EVALUATION OF RURAL HEALTH COMPONENT OF BAKEL SMALL IRRIGATED PERIMETERS PROJECT (NO. 685-0208)

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I. SUMMARY

The purpose of this evaluation is to assess the efficiency and effectiveness of the implementation of the Rural Health Component of the Bakel Irrigated Perimeters Project. The rural health project consists of two elements, a health surveillance element to collect and analyze data relating to the incidence of certain endemic diseases in Bakel department and a health services element which involves the training of village health workers and the establishment of village health huts. The purpose of the project is twofold: to determine the effects of irrigated perimeters on the incidence of disease in the area and to maintain in the area the existing health level and if possible, to improve it.

However, since the compilation of the surveillance data is not complete, the evaluation team had no basis with which to evaluate achievement of these project purposes. The evaluation found that the project has suffered from a vague project design and lack of management planning. As a result, confusion appears to exist in the minds of both AID and GOS officials concerning the final outputs of the project. Nevertheless, based on discussions with villagers, the village health worker activities appear to be having a positive health impact, and the preliminary information on project outputs indicates that the project is worthwhile and should be pursued.

To successfully complete the project requires several actions. A project workplan outlining project outputs and activities to achieve these outputs should be prepared. The health surveillance element should be better integrated with the rest of the project and should include information concerning identification of breeding vectors, their resting and biting habits, flight range, and distribution of breeding sites.

Training activities for the health services element should be clarified and implemented as soon as possible and the proposed governmental resupply system should be reexamined. These and other recommendations are presented with greater detail in the final section of this report.

2. INTRODUCTION

2.1. Evaluation Methodology.

The Health Component of the Bakel Irrigated Perimeters Project is a five-year project which is presently in its third year of implementation. As one of the outputs, the project includes the development of baseline and trend data on health status in the Bakel Region. The compilation of this data is not complete nor has corresponding data yet been tabulated for irrigated perimeter development. Therefore, the present compilation is restricted to an interim assessment of implementation and management strategies, and not an evaluation of project outputs as relates to project goals.

This evaluation is based on the AID Logical Framework Matrix which describes inputs, outputs, purpose, goal, the indicators of achievement and the assumptions in causal linkages. Using the Logical Framework Matrix, the planned inputs and outputs of the project have been compared to the actual implementation of the project. This comparison was used to understand what factors have changed in the project, to explore the reasons for these changes, and to determine how these changes have affected the achievement of project purpose.

This project evaluation has involved a review of project documentation and budget, discussions with all relevant project personnel, including representatives from AID and the Senegalese Government, and a site visit to the Bakel region. A list of discussants is found in Appendix I.

3. PROJECT BACKGROUND

3.1. Project Description.

The project is located in the far eastern region of Senegal in the Department of Bakel along the Senegal and Faleme Rivers. The area is populated by subsistence farmers who grow sorghum, millet and a limited amount of irrigated crops. The project zone includes 23 villages, divided into two ethnic groups - Sarakholés and Toucouleurs - located along the left banks of the Senegal and Faleme Rivers.

The current AID project was begun in 1977 to support and expand the initial activities undertaken by the International Company for Rural Development (CIRD) and Société d'Aménagement et d'Exploitation des Terres du Delta du Fleuve Sénégal (SAED).

The purpose of the AID project is to introduce farmers to managed irrigated crop production in an area previously characterized by dry land and flood recession farming. It seeks to increase and stabilize agricultural production, increase farmer income and reduce imports by increased development of irrigated lands. The project calls for the development of 1800 hectares of irrigated land in perimeters averaging 30-50 hectares. The perimeters are operated by farmer groups with support from SAED and financing from AID and the GOS. Two additional components of the project include: (1) the field testing of a solar powered pump, and (2) a health program to counter the possible adverse effects of the additional exposure of the population to water-borne health problems.

3.2. Purpose of the Rural Health Component.

The introduction of irrigated agriculture involves environmental changes which can affect the incidence of diseases in an area. Vector-borne disease associated with water, such as malaria, schistosomiasis, onchocerciasis, and intestinal parasites occur in the southern portion of the Sahel. Water-related development projects create excellent breeding habitats by which the spread of these vector-borne diseases can expand. Irrigated and dryland development projects have increased the prevalence of one or more of these diseases in Chad, Ghana, Nigeria, Cameroons, Zimbabwe, Egypt, Iran, China, India and Brazil.(1)

The spread of water-borne diseases as well as communicable or infectious diseases, and of chemical contamination of food and water from pesticides, is often a by-product of agricultural development. It was for these reasons that the project review committee included a health component to the Irrigated Perimeters Project.

The goal of the Bakel Health Project is to "maintain in irrigated perimeters region the existing health level and, if possible, improve it." To this end, two health activities -- a health surveillance element and a village health services program -- were incorporated into the crop production project to counter the effect of the possible additional exposure of the population to water-borne diseases.

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(1): Health Impact Guidelines for the Design of Development Projects in the Sahel, Family Health Care Vol. 1, Family Health Care, Inc. prepared for AID, April 13, 1979, contract no. AID/afr-C-1138, April 1979.

3.2.1. Health Surveillance Activities. The purpose of the health surveillance as stated in the project paper is to collect and analyze data relating to the incidence of parasitic diseases in 25 villages (23 villages in the project plus two other villages for control purposes). An initial census of the population of these villages was done by Dr. Samba Diallo of the Service de Lutte Antipalustre (SLAP). After the initial census, two surveys were to be made each year, one at the end of the rainy season and one during the dry season. This data could then be used to identify trends in the incidence of disease which could be used to determine if the development of irrigated perimeters in Bakel affects the incidence of disease in the region.

3.2.2. Village Health Services Activities. The purpose of the village health services program as stated in the Project Paper is to "strengthen existing medical services in order to improve diagnosis and treatment of endemic diseases, and to provide health and sanitation training in the villages." The Project Paper presented the following elements:

- Training dispensary nurses in microscopy and education of village health workers.
- Training of 23 village sanitarians, and 23 maternal/child health workers.
- Training of village health workers for those villages lacking dispensaries.
- Establishment of 23 self-supporting village health huts.

The village health services program is built upon the basic health structure of the Government of Senegal. The Administrative Director of the project is the deputy (Adjoint au Développement) to the Regional Governor and the Technical Director is the Regional Medical Officer. These individuals are both located in Tambacounda. At the departmental level, the Préfet and the Chef de Circonscription Médicale are responsible for project activities. The USAID Technical Assistant and a representative from Promotion Humaine implement project activities at the village level.

3.4. Relevant Factors in Implementation.

The Project Agreement (ProAg) of Small Irrigated Perimeters Project between AID and the Government of Senegal was signed in June 1977, but the first Implementation Letter for the Health Project was not executed until July, 1978. The first Implementation Letter changed several project inputs and outputs and since that time the Bakel Health Project has undergone other changes. These changes have been a result of both external and internal factors. Several of these factors are discussed in the following paragraphs.

1.3.1. Project Design. The first project paper was prepared in 1974 and did not include a health component. The project committee considered the environmental examination of this paper inadequate with respect to the potential negative health impact. Thus, the committee recommended that the project move forward but subject to further assessment of the health impacts and to the inclusion of a health component.

Subsequently, a study of environmental and health elements was undertaken by Dr. John Nebiker. He recognized the potential increase in malaria incidence as serious, but concluded that"the threats on public health from irrigation are many, but those specifically posed by the limited extent and complexity of the Bakel Crop Production are few". The Executive Committee for the Project Review found the recommendations of this report unsatisfactory and ordered a further assessment of the project.

An environmental assessment and a design for a health component were done by a team sponsored by the American Public Health Association in 1977. In the meantime a revised project paper which included a health component was prepared in May 1977. The APHA team considered this component necessary, "not because of any potential adverse health impacts (deemed to be insignificant), but because of concern that existing poor health conditions in the villages are serious enough to have an adverse effect on the contribution of the villagers to the project". However, the APHA report recommended the inclusion of three additional elements to the health component:

- A surveillance program to include the prevalence, incidence, distribution and transmission of malaria, as well as identification of the vectors, their resting and biting habits, flight ranges, susceptibility to insecticides and distribution of breeding sites and that similar information be collected with respect to schistosomiasis.

- Two-way radio communication between Bakel health center and each of the twelve Health Posts.

- Malaria prophylaxis be provided for all residents of the project area during the main three-month transmission period of the disease from July to September.

In summary, the original project design did not include a health component. The health component was added to the project paper at the insistence of AID/Washington after further environmental assessment was conducted. Partially as a result of this history, the health component was never fully integrated into the

overall project and, in fact, was considered by some Mission personnel as an AID/Washington add-on of secondary importance to the larger agriculture project.

3.3.2. Project Administration. The Project Agreement for the Bakel Small Irrigated Perimeters Project was signed in June 1977. The AID life of project funding for the Irrigated Perimeters Project over five years (1977 to 1982) is $6,575,000. Of this amount, $407,000 had been budgeted for the health component. SAED, concerned with agricultural development in the Senegal River Basin, accepted the health component but was and still is, indifferent towards it. SAED has no particular expertise or interest in health and thus far has done nothing to integrate the health component into the overall project.

The Government of Senegal (GOS) authority for the health component is maintained at the regional level in Tambacounda because of the lack of capacity to administer the project at the departmental level. Some inconvenience in the disbursement of funds and some coordination difficulties seem to have resulted from the regional administration, but, overall, this has not created any major problem.

AID authority for the project is split between two offices: PMA has responsibility for crop production and RHO is responsible for the health component. PMA obligates AID funds for the overall project to SAED and budgets with SAED the amounts for the health component based on requests from RHO. Apart from this, there is no integration between the two project offices.

4. ANALYSIS OF PROJECT IMPLEMENTATION

The health component of this project has gone through several changes. Inputs and outputs described in the ProAg differ from those in the Implementation Letter. The changes in project implementation are discussed in the following paragraphs.

4.1. Health Surveillance.

4.1.2. Inputs. As stated earlier in this report, the health surveillance element was contracted to Dr. Samba Diallo. The total budget for the health surveillance was to be $295,000. Of this total $125,000 was budgeted to Dr. Diallo for data collection and $20,000 for miscellaneous equipment - including a vehicle for the health surveillance team. The other $150,000 was budgeted for consultancy assistance to establish a surveillance program; monitor field surveys and analyze results; and, at the end of the fifth year, to conduct an evaluation of the health component of the project.

AID has funded the operating expenses to date of Dr. Diallo. In addition, AID has purchased camping equipment, and various medical supplies for the surveillance team, and has provided funds to repair a vehicle for the team. To date, no funds have been used for outside consultants to assist Dr. Diallo in his analysis nor has any plan to do so been developed.

4.1.2. Outputs. Outputs for the health surveillance were clearly stated. Dr. Diallo would provide an initial census of 25 villages in the Bakel region and, after this initial survey, two surveys would be made each year. According to the Implementation Letter, Dr. Diallo was to submit quarterly financial reports but the timing for the submission of his surveys was not established. The end product of his work is an evaluation of the project. Implicit in the planned end-of-project evaluation is the assumption that the end results of the surveillance will establish an improved understanding of factors affecting the health status of the population of the Department of Bakel.

To date, the health surveillance team has conducted the initial census and four of the ten biannual surveys of the villages. A first report "Premier Rapport sur le Recensement des Populations et le Dépistage des Maladies Parasitaires Endémiques" which covered the spring 1978 survey was submitted to AID. However, since the census was conducted in two phases, only the first fifteen villages were described in the report. The remaining 8 villages have been censused but the written analysis is not complete.

The project design initially suggested that the survey sample 2,000 people selected at random from 23 villages. However, because of logistical problems, the decision was made to sample only four villages and to include everyone in these four villages. The four villages in the sample were selected based on tribal and ecological considerations. Dialiguel, a Toucouleur village, has created some problems for the health surveillance team because villagers have been reluctant to provide stool specimens for examination. Only the results of the first survey have been tabulated and submitted to AID, so that trend data is not yet available.

4.2. Health Services

4.2.1. Inputs. The project paper included a comprehensive list of project activities. However, project implementation planning changed some project activities. The changes in planned project inputs and actual inputs are illustrated in Exhibit 4.2.1. For example, in the ProAg it was planned to train 12 nurses, 16 village health workers, and 23 sanitarians and 23 maternal/child health workers. The implementation plan for the project as presented in

EXHIBIT 4.2.1.

HEALTH SERVICES PROJECT INPUTS:
PLANNED AND ACTUAL

PROJECT AGREEMENT (June 77)	LETTER OF IMPLEMENTATION (July, 1978)	ACTUAL INPUTS (March, 198
. Retraining 12 dispensary nurses in microscopy	. Retraining of 8 dispensary nurses in microscopy	. Retraining of 4 dispensary nurses in microscopy
. Purchase of 12 microscopes and equipment	. Purchase of 8 microscopes and equipment	. Purchase of 4 microscopes and equipment
. Training of 23 village sanitarians and 23 maternal/child health workers		
. Training of village health workers for those villages lacking dispensaries (16 VHW)	. Training of 20 village health workers	. Training of 10 village health workers
. Provision of basic drugs and medicines for all villages	. Provision of 8 basic drugs and medicines for all villages	. Provision of 8 basic drugs and medicines for all villages
. Purchase of 12 mobylettes	. Purchase of 6 mobylettes and spare parts	. Purchase of 6 mobylettes
	. Village training in health education and nutrition	
	. Purchase of 8 delivery tables and equipment for PPNS	
	. Construction of pharmaceutical warehouses in Tambacounda and Bakel	
	. Equipment for village health huts	. Purchase of 23 zinc roofing for village health huts
	. Salary for warehouse manager	

The Implementation Letter stated that 8 nurses and 20 village health workers would be trained. The Implementation Letter included the construction of pharmaceutical warehouses in Tambacounda and Bakel. These depots had not been mentioned in the ProAg.

The type and quantity of medicines for the project was established by the PHO and has not changed during the implementation. Delivery has been slow for all of these commodities partially because of the difficulty in procuring small quantities of drugs from the United States. Three drugs have not yet been purchased, nearly two years after the PIO/C was issued.

The project has been implemented incrementally without the guidance of a broad implementation plan for achieving project outputs and purpose. The first Project Paper was apparently drafted without consideration of the health status and medical needs of people in the Bakel Department. Then, as AID officials discussed village health needs with the Senegalese Government a more refined model for the health services project was developed. The impetus for a health component came from outside the Mission and the model for project interventions appears to have come from outside Bakel, incorporating much of the strategy used by the AID Sine-Saloum Health Project.

4.2.2. Outputs. Project outputs are the results achieved as a result of project interventions. In Exhibit 4.2.2. both projected project outputs and actual outputs to date are illustrated. Neither AID nor GOS project officials appear to have a clear conception of exact outputs now planned for the project.

In general, project officials concur on the targeted training of village health workers and the establishment of village pharmacies in twenty-three villages. However, uncertainty exists concerning the institutionalization of this village health system, particularly the resupply of medicines, and concerning whether village sanitarians and maternal/child health workers will be trained in the project. Much of this confusion results from the failure of AID to prepare amendments to project documentation so as to maintain clear output targets. The fact that changes in project activities have been poorly documented and that no systematic project implementation planning has been developed has led to unnecessary confusion and to delays in achieving project outputs.

5. FINDINGS

It should be noted that the Health Project is a five-year project which has been underway for almost three years. The health surveil-

EXHIBIT 4.2.2.

HEALTH SERVICES PROJECT OUTPUTS : PLANNED AND ACTUAL

PROJECT AGREEMENT (June 1978)	LETTER OF IMPLEMENTATION (June 1978)	ACTUAL OUTPUTS (March 1980)
2 nurses trained in microscopy and community health	. 8 nurses trained in microscopy and community health	. 4 nurses trained in microscopy and community health
3 village sanitarians and 3 maternal/child health workers trained		
6 village health workers trained and working	. 20 village health workers trained and working	. 8 village health workers trained and working
Village health huts number is not specified.	. 20 village health huts	. 8 village health huts operating
Institutionalization of system to retrain village health workers and resupply pharmacies.	. Institutionalization of system to retrain village health workers and resupply pharmacies.	
	. Village women trained in health education and nutrition.	
	. Pharmaceutical warehouses in Tambaccunda and Bakel.	

lance activities were started in April 1978 shortly after an Implementation Letter was signed. However, the implementation of the health services activities were delayed until March 1979, when an AID technician was hired to work in Bakel. Essentially, health services project activities have been implemented only during the last year.

5.1. Health Surveillance.

Dr. Diallo has completed the census of the 23 villages and 4 of the planned 10 biannual surveys of the region. Dr. Diallo has adhered to the workplan of conducting two surveys a year, one at the end of the rainy season and one during the dry season. Since the final output of the health surveillance is to be tabulated and analyzed data, it is premature to assess the validity or relevance of these reports to AID's goals. Nevertheless, in assessing project designs and implementation several problems became apparent.

5.1.1. Monitoring of Health Surveillance. There has been no regular monitoring of Dr. Diallo's activities by USAID. Only the initial census of the region has been submitted although vouchers have been regularly paid by USAID.

5.1.2. Microscopic Training. There has been no integration of the microscopic training given by Dr. Diallo to the four nurses with the health surveillance of the villages. The nurses have not utilized their microsconic skills since their training in October 1978. If Dr. Diallo had incorporated the nurses into the microsconic analysis of the specimens which is done on site, it would have provided the nurses with the opportunity to exercise their skills under the auspices of Dr. Diallo and would have helped to institutionalize health surveillance at the rural-health-post level.

5.1.3. No correlation between irrigated perimeters development and the health of the population. AID's purpose in funding the health surveillance was to get information on the effects of irrigated perimeters on the incidence of disease in the area. It is questionable whether the surveillance can do this. The primary reason for this is that no correlation is being established between the health survey and the development of irrigated perimeters. When the surveillance team conducted the census and initial survey they did not collect entonological information with respect to malaria, schistosomiasis, and onchocerciasis. Such information would have included the identification of the vectors, their resting and biting habits, flight ranges, susceptibility to insecticides and the distribution of breeding sites. If standing bodies of water had been mapped at the time of each survey then it would have been possible to determine the correlation between an increase in water

in the area and the prevalence of disease. Using the existing design it is impossible to determine if the change in the incidence of disease is caused by the irrigated perimeters or by something other than the program.

A secondary problem is the statistical validity of the design. The survey suffers from several threats to validity:

. Sampling. Four villages were chosen as sample villages using ecological, geographical and tribal considerations. There is no assurance that these villages represent a sound sample of the population of the project zone.

. Maturation. That is, as a result of the health surveys villagers are more likely to become aware of their medical problems and they are more likely to seek preventive measures or treatment for their medical problems. This may produce unanticipated changes in the incidence of disease in a village.

. Instability. The surveillance team examines all the villagers in 4 villages. However, everyone is not always there when Dr. Diallo's team conducts its site visit. As a result, the same people are not always examined and there is a fluctuation in the number of people sampled during each visit.

. Lack of control group. It is often very difficult in action settings, particularly in a health evaluation, to use a control group. If a village participates in a survey they expect some sort of compensation usually in the form of treatment. However, if a control group outside of the SAED region had been used then before and after measures taken in both the control village and the other 23 villages could be compared. The difference between the two could then be contributed to the irrigated perimeters.

. Treatment. An ethical issue confronting the surveillance team is the issue of treatment of the villagers for their diseases. Diagnosis and treatment are interrelated. It is difficult to diagnosis a disease such as malaria and not to treat it. When possible the evaluation team treated the villagers, and if they were not treated by the team, the villagers sought treatment from the village health hut or the nurse. Although it would not be appropriate to diagnosis a medical problem and not treat it, the treatment of a disease may distort the true extent of the endemic diseases in later surveys of the village.

The health surveillance is using a time series design to determine the effects of the irrigated perimeters on the incidence of the disease. The use of a quasi-experimental design in this manner is generally a good way to find out the effects of the program. However, the design did not protect against the effects of

extraneous variables on health measures. Therefore it is impossible to establish a valid inference about the effects of irrigated perimeters on the incidence of disease. The only valid conclusions that can now be drawn from the surveillance is an indication of the type and prevalence of diseases in the region which can be used to develop a strategy to address these health problems.

5.2. Health Services

5.2.1. Training. Four nurses received training in microscopy and in training village health workers, but one has left the project, leaving 3 trained nurses. So far these three nurses have trained 10 village health workers; one VHW has quit the project and one has not yet begun village-level activities. Of the 8 trained VHWs now working at the village level, 3 are in villages where there is already a nurse/pharmacy. Thus, the conclusion is that primary health services have been expanded into a total of 5 new villages. The project has trained no village-level midwives nor sanitarians. The present status of the village health huts is summarized in Exhibit 5.1.

The training of the nurses in microscopy was done in October 1978 by Dr. Samba Diallo at the University of Dakar. Since receiving the training the nurses have not utilized their skills. They have not participated in the health surveillance work conducted by Diallo nor have they had the equipment necessary for performing their own analyses. The training of the nurses to train VHWs was given for 3 weeks in May 1979 in Fatick by Irene Van Dyck, a midwife with the Dutch Village Pharmacy Project. The nurses have been using the teaching methods covered by the Fatick training session and the VHW teaching materials developed by the Sine Saloum Rural Health Project (685-0210).

The three nurses now active in the project are all government officials (infirmiers d'Etat or agents sanitaires). Their salaries are paid by the Government of Senegal. Since the project was to use the existing government structure already in place in Bakel no additional housing , travel or hardships allowances were planned for the project. The project supplies each nurse with a motor bike and money for gas, oil and repairs. Because of apparent inequities in comparison to other AID projects in the Bakel Department (Range and Livestock Project and Small Irrigated Perimeters Project), project management decided to give a short-term allowance to each nurse and to the departmental agent for Promotion Humaine. These allowances amount to 600,000 CFA and are being paid monthly over a six month period. These allowances will terminate at the end of this six month period in June 1980.

The village health workers are being trained by the nurses in the diagnosis and treatment of basic village health problems.

EXHIBIT 5.1.

STATUS OF VILLAGE HEALTH HUTS

Village	Nurse	Health facilities before AID Project	Has village been sensitized	Village Health Worker	Village Health Hut is Operating	Number on the Comité de Gestion	Type of Payment to VHW	Amount in Caisse	Fees (CFA)
1. Gande °	Diallo	Rural Health Post	X	X	X	5	In kind		50 CFA - child 100 CFA - adult
2. Galade	Diallo		X	X	X				50 CFA - child 100 CFA - adult
3. Moudéry	Diallo	Rural Health Post Pharmacy PPNS, Nurse	X	X			undecided		undecided
4. Diawara	Fofana	Rural Health Post Pharmacy PPNS, Nurse	X	X	X				50 CFA - child 100 CFA - adult
5. Diabuo	Fofana		X	X	X	3	10,000 CFA	6,000	5 CFA pill
6. Manael	Fofana		X	Trained but quit					
7. Kelingara	Fofana								
8. Kourchani									
9. Yafera		Rural Health Post							
10. Aroundou									

11. Ballou°		Rural Health Post Pharmacy							
12. Sebou									
13. Debecoulé									
14. Djinbe									
15. Dialiguel°	Sow								
16. St. Dialiguel	Sow		X	X	X	3	None	18,000	5 CFA pill 100 CFA
17. Gurohi-Tadou	Sow		X	X	X	3	None		5 CFA pill No care
18. Selin	Sow		X	X	X	3	None	5,500	5 CFA pill 110 care
19. Niaye	Sow		X	X	X	3	None	21,500	5 - 25 CFA
20. Guitta	Sow								
21. Senedebou°	Sow	Rural Health Post							
22. Seboly	Sow								
23. Nidira	Sow	Rural Health Post Pharmacy PPNS, Nurse							

°: Village participating in health surveillance

The departmental agent of Promotion Humaine has worked with the project technical assistant to organize villages and establish the village management committee and other project implementation mechanisms. The training of VHWs and the village organization has not yet established pricing policies, drug reorder and resupply mechanisms, nor VHW remuneration guidelines which are economically and socially sound. Each village has been left to establish its own policies. The approach properly stresses village participation and control but has also created management uncertainties which could threaten the continuation of post-project VHW activities.

5.2.2. Institutionalization of Village Health System. A major threat to establishing a continuing system of village health huts is the lack of project institutionalization. No village has yet established a capacity for continuing VHW activities. Villages do not know the real cost of medicines. They are establishing prices based on recommendations of project technicians and/or on their own judgment of what is right. A system for resupply of medicines has not yet been initiated. This leaves the villages dependent on project resources even though they have accumulated a significant amount of their own cash through the sale of project medicines. Furthermore, they do not know resupply costs and thus cannot determine what amount is available to pay for VHWs or for other village health activities. Most VHWs are not receiving any compensation for their work. This is generally not because of a village decision not to pay them, but because of indecision, lack or financial and management knowledge and lack of project guidelines. No village health huts have been completed. One is being constructed and the bricks have been made for several others, but the lack of a health hut appears not to have hindered the VHWs who operate out of their homes.

5.2.3. Technical Assistance. The project design did not budget for technical assistance, since the PP expected a Peace Corps Volunteer to be assigned to the project. Reprogramming of project funds during implementation included funds for long-term expatriate technical assistance on a Personal Services Contract. The American technical assistant who was hired for the project has been involved in project management as well as technical assistance. The institutionalization and continuation of project activities will require VHW activities to become less dependent on the managerial activities of technical assistant. Yet, his efforts are crucial for starting village health huts and giving them operating guidance. To do this effectively the technical assistant must be able to visit villages frequently. To date his activities have been hampered by lack of transportation and administrative support.

Project design did not consider the administration and implementation of the health components as a separate project apart from USAID and the Small Irrigated Perimeters Project. The administrative structure had to be worked out during the first year of the project which was one reason for a year's delay in starting implementation. The Regional Health Office of USAID lacked administrative capacity and thus, hired a Personal Services Contractor, to work part-time on project administration. It should be noted that this contractor is not funded by the project but works at the expense of another health project. Although knowledgeable about Senegal and Senegal's health problems, the part-time project manager knew nothing of AID procedures and was not given adequate training on AID regulations and requirements before assuming a project-manager type of role.

5.2.4. Project Implementation. Project implementation has been characterized by a short-term task-oriented approach. Difficulties in getting implementation tasks accomplished, like arranging training courses or getting commodities delivered, have caused project managers to concentrate on immediate needs and to lose sight of desired outputs and purposes. This problem has been intensified by the reprogramming of project activities and funds so that some of the outputs presented by the Project Agreement are no longer the real output targets of the project.

Implementation effectiveness has also been hampered by inefficiencies in project administration. The technical assistant has operated for a year using a small motor bike on difficult terrain. Access to a four-wheel-drive vehicle would have improved the efficiency of his activities. Project commodities were shipped by USAID directly to Bakel instead of Tambacounda as had been agreed to by USAID and GOS project managers. Training programs were planned, cancelled and rescheduled creating confusion, and the question of project allowances and amount of allowances went through many forms and levels before being finalized. In addition, three of the eight medicines for village health huts have not been purchased, and microscopic materials have not been delivered to the nurses. Such problems have slowed implementation and strained AID credibility with Senegalese project personnel.

6. RECOMMENDATIONS.

The Bakel Health Project has suffered from a vague project design and lack of implementation planning. Project activities have been implemented with little thought given to the overall project purposes and goal. Nevertheless, the project's output targets and purpose appear just. Health huts are needed and desired by villages in the Bakel Department and there is also a need to

develop a better understanding of the effects of irrigated perimeters on the incidence of disease. However, to successfully complete this project the evaluation team recommends the following changes:

6.1. Health Surveillance.

As stated earlier in this report, the purpose of the health surveillance is to determine the effects of irrigated perimeter development on the incidence of disease in the Bakel Department. However, as it is presently designed the surveillance will not provide AID with this information. To get this information it is recommended that:

1) AID enlist consulting assistance to (1) compile the data on breeding vectors and (2) to assist in the analysis of survey results. The ProAg budget included $150,000 for outside consultants. Consulting assistance is not needed to monitor the existing data collection methods but, rather, to see that the additional information necessary to determine the effects of irrigated perimeters on the incidence of diseases is collected and properly analyzed.

2) The health surveillance element should be better integrated with (1) the health services component and (2) with SAED. By assisting Dr. Diallo in the microscopic analysis, the nurses can receive practical on-the-job training and this would also help institutionalize the monitoring of disease in the area. This element of the project should also be better integrated with the health service element of the project in regard to USAID monitoring and financial management control. Integration with SAED is important if the surveillance is to collect entomological data from the irrigated perimeters to permit the determination of the health effects of irrigated perimeters development.

6.2. Health Service Training System.

1) The project needs to clarify how many nurses are to be trained, what project support each will receive and what responsibilities each will have.

2) The project should develop a program for training village midwives and proceed to implement it. This portion of the project's training component has been ignored.

3) The sanitarian function has been eliminated as a position separate from the VHW. This change in project output or the inclusion of sanitarian activities in VHW activities

should be formally acknowledged.

4) Planning is needed for the nutrition component. Some nurses are giving talks on nutrition and the project provided baby scales for the nurses, but no coherent project thrust appears to exist.

5) Project training and guidance should include some systems management. The project should give villagers more guidance on pricing of medicines and on how they might compensate the VHW for his work. None of the villages visited had any idea about the replacement cost of medicine and therefore of the potential profits which could be used to pay the VHW. Other possible means of compensating the VHW such as working in his fields, charging a consultation fee, or using other village funds could be considered. The villages need basic cost information on which to base their drug prices and operating support for the project.

6.3. Resupply System.

The PP did not discuss how the villages would resupply their medicines. However, Implementation Letter No. 1 established a governmental resupply system as part of the project. This system is to include project financed warehouses in Tambacounda and Bakel. Review of project documentation and discussions with project officials did not reveal any analysis of this proposed system nor of possible alternatives.

There are two private pharmacies presently operating in Bakel and one in Moudery and in Kidira. The two pharmacies in Bakel have in stock all the medicines being used by the village health huts. The average price of these drugs was found to be about 35% more than private pharmacy prices in Dakar. The Bakel pharmacies receive their drugs by rail from Dakar through Kidira about every two weeks. Shipping costs for small packages by rail account for much of this increase leading to the conclusion that the local private drug market in Bakel is likely providing competitively priced medicines. Given this, the plan to create a governmental supply system should be reexamined.

The plan for a governmental system was apparently based on the assumption that health huts could not be resupplied privately or that a governmental system would be more efficient and therefore cheaper. The first assumption is false and the second is open to doubt since no analysis of operating costs has been done for the

proposed warehouse system. Consideration of the general lack of medicines in health posts prior to the project and of the general administrative situation in the Bakel Department raises doubts as to how efficiently the governmental depot system would function.

Furthermore, several village health huts have run low or run out of some medicines. They have cash with which to buy medicines but no knowledge of how to buy the medicines. Since they were given the initial stock no project resupply system has been created.

With the above in mind, this evaluation has concluded that:

1) The planned governmental resupply system should be re-examined. The project should not finance the warehouses unless necessary because of political commitment. The ProAg contains nothing about warehouses. However, AID has committed itself to warehouse construction through the Implementation Letter of July 1978 and in subsequent discussions with GOS project officials.

2) Villages should be given immediate guidance on the resupply options open to them, and encouraged to take some initiative, and to go to the private Bakel pharmacies or elsewhere and buy replacement medicines. They can later use the governmental resupply system if and when it is built.

6.4. Commodities.

Delays have been experienced in the purchase and delivery of commodities. As a result, the health huts are operating without 3 of the 8 planned medicines. This has hindered the effectiveness of the village health workers in providing medical care and it has also hurt AID's credibility with the nurses and villagers. Therefore, to remedy this situation, the evaluation recommends that:

1) AID immediately purchase the three missing drugs. To expedite this process AID should consider getting a waiver so the drugs can be purchased in Senegal. Further delay will only hinder the effectiveness of the village health huts.

2) All drugs and medicines being sent to Bakel should be sent through the Project Director in Tambacounda. The Project Director has asked that all shipments be sent through him. The first shipment of drugs was sent directly to Bakel creating some discontent on the part of the GOS officials who were concerned about the safe storage of drugs in Bakel.

3) AID should locate and distribute the missing microscope

equipment to the nurses. Moreover, if the additional nurses are to receive microscopic training then this equipment should be ordered immediately to avoid unnecessary delays. If the nurses are not to receive microscopic training this should be so documented.

4) Additional mobylettes should be purchased for the new nurses so they will have them at the end of their training period.

5) The project vehicle should be repaired immediately and given to the technical assistant. A former AID mission vehicle has been sold to the project. However, the vehicle was in disrepair when it was sold.

6.5. AID Project Support.

The Bakel Health Project has suffered from insufficient Mission support for its activities. To remedy this, the following recommendations are suggested.

1) The commodities be ordered in a timely fashion and AID Mission personnel follow-up the shipments to be certain they are received.

2) The project budget should include funds for AID project management.

3) A project workplan be completed for the project. This should include remaining project activities to be completed, dates for completing these activities, and projected costs for each activity. This project workplan should be completed in conjunction with the AID project manager, and technical assistant, and the GOS Project Director.

4) Technical management and support service in the RHO need to be better coordinated. Commodity delivery was hampered by poor internal communication in RHO. If personal service contractors are to effectively assist in project implementation they need training in AID management procedures as well as knowledge of Senegal and of project activities.

6.6. Operating Costs.

A great deal of confusion exists over the amount of indemnities paid to the nurses. Indemnities to the nurses were not included in the budget. However, AID has paid indemnities to

Senegalese officials working on the Livestock project in Bakel and the nurses in the Sine Saloum project. The nurses on the Bakel Health Project heard of the other indemnities and argued that if AID is giving indemnities to Senegalese officials in other projects then AID should provide comparable indemnities to them. To avoid similar problems in the future:

1) AID must establish a uniform policy for all projects concerning the payment of indemnities to GOS project officials.

6.7. Peace Corps Involvement.

1) The possibility of using a Peace Corps Volunteer in future to extend project activities particularly in sanitation and health education activities, should be explored by AID. The Project Paper stated that a Peace Corps Volunteer would be used to coordinate SAED activities and health activities at the village level. In addition to this, the PCV could promote preventive health measures in the village such as canal clearing, the identification and reduction of ponding, and promoting improved sanitation practices. Senegalese government officials have expressed interest in having a PCV in the Bakel Department.

6.8. Sensibilize Remaining Villages.

The evaluation team was impressed by the positive response of the villagers to the village health huts. Villagers are concerned about their health and are anxious to improve their health care facilities. In villages where the VHWs are activity, the villagers seem satisfied with the results and, in some cases, anxious to expand the VHW activities. However, fourteen villages still do not have a VHW.

1) The project should organize the remaining villages as soon as possible. The remaining villages are aware of the AID project and are anxious to develop their own health huts. It is particularly important that the three villages - Ballou, Dialiguel and Senedebou - used in the health surveillance be organized to start health huts. Dr. Diallo has experienced some difficulty in working in these villages. The villages argue that if they participate in the survey they should receive health services in return.

7. CONCLUSION.

The basic assumption of the Bakel Health Project is that the project can help maintain the health of the villagers so they will

be able to participate in development in the area, that the village health huts will prevent the deterioration of the health of the villagers or will hopefully improve the overall health status. However, presently there exists no data with which to evaluate these assumptions. There is no quantitative information on the impact of the irrigated perimeters on the incidence of disease in the area nor on the impact of village health hut on the health of the villagers.

The evaluation found no basis with which to challenge or confirm these basic assumptions; the purpose and goal of the project appear to be as valid or invalid today as three years ago. Based on discussions with the villagers, the villagers appear to be benefitting from the VHW activities. Similarly, the preliminary information collected on project outputs indicates that the project is worthwhile and should be pursued.

The project has suffered from a vague project design and lack of management planning. Some of this follows from Mission consideration of the health project as a secondary component to the larger Irrigated Perimeters project. Project activities have been implemented on an incremental basis with little consideration given to long-range planning for the completion of the project. Confusion appears to exist in the minds of both AID and GOS officials concerning the final outputs of the project.

To remedy this problem a project workplan should be prepared, describing project outputs and what must be done to achieve these outputs. AID should work closely with GOS in developing this workplan and required projects changes should be documented. With the incorporation of these and other changes recommended by this evaluation, the project can and should be successfully completed.

APPENDIX I

LIST OF DISCUSSANTS

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Amadou Grew - Selin
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