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**SEMI-ANNUAL REPORT NO. 4**

July - December 1982

**UPPER VOLTA RURAL  
WATER SUPPLY PROJECT**

PROJECT NO. 686-0228

CONTRACT NO. AID/afr-c-1709

**DIMPEX ASSOCIATES INC.**

**MANAGEMENT CONSULTING/ECONOMICS & SOCIAL RESEARCH/TRAINING**

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## 1. INTRODUCTION

### 1.1 Project Goal

The over-all goal to which this project contributes is to "improve the quality of life of rural people in Southwestern Upper Volta."

-USAID Project Paper, June, 1979.

### 1.2 Project Purpose

The purpose of this project is "to provide rural people of Southwestern Upper Volta with a) potable water supply systems which will meet their minimum daily requirements and b) an effective community health education program."

-USAID Project Paper, June, 1979.

### 1.3 Scope of Work

The scope of work for which DIMPEX is responsible includes the provision of a long-term specialists in administration, equipment, health education and hydrogeology, as well as selected short-term specialists, to perform technical assistance directed to:

- 1) the digging, deepening or drilling of 620 wells and
- 2) the creation of a viable and self-sustaining preventive health system in the villages associated with the wells program.

-Contract No. AID/afr-c-1709, October, 1980.

### 1.4 Contract Funding and Modifications

Initial funding up to a limit of \$240,000 and effective for 6 months was authorized in a letter contract between AID, SBA and DIMPEX in October, 1980, pending negotiation of costs and execution of the final contract (C-1709).

On February 20, 1981, Amendment No. 1 to the Contract:

- 1) increased obligated funding by \$240,000 to a total of \$480,000;
- 2) modified the statement of work to reflect 42 months of service for the hydrogeologist and health educator, reduced from 48 months; and also amended the short-term technical assistance;
- 3) identified the period of the contract as starting on October 3, 1980 with an estimated completion date of December 31, 1984;

- 4) provided a line item budget and identified the total estimated cost of the contract as \$1,924,271;
- 5) defined the basis for overhead rate and payment of fixed fee.

On November 9, 1981, Amendment No. 2 to the Contract:

- 1) increased obligated funding by \$750,000 to a total of \$1,230,000;
- 2) revised the description of services for the hydrogeologist and added a new contract position and scope of work for 36 months of services by an Administrative Manager;
- 3) revised the schedule and duration of long and short-term technicians' services;
- 4) increased the budget to \$2,314,084, reflecting the additional costs of the new Administrative Manager position and adding the wife of one of the contract technicians;
- 5) provided for changes in logistic support and for the inclusion of updated AID General Provisions and Additional General Provisions.

On April 26, 1982 Amendment No. 3 to the Contract:

- 1) revised the budget to \$2,241,213 to reflect savings based on the first years' actual costs.

## 2. CONTRACTOR CONTRIBUTIONS TOWARDS OBJECTIVES

### WATER SUPPLY COMPONENT

#### Summary

This reporting period covers the end of the 1981-82 well campaign, the three month "off season" and the beginning of the 1982-3 campaign. It thus touches upon each of the three main phases of the annual well program and includes a cross-section of health sector activities. (Discussed separately.)

The 1981-2 well campaign officially concluded on July 31st, 1982. A total of 80 hand-dug and 93 drilled wells were successfully completed during this campaign and 11 wells were deepened.

The months of August, September and October ("la saison morte") were largely devoted to preparing for the 1982-3 program, though some construction activities (pump installations, office, garage and warehouse construction) continued non-stop. During these three months vehicles and equipment received needed maintenance, field supplies were reordered, the 81-82 local currency budget was closed and footed, and fiscal provisions arranged for the coming campaign. The 1982-83 Programme D'Activities, which serves as a master plan for the field teams and sets goals for each brigade, was drafted and discussed at a coordinating committee meeting in late September.

In November and December, 1982, the Programme D'Activities was amended and finalized, field supplies were issued and the campaign began. As of this writing, eight specialized teams - some 250 personnel in all - are in the field.

As the well program activities changed focus during the close-down off-season start-up phases described above, so too did the contractor contributions to project objectives:

The hydrogeologist spent most of his time in the first half of the period analyzing village inventory data and assisting in the programming of 1982-3 wells sites. The latter half was taken up with site selections and, in December, with the training/overlap of a newly-arrived contract hydrogeologist.

The equipment specialist spent the initial part of the period servicing vehicles and equipment newly returned from nine months in the field and reordering supplies in anticipation of the coming campaign. During November and December his activities were directed more towards final repairs and check-outs.

The administrative specialist worked with the project accountant closing out the 1982-83 budget and analyzing financial data necessary for the preparation of the succeeding local currency budget request. He also initiated a data-collection/record-keeping process drawing upon inventory records in an effort to detail more precisely the expenditures per field team, and eventually, a cost per linear meter for drilled or dug wells.

The contributions of the contract personnel are described in greater detail below.

## 2.1 Hydrogeology- Inventory

When the H.E.R. inventory teams left in July, it remained for the hydrogeologist to sort through the raw data contained in the village inventory cards, to organize and compile this data in an easily accessible form and to make recommendations concerning the programming of dug and drilled wells for the 1982-3 campaign.

At present, the village inventory of water resources is essentially complete in the Department of Hauts Bassins, with part of the canton of Kotedougou and the Sous-Prefecture of Hounde remaining undone (Hounde has a previous inventory available, so the need for another is not very great unless one wants to make the inventory uniform throughout the department). In compiling the inventory data, some villages were found to need additional data and/or more precise coordinates.

Inventory work in the Department of the Sud-Quest is well started but the greater number of villages has meant that complete coverage has yet to be achieved. Previous inventory work of years ago gives reasonably good coverage for the Sous-Prefectures of Dano, Diebougou and Dissin. Inventory work of the past campaign has given partial coverage of Batie, Gaoua, Kampti, Loropeni, Nako and Tiankoura.

Village inventory data has been tabulated in a bound book making it readily available. Tables therein were used in the programming of the 1982-3 campaign. The brigade chiefs used the tables to choose villages where water needs were most acute, and then to decide which were better suited for dug wells or which would require drilled wells.

## 2.2 Hydrogeology - Well Siting, Training

Towards the end of the reporting period, the hydrogeologist participated in the siting of wells in both Departments and in the briefing/field training of his replacement.

## 2.3 Equipment Specialist

The main activity of the equipment specialist during this reporting period was to assure that project vehicles and equipment were in working order for the campaign which started November 1. In addition to regular maintenance and minor repairs, several parts on the Jeeps that had experienced chronic breakdowns during the past campaign were modified. Some of the old vehicles supplied by H.E.R. required major repairs. (See Semi-Annual Report #3, Section 3.2.)

Parts for American vehicles and equipment, supplementary tools, equipment for the garage, and parts to modify the Moyno pumps were ordered through USAID/Ouagadougou.

Inventory controls in the garage and warehouse continued to be monitored during this period.

#### 2.4 Administrative Specialist

The administrative specialist spent the first half of the reporting period concentrating on project financial accountability and inventory controls. An inventory system set in place in May (see Semi-Annual Report #3, Section 2.6) was refined in July and August, and information from elements of this system was incorporated into a separate journal designed to provide more detailed cost data for each discrete field activity. This information will eventually form the basis for more sophisticated financial and cost-benefit analyses.

During the latter half of the period, the administrative specialist worked with both the project director and the four brigade chiefs in standardizing the data-collection effort. He also continued to work with the Voltaïque accountant to improve financial reporting and to assure that project encumbrances (as opposed to expenditures) were accurately presented.

### HEALTH EDUCATION COMPONENT

#### 2.1 Recruitment and Training of 50 VHWs

Sixteen VHWs in the Department Haute Bassins (12 in the arrondissement of Fo and four in the S/P of Bobo) have received curative treatment training and have received their pharmacies during this reporting period. In addition, three VHWs from the Bobo S/P are currently receiving training and will receive their pharmacies upon completion of this training. Three VHWs from the South West Department (all replacements for VHWs who have resigned) have received initial curative treatment training during this period.

The recruitment and training of VHWs has not been achieved at the levels anticipated for several reasons. One, this reporting period coincided with the rainy season during which many villages are difficult to reach and villagers are working in their fields. Secondly, staff time was divided between 1) the planning of this year's recruitment and combined curative-preventive training of VHWs by dispensary nurses in a much expanded project zone, 2) planning for the necessary training of nurses for this task, 3) the development of a more extensive training guide for trainers of VHWs, and 4) following up on problems among VHWs trained during the past year.

## 2.2 Training of 40 VHWs in Health Education

No VHWs were trained in health education during this reporting period, for reasons discussed under 2.1, paragraph 2 above.

## 2.3 Testing and Treatment of Project Wells

The testing and treatment of project wells has been postponed during this reporting period due to 1) problems of acquiring all necessary pieces of equipment, 2) lack of vehicles, and 3) uncertainty among project sanitarians as to how to use the testing equipment.

## 2.4 Establishment of an Information Reporting System

An information reporting system has been established in the project region whereby VHWs record cases treated (by illness/symptom, age, and treatment or evacuation) on a prepared chart. (Some VHWs also note health education and sanitation activities.) The reports are collected and reviewed at monthly meetings. As local health personnel take a more active role in the supervision of VHWs, they will be asked to summarize these monthly reports for VHWs in their region and report as well on health education activities in the villages.

## 2.5 Orientation of Nurses in the Project Zone

Approximately one-half of the dispensary nurses in project regions programmed for the recruitment and training of VHWs during this campaign have been oriented to the project and to the MOH program in primary health care. Since, however, it has been decided that all future VHW training and supervision will be done by nurses and itinerant health workers (IHWs), project staff is collaborating with the MOH and CESAO to provide appropriate training for the nurses. (IHWs are in longer term training for this, their primary job role.) This training will occur in three segments beginning in December '82 and continuing until March '83 and will involve a MOH team, CESAO personnel and project personnel. In between these in-service training sessions, project staff will work with the nurses on the recruitment, training and supervision of VHWs.

## 2.6 Monthly Supervision of VHWs

Regular monthly supervision of VHWs continues to be achieved only through the vehicle of the monthly meeting held at each dispensary. This form of supervision will probably remain the only regular supervision most VHWs receive until the IHWs begin working sometime in April or May '83.

Such supervisory meetings have recently been established in all five supervisory dispensaries in the S/P of Houde, three dispensaries in the S/P of Bobo and one in the arrondissement of Fo (all in the Department Haute Bassins). Meetings are presently conducted by Project sanitarians. Similar meetings have been conducted in the S/P of Dano (Department South-West) since December '81, by the regional health officer, Project sanitarian or Peace Corps volunteers in collaboration with dispensary nurses.

At the monthly supervisory meeting, 1) problems encountered by VHWs, and possible solutions, are discussed, 2) VHWs renew pharmacy supplies (in the Haute Bassins, requests are put in one month and picked up at the following monthly meeting), 3) VHWs submit their monthly reports which are discussed as necessary, and 4) a chosen topic is presented and discussed.

It is anticipated that IHWs will progressively take over the responsibility for these meetings as they become integrated into the primary health care program. Nurses and sanitarians will continue to participate as necessary &/or appropriate.

## 2.7 Other Activities

### (1) Development of VHW Training Manual

Project staff have developed a training manual to be used by trainers of VHWs in the project region. The manual is also being reviewed by MOH staff for possible use on a national level.

### (11) Evaluation of VHW Activity - Haute Bassins Department

An evaluation of 37 project villages in the Haute Bassins was initiated at the end of the rainy season to ascertain project staff. The following three items were emphasized: 1) the VHW's management of the pharmacy, 2) progress in latrine building, and 3) village support for the VHW. Problems encountered are discussed under 3.1, 3.2 and 3.3

(iii) Re-supply System for VHW Pharmacies - South-West Dept.

Project personnel are working with the German aid organization and with local health personnel in the South-West Dept. to establish a stable pharmacy re-supply system for VHWs throughout this region. The establishment of this system is made possible by the ability of the German organization to increase its stock of pharmaceuticals to be used for this purpose. It is planned that the new system will begin working early in '83. For their part, VHWs in the region have experienced few problems with the management of the pharmacies. In virtually all cases, the fee for consultation/fee for medicines agreed to by the villagers has been adequate to enable the renewal of supplies.

(iv) Itinerant Health Worker Training

A project sanitarian participated in the IHW training program, providing 32 hours of classroom instruction on the subjects of sanitation and health education. Project personnel have planned a week of practical training in these areas, to take place early January '83.

3. PROBLEMS EXPERIENCED

WATER SUPPLY COMPONENT

3.1 Shortage of Equipment

Although the project continued to be plagued by equipment shortages (see Semi Annual Report #3, section 3.1) during this reporting period, there is reason to believe that these sorts of frustrating hindrances will shortly be resolved. The August arrival of the long-awaited drafting table and equipment and the imminent arrival of calculators and printers (requested two years ago; now to be purchased locally) relieves some of the sense of urgency relative to project equipment needs. Office furnishings and storage cabinets which have been in chronic short supply will be purchased/installed when the project takes possession of the new headquarters building presently nearing completion. The remaining material in short supply, notably graph and tracing paper and miscellaneous drafting equipment, have been ordered through U.S. Government procurement channels along with a large quantity of shop tools and high-quality office furniture. It is fervently hoped that delays encountered in past orders placed through these channels can be avoided/minimized this time around.

With regard to hydrogeological equipment, the outlook is not as bright. Tapes to measure depth-to-water and portable water quality analysis kits will need to be ordered as soon as possible. The new hydrogeologist may be able to review U.S. sources for such equipment before taking up his post, though the choice of models and specifications has yet to be made by the project director.

### 3.2 Aerial Photos

Despite repeated inquiries aerial photos needed for wells siting have not been located. A complete set for the two departments needs to be ordered for project and H.E.R. use.

### 3.3 Lack of Maps

The project has yet to obtain an adequate supply of maps for the Bobo-Dioulasso Quadrangle (one of the most important of the project area). An order placed with the Institute Geographique National (IGN) in Paris was only partially filled because certain of the requested coverages were "out of stock". The IGN office in Ouagadougou is equally ill-supplied. The maps will be reordered in early 1983.

### 3.4 Moyno Pumps

The Moyno pumps continue to breakdown at an alarming rate. The solution to this problem requires replacement of both rotors and stators (see Semi Annual Report #3, section 2.3). Robbins-Myers recently informed the project that they are experiencing difficulty applying plating to these replacement parts, and that they do not expect to be able to ship them before the end of December, 1982. In the meantime, the project is running low on its stock of pumps to install and has no more replacement rotors and stators to repair those that break down. Any delay in the receipt of the promised parts could hinder the pump-installation work.

## HEALTH EDUCATION COMPONENT

### 3.1 Management of VHW Pharmacies -Haute Bassins

Among the 37 villages visited by project staff in the Haute Bassins recently, over half of the VHWs have experienced problems with the renewal of medicines for their pharmacies. Reasons cited for these problems include: 1) young VHWs who do not/cannot insist on payment for medicines from elders; 2) a fee for consultation/fee for medicine which is insufficient to cover renewal expenses (exacerbated by the fact that until recently many of these VHWs had to come to Bobo

(a distance of more than 100 km one direction for some VHWs) for medicines); and 3) villages who chose to give medicines free and take up a collection to pay for a new supply found it difficult to collect the money.

### 3.2 Villages Support of VHWs .

Although the curative treatment services of the VHW (which respond to the felt needs of the villagers) appear to be well subscribed to, indicating some appreciation of the VHW's work, villagers' support of VHWs continues to be very weak to non-existent. In the recent evaluation of villages in the Haute Bassins as in most of the rest of the project region, some villagers continue to assume either that the VHW profits from the sale of medicines or is paid by the project/by the State. In many cases, it appears as though there is simply a combined lack of motivation, understanding &/or organization in the village to address the situation.

### 3.3 Latrine Construction (& Other Health Promotion Activities)

With few exceptions, there has been minimal activity associated with latrine construction, or other health promotion activities, during this reporting period. In part, this is due to most of the reporting period being the rainy season. However, it is also due to inadequate supervision of VHWs. (The exceptions are: one village where villagers have begun working on latrines following the rainy season; and regions where the Peace Corps volunteers have provided consistent supervision. In the latter case, the volunteers have negotiated latrine projects in two of seven primary schools in the area; and have had many requests by village health workers to do early childhood nutrition demonstrations, which have been followed in some cases by village women repeating the demonstration for other groups of women.) The lack of adequate supervision may continue to hinder progress in health promotion activities until adequate supervision can be provided by IHWs, backed up by the sanitarians as most if not all VHWs require a fair amount of support from health personnel in the initiation of such tasks.

### 3.4 Project Vehicles

Until present, neither of the two sanitarians in the South-West Department has a project vehicle (other than a motor-bike). They are expected to travel distances of 100-250 kms per day on very poor roads on a regular basis. They are the only project personnel expected to work under such conditions. On occasion, they are given access to MOH vehicles.

#### 4. GENERAL OBSERVATIONS

##### WATER SUPPLY COMPONENT

##### 4.1 Hydrogeology

Though the previous semi-annual report and end of campaign statistics note a drilled-well success rate of 80%, this figure may be misleading. In fact, few of the reported "failures" were due to a lack of water or to improper siting. The actual success rate in terms of potential output is empirically closer to 95%, the difference between these two figures representing wells drilled in the absence of bentonite drilling mud to keep the hole open during the installation of the PVC casing. Such technical failures may be successfully redrilled.

##### 4.2 Equipment Maintenance

Preparation of equipment and vehicles for the 1982-83 campaign went very smoothly. The stock of parts at the warehouse and Jeep dealership allowed the garage to get all the American vehicles and equipment ready in time for the campaign. Unfortunately, two Jeeps are not in operable condition at this time because of accidents. Provisions for their repair are being made.

No new orders for Jeep parts were placed during this reporting period because the stock of parts on hand and at the dealership was sufficient to keep the vehicles on the road. The problem of long delays for emergency parts has not yet been resolved.

The inventory-control system introduced in the previous reporting period is working very well.

The Moyno-pump problem threatens to seriously impede the pump installation and repair functions.

##### 4.3 Administration

In terms of financial accountability and inventory control, the project is in excellent fiscal health. Local currency expenditures are well documented and an accounting "paper-trail" that is both simple and logical has been set up. The local accountant is capable of keeping most of the project financial records in relatively good order.

There are, however, two administrative functions which need to be improved. The first is the collection of detailed cost data for virtually every aspect of project operations. Without such data, any cost-benefit analyses will be necessarily more general, hence less meaningful. New procedures for extrapolating this sort of cost data are in place but will need to be re-examined during the course of the current wells campaign to determine if they yield information precise enough and sufficient to satisfy future analytical requirements.

The second point of difficulty in the accounting/administrative sphere is of a micro nature, and concerns the lack of precision in calculating gasoline encumbrances on a monthly basis. The problem here is one of procedure - gas coupons are routinely issued to brigade chiefs who provide them to various drivers and team leaders. Some are cashed immediately, while others are held for indefinite periods, or, occasionally, lost. Remote stations will wait until they have amassed a certain quantity of coupons before sending them to the main office for billing. And pump prices vary from station to station across regions. As a matter of convenience and to meet USAID reporting requirements, an estimate of monthly encumbrances is made based on the quantity of coupons distributed to brigade chiefs and an average pump price. These estimates are very difficult to correct, however, due to the above listed constraints and to the lengthy circuit some of the coupons will follow before being billed. This is the only area of imprecision in the encumbrance record keeping process - all other estimates being corrected upon receipt of the appropriate invoice. Various procedural changes to correct this situation are being studied.

#### HEALTH EDUCATION COMPONENT

##### 4.1 Management of VHW Pharmacies

When presenting the pharmacy to the village, project staff will be more assertive in presenting to the villagers the pros and cons of the several ways of ensuring renewal of the pharmacy. More emphasis will be put on a fee for consultation, or fee for medication, as the most effective way to ensure sufficient funds to maintain the supply of medicine.

##### 4.2 Village Support of VHWs

The lack of village support for VHWs is a complex problem which began with the fact that within the guidelines of the project, there are too many villages, too few personnel and too little time to adequately pursue the introduction of the concept of primary health care to the villagers. To make any impact on the problem requires (in addition to their realizing some benefit from the VHW's work and having good rapport with him) on-going dialogue with the villagers, a task which will be the responsibility of the supervisors of VHWs. Village support for VHWs will be made a subject of the nurses' in-service training and has been discussed in the IHW training. Project personnel will continue to follow up on the problem with nurses and IHWs in the field.

#### 4.3 Latrine Construction (& Other Health Promotion Activities)

As indicated earlier, progress in latrine construction and other health promotion activities will depend largely upon consistent and supportive supervision of VHWs. With the availability of the first class of IHWs, there should be a ratio of one IHW to a maximum of 10 VHWs and as necessary, one nurse to five VHWs. This should allow contact with each village at least twice a month. Project personnel will consult with nurses and IHWs concerning their role in the promotion of these activities.

#### 4.4 Project Vehicles

As soon as the second of two new project vehicles assigned to the health component is properly licensed, it will be assigned to one of the sanitarians in the South-West. There appears to be no immediate solution to the transportation needs of the second sanitarian.

#### 4.5 Coordinating Committee Meeting

Project personnel participated in semi-annual coordinating committee meetings in both departments. Results of the past campaign and plans for the up-coming one were discussed.

#### 4.6 In-service Training for Nurses

A Ministry of Health team conducted a one-week in-service training course for dispensary nurses of both departments (as part of a national in-service training program). This training, in conjunction with that to be provided by CESA0 and by project personnel (in January and February '83), should enhance both the training and supervisory capabilities of the nurses.

### 5. POTENTIAL RELATIONSHIPS

#### WATER SUPPLY COMPONENT

##### 5.1 TAMS-Earth Satellite Corp.

USAID has financed the compilation of an extensive series of maps by TAMS-Earth Satellite Corp. This map series covers much of the area of the project: specifically the 1:200,000 map quadrangles of Bobo Dioulasso, Hounde, Leo, Banfora, Gaoua, and Manoa. The interpretive maps for these quadrangles include: climate, geology and mineral resources, hydrogeology and water resources, water resources (with aquifer evaluation) fisheries potential, and minerals potential. All of the above have data that are of value

in hydrogeological work. Copies of these need to be obtained for project use.

## 5.2 Togo and Mali Programs

Water development programs similar to this project are being carried out in Togo and Mali. The project Director and Hydrogeologist could both benefit by meeting their counterparts in these two countries and interchanging ideas on methods and techniques of mutual interest. USAID is financing the work in Togo and has previously sponsored a project in Mali which is being followed up by a 1,200 drilled well project sponsored by the World Bank.

## 6. CONTRACTOR GOALS AND OBJECTIVES

### WATER SUPPLY COMPONENT

#### 6.1 Hydrogeologist

To brief the new hydrogeologist on methods used to date on the project and on the data gathered.

#### 6.2 Equipment Specialist

- 1) To continue supervising garage activities.
- 2) To continue supervising warehouse control
- 3) Oversee electrical installation and improvements at the new garage prior to setting up there.

#### 6.3 Administrative Specialist

To refine the financial data collection process as discussed above: To organize and supervise the move to new office and garage facilities; To continue to assure project financial accountability and inventory control; To begin basic cost-benefit analyses.

### HEALTH EDUCATION COMPONENT

#### 6.1 In-service Training for Nurses

Seven nurses from the Haute Bassins Department and 19 nurses from the South-West Department will be given a one-week in-service training session by project personnel. Topics will include sanitation, early childhood nutrition, training methodology, health education and the supervision of VHWs. This will complement training received by a MOH team (see 4.6) and other training to be conducted by CESAO in February.

## 6.2 Recruitment and Training of VHWs

Recruitment and training is planned for 45 VHWs in the Haute Bassins and 70 VHWs in the South-West. A five-week training program in curative and preventive health care will be conducted by dispensary nurses. An additional 50 VHWs in the South West will receive three weeks of training in preventive health. These VHWs were previously trained in curative treatment by another project.

## 6.3 Village Pharmacies

Village pharmacies will be provided by the project and MOH to all newly recruited and trained VHWs.

## 6.4 Practical Training for Itinerant Health Workers

Project personnel will provide one week of practical training in latrine construction, waste water disposal, well maintenance, and early childhood nutrition and techniques of supervision for IHWs. HER will collaborate in the training on well maintenance, assisting with the deepening and cleaning of one of the wells to be used for the training program.

## 6.5 Testing and Treatment of Project Wells

Following a seminar on methods of water analysis and treatment, 50 wells will be tested (and treated as necessary) in each department (if appropriate transportation is available for project sanitarians). Note: this seminar was conducted by MCD in early December and included preparation of a sanitary control Action Plan by the seminar participants. The seminar proceedings are incorporated in MCD's trip report, Annex A, and the preliminary Action Plan attached as Annex B.

# 7. ADMINISTRATIVE PLANS

## WATER SUPPLY COMPONENT

### 7.1 Home Office Support

A ten day field visit by a Dimpex and MCD home office team was conducted in late July. Various project areas were visited and meetings conducted with USAID and GOUV officials and with members of the contract team. Specific actions requiring further home office support were identified; ie, recruiting a replacement hydrogeologist and procuring needed equipment, and undertaken after the team returned to the U.S.

An extensive follow-on field visit by home office personnel was planned for November/December. Constraints at Post, however, limited the activities, although it was possible to proceed with a modified schedule of meetings and visits to project areas. MCD home office and field staff also conducted a previously planned workshop on sanitary water supply.

#### HEALTH EDUCATION COMPONENT

##### 7.1 Field Staff

Suzanne Plopper took three weeks of leave-without-pay in December 1982 and will extend her tour through May 1983.

ANNEX A

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ANNEX A

UPPER VOLTA RURAL WATER SUPPLY PROJECT  
Project No. 686-0228

TRIP REPORT  
December 4 - 10, 1982

Pierre R. Léger  
Director, International Office  
Medical Care Development, Inc.

December 20, 1982

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## INTRODUCTION

During the period of December 4 - 10, 1982, Pierre R. Léger, Director of the MCD International Office and Project Administrator for the health component of the Upper Volta Rural Water Supply and Sanitation Project (Project No. 686-0228), conducted a workshop regarding sanitary control of village water supplies.

The purpose of the workshop was to provide the necessary technical information to project personnel (health and HER) which could help them in integrating sanitary control activities into the current project activities and, thereby, meet the principal goal of the project: the improvement of the health status of the targeted villagers.

The specific objectives of the workshop were:

- a. To improve the technical capabilities of the HER and health personnel who are primarily responsible for making groundwater inventories; siting and constructing wells; monitoring sanitary conditions of wells; maintaining water supplies; and the sanitary control of village water supplies.
- b. To help the participants design a preliminary action plan for the sanitary control of village water supplies which would serve as a basic document for the development of such activities.

Seven technicians attended the four-day workshop held in Bobo-Dioulasso.

The technicians were:

- one superior technician from HER who is responsible for water resources inventory for water supply development;
- six sanitarians (Assistants d'assainissement)
  - 4 from the health component
  - 1 from the Hygiene Service, Bobo-Dioulasso
  - 1 from the Hygiene Service, Banfora.

The workshop was officially opened by the project directors: Dr. M. Kagoné for health, and Mr. Paré for HER. Others attending the opening session were Dr. O. Harper, Health Officer, U.S.AID; Mr. R. Vorheis, project hydrogeologist; and Dr. Youssef, the possible replacement for Mr. Vorheis.

At the end of the workshop, a debriefing session was held separately with Dr. Kagoné and Mr. Paré. In Ouagadougou, debriefing sessions were held with the MOH Director General and Dr. Harper; the U.S.AID program officer and the interim Mission Director, Mr. Roux.

The following sections of this report will discuss the outcome of the workshop, comments, and conclusion and recommendations.

WORKSHOP OUTCOME

Initially, the workshop was designed for three days, and was outlined as follows:

Day 1 - Introductory remarks and discussions of the concepts of the project design; review of evaluation report findings concerning sanitary status of the water supplies constructed in the project; discussion of appropriate technologies for improving the sanitary status of these water supplies.

Day 2 - Hold practical sessions in the laboratory and field for bacteriological and physico-chemical analyses; preparation of disinfectant; wells disinfection and sanitary inspections of water supplies and their environment.

Day 3 - Develop a sanitary control action plan for the project.

Upon arrival to Bobo-Dioulasso, the project directors and participants requested a five-day workshop. A compromise was reached to extend the workshop to four days. The three-day program was modified, and consisted of the following:

Day 1 - 9:00 a.m. - 6:30 p.m.

- Introductory remarks (goals, objectives, strategies and outcome)
- Discussion of problem areas specific to sanitary status of wells and recommendations made in the mid-term evaluation report.
- Discussion of village water supply technologies to include the technical sociocultural, financial, and sanitation aspects

Day 2 - 7:00 a.m. - 6:30 p.m.

- visits to four village water supplies for sanitary inspections and water sampling.

- 3 built by the project
  - 1 in use
  - 1 not in use because of non-functioning hand pump
  - 1 not in use because of poor water quality
- 1 non project unsanitary water supply

3:00 - 6:00 p.m.

- Laboratory work: bacteriological and physico-chemical analyses of water.

Day 3 - 7:00 - 9:30 a.m.

- Laboratory work: Techniques for disinfecting water supplies and the utilization of equipment to prepare hypochlorite disinfectant.

- 9:30 a.m. - 1:00 p.m.

Field trip to disinfect the unsanitary well

- 3:30 - 6:30 p.m.

Discussion: interpretation of sanitary surveys on water supplies, development of sanitary control program activities.

Day 4 - 7:30 a.m. - 1:00 p.m.

The goal and objectives specific to the sanitary control component of the project were formulated by the participants in a plenary session.

Three groups were formed to develop a specific action plan for three stated objectives. The groups were to:

- formulate the problems associated with the objective;
- identify constraints and facilitating factors in resolving those problems;
- select problems which could be dealt with during the remaining lifetime of the project, based upon identified constraints and facilitating factors;
- analyze the selected problems in order to determine what can be done, who will do it, and what material resources will be needed, and when it should be done.

Each group then prepared a synthesis of their work; selected a group member to be the "rapporteur" to make the group presentation to the plenary session.

The work presented by each group was discussed and finalized by consensus from all participants.

The final reports were collected and will be integrated into a preliminary plan of action. The preliminary action will be reviewed by all participants before it is submitted to the project directors for approval.

Day 4 - 3:00 - 6:30 p.m.  
(cont.)

Training of two selected participants to utilize the DR/EL Hach Portable Laboratory for physico-chemical testing of water supplies.

(NOTE: An environmental health manual written by Mr. Pierre Léger covering techniques for sanitary control of rural water supplies was given to all participants.)

#### COMMENTS

Although there had been little organizational preparation, the workshop went smoothly because of the high interest in the subject by the project directors and the seven participants. Additionally, Dr. Kagoné and Ms. Suzanne Plopper, MCD senior health specialist, worked very hard to make arrangements for classroom and laboratory space and the logistics for field trips.

While a larger number of participants were anticipated (from HER and non-project MOH sanitarians), the size of the group was adequate. It permitted in-depth discussions on specific situations in the project. It was possible to evaluate the level of knowledge and skills of the participants allowing the workshop to be oriented toward specific needs of the participants throughout the four days.

The participants showed a great deal of motivation in organizing and implementing in the workshop. Although the schedule reflected a seven-hour day, workshop sessions actually extended to eight and nine due to high-level of interest in discussions and practical work carried out.

Feedback pointed out that the participants were not only satisfied with the knowledge and skills they acquired during workshop, but also their feeling that it was a positive technical and administrative reinforcement in the project. It became clear that the participants were not totally informed about about the concept of the project design. They did not fully understand the role of each component in village water supply system development nor the role of sanitation. Additionally, while participants had the theoretical background that enabled them to follow subjects discussed in the workshop, they had very few skills in those areas; this is a major reason why equipment previously acquired by the project is not used.

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## CONCLUSION AND RECOMMENDATIONS

This workshop was useful in reuniting key technicians who are primarily responsible for making inventory of groundwater resources and ensuring that sanitary supplies are developed and maintained by the project. It also provided them with appropriate technologies to address the sanitary problems of new and reconstructed water supplies, as well as a broad overview of the project goal, objectives and strategies, and the integration of both components.

Additionally, the workshop participants developed a preliminary sanitary control action plan. This was prepared entirely by the participants with limited technical assistance in its development and writing. The sanitary control of project water supplies could now begin with the development of the the action plan, the existing key personnel and some of the basic available equipment and supplies.

Specific recommendations are the following:

### 1. Second Workshop on Village Water Supply and Sanitation

It has been requested by the Director General of the Ministry of Health, the directors of the two project components, and the participants of the first workshop that a second workshop be held in June or July, 1983 in Bobo-Dioulasso. The second workshop should be of two weeks duration, and preparation should begin two months prior to the set date.

The workshop should be a joint presentation by Dimpex Associates and MCD, its theme: "Village Water Supply and Sanitation". The goal of the workshop will be to improve the effectiveness and efficiency of the project. Its specific objectives will be:

- a. To increase the knowledge and skills of project technicians and others in village water supply and sanitation technologies, planning, and management.
- b. To develop specific action plans for:
  - villager project involvement
  - water supply monitoring and maintenance
  - choice of appropriate technologies for project water supply and sanitation systems

- financial management of project
  - project development plan and management
  - epidemiological surveillance
- c. To analyze and identify strategies in order to address the problems presented in the mid-term evaluation.

The workshop strategy will be:

a. Presentation of themes by national and international experts on the following subjects:

- appropriate technologies for village water supplies
- village water supply and sanitation financing and financial management
- village water supply and sanitation planning and management
- villager involvement in development projects
- health education activities in a village water supply and sanitation project
- manpower development for village water supply and sanitation projects
- epidemiological surveillance of water-borne and water-related diseases in a village water supply and sanitation project.

b. Demonstration of technologies applicable in the project (or in Upper Volta), including:

- water drilling equipment
- groundwater prospection equipment
- water quality control equipment
- water pumps (operation and maintenance)

c. Field visits

d. Group work for the preparation of action plans.

The first week will include presentations of broad subject areas, field visits, and demonstrations. The second week will offer special courses in specific areas of village water supply and sanitation.

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2. Reference Laboratory for Water Quality Control

The project has a need for a small reference laboratory in Bobo-Dioulasso which could perform bacteriological and physico-chemical tests, in addition to other support activities which will be necessary for developing and monitoring water quality control. This reference laboratory would be complementary to the portable kits which project technicians are to use.

The laboratory will serve the needs of both components; however, it could be developed for the health component which has the necessary location. MCD is willing to provide a short-term consultant to help develop the laboratory. This has been discussed with Dr. Kagoné.

In addition to the above-referenced services, the laboratory would also be useful in the preparation of disinfectant, disinfection units and other tasks related to environmental health.

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ANNEX B

UPPER VOLTA WATER SUPPLY PROJECT  
FINANCED BY THE GOVERNMENT OF UPPER VOLTA AND  
THE UNITED STATES AGENCY  
FOR INTERNATIONAL DEVELOPMENT (USAID)

PRELIMINARY ACTION PLAN  
WATER SUPPLY AND SANITATION PROGRAM

## INTRODUCTION

This action plan is the result of a workshop on rural water quality control held at the School of Health in Bobo Dioulasso, December 6-9, 1982, organized by the Project Direction (health component) and Medical Care Development (MCD).

This plan was prepared by those participating in the workshop; with the technical support of the Lecturer, Mr. Pierre R. Léger, Director of MCD, International Office.

The methodology applied in the plan preparation was the following:

- 1 - Identification, in plenary session, of the importance of a water supply and sanitation program to the villages targeted by the project. Formulation of goals and objectives for such a program.
- 2 - Distribution of participants in three working groups and assignment of a specific objective to each for the development of an action plan to accomplish that objective (see Appendix for each group composition and objective).
- 3 - Preparation of each specific action plan has included:
  - a) identification of problems and advantages regarding the objective to be addressed;
  - b) analysis of problems in order to dissipate any constraints which could be resolved during the life of the project, as well as those which will not be solved during that timeframe;
  - c) development of a strategy oriented specifically towards the resolution of each problem, indicating what can be done, by whom, with what means, and when would it be feasible;

d) preparation of a work summary by each group to be presented in plenary session.

4 - Presentation and discussion in plenary session of the work of each group. The presentation was made by a representative of each of the three groups.

5 - Discussion in plenary session of the format and content of the final document and of the recommendations to be made concerning program development within the project framework.

6 - Finally, winning the group's agreement which would lead to the synthesis and preparation of the final document by the Lecturer.

It should be noted that this plan of action is merely a preliminary plan, to be submitted to the Directors for the two project components who would approve a definitive action plan for village water supply and sanitation.

## I - Overview

The purpose of the village water supply development project in cooperation between the Government of Upper Volta and the United States of America is to improve the quality of health and the socioeconomic status of populations distributed among 550 in Upper Volta by developing water supply systems capable of providing a significant amount of water, of easy access, and of acceptable sanitary quality. Project objectives are:

- 1) To motivate, organize, train and bring the villagers to an uniform level, enabling them to participate in all the phases of system development entrusted to them, namely: choice of source (groundwater or surface water), collection method (cisterns or large diameter wells) and their location, drawing method (type of pump), construction of the supply system and its physical and sanitary maintenance.
- 2) To build 620 sanitary water points (320 cisterns and 300 large diameter wells) in the 500 targeted villages.
- 3) To supervise and maintain the physical and sanitary level of water supply.
- 4) To develop actions for the promotion of health and prevention of diseases in order to achieve the benefits expected from the availability of a sanitary supply system, as well as its protection from eventual contamination by unsanitary practices.
- 5) To develop the auxiliary personnel needed to assist at the village level, and to improve the technical and administrative skills of intermediate groups called, in particular, to plan and supervise the surveillance and maintenance of the physical and sanitary levels of water supply systems after construction.

Although project activities during the last three years have efficiently addressed the majority of the objectives mentioned above, the principal project activity was developed in the field of water safety control.

Thus, at the end of the 1981/1982 campaign, 775 villages have been inventoried, 24 cisterns have been designed, 60 large-diameter wells have been built, and 98 pumps installed. Additionally, 204 village health workers have been trained for 164 villages of which 114 are targeted by the project. It should be noticed that only 94 VHws in 80 villages (77 villages within the project) have received specific health training. Moreover, 22 travelling Agents who will be responsible for the supervision of VHws are presently being trained. A continuing education program for nurses is underway at the project sanitary level. However, in the field of water safety control, monitoring the sanitary conditions of water supplies, and epidemiological surveillance (particularly of diseases of hydric origin or those bearing relation to the water) few activities have been carried out by the project until the present time.

In order to remedy this situation and accomplish the results expected from the different plans executed by the project, a component relevant to the sanitary control of the project water supply systems will be included among the activities of the project's two folds. The description of the action plan proposed for this component, as well as the specific resources necessary to its implementation are formulated henceforth.

II. Action Plan for Water Supply and Sanitation Within the Project Framework

A. Goals and Objectives

This component has the objective of assuring that the water to be distributed from the supply systems built within the scope of the project will be maintained at a level of quality acceptable for drinking. In other words, the risks of developing unsanitary systems or water of undesirable quality, as well as the risk of potential contamination of such systems after their initial utilization will be reduced to a minimum.

To accomplish this, the specific objectives of this component for project activities in this field are as follows:

1. To obtain sanitary water sources, free of risk of contamination from existing or potential pollutants.
2. To obtain sanitary water storage or collection.
3. To maintain the sanitary level of water supply systems once their utilization has begun.

B. Action Plan Strategy or Approach

In order to attain the goals and objectives of this component the preferred strategy or approach for this action plan will include:

1. Hydrogeological Survey and Choice of a Groundwater Source

The hydrogeological survey of groundwater levels must include an in-depth sanitary inquiry, together with a complete inspection of the sites, in order to determine the existing or potential sources polluting the water intended to supply the targeted villages; physico-chemical and/or bacteriological analyses will have to be made when the safety level of a

targeted source is unknown, as well as the geological site analysis in order to collect information on the ground's capacity to absorb treatment.

a) For deep ground sources (more than 30 meters), it is sufficient to collect a sample for physico-chemical analysis during the pump tests, in order to determine its odor, color, turbidity, pH, temperature, alkalinity, acidity, total life of the source, calcium, magnesium, iron, manganese, sodium, potassium, nitrates, nitrites, chlorides, sulphates, fluor, silicates, carbonates and bicarbonate percentages.

Whenever the sources are suspected of being polluted by a nearby industrial plant, a much more thorough analysis will have to be made.

b) For superficial sources (less than 30 meters) a sample will have to be taken for bacteriological analysis in order to determine its percentage of fecal coli-bacilli, in addition to a sample for physico-chemical analysis to establish the parameters indicated above.

These samples could be taken while conducting pump tests. In the absence of pump tests, a sample for physico-chemical analysis would simply be taken.

Site inspections and surveys will be conducted by HEH agents, in charge of the hydrogeological inventories. The analyses will be executed at the water sanitation laboratory of the health component, and the results obtained will be submitted to the approval of the Sanitation Agents, leading to the choice of waters to be drawn.

## 2. Site Selection and Construction of Water Supply Systems

Having chosen the water source, it would be wise to select the the site and proceed to constructing the water supply system.

Site selection should take into consideration the recommended sanitary guidelines, i.e. the distances between the water point and the several pollution focuses (latrines, cow pastures, cultivated terrain, etc...). On the other hand, the site selection will favor elevated locations. This will not only help maintain water quality levels, but will also facilitate the transportation of water.

Regarding water systems construction, this will be based on standard plans for cisterns and large-diameter wells. These plans will be studied and approved a priori by Sanitation Agents in order to insure that the sanitary requirements for the construction of wells are met, i.e. volume capacity, drainage of construction waste waters, and the assignment of a worksite protection zone.

In case of improvement or reconstruction of a water system, a thorough sanitary inquiry is required, as well as an in-depth inspection complete with collection of samples for physico-chemical and bacteriological analyses. If contamination from a pollution point is suspected, this should be verified by means of a fluoresceine test which will prove whether or not any connection exists between the system and the suspected pollution point.

After construction or reconstruction, the water systems will be treated with a surplus of chlore for at least 12 hours (preferably at night), the excess chlore being eliminated either by steady pumping until the residual chlorine has reached a concentration lower than 2 mg/l, or by its neutralization with sodium thiosulphate.

Site selection will be made by the HER Agent, who will be responsible for determining the worksites with the approval of the Sanitation Agent for that region, who will also conduct sanitation inquiries before and after

construction; disinfection of the supply systems will be carried out by the HER construction team under the supervision of a Sanitary Agent, who will recommend the chlorine concentrations to be utilized, and who will also be responsible for maintaining the right chlorine concentrations after disinfection. These analyses will be conducted at the project's health component laboratory.

### 3. Sanitary Maintenance of Water Supplies

Once a water system goes into service, it becomes necessary to monitor its sanitary level and to adopt preventive and corrective measures when applicable.

Specific aspects to be monitored are:

- the state of the work, particularly its water bearing capacity;
- the condition of the pump and its utilization;
- the system's draining capabilities; and
- the observance of the protection zone.

Concerning the preventive measures, it would be advisable to draw samples for bacteriological analysis (as well as physico-chemical analyses when industrial pollution is in question) at the end of each raining season, and to disinfect the collected water by means of overchlorination.

This measures apply primarily for large-diameter wells. The chlorine base disinfectant can be obtained from the Sanitary Agents' chlorine-base disinfectant manufacturing facility.

As for the corrective measures, it would be wise to identify the safety risks presented by each problem, and to adopt emergency measures until safety has been restored.

Considering that the pump is the system's most vulnerable component, it is advisable, in case of breakdown, to identify the water point, the water drawing method, and the safety risks, and proceed to disinfecting the water in the supply system, either by overchlorination if another unsanitary water point were to be chosen, or by a chlorination strong enough to cover water chlorine needs whenever the project systems (large-diameter wells) preclude pump utilization.

A residual chlore concentration of 0,5 - 1,5 mf/l will be maintained in the used supply by the periodical disinfection of wells or by means of a steady disinfection procedure (clay pot or other).

Thus, whenever there is reason to suspect accidental contamination of a water point, it would be wise to proceed to disinfecting the waters, and to identify the problem in order to take the necessary corrective measures.

The most common operations to be carried out are shown on FIGURE 1.

FIGURE 1: Operations Most Commonly Conducted in a Rural Water Supply and Sanitation Program

Operations	Sanitary Inspection	Analysis		Disinfection		Sanitary Training
		Bacteriological	Physico-chemical	Preventive (5-10 mg/l)	Corrective (100-200 mg/l)	
Choice of a Water Source	XXX	XX	XXX	-	-	XXX
Construction of a Supply System	XXX	-	X	-	XXX	XXX
After the raining season	XXX	X	X	-	XXX	XXX
During epidemics	XXX	XXX	X	-	XXX	X
Periodical Maintenance (sanitary wells)	XXX	-	-	-	-	XXX
Periodical Maintenance (unsanitary wells)	XXX	-	-	XXX	-	XXX

- XXX - Recommended action  
 XX - Suggested action  
 X - Recommended in certain cases  
 - - Unnecessary

Chlorine percentage experiments leading to a recommended chlorine concentration for the different works of the project will be the responsibility of the Sanitary Agents. Continuous monitoring of the works' safety level will be entrusted to VHWs. At least once a month, the Travelling Agent in charge of supervising the VHWs will make a routine inspection of the project in order to assess the sanitary level of the works. With the assistance of the VHWs, the Travelling Agent will also conduct all necessary routine disinfections. At least once every other year, the Sanitary Agent himself will be responsible for achieving a complete sanitary inquiry of the water points. Moreover, at least at the start, the S.A. will be responsible for supervising all disinfection by overchlorination. After that, this same task could be undertaken by the Travelling Agent. The Sanitary Agent will also have to grant his permission for reutilization of a water supply after maintenance procedures, in order to insure all safety measures have been taken.

All water supply works regarding the improvement of safety will be initiated and carried out under the supervision of a Sanitary Agent. Finally, the supervision and maintenance program for each water supply system will be designed by the Sanitary Agent who, in turn, will be in charge of its supervision.

4. Villagers Participation in  
Water Supply and Sanitation Activities

The principal beneficiaries of this control program are the villagers who, naturally, must be considered as the works' patrons. For that reason, all the activities of this component should benefit from villagers' participation, one of the first safeguards to be sought prior to the beginning of activities in a targeted village.

To obtain the meaningful and steady participation of villagers, it would be advisable to conduct a motivation campaign, based on their understanding of the purpose and need for such activities as part of any water supply project. For example, environment sanitation, particularly the construction of latrines, should be regarded as a means of assuring water safety not only at the level of supply systems, but also at the home storage level. Hopefully, this understanding will be realized at the beginning of the studies concerning selection of villages targeted for installment of water supply systems. This villagers motivation phase must embrace all program phases, as well as a clear definition of their role, their contributions, and their responsibilities toward this program. Villagers participation sought for this program is the following:

- choice of drawing method or type of pump (when several are available).

This choice will be made after all the details have been explained to them with regard to operation, cost, durability, maintenance facility, dependability, and the limitations of pumps.

- Choice to build a watering and/or washing tank, which would be constructed with the village's own resources and the technical support of the working party.
- construction of a safe draining system under the supervision of a health agent (Sanitary Agent or Travelling Agent), and with his technical support.
- responsibility for monitoring the supply system operation, and for the preventive maintenance of the system, the pump, and the protection zone and, particularly, the drawing system.
- contribution for the purchase of Javel water in emergency cases.

At the terminus of the motivation campaign and when the villagers are ready to assume responsibility in the installation of a water supply system, the village should be organized by one or more representatives designated by the community. At that time, their tasks will be determined. On the other hand, it will be necessary to exemplify their function in order to enable them to bring their tasks to fruition. Periodic contact will have to be maintained between technicians of the two components and those charged with these responsibilities, in order to establish cross-information. Data on water supply conditions and the difficulties encountered will be provided by those in charge, whereas data on the needs for corrective and/or preventive measures will be furnished by technicians.

The sensibilization campaign and training activities will be conducted in a joint effort by HER and Health Agents (entrusted with inventory, site selection, construction of supply systems and their supervision and maintenance).

The VHWs and the T.A. will coordinate villagers participation under the supervision of Sanitary Agents. Finally, the entire staff of the two working parties will participate in the continuing training of villagers with emphasis on sanitary maintenance of water supply systems.

##### 5. Development of the Working Parties Technical Skills

In order to execute the above-referenced program activities, it will be necessary to develop the technical skills of the personnel involved in the program. This will be accomplished first, through technical and/or practical courses as part of the training program and of VHWs and T.A.'s training. Such courses could be prepared and taught by the Project's

Sanitary Agents, according to the tasks entrusted to them. Thus, in a practical way, the courses will address the following topics:

- Sanitary level of a water supply system
- Inspection of a water supply system
- Drawing of samples for bacteriological analysis
- Disinfection of a water supply by utilization of Javel water.
- Villagers participation (motivation, organization, training and information).
- Sanitary measures to be taken for the protection of water supplies.

A two week workshop should be conducted in the interest of the two working parties (HER and the Health component). The workshop would be attended by technicians from the project and surrounding regions, and will feature a complete program on Rural Water Supply and Sanitation. Subjects treated in the workshop will be:

- Appropriate technology for the development of rural water supply and sanitation systems. Topics are:
  - . hydrogeological survey
  - . groundwater drawing and sanitary construction of drawing systems
  - . preventive and corrective disinfection of water supplies
  - . water distribution (pumping or drawing methods)
  - . supervision of the water's physical and sanitary conditions
  - . preventive and corrective maintenance of water supplies with regard to construction and sanitation
  - . disposal of human excreta and wastes in the villages
  - . villagers participation in water supply and sanitation projects.

Sub-topics are:

- . Motivation of villagers
  - . Organization of villages to participate
  - . Training of participating villagers
  - . Information and sanitary training.
- Planning Rural Water Supply and Sanitation Programs. Topics are:
- . Planning and programming WS&S projects
  - . Management of projects (administration, planning and supervision)
  - . Management of information
  - . Project evaluation.
- Financing rural WS&S projects. Topics are:
- . Financial analysis of projects
  - . Village-level financing
  - . National and foreign sources of financing.
- Epidemiological surveillance of hydric and drinking water-related diseases in a WS&S project.

This workshop will include conferences, practical demonstrations, group work and practical on-site experiments.

Thus, the project technicians will have the opportunity to participate in seminars, workshops and/or international symposiums with the purpose of broadening their knowledge through other peoples' experiences.

6. Management of Information Within the Program Framework

It will be necessary to collect, interpret, disseminate and store data generated by the water supply and sanitation program. Such data

will not only equip participants for decision-making as needed, but also for evaluating work progress. To accomplish this, the following information is needed:

- General profile of Each Targeted Village

- . Demography
- . Sociology
- . Economic status
- . Other

- Profile of Each Village's WS&S

- . Type of WS&S
- . Population serviced
- . WS&S's level of safety
- . Description of actual and potential contamination
- . Population participation and input
- . Presence of VHVs in the village and information on their training and their experience in the position they occupy.

- Record of Activities:

- . Construction and improvement
- . Sanitary inspections
- . Surveys
- . Problems and obstacles encountered
- . Analyses results and their interpretation
- . Actions taken concerning the WS&S.
- . Other

## 7. Schedule of Program Activities

After the proposed Action Plan has been approved by the project incumbents, it will be profitable for the personnel of both components to agree on ways of cooperation to carry out project implementation.

Although it would be advisable to launch all the above mentioned activities, the present lack of necessary resources for some represents an obstacle which will only be removed slowly. However, a good number of activities will be scheduled to start immediately. These are:

- . Incorporation of sanitary inquiries to water resources assessment activities.
- . Water Supply inquiries in villages already serviced.
- . Physico-chemical and bacteriological analyses of supposedly contaminated waters.
- . Boosting village participation.
- . Training of personnel working in the program (VHWs and T.A.s)

A chronogram or schedule of activities is shown below:

- Dissemination of Data

- . All urgent information regarding the WS&Ss will be disseminated immediately. For example, the technicians of both working parties will be responsible for informing one another immediately about every emergency situation which may arise.

With regard to routine situations, the Sanitary Agents will be required to present a monthly report to the Director of the Health component, with copy to the Director of HER, and an annual report on the sanitary condition of the water points and the interventions carried out during the year. This annual report will be distributed to the Directors of both components.



## APPLICABLE RESOURCES

### Human Resources

1. HEALTH COMPONENT
  - . 4 Sanitary Agents
  - . 1 Laboratory technician
  - . 110 Travelling Agents
  - . 550 Village Health Workers
  - . Drivers
  
2. HYDRAULIC COMPONENT (HER)
  - . Hydrogeological inventory incumbents
  - . WS&S site selection incumbents
  - . WS&S construction incumbents
  - . WS&S maintenance incumbents
  
3. TECHNICAL ASSISTANCE
  - . 2 Sanitary education specialists
  - . 1 Hydrogeology specialist
  - . 1 Electromechanics engineer
  - . 1 Financial analyst
  - . National/international lecturers, Sanitary engineer(s), Epidemiologist, Administrator, financial analyst, sociologist, other...

### Material Resources

- 3 portable laboratories for the exclusive analyses of recommended tents (1 laboratory per department, and 1 for the HER hydrogeology section).
  
- 4 Millipore portable laboratories for bacteriological analyses (fecal coli-bacilli only). Laboratories are to be utilized for routine analyses by Sanitary Agents.

- 4 kits for the production of sodium hypochlorite from granulated salt and water-base disinfection. These kits will be placed at the health centers or dispensaries at the Sanitary Agents' operations headquarters, and will be capable of producing chlorine-base disinfectant in sufficient quantities to cover not only the program needs, but also those of the health center or dispensary.
- Agents' Working Tools
  - . 250 ml. flasks
  - . 5 to 10 liters plastic drums
  - . 100 meters scale chain
  - . Weight
  - . String and rope
  - . Thermometer
  - . Residual chlorine/pH indicator (preferably Hydrocure), 1 per Sanitary Agent
  - . Hach residual chlore indicator (1 per S.A.).
- Complete reference laboratory for physico-chemical and bacteriological analyses of drinking water. This laboratory will be located in Bobo-Dioulasso, within the health component facilities.
- 4 four-wheel-drive vehicles, one per sub-district for use by Sanitary Agents for program supervision activities.

NOTE: A complete and thorough study would be necessary for equipping the reference laboratory. Such study would require the expertise of a consultant specializing in water quality control experiments.

APPENDIX

List of Participants in the Workshop  
and Composition of the Working Group

A - List of Participants

<u>Name</u>	<u>Title</u>	<u>Position</u>
TRAORE, SEYDOU	Senior Technician, HER	Water Resources Inventory Brigade
BOUDA, OMER	Sanitation Assistant	Rural Water Project Health Component
SORGHO, G. PROSPER	Sanitation Assistant	Banfora Sanitation Service
YONLI, AMYE	Sanitation Assistant	Rural Water Project Health Component
HIEN, DIKONTE ETIENNE	Sanitation Assistant	Rural Water Project Health Component
OUDRAGO, BOUBACAR	Sanitation Assistant	R.W.P. - H.C., Bobo
TIENGUEBI, SIMON	Sanitation Assistant	R.W.P. - H.C., Bobo

APPENDIX

**B - Composition des Groupes**

<u>GROUP</u>	<u>Subject (assigned objective)</u>	<u>Participant</u>
I	To obtain a sanitary water supply source	Traoré, S.* Bouda, O. Hien, D.E.
II	To obtain a sanitary water collection and distribution system	Tienguéri, S.* Sorgho, G.P.
III	To supervise and maintain water supply systems in good sanitary condition	Yonli, Amyé* Ouédraogo, B.

\* Presenter of the group's works in plenary session.