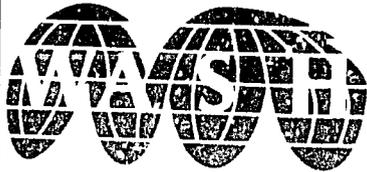


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WATER AND SANITATION
FOR HEALTH PROJECT

Operated by
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EVALUATION PLAN FOR THE RURAL WATER SUPPLY AND SANITATION PROGRAM WITHIN THE HEALTH SECTOR LOAN II PROJECT DOMINICAN REPUBLIC

WASH FIELD REPORT NO.166

FEBRUARY 1986

The WASH Project is managed
by Camp Dresser & McKee
International, Inc. Principal
cooperating institutions and
subcontractors are: Associates
in Rural Development, Inc.;
International Science and
Technology Institute, Inc.;
Research Triangle Institute;
Training Resources Group;
University of North Carolina
at Chapel Hill.

Prepared for
the USAID Mission to the
Dominican Republic
WASH Activity No. 172

WASH FIELD REPORT NO. 166

EVALUATION PLAN FOR THE RURAL WATER SUPPLY AND SANITATION
PROGRAM WITHIN THE HEALTH SECTOR LOAN II PROJECT
DOMINICAN REPUBLIC

Prepared for the USAID Mission to the Dominican Republic
under ACT No. 172

by

Jacques M. Faigenblum

February 1986

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ABBREVIATIONS

DR	Dominican Republic
GODR	Government of the Dominican Republic
HSL I, II	Health Sector Loan I, II
PP	Project Paper
SESPAS	Secretaria de Estado de Salud Publica y Asistencia Social (Secretariat of State for Public Health and Social Assistance)
USAID	United States Agency for International Development
WASH	Water and Sanitation for Health Project

EXECUTIVE SUMMARY

In June 1985, the USAID Mission in the Dominican Republic requested assistance from USAID's Bureau for Science and Technology to develop an evaluation procedure for its Health Sector Loan II Project. USAID authorized the WASH Project to undertake this assignment by sending a consultant to Santo Domingo for up to five weeks to develop a simplified evaluation procedure.

The USAID-funded WASH Project had been involved since 1981 in helping the Health Sector Loan Project to develop a project evaluation methodology. WASH had also been involved in providing consultants for the design and manufacture of the handpumps.

This report presents the work undertaken by the WASH consultant during his visit from October 2 to 22, 1985 in developing a simplified plan for the final evaluation of the Health Sector Loan II Project in the Dominican Republic. This project, which was undertaken in 1978, has received two extensions and is now to be completed by November 1986. Project objectives are to:

- Expand the Basic Health Services Program established under Health Sector Loan I to an additional 100 rural communities
- Upgrade 100 rural clinics and 20 hospitals
- Train doctors, nurses, supervisors, and promoters
- Deliver potable water systems to rural communities (predominantly in the form of handpumps), latrine components, health education, and the training of community health committees to assist with the water supply, latrine, and health education components as well as with training for long-term maintenance of the potable water systems.

To date, the first three objectives have been accomplished. Remaining objectives include the provision of 2,600 wells for potable water, the installation of 20,000 latrines, and the distribution each of 20,000 water carrying and water storage containers. This simplified plan calls for the evaluation of behavior regarding water collection, use, and storage, latrine use, behavior related to the disposal of feces, and those related to personal hygiene and the maintenance of sanitary cleanliness around the home. This range of behavior is the focus of the project's attendant health education component.

This simplified evaluation is primarily concerned with measuring intermediate variables and supersedes an evaluation that focused on health-outcome impacts on child mortality and anthropometry. The health impact evaluation was abandoned because of its estimated expense and because there was insufficient time to carry it out.

The current activity involves a sample of 2,000 to 2,500 households to be evaluated in 50 communities cooperating with the project. The project works with approximately 600 communities. There is no use of "control" households as

communities and the evaluation is to be a one-time survey, without benefit of specifically collected baseline data.

As part of this effort, a contractor in the Dominican Republic is to be hired to supervise the field component of the evaluation and to process and analyze the evaluation data and write a final report. Data collection in the field is to be completed by the Promotion Assistants, who implement the projects at the community level. It is expected that data collection will require two weeks of full-time effort by the Promotion Assistants and their supervisors. Data collection is scheduled for February and March of 1986.

Concurrently, an evaluation is to be made of the performance of the locally manufactured Santo Domingo steel handpump designed by the Georgia Institute of Technology. This pump is intended to replace the use of the locally manufactured cast-iron AID-Battelle handpumps that have proven satisfactory in a significant number of communities but only if they were used with a shallow well and if the community showed interest in repairing the pump. At the conclusion of the project, it should be possible to give a full evaluation of the manufacture, installation, performance, and maintenance requirements of the handpump. Further, it is hoped that the handpump eventually will be manufactured, marketed, and serviced by the private sector.

Chapter 1

PROJECT BACKGROUND

1.1 Introduction

In 1975, the Government of the Dominican Republic (GODR) was awarded a USAID loan (Health Sector Loan I -- HSL I) for \$4,725,000, which was supplemented by approximately \$6,919,000 from the GODR. Project objectives included:

1. Administrative reform of the Secretariat of Health and Social Assistance (SESPAS)
2. Establishment of a low-cost health delivery system, utilizing local health workers (health promoters)
3. Development and implementation of a nutrition education program.

Following the completion of the HSL I Project, the GODR requested a second loan (HSL II) to expand the services offered under HSL I. HSL II, which was awarded to the GODR by USAID in 1978, was intended to upgrade 100 rural clinics and 20 small hospitals by providing simple medical equipment and training. In addition, the project would provide potable water, latrines, and health education for approximately 500 villages (approximately 160,000 people) in four of the country's health regions. The amount of the HSL II was \$8,000,000, which was to be supplemented by \$3,154,000 from the Government of the Dominican Republic.

1.2 The Potable Water Supply Program

Two types of water systems are being constructed by the HSL II Project. The first, and by far the most numerous, is drilled wells with public handpumps -- in 577 communities by September 1985. Second is the construction of gravity-fed systems from capped springs with public faucets -- in 11 communities by September 1985. A design criterion common to both systems is that one well or faucet serves ten households.

The objective of the project is to drill 2,600 wells. Assuming that 20 percent of these are dry holes, the project will install more than 2,000 handpumps by its end.

Maintenance of the pumps and gravity systems is to be the responsibility of the communities themselves through the efforts of the community health committees. To amass sufficient funds to purchase spare parts when making repairs, or to pay for someone to repair the system, each household using the water system is expected to pay to the committee the amount of 50 cents DR monthly (equal to approximately \$0.15). The committee appoints volunteers to be trained by the project to carry out basic maintenance tasks and repairs.

In addition to providing the potable water source, the project also provides a white plastic 20-gallon water container with a screw-on top and a faucet for sanitary storage of the drinking water in the home. A family is eligible to

receive one of these containers when it has paid the system user fee for six months in succession. To aid with the sanitary transport of water from the new source to the home, five-gallon white plastic containers are provided that have narrow necks and screw-on caps. A family is eligible to receive one of these after paying the monthly user fee for three months in succession.

1.3 The Latrine Program

The objective of this program is to provide latrine components to 20,000 homes served by the new water services by the end of the project in November 1986. Two types of latrines are offered: one is the simple pit latrine concrete platform, riser and wooden cover; the second is a ceramic water-seal bowl which drains into a soakage pit. The ceramic bowl is now manufactured in the Dominican Republic. The household is initially responsible for excavating the pit under the supervision of a project Promotion Assistant and for constructing an adequate superstructure.

1.4 The Health Education Program

Each of the four regional SESPAS offices is managed by a Unit Chief and supported by an Administrative Chief. In the field, the health education program is carried out by Promotion Assistants, who are hired specifically for this project and who are under the supervision of supervisors. At present, there are 38 assistants and 4 supervisors working in the approximately 577 communities, an average assignment of 15 communities per assistant. The male assistants are issued motorcycles, while the female assistants use public transport.

Table 1

Health Education Program Manpower

<u>Regional Office:</u>	<u>Supervisors</u>	<u>Assistants</u>
Peravia-Azua	0	6
San Juan	1	11
Elias Pina	1	6
Santiago Rodriquez-Puerto Plata	2	15
	4	38

The objectives of the health education program are to:

1. Assist the community in selecting members of the health committee.
2. Assist the health committee in organizing the community inputs needed for the construction of the new water system.

3. Train and then supervise the efforts of the health committee in maintaining the water system.
4. Promote the use of latrines and supervise their installations.
5. Promote sanitary conveyance to and the storage of potable water in the home.
6. Promote a number of hygienic habits related to children and the maintenance of cleanliness around the home.

The assistants and supervisors are trained to install, maintain, and repair the different project handpumps so that they too can train and assist the community in doing maintenance and repair. If necessary, the assistant may call on the assistance of the four SESPAS mechanics designated to work full time on the repair of handpumps.

1.5 Other Aspects of the Project

The HSL II Loan also called for upgrading 100 rural clinic and 20 small hospitals and for training doctors and nurses, village health promoters, and health educators. Because this component of the project was completed earlier and has already been evaluated, it is not included in the present scope of work. The health educators are the current promotion assistants.

This project is the responsibility of a special SESPAS unit known as the Development of the Health Sector II Program. Its employees are not on the permanent staff of SESPAS and their contracts end with the close of the project in November 1986.

Chapter 2

EVALUATION BACKGROUND AND DESIGN

2.1 The Project Paper, 1978

The USAID Project Paper (PP), which was written in 1978, called for the development of a five-year evaluation plan to be completed by the eighth month of the project. The plan was to be carried out by the Program and Health Office of USAID and the Project Coordinator's office of SESPAS. Two types of evaluation were to be undertaken: (1) an evaluation of project management and progress-to-target (completion of project goals) and (2) periodic evaluations of the project purpose and goals.

The first types of evaluations were to be completed during the 10th, 19th, 31st, 41st, and 50th months of the project ending in 1983. These evaluations were intended to measure the progress made in meeting the intermediate implementation targets and to provide feedback for adjustments that might be required in the project implementation schedule. One-page quarterly reports charting project progress were submitted to USAID by SESPAS in lieu of the originally conceived evaluations.

The second type of evaluation involved the use of a research evaluation methodology to measure progress toward project goal, purpose, and outputs in participating and control communities. The Logical Framework Matrix of the Project Paper proposed measuring such progress by means of Objectively Verifiable Indicators. The Logical Framework Matrix contains the following:

a. Goal

Infant mortality to decline from 127 per 1,000 live births to 95 per 1,000 live births. Mortality for children in the one- to four-year-old age group to decline from 20 per 1,000 to 15 per 1,000.

b. End-of-Project Status

Incidence of diarrhea (total population) and malnutrition (infants and preschool children) for residents of target area to be reduced significantly. A total of 650 health promoters and 100 health educators to be performing assigned duties. A total of 100 rural clinics and 20 rural hospitals to be performing referral services. Community health committees functioning as necessary to support the Basic Health Services and rural water supply and sanitation programs. The Basic Health Services logistical system to be performing adequately to support operations.

c. Output Indicators

The construction of 2,250 community water system outlets and 20,000 latrines. The training of 100 health educators (Promotion Assistants) and 300,000 villagers.

The Project Paper called for a preliminary report to be completed during the last month of the project and subsequent reports to be submitted after project completion. The primary rationale for the project was the assumption that the provision of potable water, latrines, and health education would significantly reduce the incidence of diarrhea. Evaluation was to consist of estimating infant mortality and age-specific mortality rates for the one- to four-year-old year age group and of observing annual changes in these rates.

It was recommended that a random sample of communities be chosen to represent 5 percent of the 500 communities to be served by potable water, latrines, and health education, or a sample size of approximately 25 communities. The assessment was to be confined to these 25 communities. Each community was to be carefully mapped and the entire population enumerated. Data for the evaluation were to be collected by the Village Health Promoters trained under the Basic Health Services Program. SESPAS was to assume responsibility for subsequent data analysis.

In addition to the foregoing 25 villages selected randomly from the project communities, 12 more villagers were chosen randomly to have controlled interventions. Four of these villages were to be randomly assigned potable water alone; four more to have potable water plus latrines; and the last four villages to receive all three interventions of potable water, latrines, and health education.

The differences between the 25-village and 12-village sample, were as follows:

1. In the 25-village sample, health promoters were expected to collect data under the control of their supervisors. These data were for calculation of crude birth rates, infant mortality rates, and age-specific mortality rates. Each of the villages was to receive all the interventions of the project, but a ranking of villages (in order of project implementation) and schedules for the interventions were not given.
2. In the 12-village sample, more highly skilled people were to be hired and trained to collect the foregoing data as well as additional information on diarrhea. As indicated previously, the villages were to differ on the types of interventions.

The 12-village sample was to be used to test the following two hypotheses:

1. Two years after the experiment was initiated, the infant and preschool mortality rates would be lowest in those villages receiving potable water, latrines, and health education; highest in those villages receiving only potable water; and intermediate in those villages receiving potable water plus latrines.
2. The incidence, prevalence, and duration of the diarrheal episodes would be lowest in those villages receiving potable water, latrines, and health education; intermediate in those receiving water and latrines; and highest in those communities receiving only potable water.

2.2 WASH Field Report No. 5 (January 1981)

In January 1981, Dr. Dennis Warner, then a WASH consultant, visited the project and wrote a report entitled "Dominican Republic Consultations on Health Sector Loan II." One of the objectives of this mission was to discuss assistance in designing and implementing the evaluation of HSL II. Dr. Warner reported that between 1978 and early 1981 little progress had been made in planning for the evaluations called for in the Project Paper.

Dr. Warner also reported that the information needed for the evaluations of project management and progress-to-target was being routinely collected by SESPAS and was on file at the USAID Mission office. This included information on the number of participating communities, number of clinics upgraded, the number of people trained, the number of pumps installed, number of latrines installed, and so forth.

Regarding the health outcome evaluation, Dr. Warner noted that the Project Paper had failed to clearly define the two proposed studies (the 25-village sample and the 12-village sample), other than to indicate that the studies were intended to show favorable relationships between the provision of potable water, latrines, and health education on the one hand and reductions in diarrhea, gastroenteritis, parasitic disorders, and infant and child mortality rates on the other. He concluded that insufficient information was available to prepare the requisite evaluation at the time of his visit and that a carefully developed impact study was needed to show the overall outcome of the project. According to Dr. Warner, this study should incorporate the essential features of the individual evaluations outlined in the Project Paper. The report went on to say that "since the water and sanitation interventions are unlikely to have any significant effect upon vital statistics and mortality rates in the course of the program, it is imperative that any impact study adopted for the Loan II program set out clearly measurable intermediate variables and targets."

These intermediate variables were to be related to the performance of the project, that is, to the use and maintenance of the input facilities by the community. Warner mentioned two aspects of importance -- the use of water and sanitation facilities by individual households and the overall support and maintenance of these facilities by the community. Suggested evaluation variables included water quantities, water quality, hygienic behavioral patterns, maintenance routines, revenue collection, and health education. Annual assessments of randomly selected villages were considered to be an effective means of determining baseline data, monitoring year-to-year progress, and accumulating information for a final impact assessment of the program.

Warner suggested the following community sample sizes for the evaluation: 20 control communities with no interventions; 10 communities with water only; 10 communities with water plus latrines; and 10 communities with water, latrines and health education.

The Warner report recommended that two individuals with experience in rural water and sanitation programs, nonformal health education training, and field research methodology be sent to the Dominican Republic for approximately three weeks. During this period, they were to become fully knowledgeable about the

evaluation needs of the HSL II Project, to determine the extent of the evaluation effort, to assess the capacity of SESPAS (or other organizations) to perform the evaluations. Moreover, they were to design the evaluation studies to monitor program progress and to assess overall program impact. In effect, the consultants were to design both types of evaluation called for in the Project Paper.

2.3 WASH Field Report No. 23 (August 1981)

Within three months of Dr. Warner's visit, two consultants were sent by WASH to the Dominican Republic. Mr. Paul Howard, sanitary engineer, and Dr. Robert Struba, epidemiologist, spent three weeks in country and prepared a report entitled "Plan for Health Impact Evaluation of the Health Sector II Bilateral Assistance Project in the Dominican Republic." As suggested by the title, the WASH team did not work on the progress-to-target evaluations, but instead concentrated on assessing health impacts.

The report contained a detailed description of evaluation theory, methods, techniques, and controls as well as the monitoring efforts required to ensure a reasonable degree of validity in an evaluation. The report did not provide details concerning how to conduct field evaluations, to design forms, to choose a sample and so forth. It was intended to serve as a guide for further detailed planning and implementation of the evaluation.

As far as the recommended evaluation of impact was concerned, the interventions -- water, latrines, and health education -- were to be treated as dichotomous variables, and there was to be no direct attempt in the impact evaluation protocol to measure either the quality or quantity of the delivery and use of these interventions. The WASH consultants, however, did stress that the evaluation of the intermediate implementation variables was crucial in explaining the results of their proposed evaluation. They also recommended that data from community files be assembled to measure the level of achievement of the intermediate variables.

Their recommendations included the following:

- Diarrhea morbidity measurements should be dropped from the study, because of the difficulties in collecting valid data in this area.
- It would be more useful to monitor a smaller number of communities than to monitor only portions of a larger number of communities.
- A consultant should be contracted to further assess the ability of institutions, agencies, groups, or personnel in the Dominican Republic to process and analyze the data for the evaluation.
- Dominican Republic resources should be used, if recommended by the consultant.
- Village health promoters should be employed as the principal data collectors for the evaluation.

- The job of the consultant was to define the tasks, to prepare the data-gathering forms, and to select the personnel for project monitoring.
- A total of 130 communities were to be studied, including 55 control communities, 25 communities with water only, 25 communities with water and latrines only, and 25 communities having all three interventions. All of the study communities were to be initially monitored for baseline data. Afterwards, periodic monitoring according to the evaluation plan was to be carried out on selected samples of villages.

2.4 WASH Field Report No. 35 (February 1982)

Later in the year, WASH consultant, Mr. Kenneth McLeroy, prepared a report entitled "Scope of Work for the Health Outcome Evaluation of the Health Sector Loan II Project in the Dominican Republic." This report furthered the work of Mr. Howard and Dr. Struba by presenting a scope of work and a cost estimate for a 30 month evaluation of health outcomes from the HSL II Project. As in the previous case, this report was concerned only with an outcome evaluation.

The scope of work set forth in Mr. McLeroy's report called for the data to be collected by the village health promoters, to be summarized in the Dominican Republic and then to be sent off to the United States for analysis. To carry out the detailed evaluation, a contractor in the Dominican Republic was to be hired and be responsible for sample selection, data analysis, and project management. McLeroy recommended that the principal personnel needed for the evaluation were project director, sampling statistician, management systems analyst, and epidemiologist. The estimated cost, excluding those of SESPAS, was \$124,000 (1981 dollars).

All communities in the evaluation sample were to be included in a baseline survey and then visited every six months over the life of the project (30 months). Every household in these selected communities was to be surveyed. Six months prior to the end of the project, the contractor was to submit a draft outline of the final report to USAID. The final report was to contain, at a minimum, summaries of the data by community and treatment groups, the final results of the study, problem areas encountered in the study, and suggested changes in the evaluation process/evaluation design for incorporation into future studies. The contractor was to specify a preliminary analysis, including the statistical tests to be employed.

2.5 Scope of Work for this Report, October 1985

The HSL II Project was originally scheduled for completion in November 1983; the project, however, received a two-year extension until November 1985, and recently obtained a further extension of one year. No action on the previous evaluation recommendations by Mr. Howard and Dr. Struba and Mr. McLeroy had been taken by mid-1985. In June 1985, a request was then made by the USAID Mission for a WASH consultant to spend five weeks in the Dominican Republic to develop a simplified evaluation procedure for the HSL II Project. The

assignment was to be completed in two trips, the first of three weeks duration in October 1985 and the second of two-weeks' duration nine months later.

During the first three week visit, the consultant was to:

- Review the objectives of the HSL II Project, as detailed in the Project Paper.
- Review the previous WASH reports on the HSL II Project, especially those by Howard and Struba and McLeroy relating to the development of the final project evaluation plan.
- Develop a simpler evaluation procedure that would assess the attainment of overall project outputs.
- Develop an evaluation technique for the handpump component of the project which would obtain information on water utilization factors rather than on the impact of this component in terms of better health.
- Assist SESPAS and USAID in selecting a local firm to conduct the evaluation developed by the consultant.
- Prepare a draft report detailing the simplified evaluation procedure and the recommendations made by the consultant to SESPAS and USAID for selecting a local firm to perform the evaluation.
- Review the report with appropriate mission and SESP'S officials.

During the second visit, the consultant was to assist the selected firm in analyzing data and preparing its final report, prepare a supplement to the final report on the results of the assistance given by the consultant to the local firm, and to review this report with appropriate officials in the Dominican Republic.

2.6 Scope of the Evaluation

During discussions with the USAID project officer for HSL II, it was agreed that the scope of the evaluation would be limited to the potable water, latrine, and health education components of the project. The clinic upgrading and training components had been evaluated in previous years and it was determined that there was no need for further evaluation. It was further decided that given the small number of gravity fed systems in the project (11 systems versus 550+ communities with pumps), the evaluation should concentrate on evaluating only those communities receiving water from handpumps.

During the discussions, it was also agreed that no attempt would be made to measure any health outcome variables as originally envisioned in the Project Paper and the previous evaluation plans. In addition to unavailable resources for evaluation, there had been a serious deterioration in the village health promoter program, which had been assumed by previous plans to be responsible for collecting the demographic and anthropometric data.

2.7 Evaluation Resources

It was decided to engage the Promotion Assistants and their supervisors in collecting field data and to have a contractor manage the field phase of the evaluation and then process and analyze the resulting data. Because the project was making a concerted effort to install more than 700 pumps and 10,000 latrines in the remaining year of the project, it was important that the evaluation not impose great demands on the time of the limited field staff assigned to the project. The task became one of designing an evaluation plan that took into account the shortage of available resources in time and money as well as the limited experience of the promotion assistants in carrying out household surveys.

2.8 Evaluation Timing

A period of two to three weeks was acceptable to USAID and the SESPAS project manager for completing the evaluation. Given the number of field staff and the time available, it was necessary to limit the sample sizes of communities and households to be evaluated. The decision was made, therefore, to survey 50 communities containing between 2,000 and 2,500 households, which is roughly a 10 percent sample of households in the project.

The year 1986 will pose a problem for the evaluation, due to a national election scheduled for May 16. As a result, project management is reluctant to conduct a survey during the two months prior to that date. A reluctance to use control communities is also evident, due to the risk this poses in creating political problems within the communities.

Given the election schedule, it would be unwise to start the survey until after the middle of March 1986. The coffee harvest in the Dominican Republic, however, occurs during the months of January and February, a time when one can expect to find few informants at home during the day. Because the coffee harvesting season varies by area of the country, the survey may have to be scheduled at different times for the four regional offices in the project.

Postponement of the survey until after the election in May would not leave sufficient time for data processing, analysis, and report writing. As a result, it would be preferable to carry out data collection either during February or early March 1986.

2.9 Selection of a Contractor

The unit within SESPAS that is involved in HSL II does not have the experience to carry out the preliminary field testing, personnel training, data processing, and data analysis required for this evaluation. It was agreed, therefore, that a local contractor be engaged to carry out these tasks. A scope of work for the contractor involves:

- Orienting contractor personnel to the project and evaluation plan
- Estimating the costs and time needed to complete the plan. The contractor presents detailed information on its previous

experience, personnel and equipment to be used for field-testing, training, data collection supervision, data processing and analysis

- Designing the evaluation survey forms and manuals, including the organization and management of field tests and training of field personnel in the use of the forms and manuals
- Selecting communities in the sample and assign specific communities to each regional office on the basis of approximately equal workload for each promotion assistant
- Supervising the printing of forms and manuals
- Organizing and overseeing the collection of evaluation data in the sample communities
- Transferring the data from the survey forms to the computer
- Preparing data files for the statistical analysis by some computer program system, such as SSPS, SAS, and so forth
- Monitoring allowable values and verifying data
- Planning the basic analysis of the data based on frequency of responses (in terms of length of time the community has been in the project), time since the start of the water service, categorization of the community as "wet" or "dry," and location by province
- Completing the preliminary analysis
- Discussing the findings, results and conclusions with SESPAS and mission officials and planning further analyses, if such an effort is considered to be worthwhile
- Preparing a final report on the evaluation in cooperation with SESPAS and mission officials.

The Mission felt that the most appropriate method for selecting the contractor would be to place an advertisement in the major Santo Domingo newspapers. This advertisement should outline the scope of work and invite interested firms or organizations to submit their names for consideration. The interested parties would then be briefed on the project and the evaluation and then would be asked to submit a contract bid and prepare a presentation on proposed implementation plans.

2.10 Evaluation Timetable

At the conclusion of the assignment, the following tentative timetable was proposed by the consultant. It is recognized, however, that a realistic timetable can be made only after the contractor has submitted a plan of work.

Table 2

Evaluation Timetable

<u>Task</u>	<u>Estimated Time Required</u>	<u>Completion Date</u>
Selection of the Contractor	1 month	November 22, 1985
Form and Manual Design, Including Field Testing	3 weeks	January 10, 1986
Selection of the Communities and Work-load Assignment	3 weeks	January 10, 1986
Printing of the Forms and Manuals	3 weeks	January 31, 1986
Training of Field Workers	2 weeks	February 14, 1986
Collection of Evaluation Data	2 weeks	March 7, 1986
Processing of the Forms	10 weeks	May 16, 1986
Verification of Data	3 weeks	June 6, 1986
Construction of Data Files and Plan for Basic Analysis	2 months	August 1, 1986
Conduct of the Basic Analysis	1 month	August 29, 1986
Discussion of the Planning of Future Analyses, and Implementation	1 month	September 26, 1986
Preparation of the Final Report	5 weeks	October 31, 1986

To the extent that it is possible for the contractor to carry out some of these tasks concurrently rather than sequentially, the total time actually required to complete the evaluation could be much less than estimated here.

2.11 Selection of Sample Communities

All of the communities participating in the handpump program were categorized according to the year in which a well was first drilled in the community. It was from such time that continued contact started with the community, even though in a few communities it was more than a year before a pump was actually installed. Therefore, it was decided to use this date for calculating the length of contact time between the community and the project rather than the date of installation of the pumps. Nevertheless, an initial drilling date was requested, because drilling in some communities was spread out over several

months. The resulting data, in terms of the number of communities entering the project by year, area (north/south) and province, are shown in Table 3.

Table 3
Communities Categorized by Length of Time in Project

<u>South</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>Sept. 1985</u>	<u>Totals</u>
San Cristobal	0	0	0	0	0	17	17
Peravia-Azua	29	8	18	0	0	0	55
San Juan	8	57	111	13	0	37	226
Elias Pine	<u>0</u>	<u>1</u>	<u>8</u>	<u>41</u>	<u>13</u>	<u>3</u>	<u>66</u>
(a)	<u>37</u>	<u>66</u>	<u>137</u>	<u>54</u>	<u>13</u>	<u>57</u>	<u>364</u>
 <u>North</u>							
Sto. Rodriguez	0	0	0	34	24	3	61
Valverde/Mao	0	0	0	0	13	0	13
Dajabon/Monte Cristi	0	0	0	45	6	9	60
Puerto Plata	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>68</u>	<u>11</u>	<u>79</u>
(b)	<u>0</u>	<u>0</u>	<u>0</u>	<u>79</u>	<u>111</u>	<u>23</u>	<u>213</u>
Totals (a) + (b)	<u>37</u>	<u>66</u>	<u>137</u>	<u>133</u>	<u>124</u>	<u>80</u>	<u>577</u>

These results show that well digging was not uniform with time over the project area. During the first three years, well digging focused on the southern area and after that on the northern area. The table also shows that there is almost twice the number of communities participating in the south as in the north.

2.12 Stratified Sampling

Fifty communities of the 577 present in the project are to be chosen for the evaluation. The sample should be stratified in terms of the length of time the communities have been in the project, that is by multiplying the total sample size, 50, by the ratio of the number of communities that entered in a given year over the total number of communities in the project. The results are presented in Table 4.

Table 4

Stratified Sample Sizes by Year

Sample size from 1980	=	37/577	x	50	=	3
1981	=	66/577	x	50	=	6
1982	=	137/577	x	50	=	12
1983	=	133/577	x	50	=	11
1984	=	124/577	x	50	=	11
1985	=	80/577	x	50	=	<u>7</u>
				Total		50

The foregoing table represents only an example of the calculation to be made, because the figure for 1985 represents the number of communities included through September. If the community selection is not actually made until the beginning of 1986, the figure for 1985 will have to be updated, thereby resulting in a different distribution by year.

Given the present example, however, the next stage would be to choose at random three communities for the 1980 sample from the provinces that were represented in that year, namely, Peravia-Azua and San Juan. Each of the seven potential communities could be given a number between 1 and 37 and three communities could be selected randomly. Because the number of households in each community is known, the number of households to visit in the selected communities is also known.

The ratio of project communities in the south to those in the north is 364 to 213, that is 1.7:1. For this ratio to be exactly duplicated in the sample, there would have to be 32 communities selected in the south to 18 in the north. It is unlikely that the foregoing method will result in such ratios, but it is expected that they will be close to these proportions.

2.13 Workload Assignment

A problem exists in the foregoing method in selecting 50 communities at random. The problem is that one does not know how many households will be involved, because a community can have anywhere from 15 to 200 households. Given the number of assistants available to do the field work and the time allotted for the evaluation, each assistant should not be assigned more than 50 to 55 households to evaluate.

Accepting this workload range and the number of available assistants in each region, it is possible to calculate the desired workload per regional office. The first step is to choose the 50 communities, as outlined above, and then to determine how many households are in each regional office. If the number falls within an acceptable range of 50 to 55 households per promotion assistant, one needs to go no further. If there are too few or too many households, however,

it may require some judicious juggling by adding, subtracting, or replacing one or more communities to bring the total number of households to an acceptable level for the region.

An alternative approach would be to keep the randomly selected number of households as fixed and instead to change the number of assistants assigned to a given region. This might be a problem, however, if the other regions do not have sufficient personnel.

One can expect that there will be a number of households that will have to be eliminated from the sample because of noncooperation, no one found at home, and so forth. It is important, therefore, that the number of households initially selected be in the area of 2,500 so that one can end up with valid survey information for at least 2,000 homes.

Chapter 3

EVALUATION OF HOUSEHOLD HEALTH BEHAVIORS

3.1 The Choice of Evaluation Variables

The original intent of the project evaluation was to measure the actual impact of project programs on the health status of the population at greatest risk to sanitation-related diseases, in other words, children between the ages of 0 and 5 years. When it was determined that it was infeasible for the project to consider this type of evaluation, attention was focused on the next level of variables in the standard evaluation model -- the intermediate variables related to the use of the sanitation facilities and educational inputs supplied by the project.

If people drink uncontaminated water, if they wash their hands with soap after defecating, if they dispose of all their feces in a well-functioning latrine, then public health theory predicts that one should see a decline in the morbidity and mortality rates associated with poor sanitation in that population. It is another way of stating the original hypotheses stated in the Project Paper.

As a proxy for measuring the actual impact on morbidity and mortality, the evaluation plan is to measure the level of behaviors at the family level which are conducive to good health and an avoidance of sanitation-related diseases. Behaviors can be targeted that relate to the three major project programs -- water supply, latrines, and health education. The actual choice of variables to be measured requires exercising judgment about which measurements are practical and acceptable to the people being surveyed.

3.2 Potable Water-Related Variables

Variables related to water supply include source of water for different activities, the time spent in collecting water, new uses of water, transport and storage of water, and reliability of the handpump service. Not included are measures of water use in gallons; nor are there measures of bacteriological quality differences between traditional sources and the water stored in the home that has been fetched from a protected source, the handpump. These variables were ruled out on the basis of practicality. The philosophy for the design of the evaluation survey was one of nonintrusiveness, in a physical sense, around the home and a preference for answers based on observations by the interviewer rather than answers dependent on direct questions to an informant. Eliciting valid and reliable answers by asking questions requires a skilled and experienced interviewer. Such skills and experience are not usually held by the majority of promotion assistants who would be responsible for conducting the evaluation survey. Although direct questions cannot be easily avoided, an attempt was made to minimize their use.

The following questions were included in the evaluation: How wedded are the users to the new source? If there is a service problem do they insist on funding another protected source or do they go back to using a traditional contaminated source? Has the new availability level of water meant that there

is now significantly more time available to the people responsible for fetching water? Has the new availability meant that activities such as keeping animals or keeping a vegetable garden are now possible where previously they were not? Are water transport and storage behaviors helping to avoid the risk of contaminating the water removed from the protected source?

3.3 Latrine-Related Variables

Latrines can be expected to yield health benefits only if they are sited and constructed properly, are used frequently, and serve to break the fecal-oral transmission routes that result in sanitation-related death and illness. The variables chosen for the evaluation relate to the length of time the family has had a latrine of their own and to the use of the latrine by the children. The surveyor is asked to assure himself or herself that the latrine really is being used and that it is being properly maintained.

3.4 Health Education-Related Variables

Obviously, the aforementioned variables are all part of the behaviors targeted by the health education program for adoption by the communities. The survey includes questions about the cleanliness in and around the home, the control of animals, and the use of footwear as a protection against parasites. The targeted behaviors were identified by a somewhat circuitous route. The WASH consultant was informed that there was a document that specified the targeted behaviors. The document, unfortunately, could not be located and was not readily available to each promotion assistant executing the program.

The principal teaching material for health education was a series of illustrations on a cloth flipchart that had been developed for a rural water supply and sanitation project in Honduras. The only other materials being used were pamphlets published for primary health care programs. The only consistent tool in all regions was the cloth flipchart. Because the illustrations showed both the undesirable and desirable behaviors, by going through each illustration it was possible to get the health educators to identify each specific targeted behavior in their program. The evaluation survey was tailored to fit this specific health education program. The evaluation form and its manual are found in Appendix A.

3.5 The Household Hygienic Behavior Score

The household evaluation form has several design elements:

- The direct questions appear on the form in Section A. Section B consists either of observations or of behaviors or their results.
- The items are grouped to conform to a natural progression through the survey -- begin by interviewing the informant, move to the kitchen area, move to the yard, finish at the latrine.

- The answers to the observation questions can be used to calculate a score for that household and to describe the "household Hygienic Behavior Score.

Each hygienic behavior observation question is answered by circling a "yes" or "no" on the form. These "yes's" and "no's" have been arranged so that the desirable response appears in the right-hand response column. At the end of the survey, the promotion assistant is able to total the number of responses circled in the right-hand column, divide this by the number of applicable questions, and multiply the result by 100 to arrive at a score that may vary between 0 and 100. The greater the adoption of targeted hygienic behaviors by the family, the higher their expected score and the greater the assumed impact and effectiveness of the project's health education efforts. This score may be used to characterize a household in analyzing the evaluation data or, more importantly it might be used by the promotion assistants to identify targeted behaviors that require increased attention in low-scoring households.

3.6 Evaluation of Other Project Components

Other project components of interest include the performance of the installed handpumps, the effectiveness of the community maintenance efforts, the effectiveness of the community health committees, and the quantity and type of health education activities.

The performance of the new steel handpumps is specified in Chapter 4 of this report. Because little data was collected during the past five years on the performance of the original cast iron pumps, the decision was made not to attempt to evaluate their performance at this stage of the project. The promotion assistants know which of their communities are actively maintaining cast iron pumps, but this information is not reported on any form. This information will be known for the steel Santo Domingo pumps through the use of the pump performance history form described in Chapter 4 and Appendix C.

The health committees are to submit monthly reports on the state of the maintenance and repair fund, the number of paid-up subscribers, and any expenditures on repairs. Unfortunately, a review of the forms at the central office indicated that much of the requested data is missing and that little effort, if any, is being made to improve the quality of this information. The health education program does require each region to report the total sum of money in the community fund on its general monthly report form, which is entitled, "Activities Carried Out by the Development of the Health Sector II Program Supervisors." The "Activities" report form also requires information, by community, on the number of homes, the number of people, the number of wells drilled -- wet or dry, the number of pump platforms installed, the number of pumps installed, the number of private latrines already existing, the number of latrines delivered by the project, the number of new latrines installed by the project, the number of latrine pits completed, the number of community meetings and the total amount of money in the repair fund. In addition, each promotion assistant has to submit a weekly plan of activities to his or her supervisor.

These forms could be analyzed to calculate the quantity of each type of activity carried out by the promotion assistant -- pump installation, latrine

installation, latrine promotion, health committee training, school health education, and general community education. The promotion assistants also maintain personal notebooks of their activities. No decision has been made yet about the level of effort the project will make to analyze this health education activity data.

3.7 The Community Description Survey

The purpose of this survey form is to collect information about each community in the evaluation sample on the:

- Degree to which the community is organized and has had previous experience with communal projects
- Degree of physical accessibility to the community
- Level of public services to the community.

These factors will be used as covariables in analyzing the evaluation data. The form and its manual are to be found in Appendix B. The survey is to be completed by a supervisor.

3.8 Implementation of Evaluation Surveys

A person is to be hired who is experienced in organizing and managing survey work. Such an individual would organize and supervise the field-testing and revise the survey forms and their accompanying instruction manuals. This person is also to train the field staff in the use of the forms and to supervise the collection of evaluation data. It is expected that this individual will be supplied by the contractor hired by the project to process and analyze the data.

This person should work with the data processing manager in designing survey forms in order to minimize problems in transferring the data from the forms to the computer. The form should be designed to enable the survey-taker (enumerator) to read it and fill it out easily. The printing of the forms and manuals should be managed by the contractor and not by SESPAS and each supervisor and promotion assistant should be furnished a copy.

Before going into the communities to carry out the evaluations, the enumerators need to be extremely well-acquainted with the form and have to understand and be able to interpret each question. Each enumerator must have some trial experience prior to using the form. Rather than assigning one assistant to survey a whole community, it is recommended that all the assistants in a region arrive at a given community at the same time and work together under the constant supervision of their supervisor.

Before leaving the community, the supervisors should make sure that all homes have been surveyed and that all of the completed forms have been checked for completion. Corrections are difficult, but possible, to make while in the community. They become difficult to make once the team has left. The results of the survey will depend directly on the quality of the data collected by the

assistants and on the quality of verifying the forms, which is carried out by the assistant immediately upon completion of the field work.

It is recommended that completed forms not be sent to the central office in Santo Domingo until a region has finished all of its assigned surveys. Completed forms should then be delivered to the contractor for data processing as soon as possible. The person who supervised the development and testing of the form and the field training should be readily available to the people keying in the data from the forms to the computer, to answer questions and to resolve problems encountered by the data processors in interpreting completed forms.

Chapter 4

EVALUATION OF THE SANTO DOMINGO HANDPUMP

4.1 Introduction

The project was initiated with the installation of cast iron handpumps originally developed by the Batelle Research Institute for USAID and manufactured in the Dominican Republic. When it was discovered that there was an unacceptably large number of service failures of these pumps, the project sought ways to improve the mechanism. Certain design changes were made, and the new design was referred to as the Modified AID-Batelle handpump.

When concern over the performance of even these modified pumps continued, the Georgia Institute of Technology suggested the introduction of a steel pump, designed by this institution, to replace the cast iron pumps. This new pump also was designed to be manufactured locally.

A 1984 AID Internal Audit report on the project estimated that 750 more handpumps were needed before the end of the project. Contracts were signed with four local manufacturers to share the production of the 750 pumps. As of October 1985, some 150 of the steel handpumps had been manufactured and had passed the rigorous acceptance procedures maintained by SESPAS, with the help of the quality-control staff of the Dominican Institute of Industrial Technology. These pumps have been given the official name of "Santo Domingo Handpumps."

4.2 Santo Domingo Pump Evaluation Plan

The overall basis for the evaluation of the Santo Domingo pump is the list of criteria for handpump evaluations presented by Kenneth McLeod and David Donaldson in their WASH Field Report No. 139 of February 1985 entitled "Field Evaluation of Steel Fabricated Handpumps for the USAID/Dominican Republic Health Sector II Project". The criteria are as follows:

- Ease of maintenance
- Durability and efficiency
- Life-cycle cost of the proposed pump
- Acceptability to users
- Potential for local manufacture.

It was found that two general types of information were required to complete the evaluation according to the foregoing outline:

- Descriptive information
- Quantitative information that needed to be specified on a form and have a schedule set for its collection.

Because this evaluation plan was developed in cooperation with the newly appointed technical adviser to SESPAS on handpumps, the WASH consultant concentrated on the quantitative aspects, with the understanding that the SESPAS technical adviser would gather all of the necessary descriptive

information to address the McLeod and Donaldson criteria. In addition, the SESPAS technical adviser was responsible for the overall evaluation plan of the Santo Domingo handpump.

In determining quantitative information needs, the consultant considered four stages, as follows:

1. Raw materials stage
2. Manufacturing stage
3. Installation stage
4. Functioning stage.

4.2.1 Raw Materials Stage

Manufacturers have been given detailed specifications concerning all aspects of production, including those of the quality of the raw materials. The consultant concluded that there was no need to collect additional quantitative data for this stage.

4.2.2 Manufacturing Stage

It was concluded that, because of the acceptance checks made by SESPAS and the quality-control assistance from the Dominican Institute of Industrial Technology, there was no need for additional data to be collected for this stage.

When accepted, each handpump is stamped with an identification number giving manufacturer's I.D., the lot number, and the specific number for that pump within the lot. Twenty percent of the pumps in a lot are chosen at random for inspection. If any deviation from specifications is found on one of the selected pumps, that defect is looked for in all remaining pumps in the lot. Any pumps with defects are rejected and have to be corrected at the manufacturer's expense. If the pump lot is neither delivered nor accepted by the contractual date, the manufacturer is fined for each excess day. Records maintained by the team involved in the acceptance procedure give the percentage of satisfactory units produced by manufacturer and date.

From the manufacturer, the accepted handpumps are delivered to the central SESPAS warehouse in Santo Domingo, where a careful check is carried out of all parts to be used in pump installation. From the central warehouse, the pumps are then dispatched to regional warehouses for allocation to the communities.

4.2.3 Installation Stage

At the regional warehouse, all of the items necessary for an installation are assembled. Before going into the communities, the installation team is supposed to verify again that all necessary parts and tools are present. A form is filled out for each installation by the person in charge of the installation team. This form calls for specifying the exact number of items that went into each installation. The consultant recommends that this form be amended to request information on whether: (1) all parts were in fact present

at the moment of installation and (2) whether there were any problems with the fitting of parts. This information represents a final verification of the quality of manufacture and the distribution of parts and tools by the SESPAS warehouses.

4.2.4 Functioning Stage

The plan calls for a general evaluation of the performance of all 750 of the steel pumps to be installed as well as an in-depth evaluation of a sample of the pumps. At this stage, the factors of interest include:

- The percentage of time annually that the pumps work
- The types of repairs needed
- The cost of replacement parts
- Where the parts are obtained
- The annual operations and maintenance costs
- The average time to first repair
- The average time between repairs and the performance of the pump versus depth of the well.

4.3 Evaluation Plan for the Santo Domingo Sample Pumps

a. Seventy-five pumps are to be selected from the 750 Santo Domingo steel pumps that are being manufactured. Twenty-five of these pumps should be destined for use in "shallow" wells, defined here as wells with a depth to static water level of less than 25 feet. Twenty-five pumps are to be for "medium" wells, that is, having depths between 25 feet and 100 feet. Twenty-five are to be for "deep" wells, that is, having depths greater than 100 feet.

Because the objective of the evaluation is to follow the actual performance of these pumps and not the quality of maintenance they receive, it is unnecessary to choose the sites where the pumps are located randomly. It is preferable, instead, to go for the most convenient and accessible sites to the pump repair team based in Santo Domingo.

b. Two promotion assistants in each area -- north and south -- are to be chosen and given the responsibility of visiting all sample pumps every week. They are to receive training for this task and a detailed set of instructions, in the form of a checklist and manual, on the activities to be completed during each weekly visit. It is expected that each assistant will be able to visit the assigned pumps in one day. The male assistants have motorcycles assigned to them by the project for this purpose.

At each visit, the assistant is to monitor the rate of flow at the pump output using a specially calibrated bucket and a timing device. In addition to the flow test, the assistant is also to:

- Check for noises that might indicate problems with the pump

- Make a general inspection concerning the ease of operation
- Use an Allen wrench to remove the top of the pump and to check for corrosion on the chains
- Inspect the chain connection points.

The assistant is also to check for the presence of metal shavings inside the pump which would indicate misalignment of some parts. The assistants should be issued flashlights to help with the internal inspections.

c. The forms completed by the assistants responsible for the 75 selected pumps are to be collected and transported to the central office in Santo Domingo at least once every three weeks. A special file is to be maintained at the central office for each of the sample pumps. If a pump is not working or the assistant thinks that it is in need of repair, that information is to be sent by radio to the central office. The assistants are to understand that any repairs to the 75 sample pumps are to be made only by persons authorized by the central office. They are neither to touch them themselves nor allow community members to do so. This approach, of course, highlights the need for an immediate response by central office personnel.

d. If any of the 75 pumps require repair, they are to be completely taken apart in what is known as a "tear-down." This step is in addition to any actual repair work that may need to be carried out on the pump. A manual of procedures and reporting for the tear-down is to be written by the technical adviser, and he is to prepare any necessary forms for the task. The tear-down will enable the project to determine the condition of each part in the pump being analyzed and thus permit the analysis of wear on critical components.

e. Prior to installation, all 75 pumps in the sample will be inspected, and critical measurements taken that can later be used for carrying out wear analysis on any of these pumps. In October 1986, six pumps that have not required any repairs will be chosen at random, two from each of the three pump classifications of shallow, medium, and deep. These six pumps will be subjected to a tear-down and will be analyzed for wear to the critical components.

f. A record is to be maintained at the central office of the performance history of each of the 750 installed Santo Domingo pumps, whether or not they are included in the sample. This record will contain the following for each pump:

- The date the pump stopped working
- The date it restarted
- The number of days without service
- The repair needed
- Who carried out the repair
- What was the cost of the replacement parts and from where were they obtained.

With this information, it will be possible to calculate:

- The percentage of days the pump has been working
- The annual operation and maintenance cost
- The time to first repair and the average time between repairs.

g. Because promotion assistants, members of the community, or hired mechanics may, over time, repair those pumps not included in the sample of 75, special effort will have to be made to ensure that the record of pump performance history is accurately maintained and kept up to date every time a repair is carried out. The principal responsibility for this task lies logically with the assistants, because they have the closest contact with the communities. They will, however, have to receive constant monitoring by the central unit in charge of the pump evaluation if valuable performance data are not to be lost during the last months of this project.

h. Given the data collected from the sample of 25 pumps at each of the depth classifications, it should be possible to carry out a revealing analysis of the effect of operating depth on the performance history of the Santo Domingo pumps.

4.4 Ease of Maintenance

One of the issues that needs to be evaluated for the Santo Domingo pump is the extent to which the pump should be repaired by the community. There is little doubt even now that any repairs concerning the above-ground parts of the pump can be done by trained community members. The issue concerns repairs that involve retrieving the pump cylinder from medium to deep wells where one has to contend with the considerable weight of the piping. Full-time mechanics have been trained to use the steel tripod, designed by Georgia Institute of Technology, as well as special clamping tools to hold the drop-pipe in position. Concern exists that carrying out repairs without these special tools will lead either to personal injuries or to damage to the pump system. The situation needs to be further evaluated, but it is expected that several more months of installation experience will allow definitive guidelines to be made.

Regarding the above-ground maintenance, one of the advantages of the steel pump over the cast iron pump is that little maintenance is expected to be required, because lubrication is not needed for long intervals, and the community maintenance people can be trained to look and listen for potential problems. The above-ground parts most likely to need replacing are the bearings and chain. The parts chosen for the pump are common and have been found to be locally stocked in hardware stores in small towns. The manufacturers have agreed to produce at least a two-year supply of spare parts for the pump. The size of the requisite supply is being specified by the technical adviser based on handpump-testing experience at the Georgia Institute of Technology laboratories.

4.5 Durability and Efficiency

At present, manufacturers have not been required to guarantee their pumps for any warranty period. Because each pump is to have a unique identification number giving the manufacturer's identity and the lot number from which it came, pumps requiring continued repairs can be returned to their manufacturer for rectification. If the eventual plan is to turn the marketing and servicing of the pumps over to private enterprise, it would seem appropriate to consider introducing a warranty system in the near future.

Durability of the pumps will be evaluated by the following data:

- Time to first repair after installation
- Mean time between repairs over the first year of operation
- Percentage operating time annually
- Number of days operating annually divided by 365 and then multiplied by 100.

Durability of each part of the pump system will be evaluated by means of the repair report and, more importantly, by means of the tear-downs to be carried out on the sample pumps. By the end of the evaluation year, it is expected that the project will be able to predict the length of trouble-free operation for the average pump, based on the depth of well in which it is to be used. The project objective is to have a pump that has at least one year of trouble-free operation.

4.6 Life-cycle Costs

The project has only one year left to run so it is not practical to address the issue of the life-cycle costs of the Santo Domingo pumps before project completion. The expected life-cycle of these pumps is conservatively estimated at ten years. What will be available is the average cost of first year maintenance. Unfortunately, this will not be a good estimator of life-cycle cost since one expects first year costs to be very small and for the costs to increase with length of operation.

The costs of repairs during the remaining life of the project are to be tracked for all the installed Santo Domingo pumps. These costs are to include the cost of labor, where applicable, as well as the cost of replacement parts. It is hoped that maintenance of these pumps will be taken over by the private sector and that local mechanics, trained by the project, will accept contracts with communities in their area to maintain and repair the pumps. The mechanics will be paid out of the monthly user fees collected by the health committees in the communities.

Given the similarity of the Santo Domingo pump to the Mark II steel handpump from India, one could conceivably arrive at a rough estimate of life-cycle costs if such costs were known for the Mark II. Several hundred of these pumps are operating in neighboring Haiti.

4.7 Acceptability to Users

The level of acceptability of the handpump by the users can be gauged by observation of user behavior at the pump and by asking users about their experiences with the pumps. One factor of importance may be whether the pump is easy enough to operate that young children can be sent to fetch the water. If it is thought that young children should not operate the pumps, steps might be taken to stiffen the pump handle action so that only older children and teenagers could draw water.

The assistants responsible for the weekly checking of the 75 sample pumps will be trained to check the pumps for ease of operation and for the rate of flow in gallons per minute. After several months of experience, the community maintenance people can be trained to carry out the same tests. A decrease in the rate of flow is usually a good indication of the pending breakdown of the pump, as is a stiffening in the action of the pump's drawing mechanism.

Acceptability to the user is not only going to depend on the provision of enough water in a reasonable time period and a minimum of physical effort by the user, but also on the time it takes to restore a pump to service and the monetary cost to those paying for repairs. Because of the limited time available for evaluation, only a rough estimate of acceptability to the user will be possible.

4.8 Local Manufacturing Potential

The project will be able to demonstrate, by the end of the evaluation, whether it is possible to manufacture steel handpumps to strict specifications on a long-term basis. Little doubt now exists that there are machine shops in Santo Domingo that can produce a first-rate product if their management is willing to exert careful internal quality control. If quality control is not accepted as an internal responsibility by the manufacturers, but is left to SESPAS, the probability of long-term production of first-rate pumps is small.

Care has been taken with the design of the pump to ensure the complete interchangeability of parts between manufacturers. The parts most likely to need replacement -- ball bearings, chains, valves, and leather cups -- have been clearly specified because of their ready availability in the Dominican Republic.

None of the present pump manufacturers are devoting all of their facilities to making the pumps; all have other orders to fill. The incentive to take care over the production of the pumps will depend on the profitability of the pumps and the long-term expected level of demand. If the pumps operate successfully, the expectation is that not only will there be substantial demand on the local market, but also that there will be the possibility of exports to Caribbean and Central American markets.

Chapter 5

MAJOR RECOMMENDATIONS

5.1 Evaluation Design

Fifty communities, approximately 10 percent of the communities now involved in the project, should be selected for the evaluation. Every household in these 50 communities is to be surveyed. It is expected that this will entail surveying between 2,000 and 2,500 homes.

All of the communities in the project at the time that the sample selection is made are to be categorized by the year in which wells were first dug in a community as part of the HSL II Project. This categorization will represent the length of time that the community has been receiving inputs from the project, such as latrines, health education, and work with the health committee. This will not necessarily reflect the length of time that the community has had potable water, because there are communities that have no potable water but have been receiving other inputs for more than a year. Finally, it will be important that the analysis be completed using both dates, the date that contact began and the date that water service was started. These two dates are noted on the Community Description Survey Form (Appendix B).

A stratified sampling technique is to be used to select the 50 evaluation communities. The basis for stratification will be the year that the community entered the project, that is, the year that the first well was dug. The evaluation of the project is to be made at the household level. The evaluation is to cover the areas of water collection, water use, water storage in the home, latrine use, behaviors related to the disposal of feces, behaviors related to personal hygiene, and the maintenance of sanitary cleanliness around the home. The behaviors to be surveyed are those that have been targeted for adoption within communities by the health education program.

An evaluation is to be made of the performance of the Santo Domingo steel handpump.

5.2 Evaluation Plan

A contractor in the Dominican Republic should be hired who has experience and capability in processing and analyzing data collected in the field. In addition, at least one experienced person should be hired to supervise the development and field-testing of the forms needed for this evaluation and to train and supervise the SESPAS field staff in their use.

The collection of evaluation data should be carried out by the project promotion assistants, who are the project representatives in the communities. A period of two to three weeks should be set aside for the evaluation and the assistants should devote their whole time to the evaluation during this period. Data collection in the field should be carried out either in February 1986 or in early March. In addition, it is recommended that a statistical analysis program package, such as SPSS or SAS, be used to analyze the

evaluation data. There are an estimated 150 variables for which data will be collected. A contractor should review and organize the data, set aside problem cases, and establish acceptable value ranges for each variable.

The initial data analysis should include, at the least, the frequency of response for each variable by community, province, by length of time the household has been in the project, by the length of time the household has had potable water and by the designation of the household as living in a "dry" or "wet" community. The contractor may decide what further statistical tests should be done. Such tests should be discussed with AID and SESPAS officials. It is expected that the consultant will return to discuss the preliminary findings, further plans for data analysis, and the preparation of the final report in mid-1986 when the preliminary analysis has been completed. The contractor will be responsible for writing a report summarizing the results and stating the conclusions. This report is to be completed, at the latest, by the end of October 1986.

5.3 Evaluation of the Santo Domingo Handpump

The evaluation of the pumps should be under the management of the technical adviser assigned to the SESPAS unit. A total of 75 pumps should be chosen randomly to be evaluated between their time of installation and the end of the project in November 1986. The pumps should be in shallow, medium, and deep wells, one-third (25) in each category.

These 75 sample pumps should be checked each week. Any sample pump requiring repair should receive a tear-down with full analysis of every part. At the end of the evaluation period, six pumps that have not been repaired should be chosen at random to receive a tear-down, including a full analysis of every part. Each depth category of well should be represented by two of the randomly chosen wells. A form should be used to give the performance history of each Santo Domingo handpump whether or not it is included in the sample of 75.

APPENDIX A

Household Health Behaviors Evaluation Survey and Manual

SECRETARIAT OF STATE FOR PUBLIC HEALTH AND SOCIAL ASSISTANCE
OFFICE OF THE DEVELOPMENT OF THE HEALTH SECTOR II PROGRAM

Household Health Behaviours Evaluation Survey

V5 18.10.85

Community:..... Municipality:.....

Province:..... House Number:.....

Interviewer:..... Date (d/m/y):.....

Dry community? yes no

Informant's name:.....

Family position:

female head grandmother daughter other.....

SECTION A. THE INTERVIEW

Number of people living there:.....

Number of children less than 5 years old:.....

What are your sources of drinking water now? traditional pump

What were your sources of drinking water
before the installation of the pump? traditional other pump NA

How far was the drinking water source
in the dry season? metres

Now, when the pump is not working, what
is your source of drinking water? traditional other pump NA

How many times did you go yesterday
to fetch water? times

Normally, how long does it take each time
to go, fill up and come back? mins.

TIME SPENT NOW IN FETCHING WATER MINS.

Before the installation of the pump, how many times did you go per day to find water? times

At that time, how long did it take each time to go , fill up and return? mins.

TIME SPENT BEFORE IN FETCHING WATER MINS.

DIFFERENCE BETWEEN THEN AND NOW MINS.

What is the frequency of breakdowns of the pump that you normally use? daily weekly monthly quarterly

in the dry season

never happens NA

When did the last breakdown occur? date (d/m/y):..... NA

How many days passed until the pump that you normally use was repaired? days NA

Who repaired it? the community
a contracted mechanic
a Promotion Assistant
a SESPAS mechanic
don't know NA

Where do you obtain water for the following activities?

drinking and cooking	traditional	pump	
utensil washing	traditional	pump	
bathing	traditional	pump	
clothes washing	traditional	pump	
water for animals	traditional	pump	NA
watering a vegetable patch	traditional	pump	NA

What are you doing with the water now that you were not doing before?
NOTE DOWN THE REPLIES.....

SECTION B. OBSERVATIONS

The informant is wearing something on her feet now?		no	yes
All the children of the family that you can see are wearing something on their feet?	NA	no	yes
Can you see a child of the family that is nude?	NA	yes	no
Can you see a young child playing on the ground?	NA	yes	no
Is there fecal material in the kitchen?		yes	no
Is there a barrier against the entry of animals into the kitchen?		no	yes
Is it a low cooking-place?		yes	no
All the containers used for storing water are well covered?		no	yes
The 20 gallon container is functioning well?		no	yes
The 20 gallon container is clean inside?		no	yes
The tap of the 20 gallon container is clean?		no	yes
The 5 gallon container is clean inside?		no	yes
Can you see fecal material of any kind in the patio?		yes	no
All the animals are contained behind fences?		no	yes
Are there pools of water in the patio not due to rainfall?		yes	no
If there is a new latrine, are you certain that is is being used?		no	yes
Does the superstructure of the latrine..			
-- offer protection against the rain?		no	yes
-- allow privacy?		no	yes
-- have its structure in good condition?		no	yes
What type of latrine is it?			
		standard latrine without cover	
		standard latrine with cover	
		hydraulic seal latrine	

Is there a good smell in the latrine?	no	yes
Can you see flies or insects?	yes	no
Is the state of cleanliness good?	no	yes
Is there personal cleansing material present?	no	yes

Number of applicable questions (20 or 23)

Number of responses in the right-hand column

The score for the Family Hygiene Habit Scale is calculated by dividing the number of responses in the right-hand column by the number of applicable questions X 100 =

For example, if the number of applicable questions is 20 and the total number of right-hand column responses is 8, then the family score is given by $8/20 \times 100 = 40$.

This scale has a range of values between 0 and 100.

This calculation is not to be done during the interview but the Assistant should do it before giving the completed form to the Supervisor.

SECRETARIAT OF STATE FOR PUBLIC HEALTH AND SOCIAL ASSISTANCE
OFFICE OF THE DEVELOPMENT OF THE HEALTH SECTOR II PROGRAM

MANUAL OF INSTRUCTIONS FOR USE OF THE
HOUSEHOLD HEALTH BEHAVIOURS EVALUATION SURVEY FORM

1. Purpose of the Form

The purpose of this form is to evaluate the impact of the project at the family level. The following are four areas of primary interest:

- a) the use of uncontaminated water from the pumps and the cessation of the use of traditional, contaminated water for drinking, food preparation and food utensil cleansing;
- b) the storage of water inside the home in containers that are covered and have faucets that obviate the problem of introducing items into the interiors of the containers. Along with this is the use of a small-necked water fetching container with a cap to protect the water from contamination in between the pump and the home storage container;
- c) the use and maintenance of a latrine; and
- d) changes in hygienic habits targeted by the health education activities.

There are two main sections to the form. Section A consists of questions put directly to the informant. Section B consists of questions answered by the observations of the interviewer without need of asking questions. These questions have been further grouped so that there is movement from the interview site to the kitchen area to the patio and then to the latrine area.

The observation section has been designed so that all the desirable responses are in the right-hand column. If we give all these replies a value of 1 and the undesirable answers each a value of 0, we have a family hygiene score that can vary between 0 and 100 after making a simple calculation. The more a family has adopted hygienic habits, the higher their score should be. This is one way of measuring the impact of the health education activities. It can also be used as a guide by Promotion Assistants to planning activities and seeing which behaviours need greater attention in any given family or community.

2. The Informant

The areas of interest to the survey are activities that are the responsibility of the females of the house, therefore there is little point in interviewing one of the males of the house --they are unlikely to have the information that we are seeking. The most appropriate informant is the female head-of-household. If she is not at home you may interview another adult woman or an older daughter in charge of the home.

Under no circumstance should you interview a male unless it happens that he lives by himself and does all the household chores himself.

If a man insists on being present and in participating in the interview

you should stop and explain to him that you are going to be asking questions that are related to women's responsibilities in the home. If he still insists on participating, you should stop the interview, thank the informant and go to do an interview in another home.

3. Who does the Survey?

The survey will be carried out by the Promotion Assistants under the supervision of their supervisors. For the period of the evaluation, some two weeks, the Assistants will work together in surveying a complete community. For example, if there are 40 homes in a community and 6 Assistants, each person will complete more or less 7 visits. Each survey is expected to take 30 minutes. It is expected that during the two-week period, each Assistant will complete 50 surveys.

4. Which Communities are to be Surveyed?

All 600 communities in the project will be categorized according to the length of time they have been in the project, i.e. since 1980, since 1981, etc. 50 communities will be chosen by means of a randomly selected stratified sample. It is expected that between 2,000 and 2,500 homes will be evaluated.

5. When the Form has been Completed

When each form has been completed, before leaving the home you must check the form to see that no questions have been left unanswered, that the responses are correct and that you did not by chance check an incorrect answer. Also it is important to check that there is no missing information about the identification of the informant, the house, the date and your name on the form. It is critical to make sure that all the answers can be clearly interpreted when the data is entered into the computer.

Completed and checked forms should be given to your supervisor. The supervisor will recheck your forms before they are sent to the central office for processing by computer.

Community, Municipality, Province

House Number refers to the number given by the malaria control program.

Interviewer write in your complete name

Date day, month and year, e.g. 12 March 1986

Dry community?

Is there a natural scarcity of water in the community? That is to say that there are no sources near the community and that it takes a lot

of effort to fetch water if there is no manual pump service.

Informant's name write in the full name of the informant.

Family position of the informant. Circle the appropriate response or write it in.

SECTION A. THE INTERVIEW

Number of people living there at the present time.

Number of children less than 5 years old living in the house now.

What are your sources of drinking water now?

Any source other than a SESFAS water pump is classified as "traditional".

What were your sources of drinking water before the installation of the pump?

Unless they made use of water from a handpump or a gravity system from some other project, the answer is "traditional". If the community has not yet received a pump, circle "NA" (Not Applicable) in the answer column.

How far was the drinking water source in the dry season?

How far did they have to go to get **drinking water** when water was scarce. Give the distance in meters. For example, if the person replies "half a kilometer", you would note down "500 meters". (There are 1,000 meters to a kilometer.) If the person replies "some 10 kilometers" then you would note down "10,000 meters". It is not necessary for the informant's reply to be an exact one but we do want to be able to distinguish clearly between families who walked a few hundred

metres and those that had to walk several kilometers to get their drinking water.

If the community does not have a pump yet, this will be the distance that they still have to go, write it down as the answer.

Now, when the pump is not working, what is your source of drinking water?

We want to know whether people will only get their drinking water from a pump no matter how far away it is, or whether they go back to using their traditional water source when it is not as convenient to get water as usual.

If the community has no pumps, mark this question "NA".

How many times did you go yesterday to fetch water?

Note down the number of times.

Normally, how long does it take each time to go, fill up and come back?

If the person says "half-an-hour", you convert it to minutes, e.g. "30 minutes". If she says "about 2 hours", you note down "120

minutes", etc.

TIME SPENT NOW IN FETCHING WATER

Do not complete this during the interview. It will be completed by the supervisor.

Before the installation of the pump, how many times did you go per day to find water?

Note the number of times. If the community has no pumps yet, mark the question "NA".

At that time, how long did it take each time to go, fill up and return?

Instructions same as before. If community does not have pumps yet the response is "NA".

TIME SPENT BEFORE IN FETCHING WATER

Do not complete this during the interview. It will be completed by the supervisor.

DIFFERENCE BETWEEN THEN AND NOW

Do not complete this during the interview. It will be completed by the supervisor.

(Note to the supervisor: time spent = number of times X time per collection visit)

What is the frequency of breakdowns of the pump that you normally use?
Since there may be several pumps in the community, this refers to the one that they use most frequently. If the person replies without prompting,

translate their response to one of the categories shown on the form. If they need prompting, you may read out the list of alternatives and ask the informant which one is the most appropriate.

If there is no pump yet the answer is "NA".

When did the last breakdown occur?

If possible give the exact date, if not give the month and year. It might be useful for you to have a little calendar with you to be able to specify the date if the response is "last Thursday", for example.

Question "NA" if the community has not yet received pumps.

How many days passed until the pump that you normally use was repaired?

If the answer is given in weeks or months, you have to convert it into days. Assume that every month has 30 days.

If no pumps yet the answer is "NA".

Who repaired it?

For example, if it was done by the Assistant with the help of a member of the Committee or the community, then you circle the categories.. "Assistant" and "Community". According to the response, you should check one or more categories. If the person does not know, mark the appropriate response. For communities without pumps yet, the

answer is "NA".

Where do you obtain water for the following activities?

You read out aloud each use to the informant and note the response. If the source is not the pump then you mark it as "traditional". "water for animals" and "watering the vegetable garden" are allowed the "NA" option in case people do not have animals or do not maintain a vegetable garden.

What are you doing with the water now that you were not doing before?
This only refers to communities that have pumps. We want to know if they have strated new uses of water since getting the pumps. Perhaps they have started a vegetable garden or have strated keeping animals, etc. Write down the replies.

What do you use to carry the water?

From whichever water source to the home. If the home has not received a 5 gallon container, the answer is "only other containers". If they have a 5 gallon container but they also use other containers, then the answer is "the 5 gallon container and others".

What do you use to store the drinking water?

Instructions are similar to those for the previous question, only instead of a 5 gallon container we are now dealing with the 20 gallon container.

Do you have a towel and soap for handwashing?
If they reply "yes", ask politely to see them.

Does the family have its own new latrine?

A "new" latrine means one constructed with the help of this project.

Did the family have its own latrine before?

It does not matter what type of latrine it was, it is important to know if they were accustomed to using a latrine at home before the project came into the community.

IF THEY DO NOT NOW HAVE THEIR OWN LATRINE, ASK

Do you use another family's new latrine?

If the family has its own latrine, mark the answer "NA".

Where do the children excuse themsleves (defecate)?

In some families, the young children do not use the latrine and are allowed to defecate in the patio or bush. Only circle the answer "latrine" if all the children always use it, if not then the reply ought to be "in the bush/patio". If there are no young children in the family, the response is "NA".

Where is fecal material from diapers put?

Only mark "latrine" if they always put the fecal material into the latrine pit. If they sometimes throw it into the patio or into the bush, then the answer ought to be "bush/patio". If there are no children in diapers, the question is "NA".

What happens to the material used for personal cleansing after excusing

oneself (defecating)?

It is not sufficient to know that they put it into a container next to the seat, what is the final destiny of this material?

How many times have you (THE INFORMANT) attended a talk given by an Assistant from this project this year?
List the number of times.

By chance, have you noted any changes in your health or in the health of the children or in the health of other members of the family since the beginning of our project in your community?
Note down the replies.

SECTION B. OBSERVATIONS

The informant's feet are shod now?

At the time of your visit. It is not important what type of foot covering it is as long as the sole of the foot is protected.

All the children of the family that you can see are wearing something on their feet?

If only some of the ambulatory children are shod, the reply ought to be "no". If you do not see any children during your visit, the appropriate response is "NA".

Can you see a child of the family that is nude?

If you do not see any children during your visit, the appropriate response is "NA".

Can you see a young child playing on the ground?

That is to say that the child is seated on the ground. For this question a "young child" signifies a child that is not yet walking. If you do not see any young children of that age during your visit, the appropriate response is "NA".

Is there fecal material in the kitchen?

Examine the floor and the tables to see if there is any type of fecal material including that of chickens. If there is, the answer should be "yes".

Is there a barrier against the entry of animals into the kitchen?

This is a barrier that keeps out all types of animals including chickens and dogs. The barrier should be in place unless the kitchen is in use at the exact time of your entry. If it is not in place, the answer should be "no".

Is it a low cooking-place?

That is to say, a cooking place on the floor. If it is not directly on the floor, it is not considered to be a "low" cooking-place but a "high" cooking-place instead.

All the containers used for storing water are well covered?

This refers to any containers containing water that might be used for drinking, cooking or the washing of kitchen utensils. If only some of them are covered, the answer should be "no".

The 20 gallon container is functioning well?

If the family does not have a 20 gallon container the answer is "no". If the family has a container but is not using it properly, the response is "no". For example, if the 20 gallon container contains water that is not from a pump, the response is "no". If the faucet is broken, also the response is "no".

The 20 gallon container is clean inside?

If the family does not have a 20 gallon container the answer is "no". The interior surface of the container ought to be completely white and you should not be able to see particles or specks in the water.

The tap of the 20 gallon container is clean?

If the family does not have a 20 gallon container the answer is "no". Examine the underside of the faucet, if you can see encrusted muck around the mouth of the faucet, the response should be "no".

The 5 gallon container is clean inside?

If the family does not have a 5 gallon container the answer is "no". The interior surface of the container ought to be completely white and you should not be able to see particles or specks in the water.

Can you see fecal material of any kind in the patio?

This includes the feces of chickens and dogs.

All the animals are contained behind fences?

We are talking about goats, chickens, pigs, etc. This does not include cats and dogs. Parrots ought to be in cages. If you see a goat, chicken or pig walking about freely in the patio, the response should be "no".

Are there pools of water in the patio not due to rainfall?

If there is a problem of drainage that leaves pools of water on the property, the response ought to be "yes".

If there is a new latrine, are you certain that it is being used?

A latrine is of benefit to a family only if they use it. It is not unknown for a family to construct its latrine because it is a requirement of the aid program if they want to obtain a new potable water service. Then the latrine might become a monument, used from time to time for the chickens or for storing crops. The people still prefer to go to the bush rather than use the latrine. You must assure yourself that the latrine is in daily use even though they tell you that it is used. Look inside the latrine pit to see if there is fecal material or if there is a smell. Look to see if there are signs of a path to the latrine, if there is personal cleansing material available in the latrine.

If the family does not have a latrine, the response is "no".

Does the superstructure of the latrine -- offer protection against the rain?-- allow privacy?-- have its structure in good condition?

If there is no latrine, the response to each part should be "no". "Offers protection" means that a person using the latrine does not get wet. "Allows privacy" means that one cannot see the person using the latrine. "Structure in good condition" means that there are no big

holes in the walls or in the roof and that the door functions properly.

What type of latrine is it?

This question does not enter into the total of the family hygiene score.

Is there a good smell in the latrine?

Musty perhaps but not offensive according to the surveyor's judgement.

Can you see flies or insects?

Usually they will be seen around or on the seat where there might be fecal material.

Is the state of cleanliness good?

That is to say that the floor is perfectly clean as is the area around the seat. It is clean around the outside of the superstructure too.

Is there personal cleansing material present?

Paper, corn cobs, leaves, etc.

HOW TO CALCULATE THE FAMILY HYGIENIC HABITS SCORE

Number of applicable questions (20 or 23)

Number of responses in the right-hand column

The score for the Family Hygiene Habit Scale is calculated by dividing the number of responses in the right-hand column by the number of applicable questions X 100 =

For example, if the number of applicable questions is 20 and the total number of right-hand column responses is 8, then the family score is given by $8/20 \times 100 = 40$.

This scale has a range of values between 0 and 100.

This calculation is not to be done during the interview but the Assistant should do it before giving the completed form to the Supervisor.

APPENDIX B

Community Description Survey and Manual

In which year did they begin to excavate the wells?

In which year did SESFAS begin to install pumps?

How many installed pumps are there? AID Sto. Domingo

How many abandoned pumps? AID Sto. Domingo

When did the Water Committee begin to function? (m/y):.....

SECRETARIAT OF PUBLIC HEALTH AND SOCIAL ASSISTANCE
OFFICE OF THE PROGRAM FOR DEVELOPMENT OF HEALTH SECTOR II

MANUAL OF INSTRUCTIONS FOR USE OF THE COMMUNITY DESCRIPTION SURVEY

1. Purpose of the Survey

The purpose of this survey is to collect information about each community in the evaluation sample. This information will be used for the analysis of the data obtained from the evaluation forms.

The information sought in this survey falls into 3 areas:

- a) the level to which the community is organized and has had previous experience of working together on communal projects;
- b) the level of physical accessibility to the community; and
- c) the level of public services to the community.

It is expected that each of these factors will explain part of the level of response that a community has to the project.

2. Who completes this form?

This form is completed by the supervisor with the help of whichever assistants are involved with that particular community. To obtain some of the information, the supervisor will have to interview people in the community who are knowledgeable about community affairs. The assistants who work in the community should be able to identify such informants to the supervisor.

3. When is the survey done?

The survey must be completed any time before the assistants complete collecting the evaluation survey data. Some of the information requested on this form is available from existing files. The process of collecting the information in the community is not expected to require more than half-a-day.

4. Which communities are to be surveyed?

The community description survey form should be filled out for each of the communities in the evaluation survey sample-- some 50 out of the 500 to 600 communities cooperating with the project. Each supervisor will be assigned his or her complement of communities to be surveyed.

5. What happens afterwards?

When the supervisor has finished all his or her assigned communities, the forms must be checked to guarantee that there is no missing data or errors in the data. Then the forms are to be sent to the central office, to the person supervising the evaluation plan. From the central office, the forms will be sent to the contractor in charge of

analysing the data.

Date given as day, month, year, e.g. 12 March 1986

Community, Municipality, Province

Number of homes, Number of people

This information should be available from existing project files.

Is there a public school?

A primary or secondary school physically located in the community.

Number of grades, Number of teachers

If there is no school, the response should be (Not Applicable) "NA"

Does the school have a good latrine?

A good latrine means that it should not have an offensive smell and it is clean and the superstructure is in good condition and there are no flies inside. If these conditions are not all present, then mark the response as "no".

If there is no school, the response should be (Not Applicable) "NA"

Does the school have water?

Do the pupils and teachers have easy access to water from a pump?

Is there a public clinic?

Private clinics not to be included.

Is there a health promoter working in the community?

That is to say, a health promoter who is still active and not one who lives in the community but is now doing nothing.

Is there electricity service to the community?

Are there lines reaching the community so that some houses or buildings have connections?

Is there rural telephone service to the community?

Is there at least one telephone somewhere in the community.

What is the distance of the community from the regional SESFAS office?
Measure this distance using the distance gauge on a car or motorcycle.

What is the distance of the community from the nearest paved road?
Measure this distance using the distance gauge on a car or motorcycle.

How many times a day does passenger transport pass through the community?

That is to say, transport that actually passes through the community. We want to know how easy it is for community members to have contact with urban centres.

Can motorcycles get into the community all year round?

If there are days on which an assistant on a motorcycle cannot get

into the community because of mud or swollen rivers then the response should be "no".

What clubs or organizations exist in the community? Specify
Please list all the clubs such as: Mothers' Club, sport's club, youth group, agricultura' association, etc. DO NOT INCLUDE POLITICAL ORGANIZATIONS.

Has the community had experience with any other communal activity other than this project? Specify and note the year it occurred.
This should include any activity that required that the community members cooperate together. Perhaps they had to give money, donate labour for the construction of a building, they got together to form a cooperative, etc.

Are there few natural sources of water around the community?
We wish to know if this is a community that naturally suffers from a shortage of water if there are no pumps functioning. If there is a river, spring or traditional well nearby and it is not difficult to find water then the answer should be "no". If it is generally difficult to find water then the response should be "yes".

In which year did they begin to excavate the wells?
Note down the first year that the project began to drill wells in the community. It does not matter if some of these wells were dry ones.

In which year did they begin to install SESFAS pumps?
Again, note down the first year in which installation occurred.

How many installed pumps are there?
This information needs to be updated if they will be installing new pumps between the time the community survey is started and the time the evaluation is carried out.

How many abandoned pumps?
This refers to any pumps that have not been functioning at all for at least a year.

When did the Committee begin to function?
This refers to the committee responsible for maintaining the potable water system and for cooperating with the latrine and health education programs.

APPENDIX C

Santo Domingo Handpump Performance Record Form

