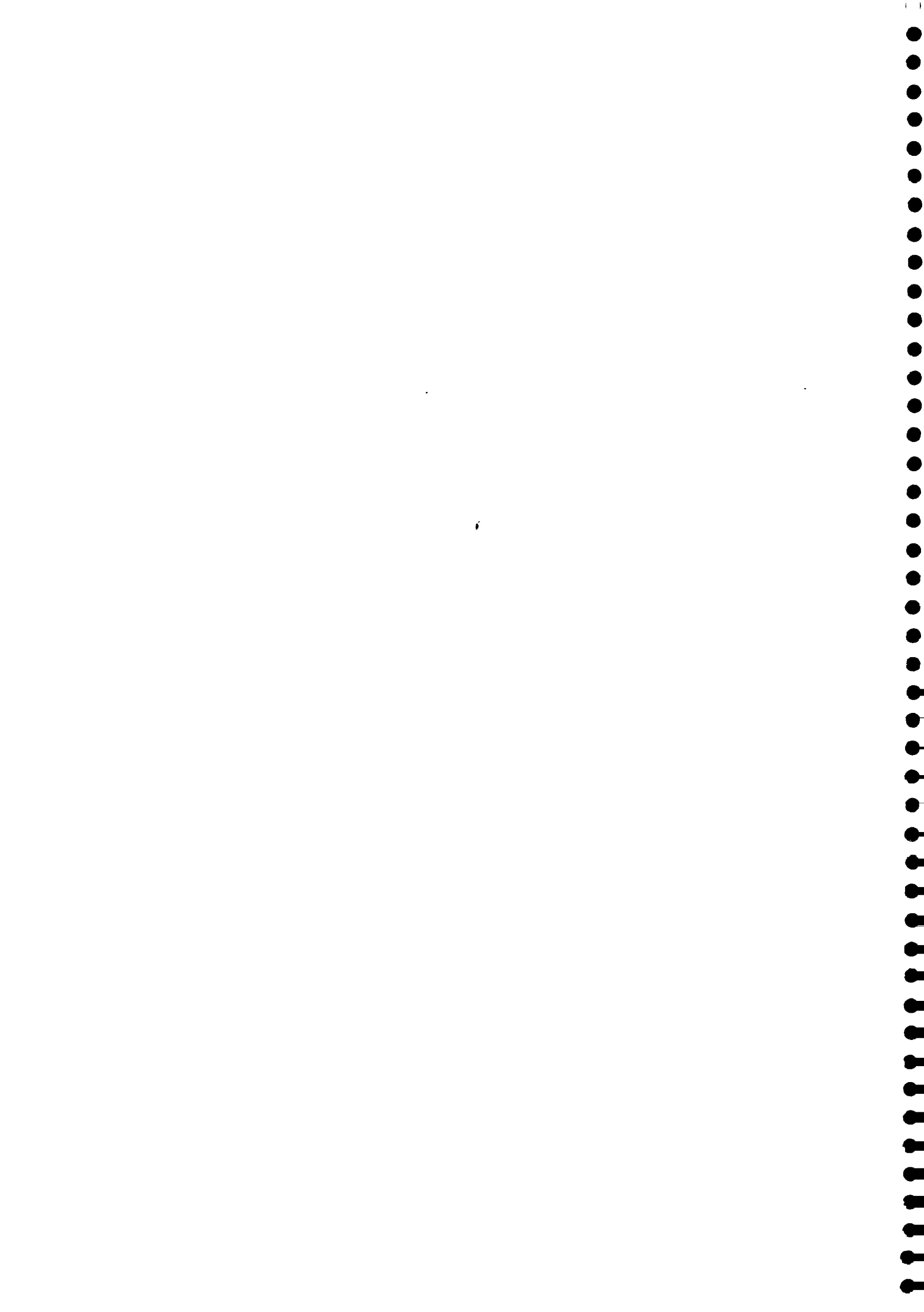
In the villages covered in the study, drinking water is used observing utmost cleanliness. Drinking cups/tumblers never touch the lips but are emptied from on high. This practice was found to be widely prevalent among all people regardless of caste and economic background. However, hot liquids are consumed with cups/tumblers touching the lips.

The people's perceptions of purity versus contamination become also clear from other habits of using drinking water. These habits do not only reveal the segregated form of social interaction prevailing in the stratified social system, but also indicate the rigidity with which practices are adhered to.

When people belonging to a lower caste, especially Harijans, ask for drinking water, higher caste members offer the same without container, by pouring water on the palms of their hands. On the other hand, Harijans will never offer consumable items including water to forward caste people since such an act would bring disaster while contaminating the recipient. These habits reflect traditional norms still found to be strongly prevalent, in spite of efforts by the government and others to achieve social equality.

4.2 Household Management of Water

In the following subparagraphs, some findings with respect to practices adopted by different sections of the village communities in collecting, transporting and storing water are described. It is pertinent to mention here that these practices are not only governed by the quantity and quality of water available, but also influenced by the communities' perceptions and attitudes which in turn are affected by their socio-cultural beliefs. Furthermore, physical aspects such as














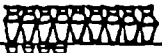

















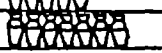








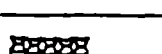

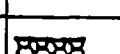
























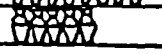








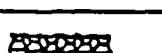





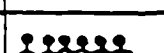




















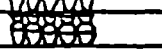










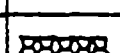



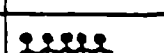
















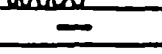

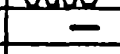

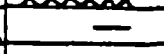




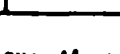

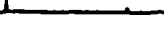
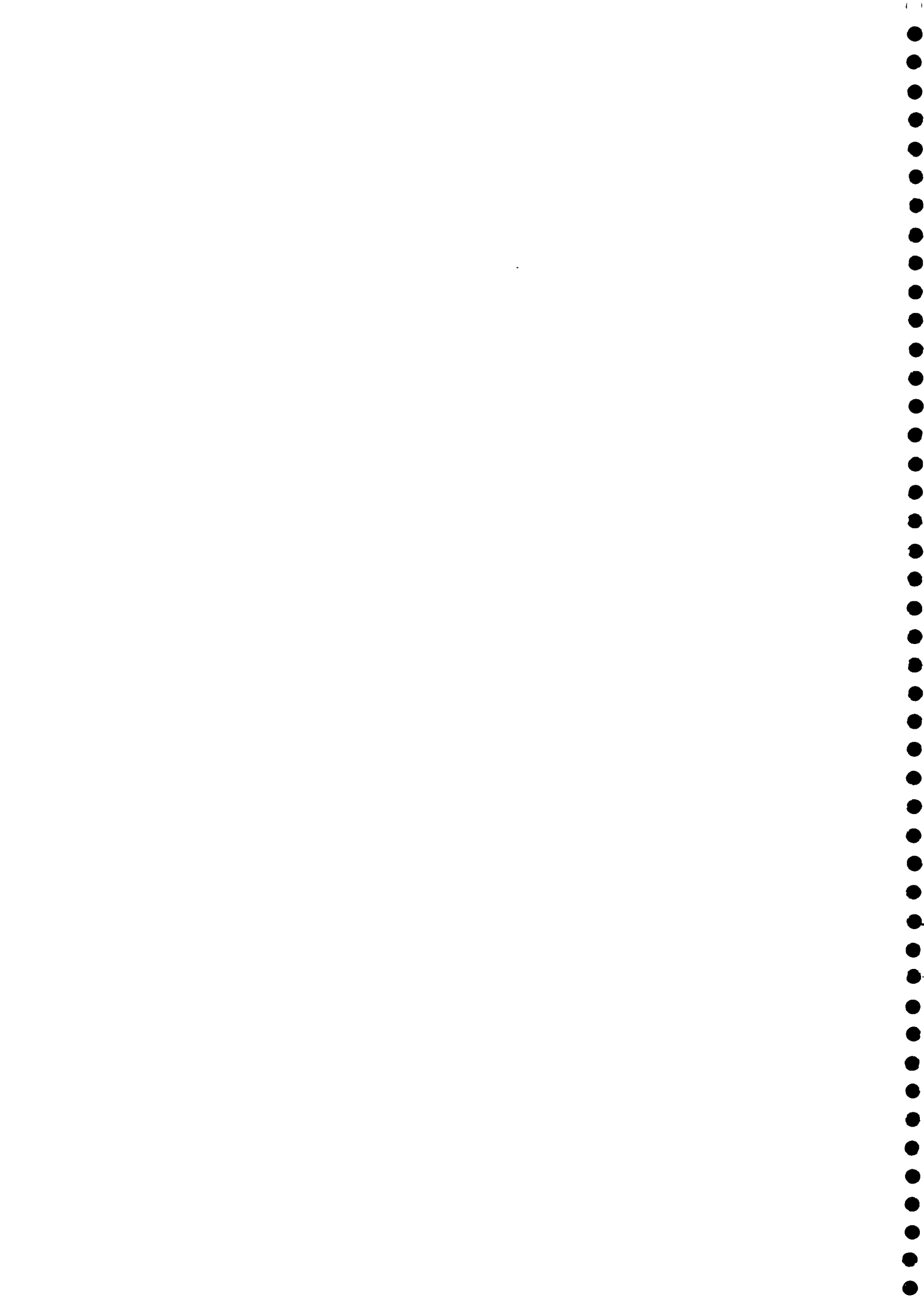
CASTES	Type of village										TOTAL POTS OF WATER
		Cooking	Drinking	Bathing	Vessels	Washing cloths	Cattle	Fields	Miscellaneous	Average family size	
HIGH CASTE	Scarcity Village									H 	25
MIDDLE CASTE										M 	14
LOW CASTE										L 	21
MUSLIMS										M 	24
HIGH CASTE	Flouride Village									H 	21
MIDDLE CASTE										M 	34
LOW CASTE										L 	30
MUSLIMS										M 	22
HIGH CASTE	Grackish Village									H 	27
MIDDLE CASTE										M 	28
LOW CASTE										L 	27
MUSLIMS										M 	24
HIGH CASTE	Control Village						Surface water used	Surface water used		H 	26
MIDDLE CASTE							---	---		M 	17
LOW CASTE							---	---		L 	16
MUSLIMS							---	---		M 	---

Fig 4-1 Proportions of water use, by purpose, category of population and nature of water problem
(in number of containers of 10 to 12 liters)



distance to source, manpower availability, space for storage, level of cleanliness and hygiene of the users and the general household environment contribute significantly.

4.2.1 Water Collection and Storage

By and large, among the poorer households, water is carried in plastic or earthenware containers, while affluent households use brass, iron or copper ones. In homes, drinking water is stored mostly in metal or earthenware containers according to the economic conditions of the family.

The study revealed that storage practices depend heavily on three factors, viz.

- a. the type of water supply facility
- b. the existence of adequate space and storage capacity in the household
- c. the quantity of water required for the family

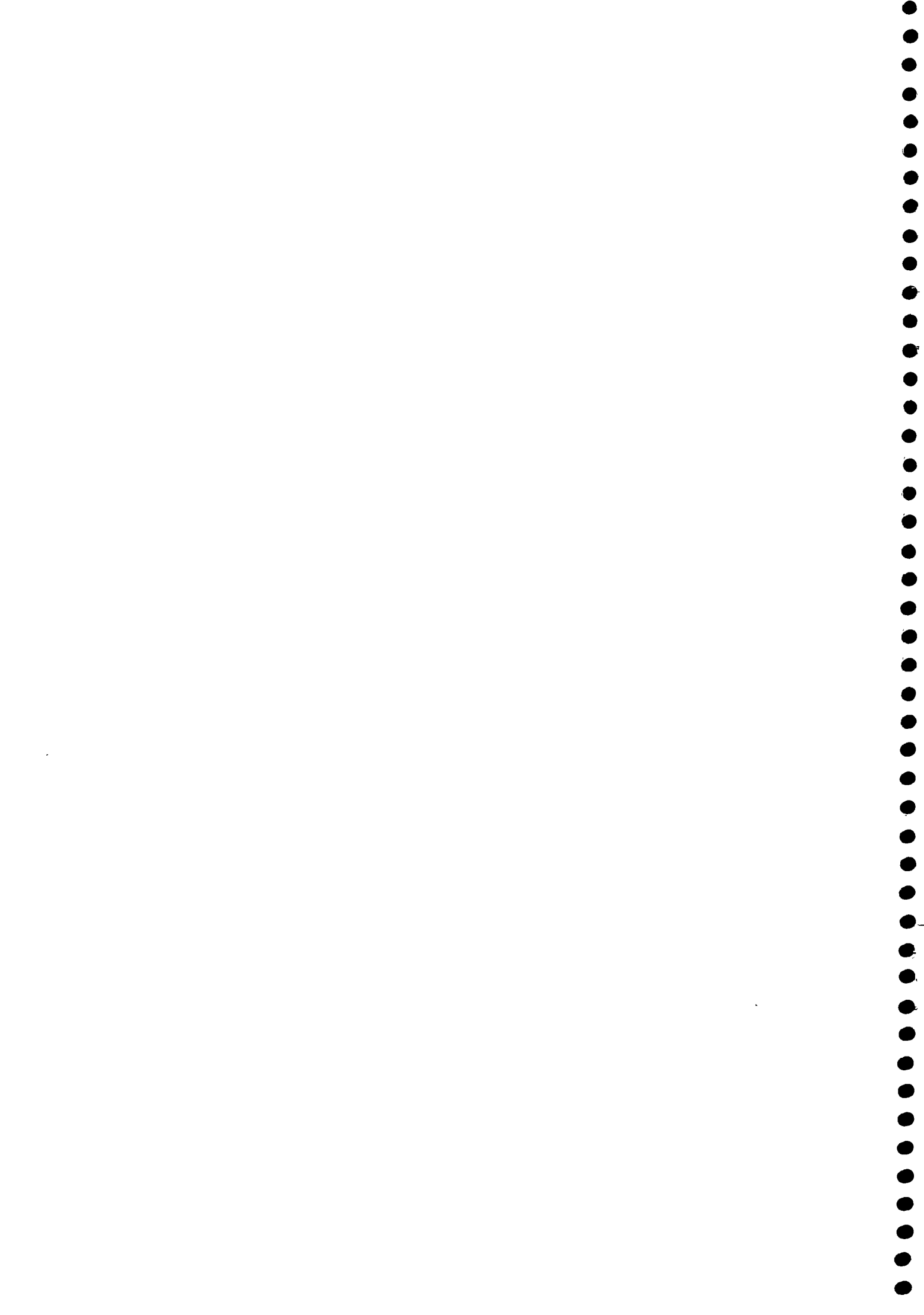
For instance, in Kalasur, where piped water supply is in operation, water is made available at scheduled times once a day. As such, it is essential for each household to collect sufficient water when supply is on. Many upper and middle class households have built large storage tanks of cement inside their houses which can hold up to 50 liters of water. During the interviews, a wealthy Lingayat respondent stated:

"We store water only once a day. We have 3 pairs of bullocks, 6 cattle and three household servants and our family makes up 10 members. For all these persons and animals and other purposes, we need sufficient water. The storage tank here holds only 30 to 40 "koda" of water. Come in, I will show you some more". He took us inside and showed the bathroom. Two huge copper containers each holding roughly 10 to 15 "koda" (pots) and another container of similar capacity for heating water for bathing were placed there. He then showed us the kitchen where he pointed to two stainless steel drums, each containing about 4 "koda" of water, and another seven copper vessels also filled with water. An old lady of the household noted that

"In spite of storing so much water, there won't be anything left by tomorrow. We have to wait till the water is supplied. If there is a failure in electricity supply, we have a tough time; then we go to the handpump for collecting drinking water and take our animals to the river".

In most of the richer households, comprehensive arrangements have been made to store a maximum quantity of water, which also indicates their high water requirement. However, in the Harijan colony of the same village, the contrast is quite marked. Almost all households in this colony live in small, thatched huts and have inadequate space for storing water. Further, poor as they are, Harijans by and large cannot afford to own luxuries. Families in this area possessed a few containers made of plastic or aluminium and one or two small vessels made of copper or bronze. The talks with them revealed that the containers cannot store the amount of water required for their daily use. This situation, it was told, had increased their dependency on handpumps and surface water sources. In view of this, it is crucial for them to achieve optimum time management.

Talks with some other respondents in the same regard disclosed that they would try to complete washing and cleaning activities as and when piped water is available. Due to lack of storing facilities, they are forced to use piped water to the maximum extent. But how do they actually manage?



Direct observations and discussions disclosed the following findings. Just before the onset of flow in the piped-water-scheme (which is normally at a pre-determined time), the clothes to be washed are soaked and vessels are cleaned and kept ready to be filled. When water starts flowing women, usually with the assistance of children, begin washing and collecting water. For about an hour (duration of water available), clothes are thoroughly washed, vessels cleaned and all efforts made to fill containers. However, invariably, because of limited container and storage capacity, also several trips to handpumps to collect water will be necessary.

In all sample villages, similar situations are observed. In scarcity villages, affluent households have sometimes taken piped connections from irrigation wells and also built storage tanks of larger capacity. Households without such connections often hire labourers to transport water. Similar practices are observed in brackish villages. However, always people of poorer households have to make several trips a day to meet their water requirements.

During the hot months, the storage practices differ somewhat from those of other periods. A majority of the households, irrespective of caste or economic status, stores water for drinking purposes in earthen pots so that it remains cool.

4.2.2 Cleaning and Keeping of Water Containers

The practices related to cleaning of vessels and other utensils do not vary much with socio-economic conditions. Almost all persons spoken with reported that they clean drinking water containers daily.

Further, a major portion of them said that they use either soil or ash as a cleaning agent, while some prefer jowar husk or flour. This refers particularly to wealthier households. Observations revealed that copper and bronze containers are cleaned invariably with tamarind paste. The paste is thoroughly rubbed on and then ash is brushed over the vessels. In homes, cleaned vessels are usually kept on an elevated platform made of stone slabs or mud.

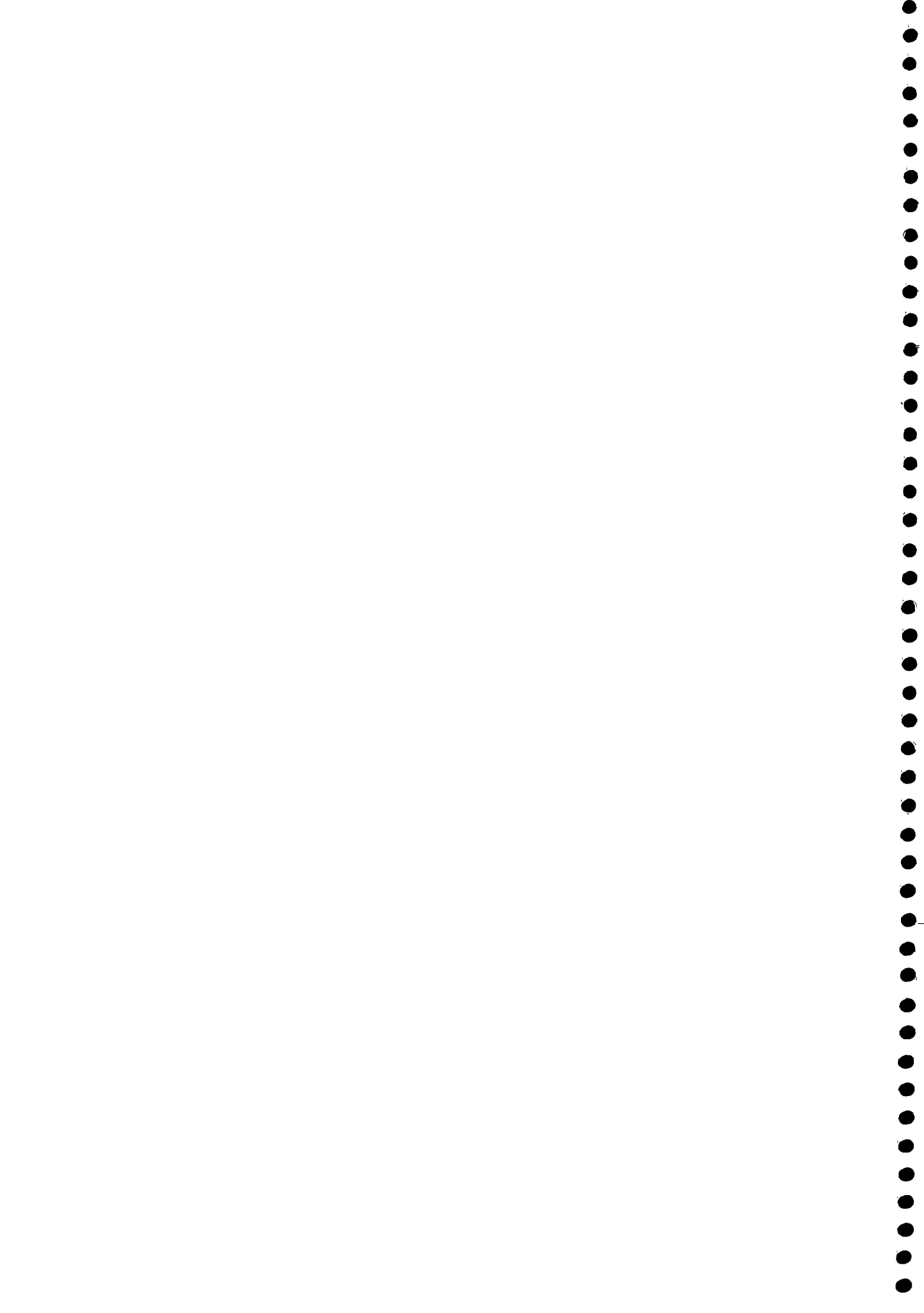
The drinking water containers are generally covered with a plate or earthen lid. While taking water, a dipper specifically kept for the purpose is used. The dipper, more often than not, is not dipped directly into the vessel but the vessel is tilted while drawing water.

4.3 Water Use and Gender

While agriculture is the major occupation of almost all households, the observations and discussions revealed the existence of a sharp division of labour between men and women cutting across caste and economic status.

Most of the household chores are carried out by women with very little or no help from their male counterparts. In addition, women contribute significantly in a variety of agricultural operations. While ploughing is exclusive the task of men, women are engaged in such operations as weeding, transplanting, harvesting and post-harvest processing. Women from poor households also work for wages on others' lands. Women from the better-off sections mostly work on their own land only.

With regard to care of cattle, men are solely in charge of bullocks and other draught animals, for bathing and feeding them, while women tend cows and buffaloes. Another important task almost solely carried out by women is fetching fuel. For those who own land, the major types of fuel include crop residues, twigs and tops, whereas women belonging to landless households have to walk long distances to gather dead wood from scrub lands and similar places. With increasing deforestation, lack of adequate fuel has become an important problem for the poor.



Generally, there is a widespread belief that fetching water is solely carried out by women. While this may be true in many cases, there are variations depending on the nature and extent of the water problems faced. In this regard, the study disclosed the absence of uniformity in women's roles between the villages covered and even within villages between different castes and classes. It is observed that men make significant contributions in fetching water for their families in certain specific caste and class categories under particular circumstances. This situation emanates from a variety of factors and conditions.

The talks with various groups of respondents make clear that women's participation in fetching water is greatly influenced by

- a. the distance to source and
- b. the conditions at the source

Further, the economic status of the households is found to influence the apportioning of roles in fetching water. By and large, men belonging to middle class households actively participate in fetching water, while those of the affluent as well as of the poor families have little or no role in this activity. The affluent households hire labourers to fetch water and invariably these belong to poor families in the village, who then obviously cannot take part in water fetching activities related to their own households any more. Besides this economic dimension, another factor, chiefly gender-based, is that only when water fetching is felt as a very hard task men enter the scene. For instance, when the water source is felt to be too far (especially in scarcity villages during dry season) or when the work involves drawing of water from a deep open well or requires to negotiate steep banks of a tank or river. Under such circumstances, the men from affluent and middle households tend to protect their women from taking risks.

In summary, it can be concluded that

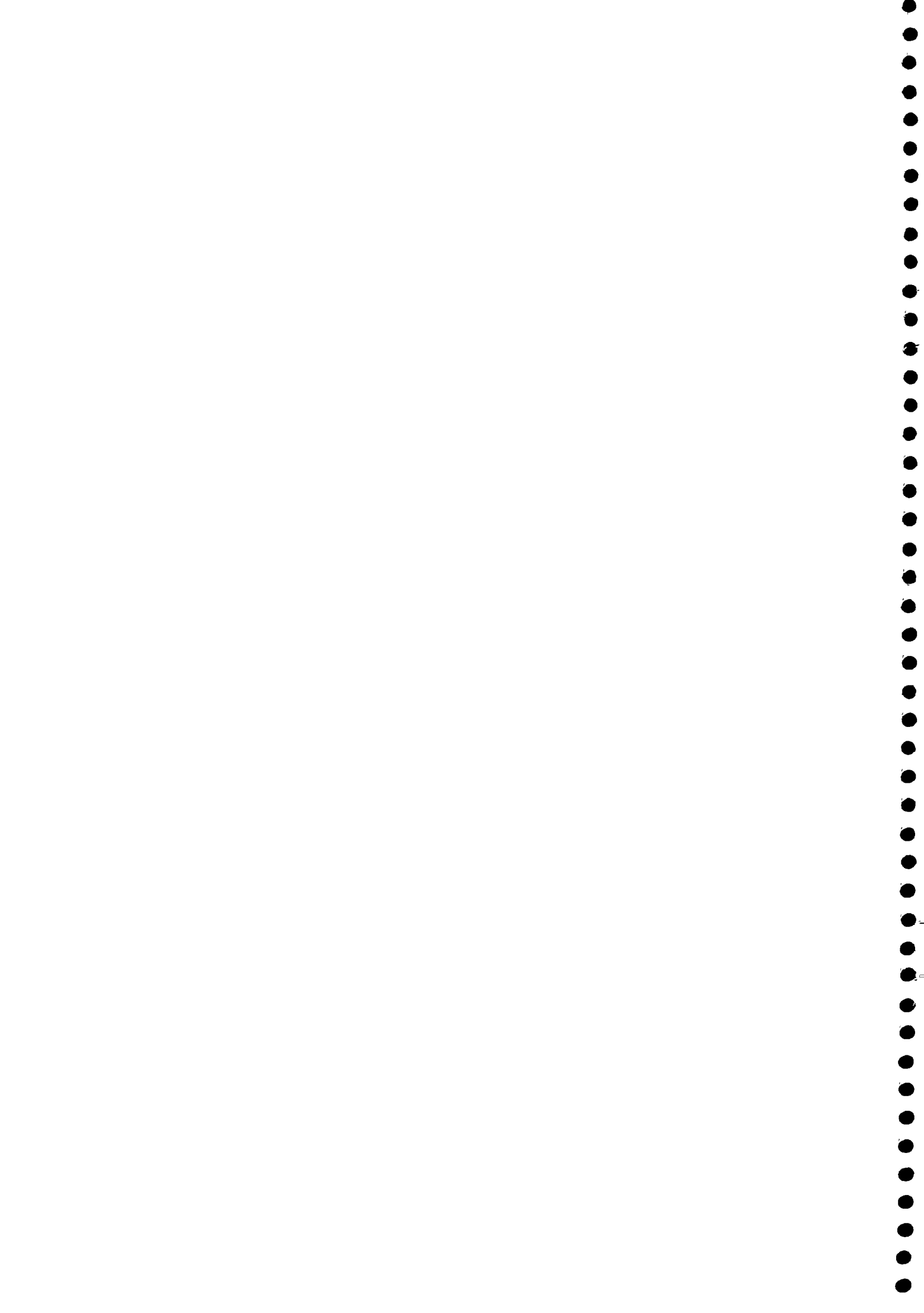
- in affluent households, water fetching is arranged for by hiring labourers; women are only occasionally involved and men play an insignificant role
- in middle class households, water fetching is regularly shared by men and women, depending on physical circumstances of distance and accessibility
- in poor households, women fetch water for the own households while men involve in fetching for the affluent households as paid labourers

However, there are exceptions. E.g. in Aladakatti, during a meeting in the Harijan colony, many respondents reported that women are the sole providers of water for the family, regardless of distance to source, difficulty in procuring and other aspects. The conversations, sometimes at individual level and sometimes at group level, evoked interesting responses at times beyond the mere issue of fetching water. An old woman said

"Our men work hard on the fields. When do they have time and energy to help us?"

When the fact that women also work on the fields came to discussion, some quietly observing men reacted. One of them said. *"We leave our homes at 7 a.m. and do hard labour such as ploughing and the like, while our women folk join us at 9.30 or 10.00 in the morning and explain that they had domestic work to do. In our caste, domestic work is the job of a woman and we men do not involve in such work".*

At this, an angry old woman shouted to the speaker *"Yes! Yes! You men are only there to beat your wives and make us work like donkeys!"*



In the baseline survey, the shares of household members in water fetching were found to be as shown in Table 4.3-1. The baseline survey findings match quite well with the observations of the in-depth study. Some particular village situations are further described below. The pictorial on page 4-7 shows by approximation the shares in water fetching of men and women, by population category.

District and Category	Dharwad				Bijapur		
	Scarcity	Brackish	Fluoride	Average	Scarcity	Brackish	Average
Adult males	32	49	27	39	41	50	48
Adult females	28	31	45	32	41	33	35
Both	23	10	18	17	9	10	10
Children	8	5	9	7	4	4	4
Adults & Children	9	5	-	7	5	3	3

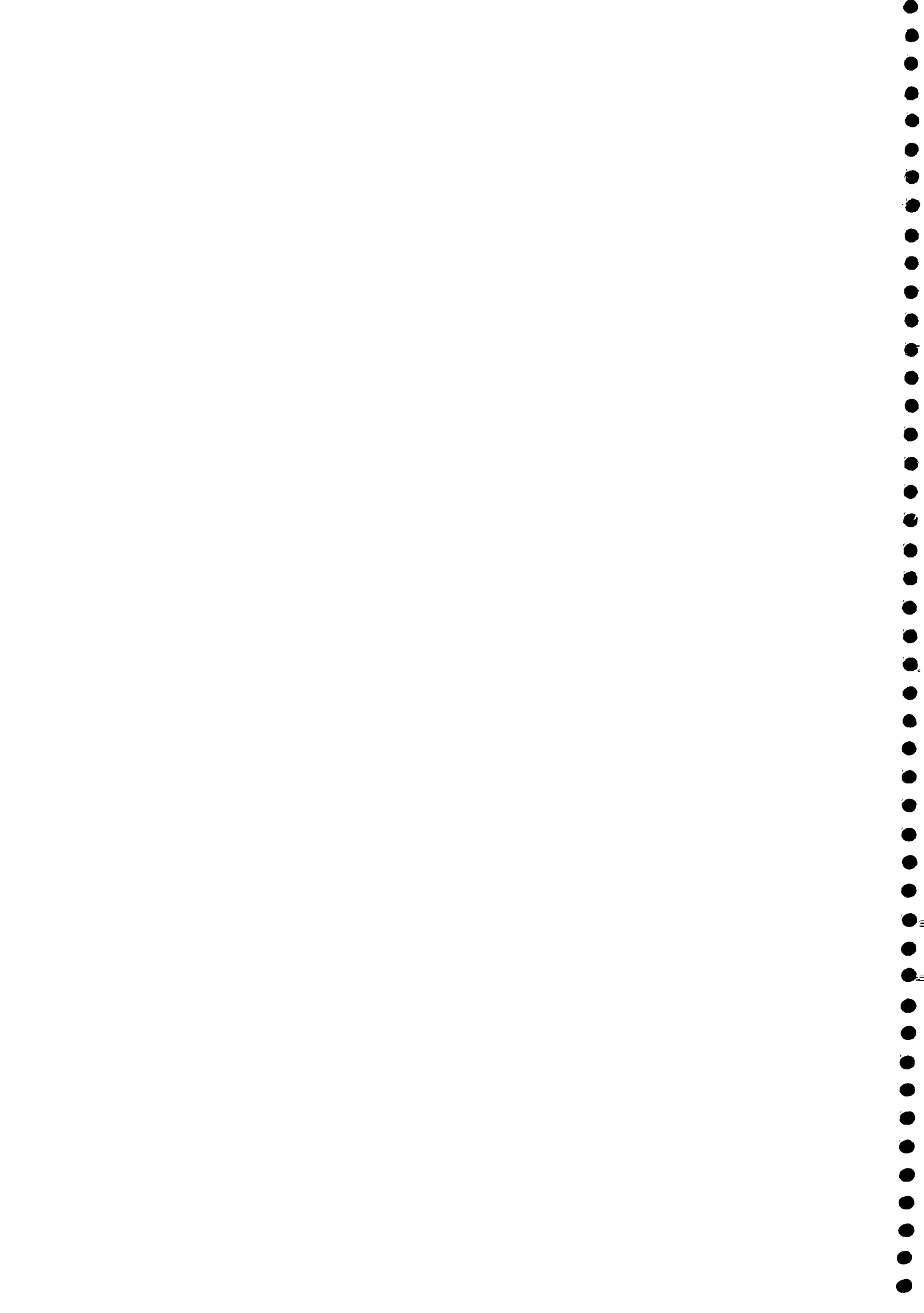
Table 4.3-1: Share of Household Members in Water Fetching, by District and Category of Village, in Percentages

In Yerinarayanapura, where the tank bund is quite steep and slippery, women of relatively affluent families do not fetch water and the task is entirely taken up by men in the wet season. However, when the tank bund is dry, women from these households do fetch water. *"Whatever may be our problems, we have to get enough water for home in the morning and only then do we attend to other works"*. Among very rich households, the task of fetching water is almost always carried out by hired male labourers. In contrast with these two categories, fetching water among the poor households is the women's domain regardless of conditions.

In Churchihalla, where an open well is the major water source, men of high caste and better-off households take active part in drawing water, while the Harijans solely depend on handpumps regardless of their location. Further, Harijan men do not consider fetching water as their job. When Lingayat men were asked why do they fetch water, they said that drawing water from the open well is a difficult task and women cannot do it, whereas they consider the job with handpumps as easy. *"Moreover, women have a lot of work at home. If we provide them some water before we leave for the fields they are happy and will be able to cook well, which is good for us"*.

Fetching water in the scarcity villages, where distances are long, follows a somewhat different pattern. Affluent households have pipelines drawn to their houses from irrigation borewells. Households without pipelines, however, collect water in barrels and transport it by tractor. The arrangement is entirely on the basis of mutual understanding and cooperation. Among families which are less affluent, men carry water on bicycles or bullock carts and sometimes even on borrowed tractors. However, for the poor households, such facilities are hard to come by and thus, invariably, women physically carry water on their heads or hips, often walking long distances.

Some broad conclusions from the above. Firstly, households of higher socio-economic status are distinctly at an advantage. Secondly, the notion of what is a convenient or a difficult source of water varies by type of source, e.g. a handpump is considered an easy source in one village and in another it is considered a difficult one. Sometimes, pumping water from a handpump is even considered dangerous to women's health. Thirdly, men from higher castes and better economic status appear more cooperative to their women compared to men of lower caste and poorer standing.



HC = High caste
 MC = Middle caste
 LC = Low caste
 M = Muslims
 Capacity
 1 Pot = 10 to 12 liters

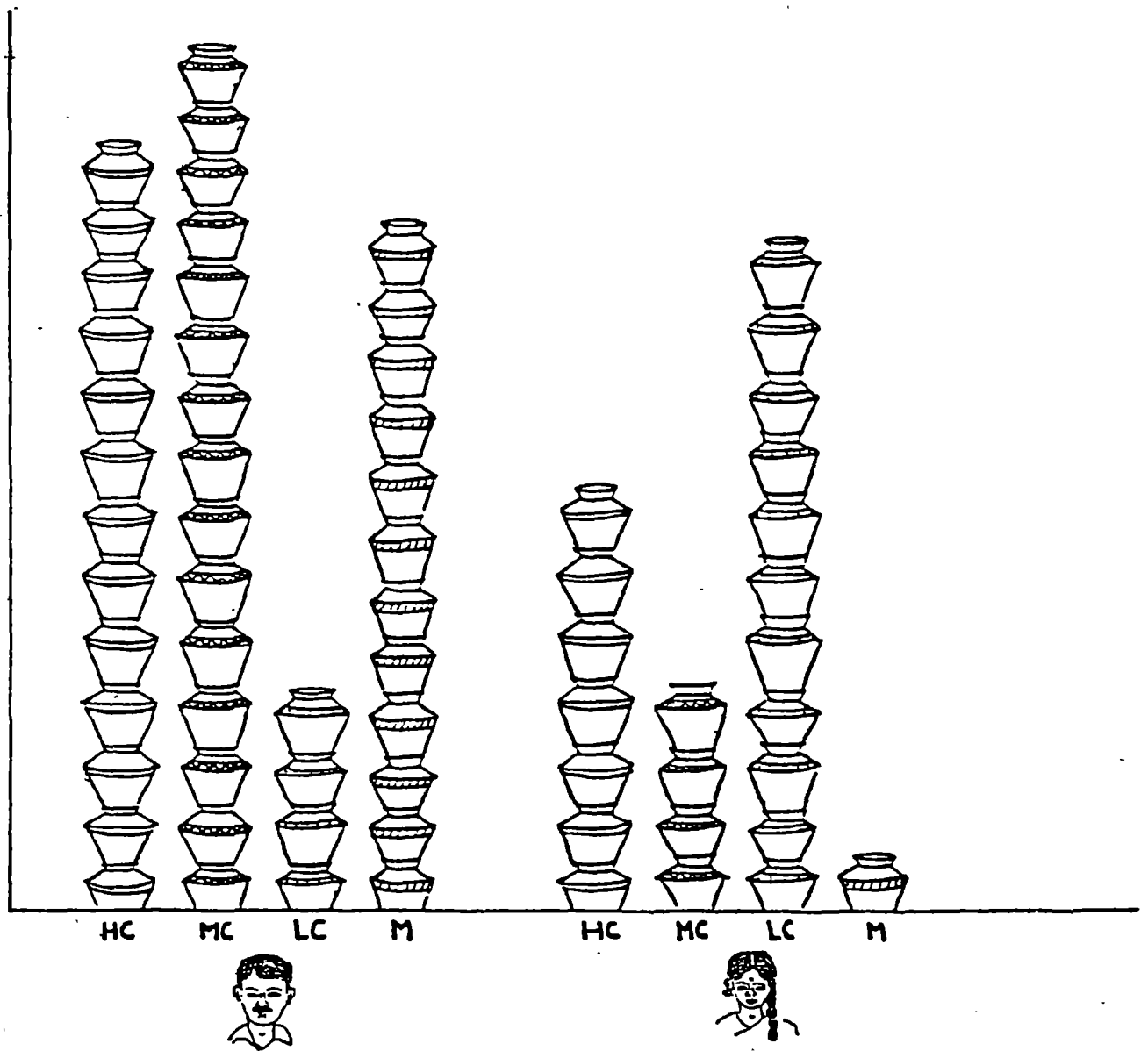
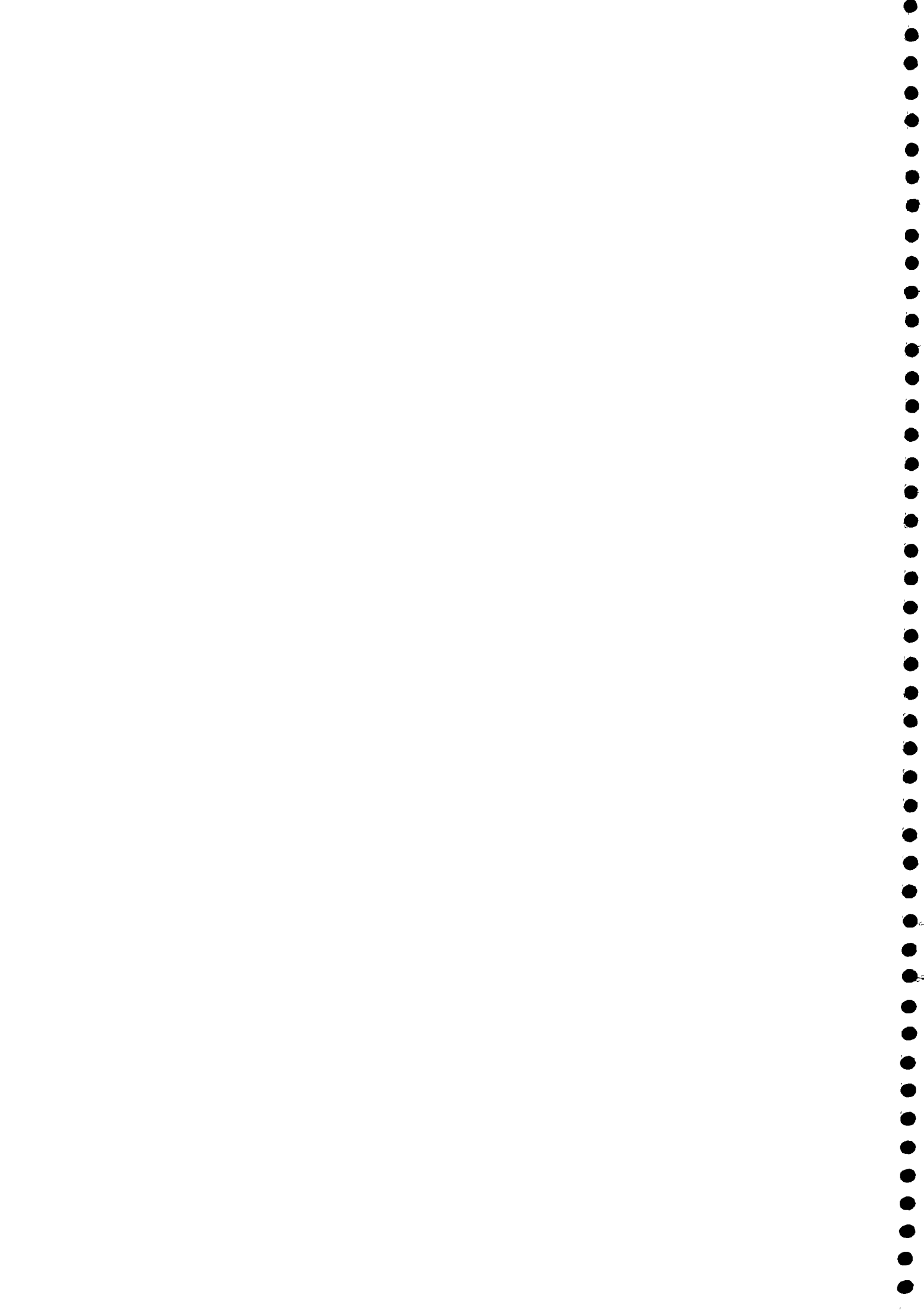


Fig 4.3-1 Approximate numbers of water containers fetched by adult men and women daily, by population category



4.4 General Aspects of Environmental Sanitation

This paragraph describes findings with respect to the general sanitary conditions existing in the sample villages. It is important to note here, that factors governing practices and behaviour regarding sanitation not only stem from environmental and physical aspects; also the social and cultural background is determining.

Thus, practices related to personal hygiene, environmental cleanliness, housing conditions and maintenance, care and protection of cattle and other domestic animals, disposal of household refuse, defecation and ablution and the like portray a distinct caste and economic orientation. Possibly, these practices have over time undergone significant alterations due mainly to the changing environment and differences in availability and access to water. Nevertheless, caste and economic background appear to wield tremendous influence on the personal hygiene practices of the people and the availability of different facilities by and large.

4.4.1 Disposal of Household Refuse

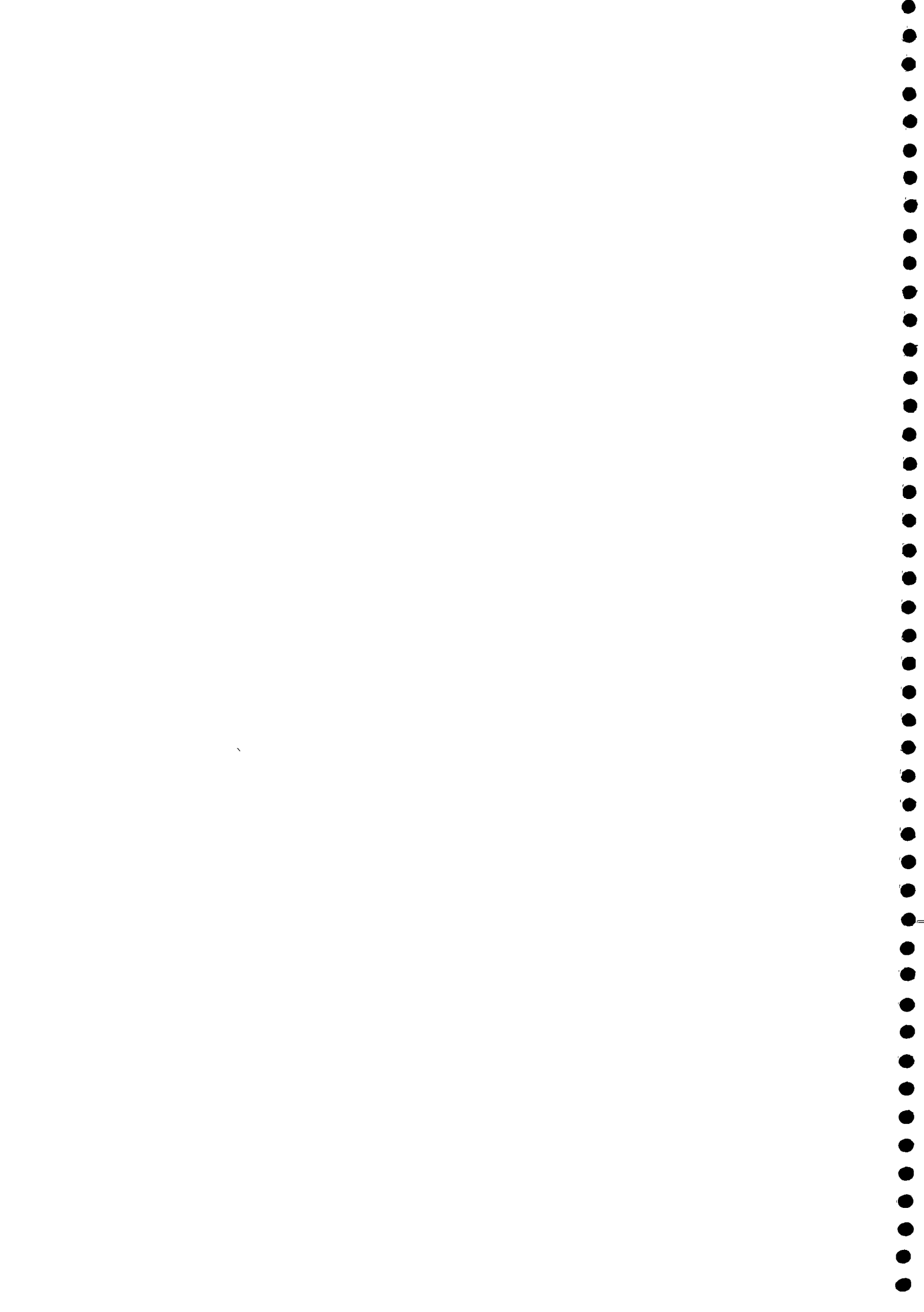
The modes of disposal of household refuse are more or less similar in the villages. This applies even within villages across socio-economic boundaries. The housing pattern in all villages appears to be uniform. Typically, the centres of the villages happen to be the original settlement area; they often present a congested picture with houses closely packed together without adequate space and proper planning. The traditional social stratification is reflected in the housing pattern. People belonging to distinct caste groups live in clearly identified lanes and streets, resulting in a compartmentalized settlement pattern.

Further, the housing pattern also in a way reflects the social power structure of the village with high caste households located in the centre and others households towards the periphery. The scheduled castes live in the outermost circle of the village. Congested as the villages are, lanes and streets are most often narrow pathways only wide enough for one person to pass through. Regularly, lanes and streets are impassable because of household wastes including used water which are left to settle where thrown. The situation is compounded during the rainy season when household dirt and other refuse combines with rainwater to form numerous pools and puddles, creating problems of inconvenience and more importantly health hazards.

Another characteristic feature of part of the villages is the presence of black cotton soil which, during rains, becomes very muddy often making it impossible for bullock carts and other vehicles to move. It is common during the rainy season to find bullock carts stuck in lanes. By and large, there is total absence of drainage facilities inside houses but also in public places. Further, many houses do not possess a proper place for washing household utensils, clothes and cattle. Used water is allowed to flow onto lanes freely.

The worst situations in this regard are found in the Harijan colonies. With poorly built mud houses or thatched huts, the people here often face the problem of flooding during the rainy season. Rain water leaking through roofs adds to the untold misery of the occupants. The houses or huts are built without much space between each other and have no backyard. Thus, all washing and cleaning is done in front of them or near water-points such as handpumps. E.g. at Sangapura, it was observed that women wash clothes and kitchen utensils on the handpump platform. When asked why they were working there, one of them said,

"Where else can I go? We have the choice between either carrying water all the way to our homes and wash in the frontyard or do the same work here. As you have seen, this wastewater stagnates in front of the house and further it runs into my neighbour's house and why should they tolerate? So they start fighting. I don't like to mess up the surroundings of my neighbourhood. So the best place I find is the handpump. It is a government property. Nobody can ask why we work here. Moreover, it is easy to wash here and there are no washing places or drains in this village. What is to be done?"



It is a common sight to see children being bathed on roadsides. Further, washing of hands and feet by other family members is carried out in front of the houses indicating the need for washing and bathing spaces.

4.4.2 Disposal of Animal and Farm Residues

Animal wastes mainly in the form of dung as well as crop residues are extensively used as organic manure for agricultural purposes. Further, crop residues in the form of hay are a major fodder for cattle, while twigs, dried lops and tops and dead leaves are used as fuel by almost all households regardless of their socio-economic status.

The most common practice of stocking organic manure is the compost pit, normally located on the household fringe. Cattle droppings are meticulously collected mostly by women and children and dumped on the compost. The manure thus obtained is transported to the fields when needed. Besides for manuring purposes, cattle dung is also used as household fuel in the form of dung cakes.

Further, with the advent of governmental programmes of introducing gobar gas plants, cattle dung is also used as raw material for generating bio-gas. However, such plants are affordable to affluent households only. In addition, cattle dung is an important ingredient for cleaning the interior of houses. A thick solution of dung is dabbed over floors and walls and allowed to dry up.

4.4.3 Defecation and Ablution

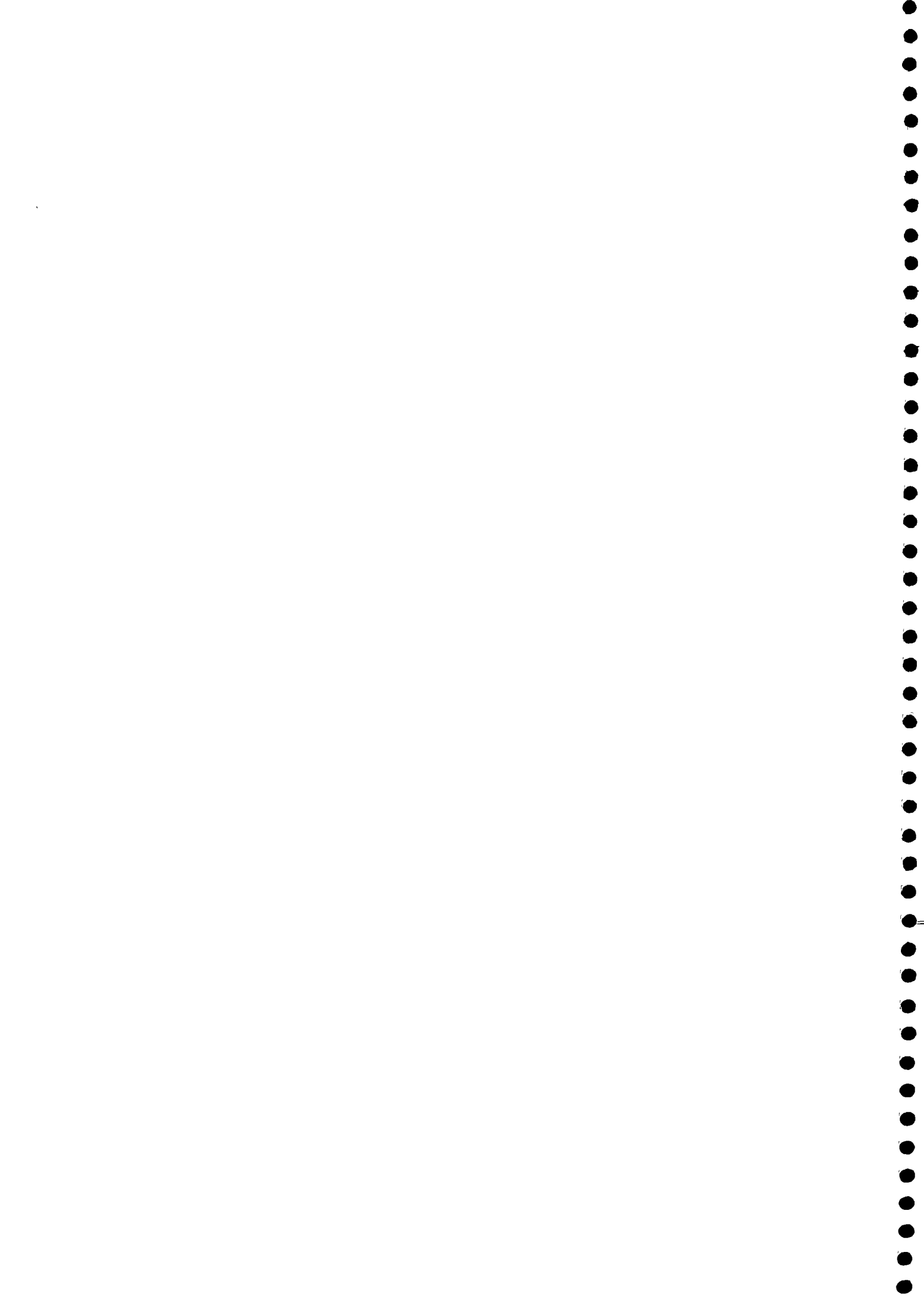
All over the project districts, the concept of defecation in a closed space meets consternation. When questioned, almost all villagers said that they use open space for defecation. Areas for open defecation comprise roadsides, agricultural fields, open spaces around villages and other available places. Only few households have a latrine usually in the backyard.

Public latrines found in some villages are mostly neglected by the people as well as the concerned officials. In some villages of the Bijapur District, special public latrines for exclusive use by women and consisting of an enclosure with drop holes exist. These facilities are also not well maintained and the faecal matter is often devoured by stray dogs and pigs. By and large, programmes of building public latrines appear to have failed. The general feeling regardless of status - social, economic and political - is that *"though people do not like latrines, yet there are programmes of building them"*.

By far, open defecation is found to be the most preferred method of defecation. As mentioned earlier, the places of defecation include any available public space including roadsides. The distances covered by people to reach these places vary due to several factors, such as location of their house, gender, etc. However, talks revealed that as far as women are concerned certain norms are followed. In most of the villages, certain areas are earmarked specially for women for the purpose of defecation and usually men avoid entering such areas. Also male respondents often show concern about the need for privacy for women during defecation, but despite such concern it is observed that, where e.g. compost pits are located in the said areas, men go there to dump cattle dung and thereby disturb women.

Special water containers, usually placed outside the house, are used exclusively for ablution. These containers are cleaned either twice or thrice a week.

Why do people prefer open defecation to using a latrine? The main reason appears to be lack of awareness. Further, lack of water and space are also reported. In this light, it would be of interest to find out what the villagers think about alternatives to open defecation.



Detailed and probing discussions led to the conclusion that the majority is not exposed to the idea of having a latrine or any other facility which would involve a change in their present practices. Moreover, a majority of the people questioned plainly said that it had not occurred to their minds that there can be different types of latrines too.

In the scarcity villages, the prime felt need is water and other needs are considered non-issues. People say *"solve our water problem first and only then will we talk of other things"*. Thus, sanitation receives low priority. When asked about what they need in terms of sanitation, drainage provisions are reported first by many respondents. Latrines hardly figure in the list of needs.

Discussions with a cross-section of villagers revealed that the need for latrines is hardly ever thought of. Even among affluent households with large houses with several rooms, a spacious backyard and abundant water, latrines are not available and the household members use open space for defecation. When asked why they have no latrines despite the availability of space, water and funds, the respondents plainly admitted that they had not thought of it. As one rich person from Sangapura said when asked why he had not built a latrine.

"Well, we have not thought of it! Since our ancestors time, it is going on like this. You know, we are villagers, we do not mind. Now, that you mention it, I am actually thinking of having one. May be, it is good for our womenfolk".

In Kalasur, however, some upper and middle class households possessed individual latrines. Respondents from among them said that latrines are quite convenient. They found that owning a latrine is a symbol of higher status in the community. Talks with women respondents revealed how they considered themselves different from others. As one of them said

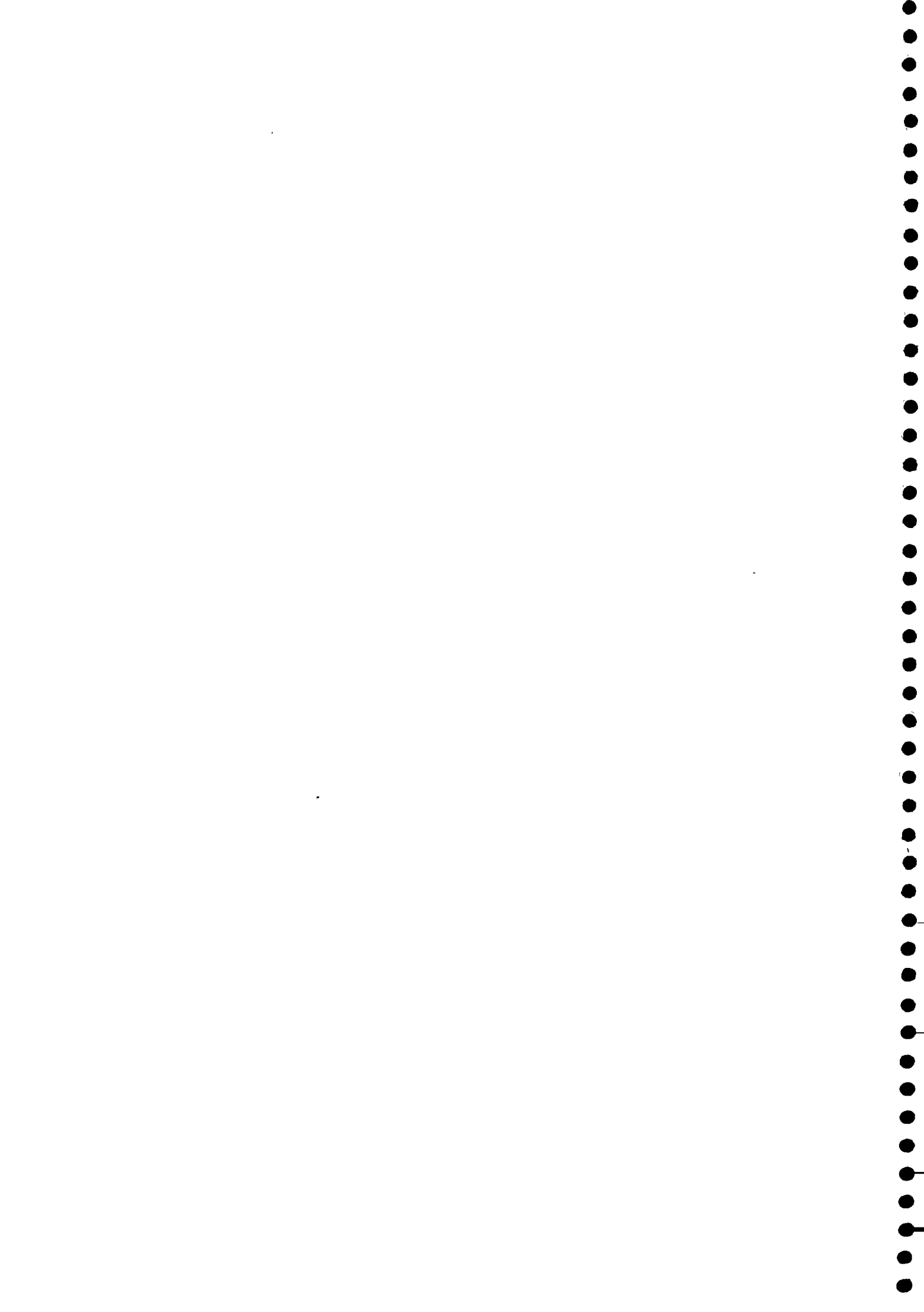
"We are from a good family. We cannot live like those women of the scheduled caste, who go anywhere without modesty. We are not like them. Our men do not permit us to go astray like other women. We are clean people and we keep our homes, children and surroundings clean. And having toilet is a part of our clean habits and hygiene practices".

The conversations in the Harijan colony of the same village presented an altogether different picture. Women there explained plainly the difficulties encountered including lack of time, space, water, funds and the like in building a latrine. Most women said that owning a latrine is a luxury. Their responses reflect realism in the context of their socio-economic conditions.

One of the respondents pulled a team member into her hut and said *"This is all the space I have. Tell me how can I build a latrine"*. The hut measured about 6 feet by 5 feet with a height of about 5 feet. Further, a 3 feet high wall enclosed a small space of 2 feet by 3 feet which was the kitchen. The respondent continued *"Where do you think I should have a latrine? Do we have a backyard or side space or a frontyard? Moreover, we live a hand-to-mouth existence. Where is the money to undertake the construction?"*

Another woman asked *"Sister, my employer (a rich Reddy household) tells me that a latrine costs Rs. 2,000.-, Is it true?"* An old woman sitting in the corner *"Have you seen Rs. 2000.- at a time in your life?"* When asked whether they had any problem with open defecation, the chorus ensued *"Yes! Yes!"* One woman said *"Because we have problems, do you think we can stock faeces in our stomach?"*.

By and large, Harijan women are generally frank and analytical in their assertions! They clearly report their problems with regard to owning an individual household latrine. At the same time, they are very keen on having other facilities. Their first preference from among environmental sanitation issues concerns lane paving and drainage. In Kalasur, the Harijan colony is slightly away from the main village. During the team's visit, due to heavy rains, the road leading to the colony was almost impassable due to flooding. Harijan youth, who attended the introductory



meeting, insisted that the team should witness their road problem personally. They made them to walk on that road. The team could only reach the colony with great difficulty. The road was extremely slippery. After the team reached the colony, the youth apologised for making them to go through and said *"We were firm on getting you here to show you our problem, because you mentioned in your introductory talk that you have come to attend people's problems. In the history of this village, all development people only visited the other side of the village where important people live, I mean high caste, economically and politically powerful! Our settlement is almost non-existent for them"*.

4.5 Summary of Findings

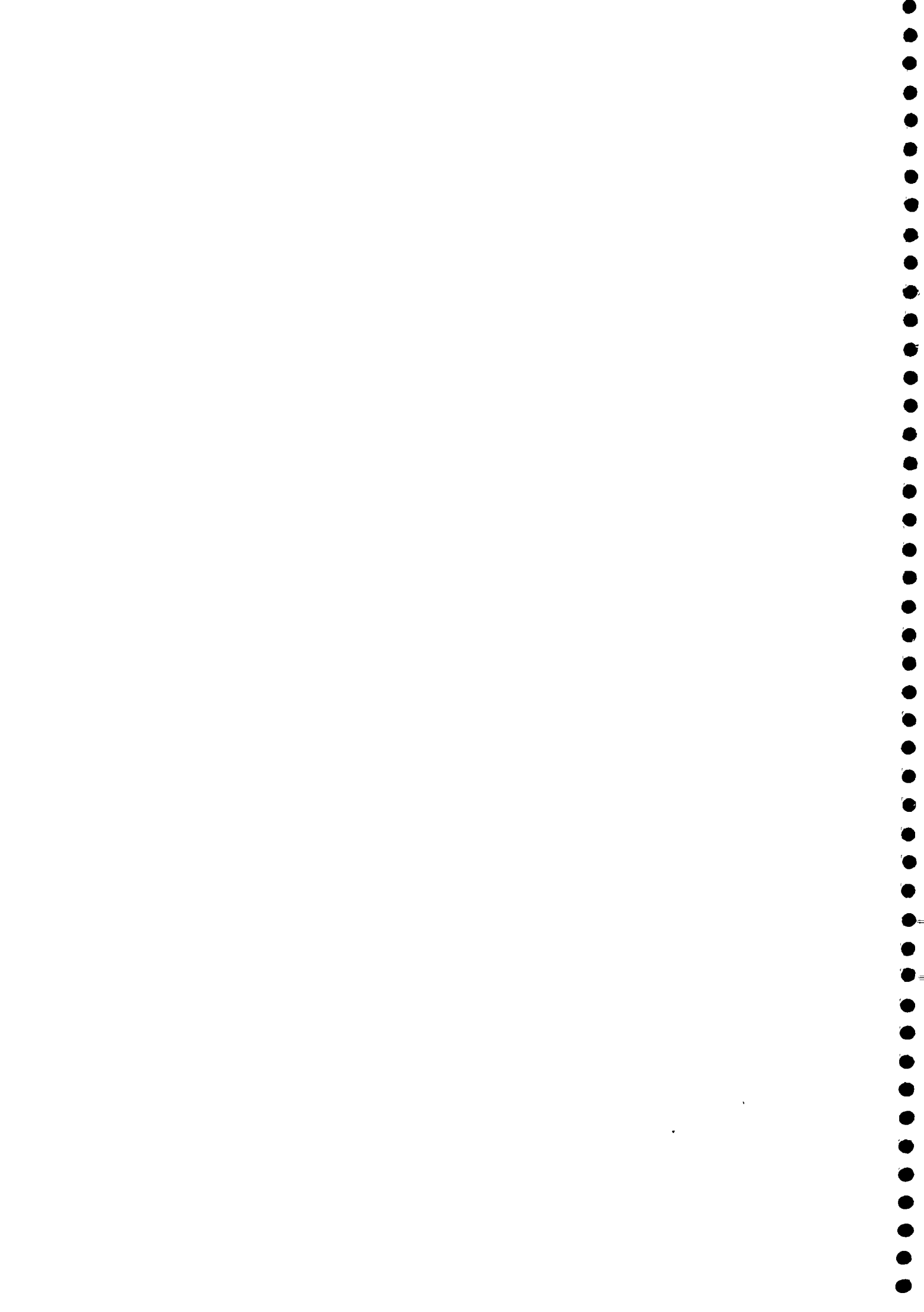
In summary, the following points may be highlighted from the foregoing:

regarding water supply:

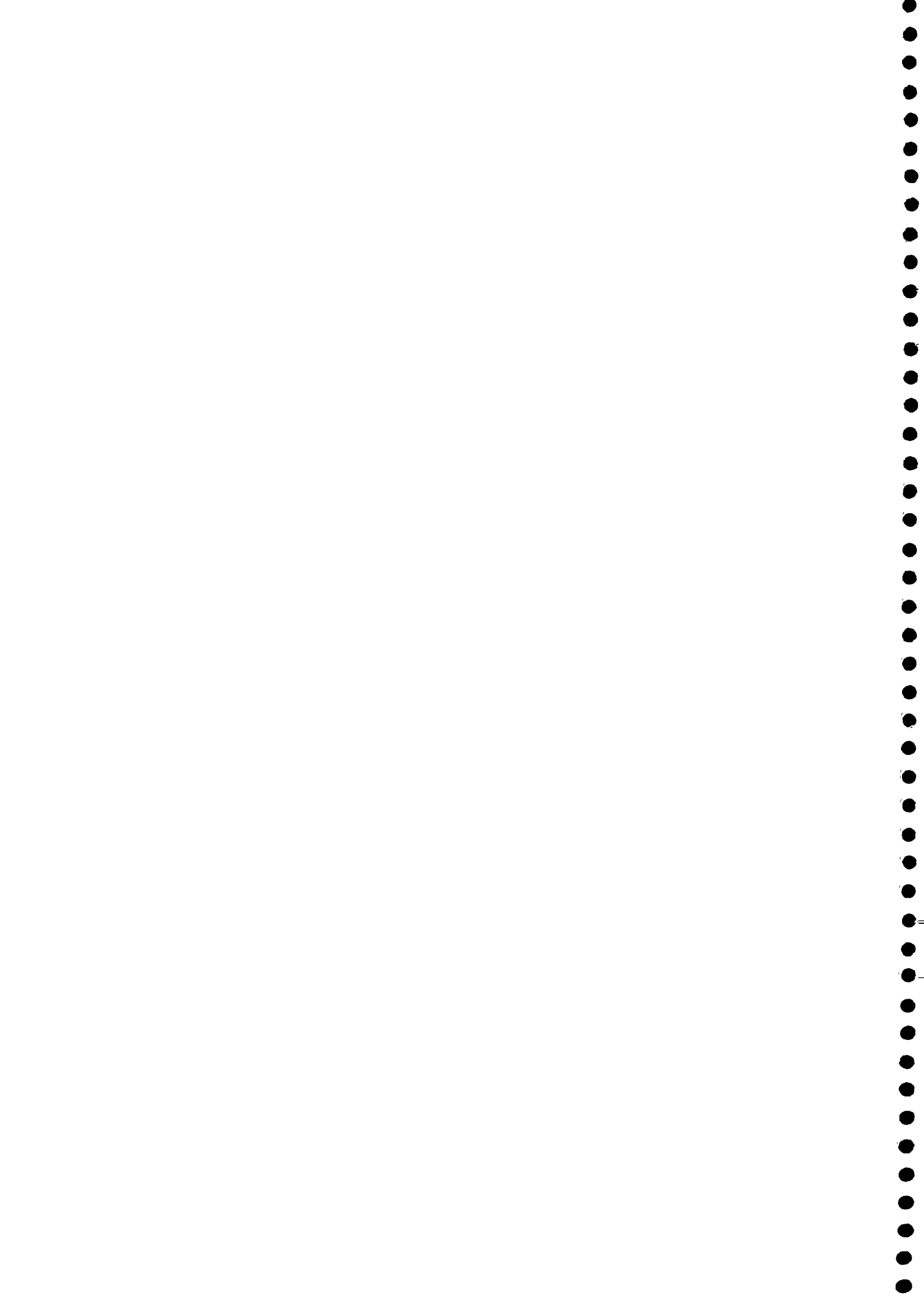
- the quantity of water required is about 40 to 50 lpcd; most is used for cooking and drinking, washing and bathing as well as washing household utensils and clothes
- across the different sections of the communities, water use by upper class and affluent households is higher than of the others
- generally, perceptions of what is clean, pure or contaminated are observed, when collecting and using drinking water, regardless of caste and economic background; however, social distance is maintained between caste groups
- water storage practices vary with socio-economic status; the capacity to store water is lower among poor and scheduled castes compared to others; this in a way has increased their dependency on handpumps and surface water sources
- men are at least equal partners in water fetching, against the popular belief that women are the sole providers; the reasons for this appear that
 - a) wherever water is to be carried over long distances or water fetching is felt to be a hard task due to inaccessibility of the source, men take increased responsibility to protect their women from taking risks
 - b) while women carry a maximum of 2 containers of water at a time, men transport simultaneously up to 10 containers or even more depending on whether they use bicycles, trollies or carts
- variations are also observed across the communities with regard to the role of men and women in fetching water; in forward caste affluent households, the responsibility is mainly borne by men of the family or by hired labour, whereas in poor families and scheduled caste households, the responsibility is vested with the women

regarding environmental sanitation

- practices related to cleaning of vessels and utensils do not vary much across communities; variation is observed only in terms of agents used for cleaning purposes
- no specific practice as such is being followed for the disposal of household refuse; quite often, household waste and used water is left to settle on roads and lanes; the situation is most worse in Harijan colonies where there are no bathing, washing and cleaning facilities



- the use of lanes and handpump platforms for washing, cleaning and bathing purposes results in the formation of pools and puddles of stagnant water, but also points towards the need for washing and bathing places
- irrespective of position in the socio-economic hierarchy, animal and farm residue is by and large used as organic manure by the villagers
- drainage is a common problem in all villages, especially in the rainy season; villages with mini-/or piped - water- schemes, but without proper drainage arrangements around taps and standposts, often have added problems; almost all villagers consider drainage essential
- no variation - with few exceptions - as such is observed across groups and classes with regard to defecation and ablution practices; by and large, open space is used for defecation
- lack of awareness and space as well as funds have inevitably removed latrine construction from the list of priorities of most villagers; as such, latrines are not considered a priority anywhere; there are instances, however, where women express a need for a latrine for reasons of privacy, provided that adequate water supply exists.



5. PROBLEMS AND FELT NEEDS RELATED TO WATER SUPPLY

The situation regarding water supply varies from village to village. Examination of the existing conditions reveals that the quantity and the quality of water available significantly differ by village and by season. The variations result from among others source yield, method of distribution and maintenance conditions of the facilities.

5.1 Water Sources and Distribution

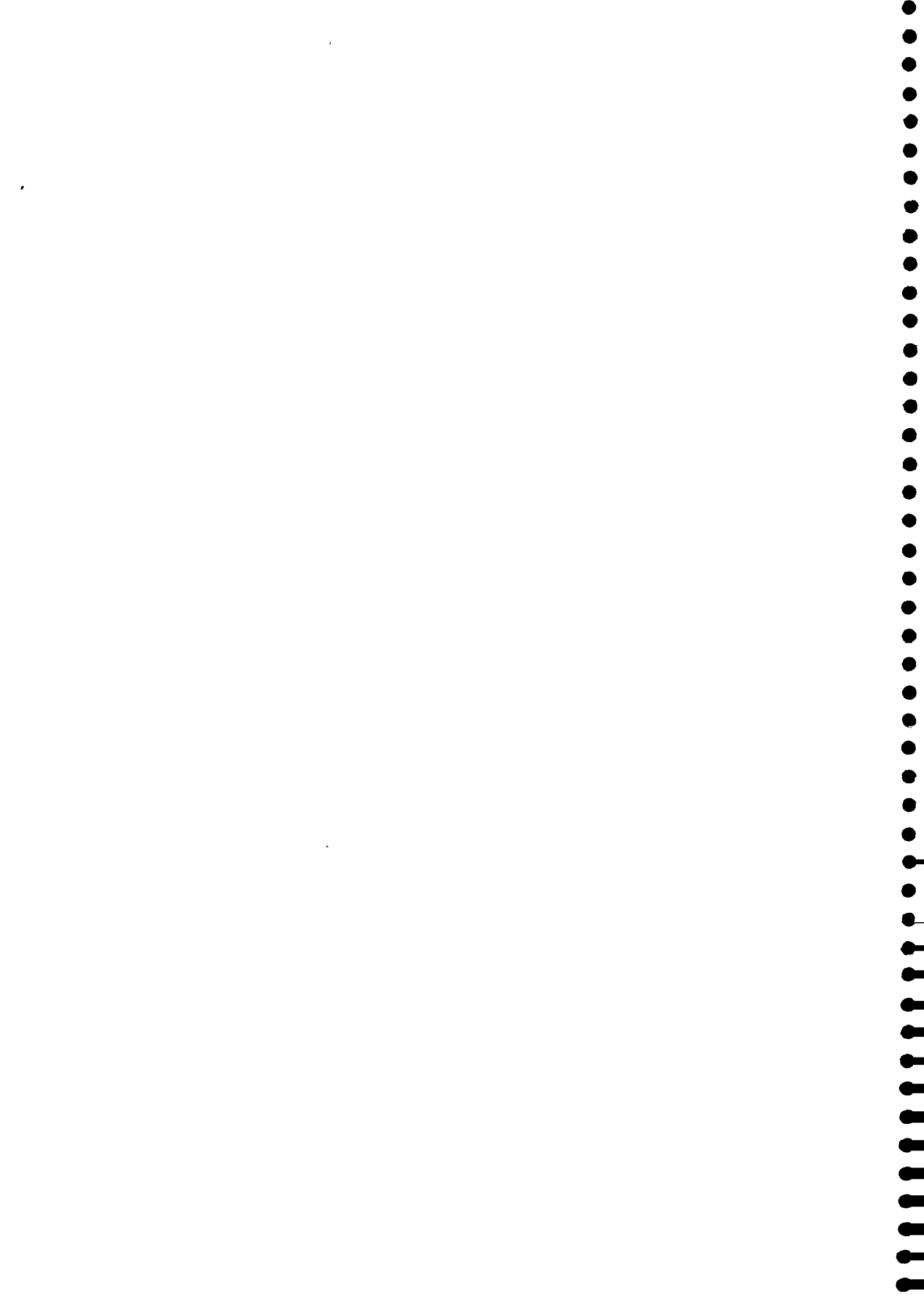
Each of the eight sample villages is unique with respect to source of water, with variation from surface sources such as streams, rivers and tanks to groundwater sources like open wells and borewells. Though most villages have at least one surface source, populations nevertheless depend most of the year on groundwater, except where brackish. Table 5.1-1 shows details of the water sources by village. The table also shows that many of the borewells with handpumps are not working. In the pictorial on page 5-2, the dependency of the village populations on different water sources is shown percentagewise, by season and category of village.

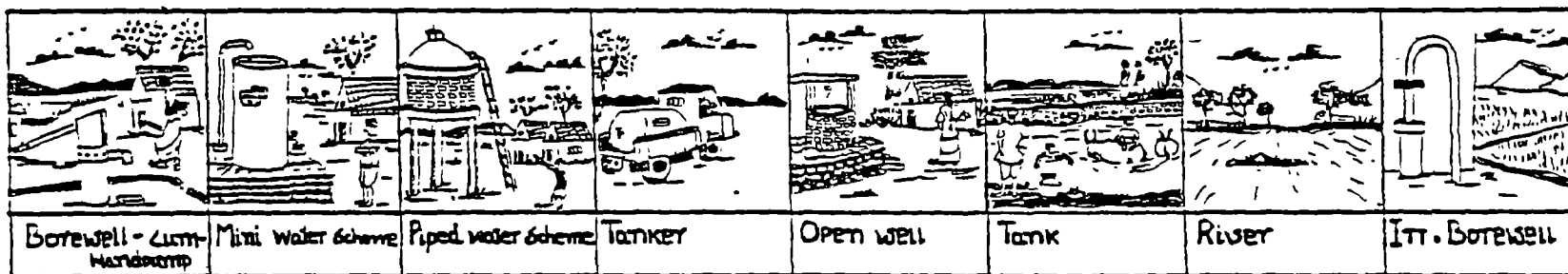
Village Name	Handpump (Working)	Handpump (Not-working)	Mini-Water Scheme	Piped-Water-Scheme	Open Well	Other Sources
<u>Scarcity</u>						
Aladakatti	3	6	-	-	-	River
Antaravalli	1	9	1	-	-	Tank, River
Chillur	3	2	-	-	-	Tank
Sangapura	6	1	-	-	1	-
<u>Brackish</u>						
Yerinarayanapura	3	2	1	-	-	Tank, Tanker
Jeergal	3	-	1	-	-	River
<u>Fluoride</u>						
Churchihalla	2	4	-	-	1	Tank
<u>Control</u>						
Kalasur	2	7	-	1	-	River
Total	23	31	3	1	2	-

Table 5.1-1 Available Water Sources/Supply Facilities, by Village

5.1.1 Situation in the Scarcity Villages

Scarcity villages do not only suffer from scarcity. The fact that many handpumps installed on borewells do not work aggravates problems in villages like Alladakatti, Antaravalli, Chillur and Sangapura. For the example of Antaravalli, only one out of the 10 borewells with handpumps was yielding some water at the time of the in-depth study. At the same time, the cisterns of the mini-water-scheme were empty due to leakage in the supplying pipeline and low yield of the borewell. The problem becomes most acute - as noted by a mandal panchayat member - during the dry season and people have to walk long distances to fetch water for which children are kept out of school sometimes.





TYPE OF VILLAGES	SEASON															
	WET	DRY	WET	DRY	WET	DRY	WET	DRY	WET	DRY	WET	DRY	WET	DRY	WET	DRY
Scarcity	38%	40%	20%	20%	not available	not applicable	8%	0%	34%	0%	not used	0%	40%			
Brackish	not used		10%	50%	not available	0%	45%	not available	45%	0%	45%	5%	not available			
Fluoride	35%	80%	not available	not available	not applicable	60%	20%	5%	0%	not available	not available					
Control	10%	20%	not available	60%	80%	not applicable	not available	not available	30%	0%	not used					

FIGURE 5 - 1

DEPENDENCY OF VILLAGE POPULATIONS ON DIFFERENT WATER SOURCES
 BY SEASON AND CATEGORY OF VILLAGE
 (in percentages)



A more or less similar situation prevailed at the time of the study in the other scarcity villages. As the table points out, also in Aladakatti and Chillur many borewells with handpumps do not function. Yields generally dwindle during the hot, dry months March to May.

5.1.2 Situation in the Brackish Villages

The water-related problems in brackish villages are of a different nature. In both Yerinarayanapura and Jeergal, the prime source of water is surface water, viz. a tank and the river Ghataprabha respectively. Talks with the villagers revealed that they are quite aware of the quality of the groundwater. Many respondents reported that the local groundwater is absolutely unpotable and unsuitable for any use, so much so that none of the borewells located in the villages is used for any purpose.

Discussing about this, a retired school teacher and mandal panchayat member noted that the *"people call me a 'water-man' as I have been raising this problem in every mandal meeting I attended. I have approached higher officials and others to draw attention to our problem and finally I was successful in getting a mini-water-scheme for our village. The scheme worked well for some time. However, unfortunately, we are confronted with a social problem. The borewell is incidentally located in a nearby village and people of that village are unwilling to share water with us. They do not have a generous heart to understand our problems and cooperate with us. Due to this, several fights have occurred between the people of the two villages. The mandal pradhan has promised to intervene and solve the issue. But at the moment, we people of Jeergal either drink contaminated water straight from the river Ghataprabha or do not drink water at all"*.

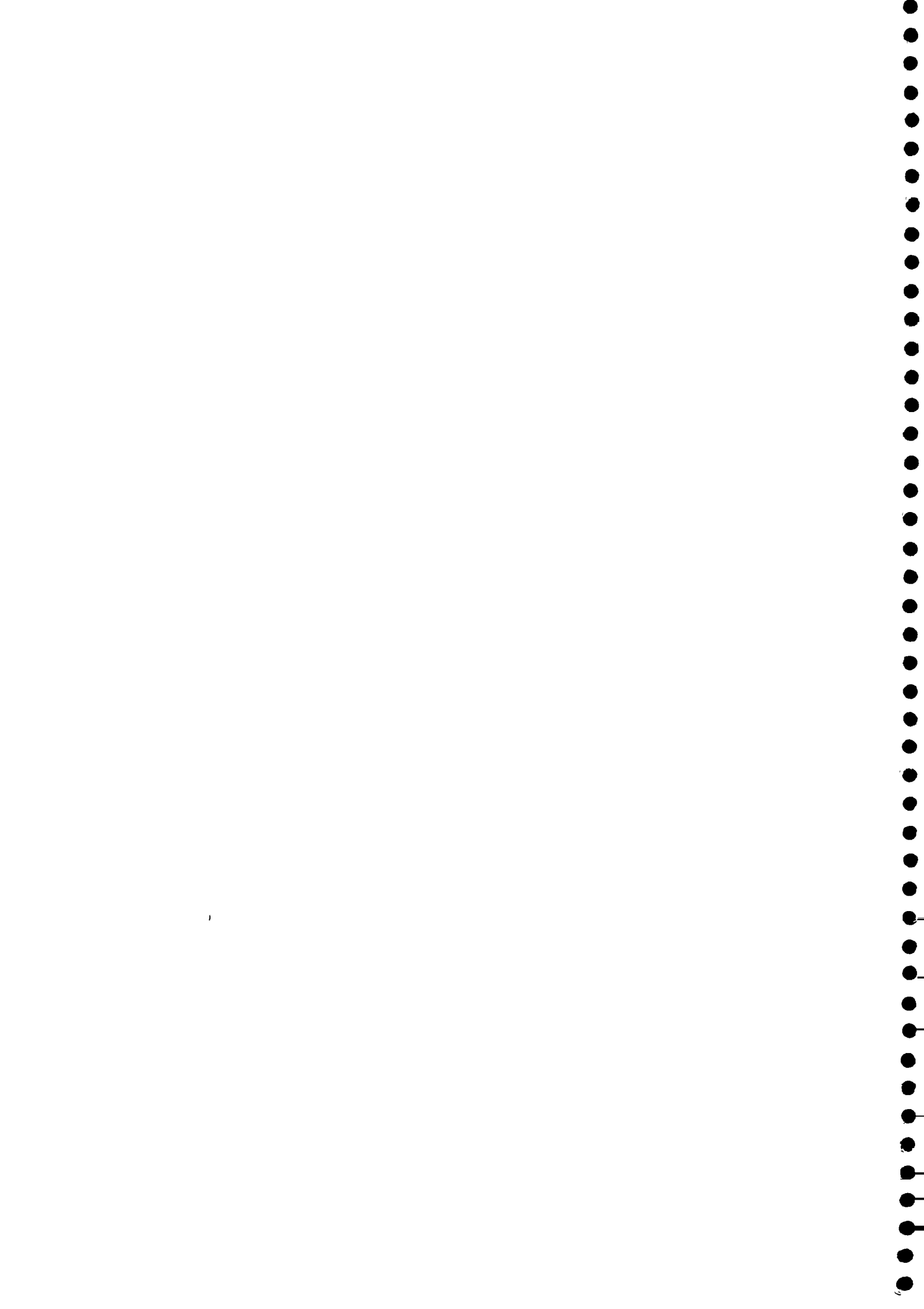
The river Ghataprabha carries water for about nine months a year and people of Jeergal acknowledge this source with respect. However, during the dry season the river stops flowing. Adding to this is the occurrence of high temperatures which make the need for drinking and bathing the more urgent. Water available from handpumps, according to some women respondents, is utterly useless because of quality. *"It is impossible to bath, clean our vessels and clothes"*. Some tanners in the village stated that the water is not even suitable for tanning purposes. As one of them said *"The water in fact hardens the hide, instead of softening the product"*.

An old woman pointed out, that there is no difference between water by purpose of use. *"Look at the river, we do everything in it ... washing clothes and animals and drinking the same water. We do not have any other alternative. The government digs so many borewells and wastes money knowing fully well that we do not have a history of groundwater here and claiming that this is part of their development efforts"*.

The situation at Yerinarayanapura is slightly different, though not less severe. The groundwater is also unpotable and the main source of water for villagers is a pond. Out of the three available handpumps, the one located in the Harijan colony yields a relatively better quality of water which is used when the tank goes dry. During the peak dry period, when water availability is almost nil, the Revenue Department supplies water with tankers.

5.1.3 Situation in the Fluoride Village

The inhabitants of the fluoride village Churchihalla depend on groundwater. The village has two open wells - one in the centre of the village and the other in the Harijan colony - and six borewells with handpumps. Of the latter, only two are in working condition. The well located in the centre of the village and the handpumps constitute the prime water sources for non-



Harijans and Harijans, respectively.

The discussions and interviews, indicated that by and large, the people are unaware of the fact that the village is affected by a fluoride problem. In fact, the fluoride problem was identified by an outside agency. However, no health problems such as stiffening of joints and so on are encountered by the villagers due to consumption of the water.

5.1.4 Situation at Control Village

Unlike the other villages, Kalasur has no water problem as such. The village has both ground- and surface water sources. A piped-water-scheme is in operation and water is distributed through both public and private connections. However, distribution problems are apparent.

It was learnt from the enquiries that applicable norms and regulations are not adhered to due to interference of powerful people in the village. Many respondents attributed this to the *"fluid rules being followed in the village. Anything can be done if you have political pull, money and influence"*. One angry youth pointed out at a tap located almost at the doorstep of a house and said *"Look at that! That house belongs to a relative of the mandal pradhan and that is why nobody can question him because he is fully protected by the pradhan. His action has affected so many households but what can be done? It is all useless. In this village money and political power rule the people and nobody can fight against these two things"* (The tap in question was drawn directly from the pumping main of the piped-water-scheme running beneath the road). This type of actions by rich and powerful people had resulted also in acute drainage problems elsewhere in the village.

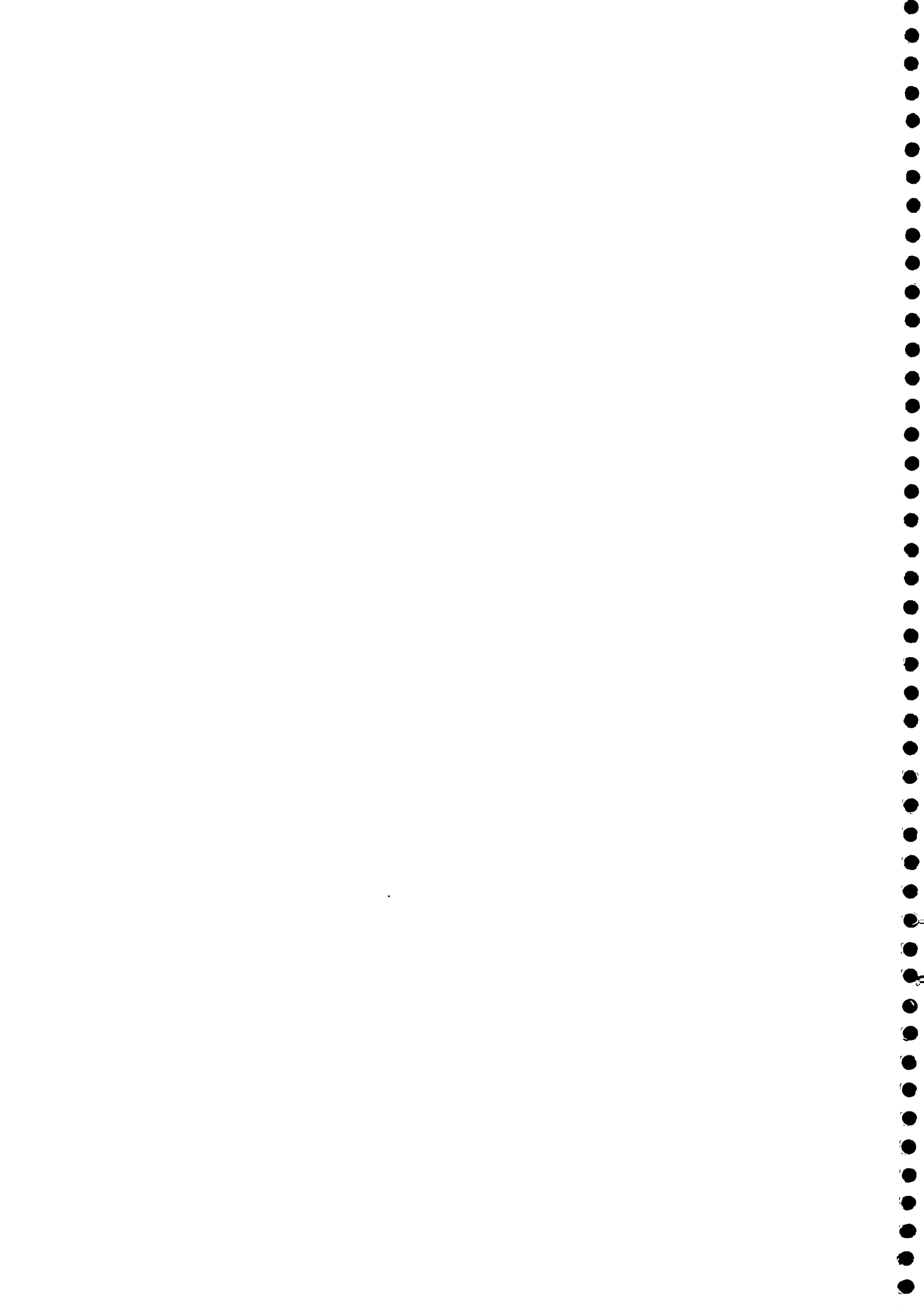
5.2 Management and Maintenance of Water Supply Facilities

The problems of management and maintenance of sources and distribution facilities appear to be greatest in villages provided with borewells with handpumps, mini - and piped-water-schemes compared to those where traditional sources, viz. tanks, rivers and open wells, are still used. Borewells with handpumps, mini- or piped-water-schemes are new technologies for the villagers and as such responsibility for operation and maintenance is largely with the local government. District level authorities install facilities regardless of type, maintenance is with subdivisions or district level authorities depending on type and mandal panchayats are in charge of operation. In other words, since the introduction of borewells with handpumps or water supply schemes, the users in general have little role in maintaining and protecting the facilities.

The study shows that in villages where the major source of water is still a traditional one, villagers actively participate in maintaining such source. In Yerinarayanapura, the tank which is the only water source is entirely managed and maintained by the community. Similarly, in the village of Churchihalla, protection and management of the open well is carried out by community members. This continues even now without much support from the local government.

As an impact of change, the communities, by and large, do not feel responsible to actively contribute towards caretaker services for new facilities. The general feeling is that such responsibilities and services are with the mandal panchayats. In fact, a majority of the respondents felt that it is the mandal panchayat's sacred duty to provide all services and, importantly, that there should not be any commitments from the beneficiaries.

People maintain that the members of the mandal panchayats are elected by them with the primary objective to bring in various schemes and benefits. One of the respondents said *"Why*



should we pay taxes to mandals? After getting elected, they do not even care for us. We request for many benefits and not even 10% is provided."

In this connection, it was found that taxes are not collected regularly. Further, mandal panchayats seem to have been charged with responsibilities which are beyond their capacity, administratively, technically and financially. Also, there appears to be lack of coordination between involved local government agencies and sometimes they are not even answerable to each other.

Discussing these points, one mandal member reported *"Mandals do not have adequate funds nor technical staff, equipment and other types of support to install new systems as well as maintain existing ones. Moreover, people are not forthcoming to share any cost whatsoever; we cannot force them either to contribute"*.

When asked why they are unable to insist on public contribution, one of the members said

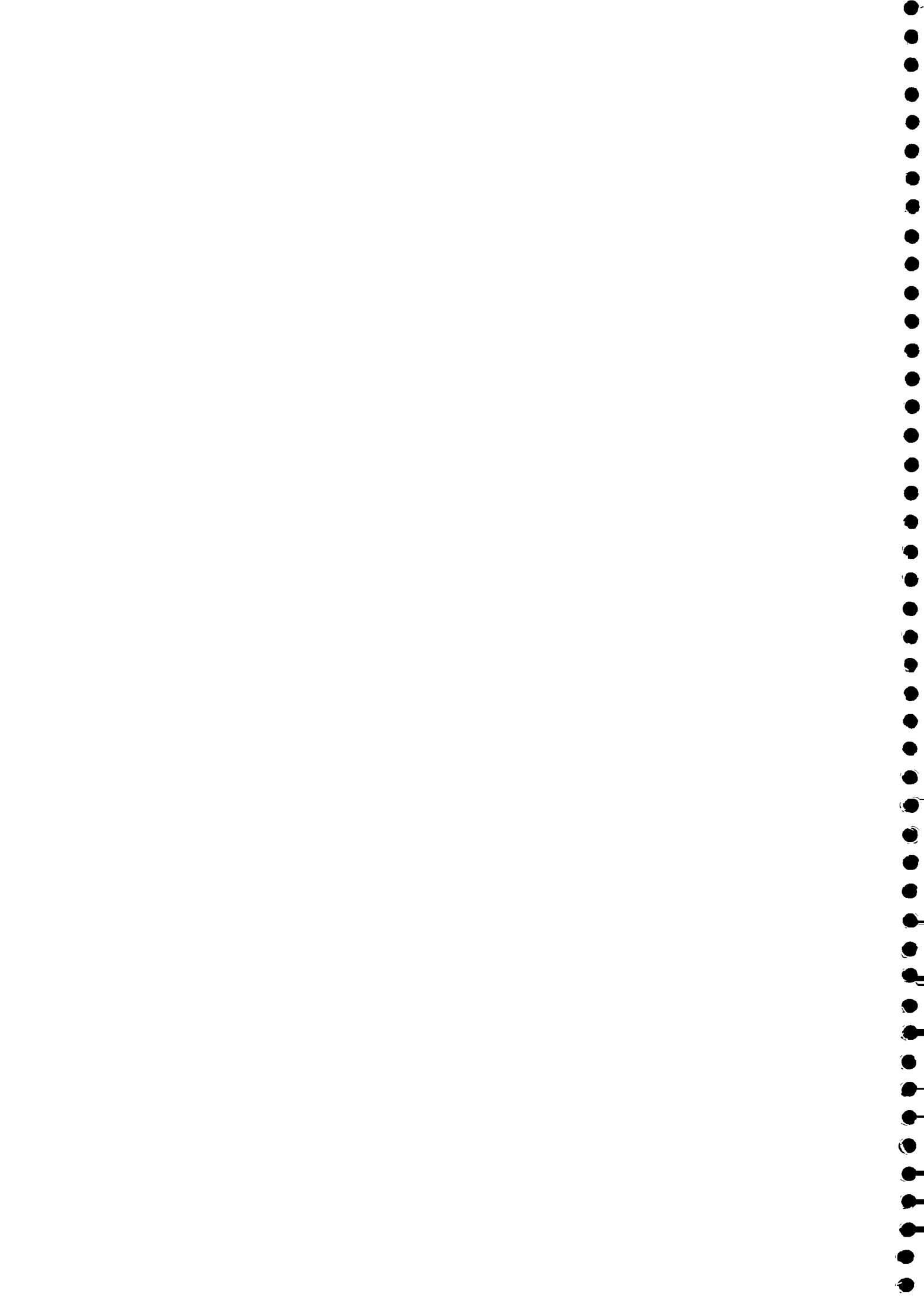
"If we force people to contribute, we will incur their displeasure and in the coming elections we will loose our seats, because they would not vote us to power again. You see, our position is very delicate. Whatever good work we do, it is never noticed or taken into account. But one slip or even a bad rumour about us will make us very unpopular. In addition, I should mention that villagers are generally poor. They do not have money. Moreover, they are facing successive droughts since several years. There is no crop. This region especially is worst hit. Therefore, we don't feel like enforcing taxes seriously".

5.3 Felt Needs and Preferences

The Participatory Rural Appraisal exercises in the sample villages yielded interesting results regarding the people's opinions with respect to different water sources. The exercises centred around what is considered the best source of water among the available ones and what is preferred irrespective of existence. The discussions and dialogues threw light not only on choices but also indicated analytical assessment of the situation. The sources used by villagers by purpose of use are shown in Table 5.3-1 for the three categories of villages. Sources are ranked according to preference. By category of village, the same is illustrated in pictorials on the following pages 5-6 to 5-8 which also indicate the main reasons for the preferences.

Cooking, Drinking, Washing Utensils	Bathing	Washing Clothes	Cattle Washing
<u>Scarcity</u>			
1. Handpump/MWS/PWS 2. Irrigation well	1. Any water 2. Irrigation well 3. Handpump/MWS/PWS	1. Surface water 2. Irrigation well 3. Handpump/MWS/PWS	1. Surface water 2. Handpump/MWS/PWS
<u>Brackish</u>			
1. Surface water 2. Tanker	1. Surface water 2. Tanker 3. Handpump/MWS	1. Surface water 2. Handpump/MWS	1. Surface water 2. Handpump/MWS
<u>Fluoride</u>			
1. Open well 2. Handpump	1. Any water 2. Handpump	1. Irrigation well 2. Open well 3. Handpump	1. Handpump 2. Surface water

Table 5.3-1 Preferences for Water Sources by Purpose of Use and Category of Village



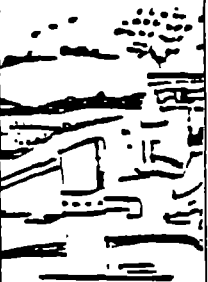

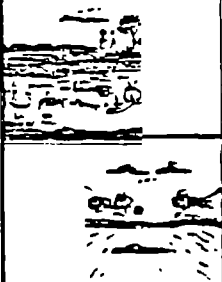
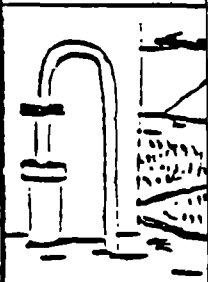
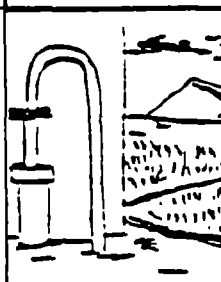
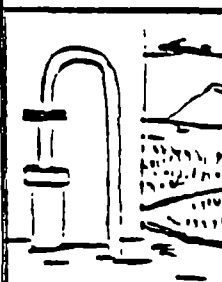



PREFERENCE	COOKING, DRINKING, WASHING UTENSILS		BATHING		WASHING CLOTHES		CATTLE WASHING	
	Handp./MWS/PWS	Why?	Any Water	Why?	Surface Water	Why?	Surface Water	Why?
1		<ul style="list-style-type: none"> . clean water . tastes good . cooks food well . easy to fetch 		<ul style="list-style-type: none"> . men can bathe anywhere . women prefer to bath at home, regardless where water comes from 		<ul style="list-style-type: none"> . abundant source . no need to carry water home . space for washing slabs and drying clothes . preferred venue for women's gathering 		<ul style="list-style-type: none"> . convenient washing . cattle can drink at same time . men can bathe at same time
2		<ul style="list-style-type: none"> . same reasons, used when hand-pump/MWS/PWS dwindle in dry season 		<ul style="list-style-type: none"> . for men only, when abundant and near working space 		<ul style="list-style-type: none"> . when abundant . no need to carry water home 		<ul style="list-style-type: none"> . nearby house
3				<ul style="list-style-type: none"> . for men only in wet season, . easy to fetch 		<ul style="list-style-type: none"> . washes clothes well . easy to fetch . platform serves as washing slab 		

FIG. 5.3-1: PREFERENCES FOR WATER SOURCES BY PURPOSE OF USE
- SCARCITY VILLAGES -





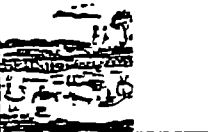


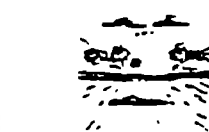

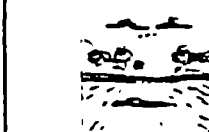

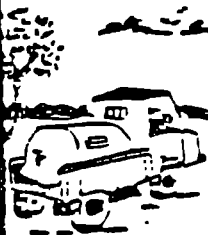

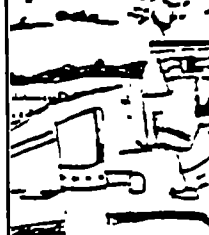

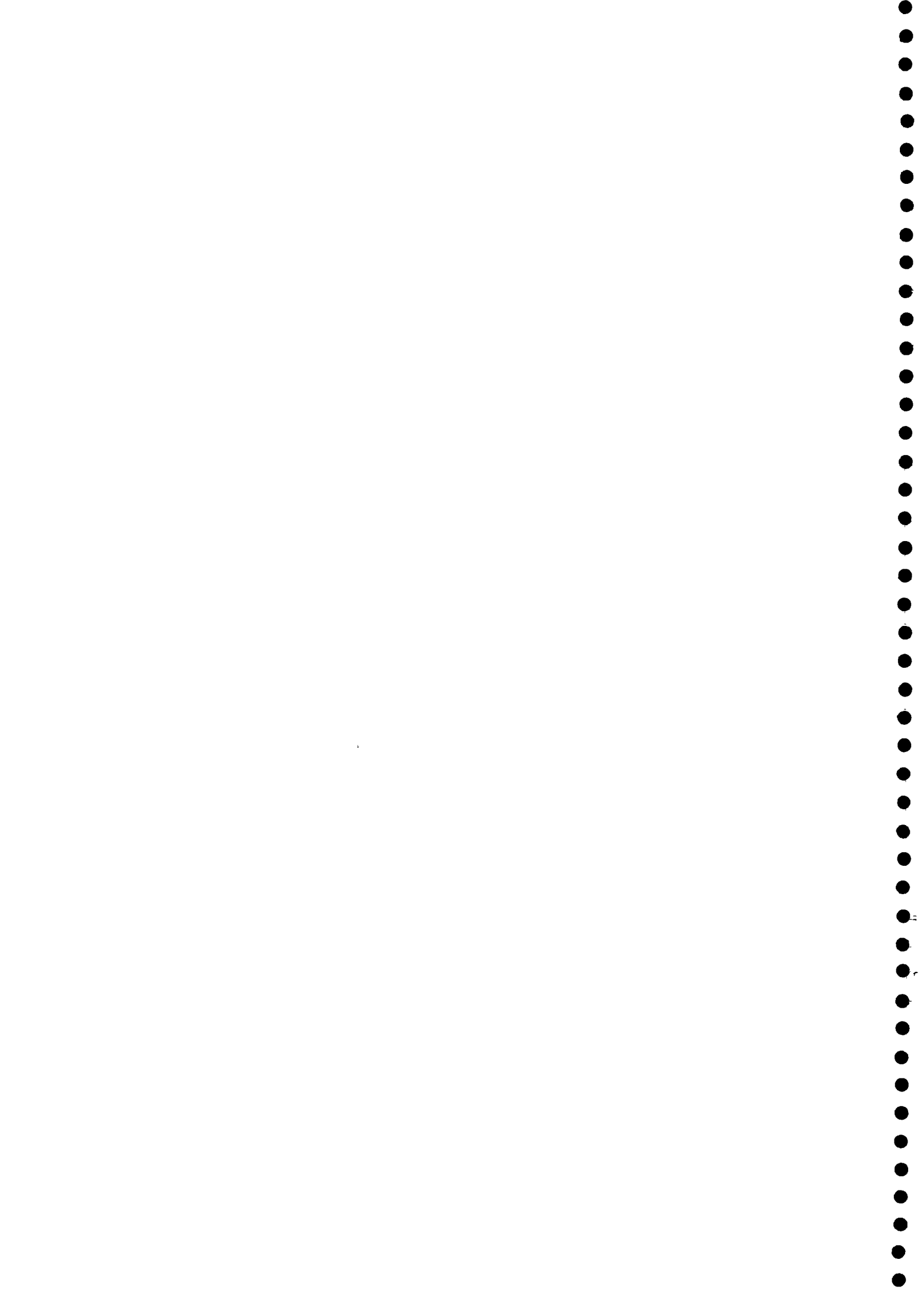
PREF- ERENCE	COOKING, DRINKING, WASHING UTENSILS		BATHING		WASHING CLOTHES		CATTLE WASHING	
	Surface Water	Why?	Surface Water	Why?	Surface Water	Why?	Surface Water	Why?
1	 	<ul style="list-style-type: none"> tastes well cooks food well food tastes well low needs for cleaning agent 	 	<ul style="list-style-type: none"> by all because of low soap requirements by men because of abundance and no need to carry water home 	 	<ul style="list-style-type: none"> abundant source no need to carry water home space for washing slabs and drying clothes preferred venue for women's gathering 	 	<ul style="list-style-type: none"> convenient washing cattle can drink at same time men can bathe at same time
2		<ul style="list-style-type: none"> when no surface water available any more, preferred above groundwater because of quality 		<ul style="list-style-type: none"> Compared to hand-pump/MWS water: <ul style="list-style-type: none"> requires less soap and lathers easier to fetch 		<ul style="list-style-type: none"> easy to fetch nearby home, though requiring more cleaning agent 		<ul style="list-style-type: none"> cattle washing and feeding can be done near handpump/MWS, thus no need to carry water home
3				<ul style="list-style-type: none"> last option during dry season 				

FIG. 5.3-2: PREFERENCES FOR WATER SOURCES BY PURPOSE OF USE
- BRACKISH VILLAGES -



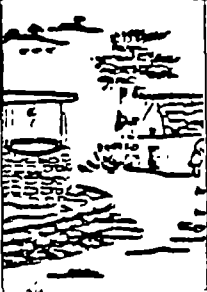
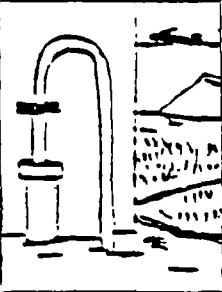

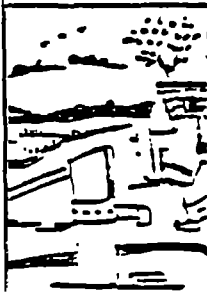
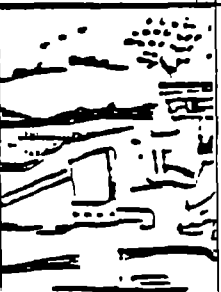



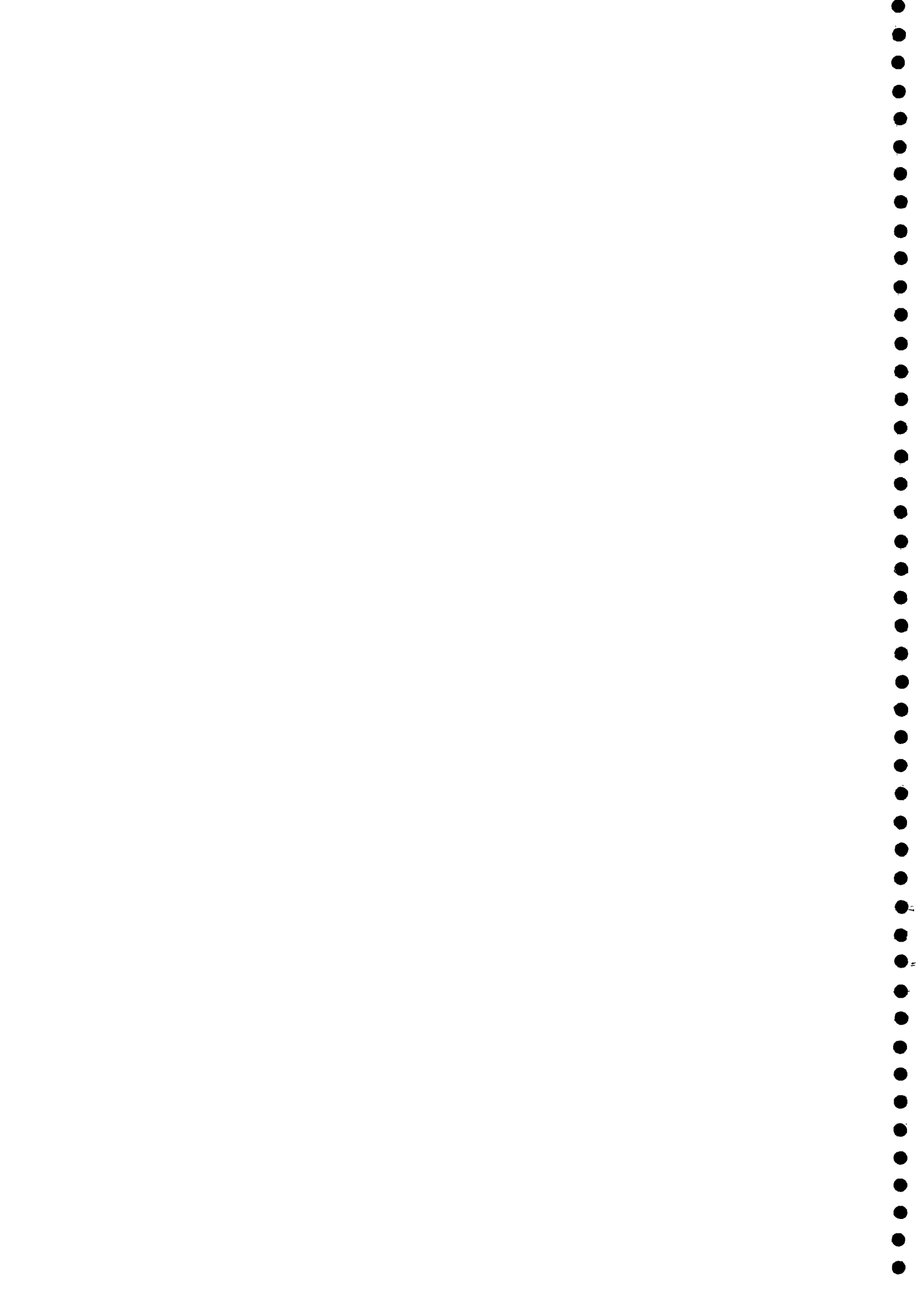
PREFE- RENCE	COOKING, DRINKING, WASHING UTENSILS		BATHING		WASHING CLOTHES		CATTLE WASHING	
	Open Well	Why?	Any Water	Why?	Irr. Borewell	Why?	Handpump	Why?
1		<ul style="list-style-type: none"> • clean water • tasty to drink • adds taste to food • requires less cleaning agent 		<ul style="list-style-type: none"> • men can bathe anywhere • women prefer to bath at home, regardless where water comes from 		<ul style="list-style-type: none"> • abundance • space for washing available • close to work place • reduces carrying water home 		<ul style="list-style-type: none"> • reduces carrying home, since cattle can drink at handpump
2		<ul style="list-style-type: none"> • tasty to drink • cooks food well in less time 		<ul style="list-style-type: none"> • low need for soap 		<ul style="list-style-type: none"> • cleans clothes easy • low need for cleaning agents 		<ul style="list-style-type: none"> • nearby house
3						<ul style="list-style-type: none"> • washes clothes well • easy to fetch • platform serves as washing slab 		

FIG. 5.3-3: PREFERENCES FOR WATER SOURCES BY PURPOSE OF USE
- FLUORIDE VILLAGE -



5.3.1 Scarcity Villages

The preferences regarding source vary according to purpose of use. Handpump or cistern/standpost taps are the preferred source of water for drinking, cooking and washing vessels. The prime reasons given are accessibility, easy fetching, better cleaning and better tasting. However, villagers give these sources a lower rank for purposes of bathing, washing clothes and cattle. For these purposes, streams, tanks, irrigation or borewells are considered better.

With regard to the mode of water distribution, most people consider piped water supply as ideal. Discussing this point, Yelliamma, a Harijan woman from Chillur, noted *"Well, if you ask what I personally feel as the most convenient system, that is a running water tap inside my house .. like what our rich Lingayat women have"*.

All women assembled at the meeting roared with laughter and one of them told our respondent giggling *"Inside your house! Then they will ask you where is the house! A mud hut"*. The women went on *"How can you bring a pipeline into the house? Where will you have the tap? Where will the wastewater go? Have you thought of all this?"* Yelliamma turned towards her and said *"Well, that is what I consider as most convenient, that is all. I did not think of whether it suits my little hut. If you want me to say what is best the water supply system, I still say that the tap is the most ideal one in our locality"*.

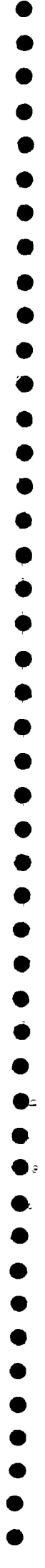
5.3.2 Brackish Villages

In brackish villages, preferences are different. The quality of water is considered more important than convenience of supply. The inhabitants of brackish villages place handpumps low on their scale of preference. Surface water sources like rivers, streams and tanks are most preferred for almost all activities. In spite of the general awareness regarding hazards of consuming surface water, tanker water supply also gets less preference.

By and large, the villagers appear to base their preference on to the two crucial factors of taste and 'hardness'. Accordingly, handpump water is strongly believed to be hard compared to surface water from a tank, river or the like. Due to the hard nature of the water, the villagers report that handpump water is not suitable for drinking and that food does not get cooked well. Further, many women said that handpump water does not clean clothes and vessels well; the vessels do not get the desired shine while tanks and rivers have the added advantages of free availability (*"You do not need to pump"*), presence of stone slabs and space for drying clothes.

One of the Kuruba woman described her routine in this regard *"I attend to cooking, cleaning and bathing by 9.00 a.m. My husband and children help me in providing water and other items and they leave for the fields. Then I dump all dirty clothes and vessels in a big basket and walk to the Kere (tank). First, I wash clothes and spread them for drying and then I clean the vessels. By the time I finish washing vessels, clothes have dried up. I fold them, arrange them in the basket along with other village women who come there and by about 10 a.m., I return home. After putting the vessels and clothes at home, I go to the fields and join my people"*.

Another woman added *"If we have to do the work of carrying water from a borewell, it would take three times more of our time. Further, after all this, our clothes and vessels are not cleaned properly. Most important after working with the handpump for so long, we get extremely tired and are not in a condition to go to the field. Why should we waste our time and energy at a handpump?"*



5.3.3 Fluoride Village

In the fluoride affected village of Churchihalla, water from the open well is most preferred for the purpose of cooking, drinking and cleaning vessels. The reasons in support of the preference include taste, that it enhances the taste of cooked food and requires a lesser amount of cleaning agent (tamarind, soap, powder, ash, etc.) for washing vessels.

This preference indicates the gap between the perceptions of officials and of the population at large with regard to the potability of water. According to norms, handpump water is considered safest. Of all existing types, borewells with handpumps are promoted officially as the best source for water for drinking and other domestic uses as they are least subject to contamination. The villagers appears to have their own perceptions and reasons for preferring other sources.

5.3.4 Control Village

A more or less similar situation prevails at the control village Kalasur. Despite the existence of a piped-water-scheme with both public taps and private connections, the villagers prefer surface water. This, however, only for specific purposes, especially washing clothes and cattle. Water from handpumps is the next preferred and the reasons reported are good taste and better compatibility in terms of cooking.

5.4 Summary of Findings

The villagers are inclined to use water from (a) particular source(s) depending on

- . source availability
- . quality of water vis-a-vis purpose of use
- . convenience of fetching
- . time requirements

For drinking and cooking, surface water is preferred in brackish villages; elsewhere, water from wells is taken. Even where the groundwater is only slightly brackish, however, the villagers return to surface sources when available. Though, in many cases, they are compelled to use borewell water because of lack of an alternative.

For the purpose of washing of clothes and cattle, etc. the preferred source is a surface water body. The reasons are primarily

- convenient availability
- presence of stone slabs
- saves the need for carrying water and thus time and energy
- cleans clothes very well

In the fluoride village, the best water for washing purposes is considered that of a borewell or open well, believed to be softer and cleaning clothes easier with lesser amount of soap.

With regard to bathing, preferences are specific by gender. Women bath at home, using water from any source. Men prefer to bath at surface water bodies or irrigation wells, depending on accessibility, location near workplace, etc.



6. WATER-SANITATION-HEALTH RELATIONSHIP: KNOWLEDGE, CONCEPTS AND PRACTICES

At the outset, it is necessary to mention that, normally, attempts to understand the behaviour and concepts regarding health and illness require a close examination of a variety of aspects. These aspects range from socio-economic, cultural and demographic to epidemiological and medical issues. Besides, physical aspects such as availability and distance to health care facilities as well as social access to these facilities also have a strong impact on the general health behaviour of the people. In this study, it was not possible to carry out such a detailed exercise. Hence, the efforts were mainly focused on people's knowledge and concepts of the relationship between water and health. More specifically, attempts were made to assess

- a. knowledge about the causes of some water-borne diseases
- b. people's concepts regarding good health and illness
- c. actions taken during illness

6.1 Knowledge

Perceptions and attitudes towards health and illness are intricately linked with the traditional ethos of the people. This ethos, with time, internalizes to some extent new knowledge regarding specific ailments, their causes and treatment. Nevertheless, by and large, health issues are governed by traditional taboos and customs and the villagers generally follow a 'referral system' in seeking health care, starting with home remedies and treatment by herbalists; only as the ultimate recourse, professional medical help is sought. Throughout, magico-religious efforts are simultaneously made. Enquiries regarding what is being healthy or ill did not receive quick responses. The most common response was that illness is a common occurrence and part of life. Good health according to many respondents is considered to involve eating, digesting and sleeping well and being strong enough to work in the fields. Absence of these characteristics is defined as illness.

The common ailments reported include common cold, chill, fever and other symptoms. Loose motion or diarrhoea are not reported as an ailment. However, the seasonality of various diseases and also the types of diseases that are brought about by mosquitoes or changes in water source, temperature, food or diet are not unknown.

6.2 Concepts

Fever is a common ailment reported to afflict all sections of the village populations. This is especially so during the cooler season. Over-exposure to open air after a cold bath and mosquito bites are considered as the causative factors of fever by a majority of the villagers.

Many of them reported that due to inadequate facilities for wastewater disposal, slushy zones and pools of stagnant water form in and around the villages and become breeding grounds for mosquitoes which in turn pose health problems. In Kalasur, the control village, people said that before the introduction of the piped-water-scheme they used to have the problem of stagnant water only during the rainy season. However, with the introduction of the scheme, people reportedly suffer year-round due to the lack of a proper system of disposal of wastewater near standposts and taps, both public and private. As a consequence, wastewater runs freely on lanes forming puddles and pools where mosquitoes thrive.



Generally, diarrhoea is not considered a major health problem. This illness or disorder is thought of mainly as a normality in the process of digestion. In other words, a close link is perceived to exist between loose motion and the type of food consumed. Many respondents noted that one would upset his or her stomach during the groundnut harvesting season when a good amount of them is consumed. In addition, another important reason put forward is that of a 'change of water'. There is a strong belief that people would fall sick if they change from one water source to another. It is believed that if one consumes water from a particular source for a considerable period of time, the body would get used to this water. Any change of source would create a sudden imbalance in the body resulting in indigestion and other gastro-intestinal disorders leading to diarrhoea.

Contrarily, diarrhoea among infants and children is attributed to 'casting of the evil eye' and appropriate remedial steps are taken by seeking protection through magico-religious practices. In the atmosphere, there are so many things which we permit into our body while breathing, drinking, seeing, etc. Small children get affected by such elements and begin vomiting or passing loose motion.

Another important concept very commonly adhered to is the effect of heat and cold. Heat is not only meant as a rise in temperature but something more. Hot foodstuffs when consumed would upset the stomach, it is believed.

However, the majority of the people said that loose motion erupts due to both cold and heat. One argument is that when there is a rise of water content in the body, it has to somehow be disposed off in order to maintain the physical balance and this happens through diarrhoea. Many further distinguish between different types of diarrhoea and give different causes for their occurrence. While simple diarrhoea is due to excess of water in the body, diarrhoea with mucus results from excess heat and dysentery is the consequence of extreme heat. Loose motion with different colours is given various reasons, e.g. green loose motion with children is attributed to an evil eye or to teething.

diseases	causes	remedies
common cold	getting drenched in rain or exposed to cold breeze	drink hot tea or (ginger) coffee drink hot milk with pepper and turmeric
fever and chill	- ditto -	drink hot jeera (cumin seeds) and pepper concoction, ginger coffee, tulsi leaves or pepper juice
stomach ache	drinking dirty water from a tank	chew betel leaves and salt, eat ajwan, apply castor oil on the navel



dysentery and loose motion	change of source of water drinking dirty water from a tank when almost dry or before heavy rains due to in-digestion	add lime to hot water and drink eat sago-porridge massage a particular nerve of the calf muscle
constipation	due to an evil eye (during pregnancy)	eat banana
headache	due to exposure to too much sunlight, heat or smoke	juice of wild berries is applied on the eyebrows and pressure is put on temples
burning sensation in the eyes	due to too much sunlight or to lack of ventilation in the kitchen	cotton leaf is soaked in butter-milk and kept on the eyes
conjunctivitis	due to too much heat or smoke	cotton leaf is heated and kept on the eyes cotton leaf is soaked in butter-milk and kept on the eyes put few drops of goat milk on the eyes
measles, chicken-pox	goddess Durgamma or Mariamma is angry due to an evil eye	perform puja (prayer) to the goddess apply neem leaves

6.3 Practices

For treating fever, the most common home remedy is Kashaya, a concoction obtained by boiling cumin seeds, black pepper, tulsi leaves and turmeric powder. The product is boiled with molasses and milk and taken hot. After consuming this, the patient is advised to rest and cover him/herself with a thick blanket to perspire. Similar treatment is carried out for cold and cough. By and large, home medicines form the first course of treatment for almost all common illnesses. If found ineffective, efforts are made to seek treatment from herbalists and other indigenous health practitioners and only later, efforts are made to seek professional medical help through hospitals and/or specialists. Throughout this referral system, simultaneous efforts are made by the patient and elders in the household to visit temples, taking vows with deities, undergoing magic-religious rituals, wearing amulets or talismans believed to repulse evil spirits and the like, besides following a tight regimen regarding food and other activities.



Treatment of fever is thus through successive use of home medicines, consultation of herbalists and treatment by professionals. A common finding is that people tend to self-medicate without much consideration the majority of minor illnesses. Usually, at the onset of a symptom, the guardian of the patient consults a local herbalist or voluntarily asks for specific medicines and administers the same to the patient without consulting a practitioner.

Enquiries as to the reasons for this form of treatment point to the distant location of the health centres. In fact, there is a health centre in Kalasur itself; in the cases of Yerinarayanapura, Aladakatti, Jeergal, Chillur and Antravalli, distances vary between 2 and 5 km, the health centres are really far away only for Chuchihalla (10 km) and Sangapura (14 km). Thus, in terms of actual distance, they are mostly not too far, but lack of transport makes it inconvenient to visit them. Besides, at the government hospitals "We may not find doctors and even if we find a doctor, he may say there is no medicine in stock", many complained, adding that they therefore procure medicines from a shop.

A typical treatment for children suffering from diarrhoea was described by an elderly woman thus

"A well cleaned small copper container is filled with clean water and placed before the idol of a deity. A few pinches of turmeric and lime are added to the water, which gives it a red colour. Charcoal pieces are then added to it. The container is then lifted and passed over the body of the patient, from top to toe. The performer while doing so chants 'evil spirit, go away!, go away!' After a couple of such passes, a small amount of water is sprinkled over the child and the remaining water is poured at a public place where three roads or paths meet. This is carried out normally at dusk".

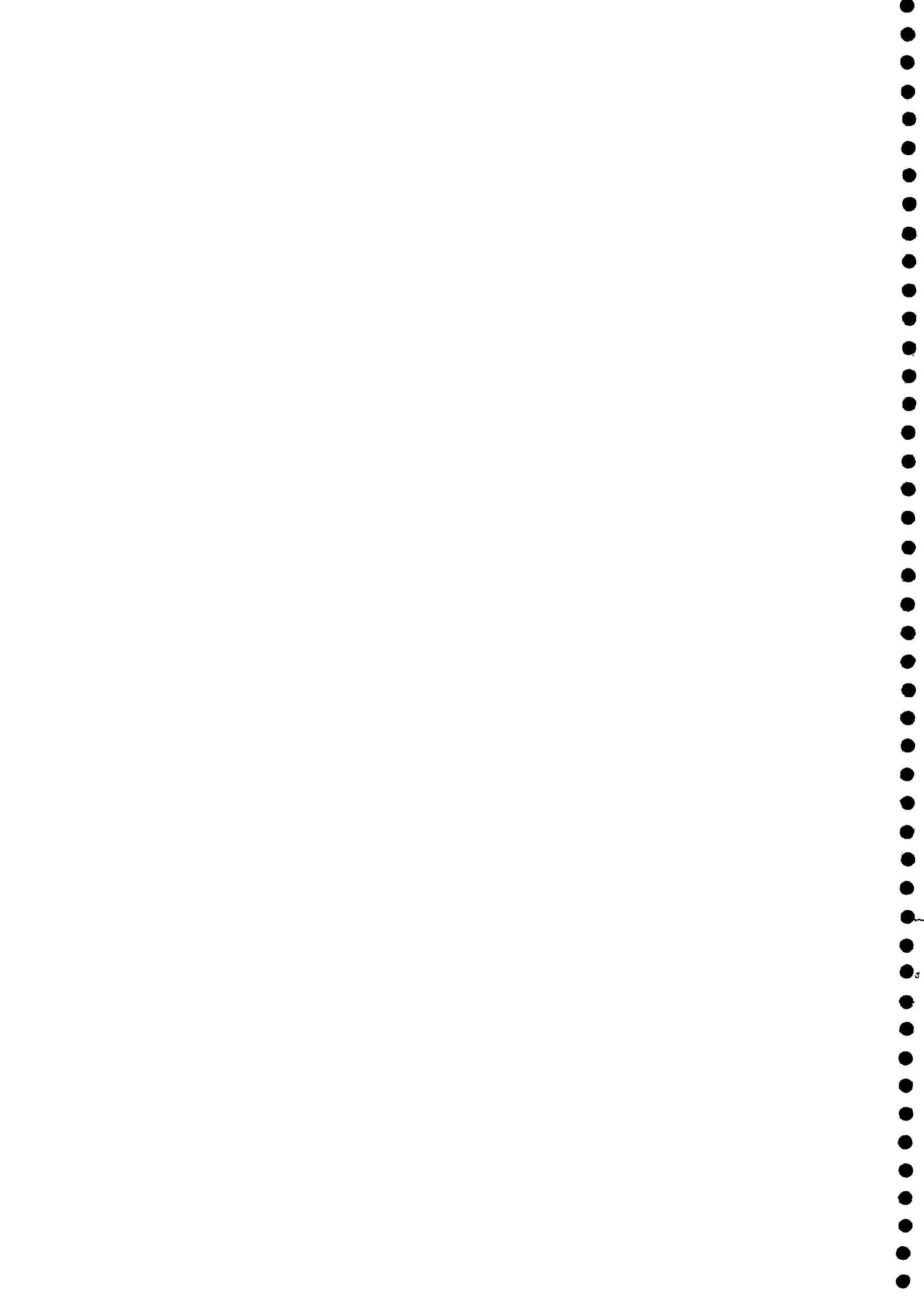
Generally, measles and chicken-pox are reported to be common among children, especially during the dry season. These ailments are strongly believed as the effects of acts of goddesses and spirits. Accordingly, they are treated with great respect and fear, lest the goddess could take away the patient's life. Once the disease is established, a general panic is expressed. No medication of any sort is carried out. Further, the patient is not allowed to come into contact with menstruating women and certain traditionally defined polluting agents. Neem leaves are spread around the child as an antiseptic and also to serve as a purifying agent. Simultaneously, all possible efforts are made to please the irate goddess Durgamma or Mariamma. Besides citing religious incantations to the goddess, specific coolants such as milk and curd are offered by pouring them over the idol. In each of the sample villages, there is a temple of the goddess Mariamma who is especially worshipped by backward and scheduled castes. However, during pestilences and epidemics, Durgamma or Mariamma is worshipped by one and all.

6.4 Summary of Findings

In summary, common ailments among the adults include common cold, chill, fever and diarrhoea. In addition, measles and chicken-pox are reported to be common among children.

To some extent, villagers seem to be aware of the reasons in general of their health problems and of linkages between water and health. The reasons given for the occurrence of the mentioned ailments are quite varied; they are attributed mostly to

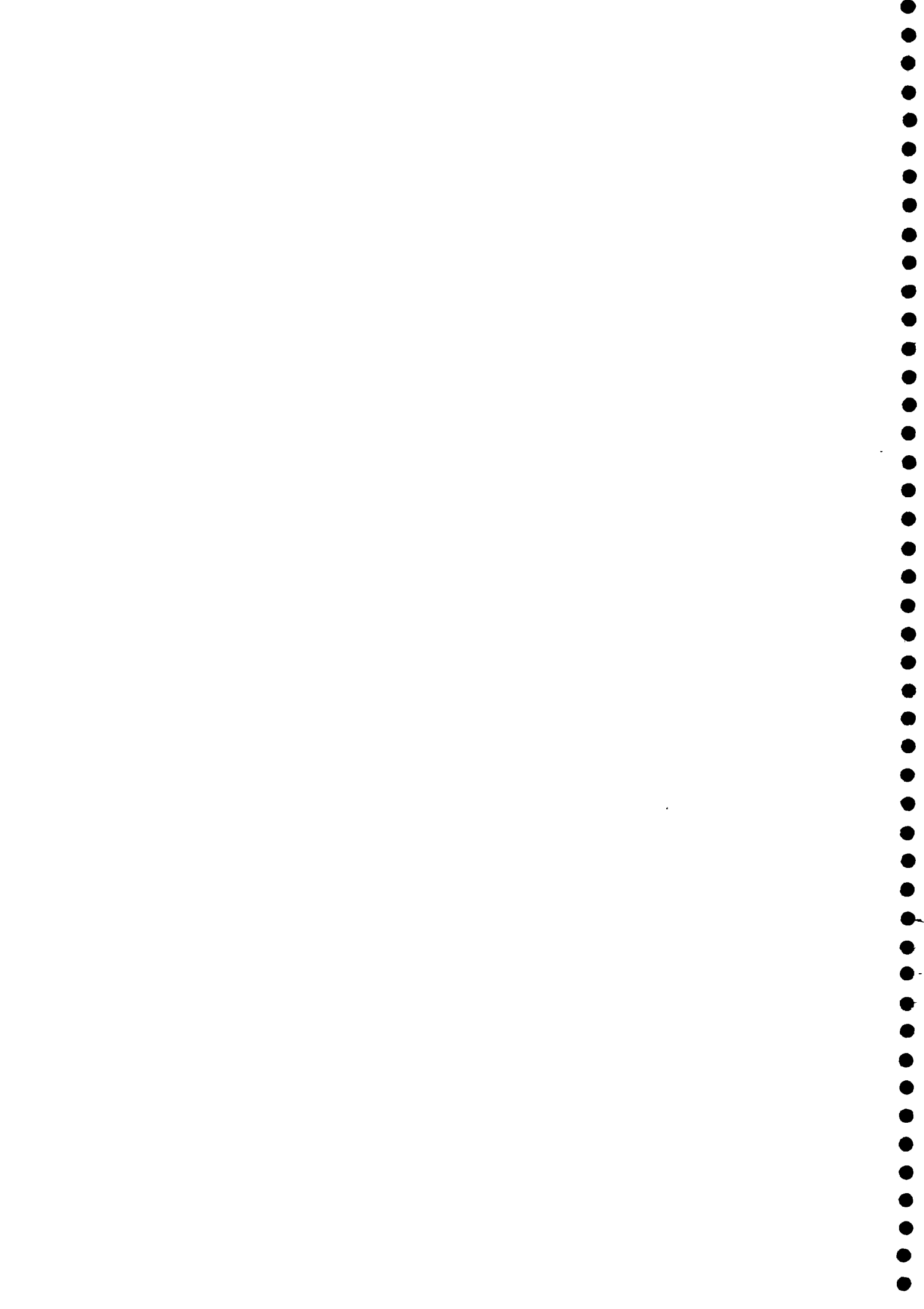
- a) season change
- b) change in water source and in quality of water
- c) change in food and diet
- d) inadequate facilities for wastewater disposal and lack of drainage



- e) presence of slush and stagnant water pools in the village
- f) mosquito bites

With respect to a majority of minor ailments, the villagers favour self-medication done without much consideration regarding the type of ailment. The self-medication is by following traditional practices.

Confidence in traditional practices, cultural and religious beliefs in goddess Durgamma or Mariamma and spirits as well as inaccessibility of primary health centres due to distance and lack of transport facilities seem to be the main reasons for which they favour self-medication.



7 CONCLUSIONS AND RECOMMENDATIONS

In the following paragraphs, conclusions on water use and management, sanitation and water-sanitation-health links arising from the study are summarized. Recommendations for consideration in project implementation conclude this section.

7.1 Conclusions regarding Water Use and Management

- the quantity of water required is about 40 to 50 lpcd; most is used for cooking and drinking, washing and bathing as well as washing household utensils and clothes
- across the different sections of the communities, water use by upper class and affluent households is higher than of the others
- generally, perceptions of what is clean, pure or contaminated are observed, when collecting and using drinking water, regardless of caste and economic background; however, social distance is maintained between caste groups
- water storage practices vary with socio-economic status, the capacity to store water is lower among poor and scheduled castes compared to others; this in a way has increased their dependency on handpumps and surface water sources
- men are at least equal partners in water fetching, against the popular belief that women are the sole providers; the reasons for this appear that
 - a) wherever water is to be carried over long distances or water fetching is felt to be a hard task due to inaccessibility of the source, men take increased responsibility to protect their women from taking risks
 - b) while women carry a maximum of 2 containers of water at a time, men transport simultaneously up to 10 containers or even more depending on whether they use bicycles, trollies or carts
- variations are also observed across the communities with regard to the role of men and women in fetching water; in forward caste affluent households, the responsibility is mainly borne by men of the family or by hired labour, whereas in poor families and scheduled caste households, responsibility is vested with the women
- practices related to cleaning of vessels and utensils do not vary much across communities; variation is observed only in terms of agents used for cleaning purposes
- the villagers are inclined to use water from (a) particular source(s) depending on
 - . source availability
 - . quality of water vis-a-vis purpose of use
 - . convenience of fetching
 - . time requirements
- for drinking and cooking, surface water is often preferred in brackish villages; elsewhere water from wells is taken; even where the groundwater is only slightly brackish, however, the villagers return to surface sources when available. Though, in many cases, they are



compelled to use borewell water because of lack of an alternative

- for the purpose of washing clothes and cattle, the preferred source is a surface water body, with open well or borewell water given second preference; the reasons for the preference for surface water are
 - . convenient availability
 - . presence of stone slabs
 - . saves the need for carrying water and thus time and energy
 - . cleans clothes very well

- the responsibility of management of the water supply facilities is largely vested in the Public Health Engineering Department and, particularly, local government agencies; lack of coordination, insufficient funds and distant location are major causes of inadequate management; this has naturally aggravated the problem of water scarcity, in particular in villages depending on protected groundwater sources and mini- or piped-water-schemes; even in villages where there is adequate supply, problems of management and maintenance result in water scarcity.

7.2 Conclusions regarding Sanitation

- no specific practice as such is being followed for the disposal of household refuse; quite often, household waste and used water is left to settle on roads and lanes; the situation is most worse in Harijan colonies where there are no bathing, washing and cleaning facilities

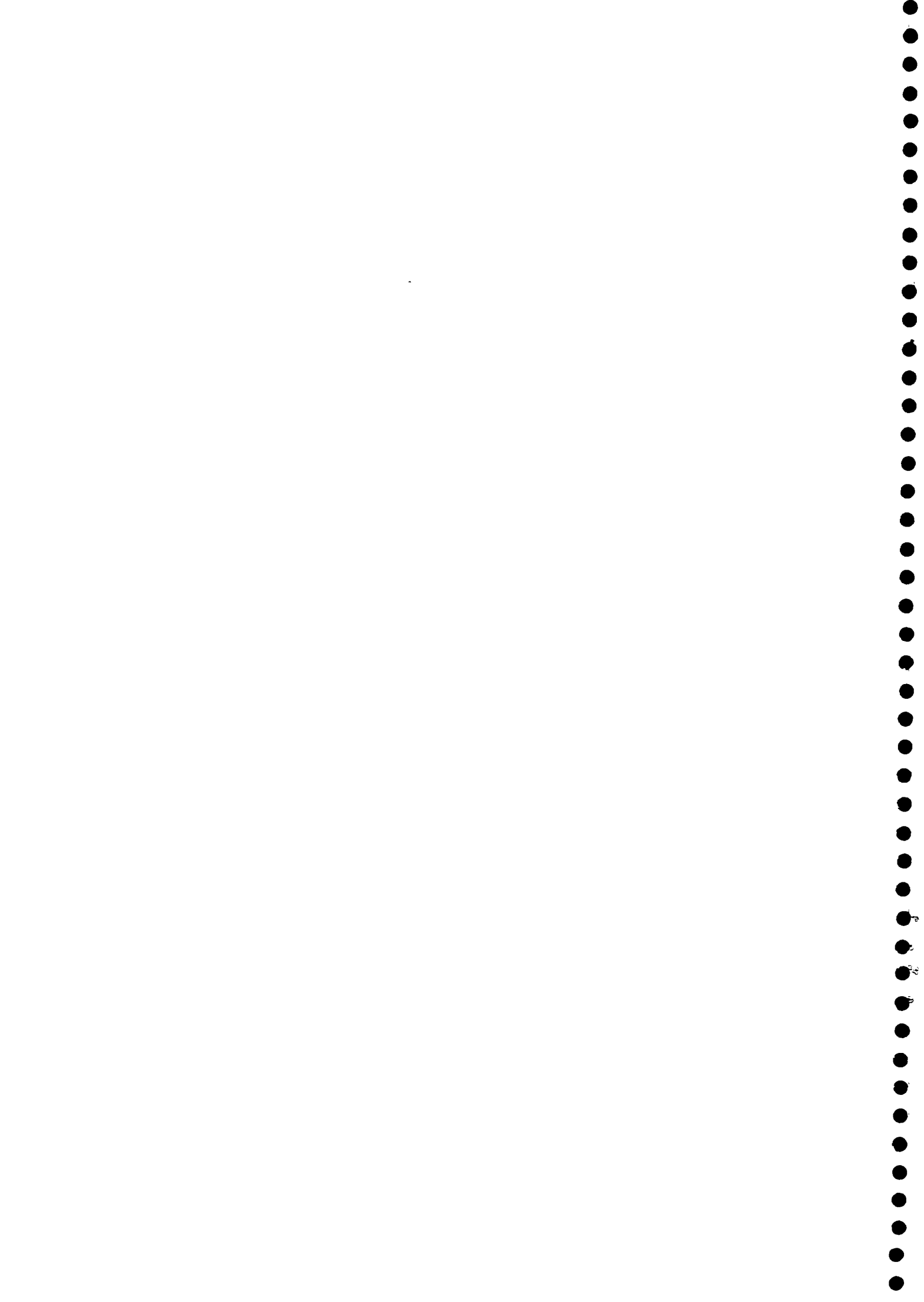
- irrespective of position in the socio-economic hierarchy, animal and farm residue is by and large used as organic manure by the villagers

- the use of lanes and handpump platforms for washing, cleaning and bathing purposes results in the formation of pools and puddles of stagnant water, but also points towards the need for washing and bathing places

- drainage is a common problem in all villages, especially in the rainy season; villages with mini-/or piped - water- schemes, but without proper drainage arrangements around taps and standposts, often have added problems; almost all villagers consider drainage essential

- no variation - with few exceptions - as such is observed across groups and classes with regard to defecation and ablution practices; by and large, open space is used for defecation

- lack of awareness and space as well as funds have inevitably removed latrine construction from the list of priorities of most villagers; as such, latrines are not considered a priority anywhere; there are instances, however, where women express a need for a latrine for reasons of privacy, provided that adequate water supply exists.



7.3 Conclusions regarding Water-Sanitation-Health Links

- to some extent, villagers seem to be aware of the reasons in general of their health problems and of linkages between water and health; the reasons given for the occurrence of ailments like common cold, fever and chill, stomach ache, dysentery and loose motion, etc. are quite varied; they are attributed mostly to
 - . season change
 - . change in water source and in quality of water
 - . changes in food and diet
 - . inadequate facilities for wastewater disposal and lack of drainage
 - . presence of slush and stagnant water pools in the village
 - . mosquito bites
- with respect to a majority of minor ailments, the villagers favour self-medication done without much consideration to the type of ailment; self-medication is a first step followed by traditional practices
- confidence in traditional practices, cultural and religious beliefs as well as inaccessibility of primary health centres due to distance and lack of transport facilities seem to be the main reasons for which they favour self-medication

7.4 Recommendations

- the presence of various institutions and organisations at the village level, established for various purposes, points to the potential of village level bodies that can be involved in a 'community initiated' project implementation process. Further, the existing institutions and organisations can be drawn into this process, as they have the confidence and acceptance of the communities. In the formation of such village level bodies, representation of the various sections of the community must be ensured, to reflect the interests of the whole villages in the project planning and implementation
- given the level of awareness of the community on the links between safe water and health and hygiene, environmental sanitation can well be integrated with water supply and can be an entry point for fostering community participation. The level of awareness also points to the need for health and hygiene education efforts for ensuring the safety of drinking water and improving the sanitation situation in the villages. However, the depth of this awareness and whether the awareness leads to improved health and hygiene practices needs to be probed further, before any specific strategy can be defined
- environmental sanitation needs seem to vary not only across villages, but even within a village. As noted in the report, the habitat density is more in the centre of a village resulting in spatial problems in constructing drains, latrines, soakpits and so on. Even in villages where space is not a problem, soil conditions may impose constraints on solutions to sanitation problems. The approach to environmental sanitation must take these factors into account and identify appropriate solutions to the existing situational needs of different locations
- an important gender-related issue that has emerged from the study is the high participation of women from backward and schedule caste groups in fetching water. They also have more limited water storage facilities and limited access to washing, bathing and



cleaning facilities. In most poor households, facilities for storing adequate water for meeting household needs do not exist. This aspect will need to be addressed in the planning of water supply points and supply hours, as well as in the sanitation works to be initiated to meet the specific needs of this disadvantaged group for a more equitable reach of the project benefits

- so far, the responsibility for water supply implementation has been mainly with the district level authorities and for maintenance with the sub-division or mandal panchayat level bodies. Each of these have their own constraints of manpower and budgets. The result has been poor service to the end-users, reflected in their long list of grievances. On its part, the community has played a passive role even in the routine care, maintenance and responsible use of the facilities provided. To move from this situation of impasse, institutional linkages between the various agencies have to be clearly spelt out and operationalised right from the planning stage. Similarly, the community's role in the post-implementation phase i.e. in operation, minor repairs, maintenance and responsible use of the services has to be made clear. Perhaps, a village level body with representatives from all the segments of the community can play an effective role in this



ANNEXES



ANNEX 1 SHORT HISTORY OF THE DEVELOPMENT OF PARTICIPATORY RURAL APPRAISAL

The Participatory Rural Appraisal (PRA) technique is of recent origin and its use is as yet limited to areas of rural development. The technique was initially developed in the seventies when social scientists, in the wake of the success of the Green Revolution, became aware of the shortcomings of the conventional methods adopted by them. Particular attention had to be paid to poorer farmers in different heterogenous environments. This gave rise to an approach known as Farming Systems Research (FSR). Its general aim was to describe and analyze farming systems, to identify problems and plan research and extension activities.

Farming Systems Research, in its initial stage, adopted classical tools and techniques of surveying and analysing, but also stimulated developing new techniques to produce quicker and more accurate analyses of the complexities of farming systems. Together, these were called "Rapid Rural Appraisal" (RRA). RRA used a multidisciplinary team, working with the people to arrive quickly but systematically at hypotheses for further detailed investigations. The technique gradually gained recognition as a powerful tool in making realistic assessments in rural areas. The technique was promoted and propagated by Robert Chambers, Peter Hildebrand, Robert Rhoades, Michel Collinson and other development experts who called for a moratorium on the indiscriminate use of questionnaire-based surveys which had resulted in improper and misleading assessments of situations, resulting in a sort of "Development Tourism".

In contrast, the technique of Participatory Rural Appraisal is carried out with the basic premise that the members of the village communities are the actual resource persons and that any development worker has to become a member of the target community and "learn" rather than "collect data". Thus, the technique presupposes the wholehearted "participation" of the researcher in community events to gain deeper insights, rather than remaining an outsider visiting a village for a specific purpose.



WATER

Purpose: drinking, cooking, agricultural, handicraft
Sources, types of water
Methods of distribution
Quantity, seasonal variation, physical location
Accessibility
History of water sources, process of change
Taste pattern (technical, social)
Ownership of water sources (legal aspects)
Water management (access, payment and maintenance)
Time allocation (fetching for different purposes)
Attitudes towards water use

HEALTH

Health - water relationship
Cultural and traditional attitudes to health
Treatment of diseases (types)
Health statistics (women and children)
Morbidity pattern according to age groups
Water-borne diseases
Behavioural pattern in relation to adequacy of water, adequacy of health service system
Attitudes towards health

SANITATION

Housing pattern: presence and location of bathing spaces, latrines, cattle sheds, drainage, floors and roofs
Defecation pattern
Drainage and roads
Environmental degradation (deforestation)
Attitudes towards sanitation

RELIGION/CASTE/CLASS/GENDER

Socio-political structure of the village communities
Interaction between religion, class, caste & gender
Irrigation and type of water facility
Literacy levels
Time allocation (caste, class and gender)
Wealth ranking
Behavioural patterns
Attitudes towards leisure and work

INSTITUTIONS (FORMAL/INFORMAL)

Formal and informal (schools, health units, anganwadis)
Traditional institutions
Informal gatherings (identify existing pattern of gatherings and communications within the village)
Cooperatives, credit societies, banks
Institutions related to water
Types of organisations - caste, women, youth, trade unions
Attitudes towards institutions



ANNEX 3 RETROSPECT ON MANAGEMENT OF WATER SUPPLY

An understanding of the history of management of drinking water supply provides an idea about the evolution of water problems including contributing intrinsic and external factors as well as a prospect on the problems to be faced in the future. Also, the understanding may indicate policy implications leading to plausible remedial measures which could help reduce the inadequacies and alleviate consequent hardships. The need for such an understanding is found to be most acute at the village level, where water use undergoes tremendous changes and is instrumental in shaping the lives of the people. For this reason, one of the concerns of the project is to identify and understand the role of the village communities in the past and today in the operation and maintenance of such a vital public utility as a drinking water facility.

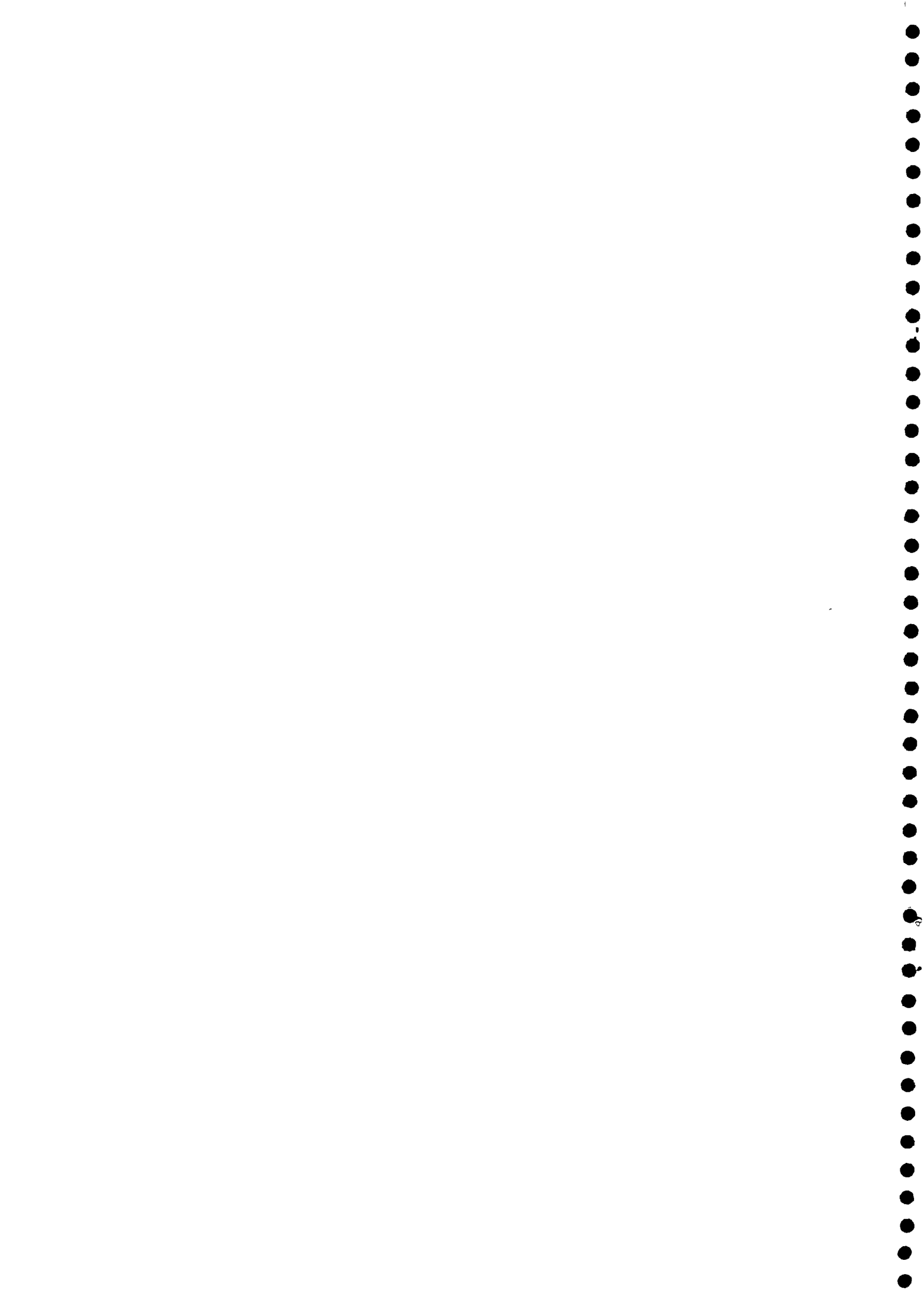
Therefore, an effort has been made to trace changes that took place in villagers' involvement with the introduction of new ways of water supply and management. In this regard, discussions were held with officials of the Public Health Engineering Department, with office bearers of concerned mandal panchayats and village elders. The latter category of informants has been included since one can expect that they have had personal experiences with changes and may have even witnessed them. Documents describing the history of water use and management in the sample villages are not available. Thus, the information provided by the above informants is of much interest. During the talks with them, attention focused on the respondents' experiences with drinking water management either as a participant or as a witness during periods they could recall.

Historically, a public utility such as a drinking water facility has always been an important component of the traditional village administration. The task of overseeing operation and maintenance was in the hands of the village panchayats and more specifically of the Talwar and Neeraganti caste members who formed distinct groups performing specific tasks. In addition, the Neeraganti were also in charge of managing irrigation water use by the villagers.

Operation and maintenance in the traditional village setting included among others the protection of open wells and other surface water bodies which were invariably the only or the major source of potable water. Maintenance included deepening of wells, periodic cleaning, tank desilting, making structural repairs and related tasks. For the case of a tank, maintenance included the appointment of a full-time guard, who kept a close watch on any type of misuse. Villagers were allowed only to draw water, while washing activities were not permitted. Offenders were fined. While people belonging to specific caste groups were involved in operation and maintenance, other villagers took part in the construction and allied works. Payments to the talwars and neeraganti were made in the form of foodgrain and other farm products during the harvest season, with each villager contributing a share towards the services provided.

The talks with the respondents revealed that the traditional drinking water management was primarily planned and administered by the community members as a self-contained mechanism, entirely based on mutual cooperation and understanding. The village panchayat was considered responsible for satisfying the community members' water needs and organized required measures, most often by utilizing locally available material, manpower and, importantly, funds.

During the period 1950 to 1980, spanning 30 years, the village populations witnessed tremendous changes in the realm of drinking water supply and management. A formal institutional framework emerged and government efforts to provide water in rural areas became an important activity. The Public Works Department (PWD) was assigned the responsibilities of planning, constructing and managing drinking water sources. The Block Development Officer (BDO) in coordination with the village panchayats implemented the works. The village



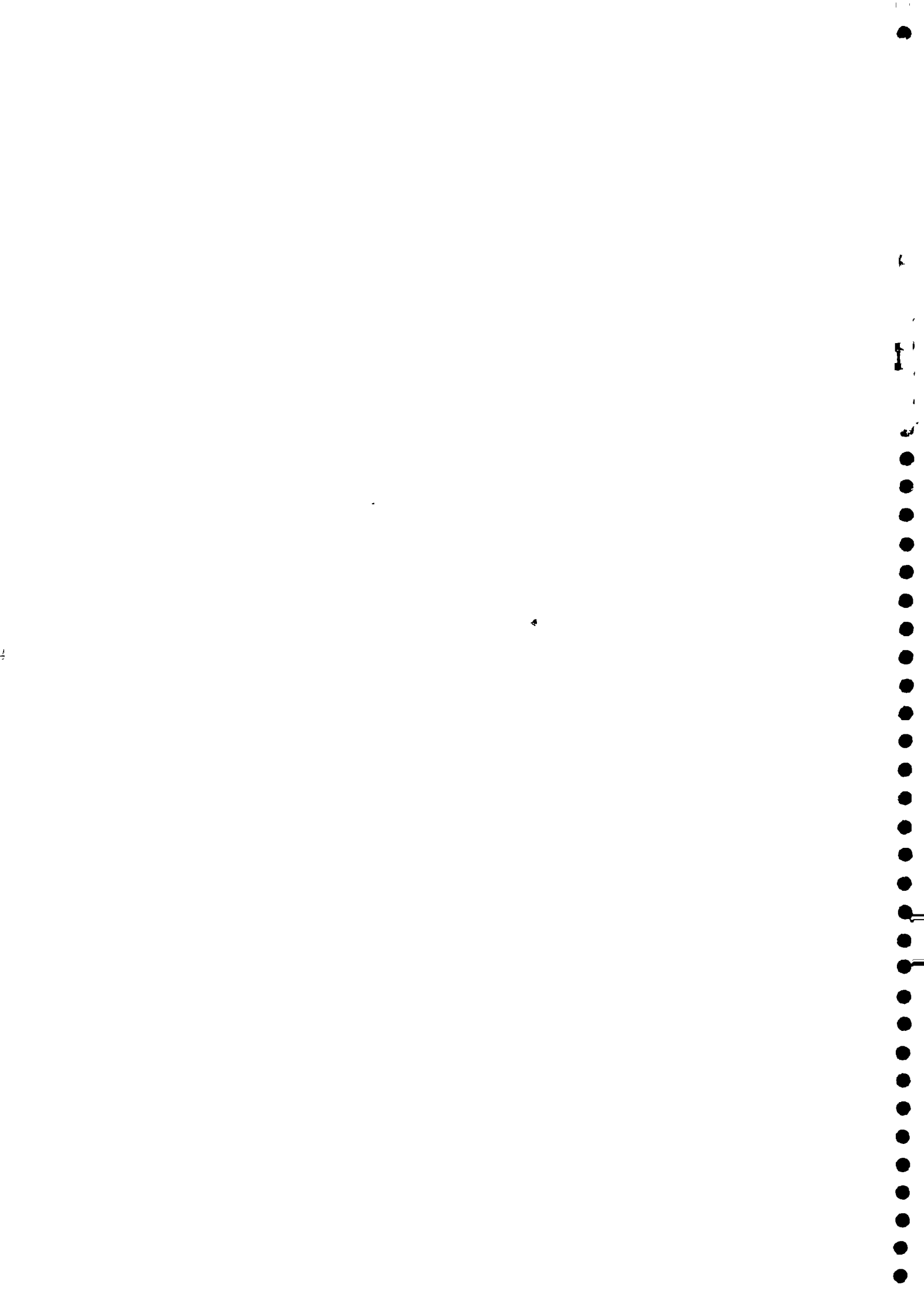
panchayats, on their part, became responsible for maintenance of the facilities and for collection of water taxes by payment in kind or cash. The village panchayats were also given powers on the funds collected through water tax.

The early 1970's saw a perceptible change with respect to the drinking water situation. For the first time people, especially in the rural areas, began to experience water scarcity. Among others, growing populations and drying up of open wells due to lowering of the groundwater table were the reasons for the scarcity. Consequently, water supply conditions became difficult for the people, especially for those from the poorer sections. In view of those developments, with widespread shortage of water, the need for a separate government agency solely responsible for the construction, protection, operation and maintenance of water supply facilities in rural areas arose. With the subsequent creation of the Public Health Engineering Department, the role of the village panchayats became further restricted.

In the mid seventies, a massive programme of installing borewells with handpumps was taken up by the Public Health Engineering Department in all villages of the state. Subsequently, in the mid eighties, major changes took again place with the introduction of a decentralized system of administration, comprising Zilla Parishads, Taluk Panchayats and Mandal Panchayats. The guiding philosophy of this decentralization was that the villagers themselves should be in the centre of decision-making and implementation of the various programmes, with a relatively secondary role given to the official machinery at the state level. Thus, earlier centralization was reversed in part. However, now, local government agencies were charged with responsibilities beyond their capacity in terms of resources.

The study also revealed that the existence of borewells is closely associated with the type of water problem faced. Thus, in scarcity villages, borewells with submersible pumps or open wells are often existing in abundance, though low yielding or not at all, reflecting the part-failure of the borewell programme; rapid proliferation of the new borewell technique for application in irrigation led to indiscriminate extraction and an alarming rate of depletion of the groundwater. In scarcity villages on river banks, water is most often lifted from the river, which however goes dry seasonally. In contrast, brackish villages present a different picture. The brackish groundwater cannot not be used and, hence, the people rely on surface runoff from rainfall for their needs. Thus, in the village of Yerinarayanapura, people depend entirely on rainfall since there is no other surface water source, while in the village of Jeergal, which lies right on the banks of the Ghataprabha River, people use the river water for about 9 months in a year. For about three months, they have water scarcity because of drying up of the river.

Further, it was established that, though officially in charge, government agencies mostly only played a minimal role in rural drinking water supply. Occasionally, the government provided financial help e.g. for digging of an open well or drilling of a borewell and installing a handpump but, thereupon, platform construction, protection and maintenance was often left to the local community and the concerned village panchayat.



ANNEX 4 WATER USE BY VILLAGE, PURPOSE AND RELIGION/CASTE
(Figures refer to containers of 10 to 12 liter and per family per day)

Religion/ Caste	Cooking/ Drinking	Washing/ Bathing	Utensils/ Clothes	Other
<u>Yerinarayanapura</u>				
Lingayats	4.9	7.1	7.6	11.2
Kurubas	7.4	5.6	8.8	5.1
Harijans	7.0	5.2	9.5	6.8
Muslims	7.5	7.0	9.0	10.2
<u>Alladakatti</u>				
Lingayats	6.1	9.7	7.3	2.3
Kurubas	4.3	2.0	4.3	2.5
Harijans	5.2	3.5	3.5	1.7
Muslims	6.5	6.0	5.5	2.0
<u>Antaravalli</u>				
Lingayats	2.5	4.5	5.0	2.0
Reddies	7.2	7.6	9.6	14.0
Talwars	4.6	3.8	7.0	4.0
Harijans	5.2	3.8	7.0	3.2
<u>Chillur</u>				
information not consistent				
<u>Churchihalla</u>				
Lingayats	3.6	5.3	6.2	8.3
Talwars	4.2	7.6	8.6	11.8
Harijans	5.2	7.6	9.4	8.5
Muslims	4.5	5.5	8.0	3.0
<u>Kalasur</u>				
Lingayats	6.8	10.2	8.4	2.0
Fishermen	6.4	5.7	in river	1.0
Talwars	5.4	3.5	4.4	3.0
Harijans	5.6	4.6	6.6	1.0
<u>Jeergal</u>				
Lingayats	3.0	4.7	8.7	8.0
Kurubas	4.5	4.0	5.4	5.6
Talwars	6.6	5.1	5.8	9.0
Harijans	4.8	4.8	7.8	7.8
Muslims	5.1	3.6	2.7	6.0
<u>Sangapura</u>				
Lingayas	6.2	7.8	at	2.7
Kurubas	3.9	3.8	bore-	1.3
Talwars	5.5	6.5	well	2.0
Harijans	4.4	5.4		4.8

