

EVALUATION
OF THE
SURAKARTA WATER PROJECT
IN
INDONESIA
BASELINE SURVEY RESULTS

PREPARED BY:
INTERNATIONAL STATISTICAL PROGRAMS CENTER
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I. BASELINE REPORT EXECUTIVE SUMMARY

Surakarta is an old city, and former Sultanate, with a population of over 500,000 located in Central Java. In the 1920's when the city population was 160,000, a public water supply system was constructed. The system has been expanded and poorly maintained since it was first constructed and today only serves one-tenth of the city residents. Those who are served receive water of questionable quality and unreliable service.

The Surakarta Potable Water Project was designed to increase the amount and quality of potable water provided to households currently connected to the existing water system, to extend service to lower income families and to provide free water and sanitary facilities for the poor in the project areas.

An evaluation of the effects of the project on the people of Surakarta is being sponsored by AID and conducted by an evaluation team from Cipta Karya with the guidance and assistance of the U.S. Bureau of the Census, International Statistical Programs Center. The evaluation addresses questions of quality and quantity of water available to the household, uses of the water within the household, household members' feelings about their water supply, the economic impacts of the water supply on the household, and the effects of the water supply on the health of the household members. This is being done by examining conditions existing in the areas of Surakarta which will benefit from the project (service areas) along with similar areas which do not receive project services (control areas). Conditions were measured prior to project implementation and will be measured again some time after project completion. These two sets of conditions, before and after, will be compared for both of the study areas in an attempt to measure the actual effects of the water project on the city residents. The study of both project service and non-service areas should allow the evaluators to begin to identify those effects actually caused by the project from those caused by other factors, although an absolute isolation of project effects is not possible with the "quasi" experimental design procedures used.

This report presents the results of the preproject baseline household survey which was conducted during June 1981, before the project was implemented in the study areas. The after-project follow-up household survey will be conducted in 1983 or 1984. The report on the follow-up survey results will provide measures of the actual effects of the Surakarta Water Project. The function of this report is to document preproject conditions in both the current and expanded service areas and the nonservice(control) area.

In analyzing the baseline survey results, comparisons are made between households in the service areas and those outside the service areas, primarily for the purpose of establishing whether the control group is comparable to the service group and to point out the differences as they exist at this time. Comparisons are also made within the service areas between households which are currently connected to the existing system and those which are not. The latter comparison reveals the differences and similarities between these two groups of households and gives an indication to the evaluators how the quality of life differs between households which have access to the water system and those that do not.

The detailed results of the baseline survey are divided into six areas of interest in section IV. A general summary is presented at the beginning of each of these sections.

Summary of Baseline Results

Currently Connected vs. Currently Nonconnected Households

In comparing currently connected households to those currently not connected to the city water system within the project areas, some significant differences emerge. The households currently connected (June 1981) show various signs of a higher standard of living than the nonconnected households in the same areas. These include higher monthly household expenditures, better quality housing, and higher educational attainment for the wife of the household head. Also, in currently connected households, the wife of the household head is twice as likely (40 percent versus 20 percent) to have completed a public course on child health care.

It is important to note that even in the currently connected households there are water supply problems. The connected households get most of their drinking water from their system connections but nearly one-third use well water for washing dishes, doing laundry and bathing. About one-half of the connected households still found it necessary to fetch water from an outside source. Over 80 percent of the drinking water samples taken from connected households were classified not safe in terms of coliform count. A common complaint among connected households was that water service was unreliable, with water being available from the system less than 12 hours a day, on a median basis.

Among the currently nonconnected households, over one-half said that they would like to connect, and the amount of money they were willing to pay for service varied directly with total household expenditures. Nearly half of the currently nonconnected households were willing to pay only Rp 700 (\$1.12) or less for monthly water service and nearly two-thirds said that they would not pay a connection charge. This underlines the importance of a reasonable connection fee and water service charges if the project is to succeed in expanding service to lower income households. One-third of the households reported a willingness to share a yard hydrant with other households. These currently nonconnected households, as previously mentioned, score lower than the currently connected households in many of the level of living indicators used in the baseline survey. Nearly two-thirds of these households obtained their drinking water from open wells and nearly 85 percent of these households fetched water from some outside source, usually spending approximately 30 minutes per day on water fetching and being dependent for their drinking water on a source at least 10 meters away.

Project Area vs. Non-Project Area Households

This comparison is made primarily to determine if the experimental (project area) and control (non-project area) households are equivalent with regards to selected indicators. But this comparison can also reveal differences between the areas chosen for the project and those not chosen. In terms of most of the socioeconomic indicators used here, there is little difference between the areas. For example, project and non-project households are

virtually identical with respect to family size and composition and very similar in educational attainment. There do not appear to be systematic differences between these groups in terms of the quality of housing construction material or housing assets. With regard to water usage, there is a heavier reliance on outside open wells in the non-project areas, due to the absence of water system connections and the relative absence of pumped wells. Because of this, nearly 90 percent of non-project area households fetch water, although they spend less time in doing so and travel shorter distances to fetch than nonconnected households in the project area. Surprisingly, a higher proportion of the non-project area households had safe water than even the system connected households, in terms of E. coli count. But only half of the non-project households had safe water according to the coliform count. Over one-half of non-project area households report using the river as a toilet facility, and just over 40 percent report use of a flush toilet, as compared to 73 percent of nonconnected households and 75 percent of connected households in the project area. The non-project areas also lagged behind in method of waste disposal, with a much higher percentage of non-project area households reporting that their waste water was disposed of in a dirt gutter or drainage ditch or simply "thrown in the yard or other place."

Anticipated Effects of the Project

About 10 percent of all project area households report that they have a water-related business in the home. Most of these are small restaurants or ice businesses, with an average of just over two persons working in them. One of the anticipated effects of this project is an increase in the number of these businesses and the number of people employed in them. The follow-up survey should also reveal whether water quality and water service reliability improve at the household level, what percentage of the households in the project area actually connect once the system is improved and expanded, whether these new connectors are households with lower incomes, and whether connecting households decrease their reliance on other sources of water for various household uses and therefore decrease time spent fetching water. It is important to note that the overwhelming majority of surveyed households report that they boil drinking water. And about one-fifth have had some training in child health care. Therefore, there is good reason to expect that safe and reliable sources of water could be put to good use in the households of Surakarta, probably resulting in ultimate positive health impacts.

In conclusion, there are some important questions about project effects that can only be answered after the project is completed and a follow-up survey is performed. The baseline survey does tell us that households with higher income and a higher standard of living are the ones which now have connections to the system. However, a system connection does not guarantee safe water or reliable availability of water. Availability of safe water for household and commercial uses is a problem throughout Surakarta, for both rich and poor. The Surakarta project can provide safe and reliable water service to a larger proportion of the city lower income population, but only if connection charges and monthly service charges are kept sufficiently low.

II. INTRODUCTION

The purpose of this report is to describe the evaluation undertaken to measure the effect of the Surakarta Potable Water Project on the households in the areas selected for the initial phase of the project. The report describes the target households before the introduction of the new water system and explains the relationship of the baseline survey to the overall evaluation, which will include another survey subsequent to the introduction of the new water system.

The Surakarta Potable Water Project was designed to replace, improve, and to a limited extent, extend the existing system which furnished an inadequate quantity of poor quality, contaminated water. The new system was designed to provide an adequate supply of safe water.

A. The Project

According to available documentation¹, the public potable water supply system of Surakarta was constructed in the late 1920's and was being utilized by the late 1950's. It is believed that the first serious shortages began in the early 1960's. Since 1965, new service connections have not been permitted except for official connections (public buildings, etc.). By 1970, the lack of potable water had reached crisis proportions and the British government was requested to assist in the development of an emergency project. By December 1971, a feasibility study was completed but the British Government did not finance the project to provide an improved water system. In June 1975 USAID provided assistance to the Government of Indonesia (GOI) in the form of funding for the final design of the project.

A major factor contributing to the water crisis in Surakarta has been the rapid rate of population growth that Surakarta has experienced since the 1920's. The population of Surakarta has grown from 163,000 people in 1920 to an estimated 460,000 people in 1976 and was projected (1976 population projections) to reach 538,000 in 1982, and 1 million by the year 2001.

The existing system provides potable water to only 7,877 households, or an estimated 49,800 persons. About 85 percent of the population is dependent upon shallow wells for water. Unfortunately, a great number of these wells are contaminated, a situation which will only get worse as the population continues to grow. Also, seasonal shortages and high salinity limit the use of shallow wells, forcing many of the less fortunate to use highly contaminated river water. On several occasions, the river has gone dry, causing serious problems for the entire population.

The Surakarta Water System Project was designed to benefit: (1) the 7,877 currently connected households, (2) the estimated 660 nondomestic consumers who together employ about 27,700 people, (3) 78,000 lower-income people who will be served by private yard hydrants, (4) 60,000 poor people who are expected to use public faucets and (5) thousands more poor persons who are expected to use public latrines and bathhouses. It is thus estimated that the project will benefit 188,000 people, which is approximately 35 percent of the estimated 1982 population.

¹Project Paper, Indonesia-Surakarta Potable Water Project, AID-UCL/2199, September 13, 1976.

The project improvements will provide additional water from Cokrotulung Spring, the present primary source of the Surakarta water system. The flow rate for the existing system of 150 liters per second will be increased to 400 liters per second by the addition of a second transmission main. Under the proposed project, the new water main will be constructed from a water intake structure already completed at the spring. Water will be piped to a newly constructed water reservoir at Kartosuro. Both of these new structures were built prior to 1976 by Cipta Karya in anticipation of the project. Another new main will carry the water from Kartosuro to the Jebres Reservoir in Surakarta, a distance of about 13 kilometers. Additionally, about 150 kilometers of new distribution lines will be installed and integrated with the 106 kilometers of existing distribution lines in order to upgrade supply capabilities to the city.* Project outputs also include 13,000 new metered yard hydrants in the most congested areas of the city, providing water for low-income families, and the construction of 200 public faucets and 10 new bathhouses intended to reach the poorest segments of the population. The existing 147 public latrines will be upgraded and provided with water 24 hours a day. Yard hydrants and public faucets are new and under revised plans for expanded secondary and tertiary systems the water enterprise is aiming for 1,000 new connections a year. A new rate will be introduced that will make the new water system financially viable for the urban poor, while insuring that water is not wasted.

The project will be implemented in 4 phases. The first three phases deal with distribution line connection which coincide with 3 areas of the city. The areas selected for the first phase of construction are the poorest areas of Surakarta and consist of 8 kelurahans (administrative districts). The project executing agency is Cipta Karya, one of the four major organizations within the Ministry of Public Works and Electric Power. In early 1979, Cipta Karya appointed four staff members to an evaluation team which would plan and supervise the evaluation of this project. This evaluation team is being assisted by USAID staff and technical assistance is provided by the U.S. Bureau of the Census, International Statistical Programs Center.

B. The Evaluation

The project is to be evaluated on the basis of a "before and after with control group" design intended to measure the effects of the project on the target population. To measure project effects definitively (that is, to distinguish and isolate those effects from extraneous factors), random introduction of the experimental variable -- the new water system -- is a necessary condition. In this project the areas to receive the new water system were predetermined so that randomness was not achieved nor was it feasible. Therefore, quasi-experimental design procedures are to be used to study project effects. This is done by comparing the project or "experimental" areas with "control" areas, the latter chosen for their similarity to the project areas. Unfortunately, a control group selected in this way can never be an exact match for the experimental group, hence the word "quasi." Care is taken however, to select the control groups as carefully as possible to match the experimental group so that the variety of extraneous factors that may effect observed changes between the two groups in pre- and post-studies are hopefully minimized.

*NOTE: A leak survey and a review of consumer billings revealed 65 percent water losses in the existing system. A concentrated effort is being made by the Water Enterprise to repair leaks and meters and revise billing procedures to get water losses down below 20 percent.

Under this type of design, selected indicators of key variables are measured in the project area and control area before the project is introduced into the project area and again after the project interventions have been operating for some time. This allows an assessment of changes that might have occurred in the project area had the water system not been introduced.

The study will measure and document the technical performance of the project, as well as the utilization of the water system by the population. In addition, the study will measure the users' opinions on satisfaction with project services and determine why people choose not to use or subscribe to these services. Several indicators of health status and knowledge of health practices will also be obtained along with indicators of the impact on household businesses and household consumption. However, the study will not provide conclusive evidence of the health impacts because the evaluation budget was insufficient to support the scale of such an investigation.

This document reports the results of the "before" or baseline survey, conducted just prior to the project implementation. The data presented in this report were obtained from a household survey administered to a probability sample of households in the eight administrative districts in which the project will be implemented in its first phase and three other districts (control groups) which have not (and will not receive the project water system). These three districts were selected because of similar socioeconomic, demographic and geographic characteristics to households in the project area. It should be noted that the project areas selected in the first phase were among the poorest areas.

This report documents the characteristics of each group at the time the baseline survey was conducted. Information on the relative change in key variables within and between groups and an assessment of the extent to which these may be attributed to the project intervention will be presented in the Final Evaluation Report.

C. Description of U.S. Census Bureau Involvement

The U.S. Bureau of the Census became involved in the Surakarta Water Project in November 1978. The role of the Bureau of the Census was to furnish advisers to provide training and consultation to the Indonesian counterparts in Cipta Karya. Training on evaluation began in early 1979. Technical assistance was provided to help identify issues for the evaluation, design an evaluation plan, and prepare for data collection.

Survey design was well underway by January 1981 when the mission requested a scale-down of the evaluation. Accordingly, the sample size was reduced from 3,000 to 900 households from 11 rather than 15 kelurahans. In addition, the questionnaire was reduced from 101 questions with 205 data items to 59 questions with 95 data items. The major objective of the evaluation was still the measurement of project performance, but the revised plans scaled-down the evaluation of the health and economic impact. Instead, selected indicators of health status and practices would be measured, but without attempting to draw conclusions about the relationship between water services provided by the project and the health status of its beneficiaries.

The baseline survey was conducted in June 1981 by our evaluators in Cipta Karya along with the Indonesian Central Bureau of Statistics and the U.S. Bureau of the Census advisers. A final set of tabulations was obtained by U.S. Bureau of the Census advisers during a trip in March 1982. This report is based on those tabulations.

III. STATISTICAL METHODOLOGY

A quasi-experimental design was chosen for the study in order to permit the effects or impact of the project to be measured separately from the influences of other factors which may also have affected the selection indicators of key variables during the study period. Under such a design, the effects of the project are appropriately measured as the difference between the observed changes in indicators in the population or group to which the intervention is administered and any changes observed in a population which is not exposed to the project intervention over the course of the study period. In the present evaluation, the appropriate comparison or study groups are households located in the project and selected non-project areas respectively. However, for the analytic purposes, the sampled households in the project areas are further divided into users and non-users of Surakarta Water Enterprise (SWE) services. This additional distinction will enable the effects of the project to be measured more precisely, since the project intervention can logically affect only the portion of the project area population that is actually exposed to the intervention. In addition, the analytic separation of users from non-users in the project areas should be useful in identifying the factors which account for non-users choose not to subscribe to SWE services. Thus, the following comparisons will form the basis of the analysis of both the baseline and final reports:

1. Project vs. Non-project
2. Project SWE Users vs. Project Non-SWE Users

The study population was allocated to either the project or non-project strata on an areal basis (i.e., whether or not each given household was located in an area which was to be provided SWE services) and to user or non-user strata on a household basis (i.e., whether or not a given sample household reported using SWE services).

A. Study Design

As mentioned, the study will measure and document performance of the water system and its utilization by the population in the project area. Their key variables to be investigated are as follows:

Water system performance:

- Water quality at the source
- Water quantity (rate of flow, pressure)
- Reliability of flow (24-hour availability)
- Unit cost of water
- Water losses

Utilization of water by target population:

- Accessibility of water services
- Coverage of target population
- Characteristics of users and non-users
- Source of water for abolution, cleaning, drinking and food preparation
- Frequency of use of water for these purposes
- Amount of time spent fetching water
- Number of water-related businesses
- Number of employees in water-related businesses

Public Opinion:

Users:

Satisfaction/dissatisfaction with SWE services

Non-users:

Desire to subscribe to or use SWE water

Reasons for not subscribing to or using SWE services

Satisfaction/dissatisfaction with other water sources

Impact on Economic Status of target population:

Income from water-related businesses

Other selected indicators of income

Indicators listed above, along with selected socioeconomic and demographic characteristics, were measured in a survey administered just before new connections were installed and will again be measured one to two years later. The questionnaire administered during the baseline survey and planned for the follow-up survey is contained in Appendix I.

B. Sample Design

For the baseline survey, the questionnaire was administered to a probability sample of households in the study population: eight kelurahans, Manahan, Kestalan, Gilingan, Jebres, Jagalan, Kampung Sewu, Kepatihan Wetan, and Kratonan, which compose Phase I of the project area; and the three comparison kelurahans, Jayotakan, Pajang, and Sumber. There is a total of 51 kelurahans in Surakarta of which 22 were to receive water systems. The evaluation team, USAID and the U.S. Census Bureau decided to limit the study to Phase I kelurahans since the amount of time between completion of construction in Phase II and III areas and the scheduled follow-up survey would not be sufficient to allow project effects and impacts to be realized by the target population. The three comparison kelurahans (non-project area) were selected because they have not and will not receive the project water system and because of their similar socioeconomic, demographic and geographic characteristics to households, in the Phase I kelurahans.

A target sample size of 900 households was established in order to obtain about 300 households in each of the comparison groups: SWE users, SWE non-users and non-project area households. Maps and household listings used for the October 1980 Census were made available by the Indonesian Central Bureau of Statistics.

Households on the census listing were clustered into groups of three and the clusters were then systematically selected to obtain the desired sample size. In the project area, 214 clusters were selected resulting in 642 households. In the non-project area, 104 clusters were selected resulting in 312 households in the sample.

The evaluation team randomly selected one household from each cluster of three to have its water tested. Tests producing an E. coli count and total coliform count were conducted on water samples from the selected households.

C. Statistical Analysis

Weighting the Household Data

Since the household survey was a sample survey, the data were weighted in order to produce estimates for the entire project Phase I area and the non-project area. Also, adjustments were made for the noninterviews, the majority of which were due to the selection of vacant structures into the sample.

Based on the 1980 census household listings, the total number of households in the project Phase I area was 18,173. There were 642 households from the project area in the sample and the unadjusted weight was 28.3 per household. In the non-project area, 312 out of 6,218 households were selected for the sample with an unadjusted weight of 19.9.

In adjusting the weights for noninterviews, the reasons for noninterview were examined. Vacant houses were considered out of scope, since they should not have been included in the sample frame. True noninterviews consisted of refusals, not at home, on vacation, etc. In the project area there were only 10 noninterviews (about 2 percent), and in the non-project area there were 3 noninterviews (about 1 percent). Noninterview adjustment factors were calculated as follows:

$$\text{noninterview adjustment} = \frac{\text{no. of completed interviews} + \text{no. of noninterviews}}{\text{no. of completed interviews}}$$

$$\text{adjusted weight} = \text{noninterview adjustment} \times \text{unadjusted weight}$$

	<u>Project Area</u>	<u>Non-Project area</u>
Sample Size	642	312
Interviewed Households	617	
Vacant households	15	10
noninterviews	10	3
noninterview adjustment factor	$\frac{617 + 10}{617} = 1.02$	$\frac{299 + 3}{299} = 1.01$

The adjusted weights were then 28.9 for the project area households and 20.1 for the non-project area households.

Reliability of Household Data

The household survey results contained in this report and used in preparation of the analytical findings are estimates. The estimates are subject to error arising from the fact that they were obtained from a sample survey rather than from a complete census. The particular sample used is one of a large number of possible samples of equal size that could have been used applying the same sample design and selection procedures. Estimates derived from different samples would differ from each other. The standard error of a survey estimate is a measure of the variation among the estimates from all

possible samples and is, therefore, a measure of the precision with which the estimate from a particular sample approximates the average result of all possible samples.

The standard error of the difference between two survey estimates is approximately equal to the square root of the sum of the squares of the standard error of each estimate considered separately. The formula will generally overestimate the true standard error. If the standard error of the difference is less than the difference itself, the differences between the two estimates is statistically significant at the 68 percent confidence level; moreover, if twice the standard error of the difference is less than the difference, then the difference is significant at the 95 percent confidence level.

In this report, comparative results that are presented in the narrative of the detailed findings have been tested at the two-standard error level of significance (95 percent confidence level) to insure that apparent differences are not merely attributable to sampling error. If comparisons were not found to be significant at the two-standard error level but were significant at the 1.6 standard error level (90 percent confidence level), they are stated as "marginally" significant.

IV. DETAILED SURVEY RESULTS

The detailed findings of the baseline survey are presented below in six sections divided along topical lines as follows:

- A. Socioeconomic Profile of the Study Population
- B. Sources of Water and Water Quality
- C. Sanitary Practices
- D. Water-Related Business in the Study Population
- E. System Usage and Performance
- F. Attitudes and Preferences Among Nonsubscribers

A. Socioeconomic Profile of the Study Population

Summary

The first section of the report assesses the extent and nature of similarities and differences among the various study groups in the population prior to project implementation with respect to socioeconomic characteristics. Data were collected on the following: family size and composition, educational attainment, housing quality (measured in terms of structural characteristics), household assets, level of monthly expenditures (a proxy for household income), perceived levels of health and living standards, and levels of diarrheal morbidity among children aged 5 years or under.

Overall, there appears to be only minor differences between the project and non-project households in the study population in terms of these characteristics at the time of the baseline survey. Project and non-project households were virtually identical with respect to family size and composition and very similar with respect to educational attainment (measured in terms of attainment of the wife of the head of household). While a higher proportion of non-project households owned their homes (82 percent versus 68 percent of project households), there did not appear to be systematic differences between these groups in terms of the quality of housing construction materials (i.e., for walls and floors) or household assets and only a small difference in terms of level of total monthly expenditures, with project households reporting higher expenditures.

Despite these similarities, project households perceived their living conditions to be better than did non-project households, with 21 percent of project versus 5 percent of non-project households reporting good or excellent living conditions. Project households also perceived their level of health conditions to be better than did non-project households although these perceptions were not supported by the data on diarrheal morbidity among children, which showed no difference.

In contrast to the overall similarity between the project and non-project households, distinct and constant differences were observed in comparing SWE users and non-users within the project stratum. User households were characterized by larger household size, higher level of educational attainment among women, superior quality of housing construction materials, markedly higher levels of monthly expenditures (both total expenditures and expenditures for meals), and perceptions of higher living and health conditions. It is clear that SWE users at the time of project implementation were a select group within the project

area. These initial differences should be kept in mind in the interpretation of the data in the remainder of this report as well as the final evaluation report.

1. Description of Households in the Study Population

From the survey results (see Table 1), we estimate a total of 23,842 households in the study population. An estimated 17,832 households are in the project area, of which 2,399 are SWE users and 15,433 are non-users, and 6,010 households are in the non-project or control area. An average of 5.2 members per household is observed in both the project and non-project areas. However, within the project area, those households that use SWE sources have a higher average number of household members, 6.4, than in non-SWE user households, 5.0. Households in the study population as a whole have an average of 1.8 children under 15 years of age per household and about 0.6 children under 5 years of age per household. The larger household size of SWE users is, in part, explained by the higher mean number of persons aged 15 or less of 2.1 per household.

Table 1. Number of Households: Study Group by Age Category, June 1981

Age Category	Total	Study Group			
		Project Phase I			Non-Project
		Total	SWE Users	Non-Users	
Total Households	23,842	17,832	2,399	15,433	6,010
Average Household Size	5.2	5.2	6.4	5.0	5.2
Average No. of People Under 15 Years of Age	1.8	1.8	2.1	1.7	1.8
Average No. of People Under 5 Years of Age	0.6	0.6	0.6	0.6	0.7

Source: Table 1

2. Educational Characteristics

Overall, nearly one-third of the wives of the head of households had not attended school, one-third had attended primary school, 19 percent secondary school and 16 percent high school or above. In the project area, 30 percent of the wives of head of household never went to school compared to 36 percent of the wives of head of household in the non-project area. Within the project area, significantly fewer wives (16 percent) in SWE user households did not attend school compared to wives in the project area non-user households (33 percent). Forty-two percent of the wives in households using SWE water completed secondary school or high school compared to 31 percent of the wives in project area households not using SWE water (Table 2).

In the study population, 21 percent of the wives of head of household attended health clinic classes (PKK - see Table 1.3). A higher percentage (41 percent)

of women in households in the project area that used SWE water attended PKK than women in households in the project area that did not use SWE water (18 percent). Of those women who attended any school (61 percent), a higher proportion (30 percent) attended PKK classes. In the project area households that used SWE water, 49 percent of the women had attended PKK classes and 26 percent of the women in households that did not use SWE attended PKK. Of the women who never attended school (39 percent of study population), only 7 percent attended PKK classes from households in the project area and 3 percent of the women from households in the non-project area. In general, the distribution with respect to education for wives is much more similar for non-users versus non-project than for users versus non-users within the project area.

Table 2. Number and Percent of Households Where Wife of Head Attended School: Study Group by Highest Level of Schooling Completed, June 1981

Highest Level of Schooling Completed	Total		Study Group							
			Project Phase 1						Non-Project	
	Total		SWE Users		Non-Users		Non-Project			
	Number	Per- cent	Number	Per- cent	Number	Per- cent	Number	Per- cent	Number	Per- cent
Total Households Where Wife of Head Attended School.....	14,023	100.0	10,666	100.0	1,822	100.0	8,844	100.0	3,357	100.0
Years Completed										
None.....	4,414	31.5	3,208	30.1	289	15.9	2,919	33.0	1,206	35.9
Primary.....	4,694	33.5	3,729	35.0	694	38.1	3,035	34.3	965	28.7
Secondary.....	2,684	19.1	2,081	19.5	405	22.2	1,676	19.0	603	18.0
High School..	1,887	13.5	1,445	13.5	376	20.6	1,069	12.1	442	13.2
Academy.....	304	2.2	203	1.9	58	3.2	145	1.6	101	3.0
University....	40	.3	-	-	-	-	-	-	40	1.2
Not Reported..	-	-	-	-	-	-	-	-	-	-

Source: Table 4

Table 3. Number and Percent of Households: Study Group
by School Attendance and PKK* Course Attendance of
Wife of Household Head, June 1981

School Attendance and PKK Course Attendance of Wife	Total		Study Group							
			Project Phase 1						Non-Project	
	Total		SWE Users		Non-Users					
	Number	Per- cent	Number	Per- cent	Number	Per- cent	Number	Per- cent	Number	Per- cent
Total Households	23,842	100.0	17,832	100.0	2,399	100.0	15,433	100.0	6,010	100.0
All Households Reporting on School Attendance										
PKK* Attendance:										
Total.....	23,022	100.0	17,253	100.0	2,312	100.0	14,941	100.0	5,769	100.0
Attended PKK..	4,779	20.8	3,613	20.9	954	41.3	2,659	17.8	1,166	20.2
Wife Attended School										
PKK Attendance:										
Total.....	14,022	100.0	10,666	100.0	1,822	100.0	8,844	100.0	3,357	100.0
Attended PKK..	4,256	30.4	3,150	29.5	896	49.2	2,254	25.5	1,106	32.9
Wife Never Attended School										
PKK Attendance:										
Total.....	9,001	100.0	6,589	100.0	491	100.0	6,098	100.0	2,412	100.0
Attended PKK..	523	5.8	463	7.0	58	11.8	405	6.6	60	2.5
Total Households with no Wife Reporting.....	819	3.4	578	3.2	87	3.6	491	3.1	241	4.0

Source: Table 3

*PKK - Child Health Care Classes

3. Housing Characteristics

Overall, nearly 72 percent of households in the study population owned their homes, although variations by study group are apparent (see Table 4). A higher percentage of households in the non-project area owned their homes compared to the project area (82 vs. 68 percent). Within the project area, slightly more households that did not use SWE sources were owned by the resident (69 percent) than those households that did use SWE water (63 percent).

There did not appear to be substantial differences between the households in the project area and those in the non-project area with respect to the material of the house walls. Half of the house walls in study population households were made of bamboo or wood and nearly 40 percent had all concrete/brick walls. Within the project area there was a higher percentage of SWE user households with concrete/brick walls (57 percent) compared to the non-user households (33 percent). Of the SWE user households, 29 percent had bamboo or wood walls compared to 57 percent of the non-user households (Table 5).

There did appear to be a difference in the type of floors found in the project households as compared to those in the non-project area. In the project area, 25 percent of the households had tile floors compared to 14 percent of the non-project households. In contrast, only 28 percent of the households in the project area had dirt floors compared to 39 percent of the households in the non-project area. Within the project area there was a striking difference between the SWE user and non-user households in respect to their floors. One-half of the SWE user households had tile floors compared to 22 percent of the non-users and only 5 percent of the SWE users had dirt floors compared to 31 percent of the non-users. Nearly half (46 percent) of the households in the project and non-project areas had cement or brick floors (Table 6).

There was very little difference between project and non-project area households in terms of the type of chairs found (Table 7). In the project area, 45 percent of the households had wood, rattan or metal chairs with padded seats compared to 40 percent of the non-project area households. Thirty-one percent of the project area households and 30 percent of the non-project area households had plastic or rattan chairs. Also, 17 percent of the project area households and 15 percent in the non-project area had slatted wood chairs. Fewer project area households had no chairs compared to nonproject area households (3 vs. 9 percent).

Table 4. Number and Percent of Households:
Study Group by Ownership of House, June 1981

Ownership of House	Total		Study Group							
			Project Phase 1						Non-Project	
	Total		SWE Users		Non-Users		Non-Project			
	Number	Per- cent	Number	Per- cent	Number	Per- cent			Number	Per- cent
Total Households	23,842		17,832		2,399		15,433		6,010	
Households Reporting.....	23,842	100.0	17,832	100.0	2,399	100.0	15,433	100.0	6,010	100.0
Resident Owns House....	17,043	71.5	12,139	68.1	1,503	62.7	10,636	68.9	4,904	81.6
Resident Does Not Own House.	6,799	28.5	5,693	31.9	896	37.3	4,797	31.1	1,106	18.4

Source: Table 53

Table 5. Number and Percent of Households:
Study Group by Material of House Walls, June 1981

Material of House Walls	Total		Study Group							
			Project Phase 1						Non-Project	
	Total		SWE Users		Non-Users		Non-Project			
	Number	Per- cent	Number	Per- cent	Number	Per- cent			Number	Per- cent
Total Households	23,842		17,832		2,399		15,433		6,010	
Households Reporting.....	23,842	100.0	17,832	100.0	2,399	100.0	15,433	100.0	6,010	100.0
Bamboo.....	8,994	37.7	6,300	35.3	318	13.3	5,982	38.8	2,694	44.8
Wood.....	3,570	15.0	3,208	18.0	376	15.7	2,832	18.4	362	6.0
Part Con- crete/Brick....	2,571	10.8	1,908	10.7	347	14.5	1,561	10.1	663	11.0
All Con- crete/Brick....	8,678	36.4	6,387	35.8	1,358	56.6	5,029	32.6	2,291	38.1
Other.....	29	.1	29	.2	-	-	29	.2	-	-

Source: Table 51

Table 6. Number and Percent of Households:
Study Group by Material of Living Room Floor, June 1981

Material of Living Room Floor	Total		Study Group							
			Project Phase 1						Non-Project	
	Total		SWE Users		Non-Users		Non-Project			
	Number	Per- cent	Number	Per- cent	Number	Per- cent			Number	Per- cent
Total Households	23,842		17,832		2,399		15,433		6,010	
Households Reporting.....	23,842	100.0	17,832	100.0	2,399	100.0	15,433	100.0	6,010	100.0
Dirt.....	7,226	30.3	4,914	27.6	116	4.8	4,798	31.1	2,312	38.5
Cement.....	9,298	39.0	7,167	40.2	896	37.3	6,271	40.6	2,131	35.5
Brick.....	1,896	8.0	1,213	6.8	173	7.2	1,040	6.7	683	11.4
Tile.....	5,402	22.7	4,538	25.5	1,214	50.6	3,324	21.5	864	14.4
Other.....	20	.1	-	-	-	-	-	-	20	.3

Source: Table 52

Table 7. Number and Percent of Households:
Study Group by Type of Living Room Chairs, June 1981

Type of Living Room Chairs	Total		Study Group							
			Project Phase 1						Non-Project	
			Total		SWE Users		Non-Users			
	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent
Total Households	23,842		17,832		2,399		15,433		6,010	
Households Reporting.....	23,823	100.0	17,832	100.0	2,399	100.0	15,433	100.0	5,991	100.0
No Chairs.....	1,005	4.2	462	2.6	-	-	462	3.0	543	9.1
Slatted Wood..	4,019	16.9	3,094	17.3	405	16.9	2,689	17.4	925	15.4
Plastic/ Rattan.....	7,347	30.8	5,578	31.3	636	26.5	4,942	32.0	1,769	29.5
Wood, Rattan or Metal with Padded Seat... Wood with Silk, Velvet or Cotton Cushions.....	10,339	43.4	7,947	44.6	1,127	47.0	6,820	44.2	2,392	39.9
Other.....	923	3.9	722	4.0	231	9.6	491	3.2	201	3.4
	190	.8	29	.2	-	-	29	.2	161	2.7

Source: Table 50

4. Living Standards

Project area households reported a slightly higher level of monthly expenditures than did non-project households; 32 percent of the households in the project area spent Rp 50,000 (\$80) or more compared to 27 percent of the households in the non-project area, while 28 percent of the project households spent less than Rp 30,000 (\$48) compared to 36 percent of the non-project area households (Table 8).

Within the project area, SWE users spent significantly more money per month than non-users. More than half of the SWE user households spent more than Rp 50,000 (\$80) compared to 35 percent of the non-user households (Table 8).

In looking at the amount of money spent per month on meals, no real difference was evident between households in the project area and households in the non-project area. However, within the project area, SWE user households spent slightly more for meals than non-SWE users. In fact, 40 percent of the SWE users spent over Rp 1,400 (\$2.24) compared to 24 percent of the non-users. Only 27 percent of SWE users spent less than Rp 1,000 (\$1.60) compared to 47 percent of the non-users (Table 9).

Table 8. Number of Households:
Study Group and Subscription Status by Approximate Total Monthly
Household Expenditures, June 1981

Approximate Monthly Household Expenditures (in Rupiah)	All Study Groups		Study Group											
			Total		Project Phase I						Non-Project			
	SWE Users - Subscription Status													
			Total		Subscribers		Non-Subscribers		Non-Users					
Number	Per- cent	Number	Per- cent	Number	Per- cent	Number	Per- cent	Number	Per- cent	Number	Per- cent	Number	Per- cent	
Total Households..	23,842		17,832		2,399		1,243		1,156		15,433		6,010	
Households Reporting.....	23,842	100.0	17,832	100.0	2,399	100.0	1,243	100.0	1,156	100.0	15,433	100.0	6,010	100.0
0-29,999...	7,189	30.2	5,058	28.4	318	13.3	116	9.3	202	17.5	4,740	30.7	2,131	35.5
30,000-49,999...	9,265	38.9	6,994	39.2	838	34.9	289	23.3	549	47.5	6,156	39.9	2,271	37.8
50,000 or more..	7,388	31.0	5,780	32.4	1,243	51.8	838	67.4	405	35.0	4,537	29.4	1,608	26.8
Don't Know.....	-		-		-		-		-		-		-	

Source: Table 45

Table 9. Number of Households: Study Group and Subscription Status by Approximate Monthly Expenditures on Meals, June 1981

Approximate Monthly Expenditures on Meals (in Rupiah)	All Study Groups		Study Group											
			Total		Project Phase I						Non-Project			
	SWE Users - Subscription Status						Non-Users							
	Total		Subscribers		Non-Subscribers									
Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	
Total Households..	23,842		17,832		2,399		1,243		1,156		15,433		6,010	
Households Reporting.....	23,812	100.0	17,802	100.0	2,399	100.0	1,243	100.0	1,156	100.0	15,403	100.0	6,010	100.0
0-599.....	4,999	21.0	3,612	20.3	260	10.8	87	7.0	173	15.0	3,352	21.8	1,387	23.1
600-999.....	5,828	24.4	4,220	23.7	376	15.7	116	9.3	260	22.5	3,844	25.0	1,608	26.8
1,000-1,399.....	7,047	29.6	5,318	29.9	810	33.8	405	32.6	405	35.0	4,508	29.3	1,729	28.8
1,400 or more....	5,938	24.9	4,652	26.1	953	39.8	635	51.1	318	27.5	3,699	24.0	1,286	21.4
Don't Know.....	-		-		-		-		-		-		-	

Source: Table 46

Households in the project area perceived their living conditions to be better than those in the non-project area. Although this is a subjective question, it is interesting nonetheless. Twenty percent of the households in the project area perceived their living conditions to be good compared to only 5 percent of the households in the non-project area. Seventy-five percent of the households in the project area found their living conditions to be fair compared to 81 percent of those in the non-project area. Where only 3 percent of the households in the project area felt their living conditions were poor, 14 percent of the households in the non-project area reported such a perception. Within the project area, 40 percent of those households that use SWE sources felt their living conditions were good compared to only 17 percent of those that did not use SWE sources (Table 10).

Table 10. Number and Percent of Households:
Study Group by Perceived Level of Living Conditions, June 1981

Perceived Level of Living Conditions	Total		Study Group							
			Project Phase 1						Non-Project	
	Total		SWE Users		Non-Users		Non-Project			
	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent
Total Households	23,842		17,832		2,399		15,433		6,010	
Households Reporting.....	23,842	100.0	17,832	100.0	2,399	100.0	15,433	100.0	6,010	100.0
Excellent.....	29	.1	29	.2	-	-	29	.2	-	-
Good.....	3,944	16.5	3,642	20.4	954	39.8	2,688	17.4	302	5.0
Fair.....	18,302	76.8	13,438	75.4	1,329	55.4	12,109	78.5	4,864	80.9
Poor.....	1,287	5.4	463	2.6	58	2.4	405	2.6	824	13.7
Don't know; No opinion....	280	1.2	260	1.5	58	2.4	202	1.3	20	.3

Source: Table 37

5. Health Status

More households in the project area felt their health status was good, 53 percent, compared to 39 percent of the non-project area households. Conversely, households in the project area (86 percent) felt that their health status was fair compared to those households in the non-project area (61 percent). Only 2 percent of the households indicated that any of the children less than five had diarrhea in the last 24 hours in both the project and non-project areas (Tables 11, 12). The diarrhea data should be viewed with caution, however, as they would appear to reflect improbably low rates of diarrhea among children.

Table 11. Number and Percent of Households:
Study Group by Perceived Level of Health and
Physical Condition of Household Members, June 1981

Perceived Level of Health of Household Members	Total		Study Group							
			Project Phase 1						Non-Project	
	Total		SWE Users		Non-Users		Non-Project			
	Number	Per- cent	Number	Per- cent	Number	Per- cent	Number	Per- cent	Number	Per- cent
Total Households	23,842		17,832		2,399		15,433		6,010	
Households Reporting.....	23,842	100.0	17,832	100.0	2,399	100.0	15,433	100.0	6,010	100.0
Excellent.....	78	.3	58	.3	-	-	58	.4	20	.3
Good.....	11,724	49.2	9,392	52.7	1,416	59.0	7,976	51.7	2,332	38.8
Fair.....	11,924	50.0	8,266	46.4	983	41.0	7,283	47.2	3,658	60.9
Poor.....	116	.5	116	.7	-	-	116	.8	-	-
Don't know; No opinion....	-	-	-	-	-	-	-	-	-	-

Source: Table 36

Table 12. Number and Percent of Children Under 5 Years of Age:
Study Group by Diarrheal Status in last 24 Hours, June 1981

Diarrheal Status in Last 24 Hours	Total		Study Group							
			Project Phase 1						Non-Project	
	Total		SWE Users		Non-Users		Non-Project			
	Number	Per- cent	Number	Per- cent	Number	Per- cent	Number	Per- cent	Number	Per- cent
Total Households Reporting Number and Diarrheal Status of Children.....	23,550		17,600		2,370		15,230		5,950	
Total Children Under 5 Years of Age in Reporting Households.....	14,063	100.0	9,942	100.0	1,474	100.0	8,468	100.0	4,121	100.0
Total Children Under 5 Years of Age With Diarrhea in Last 24 Hours.....	282	2.0	202	2.0	-	-	202	2.4	80	1.9

Source: Table 2

B. Sources of Water and Water Quality

This section presents data on the major sources of water for households in the study population, variations in source of water by purpose (i.e., drinking, cooking, laundry, etc.) and household income (measured in terms of monthly expenditures), frequency of water usage by purpose, levels of satisfaction with present sources of water, and water quality.

Summary

The major source of water for both project area and non-project area households was manually drawn wells outside the house. Within the project area twice as many of the non-user households as SWE user households used manually drawn wells outside the house. The most frequently used water source for the SWE users was of course the various SWE sources.

Just half of the project area households but almost all of the non-project area households used the manually drawn wells outside the house as the source of water for drinking and cooking. That difference resulted from nearly all the SWE users using SWE sources for drinking and cooking water. However, fewer SWE users used those sources for bathing, laundry and washing dishes. For those tasks, more SWE users used manually drawn wells as their water source.

Sources of water varied considerably by level of monthly per capita expenditure for all purposes. As household monthly expenditures increased, the percentage that use inside water sources, SWE and non-SWE, increased.

About half the households with SWE connections have their source of water inside the house and did not have to fetch water daily. Just over 10 percent of the households in the non-project area had inside connections. However, nearly half of the non-project area households that fetched water spent less than 15 minutes fetching and did it less often than those households in the project area that did not have inside connections. In the project area, SWE users fetched water less often than non-users.

The majority of households was satisfied with their water connections. Surprisingly, though, the proportion of satisfied households with SWE connections was not as high; their major point of dissatisfaction was that the water was not available enough hours per day. The major reason for dissatisfaction of water source in the project area households was that the water did not taste or smell good.

All SWE sources had drainage directly to a gutter and had no standing water present. Over 75 percent of the wells drained directly to a gutter but of those, over 10 percent had standing water. Ten percent of the wells had no drainage and over one-third of them had standing water present.

Only one-third of the water sources was given a safe rating in terms of E. coli counts and coliform counts. Just half of the SWE sources was rated as safe.

1. Water Sources - General Categories

The major source of water is manually drawn wells outside the house in both project area households (65 percent) and non-project area households (84 percent). Hand or electrically pumped wells outside the house are used by 19 percent of project area households and 6 percent of non-project area households. Hand or electrically pumped wells inside the households are used by 17 percent of the project area households compared to only 9 percent of non-project area households (Table 13).

In the project area 7 percent of the households used outside SWE sources and 7 percent used inside SWE sources. Thirty-four percent of the SWE user households used manually drawn wells outside the house as a source of water compared to 70 percent of the non-user households. More non-SWE users (20 percent) used hand or electrically pumped wells outside the house than SWE users (12 percent). However, more SWE users (30 percent) used hand or electrically pumped wells inside the household than non-users (15 percent). Of those households that used SWE sources, 52 percent used outside sources and 48 percent used inside sources.

Table 13. Number and Percent of Households: Study Group by Use of Water Sources in the Last Week, June 1981*

Water Source Group and Use During Last Week	Study Group									
	Total		Project Phase 1						Non-Project	
			Total		SWE Users		Non-Users			
	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent
Total*.....	23,842		17,832		2,399		15,433		6,010	
Manually drawn from a well outside the house..	16,712	70.1	11,647	65.3	809	33.7	10,838	70.2	5,065	84.3
Hand or electrically pumped from well outside the house.....	3,734	15.7	3,352	18.8	289	12.0	3,063	19.8	382	6.4
Hand or electrically pumped from a well inside the house.....	3,636	15.3	3,093	17.3	723	30.1	2,370	15.4	543	9.0
SWE source outside the house..	1,283	5.4	1,243	7.0	1,243	51.8	-	-	40	0.7
SWE source inside the house.....	1,156	4.8	1,156	6.5	1,156	48.2	-	-	-	-
Manually drawn from a well inside the house..	779	3.3	578	3.2	58	2.4	520	3.4	201	3.3

Source: Table 54

*Multiple sources cited

2. Sources of Water by Purpose

a. Drinking Water

Most (83 percent) of the households in the non-project area manually drew water from a well outside the house for drinking purposes, whereas just over half (57 percent) of the project area households manually drew water. In the project area, hand or electrically pumped wells outside the house were used by 16 percent of the households for drinking water and hand or electrically pumped wells inside the house were used by 12 percent of the households. In the non-project area fewer households used the hand or electrically pumped

wells; 5.3 percent used the outside wells and 8.4 percent used inside wells for drinking water. In the project area 1.8 percent of the households manually drew water from wells inside the house for drinking compared to 3 percent of the non-project area households (Table 14). In the project area, 47 percent of the SWE users used outside SWE sources for drinking water and 48 percent used inside SWE sources for drinking purposes.

Table 14. Number and Percent of Households: Study Group by Major Source of Drinking Water Last Week, June 1981

Major Source of Drinking Water	Total		Study Group							
			Project Phase 1						Non-Project	
	Total		SWE Users		Non-Users		Non-Project			
	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent
Total.....	23,842	100.0	17,832	100.0	2,399	100.0	15,433	100.0	6,010	100.0
Manually drawn from a well outside the house..	15,196	63.7	10,231	57.4	116	4.8	10,115	65.5	4,965	82.6
Hand or electrically pumped from well outside the house.....	3,183	13.4	2,862	16.0	-	-	2,862	18.5	321	5.3
Hand or electrically pumped from a well inside the house.....	2,641	11.1	2,138	12.0	-	-	2,138	13.9	503	8.4
SWE source outside the house..	1,167	4.9	1,127	6.3	1,127	47.0	-	-	40	0.7
SWE source inside the house.....	1,156	4.8	1,156	6.5	1,156	48.2	-	-	-	-
Manually drawn from a well inside the house..	499	2.1	318	1.8	-	-	318	2.1	181	3.0

Source: Table 6

b. Bathing

A large difference in the proportion of households that manually drew water from outside wells for bathing purposes was observed between project and non-project areas (63 percent vs. 83 percent respectively). A higher proportion of project area households used hand or electrically pumped wells inside and outside of the house for bathing purposes than did non-project area households. Fourteen percent of the project area households used hand or

electrically pumped wells outside compared to 6 percent of the non-project area households and 15 percent of the project area households used pumped wells inside the household compared to 9 percent of the non-project area households (Table 15).

In the project area, only 1 percent of the households used outside SWE sources for bathing water and 5 percent used inside SWE sources. Of those households that subscribed to SWE, only 7 percent of the households used outside SWE sources and 34 percent used inside SWE sources. Thirty percent of them used manually drawn wells for bathing water.

Table 15. Number and Percent of Households: Study Group by Major Source of Water for Bathing Last Week, June 1981

Major Source of Water for Bathing	Total		Study Group							
			Project Phase I						Non-Project	
			Total		SWE Users		Non-Users			
	Number	Per- cent	Number	Per- cent	Number	Per- cent	Number	Per- cent	Number	Per- cent
Total.....	23,842	100.0	17,832	100.0	2,399	100.0	15,433	100.0	6,010	100.0
Manually drawn from a well outside the house..	16,179	67.9	11,214	62.9	723	30.1	10,491	68.0	4,965	82.6
Hand or electrically pumped from well outside the house.....	2,925	12.3	2,543	14.3	231	9.6	2,312	15.0	382	6.4
Hand or electrically pumped from a well inside the house.....	3,266	13.7	2,744	15.4	461	19.3	2,283	14.8	522	8.7
SWE source outside the house..	174	0.7	174	1.0	174	7.3	-	-	-	-
SWE source inside the house.....	810	3.4	810	4.5	810	33.8	-	-	-	-
Manually drawn from a well inside the house..	488	2.0	347	1.9	-	-	347	2.2	141	2.3

Source: Table 7

c. Cooking

Results indicated that households used the same source for their cooking water as for their drinking water. In the project area, 57 percent manually drew water

from outside wells compared to 83 percent of the non-project area households. Again, more project area households used hand or electrically pumped wells than in the non-project area. In the project area, 16 percent used pumped wells outside the house and 13 percent used pumped wells inside the house. In the non-project area, 5 percent used pumped wells outside the house and 8 percent used pumped wells inside the house. In the project area 13 percent used SWE sources for cooking water. Of those households that subscribe to SWE water, 48 percent used outside SWE sources for cooking water and 45 percent used inside SWE sources for cooking water (Table 16).

Table 16. Number and Percent of Households: Study Group by Major Source of Cooking Water Used Last Week, June 1981

Major Source of Cooking Water	Total		Study Group							
			Project Phase I						Non-Project	
	Total		SWE Users		Non-Users					
	Number	Per- cent	Number	Per- cent	Number	Per- cent	Number	Per- cent	Number	Per- cent
Total.....	23,842	100.0	17,832	100.0	2,399	100.0	15,433	100.0	6,010	100.0
Manually drawn from a well outside the house..	15,080	63.2	10,115	56.7	58	2.4	10,057	65.2	4,965	82.6
Hand or electrically pumped from well outside the house.....	3,211	13.5	2,890	16.2	-	-	2,890	18.7	321	5.3
Hand or electrically pumped from a well inside the house.....	2,815	11.8	2,312	13.0	115	4.8	2,197	14.2	503	8.4
SWE source outside the house..	1,196	5.0	1,156	6.5	1,156	48.2	-	-	40	0.7
SWE source inside the house.....	1,070	4.5	1,070	6.0	1,070	44.6	-	-	-	-
Manually drawn from a well inside the house..	470	2.0	289	1.6	-	-	289	18.7	181	3.0

Source: Table 8

d. Washing Dishes and Laundry

The major sources of water used for washing dishes and doing laundry were very similar in the project and non-project areas (Tables 17 and 18). In the

project area 63 percent and 64 percent of the households manually drew water from an outside well as their major source of water for washing dishes and for laundry respectively. In the non-project area 83 percent of the households manually drew water from wells outside the house for both washing dishes and laundry. Fourteen percent of the households in the project area used hand or electrically pumped wells outside the house as their major source of water for doing laundry and washing dishes, while 15 percent and 16 percent, used hand or electrically pumped wells inside the house for laundry and washing dishes. In the non-project area, 6 percent of the households used hand or electrically pumped wells outside the house as a major source of water for washing dishes and laundry and 8 percent used hand or electrically pumped wells inside the house. In the project area, only 1 percent of the households (7 percent of those who use SWE) used SWE sources outside the house for laundry and 3 percent of the households (or 24 percent of those that use SWE sources) used SWE sources inside the house for laundry.

Table 17. Number and Percent of Households: Study Group by Major Source of Water For Laundry Used Last Week, June 1981

Major Source of Water for Laundry	Total		Study Group							
			Project Phase I						Non-Project	
			Total		SWE Users		Non-Users			
	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent
Total.....	23,842	100.0	17,832	100.0	2,399	100.0	15,433	100.0	6,010	100.0
Manually drawn from a well outside the house..	16,391	68.7	11,386	63.9	780	32.5	10,606	68.7	5,005	83.3
Hand or electrically pumped from well outside the house.....	2,856	12.0	2,515	14.1	202	8.4	2,313	15.0	341	5.7
Hand or electrically pumped from a well inside the house.....	3,179	13.3	2,716	15.2	607	25.3	2,109	13.7	463	7.7
SWE source outside the house..	174	0.7	174	1.0	174	7.3	0	0	0	0
SWE source inside the house.....	578	2.4	578	3.2	578	24.1	0	0	0	0
Manually drawn from a well inside the house..	664	2.8	463	2.6	58	2.4	405	2.6	201	3.3

Source: Table 9

Table 18. Number and Percent of Households: Study Group by Major Source of Water For Washing Dishes Used Last Week, June 1981

Major Source of Water for Washing Dishes	Study Group									
	Total		Project Phase 1						Non-Project	
			Total		SWE Users		Non-Users			
	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent
Total.....	23,842	100.0	17,832	100.0	2,399	100.0	15,433	100.0	6,010	100.0
Manually drawn from a well outside the house..	16,236	68.1	11,271	63.2	751	31.3	10,520	68.2	4,965	82.6
Hand or electrically pumped from well outside the house.....	2,904	12.2	2,543	14.3	202	8.4	2,341	15.2	361	6.0
Hand or electrically pumped from a well inside the house.....	3,364	14.1	2,861	16.0	665	27.7	2,196	14.2	503	8.4
SWE source outside the house..	203	0.9	203	1.1	203	8.5	-	-	-	-
SWE source inside the house.....	549	2.3	549	3.1	549	22.9	-	-	-	-
Manually drawn from a well inside the house..	586	2.5	405	2.3	29	1.2	376	2.4	181	3.0

Source: Table 10

e. All Household Uses

Overall, 68 percent of households used water manually drawn from a well as their major source of water for all household uses. As shown in Table 19, however, there were large differences among the study groups. Water manually drawn from a well outside the house was used for all household uses by 63 percent of the project area households and 83 percent of the non-project area households. Water for household uses was hand or electrically pumped from wells outside the house by 14 percent of the project area households compared to 6 percent of the non-project households. Also, water from hand or electrically pumped wells inside the house was used for household uses by 15 percent of the project area households compared to 8 percent of the non-project area households.

Outside SWE sources were used for all household purposes by 2 percent of the households in the project area, and inside SWE sources were used by 5 percent of the households in the project area. Limiting attention to the households using SWE sources in the project area, 11 percent of these used outside SWE sources for household uses and 35 percent of them used inside SWE sources.

Table 19. Number and Percent of Households: Study Group by Major Source of Water Used Last Week for all Household Uses, June 1981

Major Source of Water for All Household Uses	Total		Study Group							
			Project Phase I						Non-Project	
	Total		SWE Users		Non-Users		Non-Project			
	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent
Total.....	23,842	100.0	17,832	100.0	2,399	100.0	15,433	100.0	6,010	100.0
Manually drawn from a well outside the house..	16,207	68.0	11,242	63.0	665	27.7	10,577	68.5	4,965	82.6
Hand or electrically pumped from well outside the house.....	2,905	12.2	2,544	14.3	173	7.2	2,371	15.4	361	6.0
Hand or electrically pumped from a well inside the house.....	3,132	13.1	2,629	14.7	462	19.3	2,167	14.0	503	8.4
SWE source outside the house..	261	1.1	261	1.5	261	10.9	-	-	-	-
SWE source inside the house.....	838	3.5	838	4.7	838	34.9	-	-	-	-
Manually drawn from a well inside the house..	499	2.1	318	1.8	-	-	318	2.1	181	3.0

Source: Table 10

3. Sources of Water by Purposes and Expenditures

Since income is so difficult to measure being a sensitive question and also due to the fact that salaries include food subsidies, monthly household expenditures were used to give some kind of economic description of the household.

a. Drinking Water

As revealed in Table 20, sources by drinking water varied considerably by level of monthly per capita expenditures. As monthly per capita expenditures increased, the proportion of households that manually drew water from outside wells for drinking decreases from 72 percent to 50 percent. Also, the proportion of households that used hand or electrically pumped wells outside the house for drinking water decreased from 16 percent to 13 percent. As monthly per capita expenditures increased, the proportion of households that used hand or electrically pumped wells inside the house increased from 3 percent to 22 percent. The use of SWE sources also increased both inside and outside the household from 4 percent to 6 percent.

Table 20. Number and Percent of Households: Monthly Per Capita Expenditures by Major Source of Drinking Water Last Week, June 1981

Major Source of Drinking Water	Total		Monthly Per Capita Expenditures							
			RP 0 - 2,500		RP 2,501 - 5,000		RP 5,001 or more		Not Reported	
	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent
Total Households	23,842		4,746		11,624		7,443		29	
Households Reporting.....	23,842	100.0	4,746	100.0	11,624	100.0	7,443	100.0	29	100.0
Outside Water Sources:										
Manually Drawn From Well Outside House....	15,198	63.7	3,421	72.1	8,046	69.2	3,731	50.1	-	-
Hand or Electrically Pumped from Well Outside House.....	3,182	13.3	736	15.5	1,519	13.1	927	12.5	-	-
SWE Source Outside House....	1,167	4.9	202	4.3	520	4.5	445	6.0	-	-
Other Outside Source.....	-	-	-	-	-	-	-	-	-	-
Inside Water Sources:										
Manually Drawn From Well Inside House....	499	2.1	40	.8	194	1.7	265	3.6	-	-
Hand or Electrically Pumped from Well Inside House.....	2,641	11.1	145	3.1	854	7.3	1,613	21.7	29	100.0
SWE Source Inside House....	1,155	4.8	202	4.3	491	4.2	462	6.2	-	-
Other Inside Source.....	-	-	-	-	-	-	-	-	-	-
Did Not Use Water For Drinking Last Week.....	-	-	-	-	-	-	-	-	-	-

Source: Table 55

b. Bathing Water

With an increase in household per capita expenditure, there was a decrease in proportion of households that manually drew water for bathing from an outside well from (75 percent versus 56 percent). There was also a slight decrease in the proportion of households that hand or electrically pump water for bathing from outside wells from 15 to 11 percent. A marked increase in the proportion of households that hand or electrically pump water from inside wells for bathing from 6 percent to 26 percent was also apparent (Table 21).

c. Cooking Water

A similar pattern emerges when the data on major source of water for cooking by per capita expenditure are examined (Table 22). With an increase in per capita expenditures, the proportion of households that manually drew water from outside wells for cooking decreases from 71 percent to 49 percent. There was also a slight decrease in the proportion of households that hand or electrically pump water from outside wells for cooking from 16 percent to 13 percent. However, with an increase in per capita expenditures there was an increase in the proportion of households that hand or electrically pump water from inside wells for cooking from 4 percent to 23 percent (Table 22).

Table 21. Number and Percent of Households: Monthly Per Capita Expenditures by Major Source of Water for Bathing Last Week, June 1981

Major Source of Water for Bathing	Total		Monthly Per Capita Expenditures							
			RP 0 - 2,500		RP 2,501 - 5,000		RP 5,001 or more		Not Reported	
	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent
Total Households	23,842		4,746		11,624		7,443		29	
Households Reporting.....	23,842	100.0	4,746	100.0	11,624	100.0	7,443	100.0	29	100.0
Outside Water Sources:										
Manually Drawn From Well Outside House....	16,178	67.9	3,536	74.5	8,496	73.1	4,146	55.7	-	-
Hand or Electrically Pumped from Well Outside House.....	2,925	12.3	707	14.9	1,415	12.2	803	10.8	-	-
SWE Source Outside House....	174	.7	58	1.2	116	1.0	-	-	-	-
Other Outside Source.....	-	-	-	-	-	-	-	-	-	-
Inside Water Sources:										
Manually Drawn From Well Inside House....	487	2.0	40	.8	202	1.7	245	3.3	-	-
Hand or Electrically Pumped from Well Inside House.....	3,268	13.7	289	6.1	1,019	8.8	1,931	25.9	29	100.0
SWE Source Inside House....	810	3.4	116	2.4	376	3.2	318	4.3	-	-
Other Inside Source.....	-	-	-	-	-	-	-	-	-	-
Did Not Use Water For Drinking Last Week.....	-	-	-	-	-	-	-	-	-	-

Table 22. Number and Percent of Households: Monthly Per Capita Expenditures by Major Source of Water for Cooking Last Week, June 1981

Major Source of Water for Cooking	Total		Monthly Per Capita Expenditures							
			RP 0 - 2,500		RP 2,501 - 5,000		RP 5,001 or more		Not Reported	
	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent
Total Households	23,842		4,746		11,624		7,443		29	
Households Reporting.....	23,842	100.0	4,746	100.0	11,624	100.0	7,443	100.0	29	100.0
Outside Water Sources:										
Manually Drawn From Well Outside House....	15,082	63.3	3,354	70.9	8,044	69.2	3,672	49.3	-	-
Hand or Electrically Pumped from Well Outside House.....	3,211	13.5	736	15.5	1,519	13.1	956	12.8	-	-
SWE Source Outside House....	1,196	5.0	231	4.9	520	4.5	445	6.0	-	-
Other Outside Source.....	-	-	-	-	-	-	-	-	-	-
Inside Water Sources:										
Manually Drawn From Well Inside House....	470	2.0	40	.8	194	1.7	236	3.2	-	-
Hand or Electrically Pumped from Well Inside House.....	2,814	11.8	173	3.6	883	7.6	1,729	23.2	29	100.0
SWE Source Inside House....	1,069	4.5	202	4.3	462	4.0	405	5.4	-	-
Other Inside Source.....	-	-	-	-	-	-	-	-	-	-
Did Not Use Water For Drinking Last Week.....	-	-	-	-	-	-	-	-	-	-

d. Dish Washing Water Source and Income

Sources of water for washing dishes and laundry also vary considerably by level of monthly expenditures, as shown in Tables 23 and 24. With an increase in monthly per capita expenditure, the proportion of households that manually draw water for washing dishes from wells outside the house decreases from 75 percent to 55 percent (see Table 23). Also, the proportion of households that use hand or electrically pumped wells outside the house for water to wash dishes decreases when monthly per capita expenditures goes over Rp 2,500. On the other hand, the proportion of households that use hand or electrically pumped wells inside the house increase from 7 percent to 26 percent with increased monthly per capita expenditures.

e. Laundry Water Source and Income

As monthly per capita expenditure increases the proportion of households that manually draw water from an outside well for laundry decreases from 75 percent to 57 percent (Table 24), while the proportion of households that use hand or electrically pumped wells outside the household as a source of water for laundry decreases from 15 percent to 11 percent. Again, as the level of monthly per capita expenditures increases, so does the proportion of households that use hand or electrically pumped wells inside the house as the major source of water for laundry (from 7 percent to 24 percent).

Table 23. Number and Percent of Households: Monthly Per Capita Expenditures by Major Source of Water for Washing Dishes Last Week, June 1981

Major Source of Water for Washing Dishes	Total		Monthly Per Capita Expenditures							
			RP 0 - 2,500		RP 2,501 - 5,000		RP 5,001 or more		Not Reported	
	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent
Total Households	23,842		4,746		11,624		7,443		29	
Households Reporting.....	23,842	100.0	4,746	100.0	11,624	100.0	7,443	100.0	29	100.0
Outside Water Sources:										
Manually Drawn From Well Outside House....	16,236	68.1	3,536	74.5	8,574	73.8	4,126	55.4	-	-
Hand or Electrically Pumped from Well Outside House.....	2,905	12.2	707	14.9	1,366	11.8	832	11.2	-	-
SWE Source Outside House....	203	.9	58	1.2	116	1.0	29	.4	-	-
Other Outside Source.....	-	-	-	-	-	-	-	-	-	-
Inside Water Sources:										
Manually Drawn From Well Inside House....	585	2.5	40	.8	251	2.2	294	4.0	-	-
Hand or Electrically Pumped from Well Inside House.....	3,364	14.1	318	6.7	1,086	9.3	1,931	25.9	29	100.0
SWE Source Inside House....	594	2.3	87	1.8	231	2.0	231	3.1	-	-
Other Inside Source.....	-	-	-	-	-	-	-	-	-	-
Did Not Use Water For Drinking Last Week.....	-	-	-	-	-	-	-	-	-	-

Table 24. Number and Percent of Households: Monthly Per Capita Expenditures by Major Source of Water for Laundry Last Week, June 1981

Major Source of Water for Laundry	Total		Monthly Per Capita Expenditures							
			RP 0 - 2,500		RP 2,501 - 5,000		RP 5,001 or more		Not Reported	
	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent
Total Households	23,842		4,746		11,624		7,443		29	
Households Reporting.....	23,842	100.0	4,746	100.0	11,624	100.0	7,443	100.0	29	100.0
Outside Water Sources:										
Manually Drawn From Well Outside House....	16,391	68.7	3,565	75.1	8,594	73.9	4,232	56.9	-	-
Hand or Electrically Pumped from Well Outside House.....	2,856	12.0	707	14.9	1,346	11.6	803	10.8	-	-
SWE Source Outside House....	174	.7	58	1.2	116	1.0	-	-	-	-
Other Outside Source.....	-	-	-	-	-	-	-	-	-	-
Inside Water Sources:										
Manually Drawn From Well Inside House....	663	2.8	40	.8	300	2.6	323	4.3	-	-
Hand or Electrically Pumped from Well Inside House.....	3,180	13.3	318	6.7	1,037	8.9	1,796	24.1	29	100.0
SWE Source Inside House....	578	2.4	58	1.2	231	2.0	289	3.9	-	-
Other Inside Source.....	-	-	-	-	-	-	-	-	-	-
Did Not Use Water For Drinking Last Week.....	-	-	-	-	-	-	-	-	-	-

f. Main Water Source for All Household Uses and Income

Information on the relationship between source of water for all household uses and monthly expenditures is presented in Table 25. These data reveal that the proportion of households that use manually drawn wells as their major source of water for all household uses decreases from 75 percent to 55 percent as monthly per capita expenditures increase. The proportion of households that use hand or electrically pumped wells outside the house also decreases slightly from 15 percent to 11 percent as monthly per capita expenditures decrease. On the other hand, the proportion of households that use hand or electrically pumped wells inside the house as a major source of water for all household use increases from 6 percent to 24 percent as monthly per capita expenditures increase, as does the proportion of households using inside SWE sources increases (from 2 percent to 5 percent).

Table 25. Number and Percent of Households: Monthly Per Capita Expenditures by Major Source of Water for All Household Uses Last Week, June 1981

Major Source of Water for All Households Uses	Total		Monthly Per Capita Expenditures							
			RP 0 - 2,500		RP 2,501 - 5,000		RP 5,001 or more		Not Reported	
	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent
Total Households	23,842		4,746		11,624		7,443		29	
Households Reporting.....	23,842	100.0	4,746	100.0	11,624	100.0	7,443	100.0	29	100.0
Outside Water Sources:										
Manually Drawn From Well Outside House....	16,205	68.0	3,536	74.5	8,544	73.5	4,125	55.4	-	-
Hand or Electrically Pumped from Well Outside House.....	2,905	12.2	707	14.9	1,366	11.8	832	11.2	-	-
SWE Source Outside House....	261	1.1	58	1.2	145	1.2	58	.8	-	-
Other Outside Source.....	-	-	-	-	-	-	-	-	-	-
Inside Water Sources:										
Manually Drawn From Well Inside House....	499	2.1	40	.8	194	1.7	265	3.6	-	-
Hand or Electrically Pumped from Well Inside House.....	3,133	13.1	289	6.1	999	8.6	1,816	24.4	29	100.0
SWE Source Inside House....	839	3.5	116	2.4	376	3.2	347	4.7	-	-
Other Inside Source.....	-	-	-	-	-	-	-	-	-	-
Did Not Use Water For Drinking Last Week.....	-	-	-	-	-	-	-	-	-	-

4. Water Fetching

Eighty percent of households in the study population reported fetching water the day before the survey, with 78 percent of the project area households reporting having fetched water compared with 87 percent of non-project area households (Table 26). Forty-three percent of the non-project area households fetched water one to three times on the reference day compared to 28 percent of the project area households. Only 7 percent of the households in the non-project area fetched water 7 or more times compared to 24 percent of the households in the project area.

Substantial differences may also be observed among SWE user and non-user households within the project area. In the project area households that used SWE, 47 percent fetched water the day before compared to 83 percent of the non users. Only 2 percent of the SWE user households fetched water 1-3 times compared to 30 percent of the non-user households. Of the SWE user households, 17 percent fetched water 4-6 times and 15 percent fetched water 7 or more times compared to 28 percent of the non-users that fetched water 4-6 times and 25 percent that fetched water 7 or more times.

Table 26. Number of Households: Study Group by Number of Times Water Fetched Yesterday, June 1981

Number of Times Water Fetched Yesterday	Total		Study Group							
			Project Phase I						Non-Project	
	Total		SWE Users		Non-Users		Non-Project			
	Number	Per-cent	Number	Per-cent	Number	Per-cent			Number	Per-cent
Total.....	23,842		17,832		2,399		15,433		6,010	
Total Households Reporting on Fetching.....	23,842	100.0	17,832	100.0	2,399	100.0	15,433	100.0	6,010	100.0
Did Not Fetch Yesterday.....	4,666	19.6	3,902	21.9	1,272	53.0	2,630	17.0	764	12.7
1 - 3.....	7,581	31.8	5,028	28.2	375	1.5	4,653	30.1	2,553	42.5
4 - 6.....	6,982	29.3	4,711	26.4	405	16.9	4,306	27.9	2,271	37.8
7 or More.....	4,613	19.3	4,191	23.5	347	14.5	3,844	24.9	422	7.0
Number of Times Fetch Not Reported.....	-		-		-		-		-	
Mean Times Water Fetched Yesterday by Reporting Household.....	4.3		4.5		2.8		4.8		3.4	
Total Households Usually Fetching Water.....	19,604		14,277		1,301		12,976		5,327	
Percent of Reporting Households Who Usually Fetch Water.....	8.2		80.1		54.2		84.1		88.6	
Mean Times Water Fetched Yesterday by Households Usually Fetching.....	5.2		5.7		5.2		5.7		3.9	

Source: Table 12

Data on the amount of time spent on fetching water on the day prior to the survey are shown in Table 27. Of those households that fetched water on the previous day, more than half the 56 percent non-project households spent no more than 15 minutes fetching water compared to 21 percent of the project area households that fetch water. Whereas only 6 percent of the non-project area households that fetch water spent more than 30 minutes fetching water on the reference day, 29 percent of the project area households spent 30 minutes or more fetching water.

5. Accessibility to Water

More project area households (21 percent) have their major source of water inside the house than non-project area households (11 percent). However, a higher proportion of households in the non-project area (31 percent) have their major source of water less than 5 meters from the house compared to project area households (19 percent) and therefore spend less time fetching water. The percentage of households that have their major source of water 5-9 meters, 10-19 meters and 20 or more meters is fairly similar between project and non-project areas, all around 20 percent (Table 28).

Looking at project area households, major differences may be observed between SWE users and non-users with regard to the distance in meters to the major source of water. Over 50 percent of the SWE user households have their major source of water inside the house compared to only 16 percent of the non-users. Therefore, the percentage of non-SWE user households that have to go any distance outside the house for their major water source is much higher than the SWE users. For example, the percentage of households who have their major source of water less than 5 meters is 13 percent of the SWE users compared to 20 percent of the non-users. Similarly, 10 percent of SWE users and 17 percent of non-users need to go 5-9 meters for their major source. Eleven percent of the SWE users and 21 percent of the non-users need to go 10-19 meters for their major source of water and 12 percent of the SWE users compared to 25 percent of the non-users travel more than 19 meters to their major source of water.

6. Satisfaction with Present Water Source

A high proportion (84 percent) of households reported being satisfied with their present source of water, with project and non-project area households equally satisfied with their current water sources (see Table 29). Within the project area, non-SWE users were more satisfied (85 percent) with their present water sources than SWE users (75 percent).

Table 27. Number of Households: Study Group by Total Time Spent Fetching Water Yesterday, June 1981

Total Time Spent Fetching Water Yesterday	Total		Study Group							
			Project Phase 1						Non-Project	
	Total		SWE Users		Non-Users		Non-Project			
	Number	Per-cent	Number	Per-cent	Number	Per-cent			Number	Per-cent
Total.....	23,842		17,832		2,399		15,433		6,010	
Total Households Reporting on Fetching.....	23,842	100.0	17,832	100.0	2,399	100.0	15,433	100.0	6,010	100.0
Did Not Fetch Yesterday.....	4,666	19.6	3,902	21.9	1,272	53.0	2,630	17.0	764	12.7
1-15 minutes..	7,162	30.0	3,786	21.2	231	9.6	3,555	23.0	3,376	56.2
16-30 minutes.	6,537	27.3	5,029	28.2	434	18.1	4,595	29.8	1,508	25.1
More Than 30 Minutes.....	5,448	22.9	5,086	28.5	462	19.3	4,624	30.0	362	6.0
Time Spent Fetching Not Reported.....	29		29		-		29		-	
Mean Total Time Spent Fetching (in Minutes):										
All Reported Households....	21.8		24.1		16.2		25.4		14.7	
Households Who Usually Fetch Water.....	26.5		30.2		29.9		30.2		16.6	
Total Households Fetching Water Yesterday.....	19,176		13,930		1,127		12,803		5,246	
Mean Time Per Fetching for Households Fetching Yesterday.....	5.1		5.3		5.8		5.3		4.3	

Source: Table 13

Table 28. Number of Households: Study Group by Distance
in Meters to Major Source of Water for Households Uses, June 1981

Distance in Meters to Major Source of Water	Total		Study Group							
			Project Phase 1						Non-Project	
	Total		SWE Users		Non-Users		Non-Project			
	Number	Per- cent	Number	Per- cent	Number	Per- cent			Number	Per- cent
Total Households	23,842		17,832		2,399		15,433		6,010	
Households Reporting Major Source of Water.....	23,842	100.0	17,832	100.0	2,399	100.0	15,433	100.0	6,010	100.0
Major Source Inside House....	4,469	18.7	3,786	21.2	1,301	54.2	2,485	16.1	683	11.4
Less Than 5 Meters.....	5,338	22.4	3,468	19.4	318	13.3	3,150	20.4	1,870	31.1
5-9 Meters.....	4,065	17.1	2,919	16.4	231	9.6	2,688	17.4	1,146	19.1
10-19 Meters....	4,611	19.3	3,526	19.8	260	10.8	3,266	21.2	1,085	18.1
20 Meters or More.....	5,359	22.5	4,133	23.2	289	12.0	3,844	24.9	1,226	20.4
Distance Not Reported.....	-	-	-	-	-	-	-	-	-	-

Source: Table 64

Table 29. Number and Percent of Households: Study Group by Level of Satisfaction With Current Water Sources, June 1981

Level of Satisfaction	Total		Study Group							
			Project Phase 1						Non-Project	
			Total		SWE Users		Non-Users			
	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent
Total Households	23,842		17,832		2,399		15,433		6,010	
Households Reporting.....	23,822	100.0	17,832	100.0	2,399	100.0	15,433	100.0	6,010	100.0
Satisfied.....	19,968	83.7	14,942	83.8	1,792	74.4	13,150	85.2	5,025	83.9
Dissatisfied..	3,855	16.2	2,890	16.2	607	25.3	2,283	14.8	965	16.1
Don't Know; No Opinion....	20	.1	-	-	-	-	-	-	20	.3

Source: Table 17

Among those households who reported being dissatisfied with their present source of water, the reasons given for dissatisfaction with the present water sources varied somewhat between the project area and the non-project area (Table 30). The primary reason given by non-project area households was that the water did not taste or smell good (46 percent), whereas only 10 percent of the project area households gave this reason. The other main reason given by the non-project area households was that the water was dirty/not clear (31 percent) compared to 17 percent of the project area households who gave this reason for being dissatisfied with their present sources. For project area households, the major reason given was that the amount of water was not sufficient (26 percent). Only 2 percent of the households in the non-project area cited insufficient quantity as a reason for dissatisfaction. The main reason given by SWE users was that the water was not available enough hours during the day (24 percent).

Table 30. Number and Percent of Households Dissatisfied with Current Water Sources: Study Group by Reason for Dissatisfaction, June 1981

Reason for Dissatisfaction With Current Water Sources	Total		Study Group							
			Project Phase 1						Non-Project	
	Total		SWE Users		Non-Users					
	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent
Total Households Reporting.....	3,855		2,890		607		2,283		965	
	3,855	100.0	2,890	100.0	607	100.0	2,283	100.0	965	100.0
Dirty Water/ Not Clear.....	971	20.6	489	17.0	114	19.0	375	16.5	302	31.3
Doesn't Taste or Smell Good.	731	18.9	289	10.0	58	9.5	231	10.1	442	45.8
Too Far or Too Long to Fetch.....	561	14.5	521	18.0	87	14.3	434	19.0	40	4.1
Breakdowns/ Interruptions.	243	6.3	203	7.0	58	9.5	145	6.3	40	4.1
Not Available Enough Hours Per Day.....	535	13.9	434	15.0	145	23.8	289	12.7	101	10.5
Amount of Water Not Sufficient....	772	20.0	752	26.0	116	19.0	636	27.8	20	2.1
Other.....	222	5.8	202	7.0	29	4.8	173	7.6	20	2.1

Source: Table 18

7. Water Quality

Water quality was evaluated in two ways in the present survey: (1) through the observation of standing water at the various sources of water used by study households, and (2) through laboratory tests performed on samples of water taken from SWE and non-SWE sources.

a. Standing Water

The findings with respect to the presence of standing water by source and drainage type are shown in Table 31. All SWE sources drained directly to a gutter, as did a majority of the (non-SWE) wells (78 percent). However, 10 percent of the wells had no drainage at all. None of the SWE sources had

any standing water present on the ground. Of the wells that had no drainage, 35 percent had standing water present. Of the wells that drained directly to the river, 7 percent had standing water as did 12 percent of the wells that drained directly to a gutter. Overall, 15 percent of the wells had standing water.

b. E. Coli and Total Coliform Tests

Two different water tests were run on samples of water taken from the SWE sources and from the wells used by the households in the study population: an E. coli count and a total coliform count per 100 ml. of water. The results of these tests are shown in Tables 32 and 33. According to standards for safe drinking water from the E. coli tests, 41 percent of the households in the study population had safe water. A higher proportion of non-project area households had safe water (48 percent) than project area households (38 percent). Within the project area, the percentage of SWE and well sources that were considered safe was about the same - 36 and 38 percent respectively.

Looking at the total coliform counts, 34 percent of the households were given a safe water recommendation. About the same percentage of non-project area households (36 percent) were found to have safe water as in the project areas (34 percent). Within the project area, 54 percent of the SWE sources were found to be safe with respect to total coliform count as compared to 33 percent of the wells.

Table 31. Number of Households With Major Water Source Outside House:
Major Source of Water Last Week by Presence of Standing Water on
Ground Near Source and Type of Drainage, June 1981

Presence of Standing Water and Type of Drainage	All Sources		Major Source of Water Last Week			
			SWE Source		Wells	
	Number	Per- cent	Number	Per- cent	Number	Per- cent

All Households

Type of Drainage:

Total.....	19,373	100.0	260	100.0	19,113	100.0
No Drainage.....	1,896	9.8	-		1,896	9.9
Drain Directly to River.....	1,891	9.8	-		1,891	9.9
Drain Directly to Gutter.....	15,182	78.4	260	100.0	14,922	78.1
Other.....	404	2.1	-		404	2.1
Not Reported.....	-		-		-	

Total Wells

Standing Water
Present on Ground

Type of Drainage of Wells:

Total.....	19,113	100.0	2,782	14.6
No Drainage.....	1,896	100.0	662	34.9
Drain Directly to River.....	1,891	100.0	127	6.7
Drain Directly to Gutter.....	14,922	100.0	1,857	12.4
Other.....	404	100.0	136	33.7
Not Reported.....	-			

Table 32. Percentage of Households: Study Group by
E. Coli Count per 100 Ml. of Water

E. Coli Per 100 ml of Water	Total	Study Group				Non-Project
		Project Phase 1			Non-Project	
		Total	SWE Users	Non-Users		
		Percent	Percent	Percent	Percent	
Total	100.0	100.0	100.0	100.0	100.0	
Safe 0	41.1	37.9	36.4	38.0	47.6	
1-10	19.7	15.2	26.4	14.0	29.1	
not safe 11-100	30.6	40.0	18.2	38.0	17.5	
101-1000	8.6	10.0	9.1	10.0	5.8	
1001 +	0.0	0.0	0.0	0.0	0.0	

Table 33. Percentage of Households: Study Group by Coliform
Count per 100 Ml Water, June 1981

Total Coliform Count per 100 Ml Water	Total	Study Group				Non-Project
		Project Phase 1			Non-Project	
		Total	SWE Users	Non-Users		
		Percent	Percent	Percent	Percent	
Total	100.0	100.0	100.0	100.0	100.0	
Safe 0	21.3	25.1	18.2	25.5	13.6	
1-10	13.4	8.5	36.4	7.0	23.3	
not safe 11-100	37.3	37.4	45.5	37.0	36.9	
101-1000	28.0	28.9	0.0	30.5	26.2	
1001 +	0.0	0.0	0.0	0.0	0.0	

C. Sanitary Practices

This chapter focuses attention on water and non-water related sanitary practices prevalent in the study population. The information presented below should be useful in providing a basis for monitoring behavioral changes with respect to sanitation during the project period as well as providing some preliminary evidence on the effects of differences in sources of water on the sanitary behavior of the study population.

Summary

Sanitary practices did not vary greatly between households in the project area and non-project area. Although a high majority of the households boiled their water for drinking in both areas, a slightly higher proportion of project area households boiled their water. Nearly all households realized that it was unhealthy to drink unboiled water.

While 75 percent of the households in the project area used flush toilets, less than half of the non-project area used flush toilets. Instead, more than half of the households in the non-project area used the river. Nearly all the SWE user households used flush toilets, with the remainder using private and public latrines.

For the study population as a whole, waste water was most typically disposed of by draining to concrete or dirt gutter. However, while 75 percent of the project households use a concrete drain for waste disposal, only one-fourth of the non-project households did. In the non-project area, a third of the households used a dirt gutter, and a fifth used their yard. Hardly any of the households in the project area used their yard for waste disposal.

With regard to materials used in washing dishes, over three-fourths of the study population used water, soap and ash. Water and soap were used by nearly all the rest of the households with a small percentage using water and ash. No one used only water in washing dishes.

1. Boiling of Drinking Water

As shown in Table 34, an overwhelming majority of households in the study population boiled water intended for drinking. Within the project population, the practice of boiling water was uniformly high - 95 percent among SWE users and 93 percent among non-users. A statistically significant difference was observed, however, in comparing the project and non-project areas, where 82 percent of the non-project population as compared to 93 percent of the project households boiled their drinking water.

Table 34. Number and Percent of Households: Study Group by Boiling of Drinking Water Other Than for Tea, June 1981

Boiling of Drinking Water	Total		Study Group							
			Project Phase 1						Non-Project	
	Total		SWE Users		Non-Users					
	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent
Total Households	23,842		17,832		2,399		15,433		6,010	
Households Reporting.....	23,842	100.0	17,832	100.0	2,399	100.0	15,433	100.0	6,010	100.0
Boil Drinking Water.....	21,572	90.5	16,647	93.4	2,283	95.2	14,364	93.1	4,925	81.9
Do Not Boil Drinking Water.....	2,270	9.5	1,185	6.6	116	4.8	1,069	6.9	1,085	18.1

Source: Table 33

The practice of boiling drinking water was also uniformly high irrespective of the source of the water, as is shown in Table 35. There was no significant difference in the proportion of SWE user households and well-users that boiled their drinking water even though the coliform test had shown that SWE water quality was better.

Table 35. Number and Percent of Households: Major Source of Drinking Water Last Week by Boiling of Drinking Water Other than for Tea, June 1981

Boiling of Drinking Water	All Sources		Major Source of Drinking Water Last Week					
			SWE Source	Per-cent	Wells	Per-cent	Other	Per-cent
Total Households.....	23,842		2,324		21,518		-	-
Households Reporting.....	23,842	100.0	2,324	100.0	21,518	100.0	-	-
Boil Drinking Water.....	21,571	90.5	2,217	95.4	19,354	89.9	-	-
Do Not Boil Drinking Water..	2,271	9.5	107	4.6	2,164	10.1	-	-

Source: Table 72

With respect to those households which did not boil drinking water (only 10 percent of the study population), Table 36 reveals that approximately three-fourths of these households considered it unhealthy to drink unboiled water. All of the households considering it healthy to drink unboiled water are found in the non-project stratum. While these figures should be interpreted with caution since they are based on relatively few observations, they do reinforce the notion that the study population perceived the available sources of drinking water to be inadequate from a health perspective.

2. Toilet Facilities

Over two-thirds of the households in the study population used flush toilets, with the overwhelming majority of these using manual as opposed to automatic flush toilets. Of the remaining households, slightly over 70 percent used rivers as their toilet facilities. Practices varied greatly, however, among the study groups as is shown in Table 37. Among SWE users, over 96 percent of households used flush toilets, with the remainder using private and public latrines. Among non-users, 73 percent of households used manual flush toilets, while 15 percent used rivers. These differences are both significant. Even larger (and statistically significant) differences are observed in comparing the project and non-project populations. While 75 percent of the project households used manual flush toilets and about 9 percent used latrines, only 43 percent of the non-project households used manual flush toilets and 4 percent used latrines. A majority (53 percent) of non-project households used rivers, as compared to 13 percent of project households.

Table 36. Number and Percent of Households Who Do Not Boil Their Drinking Water:
Study Group by Opinion of Healthiness of Drinking Unboiled Water, June 1981

Opinion of Healthiness of Drinking Unboiled Water	Total		Study Group							
			Project Phase 1						Non-Project	
	Total		SWE Users		Non-Users		Non-Project			
	Number	Per-cent	Number	Per-cent	Number	Per-cent			Number	Per-cent
Total Households	2,270		1,185		116		1,069		1,085	
Households Reporting.....	2,270	100.0	1,185	100.0	116	100.0	1,069	100.0	1,085	100.0
Healthy to Drink Unboiled Water.....	362	15.9	-	-	-	-	-	-	362	33.3
Not Healthy to Drink Unboiled Water.....	1,691	74.5	1,069	90.2	116	100.0	953	89.2	622	57.4
Don't Know; No Opinion....	217	9.6	116	9.8	-	-	116	10.8	101	9.3

Source: Table 34

Table 37. Number and Percent of Households: Study Group by Type of Toilet Facility Used, June 1981

Type of Toilet Facility Used	Total		Study Group							
			Project Phase 1						Non-Project	
	Total		SWE Users		Non-Users		Non-Project			
	Number	Per-cent	Number	Per-cent	Number	Per-cent			Number	Per-cent
Total Households	23,842		17,832		2,399		15,433		6,010	
Households Reporting.....	23,842	100.0	17,832	100.0	2,399	100.0	15,433	100.0	6,010	100.0
Automatic Flush.....	223	.9	203	1.1	116	4.8	87	0.6	20	.3
Manual Flush..	15,991	67.1	13,438	75.4	2,196	91.5	11,242	72.8	2,553	42.5
River.....	5,459	22.9	2,283	12.8	-	-	2,283	14.8	3,176	52.8
Latrine.....	1,793	7.5	1,532	8.6	87	3.6	1,445	9.4	261	4.3
Other.....	376	1.6	376	2.1	-	-	376	2.4	-	-

Source: Table 38

Information on the use and reasons for non-use of SWE public latrines is displayed in Table 38. It is clear from these data that the public latrine facilities were used by an extremely small segment of the study population. While the proportions that used the public latrine facilities are uniformly small, the reasons for non-use varied greatly among the study groups. In comparing the user and non-user and project and non-project groups, the major distinguishing feature seems to be in the proportions having their own private latrine. While 74 percent of SWE user households had private facilities, only 51 percent of non-user households had their own private latrines. Similarly, 54 percent of project households versus 34 percent of non-project households had private facilities at their disposal. Thus, it would seem that the target population for the provision of public latrines in the project areas is somewhat limited due to the fact that over one-half of the target households have private latrine facilities, which are likely to be preferred over public facilities.

3. Waste Water Disposal

For the study population as a whole, waste water was most typically disposed of by draining to concrete or dirt gutters/sewer canals (45 and 32 percent of study population households respectively), as shown in Table 39. In the project households, 82 percent disposed of waste water in these two ways with little variability observed between users and non-users. SWE subscribers were, however, somewhat more likely to use concrete as opposed to dirt gutters than nonsubscribers. Larger and statistically significant differences in methods of waste water disposal were observed in comparing the project and non-project populations. Whereas 51 percent of project households used concrete drains, only 27 percent of non-project households used such facilities. By comparison, 10 and 18 percent of non-project households drained to "Jogangan" or threw waste water "in the yard or other place" respectively versus 1 and 7 percent respectively of project households. Overall, there appeared to be better waste water disposal in the project areas.

4. Materials Used in Washing Dishes

Over three-fourths of the study households used water, soap, and ash in washing dishes, 20 percent used water and soap only, and the remaining 5 percent used water and ash only (Table 40). Substantial differences were observed, however, in comparing the various study groups, as evidenced by the fact that statistically significant T-values are observed for four of the six possible comparisons and a marginally significant difference (significant at the .10 level of confidence) is observed for another. A higher proportion of project households used water-ash or all three materials for washing dishes than did non-project households (78 vs. 70 percent), while the proportions of non-project households in the water-soap category is significantly higher than for project households. Within the project population, 84 percent of SWE users used all three materials as compared with 76 percent among non-users (this difference is marginally significant), while a significantly higher proportion of non-user households used the water and ash combination.

Table 38. Number and Percent of Households: Study Group by Use of Public Latrine Last Week and Reason for Non-Use, June 1981

Use of SWE Public Latrine and Reason for Non-Use	Total		Study Group							
			Project Phase I						Non-Project	
	Total		SWE Users		Non-Users		Non-Project			
	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent
Total Households	23,842		17,832		2,399		15,433		6,010	
Used Public Latrines.....	203	0.8	203	1.1	87	3.6	116	0.7	-	-
Did Not Use Public Latrines.....	23,639	99.2	17,629	98.9	2,312	96.4	15,317	99.3	6,010	100.0
Reasons for Non-Use:										
Households Reporting.....	23,639	100.0	17,629	100.0	2,312	100.0	15,317	100.0	6,010	100.0
Have Own Private Latrine.....	11,575	49.0	9,565	54.3	1,705	73.8	7,860	51.3	2,010	33.6
Use Other Facilities.....	7,283	30.8	5,896	33.4	607	26.2	5,289	34.5	1,387	23.2
Too Far, Not Available.....	397	1.7	116	0.7	-	-	116	0.8	281	4.7
Too Crowded...	58	0.3	58	0.3	-	-	58	0.4	-	-
Too Expensive.	-	-	-	-	-	-	-	-	-	-
Water Un-Available.....	-	-	-	-	-	-	-	-	-	-
Use River or Other Place Without Facilities.....	4,248	18.0	1,936	11.0	-	-	1,936	12.6	2,312	38.6
Other.....	58	0.3	58	0.3	-	-	58	0.4	-	-
Use/Non-Use Not Reported..	-	-	-	-	-	-	-	-	20	0.3

Source: Table 32

Table 39. Percent and Number of Households:
Study Group by Usual Method of Waste Water Disposal, June 1981

Method of Waste Disposal	All Study Groups		Study Group											
			Total		Project Phase I						Non-Project			
	SWE Users - Subscription Status						Non-Users							
	Total		Subscribers		Non-Subscribers									
Number	Per- cent	Number	Per- cent	Number	Per- cent	Number	Per- cent	Number	Per- cent	Number	Per- cent	Number	Per- cent	
Total Households..	23,842		17,832		2,399		1,243		1,156		15,433		6,010	
Households Reporting.....	23,813	100.0	17,803	100.0	2,399	100.0	1,243	100.0	1,156	100.0	15,404	100.0	6,010	100.0
Drain to "Jogangan"....	805	3.4	202	1.1	29	1.2	29	2.3	-	-	173	1.1	603	10.0
Drain Directly to River.....	2,389	10.0	1,706	9.6	203	8.5	116	9.3	87	7.5	1,503	9.7	683	11.4
Drain to Concrete Gutter or Sewer Canal...	10,653	44.7	9,045	50.7	1,791	74.7	1,040	83.7	751	65.0	7,254	47.0	1,608	26.8
Drain to Dirt Gutter or Drainage Ditch.....	7,568	31.8	5,578	31.3	347	14.5	29	2.3	318	27.5	5,231	34.5	1,990	33.1
Throw in the Yard or Other Place...	2,320	9.7	1,214	6.8	29	1.2	29	2.3	-	-	1,185	7.7	1,106	18.4
Other.....	78	0.3	58	0.3	-	-	-	-	-	-	58	0.4	20	0.3
Households Not Reporting.....	29	0.1	29	0.2	-	-	-	-	-	-	-	-	-	-

Source: Table 35

Table 40. Number and Percent of Households: Study Group by Materials Used for Washing Dishes, June 1981

Materials Used for Washing Dishes	Total		Study Group							
			Project Phase 1						Non-Project	
	Total		SWE Users		Non-Users		Non-Project			
	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent
Total Households	23,842		17,832		2,399		15,433		6,010	
Households Reporting.....	23,682	100.0	17,717	100.0	2,399	100.0	15,318	100.0	5,971	100.0
Water Only.....	-	-	-	-	-	-	-	-	-	-
Water and Soap.....	4,686	19.8	2,977	16.8	347	14.5	2,630	17.2	1,709	28.6
Water and Ash.....	1,133	4.8	1,012	5.7	29	1.2	983	6.4	121	2.0
Water, Soap and Ash.....	17,869	75.4	13,728	77.5	2,023	84.3	11,705	76.4	4,141	69.4

Source: Table 14

5. Frequency of Water Usage for Selected Purposes

Information on the number of times water was used in the week prior to the survey for various purposes is displayed in Table 41. Overall, practices with respect to frequency of water use for the indicated purposes were similar in project and non-project households, with the exception of water use for washing floors where project households reporting having washed floors 1.6 times in the previous week as compared with 1.1 times in non-project households. It should be kept in mind, however, that a higher percentage of non-project households had dirt floors (39 percent) than did project households (28 percent) (see Table 6). Somewhat greater variability was observed in comparing SWE user and non-user households. SWE users reported more frequent uses of water for three of the four purposes shown in Table 41; only the differential in frequency of washing floors is significant, however, and this difference is, at least in part, an artifact of the differential in terms of floor composition noted above.

Table 41. Number of Households and Mean Frequency of Water-Consuming Activities:
Study Group by Type of Water-Consuming Activity, June 1981

Type of Water-Consuming Activity	Total	Study Group			
		Project Phase I			Non-Project
		Total	SWE Users	Non-Users	
Total Households	23,842	17,832	2,399	15,433	6,010
Washing Clothes:					
Total Households Reporting.....	23,842	17,832	2,399	15,433	6,010
Mean Times Clothes Washed Last Week.....	6.5	6.5	6.4	6.5	6.5
Washing Household Vehicles and Cars:					
Total Households Reporting.....	23,842	17,832	2,399	15,433	6,010
Mean Times Vehicles Washed Last Week.....	0.3	0.3	0.7	0.2	0.3
Watering the Garden:					
Total Households Reporting.....	23,842	17,832	2,399	15,433	6,010
Mean Times Garden Watered Last Week.....	1.9	1.9	2.8	1.8	1.8
Washing Floors:					
Total Households Reporting.....	23,812	17,802	2,399	15,403	6,010
Mean Times Floors Washed Last Week.....	1.5	1.6	3.4	1.3	1.1

Source: Table 15

D. Water-Related Business in the Study Population

This chapter documents the extent and nature of water-related household business activities in the study population. Water-related business activities are defined as those enterprises in which the availability of water is a major requirement for the operation of the enterprise. In addition to examining the number and types of household business enterprises engaged in by the study population, information is also presented on the size of the enterprises in terms of number of persons working and profits resulting from such enterprise in the week preceding the survey.

Summary

At the time of the baseline survey, only about 11 percent of households in the study population were engaged in water-related business enterprises, with little variability in the proportion of households so engaged observed among the study groups. The operation of restaurants was the most frequently encountered activity in each of the study groups, with the exception of SWE users where ice-making was encountered most frequently. Nearly two-thirds (64 percent) of water-related business enterprises in SWE user households used SWE sources as their major source of water for business purposes.

The business enterprises engaged in by the study population were primarily small-scale activities, employing an average of 2.3 persons with little in the way of variability either by study group or by source of water (i.e., SWE versus non-SWE) observed. Average profits in the week preceding the survey amounted to Rp 4709 (\$7.50). The number of water-related business activities encountered was, however, too small to draw firm conclusions regarding profit differentials by study group or water source.

Overall, the data suggest that at the time of the baseline survey the operation of household water-related business enterprise was not an important activity for the study population as a whole nor for any one of the study groups.

1. Number and Types of Water-Related Businesses

About 10 percent of households in the study population were engaged in a water-related business enterprise at the time of the survey (Table 42). A marginally significant ($\alpha < .10$) difference is observed in comparing the project and non-project study groups, with about 11 percent of project households and 7 percent of non-project households engaged in water-related enterprises. Similar proportions of SWE user and non-user households (10 and 11 percent respectively) were observed to have been engaged in such enterprises. For the study population as a whole, the operation of a cafe or small restaurant was the most common water-related enterprise, accounting for about 56 percent of all such enterprises in the study population. The operation of cafes or small restaurants was the most frequently encountered water-related enterprise in each of the study groups with the exception of the SWE user group, where 50 percent of households were engaged in ice-making and 25 percent in the operation of cafes and small restaurants. It would appear that the availability of SWE water was a key factor in enabling households in this group to operate ice-making enterprises. This interpretation is given support by the data in Table 43, which shows that 64 percent of the households engaged in water-related businesses in this group used SWE sources as their major source of

water for business purposes and nearly 84 percent of households whose business enterprises were the operation of jamus, cafes, or ice-making interests used an SWE source.

2. Number of Persons Working in Household Businesses

An average of 2.3 persons worked in the water-related home business enterprises engaged in by the study population as a whole (Table 44). As is also shown in Table 44, there was little in the way of variability among the means for the various study groups. Overall, 71 percent of household enterprises employed two or less persons and 29 percent employed three or more. The proportion of enterprises employing three or more persons appears to be slightly higher in the project study group than in the non-project group, however, this difference is not statistically significant.

With respect to the source of water used in household business enterprises in the study population, Table 45 suggests that the source of water has at best a negligible relationship with the size of the enterprise in terms of number of workers. There was no difference in the proportion of household enterprises that employed 3 or more workers between those that used SWE sources and those that used other sources (33 percent versus 29 percent).

Table 42. Number and Percent of Households: Study Group by Presence of Water-Related Business in the Household and Type of Business, June 1981

Presence of Water-Related Business and Type of Business	Total		Study Group							
			Project Phase 1						Non-Project	
	Total		SWE Users		Non-Users		Non-Project			
	Number	Per-cent	Number	Per-cent	Number	Per-cent			Number	Per-cent
Total Households	23,842		17,832		2,399		15,433		6,010	
Water-Related Business in Home										
Type of Business:										
Total.....	2,349	9.9	1,907	10.7	231	9.0	1,676	10.9	442	7.4
Batik.....	49	0.1	29	0.2	-	-	29	0.2	20	0.3
Jamu.....	58	0.2	58	0.3	-	-	58	0.4	-	-
Cafe or Small Restaurant....	1,304	5.5	982	5.5	57	2.4	925	6.0	322	5.4
Ice.....	338	1.4	318	1.8	116	4.8	202	1.3	20	0.3
Tire Repair...	78	0.3	58	0.3	29	1.2	29	0.2	20	0.3
Hotel/Rooming House.....	-	-	-	-	-	-	-	-	-	-
Other.....	522	2.2	462	2.6	29	1.2	433	2.8	60	1.0
Not Reported..	-	-	-	-	-	-	-	-	-	-
No Water-Related Business in Home.....										
Home.....	21,492	90.1	15,924	89.3	2,168	91.0	13,756	89.1	5,568	92.6
Not Reported....	-	-	-	-	-	-	-	-	-	-

Source: Table 39

Table 43. Number and Percent of Households With Water-Related Businesses in the Home: Study Group by Type of Business and Source of Water for Business, June 1981

Type of Water-Related Business and Source of Water for Business	Total		Study Group						
			Project Phase 1				Non-Project		
	Total		SWE Users		Non-Users		Per- cent		
	Number	Per- cent	Number	Per- cent	Number	Per- cent		Number	Per- cent
All Businesses									
Source of Water for Business:									
Total.....	2,349		1,907		231		1,676		442
SWE Source....	173	7.4	173	9.1	173	63.8	-		-
Other Source..	2,176	92.6	1,734	90.9	58	36.2	1,676		442
Not Reported..	-		-		-		-		-
Jamu, Cafe or Ice Business									
Source of Water for Business:									
Total.....	1,700		1,358		173		1,185		342
SWE Source....	145	8.5	145	10.7	145	83.8	-		-
Other Source..	1,556	91.5	1,214	89.3	29	16.2	1,185		342
Not Reported..	-		-		-		-		-
Other Water-Related Business									
Source of Water for Business:									
Total.....	649		549		58		491		100
SWE Source....	29	4.5	29	5.3	29	50.0	-		-
Other Source..	620	95.5	520	94.7	29	50.0	491		100
Not Reported..	-		-		-		-		-

Source: Table 40

Table 44. Number and Percent of Households With Water-Related Business in the Home: Study Group by Number of Persons Working in Business Last Week, June 1981

Number of Persons Working in Business Last Week	Study Group									
	Total		Project Phase 1						Non-Project	
			Total		SWE Users		Non-Users			
	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent
Total Households	2,349		1,907		231		1,676		442	
Households Reporting.....	2,349		1,907		231		1,676		442	
Less Than 3...	1,662	70.8	1,300	68.2	173	74.9	1,127	67.2	362	81.9
3 or More.....	687	29.2	607	31.8	58	25.1	549	32.8	80	18.1
Mean Number of Persons Working in Business of Reporting Households.....	2.3		2.3		2.1		2.4		2.2	

Source: Table 41

Table 45. Number and Percent With Water-Related Business in the Home: Source of Water for Business by Number of Persons Working in Business Last Week, June 1981

Number of Persons Working in the Business Last Week	All Sources		Source of Water for Business					
			SWE Source		Other Source		Not Reported	
	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent
Total Households	2,349		173		2,176		-	
Households Reporting.....	2,349		173		2,176		-	
Less Than 3...	1,662	70.7	116	66.7	1,546	71.1	-	
3 or More.....	687	29.3	57	33.3	630	28.9	-	
Mean Number of Persons Working in Business of Reporting Households.....	2.3		2.5		2.3			

Source: Table 42

3. Profits from Water-Related Businesses

Households engaged in water-related business enterprises realized an average profit of Rp 4,709 (U.S. \$7.54) from such enterprises during the week preceding the survey (Table 46). Approximately 50 percent of households reported profits of Rp 3,000 (U.S. \$4.80) or less and 50 percent reported profits of more than Rp 3,000. Conclusions regarding the relative magnitude of profits for the various study groups from Table 46 should, however, be made with caution due to the small number of observations and the resulting high degree of variability in the estimates shown. While a higher proportion of enterprises in the project stratum reported profits in excess of Rp 3,000 than in the non-project stratum, the reported mean profit for the non-project stratum exceeds that of the project stratum, although the difference is not statistically significant. This anomaly likely reflects the fact that a few households in the non-project stratum with unusually high profits are influencing the estimated mean for this stratum upward. As a result, the data in Table 46 are largely inconclusive with respect to comparisons among the study groups. A similar observation may be made with respect to Table 47, although the fact that the proportional breakdowns and means are consistent in showing higher profits for business enterprises that used non-SWE sources of water than those that used SWE sources suggest that these data might reflect the actual situation. Once again, however, caution is advisable in drawing conclusions from these data.

Table 46. Number and Percent of Households With Water-Related Business in the Home: Study Group by Profit from Water-Related Business Last Week, June 1981

Profit in Rp From Water- Related Business Last Week	Total		Study Group							
			Project Phase 1				Non-Project			
	Total		SWE Users		Non-Users					
	Number	Per- cent	Number	Per- cent	Number	Per- cent	Number	Per- cent		
Total Households	2,349		1,907		231		1,676		442	
Households Reporting.....	2,321		1,879		203		1,676		442	
0-3,000 Rp....	1,149	49.5	868	46.2	145	71.4	723	43.1	281	63.6
More Than 3,000 Rp.....	1,172	50.5	1,011	53.8	58	28.6	953	56.9	161	36.4
Mean Profit From Water- Related Business For Reporting Households..... (in rupiah)	4,709		4,415		3,601		4,514		5,957	

Source: Table 43

Table 47. Number and Percent With Water-Related Business in the Home:
Source of Water for Business by Profit From Water-Related
Business Last Week, June 1981

Profit in Rp From Water-Related Business Last Week	All Sources		Source of Water for Business					
			SWE Source		Other Source		Not Reported	
	Number	Per- cent	Number	Per- cent	Number	Per- cent	Number	Per- cent
Total Households	2,349		173		2,176		-	
Households Reporting.....	2,321		173		2,148		-	
0-3,000 Rp....	1,149	49.5	116	66.7	1,033	48.1	-	
More Than 3,000 Rp.....	1,172	50.5	57	33.3	1,115	51.9	-	
Mean Profit From Water- Related Business For Reporting Households..... (in rupiah)	4,709		3,737		4,787		-	

Source: Table 44

E. SWE System Usage and Performance

Considered in this section are several measures of usage and performance of the SWE water system as of June 1981. System usage is measured in terms of number of months of use by households in the study population, cubic meters of water consumed, and amounts billed for water service in the month preceding the survey. Performance is measured in terms of number of hours of water availability per day in the week prior to the survey, number of interruptions in service, frequency of warnings prior to service interruptions, and level of satisfaction with SWE services. The data presented below are intended to describe the overall conditions in the study population with respect to these matters and, consequently formal comparisons among study groups were not made.

Summary

Among SWE subscriber households, most of whom were long-term users of SWE water sources, the median number of cubic meters of water consumed in the month prior to the survey was 25.2. This low level of reported consumption reflects the fact that subscriber households were supplementing SWE sources with other sources of water (see Table 13). The median amount billed for the reference month was Rp 1263 (\$2.05).

The data reflect inconsistency in the quality of services provided by SWE as of the survey date. Only 28 percent of households reported that water was available 24 hours on the average day. On the average, households reported availability of water for 12 hours on the typical day. Approximately one-fourth of survey households reported at least one service interruption in the week prior to the survey, and over half of affected households reported that they were "never" warned prior to such interruptions. Despite this, an overwhelming majority of households (87 percent) reported being satisfied or very satisfied with SWE services.

1. Duration of System Usage

SWE user households were made up of both SWE subscribers (52 percent) and non-subscribers (48 percent). Of the subscribers, 86 percent had in-house connections. The majority of nonsubscribers were those that used yard taps. Other nonsubscribers used their neighbors' connections, both household and public taps all provided by the SWE.

As is shown in Table 48, SWE users were, for the most part, long-term users. Over 54 percent of households had been using SWE water sources for six years or more, while 40 percent had used SWE water for at least one year prior to survey.

2. Consumption and Cost of SWE Water

Data on the number of cubic meters consumed and the amount billed in the month prior to the survey are shown in Table 49. The median number of cubic meters of SWE water consumed was 25.2. The fact that nearly 56 percent of subscriber households reported consuming 32 cubic meters of water or less in the previous month, however, suggests the possibility that these households might be supplementing SWE water with other sources of water. With respect to amounts billed for water, nearly one-half (47 percent) of subscriber

households reported a bill for one month of service of Rp 1300 or more, while only 3 percent reported bills of Rp 500 or less. The median bill for SWE service in the month prior to the survey was Rp 1163 (\$1.86).

3. Water Availability

The average number of hours of water availability in the week preceding the survey varied greatly from household to household (see Table 50). While two percent reported that water was not available during the reference week, only 28 percent of households reported that water was available 24 hours per day. An identical percent of households (28 percent) reported that water was available on average for one-quarter of the day (6 hours) or less. The median number of hours of water availability per day during the reference week was slightly under 12 hours, or about half of the day.

4. Service Interruption

Twenty-four percent of households reporting availability of water from an SWE source during the week prior to the survey reported at least one interruption in service during the reference week, while 76 percent reported no interruptions in service (Table 51). Of those households reporting an interruption in service, slightly over one-half reported two interruptions during the reference week, while just under 25 percent reported either one or three service interruptions.

While the data reported in Table 52 should be interpreted with caution because of the quite high rate of nonresponse, it would seem that service interruptions occurred most frequently without warning to users. Of the households reporting at least one service interruption during the week preceding the survey and responding to the question pertaining to warnings of service interruptions, over half reported that service interruptions were never preceded by warnings.

5. Satisfaction with SWE Services

Despite the shortcomings noted in the previous tables, nearly 87 percent of households subscribing to or using SWE water sources reported being satisfied or very satisfied with the service, while only 13 percent reported some degree of dissatisfaction. Overall, nonsubscribers appeared to be more satisfied with SWE services than did subscribers (Table 53).

Table 48. Number and Percent of Households Subscribing to or Using SWE Water for Household or Business Uses: Study Group by Number of Months Used SWE, June 1981

Number of Months Used or Subscribed to SWE Water	Total		Study Group					
			Project Phase I					
			Total		SWE Users		Non-Users	
	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent
Total Households	2,399	100.0	2,399	100.0	2,399	100.0		
Less Than 0r.e.	-	-	-	-	-	-	-	-
1-3.....	376	15.7	376	15.7	376	15.7	-	-
4-6.....	231	9.6	231	9.6	231	9.6	-	-
7-12.....	173	7.2	173	7.2	173	7.2	-	-
13-24.....	173	7.2	173	7.2	173	7.2	-	-
25-72.....	145	6.0	145	6.0	145	6.0	-	-
More Than 72..	1,301	54.2	1,301	54.2	1,301	54.2	-	-

Source: Table 25

Table 49. Number and Percent of Households With In-House Connections:
Cubic Meters of Water Consumed and Amount Billed Last Month, June 1981

Cubic Meters of Water Consumed From SWE Connections Last Month	Number	Percent
Households Reporting.....	1,011	100.0
1-16 Cubic Meters.....	289	28.6
17-32 Cubic Meters.....	376	37.1
33-48 Cubic Meters.....	173	17.1
49-64 Cubic Meters.....	58	5.7
65 or More Cubic Meters.....	116	11.4
Median.....	25.2	
Amount Billed Last Month	Number	Percent
Households Reporting.....	983	100.0
Less Than 500 Rp.....	29	2.9
500-999 Rp.....	260	26.5
1,000-1,299 Rp.....	231	23.5
1,300 or More Rp.....	462	47.1
Median.....	1,263	

Table 50. Number and Percent of Households Subscribing to or Using SWE Water for Household or Business Uses: Subscription Status by Average Hours Water Available Per Day from SWE Source Last Week, June 1981

Average Hours Water Available Per Day From SWE Source	Total		Subscription Status			
			Subscribers		Non-Subscribers	
	Number	Per-cent	Number	Per-cent	Number	Per-cent
Total Households.....	2,399	100.0	1,243	100.0	1,156	100.0
Water Not Available From SWE Source Last Week.....	58	2.4	58	4.7	-	-
Less Than Six Hours..	665	27.7	462	37.2	202	17.5
6-11.....	549	22.9	289	23.3	260	22.5
12-23.....	405	16.9	116	9.3	289	25.0
24.....	665	27.7	318	25.6	347	30.0
Don't Know.....	78	3.3	-	-	58	5.0

Source: Table 27

Table 51. Number and Percent of Households With Water Available From SWE Water Source in Last 7 Days: Subscription Status by Number of Interruptions in SWE Water Service in Last Week, June 1981

Number of Interruptions in SWE Water Service Last Week	Total		Subscription Status			
			Subscribers		Non-Subscribers	
	Number	Per-cent	Number	Per-cent	Number	Per-cent
Total Households.....	2,399		1,243		1,156	
0.....	1,821	75.9	838	67.4	983	85.0
1.....	116	4.8	87	7.0	29	2.5
2.....	261	10.9	144	11.6	116	10.0
3 or More.....	116	4.8	116	9.3	-	-
Don't Know.....	29	1.2	-	-	29	2.5
Not Reported.....	-	-	58	4.7	-	-
Mean Number of Interruptions in SWE Service for Reporting Household....	.4		.7		.2	

Source: Table 28

Table 52. Number and Percent of Households Experiencing Interruptions in SWE Water Source in Last 7 Days: Subscription Status by Frequency Warned of Interruptions, June 1981

Frequency Warned of Interruption	Total		Subscription Status			
			Subscribers		Non-Subscribers	
	Number	Per-cent	Number	Per-cent	Number	Per-cent
Total Households.....	521	100.0	347	100.0	174	100.0
Always.....	-	-	-	-	-	-
Sometimes.....	116	22.3	87	25.1	29	16.7
Almost Never.....	-	-	-	-	-	-
Never.....	289	55.5	202	58.2	87	50.0
Not Reported.....	116	22.3	58	16.7	58	33.3

Source: Table 29

Table 53. Number and Percent of Households Subscribing to or Using SWE Water for Household or Business Uses: Subscription Status by Level of Satisfaction With SWE Services, June 1981

Level of Satisfaction With Services From SWE Source	Total		Subscription Status			
			Subscribers		Non-Subscribers	
	Number	Per-cent	Number	Per-cent	Number	Per-cent
Total Households.....	2,399	100.0	1,243	100.0	1,156	100.0
Very Satisfied.....	116	4.8	58	4.7	58	5.0
Satisfied.....	1,965	81.9	925	74.4	1,040	90.0
Dissatisfied.....	260	10.8	202	16.3	58	5.0
Very Dissatisfied....	58	2.4	58	4.7	-	-
Don't Know; No Opinion.....	-	-	-	-	-	-

Source: Table 30

F. Attitudes and Preferences Among Nonsubscribers

This chapter focuses on the water source preferences, reasons for reported preferences, and water-related attitudes and perceptions among the nonsubscribers in the study population. The data reported below are important for program implementation purposes insofar as they indicate the major perception, preferences, and financial barriers that need be addressed in order for the water project to be widely accepted and subscribed to in the study population.

Summary

Fifty-seven percent of nonsubscribing households reported a preference for an SWE connection instead of their present source of water. Preference for SWE connections were strongest among SWE users in the project area where 90 percent of households desired SWE connections, although project area non-users and non-project area households also expressed preferences for SWE services in substantial numbers (57 and 50 percent respectively).

Preferences for SWE connections were unrelated to home ownership status and location of present source of water, but clearly related to level of total monthly expenditures. Households reporting monthly expenditures of Rp 5000. or more preferred SWE sources in much greater numbers (63 percent) than did those households reporting monthly expenditures of Rp 2500 or less (44 percent).

The major reasons given by households reporting a preference for their present water source were, in order of importance: greater availability on a daily basis (31 percent), more convenient (28 percent), and cost (24 percent). Reasons for preferring present (non-SWE) to SWE sources among nonsubscriber households varied somewhat by level of monthly expenditures, with higher proportions of households in the low monthly expenditure category (less than Rp 2500) citing the cost factor, and households in the high expenditure category citing water quality (i.e., taste, smell, clarity) more frequently.

The amount that households were willing to pay per month for SWE connection charges varied greatly in the study population by a number of characteristics. Overall, 41 percent of households reported a willingness to pay Rp 1000-1300 (\$1.60-2.10) per month, while 47 percent were unwilling to pay even Rp 700 (\$1.12). Greater proportions of project than non-project area households (44 versus 34 percent) were willing to pay Rp 1000-1300 per month, while SWE user households in the project area reported a willingness to pay this amount much more frequently than non-users (73 versus 42 percent respectively). Significantly, nearly half (47 percent) of the non-user households in the project area, the target population for the project, reported an unwillingness to pay Rp 700, while 58 percent were unwilling to pay more than Rp 1000 per month for SWE connections. It will be recalled from the previous section that the average bill reported by current SWE subscribers for the month preceding the survey was in excess of Rp 1100.

The amount that households were willing to pay for SWE services also varied by water source preferences and level of monthly expenditures. Households preferring SWE were more frequently willing to pay Rp 1000-1300 per month than those households preferring their present source by a factor of nearly five to one. The amount that households were willing to pay varied directly with level of monthly expenditures.

Overall, only 36 percent of households reported that they were willing to share a yard connection with other households. Only among SWE user households in the project areas were a majority of households (65 percent) willing to enter into sharing arrangements. The major reasons given for this unwillingness were inability to bear the cost of even a shared yard hydrant (48 percent) and a desire for privacy.

1. Water Source Preferences

Overall, 57 percent of nonsubscribing households in the study population reported a preference for an SWE connection, while 43 percent preferred their present source of water. In terms of water source preference, statistically significant differences are observed in Table 54 in each of the comparisons possible among the study groups. Nearly 60 percent of households in the project area preferred SWE sources, as compared with 50 percent of non-project households. Within the project area, 90 percent of SWE users reported a preference for SWE connections, while 57 percent of non-user households preferred SWE sources. A higher proportion of non-users in the project area (57 percent) preferred SWE sources than in the non-project areas (50 percent), although this difference is only marginally significant.

With respect to reasons for preferring present (non-SWE) sources, non-project households reported cost and convenience factors most frequently, while project households reported availability as the most important factor. The differences in proportions of project and non-project households citing these factors as the reasons for preferring their present source of water are all statistically significant.

There appears to be little variability in water source preferences by home ownership status, as shown in Table 55. Sixty percent of households in which the house was not owned by the residents reported a preference for SWE connections as well as 56 percent of resident owners. This difference is not significant.

A similar observation may be made concerning variations in water source preference by the location of the major water source. There is no significant difference in the proportion of households whose major source of water was located inside the house and those whose major water source was located outside the house in preference for SWE connections to their present source - sixty-four percent versus 56 percent as shown in Table 56. Among households preferring their present source to an SWE connection, availability, convenience, and cost factors were cited most frequently (31, 28, and 24 percent of such households respectively) as the reasons for preferring their present source (Table 57). Responses in the two comparison groups were distributed very similarly, with the only significant difference being the somewhat higher proportion of households whose major source of water was inside the house citing greater quantity of water available (11 percent versus 2 percent), and this difference is only marginally significant.

Table 54. Number and Percent of Households Not Subscribing to an SWE Connection: Study Group by Water Source Preference and Reason for Preferring Present Source, June 1981

Water Source Preference and Reason for Preferring Present Sources	Total		Study Group							
			Project Phase I						Non-Project	
	Total		SWE Users*		Non-Users		Number	Per-cent		
	Number	Per-cent	Number	Per-cent	Number	Per-cent			Number	Per-cent
Total Households	22,599		16,589		1,156		15,433		6,010	
Prefer Present Sources:										
Total.....	9,720	43.0	6,705	40.4	116	10.0	6,589	42.7	3,015	50.2
Reasons for preferring present source:										
Cheaper Than SWE.....	2,292	10.1	1,387	8.4	-	-	1,387	9.0	905	15.1
Convenience...	2,719	12.0	1,272	7.7	58	5.0	1,214	7.9	1,447	24.1
Taste, Smell and/or Cleaness.....	1,073	4.8	751	4.5	-	-	751	4.9	322	5.4
Available on Regular Basis or More Hours Per Day.....	3,016	13.3	2,775	16.7	58	5.0	2,717	17.6	241	4.0
Greater Quantity of Water Available.....	329	1.5	289	1.7	-	-	289	1.9	40	0.7
Other.....	262	1.2	202	1.2	-	-	202	1.3	60	1.0
Not Reported..	29	0.1	29	0.1	-	-	29	0.2	-	-
Prefer SWE Connection.....	12,878	57.0	9,883	59.6	1,040	90.0	8,843	57.3	2,995	49.8

Source: Table 20

*Households can be SWE users without being subscribers, e.g., using neighbors' connection.

Table 55. Number and Percent of Households Not Subscribing
to an SWE Connection: Ownership of House by Water
Source Preference

Water Source Preference	Total		Ownership of House			
			Resident Owns Home		Resident Does Not Own Home	
	Number	Per- cent	Number	Per- cent	Number	Per- cent
Total Households.....	22,599	100.0	16,319	100.0	6,280	100.0
Prefer Present Source.....	9,720	43.0	7,203	44.1	2,517	40.1
Prefer SWE Connection...	12,879	57.0	9,116	55.9	3,763	59.9

Source: Table 68

Table 56. Number and Percent of Households Not Subscribing
to an SWE Connection: Location of Major Water Source
by Water Source Preference

Water Source Preference	Total		Outside House		Inside House	
	Number	Per- cent	Number	Per- cent	Number	Per- cent
Total Households.....	22,599	100.0	19,256	100.0	3,343	100.0
Prefer Present Source.....	9,720	43.0	8,516	44.2	1,204	36.0
Prefer SWE Connection...	12,879	57.0	10,740	55.8	2,139	64.0

Source: Table 69

Table 57. Number and Percent of Non-Subscribing Households Who Prefer Present Sources: Location of Major Source of Water by Reason for Preferring Present Water Sources, June 1981

Reason for Preferring Present Water Sources	Location of Major Source of Water					
	Total		Outside House		Inside House	
	Number	Per- cent	Number	Per- cent	Number	Per- cent
Total Households.....	9,720		8,516		1,204	
Households Reporting.....	9,693	100.0	8,489	100.0	1,204	100.0
Cheaper Than SWE/Cost.....	2,292	23.6	2,078	24.5	214	17.8
Convenience/Ease of Getting Water.....	2,718	28.0	2,425	28.6	293	24.4
Taste, Smell and/or Clearness....	1,074	11.1	929	10.9	145	12.0
Available on a Regular Basis; Available More Hours Each Day.....	3,016	31.1	2,629	31.0	387	32.1
Greater Quantity of Water Available....	330	3.4	194	2.3	136	11.3
Other.....	263	2.7	234	2.8	29	2.4

Source: Table 71

As shown in Table 58, water source preferences are related to monthly expenditures. While only 44 percent of households in the lowest expenditure category (Rp 0 to 2,500) reported a preference for an SWE connection, 58 percent in the Rp 2,501 to 5,000 expenditure category and 63 percent in the highest expenditure category (Rp 5,000 and above) preferred SWE connections to their present source, with the difference between the lowest and the highest monthly expenditure categories being significant. The reasons given for preferring present sources did not, however, vary greatly by level of monthly expenditures (see Table 59), with the exception of the significantly higher proportion of households in the highest expenditure group citing the taste/smell/clarity factor as the major reason for preferring their present source in comparison with the other two expenditure groups. It should be noted, however, that the difference between the highest and lowest expenditure groups in proportions citing the cost factor was marginally significant.

2. Amounts Willing to Pay for SWE Service

For the study population as a whole, 47 percent of households reported that they would be unwilling to pay Rp 700 (\$1.12) per month for an SWE connection, 12 percent reported a willingness to pay between Rp 700 and Rp 1,000 (\$1.12 to \$1.60) per month, and 41 percent said they would pay Rp 1,000 to 1,300 (\$1.60 to \$2.08) per month (see Table 60).

As might be expected, significant differences were observed in the amounts households were willing to pay for SWE service both by study group and by water source preference. A higher proportion of households in the project than in the non-project areas (44 versus 34 percent) were willing to pay Rp 1,000-1,300 monthly, while a marginally significant lower proportion of households reported an unwillingness to pay Rp 700 per month (45 versus 53 percent). Comparisons between SWE users and non-users within the project areas reveal much larger differences. Whereas nearly 73 percent of user households reported a willingness to pay in excess of Rp 1,000 per month, only 42 percent of nonuser households were willing to pay this amount. Similarly, while only 15 percent of user households reported an unwillingness to pay more than Rp 700 per month, 47 percent of non-user households said they would be unwilling to pay more than this amount.

With respect to variations in amounts households were willing to pay for SWE connections by water source preference, those households preferring SWE sources were willing to pay considerably more for such services than were households preferring their present source. While 82 percent of households preferring their present source of water reported an unwillingness to pay more than Rp 700 per month, only 21 percent of households preferring SWE sources reported an unwillingness to pay this amount. Similar patterns may be observed within each of the study groups. It should be emphasized, however, that nearly one-half (47 percent) of the non-users in the project areas, who represent the "target" population for the project, report an unwillingness to pay more than Rp 700 per month for an SWE connection.

Financial considerations would seem to be the predominant explanation as to why households in the study population are unwilling to pay Rp 700 per month for SWE connections (Table 61). Over 78 percent of households in the study population reported that they could not afford to pay Rp 700 per month for SWE services, while 22 percent cited other reasons. The distribution of responses to this question was very similar in each study group.

Table 58. Number and Percent of Households Not Subscribing to an SWE Connection: Monthly Per Capita Expenditures, by Water Source Preference

Water Source Preference	Total		Monthly Per Capita Expenditures							
			RP 0 - 2,500		RP 2,501 - 5,000		RP 5,001 or more		Not Reported	
	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent
Total Households	22,599	100.0	4,544	100.0	11,132	100.0	6,894	100.0	29	100.0
Prefer Present Source.....	9,720	43.0	2,467	54.3	4,700	42.2	2,524	36.6	29	100.0
Prefer SWE Connection....	12,879	57.0	2,077	43.7	6,432	57.8	4,370	63.4	-	-

Source: Table 69

Table 59. Number and Percent of Non-Subscribing Households Who Prefer Present Sources: Monthly Per Capita Expenditures by Reason for Preferring Present Water Sources, June 1981

Reason for Preferring Water Sources	Total		Monthly Per Capita Expenditures							
			RP 0 - 2,500		RP 2,501 - 5,000		RP 5,001 or more		Not Reported	
	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent
Total Households	9,720		2,467		4,700		2,524		29	
Households Reporting.....	9,691	100.0	2,438	100.0	4,700	100.0	2,524	100.0	29	100.0
Cheaper Than SWE/Cost.....	2,292	23.7	686	28.1	1,107	23.6	499	19.8	-	-
Convenience/Ease of Getting Water.....	2,718	28.0	668	27.4	1,255	26.7	766	30.3	29	100.0
Taste, Smell and/or Clearness....	1,073	11.1	185	7.6	383	8.1	505	20.0	-	-
Available on a Regular Basis; Available More Hours Each Day.....	3,016	31.1	821	33.7	1,490	31.7	705	27.9	-	-
Greater Quantity of Water Available....	329	3.4	49	2.0	251	5.3	29	1.1	-	-
Other.....	263	2.7	29	1.2	214	4.6	20	.8	-	-

Source: Table 70

Table 60. Number and Percent of Households Not Subscribing to an SWE Connection:
Study Group by Water Source Preference and Amount Willing
to Pay Per Month for SWE Connections, June 1981

Water Source Preference and Amount Willing to Pay Per Month for SWE Connection	Total		Study Group							
			Project Phase 1						Non-Project	
	Total		SWE Users*		Non-Users		Non-Project			
	Number	Per-cent	Number	Per-cent	Number	Per-cent			Number	Per-cent
Amount Willing to Pay:										
Total.....	22,599	100.0	16,589	100.0	1,156	100.0	15,433	100.0	6,010	100.0
Not Even										
700 Rp.....	10,661	47.2	7,485	45.1	173	15.0	7,312	47.4	3,176	52.9
700-1000 Rp...	2,605	11.5	1,821	11.0	145	12.5	1,676	10.9	784	13.1
1000-1300 Rp..	9,333	41.3	7,283	43.9	838	72.5	6,445	41.8	2,050	34.1
Prefer Present Sources										
Amount Willing to Pay:										
Total.....	9,720	100.0	6,705	100.0	116	100.0	6,589	100.0	3,015	100.0
Not Even										
700 Rp.....	7,938	81.7	5,607	83.6	29	25.0	5,578	84.7	2,331	77.3
700-1000 Rp...	383	3.9	202	3.0	29	25.0	173	2.6	181	6.0
1000-1300 Rp..	1,399	14.4	896	13.4	58	50.0	838	12.7	503	16.7
Prefer SWE Connection										
Amount Willing to Pay:										
Total.....	12,879	100.0	9,884	100.0	1,040	100.0	8,844	100.0	2,995	100.0
Not Even										
700 Rp.....	2,723	21.1	1,879	19.0	145	13.9	1,734	19.6	844	28.2
700-1000 Rp...	2,222	17.3	1,619	16.4	116	11.2	1,503	17.0	603	20.1
1000-1300 Rp..	7,934	61.6	6,386	64.6	779	75.0	5,607	63.4	1,548	51.7

Source: Table 21

*Households can be SWE users while not being subscribers, e.g., using neighbor's connection.

Table 61. Number and Percent of Households Unwilling to Pay Rp 700 Per Month For SWE Connection: Study Group by Reason for Unwillingness to Pay, June 1981

Reason for Unwillingness to Pay 700 Rp Per Month for Connection	Total		Study Group							
			Project Phase 1						Non-Project	
			Total		SWE Users*		Non-Users			
	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent
Total Households	10,661		7,485		173		7,312		3,176	
Households Reporting.....	10,661	100.0	7,485	100.0	173	100.0	7,312	100.0	3,176	100.0
Cannot Afford.....	8,333	78.2	5,780	77.2	173	100.0	5,607	76.7	2,553	80.4
Other.....	2,328	21.8	1,705	22.8	-	-	1,705	23.3	623	19.6

Source: Table 22

*Households can be SWE users without being subscribers - using neighbor's connection.

That the amount households were willing to pay for SWE services was a direct function of income (measured in the present survey in terms of monthly per capita expenditures) may be seen clearly in Table 62. While 70 percent of the households in the lowest expenditure category were unwilling to pay Rp 700 and 19 percent were willing to pay in excess of Rp 1,000, the corresponding figures for the middle expenditure category were 45 and 42 percent respectively, and for the highest expenditure category 76 and 55 percent respectively. It is clear from these data that service cost will play a key role in determining the success of the project. This point is further illustrated in Table 63, where the amounts households were willing to pay for SWE connection charges are tabulated by per capita monthly expenditures. While 62 percent of non-subscribing households in the study population were unwilling to pay any connection charge and 29 percent were willing to pay Rp 50,000 (\$80), the amount households were willing to pay in charges for SWE connections is directly related to income.

Table 62. Number and Percent of Households Not Subscribing to SWE Connection: Monthly Per Capita Expenditures by Amount Willing to Pay for SWE Connection, June 1981

Amount Willing to Pay Per Month for SWE Connection	Total		Monthly Per Capita Expenditures							
			RP 0 - 2,500		RP 2,501- 5,000		RP 5,001 or more		Not Reported	
	Number	Per- cent	Number	Per- cent	Number	Per- cent	Number	Per- cent	Number	Per- cent
Total Households	22,599		4,544		11,132		6,894		29	
Households Reporting.....	22,599	100.0	4,544	100.0	11,132	100.0	6,894	100.0	29	100.0
Not Even										
700 Rp.....	10,661	47.2	3,181	70.0	4,954	44.5	2,497	36.2	29	100.0
700-1000 Rp...	2,605	11.5	479	10.5	1,503	13.5	623	9.0	-	-
1000-13000 Rp.	9,333	41.3	884	19.4	4,675	42.0	3,774	54.7	-	-

Source: Table 61

Table 63. Number and Percent of Households Not Subscribing to SWE Connection: Monthly Per Capita Expenditures by Amount Willing to Pay for SWE Connection Charge, June 1981

Amount Willing to Pay for SWE Connection (If Granted Credit to Pay in Install.)	Total		Monthly Per Capita Expenditures							
			RP 0 - 2,500		RP 2,501- 5,000		RP 5,001 or more		Not Reported	
	Number	Per- cent	Number	Per- cent	Number	Per- cent	Number	Per- cent	Number	Per- cent
Total Households	22,599		4,544		11,132		6,894		29	
Households Reporting.....	22,570	100.0	4,544	100.0	11,103	100.0	6,894	100.0	29	100.0
Rp 0.....	13,976	61.9	3,796	83.5	6,639	59.8	3,512	50.9	20	100.0
Rp 1-24,999.....	1,078	4.8	156	3.4	706	6.4	216	3.1	-	-
Rp 25,000- 49,999.....	1,031	4.6	185	4.1	572	5.2	274	4.0	-	-
Rp 50,000.....	6,485	28.7	407	9.0	3,186	28.7	2,892	41.9	-	-

Source: Table 62

3. Willingness to Share SWE Connections

Table 64 displays information on the willingness of households in the study population to share a yard hydrant with other households and the reasons for their unwillingness to enter into such sharing arrangements. Overall, only about one-third of households reported a willingness to share a yard hydrant with other households. The proportion of households willing to do so varied significantly, however, by study group. While 36 percent of project area households were willing to share, only 26 percent of nonsubscribing households in the non-project areas were willing to do so. Within the project areas, the proportion of user households willing to share a yard connection was nearly double that of non-user households (65 versus 33 percent). This is likely to reflect the fact that many of these households have already entered into sharing arrangements with other subscribing households, which would account for why these households were SWE users, but nonsubscribers.

Interestingly, there were clear differences between study groups as to the reasons for their unwillingness to share yard hydrants. While the modal response in both the project and non-project areas was that they still could not afford an SWE connection, the proportion of non-project households giving this response was significantly higher than in the project areas (61 versus 42 percent). On the other hand, significantly higher proportions of project households cited inconvenience factors (i.e., difficulties in sharing payments and maintenance) as the major reasons for their unwillingness to share SWE yard connections.

The willingness to share yard connections was unrelated to home ownership status, as shown in Table 65. Sixty-five percent of resident-owned households and 72 percent of the nonowners reported an unwillingness to share an SWE yard connection.

4. Knowledge of SWE System Expansion

Information concerning plans for expansion of the SWE water system had not been widely disseminated by the time of the Baseline Survey, as is indicated by the data in Table 66. Only 10 percent of households in the study population reported having been informed of plans for system expansion. Not surprisingly, a higher proportion of the project area households than the non-project area households reported having received information concerning the system expansion (13 versus 3 percent respectively). Neighbors seem to have been the most frequent source of information (5 percent), followed by SWE officials (3 percent).

Table 64. Number and Percent of Households Not Subscribing to SWE Connection:
Study Group by Willingness to Share a Yard Hydrant With Other
Households and Reason for Unwillingness, June 1981

Willingness to Share a Yard Hydrant and Reason for Unwillingness	Total		Study Group							
			Project Phase 1						Non-Project	
	Total		SWE Users		Non-Users		Non-Project			
	Number	Per- cent	Number	Per- cent	Number	Per- cent			Number	Per- cent
Total Households	22,599	100.0	16,589	100.0	1,156	100.0	15,433	100.0	6,010	100.0
Willing to Share.....	7,463	33.0	5,895	35.5	751	65.0	5,144	33.3	1,568	26.1
Not Willing To Share.....	15,136	67.0	10,694	64.5	405	35.0	10,289	66.7	4,442	73.9
Reason for Unwillingness:										
Households Reporting.....	15,136	100.0	10,694	100.0	405	100.0	10,289	100.0	4,442	100.0
Too Difficult to Share Payments.....	1,674	11.1	1,474	13.8	58	14.3	1,416	13.8	201	4.5
Too Difficult to Share Maintenance...	902	6.0	781	7.3	58	14.3	723	7.0	121	2.7
Still Cannot Afford.....	7,252	47.9	4,538	42.4	87	21.5	4,451	43.3	2,713	61.1
Desire Privacy.....	3,692	24.4	2,687	25.1	202	49.9	2,485	24.2	1,005	22.6
Does Not Own House.....	641	4.2	520	4.7	-	-	520	5.1	121	2.7
Other.....	975	6.4	694	6.5	-	-	694	6.7	281	6.3

Source: Table 24

Table 65. Number and Percent of Households Not Subscribing to SWE Connection:
Ownership of House by Willingness to Share a Yard Hydrant with Other Households, June 1981

Willingness to Share A Yard Hydrant	Total		Ownership of House					
			Resident Owns Home		Resident Does Not Own Home		Not Reported	
	Number	Per- cent	Number	Per- cent	Number	Per- cent	Number	Per- cent
Total Households.....	22,599		16,319		6,280		-	-
Households Reporting.....	22,599	100.0	16,319	100.0	6,280	100.0	-	-
Willingness to Share.....	7,463	33.0	5,690	34.9	1,773	28.2	-	-
Not Willing to Share.....	15,136	67.0	10,629	65.1	4,507	71.8	-	-

Source: Table 73

Table 66. Number and Percent of Households Not Subscribing to an SWE Connection:
Study Group by Knowledge and Source of Information Concerning
SWE Water System Expansion, June 1981

Knowledge and Source of Information Concerning SWE Expansion	Total		Study Group							
			Project Phase 1						Non-Project	
	Total		SWE Users		Non-Users					
	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent
Total Households	22,599		16,589		1,156		15,433		6,010	
Received Information Concerning Expansion:										
Source of Information:										
Total.....	2,340	10.4	2,140	12.9	232	20.0	1,908	12.4	200	3.3
Lurah, RK or RT Chief.....	300	1.3	260	1.6	-	-	260	1.7	40	0.7
SWE Representative.....	667	3.0	607	3.7	87	7.5	520	3.4	60	1.0
Neighbor.....	1,121	5.0	1,041	6.3	145	12.5	896	5.8	80	1.3
Radio, Movies.	116	0.5	116	0.7	-	-	116	0.8	-	-
Public Address System.....	29	0.1	29	0.2	-	-	29	0.2	-	-
Other.....	78	0.3	58	0.4	-	-	58	0.4	20	0.3
Not Reported.....	29	0.1	29	0.2	-	-	29	0.2	-	-
Did Not Receive Information Concerning Expansion.....	20,259	89.6	14,449	87.1	924	80.0	13,525	87.6	5,810	96.7

Source: Table 19

SURAKARTA WATER PROJECT EVALUATION
BASELINE SURVEY

IDENTIFICATION SECTION

KELURAHAN NUMBER [][] (1-2)	EA # [][] (3-4)	BLOCK # [][] (5-6)	BUILDING # [][] (7 - 9)	HOUSEHOLD NUMBER [][][] (10- 12)	CARD [1] (13)	SEGMENT NUMBER [][][] (14 -16)
--	----------------------------	-------------------------------	------------------------------------	--	-----------------------	--

NAME OF HOUSEHOLD HEAD _____

INTERVIEWER'S NAME _____ CODE [][]

SUPERVISOR'S NAME _____ (17-18)

RECORD OF CALLS

A. CALL NUMBER	B. DATE DAY MO.	C. TIME	D. OUTCOME	E. COMMENTS
1			1 COMPLETED - SKIP TO F 2 NOT COMPLETED - GO TO E	
2			1 COMPLETED - SKIP TO F 2 NOT COMPLETED - GO TO E	
3			1 COMPLETED - SKIP TO F 2 NOT COMPLETED - GO TO E	
4			1 COMPLETED - SK... TO F 2 NOT COMPLETED - GO TO E & G	
F. COMPLETED INTERVIEW			19-20 TOTAL TIME	
TIME BEGAN		TIME ENDED	[][] minutes	
G. NONINTERVIEW REASON			21	
			1 - Vacant 2 - Refused 3 - No one at home -- repeated calls 4 - Unavailable for duration of fieldwork 5 - Other - SPECIFY	

INTRODUCTION

Good morning/afternoon/evening. I am _____ from the Statistics Office Kotamadya Surakarta. We would like to inquire about the household's water supply and usage and some other information for a survey to determine the effects of the water system in Surakarta. May I please speak to the head of the househo d?

<p>1. First, I would like to know the number of household members who lived in this house most of the last 7 days.</p>	<p>22-23</p>	<p><input type="text"/> <input type="text"/> Persons</p>
<p>2a. How many of these people are less than 15 years old? IF NONE, ENTER "00".</p>	<p>24-25</p>	<p><input type="text"/> <input type="text"/> Persons IF "00", SKIP TO 3a.</p>
<p>2b. How many of these people are less than 5 years old? IF NONE, ENTER "00".</p>	<p>26-27</p>	<p><input type="text"/> <input type="text"/> Persons IF "00", SKIP TO 3a.</p>
<p>2c. How many of the children less than 5 years had diarrhea in the last 24 hours? IF NONE, ENTER "00".</p>	<p>28-29</p>	<p><input type="text"/> <input type="text"/> Children</p>
<p>3a. Has your wife (wife of the of the household) ever been school? If speaking to the female head, ask: Have you ever been to school?</p>	<p>30</p>	<p>1 Yes - ASK 3b 2 No - SKIP TO 3C 3 Household head has no wife - SKIP TO 4.</p>
<p>3b. What was the highest level of schooling that she completed?</p>	<p>31</p>	<p>0 None 1 Primary 2 Secondary 3 High School 4 Academy 5 University</p>
<p>3c. Has she ever attended the "health child care" course or the PKK course?</p>	<p>32</p>	<p>1 Yes 2 No</p>

4. Now, I would like to find out about the water sources from which your household 93
 obtained water last week for household uses only. This will not include busi-
 ness uses.

Please tell me whether or not your household obtained water from each source
 that I mention.

INTERVIEWER: AN ANSWER IN COLUMN C MUST BE CIRCLED FOR EACH WATER SOURCE. ALSO,
 FOR EACH SOURCE ANSWERED YES, CIRCLE THE WATER SOURCE CODE IN COLUMN A.

A. WATER SOURCE CODE	B.	C.
	<u>OUTSIDE SOURCES</u>	
01	Manually drawn from a well outside the house?	33 1 Yes 2 No
02	Hand pumped from a well outside the house?	34 3 Yes 4 No
03	Electrically pumped from a well outside the house but not connected to the house?	35 1 Yes 2 No
04	SWE Public Bathhouse or Latrine?	36 3 Yes 4 No
05	SWE connection inside a neighbor's house but not connected to your house?	37 1 Yes 2 No
06	SWE Public Tap?	38 3 Yes 4 No
07	SWE Yard Tap?	39 1 Yes 2 No
08	River?	40 3 Yes 4 No
09	Any other outside source? SPECIFY _____	41 1 Yes 2 No
	<u>INSIDE SOURCES</u>	
10	Manually drawn from a well inside your house?	42 3 Yes 4 No
11	Hand pumped into your house from a well?	43 1 Yes 2 No
12	Electrically pumped into your house from a well?	44 3 Yes 4 No
13	Your own SWE house connection?	45 1 Yes 2 No
14	Piped or electrically pumped into your house from an SWE connection?	46 3 Yes 4 No
15	Any other inside source? SPECIFY _____	47 1 Yes 2 No

Water Source Codes

Outside Sources

- 01 Manually drawn from a well outside the house
- 02 Hand pumped from a well outside the house
- 03 Electrically pumped from a well outside not connected to the house
- 04 SWE Public Bathhouse or Latrine
- 05 SWE connection inside a neighbor's house not connected to house
- 06 SWE Public Tap
- 07 SWE Yard Tap
- 08 River
- 09 Other outside source

Inside Sources

- 10 Manually drawn from a well inside the house
- 11 Hand pumped into house from a well
- 12 Electrically pumped into house from a well
- 13 SWE house connection
- 14 Electrically pumped into house from SWE connection
- 15 Other inside source

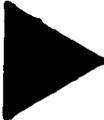
5. Last week, where did the household get most of its water for - a. drinking?	48-49	<input type="text"/>	ENTER CODE FROM WATER SOURCE CODES ABOVE.
b. bathing?	50-51	<input type="text"/>	ENTER CODE FROM WATER SOURCE CODES ABOVE.
c. cooking?	52-53	<input type="text"/>	ENTER CODE FROM WATER SOURCE CODES ABOVE.
d. laundry?	54-55	<input type="text"/>	ENTER CODE FROM WATER SOURCE CODES ABOVE.
e. washing dishes?	56-57	<input type="text"/>	ENTER CODE FROM WATER SOURCE CODES ABOVE.
f. all household uses in general?	58-59	<input type="text"/>	ENTER CODE FROM WATER SOURCE CODES ABOVE.
CHECK ITEM A  INTERVIEWER: IS ANY WATER SOURCE CODE 01-09 CIRCLED IN ITEM 4, COLUMN A, PAGE 3?	60	1 Yes - ASK 6 2 No - SKIP TO 9	
6. Does this household usually fetch water from outside the house for household uses?	61	1 Yes - ASK 7 2 No - SKIP TO 9	
7. How many times was water fetched yesterday for household uses?	62-63	<input type="text"/>	times yesterday

8. Yesterday, what was the total time spent fetching water for household uses?	64-66	<input type="text"/> <input type="text"/> <input type="text"/> minutes
9. How does this household wash its dishes - with water only; with water and soap; with water and ash; or with water, soap and ash?	67	1 Water only 2 Water and soap 3 Water and ash 4 Water, soap and ash
10. How many times did your household wash the clothes last week? IF NONE, ENTER "00"	68-69	<input type="text"/> <input type="text"/> times last week
11. How many times were household cars and vehicles washed last week? IF NONE, ENTER "00"	70-71	<input type="text"/> <input type="text"/> times last week
12. How many times was water used for gardening last week? IF NONE, ENTER "00"	72-73	<input type="text"/> <input type="text"/> times last week
13. How many times was water used for washing the household floors last week? IF NONE, ENTER "00"	74-75	<input type="text"/> <input type="text"/> times last week
14. How does this household usually dispose of water used for household purposes?	76	1 Drain to "jogangan" 2 Drain directly to river 3 Drain to concrete gutter or sewer canal 4 Drain to dirt gutter or drainage ditch 5 Throw in yard or other place 6 Other - SPECIFY _____
15. Generally, how satisfied are you with your current sources of water? Are you very satisfied, satisfied, dissatisfied, or very dissatisfied?	77	1 Very satisfied } SKIP TO 17 2 Satisfied } 3 Dissatisfied } ASK 16 4 Very dissatisfied } 5 Don't know, no opinion } SKIP TO 17
16. What is the main reason that you are dissatisfied with your water sources?	78	1 Dirty water/not clear 2 Doesn't taste or smell good 3 Too far or too long to fetch 4 Breakdowns/Interruptions 5 Not available enough hours each day 6 Amount of water not sufficient 7 Other - SPECIFY _____
17. Does this household subscribe to an SWE connection?	79	1 Yes - SKIP TO 29 2 No - ASK 18
18. Have you ever received or heard any information concerning the expansion of the SWE water system?	80	1 Yes - ASK 19 2 No - SKIP TO 20

27. Would you be willing to share the connection charge and the monthly charge for a yard hydrant with 3 to 5 other households?	26	1 Yes - SKIP TO 28 2 No - ASK 27a
27a. Why not?	27	1 Too difficult to share payments 2 Too difficult to share operation and maintenance 3 Still cannot afford 4 Desire privacy 5 Other - SPECIFY _____ 6 Do not own house; rent house
28. Is there a business in this household that usually uses water from an SWE source?	28	1 Yes - SKIP TO ITEM 29 2 No - GO TO CHECK ITEM B
CHECK ITEM B  INTERVIEWER: IS ANY CODE 04, 05, 06, 07, 13 or 14 CIRCLED IN ITEM 4, COLUMN A, PAGE 3?	29	1 Yes - ASK 29 2 No - SKIP TO 37
29. How many months have you subscribed to or been using an SWE water source? ENTER "00" IF LESS THAN 1 MONTH	30-31	<input type="text"/> <input type="text"/> Months
30. Was water available from your SWE water source during the last 7 days?	32	1 Yes - ASK 31 2 No - SKIP TO 32
31. Last week, on the average, how many hours was water available each day from your SWE water source?	33-34	<input type="text"/> <input type="text"/> Hours per day - SKIP TO 33
32. How many months has water not been available from your SWE water source? ENTER "00" IF LESS THAN 1 MONTH	35-36	<input type="text"/> <input type="text"/> Months - SKIP TO 35
33. How many times in the last week has water service from your SWE source been interrupted during normal hours of service? IF NONE, ENTER "00"	37-38	<input type="text"/> <input type="text"/> Times IF "00" SKIP TO 35
34. How often were you warned of interruptions - always, sometimes, almost never, or never?	39	1 Always 2 Sometimes 3 Almost never 4 Never

35. Think about the services you have received from your SWE water source - have you been very satisfied, satisfied, dissatisfied or very dissatisfied with these services?	40	1 Very satisfied } SKIP 2 Satisfied } TO 37 3 Dissatisfied } SKIP 4 Very dissatisfied } TO 36 5 Don't know; } SKIP TO No opinion } 37
36. What is the main reason that you are dissatisfied with SWE services?	41	1 Bad taste or smell, dirty 2 No water at all 3 Water not available enough each day 4 Interruptions in service 5 Flow of water too slow 6 Other - SPECIFY _____
37. Did any member of your household use an SWE Public Latrine for any reason last week?	42	1 Yes - SKIP TO 39 2 No - ASK 38
38. What is the main reason your household didn't use an SWE Public Latrine last week?	43	1 Has own private latrine 2 Use other facilities 3 Too far, not available 4 Too crowded 5 Too expensive, cost 6 Water unavailable 7 Other - SPECIFY _____ 8 Use river or other place without facilities
39. Does your household boil its drinking water other than for tea?	44	1 Yes - SKIP TO 40 2 No - ASK 39A
39a. Do you think it's healthy to drink unboiled water?	45	1 Yes 2 No 3 Don't know
40. In general, would you say that the health and physical condition of the household members is excellent, good, fair or poor?	46	1 Excellent 2 Good 3 Fair 4 Poor 5 Don't know, no opinion

41. In general, would you say that the living conditions of your household are excellent, good, fair or poor?	47	1 Excellent 2 Good 3 Fair 4 Poor 5 Don't know, no opinion							
42. Do you own this house?	48	1 Yes 2 No							
43. What type of toilet facility does this household use?	49	1 Automatic flush 2 Manual flush 3 River 4 Cubluk (latrine without water) 5 Other - SPECIFY _____ _____							
44. Is there a business in this household that uses water?	50	1 Yes - ASK 45 2 No - SKIP TO 49							
45. What type of business does this household have that uses water?	51	1 Batik 2 Jamu (traditional medicines) 3 Cafe or small restaurant 4 Ice 5 Tire repair 6 Hotel/Rooming House 7 Other - SPECIFY _____ _____							
46. Where does the business usually get the water it uses?	52	1 SWE source 2 Not SWE source							
47. Last week, how many people worked in this business?	53-54	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> </table> Persons							
48. Last week, how much money did the business earn after expenses?	55-60	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; height: 20px;"></td> </tr> </table> Rupiah							
49. Approximately how much does your household spend for <u>everything</u> each month? Do not include any business expenses.	61	1 Rp. 0 - 4,999 2 Rp. 5,000 - 9,999 3 Rp. 10,000 - 19,999 4 Rp. 20,000 - 29,999 5 Rp. 30,000 - 39,999 6 Rp. 40,000 - 49,999 7 Rp. 50,000 - 59,999 8 Rp. 60,000 - 69,999 9 Rp. 70,000 or more							
50. Approximately how much does your household spend each day on <u>meals</u> ? Include food for which your household does not pay.	62	1 Rp. 0 - 299 2 Rp. 300 - 599 3 Rp. 600 - 999 4 Rp. 1,000 - 1,399 5 Rp. 1,400 - 1,799 6 Rp. 1,800 - 2,199 7 Rp. 2,200 - 2,599 8 Rp. 2,600 or more							

<p>CHECK ITEM C </p> <p>INTERVIEWER: IS WATER SOURCE CODE 13 CIRCLED IN COLUMN A, ITEM 4, PAGE 3?</p>	<p>63</p>	<p>1 Yes - ASK 51 2 No - SKIP TO CHECK ITEM D</p>
<p>51. In your opinion, has the amount of water available from your SWE house connection increased, decreased or remained the same in the last 6 months?</p>	<p>64</p>	<p>1 Increased 2 Decreased 3 The same</p>
<p>52. I would like to see how much water you used last month and how much you paid for your SWE connection. May I please see your water meter and stand meter card?</p> <p>IF THE RESPONDENT CANNOT FIND HIS WATER BILL OR CUSTOMER METER CARD, OR REFUSES TO SHOW IT TO YOU, ASK HIM TO ESTIMATE THE NUMBER OF CUBIC METERS OF WATER USED LAST MONTH.</p>	<p>65-67</p>	<p><input type="text"/> <input type="text"/> <input type="text"/> Cubic Meters</p>
<p>52a. CIRCLE THE CATEGORY CORRESPONDING TO THE MONTHLY CHARGE ON THE BILL. IF NO BILL AVAILABLE, ASK: How much did you pay for water from your SWE connection last month?</p>	<p>68</p>	<p>1 Less than Rp. 400 2 Rp. 400 - 499 3 Rp. 500 - 699 4 Rp. 700 - 999 5 Rp.1000 - 1299 6 Rp.1300 or more</p>
<p>CHECK ITEM D </p> <p>INTERVIEWER: IS ANY WATER SOURCE CODE 01-09 ENTERED IN ITEM 5F, PAGE 4?</p>	<p>69</p>	<p>1 Yes - ASK 53 2 No - SKIP TO 55</p>
<p>53. I would like to measure the distance from the door of your house to your major water source for household uses. You indicated that this was (source mentioned in Item 5F). Could you please lead me to it?</p> <p>INTERVIEWER WORK SPACE:</p> <p>_____ PACES X _____ LENGTH OF PACE = <input type="text"/> <input type="text"/> <input type="text"/> Meters</p>	<p>70-72</p>	
<p>54. INTERVIEWER: OBSERVE AREA IMMEDIATELY SURROUNDING WATER SOURCE AND RECORD:</p> <p>A. IS THERE STANDING WATER ON THE GROUND?</p>	<p>73</p>	<p>1 Yes 2 No</p>
<p>B. DESCRIBE TYPE OF DRAINAGE, IF ANY.</p>	<p>74</p>	<p>1 No drainage 2 Drain directly to river 3 Drain directly to gutter 4 Other - SPECIFY _____</p>

<p>55. PRIMARILY, WHAT TYPE OF CHAIRS ARE THERE IN THE LIVING ROOM?</p>	<p>75</p>	<p>1 No chairs 2 Slatted Wood 3 Plastic/Ratan 4 Wood, ratan or metal with padded seat 5 Wood with padded seat covered with silk, velvet or cotton 6 Other - SPECIFY</p> <p>_____</p>
<p>56. OF WHAT MATERIAL ARE THE WALLS MADE?</p>	<p>76</p>	<p>1 Bamboo 2 Wood 3 Part Concrete/Brick 4 All Concrete/Brick 5 Other - SPECIFY</p> <p>_____</p> <p>_____</p>
<p>57. OF WHAT MATERIALS IS THE LIVING ROOM FLOOR MADE?</p>	<p>77</p>	<p>1 Dirt 2 Cement 3 Brick 4 Tile - small 5 Tile - Teraso 6 Other - SPECIFY</p> <p>_____</p> <p>_____</p>
<p>58. It is possible that a technician will be coming to your house in the next few days to take a small sample of your water. What is the most convenient time for him to come?</p>		<p>_____</p> <p>_____</p> <p>_____</p>
<p>59. . THANK RESPONDENT . ENTER TIME IN COLUMN F, COVER PAGE . EDIT QUESTIONNAIRE</p>		

APPENDIX II

STANDARD ERRORS FOR SELECTED STATISTICS

Table	Study Group							
	Project Phase 1						Non-Project	
	Total		SWE Users		Non-Users			
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
2. Percentage of households where wife of head completed primary	35.0	2.5	38.1	6.0	34.3	2.7	28.7	13.9
3. PKK attendance of wife	20.9	1.8	41.3	6.0	17.8	1.8	20.2	2.6
4. Resident owns house	68.1	2.4	62.7	5.6	68.9	2.6	81.6	2.4
5. Material of house walls: wood	18.0	1.8	15.7	5.0	18.4	1.9	6.0	1.4
6. Material of living room floor: dirt	27.6	2.2	4.8	2.3	31.1	2.4	38.5	3.3
7. Type of living room chairs: plastic/rattan	31.3	1.9	26.5	5.0	32.0	2.1	29.5	2.8
8. Monthly household expenditures: 30,000-49,999	39.2	2.1	34.9	4.6	39.9	2.3	37.8	3.1
9. Monthly household expenditures on meals: 0-599	20.3	1.8	10.8	3.5	21.8	1.9	23.1	2.5
10. Perceived level of living conditions: fair	75.4	2.2	55.4	5.8	78.5	2.2	80.9	2.9
11. Perceived level of health of household members: good	52.7	2.4	59.0	5.5	51.7	2.5	38.8	3.1
13. Used hand or electrically pumped well from inside the house	17.3	2.0	30.1	6.2	15.4	2.1	9.0	1.8
26. Number of times water fetched yesterday: 4-6	26.4	2.0	16.9	4.3	27.9	2.2	37.8	3.2
27. Total time spent fetching water yesterday: 16-30 min.	28.2	1.9	18.1	5.0	29.8	2.1	25.1	3.0
28. Distance in meters to major source of water: 5-9	16.4	1.6	9.6	3.4	17.4	1.7	19.1	2.3

Table	Study Group								
	Project Phase 1							Non-Project	
	Total		SWE Users		Non-Users				
	Est.	SE	Est.	SE	Est.	SE	Est.	SE	
29. Households satisfied with current water source	83.8	1.7	74.4	5.2	85.2	1.8	83.9	2.6	
34. Boil drinking water	93.4	1.2	95.2	2.3	93.1	1.1	81.9	2.9	
37. Type of toilet facility: latrine	8.6	1.6	3.6	3.5	9.4	1.8	4.3	1.7	
39. Method of waste disposal: drain to concrete gutter or sewer canal	50.7	3.0	74.7	5.8	47.0	3.1	26.8	3.5	
40. Materials used for washing dishes: water and soap	15.8	1.8	14.5	4.2	17.2	1.9	28.6	2.9	
42. Water related business: cafe or small restaurant	5.5	1.1	2.4	2.7	6.0	1.2	5.4	1.2	
54. Prefer present source	40.4	2.6	10.0	7.3	42.7	2.7	50.2	3.6	
60. Amount willing to pay: not even Rp 700	45.1	2.6	15.0	5.5	47.4	2.7	52.9	3.4	
61. Unwilling to pay Rp 700: cannot afford	77.2	3.0	100.0	0.0	76.7	3.1	80.4	3.1	
64. Willing to share yard hydrant	35.5	2.4	65.0	8.2	33.3	2.4	26.1	3.8	

Table	Monthly Per Capita Expenditures							
	Rp 0 - 2,500		Rp 2,501- 5,000		Rp 5,001 or more		Not Reported	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
58. Prefer present source: (non-SWE subscribers)	54.3	5.6	42.2	2.9	36.6	4.1	100.0	0.0
59. Prefer present source: cheaper than SWE	28.1	5.4	23.6	3.8	19.8	4.2	0	
62. Amount willing to pay: not even Rp 700	70.0	5.4	44.5	2.8	36.2	3.4	0	
Rp 1,000-13,000	19.4	3.3	42.0	2.8	54.7	4.1	0	
63. Amount willing to pay for SWE connection:								
Rp 1-24,999	3.4	1.4	6.4	1.2	3.1	1.0	0	
Rp 50,000	9.0	2.2	28.7	2.4	41.9	3.6	0	