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THE PRAGMA CORPORATION

SWAZILAND RURAL WATER BORNE DISEASE CONTROL PROJECT
FINAL EVALUATION

Prepared for the USAID Mission to the Kingdom of Swaziland
Under Contract No.: 645-0087
to the Pragma Corporation

By

Nicolas G. Adrien, P.E.
Peter B. Ashelman, M.S.
Caroline B. Curtis, M.A.

with the assistance of
Madoda Dlamini, Public Health Engineer
Rural Water Supply Board

August 1986

Authorized Under
Contract No. AID/afa-0087-C-00-1005-00

USAID MISSION/SWAILAND

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THE PRAGMA CORPORATION

116 East Broad Street • Falls Church Virginia 22046
Tel. 703-237-9303 • Telex 203507 PRAGMA FSCH UR

President
Jacques Defay

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FINAL EVALUATION REPORT

ABSTRACT

From 3 to 26 August 1986, a team of the Pragma Corporation visited the Kingdom of Swaziland to conduct the final evaluation of the USAID-sponsored Rural Water Borne Disease Control Project. The three specialists collected and analyzed data to determine how the project contributed to strengthening the institutional capabilities and interagency cooperation of the Government in the areas of public health engineering, health education - community participation, environmental sanitation, and epidemiology. The evaluation team also contributed to the feasibility study of future water supply activities. This report deals only with the evaluation of the project.

SUMMARY OF FINDINGS AND RECOMMENDATIONS

1. The Health Education Centre: Contributions to Health Education and Community Participation in Water and Sanitation Issues

The main vehicle for health education under the RWBDC project, the Health Education Centre (HEC), has survived some leadership and directional challenges and has contributed to the implementation of health education programs in rural areas. The HEC still needs evaluation assistance to be an effective promoter of community involvement and to respond to the Ministry of Health's mandate to provide effective preventative medicine. The HEC has contributed to the process of disseminating information about the relationship of water and sanitation to health, but information transfer is a faster process than behavioral change.

It is recommended that the Health Education Centre continue to be strengthened in four areas:

- Evaluative capacity
- Staffing
- Coordination of its activities with other government units and non-government organizations involved in health education, and
- Materials budget support.

2. Strengthening Management in the Health Inspectorate

The RWBDCP contributed substantially to the institutionalization of pit-latrines construction within the Health Inspectorate/MOH under the guidance and systems developed by the sanitarian during 1981-1984. Although not a management specialist, the advisor had instituted materials reporting procedures in the Health Inspectorate prior to the mid-term evaluation and RWBDCP-sponsored WASH consultancy by Phillips (September-October 1983). The sanitarian also contributed to Health Inspectorate management directly in handling materials, logistics and indirectly through his training and supervisory role in community organization and participation. His main function, however, was to transfer a latrine-construction technology appropriate to the country.

The Health Inspectorate's ability to sustain construction at the community level is evident from reported latrine completions (Section 5.3) up through the first six months of 1986. Severe constraints, however, continue to plague the functioning of the Health Inspectorate both at headquarters and at the grass-roots level in the four regions. These are, primarily:

1. The shortage of management personnel and information-processing capability at inspectorate headquarters in the MOH, Mbabane;
2. The deteriorating vehicle stock both at headquarters and in the regions;
3. Partly due to (1) and (2), inadequate supervision of rural field workers (health assistants) responsible for implementing project objectives;
4. Insufficient number of adequately-trained health assistants in the field;

5. Related to all of the above, lack of evaluation programs to measure the effectiveness of field efforts in health education, technology transfer, and community mobilization.

These constraints can be removed by a series of personnel actions: recruitment and training.

3. Evaluating Target Behavior Changes

The project paper's goal of realizing a change in the health and sanitation behavior of 40% of the Swazis was an unrealistic estimate based on little understanding of the strength of traditional beliefs, the rural homestead structure of the Swazis, and the institutional capacity of various ministries. The capacity for evaluating such changes does not now exist in the country. Technical assistance is needed to design, pretest, administer and evaluate a second KAP study to statistically verify what behavioral changes have occurred. The project paper's goals for behavioral change were too broad and too general to be translated into specific health education approaches.

It is recommended:

1. That technical assistance be provided to design, pretest, administer and evaluate the second KAP study; that the results be cross checked with results of monthly RHM reports; and

2. That short term technical assistance be made available to the HEC to assist with designing, pretesting, implementing, and assessing evaluations.

4. Public Health Engineering

The project has satisfactorily carried out the public health engineering component. Not all the anticipated outputs were realized but the project has carried out some important activities that were not originally scheduled. Performance by all parties concerned (USAID, Government, Technical Assistance Contractor) is judged satisfactory despite some difficulties. The public health engineering advisor and the WASH consultants have earned the praise and respect of their Swazi colleagues.

Major accomplishments of this component are:

- Establishment of the public health engineering unit at the Rural Water Supply Board and training and assignment of counterparts (engineer and public health inspectors).
- Coordination with the Health Inspectorate.
- Heavy participation in the planning activities of the water and sanitation sector.
- Preparation of guidelines and standards.
- Special assistance during emergencies and direction of all activities of the unit.

Some problems or unfulfilled needs remain. The public health engineering unit needs a broader scope of action but does not have the authority to intervene in domains other than water supply. The public health engineering counterpart needs further training and a well defined workplan. The health inspectors of the unit need closer supervision and also a well defined workplan. The water quality laboratory technicians need further training. There is a shortage of trained public health engineering workers. Sectoral planning and coordination with other ministries are the areas most likely to suffer from the absence of the public health engineering advisor. Integration of the activities of various government agencies involved in the water and sanitation sector is not easily achieved, being subject to several constraints.

It is recommended to:

1. Set up a task force to define the scope of public health engineering in the Swazi context, including environmental control and the relationships among various government agencies concerned.
2. Define major water resource development projects and begin reviewing those most likely to have severe health impacts.
3. Provide training and technical assistance in the area of public health engineering.
4. Set up a task force to define manpower needs and training possibilities in the field of public health engineering.
5. Realize greater integration among the public health engineering, health inspectorate, epidemiological and health education units.
6. Alternatively to the task forces mentioned above, hire short-term consultants, or ask the NAG and TSG, to carry out the recommended work.

5. Planning for Development of the Water Supply and Sanitation Sector in Swaziland

With appreciable technical assistance from the Rural Water Borne Disease Control Project, the Technical Subgroup of the National Action Group has accomplished much in terms of planning the development of the water supply and sanitation sector. Several meetings and workshops have culminated in the preparation of policy and strategy documents as well as a two-year action plan. While the national policy awaits the approval of the government, a planning process has been established and the documents prepared will guide the harmonious development of the sector in the years ahead. A five-year action plan will follow the two-year plan. One merit of the plan is that it is an emanation of the activities of Swazi technicians. Minor reservations concern:

- the possible loss of momentum when the RWBDCP's technical assistance stops;
- community participation, effectiveness of health education and payment of recurrent costs by beneficiaries;

- a more active participation in the planning process by other donors and non-governmental organizations;
- required official support for government approval;
- a possible discrepancy between expected government contributions to the two-year plan and recent level of capital investment in the sector.

6. Constructing Small Rural Water Systems

It is estimated that the Rural Water Supply Board has completed 80 or 85 percent of the construction work funded under the project for 8 water supply systems throughout the country. It is well within RWSB's capabilities to do the remaining work by the 30 September deadline but there are roadblocks that must be removed: community participation for such work as trenching, government order books for the purchase of materials, transportation. It is up to the RWSB to determine how best to remove difficulties of a logistic nature. Coordination with the MOH's Health Inspectorate was not easy and here the two agencies are encouraged to determine how best to work together in the field as mandated under the national water and sanitation policy.

7. Construction of Rural Sanitation and Small Spring Protection Systems by the Health Inspectorate

At the start of the project, the Health Inspectorate/MOH was assisting communities to construct small spring protections and latrines, but productivity was low. The unit was staffed by three district health inspectors, two senior health assistants, and 30 health assistants (of 48 trained between 1975 and 1977). Morale was low as a result of a lack of opportunity for career advancement, insufficient budget, poor logistical support and inadequate supervision. Record-keeping was poor, but between 1980 and 1985 the rate of latrine construction steadily increased from 289 to 862 per year; this exceeds the 2000 demonstration latrines expected. Complaints were heard that pits dug in anticipation of assistance in constructing slabs remained uncovered and a hazard, because the Health Inspectorate could not respond adequately to requests for assistance, which was provided generally at the individual homestead.

The project and related ORT radio broadcasting have been quite successful, however, in stimulating latrine construction, especially since 1983. The need for improved performance in protection of small springs remains in spite of certain project inputs in this area.

8. Strengthening Coordination among Units and Programs Involved in Water and Sanitation

Increasingly since 1982, the Health Inspectorate and the Rural Water Supply Board have begun to work together in the water and sanitation sector. In the past, there had been little linkage. At the present time the two units have begun to meet monthly on a regional basis. The Technical Subgroup of the National Action Group's planning process is performing well in facilitating overall sectoral coordination. This has included coordination with all major donors to the sector. Current efforts are integrated in the draft two-year

action plan by the TSG for the sector. The RWSBDC project has helped create a climate of communication and coordination among related programs. More specifically, the evaluation finds that:

- The public health engineering advisor of the RWBDC project has been a major force in providing coordination at the operational level.
- The current climate of cooperation between the RWSB and the Health Inspectorate is cordial but not well institutionalized.
- The Health Inspectorate's current lack of a deputy health inspector and other weaknesses have slowed efforts at coordination.
- Staff shortages at the Health Education Centre, especially at the regional level, have hindered significant coordination efforts.
- The Bilharzia Control Unit and other Ministry of Health's vertical programs are not integrated into the coordination process.

It is recommended:

1. That USAID provide technical assistance to the RWSB at the senior level to continue the training of the public health engineer and to act in a coordinating role. This technical advisor should have the following background:

- . expertise in design and construction management of small water supply systems,
- . environmental engineering experience,
- . water quality surveillance experience.

2. That the regional senior health assistant and the CDO and/or COW of the RWSB do monthly site visits together to communities with water and sanitation projects.

3. That the Health Inspectorate and RWSB arrange short-term technical assistance to health assistants and inspectors, community development officers, clerks of works and inspectors of works on a regional level. This assistance would be focused on in-service management and communications workshops.

4. That the Technical Subgroup meet regularly on a bi-monthly basis and circulate minutes of these meetings to regional clerks of works and health inspectors, as well as senior health assistants.

5. That the RWSB call sectoral meetings every six months to review plans, activities, problems, and coordination and linkages.

9. Bilharzia Control and Epidemiology

The project has reasonably carried out its epidemiology program. This component's objectives were related mainly to the survey and control of schistosomiasis, and to the reinforcement of the Bilharzia Control Unit by the

installation of new laboratory facilities and training of staff of the unit. All the related recommendations of the mid-term evaluation were carried out and, by the time the epidemiology advisor left, most of the objectives were achieved. However, some constraints affect the performance of the Bilharzia Control Unit: limited personnel experience, unclear line of command, budget restrictions, and lack of transportation. Some technical assistance, staffing, personnel training, and equipment provision are recommended to alleviate these problems.

The project did survey bilharzia in Swaziland and found the disease prevalent in the northern Lowveld, particularly the Lomati River basin. A study initiated in 1984 to determine the effect of praziquantel on school children infected with bilharzia is on-going but data processing difficulties may affect the results.

Taking into consideration manpower and budget limitations, the epidemiologist advisor felt that (a) the proper bilharzia control strategy is to use chemotherapy on selected human hosts and (b) there is a need to evaluate BCU's activities for epidemiological effectiveness and management efficiency.

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ACRONYMS

AED	Academy for Educational Development
APHA	American Public Health Association
BCU	Bilharzia Control Unit
CIDA	Canadian International Development Agency
CTA	Central Transport Administration
CCCD	Combatting Childhood Communicable Disease
CSC	Council of Swaziland Churches
CDO	Community Development Officer
GOS	Government of Swaziland
HEU/C	Health Education Unit or Centre
IHS	Institute of Health Sciences
IVS	International Voluntary Services
KAP	Knowledge, Attitudes, Practices
MMCOM	Mass Media for Communications
MOH	Ministry of Health
MMHP	Mass Media for Health Practices
MONR	Ministry of Natural Resources
NAG	National Action Group
NGO	Non-governmental Organization
ODA	(British) Overseas Development Assistance
ORT	Oral Rehydration Technique
PHU	Public Health Unit
PID	Project Identification Document
PQLI	Physical Quality of Life Index
PVO	Private Voluntary Organization
RHDO	Regional Health Development Officer
RHM	Rural Health Motivator
RWBDCP	Rural Water Borne Disease Control Project
RWSB	Rural Water Supply Board
TSG	Technical Subgroup of NAG
UK	United Kingdom
UNDP	United Nations Development Programme
UNISWA	University of Swaziland
USAID	United States Agency for International Development
USCC	Unitarian Services Committee of Canada
WASH	Water and Sanitation for Health
WHO	World Health Organization

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**CHAPTER ONE
BACKGROUND**

CHAPTER 1 BACKGROUND

1.1 Purpose and Scope of the RWBDCP Final Evaluation

The final evaluation was built into the Rural Water-Borne Disease Control Project (RWBDCP) to assess progress since the mid-term evaluation conducted in November 1983. Generally, the purpose of the final evaluation is to provide a context for developing future USAID/Swaziland projects relating water and sanitation intervention to health. The specific, original terms of reference (see Appendix A) included evaluation of 11 project objectives and outputs; a review of project scope, appropriateness of implementation approaches and USAID support; and an assessment of remaining needs to achieve project and GOS goals through development of the water supply and sanitation sector.

Upon arrival in Swaziland, the evaluation team was asked by USAID to expand its scope of work to examine, as time allowed, four questions related to future funding of rural water supply, new construction and rehabilitation of existing systems. The response to these questions constitutes a separate report.

1.2 Evaluation Team Composition and Program

Comprised of three persons, a public health engineer acting also as team leader, a sanitarian, and a community development specialist, the evaluation team undertook a three-week study in Swaziland August 4 - 25. During this time, Mr. M. Dlamini, a Swazi public health engineer on the staff of the Rural Water Supply Board (RWSB), served as interpreter, facilitator, and discussant: he accompanied the team on ministerial and field visits, contributed to the collection and interpretation of data, and reviewed report drafts.

The team had received orientation in Washington, D.C. by meeting:

- July 25, Dr. Charles DeBose, regional health officer on leave from USAID/Swaziland;
- July 28, Robert Gearheart and David Yohalem of WASH consultants on Swaziland water decade planning which they recently facilitated;
- July 31, Dr. Allan M. Kulakow, contract director for the Academy for Educational Development (AED), prime technical assistance contractor to the USAID/Swaziland RWBDCP.

In Swaziland the team met initially with key USAID personnel: Mission Director Robert Huesmann, acting Health/Population/Nutrition officer Alan C. Foose, RWBDCP Manager Mary Pat Selvaggio, and Program Officer Allan Reed. The team also met frequently with AED's technical assistant to the RWBDCP, chief-of-party Dr. A.W. Hoadley, who served as a valuable information resource. Considerable documentation was made available for review both in Washington and Mbabane (see Appendix B for principal documents reviewed).

The evaluation team also acquainted itself with other USAID projects affecting the RWBDCP, in particular, Primary Health Care, Combatting Childhood Communicable Disease, and Development Communications. (See Appendix C for brief overview of each).

At the end of the first week in-country, after orientation with local staff, RWBDCP chief-of-party, and GPS participants at the ministry, the team began short field visits; these were expanded during the second week with tours of Project interventions in Swaziland: Lubombo, Hhohho, Manzini and Shiselweni, as shown on the accompanying map (See Appendix D for Program Calendar, which also contains the names of the officials met).

The project paper had mandated two Knowledge, Attitude and Practice (KAP) surveys: one at the project beginning (1981) to provide some baseline information on Swazi health behaviors, and a second toward the end of the project as a tool for measuring behavioral change. The second KAP study was not done, for reasons documented in Section 2.3.

Because of this omission, the team conducted an informal "pre" survey at 15 sites during its tour of all four regions. The sites were selected for their range of geography, water projects, sanitation interventions, community organization, and non U.S. donor influence. Field interviews included public health nurses, health inspectors, health assistants, educators and their assistants, Rural health motivators, RWSB community development officers, clerks of works, construction inspectors, technicians, and rural residents affected by the RWBDCP: grandmothers, mothers, children, and students (men being generally unavailable). (See Appendix E for list of officials contacted).

To assess possible future impacts of non-USAID and non-government organizations (NGO) interventions in the sector, the evaluation team interviewed representatives of British ODA, Netherlands AID, and selected other organizations, as well as consultants with experience with the NGOs.

Briefing meetings with USAID and later with MOH in 1986 whereby the evaluation team presented findings orally and in a preliminary draft. Oral and written reports were received by RWSB, and MOH by August 23 were incorporated into the final report presented August 25. (See Appendix F). The team's stay in Swaziland ended August 26, but the team's leader remained for 7 days to complete the final report and deliver it to USAID/Swaziland on September 2, 1986.

1.3 Socio-economic and Health Conditions in Swaziland

Swaziland covers 17,364 square kilometres, surrounded by South Africa except on the north-east where it has a common border with Mozambique. Swazis live in dispersed homesteads on 6 percent of the land area; another 50 percent of the country is used for communal grazing while the remainder, 44 percent is under freehold titles held by Swazis (17%), major companies (11%) and non-Swazis (16%). The communal grazing areas constitute the Swazi Nation Land. The country is divided into four ecological zones with varying climate, topography, and population density, from west to east: Highveld, Middleveld, Lowveld, and the Plateau. See Figure 1-1. Administratively there are four regions (called districts): Hhohho in the north west, Lubombo in the east, Manzini in the south and Manzini in the west. See Figure 1-2. Recently the government has mandated decentralization towards the regions but only the Ministry of Health has taken serious steps to implement it.

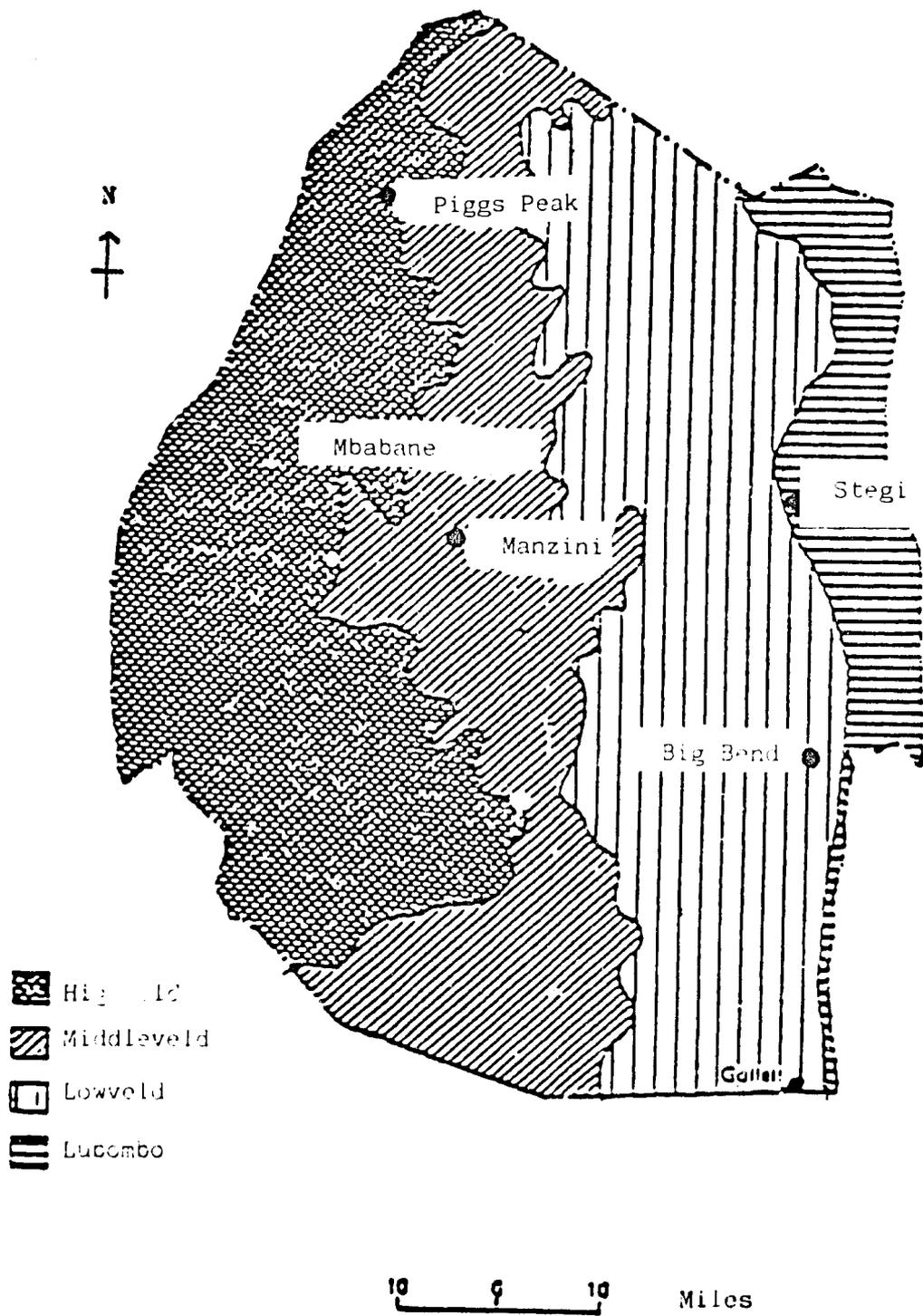


Figure 1-1
 Geophysical Areas of Swaziland

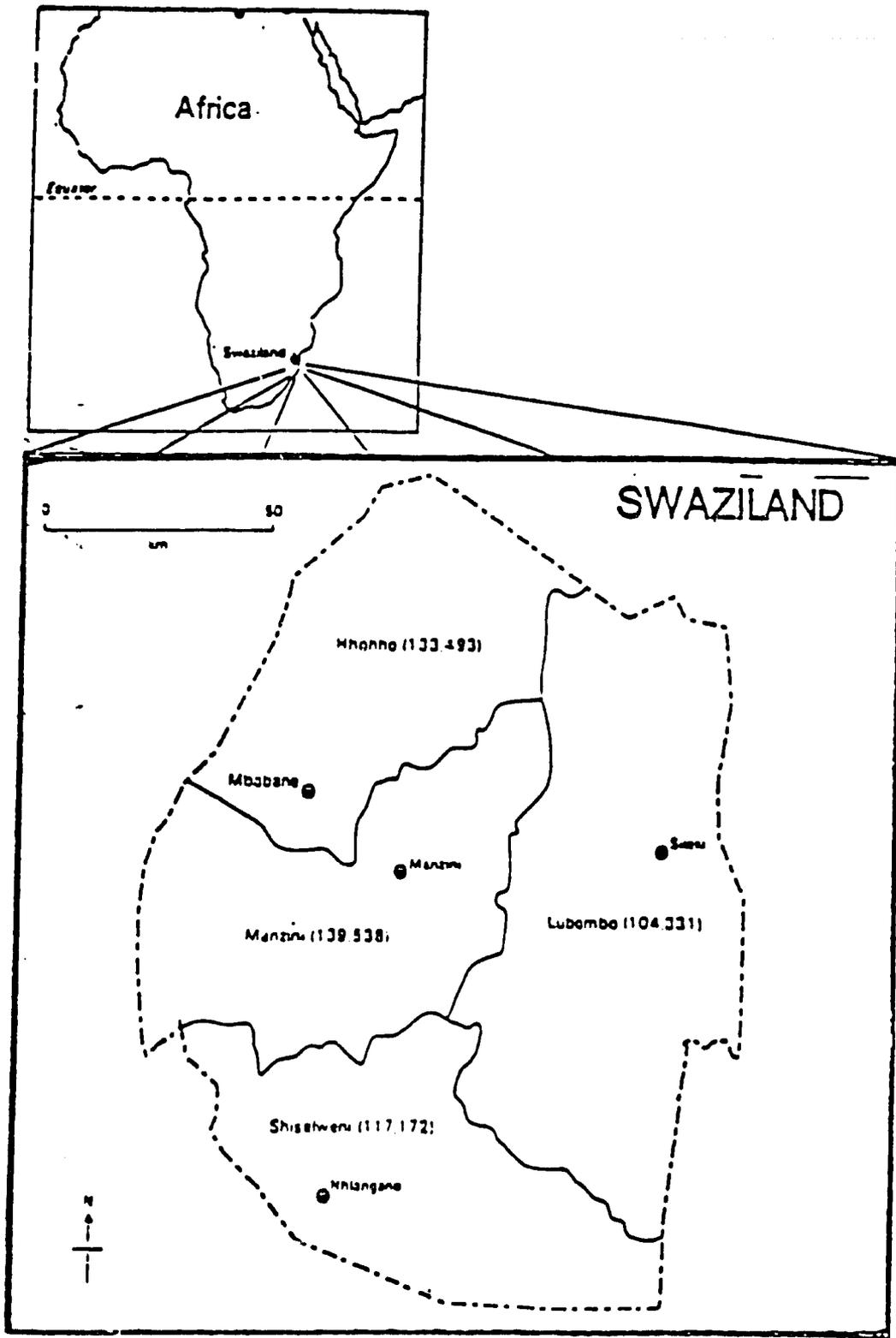


Figure 1-2
 Administrative Regions
 (with 1976 census population)

Population estimates for the country vary from 520,000 when the project paper was prepared to 605,000 in 1983. Projections of the Fourth National Development Plan show a variation from 650,000 in 1986 to 1,000,000 in 1996 and more than 1,400,000 in 2006. The resident population is mostly African with perhaps 2 percent Europeans and one percent of mixed origin. The overwhelming majority of the Africans are Swazis with a common language, tradition and history. Eighty-five percent of the population is rural, living in homesteads of about ten people each instead of the villages usually found in other African countries; the urban ratio is increasing and could reach 30 percent in 1991. The two largest towns are Mbabane (the capital) and Manzini.

Some characteristics of this population include a national female to male ratio of 1.13:1 but, because of migration to urban areas, the ratio for the rural population is 1.55:1 and may exceed 2:1 in certain areas. Forty-eight percent of the rural population is younger than 15 years and only 4 percent is older than 64. Approximately one fourth of the African resident population has at least five years of primary school education. The per capita GNP was \$550 in 1977 and \$825 in 1981, from three predominant sectors: agriculture and forestry (26%), manufacturing (22%) and government services (17%). Because of currency fluctuations, the current GNP may not show the same growth rate.

When the project was first proposed in the late 1970's, Swaziland had a lower PQLI than the average of the 49 lowest income countries while its per capita GNP and literacy rate exceeded those of the next higher income group, the lower middle income countries. (PQLI= physical quality of life index of the Overseas Development Council). The country fared poorly with respect to parameters such as life expectancy and infant mortality.

A recent assessment of the situation does not suggest a considerable improvement. In 1985, diarrhoeal diseases represented 12 percent of the 785,000 notifiable disease cases reported; two thirds of the diarrhoeal disease cases affected children under five years. Currently the infant mortality rate (deaths before the age of one year) is estimated to be 105 or 150 per 1000 live births depending on the source (National Water Supply and Sanitation Policy or National Health Policy). "Important causes of death among children are diarrhoea, infectious diseases and malnutrition, which is in turn associated with high incidence of diarrhoea and infectious diseases. These in large measure result from insufficient quality and quantity of water, faecal contamination of the environment, poor hygiene and the lack of understanding of the relationship of these factors to disease". (National Water Supply and Sanitation Policy, revised draft, 10 July 1986).

Several conditions were considered or assumed in the design of the project, leading to a strategy for the control of water-related diseases.

1. High morbidity and mortality rates resulting from poor water quality and environmental sanitation: gastroenteritis, schistosomiasis, water-related microbial infections.
2. Benefits of other investments in rural water systems can be easily enhanced, without large new funding (by adding sanitation and health education).
3. The rapid expansion of agricultural water resources without adequate environmental measures creates new health risks.

4. There is no need for additional intervention in rural water supply as three government institutions provide piped water systems that are expected to reach 50 percent of the rural population in 1985 and virtually all by 1990 (with international assistance from the United Kingdom, Canada, United Nations, African Development Bank).
5. "In general there is an urgent need to orientate priorities for development in the health area away from conventional institutional facilities centered in urban areas to those in the rural areas. Health education activities are not well organized within the Ministry of Health and not coordinated with other agencies. Field workers responsible for health education which would affect water-related diseases are too busy, poorly supervised or not given the adequate back-up support to make them really effective. There is recognition that different kinds of programs are needed which are cheaper, more simplified and closely geared to the preventive aspects of rural health in order that greater results may be attained in attempts to solve the health problems of the rural population at large."
6. "Health education, sanitary waste disposal and special schistosomiasis interventions are the most critical missing elements in a comprehensive approach to interrupting the transmission cycles of water-related diseases in Swaziland."
7. Health improvements will result from the following behavioral changes or practices that will be fostered by the project and measured by two surveys:
 - use of improved pit latrines,
 - ongoing protection of water sources,
 - maintenance of piped water supply systems,
 - avoidance of snail-infested water during peak transmission times,
 - proper handling and storage of water,
 - personal hygiene,
 - food handling and washing.
8. Health improvement through better use and control of water and sanitation is linked to expanding the capacity of the Government of Swaziland to deliver effective preventive health services to combat related diseases.
9. "Given the appropriate information and proper motivation, there are no cultural factors beyond the scope of the project that will inhibit rural people from using improved water use and sanitary practices."
10. "The GOS will continue its rural water supply program to complement the activities of this project in order to reinforce the water component of the health education program."
11. "The GOS will continue to support the health assistant and rural home visitor training programs at levels sufficient to operate an effective health education and sanitation program."

Were these assumptions valid? To what extent has the project contributed to an improvement of the situation?

1.4 Overview of the Project

The project started in November 1980 with an estimated completion date of 30 November 1985. The completion date has been extended to 30 September 1986.

1.4.1 Purpose

As stated in the project paper, the immediate goal of the project was to improve the water/use control and sanitation habits of the rural population of Swaziland: 40 percent of households in project areas by 1985 and 75 percent by 1990. It was determined that this goal could be reached by expanding the capacity of the Government of Swaziland to deliver effective preventive health services to combat diseases related to water and poor sanitation.

1.4.2 Expected Results and Outputs

This goal would be reached if the following results were obtained by the end of the project:

- . Ministry of Health's environmental sanitation and health education units staffed with trained personnel, equipped and functioning;
- . Eighty percent of health assistants actively involved;
- . Sixty percent of rural population receiving health and water messages;
- . Health criteria incorporated into the design and water systems;
- . Project-trained Swazi engineer serving as advisor to Rural Water Supply Board;
- . Results of schistosomiasis survey being used in setting priorities.

The project was to include four main components (health education, public health engineering, sanitation and epidemiology), which would produce the following outputs.

Health Education

- Carry out and interpret survey on knowledge, attitudes and practices (KAP) during first two years.
- Use results of KAP survey to design health education and sanitation programs.
- Develop a national health education strategy and plan based partly on KAP survey.
- Train in an African institution (e.g. Ibadan):
 - . one MS in health education;
 - . one nurse to the level of diploma in health education;
 - . one graphic artist, short-term.

- Train in-service community health workers:
 - . 230 rural health visitors (one week/year each);
 - . 42 health assistants (initially 2 weeks, later 1 week/year);
 - . 40 domestic science demonstrators (one week/year each).

Public Health Engineering

- Review all designs of water works planned for potential health implications and suggest changes to mitigate impacts.
- Train a Swazi engineer in the U.S. (BS or MS) and provide him with on-the-job training for 2 years.

Sanitation

- Site, design and construct 2000 demonstration pit latrines.
- Train 42 health assistants in supervising the above and in communication skills and community motivation.
- Select and train 200 community sanitation committees of 2-3 people to supervise and monitor further latrine construction (after the demonstration phase) under the guidance of the health assistants.
- Propose a series of basic pit latrine designs after an investigation of alternatives.
- Develop selection criteria for the homesteads to receive demonstration pit latrines.

Schistosomiasis Survey (Epidemiology)

- Train the members of the survey and analysis staff on the job and conduct a national survey of schistosomiasis prevalence during the first 3 years.
- Expand and equip laboratory and office.
- Ministry of Health will have a sampling framework.
- Use results to determine priorities in program.

1.4.3 Technical Assistance

Among the inputs required to obtain these results, USAID was to provide 212 man-months of technical assistance: 204 man-months of long-term advisors and 8 man-months of short-term advisors. Appendix G is a summary of the scopes of work of the long term advisors: health educators, public health engineer, social scientist, sanitarian, epidemiologist. The health educator was designated as the leader of the technical assistance team.

1.4.4 Mid-Term Evaluation and Modifications

A mid-term evaluation of the project was conducted in November 1983 by a team recruited by WASH. The executive summary of its report is in Appendix H.

Several modifications of the scope of work occurred along the way. Two major ones are the assistance to the government in carrying out sectoral planning activities and the addition of water supply system construction in the last six months.

1.5 Current Institutional Framework

The Rural Water Borne Disease Control Project has operated primarily within the jurisdiction of two ministries, the Ministry of Health and the Ministry of Natural Resources. Both have undergone changes since the mid-term evaluation at the end of 1983.

The Ministry of Health is responding to the Government of Swaziland's policy of decentralization, and is stressing activities centered in its Regional Health Management Teams involving heads of each program unit in the region. It is currently taking steps to strengthen the health care planning and delivery process at the local level. Figure 1-3 shows the revised organization chart of the ministry.

The Ministry of Health has set up a decentralization task force composed of the following MOH personnel:

- Under Secretary
- Health Planner
- Deputy Director of Health Services
- Chief Nursing officer
- Representatives from each of the four regions.

One of the goals of decentralization is to de-emphasize the control aspects of the Ministry of Health, and emphasize support activities and program development targetted toward the field.

The Rural Water Borne Disease Control Project has dealt with four main units in the MOH:

- the Health Inspectorate Unit,
- the Health Education Centre,
- the Bilharzia Control Unit, one of the MOH's vertical* programs,
- the Public Health Unit.

* Non-regionalized programs with only central facilities (e.g. control of malaria, schistosomiasis and tuberculosis).

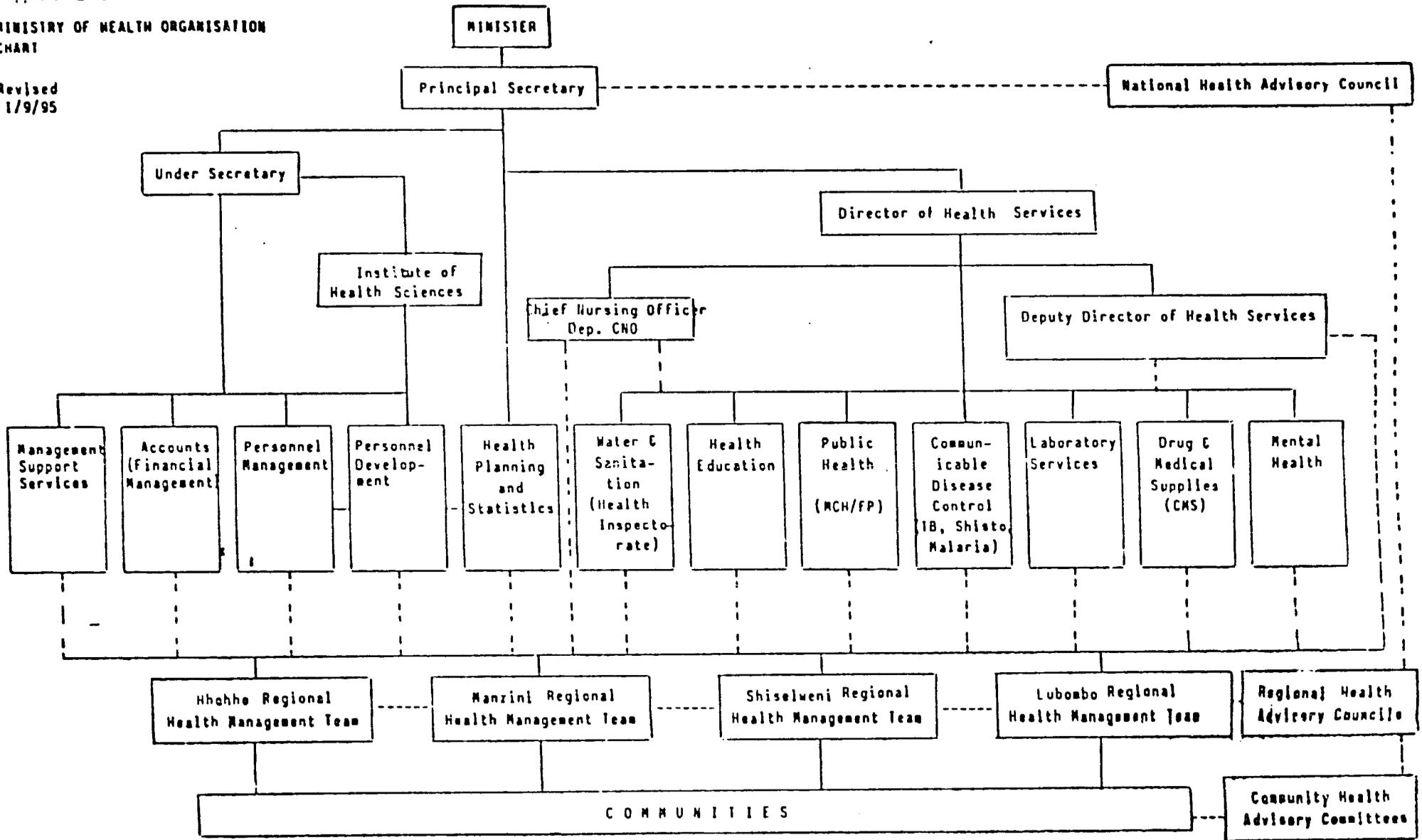
The senior health inspector of the Health Inspectorate Unit provides supervision to both the health inspectors and health assistants, who have direct regional responsibility for field programs. As such, the inspectorate was involved in the health education efforts of the RWBDC Project. In addition, the Health Inspectorate has general responsibility for programs in the water and sanitation sector. The Health Inspectorate Unit is also linked to the project by its responsibility for water supply protection, general sanitation, bilharzia control, and its technical assistance responsibilities to rural health motivators.

The Health Education Centre, established in 1977 but expanded by the project, was the prime health education vehicle in water and sanitation, and the main focus of much of its activity. It is charged with all program

Figure 1-3

MINISTRY OF HEALTH ORGANISATION CHART

Revised 1/9/95



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development in health education in the MOH, liaison with other health education organizations, and technical assistance and training to regional health workers, both government and private.

The Bilharzia Control Unit served as the main venue for the epidemiological activities of the project.

In addition, the Public Health Unit was also linked to the project through the first Mass Media for Health Practices campaign in 1982, and through its management of the second campaign in 1983.

Another main focus of the project's activity has been in the Rural Water Supply Board, which was under the Ministry of Works, Power, and Communication when the project began, but is now under the newly created Ministry of Natural Resources, Land Utilization, and Energy. The public health engineering advisor of the project has been directly linked to the RWSB throughout the second half of the project, and has worked with a counterpart assigned to the board. The linkages with the RWSB have been especially strong since March of 1986, when money was allocated through the project to construct 8 water systems. An organization chart of the RWSB is found in section 5.2 of this report.

Other ministries have had an impact on the project's functionings as well. The Department of Establishments and Training reviews all posts within the government; the Finance Section reviews and approves all budgets; and the Ministry of Tinkhundla, or Community Development, will be increasingly active as decentralization focuses more and more activity at the local level.

In addition, other non-U.S. donors have contributed to the water and sanitation sphere in Swaziland, among them Canadian International Development Agency, the United Nations Development Program, the UK's Overseas Development Authority, and the European Economic Community.

One of the primary activities of the project was planning support given to the National Action Group (NAG). Supported in part by project funds, WASH consultants have assisted NAG in carrying out sectoral planning activities in concert with the International Drinking Water Supply and Sanitation Decade. NAG includes the following members: Ministries of Health (MOH), Natural Resources (MONR), Agriculture and Cooperatives (MOAC), Education, Finance, Industry, Establishments and Training, Labor. The UNDP participates also in NAG's activities. NAG's Technical Subgroup (TSG) is made up of representatives of:

- Land Use Planning (MOAC),
- Water Resources Branch (MONR),
- Rural Water Supply Board (MONR).
- Mbabane Town Council,
- Manzini Town Council,
- Townships Engineer (Office of Prime Minister),
- Water and Sewerage Board (MONR),
- Health Inspectorate (MOH),
- Emanti Esive for all NGO's,
- Housing Branch (MONR),
- Ministry of Agriculture,
- Ministry of Education,
- Department of Economic Planning.

**SWAZILAND RURAL WATER BORNE DISEASE CONTROL PROJECT
FINAL EVALUATION REPORT**

**Prepared by the Pragma Corporation
for the USAID Mission to the Kingdom of Swaziland**

**CHAPTER TWO
HEALTH EDUCATION, COMMUNITY PARTICIPATION,
AND SANITATION**

CHAPTER 2 HEALTH EDUCATION, COMMUNITY PARTICIPATION, AND SANITATION

2.1 The Health Education Centre: Contributions to Health Education and Community Participation in Water and Sanitation Issues

2.1.1 Overview

Because the Health Education Unit, later named the Health Education Centre, was the primary focus for the health education and community participation components of the RWBDC Project, its inputs, outputs, and outlook are addressed in this section.

Conclusions

1. That the main vehicle for health education under the RWBDC Project, the Health Education Centre (HEC), has survived some leadership and directional challenges and has contributed to the implementation of health education programs in rural areas.
2. That the HEC still needs evaluation assistance to be an effective promoter of community involvement and to respond to the Ministry of Health's mandate to provide effective preventative medicine.
3. That the HEC has contributed to the process of disseminating information about the relationship of water and sanitation to health, but that that information transfer is a faster process than behavioral change.

Recommendations

That the Health Education Centre continue to be strengthened in four areas:

Evaluative capacity

Staffing

Coordination of its activities with other government units and non-government organizations involved in health education, and Materials budget support.

2.1.2 Anticipated Results and Project Performance

The project paper listed as a main goal that 60% of the rural population would be getting appropriate health messages, and that 40% of that population would be "practicing way to obtain, store, handle, and use safe water...." by the end of the project. The HEC was to achieve these goals by planning and implementing health education programs at the regional level.

As a result of the "Ayihlome MaSwati" Radio Campaigns, the efforts of health assistants, rural health motivators, public health nurses, and other community development workers, health messages have increased dramatically in rural areas in the last 5½ years. Though no specific field study of the RWBDC Project has been done to give statistical proof of this contention, an

evaluation of the MMHP campaign suggests that at least 60% of rural Swazis were exposed to the radio campaign messages, and the flyers that accompanied the campaign. Evidence from field interviews with health assistants, public health nurses, one rural health motivator, and nearly 50 Swazi women and children confirms that the connection between clean water, improved sanitation practices, and health is now well understood and accepted in the rural areas.

Although many projects with similar goals were operative during the life of the RWBDC Project, the project can take credit for some of this change, particularly through

- . the Mass Media for Health Practices campaign whose planning started in February 1983;
- . the health education efforts of the Bilharzia Control Unit;
- . the Health Education Centre workshops for rural health motivators, health extension workers, trainers in health education, health assistants, and traditional healers;
- . Health Education Centre posters and flyers.

The construction of the HEC was completed by March 1981. Equipping the facility was officially approved in January 1985. An on-site visit to the HEC in August of 1986 by the evaluation team showed that the facility was well equipped, in need of expanded storage facilities for education materials produced, but basically adequate.

Participant training for both the senior health education officer of the HEC and the graphic artist was accomplished. Because the health educators were already trained at the diploma level, no need to carry out the further training mandated in the project paper existed.

Charts on the specific outputs of the HEC from the mid-term evaluation to the present are on Tables 2-1 and 2-2.

2.1.3 Appropriateness of Scope and Approaches

Because the HEC had been in existence as a part of the Public Health Unit since 1977 under the direction of a WHO health education advisor, its focus on maternal/child health issues and all facets of health education was already established when the RWBDC Project began in 1981. The water and sanitation emphasis was thus a more specific direction for the unit.

The RWBDC Project funded a separate structure for the building, but the WHO advisor continued his role as director of the unit after the arrival of the first health educator and chief of party in November 1980. The conflict of the leadership of the HEC that resulted, as well as other factors documented in the WASH mid-term report, resulted in the health educator's departure, and an 8-month period during which the post was vacant before the arrival of the new project health educator. By this time the project team leadership shifted from the health educator to the public health engineer. The question of who was in charge and directing the focus of the HEC remained unclear until April 1984 when the MOH determined that the WHO advisor would remain as head of the unit through December of 1985. At the time of the final evaluation in August 1986, the WHO advisor was still at

Subject	Distribution/target audience	Use	Cooperating Agency
Ayihlome Maswati poster	through rural clinics	at rural clinic health talks	BCU PH Unit
Dangers of bottle feeding poster	clinics	health education talks	PH Unit
Schistosomiasis poster and guide	schools	school health teams and teachers	BCU PH Unit
Leaflets on Ayihlome Maswati Campaign	teachers, extension workers	Education in rural Communities	Health Inspec. PH Unit
4 Visual handouts ORS safe water, breastfeeding, latrine construction and use	200,000 copies to rural homesteads through clinics, teachers, extension workers, RWSB field staff		Health Inspec. Inspec. PH Unit
Manual for Acute Diarrhoea in Swaziland	Health workers	training in MMHP	
Learning module and workbook (final product ready to be printed) on diarrhoea prevention	adult literacy classes in rural areas		Sebenta
Rural Health Manual	RH Motivators	training and reference manual	USAID consultant PH Unit and others
Latrine Construction Manual	Health Assistants Extension agents		PH Unit (Health Inspectorate)
Environmental disease	Primary school students	Part of primary school curriculum	MOE, Public Health Unit

TABLE 2-1: HEALTH EDUCATION MATERIALS OUTPUTS

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<u>Target group</u>	<u>Date of Workshop</u>	<u>Specific topics covered</u>	<u>Length of Workshop</u>	<u>Number trained</u>
Rural Health Motivators	May '84	Solving water and Sanitation problems	1 day	60
Health Extension Workers	June-July 1984	Primary Health Community involvement	4 days (4 sessions held)	120
Trainers from MOH, MOA, Sebenta, Red Cross, Family Life Ass. Central Coop. Union	Dec 1984	Training skills	5 days	20
Health Assistants Domestic Sci. Demoa- strators Rural Health Motivators	Through- out life MMHP Proj.	Oral Rehydration <u>Therapy</u> Teaching mothers to recognize and prevent dehydration		257
Traditional healers	1983	Exploration of involving trad. healers in CRT, diarrhoeal disease	1 day (3 held)	
Traditional healers and other health	June 1984	Immunisable disease; malaria	5 days	
Traditional healers (Hhohho)	Oct. 1984			
Rural Health Motivators More current utputs to follow	Spring 1986	12 week course in health education topics such as:	12 weeks in each region	
Community Participation Workshop	Jan 1986	Community development topics	10 days	20

TABLE 2-2: WORKSHOP OUTPUTS

the HEC post as resident advisor. The senior health education officer of the HEC returned from studies in the USA in September of 1984 and officially assumed the duties of heading the unit.

In addition the project provided the services of a social scientist who worked with the unit from February of 1981 to September of 1983, and funded two experienced interviewers to assist with evaluation at the local level. Project outputs and targets during the life of the project were defined as:

- Constructing a separate HEC building and providing necessary equipment;
- Establishment and filling 4 regional health educator slots, and providing appropriate training;
- Participant training: at the Bachelor's level for the senior health education officer of the HEC; at the diploma level for a health educator; and training for the graphic artist;
- Development of a strategy using the KAP study results, and a national health education plan;
- The development of a strategy for MMCOM and the implementation of that strategy into a campaign;
- Developing health education materials; and
- Training traditional healers in diarrheal disease control.

To these ends, the project also funded a materials budget for the unit.

These activities were to have had the following results by project end:

- 60% of the rural population would be receiving relevant health and water education information;
- HEC could assess information on health practices from communities and design the programs to respond to that information;
- HEC staff would be capable of evaluating programs and their success in the field.

The project was also mandated to design and implement a second knowledge, attitudes and practices study during year 5 of the project. Using the first KAP study as a baseline, the data was to measure the level of behavioral change that the project was responsible for, and serve as a basis for future health education planning.

The unit's conceptual framework, as defined by the project paper, was a valid one. The HEC was to prepare and produce media materials for health education, provide in-service training to health personnel through workshops and linkages to the Institute of Health Sciences, and thus respond to the need to give community workers stronger training in community skills as well as health education skills.

The HEC was thus to be the prime focus of the project's activity in health education and community development. This made some assumptions, however, that did not turn out to be true:

- (a) that the existing structure of the HEC could be easily refocused primarily on water and sanitation issues;
- (b) that the WHO Advisor would be leaving soon after the arrival of the RWBDC project health educator;
- (c) that the Ministry of Health could establish and fill the four regional health educator positions;
- (d) that there would be enough overlap between the health educator's departure and the senior health education officer's return from studies in the States to transfer planning and evaluation skills to her upon her return; and
- (e) that the MOH would provide more guidance and direction to the unit, would support planning activities, and would help control and manage HEC resources.

Despite these obstacles, however, the HEC has had success especially in the area of training district health workers. Workshops have been held for traditional healers, rural health motivators, health assistants, and domestic science demonstrators. (see chart). In addition, a system was set up to coordinate the various training programs of many health projects (IHS, CCCD, MMHP), and courses for newly recruited rural health motivators have been designed and implemented.

2.1.4 The Issue of Community Participation

One assumption that was implied in the project paper was that the promise of improved health standards in a community would be an adequate incentive for community participation in the system. Factors other than health issues often motivate a community to participate in the building of a system. For example,

- ° at Embekelweni (Manzini Region), which currently lacks a health assistant, one of the primary motivating forces for community participation in the system was convenience, according to the RWSB CDO. Untreated water is now collected from a river far from the center of the resettled community, and interviews with school children and women confirmed that they had supported the system's construction because it would make the water source closer.
- ° at Duze (Lubombo Region) the unsafe water source was not only far away from the majority of the homesteads, but very scarce during the dry season. Rural health motivators active in the area had begun the process of health education, but the headmistress of the primary school stated that seasonal lack of water and distance from the source were probably the community's main incentives for participation in the building of the system.

The site visits also have revealed that it takes a particularly skilled, imaginative, and committed health assistant to motivate a community to participate in the building of latrines and assisting with water systems.

However, the project's activities within the Health Education Centre have fostered community participation. Among these:

- the Mass Media for Health Practices campaign of radio programs and its accompanying "Ayihlome MaSwati" poster, with its 60 percent listenership among rural Swazis;
- the activities of the project's social scientist, whose studies on leadership, community structure, and attitudes toward health and illness have provided vital information on understanding rural Swazi communities;
- the 12-week training offered to newly recruited rural health motivators in all four regions of the country; and
- the community participation workshop, which emphasized community problem solving, developing workplans, and health education.

The health incentive is by no means an automatic one, but we saw evidence of it at Maqhobeni (Shiselweni Region) and Siphocosini (Hhohho) in both latrine and spring protection systems.

Community participation has to be a vital component of one of the Ministry of Health's primary aims - to emphasize the preventive rather than curative side of medicine.

If the Health Education Centre is to support community development fully, its evaluative capacity must be expanded. One of the greatest impacts of the lack of acceptance of the RWSBDC project's health educator's role as leading the center was that he could not institutionalize planning and evaluation techniques. Without careful feedback from the regions on what education techniques work and what do not, it is not possible to plan health education courses and materials that would mobilize communities. This argues for the filling of the established but vacant regional health educator posts. Without a continuing presence at the regional level, the efforts of the HEC to respond to its goal of developing specific health education programs targetted to the community level cannot be met. And it argues for the establishment of two permanent positions for the experienced interviewers now funded by the RWBDC project. Their skills in collecting field data will provide the necessary basis for evaluation.

2.1.5 Outlook

Before the project health educator's departure in January of 1985, he listed several guidelines for strengthening the HEC. He wrote that in order to fulfill the MOH's priorities for promoting community involvement and self-sufficiency, the following steps must be taken:

- (a) establish a system to determine needs for rural health education programs by meeting with a range of health workers involved at the local level, and by reviewing evaluations of previous health education efforts;
- (b) determine precisely what resources are available to the HEC by a close examination of the budget, the existing equipment and materials, and other health budgets outside the HEC that could overlap with its activities;

- (c) plan rural health education programs to promote MOH health objectives and promote self-sufficiency and community development, both for the short- and long-term. This planning should involve:
 - . reviewing previous activities of the HEC,
 - . specifying the specific behavioral change to be targeted by a specific health education activity,
 - . formulating a yearly workplan, and
 - . revising the 5-year workplan if necessary;
- (d) assign specific duties agreed on in the plan to specific HEC personnel;
- (e) evaluate health education programs by methods such as:
 - . testing transfer of knowledge to workshop participants,
 - . measuring the extent to which workshop skills are being used in the field,
 - . performing quick sample surveys within the community to measure specific program results;
- (f) coordinate all health education efforts in the MOH and other ministries and non-governmental organizations.
(See Appendix I for the full text of these "Guidelines")

As of the August 1986 evaluation, work had been done on some of these tasks. Monthly planning meetings are held at the HEC, and the senior health education officer is actively involved in the monthly Health Development Team meetings formulated to coordinate the health education activities of many units.

Many of the proposed guidelines are not applicable because of current vacancies in established posts. The vacancy of the regional health educator post means that the existing three regional posts cover two regions each - one Manzini and Lubombo, one Shiselweni and Hhohho and one nutrition issues countrywide. Because of the responsibilities within the HEC itself, the three regional health educators reside in Mbabane. With transport problems as well as duties within the central unit, their ability to be effective forces at the regional level is greatly diminished.

The general lack of personnel in the unit itself has frustrated long-range planning and evaluation efforts. This situation might be rectified by the establishment of a communications officer post. The Ministry of Health should also consider returning two health educators who were seconded to the Public Health Unit during the MMHP campaign back to the Health Education Centre. The planning and evaluative capacities of the HEC have been the greatest casualty of the leadership problems caused by the project's first health educator's departure, the 8-month vacancy of the project health educator at the HEC, and the conflict of leadership that resulted from the WHO advisor's official advisory position within the unit. This situation can be rectified by short-term technical assistance to the health education director in planning and evaluation skills primarily:

Short-term technical assistance - 1 advisor for 3 months assigned
in evaluation methodology to HEC
February - May 1987

The HEC should also be able to draw upon the evaluation capacity of the MOH Statistics Unit. Suggestions for technical assistance to that unit appear in Section 3.5 of the evaluation. And, the unit should continue its efforts to work with the Social Science Research Unit at UNISWA to assist with the collection and evaluation of data from the field.

2.2 Strengthening Management in the Health Inspectorate

2.2.1 Overview

The RWBDCP contributed substantially to the institutionalization of pit-latrines construction within the Health Inspectorate/MOH under the guidance and systems developed by the sanitarian during 1981-1984. Although not a management specialist, the advisor had instituted materials reporting procedures in the Health Inspectorate prior to the mid-term evaluation and RWBDCP-sponsored WASH consultancy by Phillips (September-October 1983). The sanitarian also contributed to Health Inspectorate management directly in handling materials logistics and indirectly through his training and supervisory role in community organization and participation. His main function, however, was to transfer a latrine-construction technology appropriate to the country.

The Health Inspectorate's ability to sustain latrine construction at the community level is evident from reported latrine completions (Section 5.3) up through the first six months of 1986. Severe constraints, however, continue to plague the functioning of the Health Inspectorate both at headquarters and at the grass-roots level in the four regions. These are, primarily:

1. The shortage of management personnel and information-processing capability at inspectorate headquarters in the MOH, Mbabane;
2. The deteriorating vehicle stock both at headquarters and in the regions;
3. Partly due to (1) and (2), inadequate supervision of rural field workers (health assistants) responsible for implementing project objectives;
4. Insufficient number of adequately-trained health assistants in the field;
5. Related to all of the above, lack of evaluation programs to measure the effectiveness of field efforts in health education, technology transfer, and community mobilization.

These constraints can be removed by a series of personnel actions:

1. Activate the Health Inspectorate task force as recommended in the WASH report (No. 108, April 1984), Strengthening the Management of the Public Health Inspectorate of Swaziland to review that report and implement recommendations approved by the MOH.

2. Work with the Department of Establishments and Training to approve the redefined posts submitted November 1984 (see Appendix J), especially for proposed regional health inspectors.
3. Establish and fill the post of deputy senior health inspector.
4. Establish a regional reporting system for the Health Inspectorate in line with MOH decentralization efforts.
5. Provide a series of management training workshops for the new deputy senior health inspector and regional health inspectors in the areas of supervision, human resources training, and development communications.
6. Increase the number of health assistants from 29 to 90 over a five-year period by instituting a theoretical and in-service training period in connection with the IHS.
7. Provide a substantial health education component in the curriculum for new health assistant trainees at the IHS, beyond the 30 hours proposed by a WHO consultant in August 1985.
8. Provide a series of regional short-term workshops for existing health assistants to upgrade skills in health education and development communications follow-up.

2.2.2 Anticipated Results

The project aimed at:

1. institutionalizing capacity at the community level to sustain rural sanitation programs; specifically in the areas of:
 - . community mobilization for planning, construction, operation and maintenance of sanitation improvements;
 - . transfer of technical skills in latrine construction;
2. training 42 health assistants in the siting and construction of improved pit latrines; and in communication and motivation skills;
3. actively involving 80% of sanitation field workers, primarily health assistants, in motivation, supervision, and training of rural people in the construction, maintenance, and utilization of improved pit latrines;
4. selecting 200 community sanitation committees, to serve as on-going resource people for the sanitation program. According to later modification, these committees were to have an expanded function to include safe water supply.

2.2.3 Project Achievements since Mid-Term Evaluation

Table 2-3 indicates that the Health Inspectorate as a whole has grown in size from a staff (not including the senior health inspector (Sr.H.I.), head of the unit) of 42 to 52 from November 1984 to the present. The growth is due to an increase of 10 health inspectors (HI), who are trained three years

at the IHS and serve primarily in non-rural communities (see Table 2-4). The MOH expects to hire an additional eight or nine health inspectors during 1986. No long-term training of new health assistants has occurred since 1977, but the Director of Medical Services/MOH hopes to begin a training program for 15 health assistants/year in October 1987.

Table 2-3

STAFF OF HEALTH INSPECTORATE, MOH
(not including those in vertical programs)

[Source: Health inspector of public health engineering unit at MOH and RWSB]

	November 1984				August 1, 1986					
	Dep		Sr		Dep		Sr			
	Sr	HI	HI	HA	HA	Sr	HI	HI	HA	HA
Health Inspectorate, Mbabane	1	-	1	-	0	-	-	-	-	-
PHE Unit, RWSB, Mbabane							1*			
Hhohho Region			2	1	8		2	1	8	
Manzini Region			2	1	6		5	1	8	
Lubombo Region			2	1	6		6	1	5	
Shiselweni Region			3	1	7		5	1	8	
TOTALS, Category	1	9	5	27	0	19	4	29		
TOTAL UNIT				42					52	

[* Does not include HI on study leave]

The critical point to observe in the table is the loss of two support employees at headquarters in Mbabane, notably the deputy senior health inspector (Dep Sr HI), a South African who unofficially served in the unestablished deputy post from early 1984 to March 1986, when he returned to his country. This left the senior health inspector with an unmanageable administrative burden, although assisted in record-keeping by the health assistant assigned to the public health engineering unit at RWSB.

Although the MOH put into place regional health administrators July 1, 1986 -- in its effort to decentralize health services management through regional health teams -- these new posts are not yet paralleled by regional health inspectors. That post, along with the deputy senior health inspector (still vacant) has been awaiting approval since November 1986 by the Department of Establishments and Training. (See Appendix N for Health Inspectorate Job Descriptions, Actual and Pending).

Table 2-4

REGIONAL COVERAGE BY HEALTH INSPECTORS, AUGUST 1986
(not including vertical program assignments)

Region	Locations		
<u>Hhohho</u> (2)	Piggs Peak		
<u>Manzini</u> (5)	Manzini Mankayane	Matsapha Mahlangatsha	Mhlambanyatsi
<u>Lubombo</u> (6)	Vuvulane Lubuli	Siteki Sub-District Sithobela	Siteki Siphofaneni
<u>Shiselweni</u> (5)	Hluthi Nhlangano Town	Lavumisa Nhlangano	Hlathikulu

Training of health assistants during the first three years of the project was conducted primarily on the job by the sanitarian technical advisor. In its latter years especially, the project attempted to address more fully the issue of management training in the Health Inspectorate. Specific outputs included:

- a workshop on management and supervision in Tanzania attended by the senior health inspector;
- appointment of the deputy senior health inspector in 1984;
- workshop training on management and supervision of health inspectors and senior health assistants with follow-up workshop in collaboration with the Department of Extra-Mural Studies of the University of Swaziland;
- two one-week workshops on community participation conducted by the Health Education Centre in 1984 for health assistants and others;
- two one-week workshops on community participation conducted in early 1986 by WASH consultants;
- two-week workshops on small spring protection conducted by the RWSB, plus training on the job to health assistants protecting springs; some supervisory skills were imparted.

The issue of training new health assistants, as the Fourth National Development Plan called for an additional 53 by 1988, has remained unresolved since 1983; in that year the "Health Manpower Needs Assessment" led to a MOH decision to begin training approximately 17 health assistants per year during the plan period. In 1985 a WHO consultant (see reference, J.B. Sibiyi) prepared a proposal for training health assistants in a two-year program at the rate of 20 per year. The proposal was not fully thought out, both in terms of appropriateness and curriculum content and in the matter of which institutions would support its execution (see references Alt

and Mtetwa). No concrete plan with assured budgetary support for such a training program is in place at this time; and further technical assistance is required to develop a suitable, practical program.

2.2.4 Conclusions and Recommendations

Conclusions

At the time of the mid-term project evaluation, the project-sponsored WASH consultancy (Phillips) to study the strengthening of Health Inspectorate management had just been undertaken (September and October 1983) and its findings were not published until April, 1984. Essentially, the same constraints, summarized earlier, remain in force. The project made it possible to identify clearly the problem areas and to offer some solutions, in the form of short-term workshops and training seminars.

A scheme of service was prepared including job descriptions (Appendix J), lines of supervision, and career structure for health inspectorate personnel. After being submitted in 1983, rewritten and resubmitted in 1985 to the Department of Establishments and Training, the proposal still sits; MOH has received no response to date.

The present economic uncertainty and lowering of Swazi currency value against the dollar are accompanied by an apparent conservatism on the part of the GOS to establish further financial obligations in the form of new government positions.

Recommendations

1. Activate the Health Inspectorate Task Force as recommended in the WASH Report (No. 108, April, 1984), "Strengthening the Management of the Public Health Inspectorate of Swaziland," to review that report and implement recommendations approved by the MOH.

Membership in the Task Force should include: the reactivated MOH water and sanitation committee, senior and deputy health inspectors, personnel officer, senior health officer of the HEC, a representative from the Department of Establishments and Training, the RWSB public health engineer, the director of health services or his deputy who will chair the meetings, and a technical management development specialist available to the GOS who will serve as facilitator and resource.

2. Work with the Department of Establishments and Training to approve the redefined posts submitted November 1984 (see Appendix J), especially for proposed regional health inspectors.

This is essential in order to create the decentralization of the Health Inspectorate, including planning, reporting, supervision, and evaluation on a regional level. Currently all health inspectors report directly to the senior health inspector.

3. Establish and fill the post of Deputy Senior Health Inspector.

This key position assumes responsibility for liaison with health inspectors in the regions, keeps the books, purchases and delivers materials, and supervises regional health inspectors. These details should

not devolve upon the senior health inspector, who should be developing priorities and strategies at the national level in concert with other programs affecting water, sanitation, and public health.

4. Establish a regional reporting system for the Health Inspectorate in line with MOH decentralization efforts.

Reporting forms for performance and materials usage, which were introduced by the project sanitarian technical assistant, can still be used at a regional level; the processed and summarized reporting data should be forwarded to headquarters.

5. Provide a series of management training workshops, in the form of short-term technical assistance, for the new deputy senior health inspector and regional health inspectors in the areas of supervision, human resources training, and development communications.

This assistance, required for a rapid transition to regionalized management, could take up to two man-years of consultancy in the first year. It would assist in developing and streamlining more effective, computerized procedures for purchasing and for managing accounts, inventory, logistics, and vehicle maintenance at headquarters; and assist in supervision, management, and human resource development, and coordination needs at the regional level.

6. Increase the number of health assistants from 29 to 90 over a five-year period by instituting a theoretical and in-service training program in connection with the IHS.

This training should begin in October, 1987 by accepting 20 new health assistant trainees each year for three years, placing each class in the field after one year of scientific and practical studies, and then bringing the class back during its third year for more in-depth coursework and training. The first year should include a heavy emphasis on health education, audio-visual presentations, and development communications follow-up, along with traditional content suggested by the WHO curriculum. Preparation at end of first year should include practical supervisory and self-management techniques to allow rapid adaptation to field experience during the second year. Third-year studies should provide in-depth, practical experience in the following areas: public health issues, small water supply and storage systems, community sanitation, health education methods and community organization, people-management, planning and evaluation techniques.

Issues to be resolved to implement this recommendation are the training institution which will be responsible for the program (Can it be integrated into the IHS structure?); practical field demonstration arrangements over the three-year training period; adequate supervision of the increasing numbers of Health Inspectorate personnel; and GOS budgetary commitments to the training and career obligations implicit in such a program.

7. Provide a substantial health education component in the curriculum for new health assistant trainees at the IHS, beyond the 30 hours proposed by a WHO consultant in August, 1985.

The WHO proposal (see Appendix K) entails only an enumeration of course objectives and simple visual and graphic aids. What is needed is strong integration with continuing HEC programs and materials. This should include

participation in mass media campaigns, community organizational skills, team building and leadership development, and collaboration with other related field workers: RHMs, CDOs, RWSB technicians, and agricultural extension workers.

8. Provide a series of regional short-term workshops for existing health assistants to upgrade skills in health education and development communications follow-up.

This proposal needs to be integrated into a general consideration of Health Inspectorate training needs which should be addressed in recommendations 1,2,4, and 5. Existing health assistants need the opportunity to advance in their career ladder, by a combination of training and performance merit. Ideally, this could be negotiated with the Department of Establishments and Training. The in-service training should start immediately but some training could be integrated with that of the new health assistant candidates under recommendation 6.

2.3 Evaluating Target Behavior Changes

2.3.1 Overview

The project paper stated that a Knowledge, Attitudes, and Practices survey be performed within the first three years. Completed in September 1982, it responded to the project paper's assumption that not enough was known about Swazi water and sanitation practices. The paper stated that the information gained in the survey would "serve as a reference for the development of mass media materials and education modules for water and sanitation by the HEC."

Conclusions

1. That the project paper's goal of realizing a change in the health and sanitation behavior of 40% of the Swazis was an unrealistic estimate based on little understanding of the strength of traditional beliefs, the rural homestead structure of the Swazis, and the institutional capacity of various ministries.
2. That the capacity for evaluating such changes does not now exist in the country.
3. That technical assistance is needed to design, pretest, administer and evaluate a second KAP study to statistically verify what behavioral changes have occurred.
4. That the project paper's goals for behavioral change were too broad and too general to be translated into specific health education approaches.

Recommendations

1. That technical assistance be provided to design, pretest, administer and evaluate the second KAP study; that the results be cross checked with results of monthly RHM reports (see Appendix L).

2. That short term technical assistance be made available to the HEC to assist with designing, pretesting, implementing, and assessing evaluations.

2.3.2 Anticipated Results and Project Performance

The goal in the project paper states that, by the project's end:

"forty percent of the rural population will be practicing ways to obtain, store, handle, and use safe water, practicing sanitary excreta disposal, improving sanitation inside and around the home, and avoiding water that is snail infested."

With the baseline provided by the first KAP study, the second study was to measure behavioral change, and assess the project's performance in this area.

Among the specific information that Edward Green's KAP study revealed were the following:

- that convenience factors were often more important than health factors in choosing a water source;
- that the practice of boiling water was uncommon (83% said they never did), except for the preparation of baby food;
- that few rural Swazis had latrines (70% responded that they did not);
- that few children under 4 use latrines;
- that traditional beliefs about the causes of disease are still prevalent, especially in bilharzia and diarrhoea;
- that the Swazi preference for living in dispersed homesteads still exists;
- that ideas of change have generally come from the chief in a community, and that the tradition is for the people themselves not to initiate them.
- that to discount the strength of traditional beliefs in relation to health would be counter-productive.

A second KAP study was to be carried out in the fifth year of the project to measure quantitatively the behavioral changes that had occurred. Technical assistance was supplied for this purpose under the project from August 9 to September 11, 1984. The consultant was critical of the initial KAP study, however, because of three main factors:

- . the sampling method used;
- . the length of the period between the pre- and post-program surveys; and
- . the lack of control for threats to internal validity.

Thus, the plan to rerun the first study was rejected.

The consultant suggested that a status report be done instead of a formal evaluation and designed, pre-tested, and wrote a Water and Sanitation Evaluation to be done as an alternative to the initial KAP study. This evaluation was not done, however, due to the lack of adequate manpower to conduct the survey. An alternate strategy was devised to include several questions within the MMHP campaign evaluation. These included questions on water resources, practices after collection, perceptions of how water

quality relates to health, latrine use, design, and motivation for construction and practices pertaining to how stools are disposed of if the latrine is not used. Although the data are helpful in a broad, general way they cannot be used in combination with the KAP study as baseline to create a statistically valid evaluation.

Other problems exist as well within the framework of evaluating behavioral changes. There is the inherent problem that behavioral changes occur over a long period of time. Measuring a 5 year period is an artificial break in an ongoing process of change. In addition:

- The project itself changed course, thus affecting its behavioral goals.
- Catastrophic events refocussed the project such as the cyclone and cholera outbreak.
- No formal birth or death records exist in rural Swaziland, and therefore this data cannot be used.
- Many other organizations, among them UNDP, WHO, CIDA, IVS, and Peace Corps - have been active in various aspects of water and sanitation issues at the community level. Because of this, it would be very difficult to isolate behavioral change directly resulting from the RWBDC Project from other impacts within the community.
- A lack of manpower at MOH statistics branch and no evaluation capability at HEC meant no ongoing evaluations were done on projects as they were completed.

An informal tool for evaluating the targetted behavioral changes was devised by the evaluation team, however, to give some broad idea of changes that have occurred over the life of the project. See Appendix M. It was pretested at Siphocosini and Mantabeni in the Hhohho region. The general findings of the informal survey follow:

- the idea of paying for the use of available clean water is a foreign one to rural Swazis, even if that charge is low;
- the connection between the use of toilets and health is not always strong;
- mothers with small children are the most open to changing their health practices;
- people who reside in the community, such as RHMs, health assistants, and public health nurses based in rural clinics, are the most effective instruments of change in health issues.

2.3.3 Appropriateness of Scope

The goal of a 40% change in behavior shows a lack of understanding on two levels, however:

- of the complexity of Swazi society, and its traditions;
- of the intricacy of the process of change itself.

Behavior and change is really a three-stage process. First, information must be transferred; then attitudes must change, and only then will actual behavior be affected. Thus, the assumption that this 5-year project would result in such a high degree of behavioral change was too optimistic a goal.

The Green KAP study reveals the strength of Swazi traditional beliefs on water and sanitation, and provides a valuable tool for designing educational materials and targetting the focus of health education campaigns. It filled an information void that the project stated - that little was known about Swazi traditional attitudes toward water and sanitation.

Thus, the project made valuable contributions to understanding Swazi cultural attitudes toward health issues, and toward disseminating information on improved health practices at the community level. The Health Education Unit contributed greatly to this effort through its workshops and its materials.

Targetted behavioral change will be slower to achieve. However, the project can take credit for laying the informational groundwork to make that change possible.

**SWAZILAND RURAL WATER BORNE DISEASE CONTROL PROJECT
FINAL EVALUATION REPORT**

**Prepared by the Pragma Corporation
for the USAID Mission to the Kingdom of Swaziland**

**CHAPTER THREE
BILHARZIA CONTROL AND EPIDEMIOLOGY**

SECTION 3 BILHARZIA CONTROL AND EPIDEMIOLOGY

3.1 The Epidemiology Component

3.1.1 Overview

The project has reasonably carried out its epidemiology program. This component's objectives were related mainly to the survey and control of schistosomiasis, and to the reinforcement of the Bilharzia Control Unit by the installation of new laboratory facilities and training of staff of the unit. All the related recommendations of the mid-term evaluation were carried out and, by the time the epidemiology advisor left, most of the objectives were achieved. However, some constraints affect the performance of the Bilharzia Control Unit: limited personnel experience, unclear line of command, budget restrictions, and lack of transportation. Some technical assistance, staffing, personnel training, and equipment provision are recommended to alleviate these problems.

3.1.2 Project Objectives

The RWSBDCP originated by way of a PID in 1977 by the American Public Health Association (APHA) which determined the need for bilharzia (schistosomiasis) research. Changes were incorporated in the project paper, and APHA remained involved as subcontractor to AED in supplying an epidemiologist to the project from June, 1981 to August 31, 1985. APHA worked closely with the MOH in response to a shift in emphasis to diarrheal disease control subsequent to the cholera outbreak in late 1981. Specific objectives of the project were to:

1. construct and equip new laboratory facilities for the Bilharzia Control Unit (BCU);
2. conduct a survey of schistosomiasis in Swaziland;
3. provide training to all members of the BCU staff during the schistosomiasis survey;
4. develop a sampling framework for further schistosomiasis and other public health surveys through the schistosomiasis survey;
5. use data generated by the schistosomiasis survey in setting priorities for health education, sanitation, and rural water supply programs;
6. intensify schistosomiasis control activities as indicated by the study data;
7. complete a national schistosomiasis control plan. It has been agreed by the RWSB, MOH, regional health development officer (RHDO) and the project that this would take the form of a control strategy;
8. expand MOH activities into communities based on priority needs indicated in the schistosomiasis survey;

9. conduct a trial to determine the effectiveness of treatment with praziquantel as a measure for the control of schistosomiasis. It was agreed between the RWSB, MOH, RHDO, and the project that the results of this trial would be presented as part of the draft schistosomiasis control strategy;
10. conduct a diarrheal disease surveillance study utilizing RHMs. Because of severe difficulties encountered in the field following the cyclone of 1984 and further difficulties in completing the programming for data analysis, it was agreed between the RWSB, MOH, RHDO, and the project, that this activity should be dropped.

3.1.3 Recent Achievements

The mid-term evaluation of November 1983 assessed the epidemiological component's progress and accomplishments as follows:

The epidemiological component outputs include the expansion and upgrading of the Bilharzia Control Unit (BCU) laboratory facilities. In-service training has also improved the professional skills and capacities of the staff. A young, newly-named director is being trained by the AED epidemiologist and groomed for leadership. The Unit has constraints due to supply problems, transportation difficulties, and lack of data analysis facilities. However, a national schistosomiasis survey has been completed leading to identification of the highly endemic areas and the areas of infection of the different schistosomal species. This first-of-its-type survey will be useful for planning the disease control strategy. In addition, with the increasing shift of emphasis of the project away from schistosomiasis to diarrheal diseases, a new program of longitudinal, small-scale diarrheal surveillance has recently been started. The results are eagerly awaited by the Ministry of Health.

All recommendations submitted by the mid-term evaluators were carried out:

1. Extend the stay of the epidemiologist advisor (technical assistant).
Comment: The project epidemiologist extended to August 31, 1985 for a total of 48 person-months, providing about three-months overlap with the new head of the BCU.
2. Obtain the services of a programmer to develop software to manage and analyze future schistosomiasis control activities and diarrheal disease surveillance data on MOH computer or comparable local system.
Comment: 1.5 person-months in April and May 1984 were devoted to writing a program for schistosomiasis data storage and analysis.
3. Provide funds for the purchase of metrifonate and praziquantel, urine reagent strips for blood, additional membrane filter equipment, stool specimen processing equipment, laboratory glassware and reagents, urine reagent strips for blood for rural primary health care clinics.
Comment: These items were purchased under the APHA subcontract. The BCU delivers the last item to school health nurses and clinics in endemic areas.

4. Send BCU Director for management training.
Comment: The former BCU head attended a schistosomiasis control seminar for a week in Zimbabwe; the present BCU head, one in Kenya.
5. Purchase a photocopy machine with service contract to be used by public health laboratory and the BCU.
Comment: The machine is also being shared with the Tuberculosis Centre and the Malaria Control Unit, at the same location in Manzini.
6. Acquire the computer hardware and software needed for surveys.
Comment: In February 1985 the project purchased locally a battery-operated Epson HX-20 computer with display and printer.

Major project outputs by the time the APHA epidemiologist departed included:

- a report on the national survey of schistosomiasis in Swaziland;
- reconstruction and supplying of the BCU in Manzini;
- training of laboratory technicians, field health assistants and health inspectors;
- beginning of a test program for praziquantel in high risk areas (see section 3.2);

Other project important outputs were:

- computerized data collection and analysis (ongoing);
- supervision of laboratory services at the BCU;
- bilharzia school kits for quick diagnosis;
- diarrhea mini-surveillance using 14 RHMs. In August and September 1984 a three-week consultancy reviewed previous and recommended follow-up activities.

In the year since the epidemiologist advisor left the BCU, a new health inspector, who benefited from less than four months' overlap, has been struggling to continue the northern lowveld praziquantel study and run regular laboratory routines. Constraints in the effective functioning of the BCU, enumerated in APHA's end-of-contract report, remain in force at the present time. These are:

- Inexperience as head of BCU and need for continued supervision;
- unclear line of command between the Health Inspectorate and the Director of Medical Services concerning who is providing supervision of the BCU;
- unfamiliarity and operational programming difficulties with the computerized data collection system;
- unreliable and restricted budget allocations from the MOH, which hitherto relied heavily on project funds for supplies;
- lack of transportation due to the inordinate time required for simple maintenance and repair of the Central Transport Administration (CTA).

3.1.4 Recommendations

1. Assure the appointment of a 3-year epidemiologist advisor attached to the office of, and serving directly under, the director of medical services. This advisor should:

- (a) participate in policy-making committees at the highest levels of the MOH, Mbabane; and
 - (b) perform research, clarify policy and objectives, and organize training functions at MOH units in Mbabane and its laboratories in Manzini.
2. Establish and fill, with a long-term resident, a GOS post of epidemiologist-planner in the office of the director of medical services; this person should be trained by, and work as counterpart of, the epidemiologist advisor.
 3. Fill the vacant post of health planner in the MOH Planning Unit by the end of 1986: the health planner should receive in-service training from the epidemiologist advisor.
 4. Appoint a long-term resident to fill the vacant position of deputy director of medical services, and work closely with the epidemiologist advisor in reorganizing what is now vertical programs.
 5. At or near completion of recommendations 1 through 4, institute a task force in liaison with the TSG to:
 - (a) develop control strategies for communicable and water-borne diseases, including bilharzia; and
 - (b) coordinate the efforts of the new Diagnostic and Preventive Medical Services system in focusing bilharzia control.
 6. Provide long-term training in computer programming and in epidemiological and medical statistics, to a qualified health planner in the MOH Planning Unit, at least before the advisor's second year of service.
 7. Provide technical in-service training to MOH Planning Unit and Statistics Unit heads in health program evaluation.
 8. Enhance the training in medical statistics and program evaluation in the curriculum for health inspectors and health assistants, starting in 1987.
 9. Repair the Sirius computer schisto program and provide immediate, relevant, in-service training in parasitology laboratory evaluation and statistical analysis to the current head of the BCU.
 10. Clarify and institutionalize supervision; and provide operational funding for the BCU to include: essential equipment such as larger centrifuge, two electric and two sunlight microscopes, one small propane field refrigerator, and laboratory supplies.
 11. Enhance the logistics capability of the BCU by providing a new Land Rover to cover hard-to-reach areas where schistosomiasis is prevalent.

12. Arrange refresher training for BCU staff in lab science and health education on an in-service basis, through short-term consultancies designed by the epidemiologist advisor.
13. In September, 1987 send the current BCU head for a university degree (B.Sc.) in parasitology and environmental health, to include practical management, computer, and evaluation skills.

3.2 Surveying Bilharzia in the Northern Lowveld

The project epidemiologist's national survey, reported as Schistosomiasis Prevalence and Control in the Kingdom of Swaziland, covered activities during the period July 1981 through August 1984. It revealed especially high prevalence of the disease in the Lowveld. The author described the Lowveld situation, which warrants special attention, as follows:

The overall prevalence of *S. haematobium* in the Lowveld was 27% and *S. mansoni*, confined primarily to the Lowveld, 18%. The semi-tropical climate in the Lowveld provides a longer transmission season. Daytime temperatures low enough to discourage children from playing in the water are found for only one or two months in the year. Daily temperature ranges suitable for the development of the various stages in the life cycle of the parasites are maintained for longer periods.

The distribution of schistosomiasis in the Lowveld is not homogeneous but shows a remarkable gradation from north to south. In the Northern Lowveld there are areas of intense transmission. The national survey found 58% of the school children positive for *S. haematobium* and 31% positive for *S. mansoni*.

He goes on to explain:

The Lomati Basin in the northwestern Lowveld has the highest prevalence for all three species of schistosomiasis known in Swaziland. Sixty-five percent of the 10-14 year old group has *S. haematobium* (55% all ages), while 75% of the 15-19 year olds had *S. mansoni* (68% all ages). *S. mattheei* which has the same biological requirements as *S. haematobium* was found in 24 people, the only true focus of this parasite in humans found in Swaziland.

Although the Lomati River bed is below 500 metres and thus has the temperature ranges typical of the Lowveld, the general topography resembles Middleveld with rolling hills and many small streams and stockponds. Therefore, both the surface water and temperature requirements for transmission of the diseases are optimized in that area and intense transmission occurs.

Following project objective 6, the praziquantel control study, begun in 1984, is now in its third year; it should measure the effect of the drug praziquantel on children infected with the disease. Pupils at 12 schools in the Northern Lowveld, in areas shown on Figure 3-1, are screened annually for *S. haematobium* (on-site urine inspection) and *S. mansoni* (stool inspection of the BCU laboratory). Schools in the sample are:

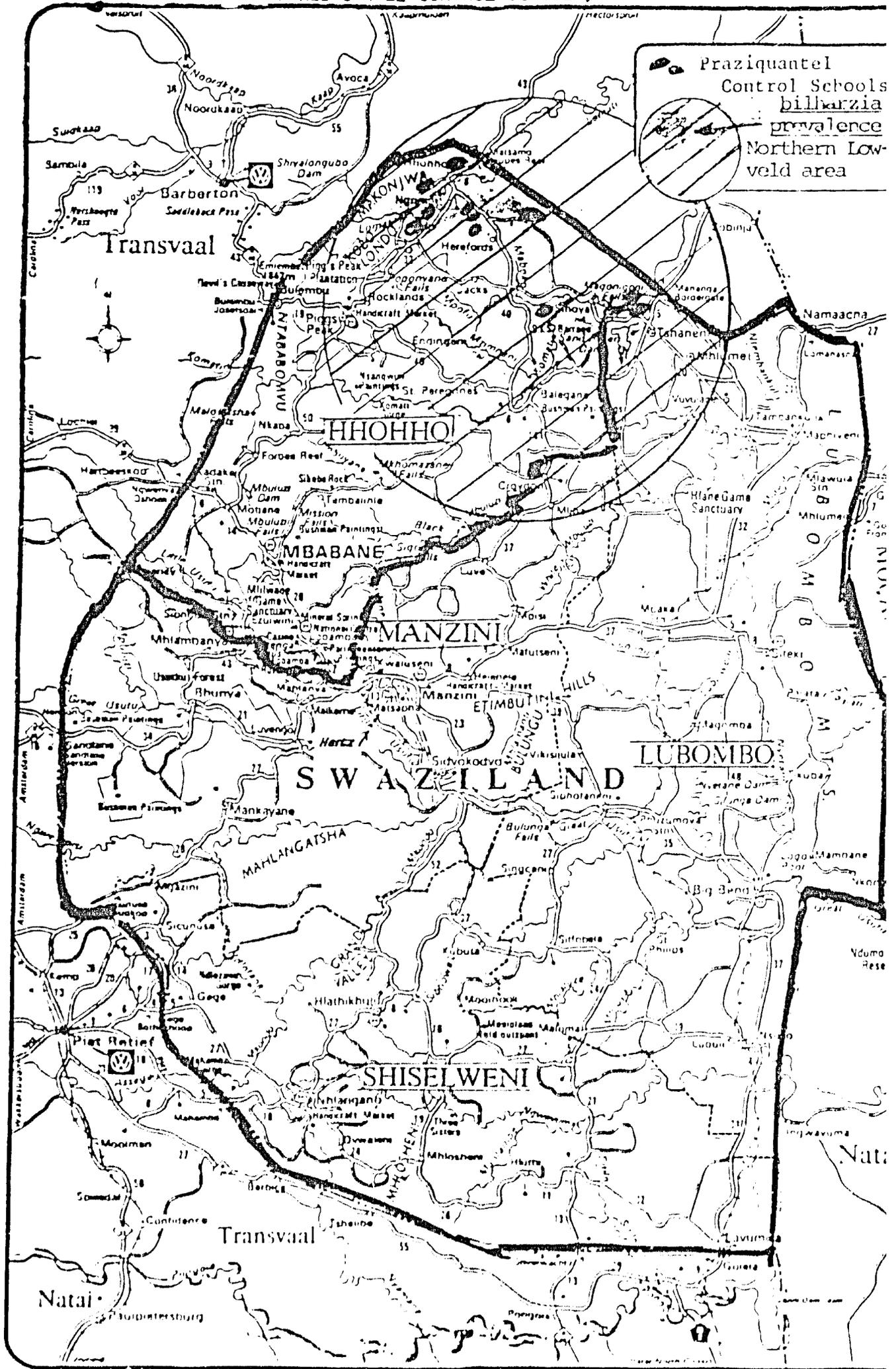


Figure 3-1

- Mashobeni Primary
- Emvembili Primary
- Mbasheni Primary
- Mshingishingini Primary
- Madvula Primary
- Ngonini
- Timphisini Primary
- Timphisini Secondary
- Ndlalambi Primary
- Mphofu Primary
- Mphofu Secondary
- Mazibeni Primary

The plan for the study, as specified by the epidemiologist advisor in his final report, is as follows:

All of the secondary schools in the Lowveld should be visited in 1984. Each student should be screened for *S. mansoni* and *S. haematobium* and positive cases treated. Follow-up surveys the following year would provide data necessary for determining incidence rates and optimum intervals between revisiting. Ideally, where prevalence is high it would be advantageous to visit each Lowveld secondary school every year and treat positive cases before they disperse into the unreachable adult population.

The present BCU director has attempted to input and compile the study data using the portable computer and a specially-developed program provided by the project. Due apparently to "bugs" in the program to compile data for the Sirius computer in Mbabane (the programmer is in Lesotho), the director has turned to hand compilation of data. At the present writing, results were not yet submitted to the public health engineering advisor for analysis.

The results of this preliminary analysis may, however, be called into question, since the BCU director (a) has discovered problems with the data (intensity of infection is not indicated), (b) has been working on the statistical compilation, with which she has problems, with little supervision (occasionally a visit from the public health engineering advisor). Apparently she still needs to obtain 1986 data on treated children in seven of the study schools. (See recommendation 9 in section 3.1 above).

In summary, the project did survey bilharzia in Swaziland and found the disease prevalent in the northern Lowveld, particularly the Lomati River basin. A study initiated in 1984 to determine the effect of praziquantel on school children infected with bilharzia is on-going but data processing difficulties may affect the results.

3.3 Developing and Implementing a Bilharzia Control Strategy

The position of the epidemiologist advisor, a recognized bilharzia specialist, on the strategy to control the disease in Swaziland, is in line with the MOH's primary aim, that is, to prevent the morbidity associated with later stages of the disease. This morbidity is due to the accumulation of eggs in various organs and tissues of the body, and is directly related to the intensity of the infection. The advisor came to the same conclusion underlying the MOH's policy focusing treatment on severe cases: he recognized that schistosomiasis eradication is not yet an obtainable goal in Swaziland. His sentiment, with which the evaluation team concurs, is summarized in the recommendations of his final report:

While it would be ideal to have a comprehensive, integrated program of schistosomiasis control involving measures such as provision of protected domestic water, toilets, footbridges, alternative recreation

facilities, snail control, health education and screening and treatment of all positive cases, conditions and resources in Swaziland preclude this approach. Emphasis must be placed on optimized use of limited manpower and budget.

The strategy to be developed, he felt, was to use selected chemotherapy on human hosts selected for high rates of morbidity. He noted the long-standing use by the BCU of the long metrifonate (Bilharzil), which requires follow-up treatment that is sometimes difficult to accomplish; opted for experimenting with praziquantel (Biltricide) in the northern lowveld study; and down-played the role of molluscicides as being too costly and limited because of widely-scattered transmission sites.

It is clear, as the project epidemiologist concluded, that control activities and expenditures must be strictly prioritized and results carefully evaluated. Foremost is the need to assess the activities of the BCU from two points of view: epidemiological effectiveness and management efficiency.

From the first standpoint, the BCU needs to be seen as one component of a larger system dealing primarily, at present, with diagnosis, treatment, and evaluation of bilharzia. Is it doing this effectively? Even if the answer were affirmative, its range of effects would necessarily be limited. What is needed is a preventive strategy involving potentially powerful change agents. Not the least could be the Health Education Unit, if it operated regionally with the support of a long-term mass-communications strategy and budget. But the entire educational apparatus at GOS disposal needs to be activated, for significant preventive behaviors to be learned and passed on to future generations.

The second perspective, management efficiency, raises the question of organizational context of the BCU in the MOH as a whole; the BCU is just one component, somewhat independent as a vertical unit, functioning in response to MOH directives and resource allocations as well as to the non-formalized expectations of its personnel. Improvement in the BCU's management efficiency, that is, achieving maximum output using only requisite resources, involves both clearer and more consistent directives, supervision, resource allocations, as well as upgrading of personnel capabilities within the unit. This includes not only technical skills which the project epidemiologist admirably imparted, but also management, planning, and communication skills. Notable was his observation of the need for writing skills, especially for the BCU head's preparation of monthly and annual work plans and evaluations. Staff training receives further discussion in the following section.

The conclusion drawn from field visits and discussions at MOH, Mbabane, is that headquarters MOH must take several coordinated initiatives to develop and implement an adequate control for bilharzia and other endemic, communicable diseases. These initiatives must be taken in the context of overall epidemiological support within the MOH.

Thus, taking into consideration manpower and budget limitations, the epidemiologist advisor felt that (a) the proper bilharzia control strategy is to use chemotherapy on selected human hosts and (b) there is a need to evaluate BCU's activities for epidemiological effectiveness and management efficiency.

3.4 Training and Enabling the Staff of the Bilharzia Control Unit

The original project paper states:

No academic or formal in-service training is provided by the project because the skills required for the schistosomiasis survey are best acquired through on-the-job training rather than through academic training. The environmental epidemiologist will train the health assistant in the collection, preservation, and examination techniques necessary to conduct the survey, both for schistosomiasis and for the other intestinal parasites or water-related diseases. The six months between when the epidemiologist arrives and when the survey begins will provide sufficient time for this training.

Interviews with two health assistants in the Bilharzia Control Unit in Manzini revealed that the project's epidemiologist advisor did train the health assistants in the use of microscopes, the basic causes of bilharzia, and some techniques to use in the education of students involved in the study at the school sites. Observation of the same health assistants in the field at a praziquantel school screening and treatment program in Mphofu (Hhohho Region) confirmed that they were effective both in collecting and evaluating samples and in their role as health educators. Four other health assistants (including two microscopists) and one laboratory assistant have also received on-the-job training, but there is a great range in their educational background - from illiteracy to junior secondary level. One senior health assistant, who sat unsuccessfully for O-levels, was transferred to BCU early August 1986 and is beginning to learn from his colleagues in the laboratory.

In the three months or so before his departure, the epidemiologist advisor provided the new BCU director in-training with management orientation, computer training, some field experience (10 trips), and laboratory techniques. She appreciated her brief tutelage, describing the advisor as dedicated, patient, and flexible.

Remaining needs of the BCU are:

1. With formal education as a health inspector (three-year diploma beyond O-levels), the head of the BCU still needs support and training in such areas are:
 - advanced laboratory science and parasitology,
 - evaluative methods for laboratory results,
 - computer analysis and statistical evaluation,
 - management and supervision skills,
 - planning, evaluation, and reporting (writing) skills.

She expressed an interest herself in learning the Khetho stool sampling method used in Botswana. Her long-term educational goal is to earn a B.Sc. in environmental health and parasitology; she has recently applied for a USAID scholarship.

2. The majority of the nine-person BCU staff is capable of performing varying degrees of microscopic analysis and can identify common parasites (Ascaris, Trichuris, Taenia) and E.coli. They are limited, however, to the use of one sunlight and three electric microscopes (they want two more of each). Other equipment constraints are the use of one six-tube centrifuge

(need another with a 24-36 tube holder) and a small refrigerator (need a second one 80 cm high, gas propane model for week-long field campaigns). (See recommendation 12 in section 3.1).

3. The operational viability of the BCU at the present time is maintained to the extent that certain critical MOH inputs are provided. The resources most in doubt, as articulated by the BCU director by order of priority, are:

Transport - the former advisor's vehicle has recently been seen in operation at the MOH, Mbabane; whereas BCU director has been told by the CTA, where it was delivered for minor exhaust pipe replacement, that it was in the shop there. BCU director did not have operating BCU vehicle to join evaluation team at Mphofu and BCU sampling team had to borrow Tuberculosis Unit's vehicle to reach Mphofu. BCU has none of three assigned vehicles available and in operating condition. (See recommendation 11 of section 3.1)

Budget - supplies have been purchased recently mostly from the APHA subcontract, yet no regular budgeting plan for restocking have been adopted.

Laboratory stock - formalin will last until September, ether to December 1986 and Haema-sticks (at 600/month) until February 1987.

Supervision and guidance - a question of morale and effectiveness looms large, as little interest is shown by MOH in operational performance of the BCU on a regular basis. (See recommendation 10 of section 3.1)

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**CHAPTER FOUR
PUBLIC HEALTH ENGINEERING**

CHAPTER 4 PUBLIC HEALTH ENGINEERING

4.1 Overview

The main purpose of this chapter is to determine to what extent the project has contributed to the strengthening of (a) the RWSB's public health engineering unit and (b) this unit's linkages with the Ministry of Health. The evaluation team finds that the project has satisfactorily carried out the public health engineering component. Not all the anticipated outputs were realized but the project has carried out some important activities that were not originally scheduled. Performance by all parties concerned (USAID, Government, Technical Assistance Contractor) is judged satisfactory despite some difficulties. The public health engineering advisor and the WASH consultants have earned the praise and respect of their Swazi colleagues.

Major accomplishments of this component are:

- Establishment of the public health engineering unit at the Rural Water Supply Board and training and assignment of counterparts (engineer and public health inspectors).
- Coordination with the Health Inspectorate.
- Heavy participation in the planning activities of the water and sanitation sector.
- Preparation of guidelines and standards.
- Special assistance during emergencies and direction of all activities of the unit.

Some problems or unfulfilled needs remain. The public health engineering unit needs a broader scope of action but does not have the authority to intervene in domains other than water supply. The public health engineering counterpart needs further training and a well defined workplan. The health inspectors of the unit need closer supervision and also a well defined workplan. The water quality laboratory technicians need further training. There is a shortage of trained public health engineering workers. Sectoral planning and coordination with other ministries are the areas most likely to suffer from the absence of the public health engineering advisor. Integration of the activities of various government agencies involved in the water and sanitation sector is not easily achieved, being subject to several constraints.

Recommendations

1. Set up a task force to define the scope of public health engineering in the Swazi context, including environmental control and the relationships among various government agencies concerned.
2. Define major water resource development projects and begin reviewing those most likely to have severe health impacts.
3. Provide training and technical assistance in the area of public health engineering.
4. Set up a task force to define manpower needs and training possibilities in the field of public health engineering.

5. Greater integration is recommended among the public health engineering, health inspectorate, epidemiological and health education units.
6. Alternatively to the task forces mentioned above, short-term consultants may be hired, or the NAG and TSG may be asked, to carry out the recommended work.

4.2 Scope

The final evaluation's statement of work contains three items that relate specifically to the public health engineering component. The performance of this component is to be evaluated to determine how the project contributed to:

1. Strengthening the Rural Water Supply Board's public health engineering unit.
2. Strengthening this unit's linkages with the Ministry of Health through the assignment and training of counterparts.
3. Involving the public health engineer in the development and review of new water projects.

This is somewhat of a peculiar scope that invites affirmative answers to the questions raised and leaves out some aspects of the original scope of work. However, it is the framework within which the discussion will be presented. During an initial meeting in Washington with Dr. DeBose, USAID regional health officer formerly in charge of the project, he indicated that the evaluation might also include the following items:

4. How well the component has been carried out and what the Government of Swaziland can do with its own resources.
5. Was it a good idea to introduce the position of public health engineering into the context?

4.3 Achievements

Project achievements in the area of public health engineering are well documented in Dr. Hoadley's draft report. We have discussed this report at great length with Dr. Hoadley himself, with the technical staff of the Rural Water Supply Board (senior engineer, design engineer and public health engineer) as well as representatives of the Ministry of Health. Everyone concurs that the statements in the report are generally correct. Consequently, rather than repeating those statements, we include the relevant sections of the report in Appendix N and summarize the important information below. In this discussion, public health engineering advisor and counterpart refer respectively to the technical assistant (Dr. Hoadley) and the Swazi engineer (Mr. Dlamini or his predecessor).

The project has provided 5 years of public health engineering assistance to Swaziland through a contract with Dr. Hoadley, who has acted as engineering advisor and as project manager. He has provided good coordination between the Rural Water Supply Board and the Health Inspectorate. The project has also provided three months of short-term

technical assistance, through WASH consultants, for the planning activities in the water and sanitation sector. The public health engineering advisor, working with the government agencies, has made possible the following results:

1. Establishment of public health engineering unit and position at the Rural Water Supply Board, in the Ministry of Natural Resources, with well defined duties and responsibilities.
2. Recruitment of 3 candidates for the position of public health engineer. The first two candidates, trained in Canada, resigned to enter the private sector. The third candidate, trained in the U.S., joined RWSB in May 1985.
3. On the job training of the public health engineer with his assignment to work on various problems in design, planning, construction and health inspection.
4. Establishment of a position of health inspector in the public health engineering unit to reinforce coordination with the Health Inspectorate. A second health inspector was assigned to the unit after the first one was sent abroad for a two-year course in public health engineering. When he returns, the second inspector will follow the same program.
5. On the job training of the health inspector.
6. Preparation of water quality guidelines, design standards, and guidelines for review and approval of projects.
7. Participation in sectoral planning activities.
8. Establishment and supervision of a water quality laboratory.
9. Special assistance during emergencies such as the cholera outbreak of 1981-82 and the cyclone of January 1984.
10. Participation in and direction of all routine activities of the public health engineering unit from source investigations to preparation of a manual on latrine construction.

Concerning the establishment of the public health engineering position and unit at the Rural Water Supply Board, it is significant to note the following comments expressed by the public health engineering counterpart:

1. He interprets public health engineering to mean more than what he is presently doing. He feels a lot more can be done under this unit, taking into consideration (a) his civil engineering degree with solid elements in the water, sanitation and environment field and (b) the fact that there is no other unit in Swaziland directly involved in environmental health issues of this nature. Although this would include issues outside the field of water and sanitation, the Ministry of Health is still responsible for the control of environmentally detrimental activities that may affect health immediately or over the long term. It is possible to expand this unit as more public health engineers and technologists are trained.

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2. It is easy to demonstrate that the public health engineering unit has still a lot to do. For example, the mid-term evaluation report mentions dams; a Water and Sewerage Board's dam is nearing completion at Hawane for the water supply of Mbabane; it is not sure that its design was reviewed. Also, the Ministry of Health must provide input to the approval of solid waste disposal sites selected by Town Councils. Conflicts arise when the public health engineering unit intervenes into someone else's field, even if it is related to health.
3. In view of these observations it is advisable to:
 - (a) redefine the responsibilities of the public health engineering unit;
 - (b) extend the contract of the unit's advisor for his exclusive assignment to public health engineering duties;
 - (c) continue training of the public health engineering counterpart until judged sufficient by the advisor.
4. As far as the Rural Water Supply Board is concerned, the public health engineering unit is well established with specific duties being adequately executed. The public health engineering counterpart has been involved in almost all stages of RWSB's operations. At first he worked with Dr. Hoadley and Mr. Potter, the Canadian public health engineer, on all of the unit's operations until December 1985. For a great portion of these 7 months, the counterpart worked with Mr. Potter, under Dr. Hoadley's supervision, because the latter assumed management responsibilities of the Rural Water Borne Disease Control Project. From February to July 1986, the counterpart was assigned to work in RWSB's design section. He now feels confident he can play his role in the unit, including the supervision of the water quality laboratory.
5. The formal and on-the-job training of two public health inspectors and their integration to the public health engineering unit are progressing. However, a proper job description still needs to be drawn for these individuals because their duties are not well defined. They just seem to survive from day to day, in most cases doing clerical work at the Ministry of Health or at the public health engineering unit. The first inspector, Mr. Mamba, is now in training abroad. The second inspector, Ms. Dube, has just started working with RWSB's micro-technician on spring protection in the Hhohho Region. Her training includes feasibility studies, design, preparation of materials list, cost estimation, and, to some extent, exposure to construction techniques. The objective is to provide her with basic skills so that she can help other health inspectors or assistants meet RWSB's standards when they undertake the MOH's spring protections.

Note of the evaluation team. The government decision establishing the position of health inspector at the public health engineering unit does list the responsibilities and duties of that position. What the preceding comment suggests, perhaps, is the need to further define these duties, to prepare a work plan for the health inspectors, and supervise their activities more closely. It must be noted, however, that the public health engineering unit does have a work plan.

4.4 Progress since the Mid-term Evaluation

It is appropriate to review what progress has been accomplished since the mid-term evaluation, which raised two major issues and recommended some measures to address them.

The first issue is the requirement of the original project paper that the public health engineer review all major water works designs. The evaluation report mentioned the problem of defining what a major project is and also the concern that the public health engineer's review might be limited to RWSB's water supply projects instead of all water resource development activities. The timing of the review was also a factor to be considered as it must take place at the feasibility stage to have an impact. The second issue was the training of a Swazi public health engineer and the institutionalization of the public health engineering position.

To address these issues, the mid-term evaluation team made the following recommendations:

1. Define major water resource development projects and, via the evaluation and impact analyses required of donors for proposed projects, begin review of all major projects by February 1984.
2. Emphasize the development of water quality and public health engineering regulations and push for legislation to be in effect by January 1985.
3. Greater integration is recommended between the public health engineering, epidemiological, and health education components of the project.
4. USAID should consider development of a new rural water supply PID to investigate the possibility of funding for RWSB activities in case the RWSB loses its funding and is unable to continue with the construction of rural water supply systems.
5. Take appropriate decisions regarding the graduate training of the public health engineering counterpart and the related extension of the advisor's contract, depending on the qualification and motivation of the former.

Recommendation No.1 was simply not followed. The public health engineering advisor's report states that "this objective (review of all designs and plans) was considered inappropriate in terms of both needs and effective use of the time of the public health engineer. It was, therefore, agreed between the senior engineer, senior health inspector, regional health development officer, and the project that this objective would be dropped in favor of activities identified in the workplan for the public health engineer". The final evaluation team believes that the proposed review would be an important step in the institutionalization of public health engineering in the country. Although schistosomiasis may be less severe than assumed in the project paper, which observation led to shift the emphasis to diarrhoeal diseases, that disease still affects a great number of Swazis particularly in the lowveld. The subject of schistosomiasis control by engineering measures should also be included in the training, formal or on-the-job, of the public health engineer.

Recommendation No.2 has essentially been carried out, perhaps by the date specified.

Recommendation No.3 deals with the linkage between the Rural Water Supply Board and the Ministry of Health. The subdivisions involved here are the public health engineering unit, the health inspectorate, the health education unit and the bilharzia control unit. The integration recommended has not happened. Some progress has been achieved, particularly the establishment of the public health engineering unit and the coordination with the Health Inspectorate. In the words of the public health engineering counterpart, the linkage with the Ministry of Health still needs strengthening. The public health engineering unit has established some liaison with health inspectors, provided technical assistance in the design of spring protections, participated in spring protection workshops (organized for health inspectors, health assistants and rural health motivators and other field workers) and recommended priority communities to be provided water supplies, based on the prevalence of water related diseases and information provided by the Health Inspectorate. So far as the other MOH sections (epidemiology, health education, etc) are concerned not much integration has occurred. It must be recognized, however, that integration is subject to several constraints and that the subject has been discussed by the sectoral planning technical group.

Concerning recommendation No.4, it is not clear what funding loss (government or donors) the mid-term evaluation report referred to. In any case, USAID-Swaziland did finance the construction of 8 small water supply systems out of surplus project funds.

Some significant developments have occurred regarding recommendation No.5. The counterpart in question resigned some time ago and has been replaced by Mr. M. Dlamini since May 1985. Dr. Hoadley's contract has also been extended until 30 September 1986. Both the RWSB's senior engineer and the public health engineering advisor rate the current counterpart as competent, capable, dedicated, and reliable. The evaluation team has observed the counterpart during the past 3 weeks and generally concurs with this assessment. He should be encouraged by further training and gradually increasing responsibilities.

4.5 Evaluation

4.5.1 Performance

In conclusion, the evaluation team estimates that the project has satisfactorily carried out the public health engineering component. Not all the original outputs, or those recommended later, were realized, but the project faced some unexpected difficulties to which it had to adjust. As found in the mid-term evaluation, all entities performed adequately their functions: the Government of Swaziland, USAID-Swaziland and the technical assistance contractor (Academy for Educational Development). The project has benefitted from a tremendous support of USAID and top ministry officials although it was at times affected by bureaucratic delays and difficult inter-ministerial coordination at high level.

Dr. A.W. Hoadley, the public health engineering advisor, deserves praise for the way he has performed his work. He is recognized as a very competent, experienced, adaptable advisor with excellent interpersonal skills. His personal and professional qualities have played an important

role in the success of the project. His influence in bringing about results is undeniable. Perhaps the best testimony to his performance is the fact that all three of his colleague-engineers at the RWSB have expressed the wish that his contract can be extended for another two years.

It was certainly appropriate to include the public health engineering component in the project although some questions remain concerning its proper location and responsibilities. On the one hand, the Government of Swaziland is convinced of its importance and shows its commitment to the concept. The demand for public health engineering has been established and may be extended to other areas. On the other hand, its location at the RWSB seems to limit its role to the quality of water supplies while this role could be broadened to include issues related to other public health aspects and to environmental control. More particularly, the control of diseases caused by water resources development projects, originally included in the project objectives, should fall within the purview of the public health engineering unit. It should also be mentioned that the technical assistance team should have included a chief of party or team leader in addition to the specialists. It was not prudent to have the health educator or public health engineering advisor double as team leader; that was at the detriment of their technical duties.

The contribution to water and sanitation planning, discussed elsewhere in this report, is considerable, but it has consumed a good deal of the public health engineering advisor's time. In the process, the unit and the water quality laboratory have suffered somewhat. The performance of the WASH consultants has also been praised.

4.5.2 Remaining Needs

Comparing the achievements of the project to the three main items of the original scope of work of the public health engineering component, the evaluation team finds that some aspects have not been fulfilled. The recommendations of the mid-term evaluation and some amendments are also considered.

1. Review of designs of water works. Very little has been done.
2. Preparing water quality guidelines, criteria for the design of water supply systems, and criteria for the selection of target communities. This element has been reasonably fulfilled.
3. Establishment and staffing of the public health engineering unit. The public health engineering counterpart needs further training and hands-on experience.
4. Greater integration with the health education and epidemiological components. Much remains to be done in this area.
5. Development of a USAID sponsored program to construct rural water systems. This element has been reasonably fulfilled.

More generally, the Government needs to:

6. Extend the concept of public health engineering to areas other than water supply and train more public health engineers.

Problem 2: The public health engineering counterpart needs further training and a well defined workplan. The health inspectors of the unit need closer supervision and a well defined workplan. There is a shortage of public health engineering specialists.

Problem 3: Sectoral planning and coordination with other ministries are the areas most likely to suffer from the absence of the public health engineering advisor.

Recommendation 3: Provide to the Rural Water Supply Board training and technical assistance in the area of public health engineering.

- (a) Technical Assistance: an advisor for the first 12 months plus two one-month evaluation missions in the eighteenth and twenty-fourth months. This advisor will provide on the job training and guidance to the public health engineering counterpart and help implement all recommendations of this chapter. The statement of work for this technical assistance should not be a simple continuation of the current position. The terms of reference should specify definite results to be obtained and the advisor's workplan should be prepared accordingly.
- (b) The training program of the public health engineering counterpart will consist of:
 - ° Twelve months of guided, on the job training. During the first 6 months the counterpart will receive intensive training and coaching, participating in all aspects of the unit, accompanying the advisor to all meetings, and being introduced to officials. During the second six months, the advisor takes the back seat, observing and, as necessary, advising the counterpart.
 - ° Twelve months of hands-on experience, on his own with further observation and advice by the advisor in the middle and at the end of this second stage. The health inspector now in training in Mauritius will have returned at the beginning of this stage and will be gradually introduced to the duties of the public health engineer in addition to carrying out his own responsibilities.
 - ° Twelve months of further experience for the engineer and training of the health inspector who will be familiar with all duties and responsibilities of the unit.
 - ° Twelve months of graduate education. Because of previous credits in water, sanitation and public health, the counterpart should be able to obtain a Master's degree in the field within this period, including, if necessary, a summer session.
- (c) The training and technical assistance program will include the preparation of detailed workplans, with well defined outputs and schedules, for the public health engineering counterpart and health inspectors.

Recommendation 4: Set up a task force to define manpower needs and training possibilities in the field of public health engineering. The need assessment will concern engineers and technicians for government agencies, donor organizations, private sector and private voluntary organizations. Training possibilities will include on the job, long and short-term, in country and abroad activities.

Problem 4: Integration of the activities of various government agencies involved in the water and sanitation sector could be improved.

Recommendation 5: Greater integration is recommended among the public health engineering, health inspectorate, epidemiological, and health education units (from the mid-term evaluation report). As this integration will raise several problems in the field and at headquarters, a study should be conducted by the NAG's TSG, by a similar group or by a consultant to (a) determine at what level or levels the integration will occur and (b) suggest an implementation program.

Recommendation 6: Alternatively to the task forces mentioned above, short-term consultants may be hired or the TSG/NAG may be asked to carry out the recommended work.

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**CHAPTER FIVE
PLANNING AND CONSTRUCTION OF RURAL WATER SUPPLY
AND SANITATION SYSTEMS**

CHAPTER 5 PLANNING AND CONSTRUCTION OF RURAL WATER AND SANITATION SYSTEMS

5.1 Planning for Development of the Water Supply and Sanitation Sector in Swaziland

5.1.1 Overview

With appreciable technical assistance from the Rural Water Borne Disease Control Project, the Technical Subgroup of the National Action Group has accomplished much in terms of planning the development of the water supply and sanitation sector. Several meetings and workshops have culminated in the preparation of policy and strategy documents as well as a two-year action plan. While the national policy awaits the approval of the government, a planning process has been established and the documents prepared will guide the harmonious development of the sector in the years ahead. A five-year action plan will follow the two-year plan. One merit of the plan is that it is an emanation of the activities of Swazi technicians. Minor reservations concern:

- the possible loss of momentum when the RWBDCP's technical assistance stops;
- community participation, effectiveness of health education and payment of recurrent costs by beneficiaries;
- a more active participation in the planning process by other donors and non-governmental organizations;
- required official support for government approval;
- a possible discrepancy between expected government contributions to the two-year plan and recent levels of capital investment in the sector.

5.1.2 Activities

The project has contributed much to the planning activities in the field of water supply and sanitation in Swaziland. The project's input was provided through the assistance of the public health engineering advisor (A.W. Hoadley) and consultants recruited through the WASH (Water and Sanitation for Health) project. Swaziland initiated some sector planning activities back in 1979-80 under the United Nations water and sanitation decade program but most of the significant achievements of the sector occurred over the past 12 months. The following list of activities is derived from information provided by the public health engineering advisor and verified through discussions with the WASH consultants, the RWSB senior engineer, UNDP officials and others.

- Formation of a Technical Subgroup (TSG) under the National Action Group (NAG). Preparation of a workplan under the guidance of WASH consultants.
- Preparation of a statement of sectoral needs, policies and strategies by the TSG, again with WASH's technical assistance.

- National seminar organized by the Technical Subgroup to review this statement with officials and non-governmental organizations.
- Preparation of a two-year action plan for the sector, also with WASH's assistance.
- One other planning activity remains for the TSG: preparation of five-year master plan for the period following that of the two-year plan.

5.1.3 Review of Documents

The Technical Subgroup has prepared some documents that will guide the development of the water supply and sanitation sector by defining needs, strategies and constraints and drawing a short-term action plan. We have reviewed these documents and we generally concur with their findings, some of which, related to rural areas, are presented below.

Needs: Health status depends largely on the availability of adequate water and sanitation facilities and on the extent of health education in the communities. Geography affects the availability of water and the ability to provide it at a low cost. Water is more available and of better quality in the high and middle velds than in the lowveld. Optimal benefits are obtained by coordinating water supply, sanitation, public health education and community participation. There is a need to standardize construction and provide for proper maintenance and operation. Some failures have occurred as a result of communities failing to pay for operating costs and to otherwise assume ownership and responsibility for the systems. There is also a need to coordinate action in the sector by several governmental and non-governmental organizations so as to avoid duplication and reduce waste. It is difficult to retain or recruit qualified manpower for the various activities in the sector.

Policies: Between 1986 and 1991, increase: (a) access to safe water supplies from 40% to 50% and (b) access to appropriate sanitation from 25% to 35%. Planning and construction of water systems must be in accordance with RWSB's standards so that the government can continue to support their maintenance. The lowveld has the greatest needs and will, therefore, receive priority. Water supply and sanitation must be considered at an early stage of planned resettlements. Provision shall be made for coordination of water supply, sanitation, health education and community participation activities. Provision shall also be made for long and short term training of technical and support personnel.

Strategies: Organize water and sanitation (or other development) committees so that communities can participate in all stages of sectoral development and later assume ownership and maintenance. Public standposts and pit latrines will be used. Implementing agencies (Rural Water Supply Board, Health Inspectorate, Health Education Centre) shall coordinate their activities; priorities for sectoral development shall be established by regional development shall be established by regional development teams.

Two-Year Action Plan: (extracted verbatim from the executive summary of the draft document dated July 1986).
The two-year action plan for the period 1987-1989 has been drafted as an intermediate step in the continuing process of planning for development of the water supply and sanitation sector in Swaziland. It has been prepared under the guidance of the National Action Group (NAG) which has

responsibility and authority for coordination and general supervision of all sectoral activities, for establishing rural water supply policy, and for planning sectoral development.

The two-year action plan for development of water supply and sanitation in rural areas consists of nineteen (19) planning elements which include:

- construction of new water supplies to serve 65,449 people and implemented by Government agencies and non-governmental organizations;
- rehabilitation of inoperable water systems to serve 12,000 people;
- construction of 3,000 latrines;
- maintenance of water systems;
- manpower assessment and planning, training, and establishment and filling of positions to meet immediate needs;
- supporting activities required to implement projects and programmes, including linkage of health education and community participation with water supply and sanitation, and coordination among agencies;
- preparation of a five-year sectoral development plan.

Crude budgets have been prepared for the plan period amounting to E8,283,681; E1,890,385 of which must come from the Swaziland Government, and E6,393,296 of which must come from external sources.

In general, the two-year action plan calls for a level of capital investment in water supplies under the RWSB in line with past level of activity and which will provide safe water to an additional 41,249 people. This is consistent with national five year goals established in the national policy. It also calls for an increase in the level of investment in rural sanitation which will acquire external support. Maintenance, which is essential to continued operation will require increasingly large budgets as the number of water supplies increases and as systems age. The plan calls for a study of funding mechanisms to reduce the burden on Government in the long term.

Other elements called for in the plan include on-going activities and planning and development of activities required for implementation of existing programmes and for meeting future needs.

5.1.4 Appreciation

With technical assistance from the Rural Water Borne Disease Control Project, the Technical Subgroup has prepared a set of sectoral planning documents that are rarely available in developing countries. These documents reflect the needs, policies and strategies of the Government as they were prepared by Swazi officials with only guidance and technical support from the project and WASH. These activities have helped establish a solid sectoral planning base and the benefits of such an institutional process will be apparent in the future. With strong support from the Ministry of

Natural Resources, the Senior Engineer of the Rural Water Supply Board is designated as Secretary to the National Action Group and Chairman of the Technical Subgroup.

Apart from the planning process itself that was demonstrated, the main benefit of these activities is a framework for orderly and efficient development of the sector. It becomes easier to identify and prioritize feasible projects when funding is available from government, international, bilateral, and private sources. The documents also identify weak points that need reinforcement so as to optimize the use of resources.

In the words of the Government officials we met, the planning process in the water and sanitation sector here is a tremendous success. The planning process may be completed by the end of December 1986, when the Cabinet is expected to approve the final documents whose draft is under revision by the TSG and will be submitted to the NAG at the end of September for review and approval.

Minor concerns expressed by the evaluation team are:

1. The sectoral planning documents are a Swazi achievement for which the members of the TSG and NAG ought to be congratulated. However, the public health engineering advisor, representing the senior engineer of RWSB, proved to be an important catalyst. One wonders if the TSG will keep its momentum once the USAID's project ends. RWSB's senior engineer has stated his commitment to continue the sectoral planning activities, replacing the public health engineering advisor, with assistance from the two other engineers currently on the board's staff. However, all three Swazi engineers are already working at capacity, handling their own responsibilities and helping with the duties of the planning and construction position.
2. Community participation was addressed in the policy and background documents but perhaps not strongly enough. There is a link here with health education so that the communities will be willing to contribute labor and funds for the construction and operation of water systems. In the few field visits that we undertook, we did not feel that all the communities had the sense of ownership and responsibility for maintenance that is required. The planning documents might make a stronger case for community participation in construction and operation. Eventually, recurrent costs will be too much of a burden for the government and provision should be made for the communities to pay entirely for operation and maintenance. It is even desirable that they pay a portion of the capital costs to the extent that their revenues permit. (There is a tendency now to require a starting fund of E1,000 before installing a water system. Communities normally pay for running costs such as electricity and fuel, but the RWSB assists with maintenance and repair at no charge. RWSB will train maintenance workers and try to have the communities pay for all operation and maintenance costs. The whole question is under study and it is hoped that decentralization will facilitate a solution).
3. Other donors (UN agencies, bilateral aid agencies) and non-governmental organizations might be invited to take a more active role in the planning process. This should not be done in a way to make the process lose of its national essence but would facilitate

its acceptance and implementation. In other words, while keeping the planning process as a prerogative of the government, it would pay to make the donors and NGOs feel part of this process. It would also serve to lessen the possibility that the documents will be later accused of excessive influence of American technical assistance.

4. The U.S. public health engineering advisor warns that to obtain cabinet approval and financial support, strong leadership from the officials and clear directives to the NAG and TSG as well as support of the Department of Economic Planning will be required. In that regard, during a meeting with the Principal Secretary and the Planning Officers of that Department, we noted their concern for the rising burden of recurrent costs and their insistence that water supply and sanitation projects include adequate elements of health education and community participation .
5. There seems to be a discrepancy between the expected contribution of the government and the recent levels of capital investments in the sector. The two-year plan indicates that the government will contribute more than one million Emalangeni toward the construction and rehabilitation of water supply systems while it contributed E200,000 in fiscal year 1985-86 and an average of E150,000 in the 5 previous years. The current budget of the Rural Water Supply Board is E500,000 per year. (Approximately two thirds for salaries of office and permanent staff and one third for overhead and operation and maintenance; field employees are paid on project funds).
6. Comment of the public health engineering counterpart: The draft short-term action plan has an allocation for the MOH's health assistants to execute spring protections. This is a potential problem built into the plan as health assistants have difficulty constructing water supply systems to the Rural Water Supply Board's standards. Health assistants still need considerable practical training and supervision in this field. The spring protection workshops and manuals provided to the health inspectors and health assistants have proved insufficient. What they really need is the kind of training and experience that Ms. Dube, a health inspector, is getting at the RWSB's public health engineering unit.

Actually, the senior health inspector, head of the Health Inspectorate, has requested that water supply construction be removed from the activities of his department but his request was denied. He thinks that the RWSB should have responsibility for the construction while the health assistants can handle the health education and community participation aspects.

5.2 Constructing Small Rural Water Systems

5.2.1 Overview

It is estimated that the Rural Water Supply Board has completed 80 or 85 percent of the construction work funded under the project for 8 water supply systems throughout the country. It is well within RWSB's capabilities to do the remaining work by the 30 September deadline but there are

roadblocks that must be removed: Community participation for such work as trenching, government order books for the purchase of materials, transportation. It is up to the RWSB to determine how best to remove difficulties of a logistic nature. Coordination with the MOH's Health Inspectorate was not easy and here the two agencies are encouraged to determine how best to work together in the field as mandated under the national water and sanitation policy.

5.2.2 Background and Purpose (Adapted from the public health engineering advisor's report)

In late 1985 it was decided to use project surplus funds to fulfill some project objectives while meeting immediate needs of some rural communities. Thus a proposal was prepared with REDSO Engineering's assistance for the construction of the eight water systems summarized in Table 5-1. These systems would serve a total population of 9500 in 1996 at a total cost of E463,335, to be contributed by the Government of Swaziland (26%) and USAID (74%). In general these systems include four components: source development, transmission, storage, distribution.

This activity was viewed as a demonstration of the achievements of the project for it called for coordination of the elements that had received support under the project and that were to be emphasized in the national policy for development of water supply and sanitation in Swaziland. Implementation of water schemes was to be carried out through the Rural Water Supply Board. The Health Inspectorate was to provide health education, help target communities with latrine construction, and assist in organization of community participation. This assistance was important to:

- (i) Increasing community understanding of health problems and how clean water and sanitation can help improve health.
- (ii) Developing effective organization for involving the communities in planning, construction, operation, and maintenance of water systems.
- (iii) Motivating the construction and use of latrines linked to the provision of safe water.
- (iv) Motivating proper use of water for all home uses including drinking, cooking, personal hygiene, and washing clothes.

5.2.3 Achievements

The Rural Water Supply Board is active in the construction and maintenance of two types of water supply systems:

- Micro systems serving up to 1000 people, consisting mainly of small spring protection structures or boreholes equipped with hand pumps (average population served is 150).
- Macro systems serving populations up to 5000; they may be boreholes equipped with submersible pumps or spring gravity fed systems with transmission, storage and distribution facilities (average population served is about 1000).

To carry out its activities, RWSB has set up the organization shown on the chart of Figure 5-1. Besides the headquarters staff, RWSB has a maintenance section and four construction units, one in each of four regions. Each of these units, headed by a clerk of works, has 25 to 35 members. In all, the field staff of the RWSB includes:

- 5 clerks of works
- 3 foremen
- 1 inspector of works
- 1 mechanical technician
- 1 community development officer
- 1 micro technician
- 2 assistant community development officers
- 2 builders
- 15 heavy duty drivers
- 16 bricklayers
- 1 construction technician
- 7 water technicians
- 1 maintenance technician
- 11 pipefitters
- 3 mechanics or plant mechanics
- 7 plumbers
- 3 carpenters
- 6 light duty drivers
- 1 storekeeper
- 4 storemen
- 6 nightwatchmen
- 1 laboratory technician
- 30 laborers

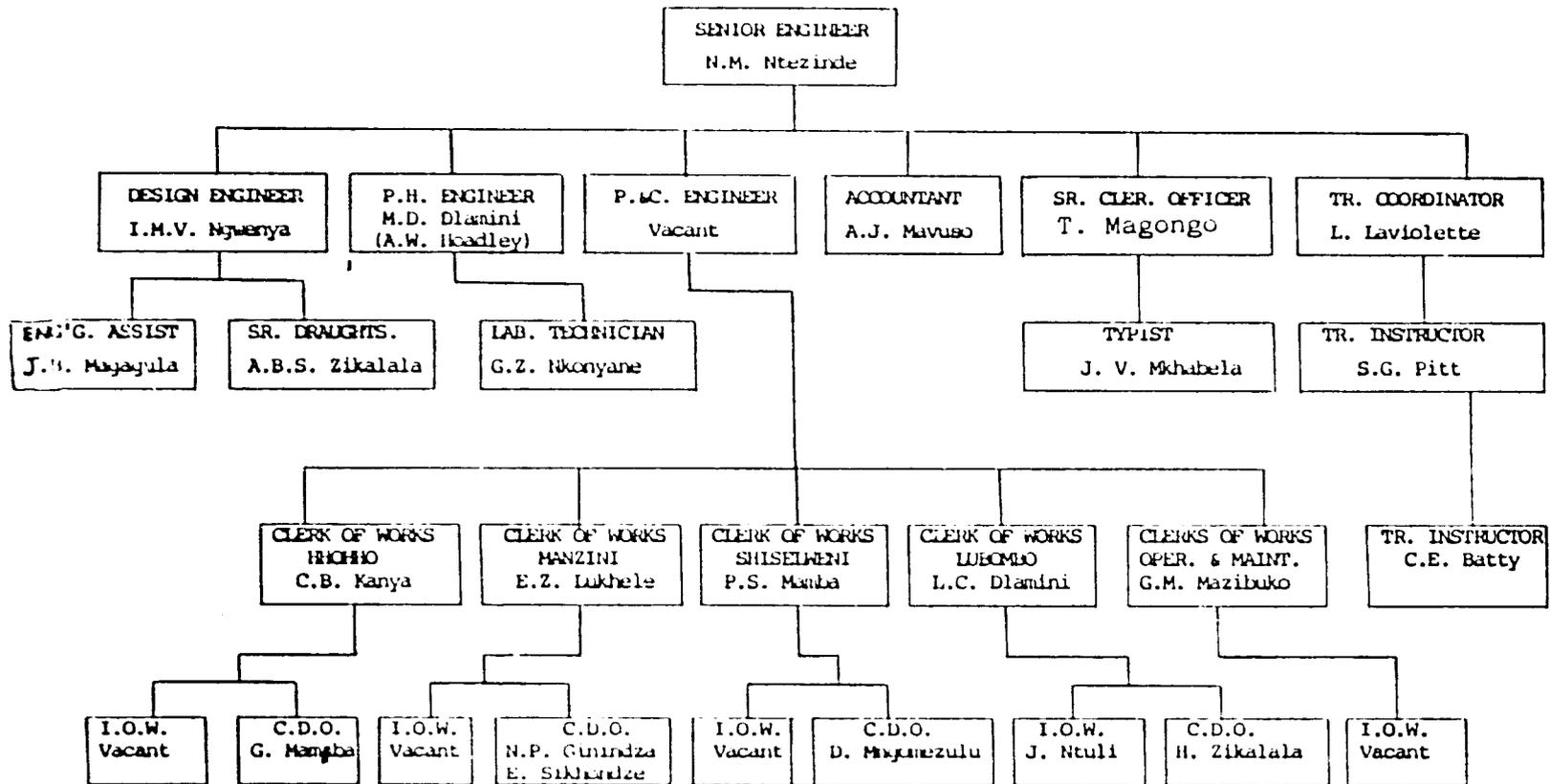
RWSB's senior engineer provided the following information. Each construction unit is divided into 4 groups, each group headed by a technician. Each group could complete a project by itself in six to eight months, but because of problems of procedures, scheduling, materials purchase, manpower recruitment for replacement, it takes a group one year to complete a macro project. Two groups are assigned to the USAID sponsored projects in order to complete them in 6 months. This is the maximum number that can work simultaneously on one project to avoid inefficiencies.

Table 5-2 summarizes the information extracted from progress reports submitted monthly by the clerks of work or information collected during our field visits. The table shows that, as of 31 July, the RWSB has completed about 80-85 percent of the work involved in the construction of the eight water systems. Transmission is the component showing the greatest progress while storage is the one least advanced. Two small systems in Lubombo involving basically spring protection are completed and in operation. Whether all the systems can be completed and in operation by the 30 September deadline depends on the speed with which the roadblocks are removed.

As of 30 June, the RWSB spent a total of E244,395 of the USAID contribution; that is a proportion of 71 percent. At that time, an overrun of 5 percent or approximately E17,000 was anticipated. Systems that have already exceeded some component budgets include:

Figure 5-1

ORGANIZATION CHART OF THE RURAL WATER SUPPLY BOARD (JAN. 1986)



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NOTE: () ADVISERS

- Embekelweni (materials and transport),
- Mphundle (materials),
- Motshane (labor),
- Duze (transport)

The two small systems already in operation in Lubombo were completed 50 percent under budget. No cost information is on file for the Shiselweni projects.

5.2.4 Evaluation

This demonstration ran into several difficulties, some of which illustrate the weaknesses of the sector and indicate areas that need improvement. A severe time constraint was imposed on the implementation of this activity. This constraint has two consequences:

- (a) the agencies of the two ministries involved had to act fast to establish a field coordination strategy;
- (b) the RWSB had to devote a good portion of its field resources to these projects, somewhat neglecting the other funded programs in the process. Comment of the RWSB's design engineer:
 - ° Only one crew out of three (instead of 2 out of 4) in every region is assigned to the USAID-sponsored systems. Since April 1986, construction units have also completed:
 - Lubombo: 1 major scheme funded by UK;
 - Shiselweni: 1 project funded by UK;
 - Manzini: 2 projects funded by UK; another project funded by UNDP is 30 percent complete;
 - Hhohho: 1 project funded by RL; and 1 rehabilitation funded by USCC.
 - ° RWSB is ready to start three major projects (RU 167, RU 216 and RU 218b).

Coordination between the Rural Water Supply Board and the Health Inspectorate proved to be difficult. Community participation in many instances left much to be desired, which makes one wonder how effective the health education messages were. In one case the community was slow because it had to devote some time to royal duties (Embekelweni), while in Motshane the residents were available only on Saturday since a lot of them work in Mbabane. However, good community participation was noted at Duze and at Madvulini. It may also be noted that royal duties affect all communities and that, over all, Embekelweni has one of the best participation records. Here is a brief assessment of these difficulties by the public health engineering advisor:

1. Participation posed unique problems in the community that was to be served by the rehabilitated system as its previous experience was not positive: initially built by the Peace Corps with USAID funding the system was not designed in accordance with community wishes and ceased operation after only a few months. The problem of obtaining good community participation, essential to successful implementation, was severe. It was overcome by joint efforts of the chief, the tinkhundla office, health assistant, community

development officers, and headquarters staff of the Rural Water Supply Board. Coordination has taken place well in the area of this system and two nearby small spring protections.

2. The contribution of the Ministry of Health was poor in most target communities, and the objectives of linked health education and latrine construction were not met. To address this problem, the concerned clerks of works and community development officers from the Rural Water Supply Board and health inspectors from the Ministry of Health were called together to agree on how they could improve coordination during the remainder of the project and in the future. It was agreed that:

- Clerks of works and community development officers will keep health inspectors and health assistants informed of new projects, needs and schemes in progress. They will also assist one another in providing transportation.
- Clerks of works or community development officers will be invited to and will attend monthly meetings of the Health Inspectorate to inform each other of activities, discuss problems, and agree on logistics and other arrangements to assure linkage and mutual assistance.

3. While objectives of this activity were not fully met, it did serve as a test of how coordination was being achieved, and it did serve as an important step towards its future implementation. It was therefore an important demonstration of a process which both the Rural Water Supply Board and the Health Inspectorate view as essential to meeting their respective and mutual goals. It should be noted, furthermore, that coordination does routinely take place in other localities, and is related to personalities involved.

Besides the delays caused sometimes by inadequate community participation, the most common difficulty faced by the construction units was a lack of order books to purchase materials and insufficient vehicle or equipment. More than one clerk of works expressed the need for a flatbed truck with a hydraulic arm for raising materials such as concrete. According to the design engineer, to cope with possible additional work, the RWSB should augment its vehicle fleet by the following: 1 backhoe for general use, 2 tipps trucks, 1 flatbed truck, 4 three-ton trucks, 4 four-wheel drives, 2 LDV.

Table 5-1: USAID Sponsored Water Systems (all costs in Emalangeni)

Project No., Location and (Region)	Source	Estimated Government Contribution	Estimated USAID Contribution	Estimated Population in 1996
RU 027 Motshane (Hhohho)	Spring	11,504	39,683	800
RU 050 Embekeiveni (Manzini)	Borehole	39,194	98,173	2,650
RU 077 Entandweni (Manzini)	Borehole	2,804	8,855	550
RU 079 Duze (Lubombo)	Borehole	15,666	62,392	1,400
RU 194 Mphundle (Lubombo)	Spring	18,945	54,259	2,000
RU 117 Madvulini (Shiselweni)	Spring	23,756	60,532	1,600
MPL 026 Emthongeni (Lubombo)	Spring	3,754	10,032	200
MPL 027 Embongolweni (Lubombo)	Spring	3,754	10,032	300
TOTAL		119,377	343,958	9,500

Notes:

(1) Government's contribution covers labor and overhead, respectively 18.9% and 6.9% of total.

(2) USAID's contribution represents:

Materials	: 44.0%	Subcontractors	: 12.1%
Transport	: 11.4%	Contingencies	: 6.7%

(3) Subcontractors are for hydrogeological surveys, borehole drilling and electrical works.

(4) Three projects (RU 077, MPL 026 and MPL 027) involve mostly source development. For the others, the relative costs of the components are, on the average and for the USAID contributions:

Source development	: 19.5%	Storage	: 19.3%
Transmission	: 14.2%	Distribution	: 47.0%

Table 5-2: Status of USAID Sponsored Systems (as of 31 July 1985)

	Percentage Completion				
	Source	Transmis.	Storage	Distrib.	Overall
RU 027 Motshane	100	100	95	80	94
RU 050 Embekelweni	97	100	80	83	85
RU 077 Entandweni	80	-	-	-	80
RU 079 Duze	100	100	40	90	78
RII 194 Mphundle	100	90	10	50	67
RU 117 Madvulini	100	100	80	80	85
MPL 026 Emthongeni	100	100	100	-	100
MPL 027 Embongolweni	100	100	100	-	100
TOTAL	97	98	63	79	80

Note:

The completion percentages for each component, derived from progress reports on file and from conversations with clerks of works, were applied to the construction cost estimates to obtain estimated construction values which were then added horizontally and vertically to yield the percentages shown on the last column and the last line.

5.3. Construction of Rural Sanitation and Small Spring Protection Systems by the Health Inspectorate

5.3.1 Overview

At the start of the project, the Health Inspectorate/MOH was assisting communities to construct small spring protections and latrines, but productivity was low. The unit was staffed by three district health inspectors, two senior health assistants, and 30 health assistants (of 48 trained between 1975 and 1977). Morale was low as a result of a lack of opportunity for career advancement, insufficient budget, poor logistical support and inadequate supervision. Record-keeping was poor, but between 1980 and 1985 the rate of latrine construction steadily increased from 289 to 862 per year; this exceeds the 2000 demonstration latrines expected. Complaints were heard that pits dug in anticipation of assistance in constructing slabs remained uncovered and a hazard, because the Health Inspectorate could not respond adequately to requests for assistance, which was provided generally at the individual homestead.

The project and related ORT radio broadcasting have been quite successful, however, in stimulating latrine construction, especially since 1983. The need for improved performance in protection of small springs remains in spite of certain project inputs in this area.

Recommendations

1. Complete and circulate the draft manual "How to Build a Pit Latrine."
2. Undertake the following activities, if necessary through short-term technical assistance:

- (a) inventory project-stimulated latrines,
 - (b) train health inspectors and senior health assistants in inventory and evaluation techniques,
 - (c) develop the present draft of a small spring protection manual.
3. Design practical workshops, in connection with recommendation 2(c), in small spring engineering technology for two health assistants from each region.
 4. Provide on-the-job training at the RWSB for the same two health assistants/region, in spring protection construction, as follow-up to training from recommendation 3.
 5. Use the results of recommendations 3 and 4 to execute a demonstration spring protection project for all health assistants requiring training.
 6. Activate a spring protection work-group in the TSG to engage in the systematic and cost-effective exploitation of springs, with assured community mobilisation and sense of ownership for improvements.

5.3.2 Expected Results

The goal of the project's sanitation component, according to project documents, is:

To strengthen MOH's rural sanitation program through long-term strategy development, training, technical assistance, and funding for a strong pit-latrine construction program.

In short, the project intended to support the MOH Health Inspectorate so that it could respond adequately to requests for assistance from communities in the building of latrines. It anticipated that by 1985, 5,000 latrines would be installed each year, based on spread efforts of a latrine demonstration program, and that by then 40% of rural homesteads would have improved pit latrines.

Specifically, project objectives were:

- (a) Approximately 2,000 ('demonstration') pit-latrines. As was noted in the mid-term evaluation, the MOH viewed the original concept of "demonstration" latrines as inappropriate and shifted the budget for their construction to the purchase of materials for latrines.
- (b) Development of minimum design criteria for pit-latrines and alternate pit-latrines designs. This was likewise modified upon arrival of the sanitation technical advisor, as the MOH required that he recommend a pit design or designs, and minimum design criteria appropriate to Swaziland.
- (c) Selection criteria for choosing homesteads for ('demonstration') latrines. The word "demonstration" was to be deleted.
- (d) Guidelines for incorporation of health criteria in the design of water supply systems. This was to be under the purview of the public health engineer, originally conceived as functioning in the MOH, but in fact housed in RWSB.

- (e) Appointment and training of four senior health assistants to supervise latrine construction, one in each region.

5.3.3 Construction Performance of the Health Inspectorate

1. The Pit-latrine Construction Program. Table 5.3 reports by year the number of latrines--4,001-- constructed since 1979 under the Health Inspectorate. Since October 1981, the project spent a total of E59,523 (roughly \$35,000) for latrine construction materials. Whereas the project budgeted \$45,819 for materials, the Health Inspectorate's inability to utilize available funds led to rechanneling unused money (the budget was cut back after 1984) into water supply construction during the project's last six months.

Table 5-3: Summary of Latrine Construction

<u>Year</u>	<u>Construction Projects</u>		<u>Materials Delivered</u>		
	<u>Latrines completed</u>	<u>Latrines under constr.</u>	<u>Cement (bags)</u>	<u>Rebar (27/slab)</u>	<u>Vent Pipes (1/slab unless double latrine)</u>
1979	146	106			
1980	289	105			
1981	409	204			
1982	520	780	1,200		560
1979-82	1,364				
1983	609	524	-		-
1984	649	534	920	1,800	200
1985	862	641	600	1,200	1,500
1986 (6 months)	517		800	800	800
1983-86	2,637		2,320	3,800	2,500
Total	<u>4,001</u>				

(through June 1986)

Source: AED 1986 Draft Progress Report

Field visits by the evaluation team revealed the same basic concerns voiced in the mid-term evaluation, as regards the pit-latrine construction process:

1. Health Inspectorate personnel cannot meet demand for latrine construction, in terms of supplying in a timely manner materials and expertise to scattered homesteads making application. Major problems are severe transportation constraints and delays in MOH purchasing and material delivery. At present, pitch fiber sockets in which to drop vent pipes are missing, allowing some health assistants to postpone slab construction.

2. As before, a high percentage of latrines remain "under construction." Reported in field visits were alleged cases of animals falling into uncovered pits awaiting slab delivery or simply a pit dug too wide, superstructures unbuilt due to lack of suitable materials, lack of a vent pipe, a toilet seat, or a door.

Design standards for the ventilated, improved pit-latrines are not yet circulated in the form of a manual, which is virtually complete but awaiting final graphics under supervision of the technical assistant to the public health engineer. Notwithstanding, health inspectors and health assistants interviewed seemed to have a fairly uniform concept of the structure's design, based on school notes and in-service training by the sanitarian technical advisor.

The team witnessed minor variations in design, such as shape and size of slab opening, presence or type of seat, and superstructure materials. Notable, however, were the many instances of uncovered slab or toilet seat openings, minimizing the benefit of the screened vent pipe.

As against a commercial price of E37, the MOH subsidized price of E5 per slab and E5 for the imported vent pipe and screen was explained as conveying a sense of ownership. In most instances, the current practice is for the health assistant to make a batch of slabs, often with homesteader participation, in a central location and arrange pick-up upon digging of the pit. Consistently, health assistants claimed they did not wish to press for immediate payment upon delivery, but rather tried to get the facility in use, then check back for gradual repayment.

2. Construction of Small Spring Protection Systems. Historically, health assistants have been active in locating springs and helping communities protect and tap them. Table 5-4 shows the jump in number of spring protections completed from the 1979-82 period - 23 - as compared with 54 in the subsequent three years. The under-construction category often rivals the completed, however, suggesting all is not well.

Table 5-4: Summary of MOH Spring Protections

<u>Year</u>	<u>Spring Protections</u>	
	<u>Completed</u>	<u>Under construction</u>
1979	5	6
1980	7	5
1981	4	2
1982	7	19
1979-82	23	
1983	17	19
1984	21	11
1985	16	15
1983-85	54	
<u>Total</u>	<u>77</u>	

Source: AED 1986 Draft Progress Report

Indeed, evaluation team field inspections bear out the observations of the public health engineer and his technical assistant advisor, that the design and actual workmanship of spring protections organized by health assistants often do not meet minimum health criteria. Most notable violations are:

- incomplete diversion of surface water from spring;
- poor drainage of excess water, often caused by misplacement of overflow pipe outlet;
- difficult and often muddy access to standpipe;
- inadequate, if any, fencing against animals.

From an engineering standpoint, miscalculations in head and reservoir capacity were also noted, jeopardizing the efficiency and effectiveness of the system.

Initial drafts of a design manual for spring protection have been circulating for almost two years, but would require an intensive effort to be brought to a usable form. Meanwhile, the review process by RWSB of MOH-generated spring protections seems to allow several problematic projects to slip by in an unfinished or poorly-conceived state.

The spring protection workshop for health assistants, staged over two weeks in 1985 by the RWSB, was well received and useful, but insufficient to remedy the situation. When a health assistant who is not a builder or plumber attempts to mobilize community labor to execute a fairly extensive project, problems arise. By contrast, the evaluation team saw an excellent spring protection organized by a health assistant who had many years of experience as a builder (Maqhobeni in Shiselweni).

5.3.4 Appropriateness of Scope and Approach

The project scope was too ambitious in aiming at latrine use by 40% of the rural population in 1985 or a construction rate of 5,000 per year. Actually, no meaningful study exists to measure the "spread effect" anticipated in project documents. An end-of-project KAP study was not done for reasons noted in section 2.3. The 1985 evaluation study of the Mass Media for Health Practices (MMHP) project sampled for water and sanitation behaviors. However, while the selection of homesteads for the initial (1981) KAP study conducted under the project and the MMHP evaluation were similar and both studies were conducted on Swazi Nation Land, the areas sampled were different. It cannot therefore be assumed that the samples were comparable. Furthermore, the factors causing any change cannot be assessed.

	<u>KAP Study 1981</u>	<u>MMHP Study 1985</u>
Homesteads with latrine	21.9%	39.4%
Proportion with slab from local materials	62.4%	33.7%

The project's scope, including the major goal of long-term strategy development, training, and funding, was appropriate, if somewhat ambitious. However, the impacts on manpower, logistics, and management were perhaps somewhat limited by the technical approach to the problem.

The MOH strategies chosen to implement project objectives were appropriate, given (a) the limitations in Health Inspectorate manpower and transportation, and (b) the innovative character of latrine usage for rural homesteads. These strategies are:

- ° incorporation of latrine construction in the health assistant's normal scope of activities;
- ° use of health education rather than incentives (other than materials subsidy) to encourage latrine construction;
- ° construction of latrine slabs at a centralized location and then arranging delivery to homesteads;
- ° promotion of community participation utilizing existing, or creating, joint water and sanitation committees;
- ° coordination with rural health motivators so that motivation and slab construction/pit digging are carried out together;
- ° work with the Health Education Centre to obtain support in training, mass media, and materials.

5.3.5 Conclusions and Recommendations

Conclusions

The project has achieved the major thrust of its goal in the latrine construction component but is lagging in the sanitary protection of water sources. The degree of success in meeting its five objectives can be measured by the following outputs:

- (a) Over 2,600 pit latrines were reported complete through the efforts of the project during the period 1983 through June 1986.
- (b) A manual with minimum design criteria for pit-latrine construction is in final draft form awaiting MOH approval and circulation. Recommended designs were prepared for ventilated, improved pit-latrines with concrete slabs and vent pipes using materials which can be purchased from MOH at subsidized prices or locally-available materials.
- (c) Selection criteria for choosing homesteads which receive pit-latrines were adopted by the project social scientist and senior health assistants, in conformity with MOH standards. Water and sanitation committees selected through the project's efforts are capable of organizing independent improved pit-latrine activities, although the extent of the committees' functioning and distribution cannot be determined from existing data.
- (d) A draft manual incorporating health criteria in the design of small spring protectives is under review but is still incomplete. Under the purview of the public health engineer, this item will probably not be accomplished by end of project in September 1986. Guidance and training are needed to implement water supply construction standards among health assistants. Spring protection measures supervised by the Health Inspectorate are often suspect, in terms of meeting adequate health criteria, engineering

soundness, and cost-effectiveness. More participation of the RWSB is required for the country to utilize properly its abundant but fragile spring resources.

- (e) The four senior health assistants supervising latrine construction are operating in each region; some, however, with limitations in transportation and therefore in supervisory capacity, a problem treated elsewhere in this evaluation. The number of health assistants actually performing the field work has remained roughly constant through the life of the project, contrary to what was hoped. Through project efforts, however, they did receive some technical and community development training.

Recommendations

The following recommendations are offered to approach a solution to the problems discussed above.

1. Complete and circulate the draft manual, "How to Build a Pit Latrine."

This is a well-illustrated draft which could ideally be printed in reduced, brochure form for circulation throughout MOH, extension, and other educational programs.

2. Undertake the following activities, if necessary through short-term technical assistance:

- (a) inventory project-stimulated latrines, and
- (b) train health inspectors, senior health assistants in inventory and evaluation techniques.

By designing and implementing a statistically-meaningful sampling procedure, ideally linked to a second KAP study as recommended in chapter 2, and involving the Health Inspectorate in the process, evaluation capability can be built into future latrine construction efforts. This can also be linked to evaluation training in the Health Education Centre (Section 2.1).

- (c) develop the present draft of a small spring protection manual.

This draft has been circulated for review over the past two years, but lacks the concentrated effort of specialists in water supply, educational documentation, and construction technology training. Moreover, knowledge of the capacity and needs of the health assistants who will be the target audience, requires some prior acquaintance with Swaziland conditions before producing the final document.

3. Design practical workshops, in connection with the consultancy of recommendation 2(c), in small spring engineering technology for two health assistants from each region.

These workshops should provide higher levels of engineering technology and building/plumbing construction skills in spring protection; methods for training, managing and supervising semi-

skilled community labor in these techniques; and pedagogical tools whereby the above skills and methods can effectively be imparted to the health assistant peers of the selected workshop participants.

4. Provide on-the-job training at the RWSB for the same two health assistants per region, in spring protection, as follow-up to training from recommendation 3.

The suggestion is offered that health assistant trainees be seconded for six months to the micro-systems and spring construction crews of the RWSB in their respective regions; and that the training modules of recommendation 3 be tied in with follow-up experience during these six months with RWSB. This will involve close coordination and supervision by the respective clerks and inspectors of works.

5. Use the results of recommendations 3 and 4 to execute a demonstration spring protection project for all health assistants requiring training

Upon completion of the six-months of secondment to RWSB, the Health Inspectorate should arrange with RWSB and perhaps outside technical assistance, a hands-on demonstration project. This could involve the following elements.

(a) the eight "graduated" health assistants who will lead the motivation and construction phases of the project from start to finish;

(b) all health assistants from areas where spring protection is a concern; some rural health motivators might be invited for initial stages;

(c) a target community willing and able to assist in construction of, and assume maintenance responsibility for, a new spring protection project in its area;

(d) an evaluation team selected by RWSB to monitor and assess effectiveness of the exercise and further training needs.

6. Activate a spring protection work-group in the ISG to engage in the systematic and cost-effective exploitation of springs, with assured community mobilisation and sense of ownership for improvements.

This work-group would be charged with implementing and monitoring a concerted, cooperative effort between RWSB as lead agency, and the Health Inspectorate as mobilising force, perhaps in tandem with certain PVGs, to engage in the systematic and cost-effective exploitation and rehabilitation of spring resources in each region. Special measures must be taken to assure community mobilisation and sense of responsibility for improvements.

5.4 Strengthening Coordination Among Units and Programs Involved in Water and Sanitation

5.4.1 Overview

Increasingly since 1982, the Health Inspectorate and the Rural Water Supply Board have begun to work together in the water and sanitation sector. In the past, there had been little linkage. At the present time the two units have begun to meet monthly on a regional basis. The Technical Subgroup of the National Action Group's planning process is performing well in facilitating overall sectoral coordination. This has included coordination with all major donors to the sector. Current efforts are integrated in the draft two-year action plan by the TSG for the sector. The RWBDC project has helped create a climate of communication and coordination among related programs. More specifically, the evaluation finds that:

- The public health engineering advisor of the RWBDC project has been a major force in providing coordination at the operational level.
- The current climate of cooperation between the RWSB and the Health Inspectorate is cordial but not well institutionalized.
- The Health Inspectorate's current lack of a deputy health inspector and other weaknesses have slowed efforts at coordination.
- Staff shortages at the Health Education Centre, especially at the regional level, have hindered significant coordination efforts.
- The Bilharzia Control Unit and other Ministry of Health's vertical programs are not integrated into the coordination process.

Recommendations

1. That USAID provide technical assistance to the RWSB at the senior level to continue the training of the public health engineer and to act in a coordinating role. This technical advisor should have the following background (see recommendations of Chapter 4):
 - . expertise in design and construction management of small water supply systems,
 - . environmental engineering experience,
 - . water quality surveillance experience.
2. That the regional senior health assistant and the CDO and/or COW of the RWSB do monthly site visits together to communities with water and sanitation projects. This would help them define their mutual needs, and help to associate the health assistant with the RWSB representative in the minds of the community.
3. That the Health Inspectorate and RWSB arrange short-term technical assistance to health assistants and inspectors, community development officers, clerks of works and inspectors of works on a regional level. This assistance would be focused on in-service management and communications workshops.

4. That the Technical Subgroup meet regularly on a bi-monthly basis and circulate minutes of these meetings to regional clerks of works and health inspectors, as well as senior health assistants.
5. That the RWSB call sectoral meetings every six months to review plans, activities, problems, and coordination and linkages.

5.4.2 Anticipated Project Results

The project paper stated as a goal that by the end of the RWSBDC project, health criteria would be incorporated into water system design and construction and other water resource developments.

It also projected that the institutional capacity would exist at the community level to sustain a rural sanitation program. This was based on a major assumption: that the Ministry of Health would continue to support health assistants and rural health motivators at levels sufficient to operate effective health education and sanitation programs.

A further assumption was that the program would be continued after the withdrawal of the technical advisor.

5.4.3 History of Coordination

In September of 1982, the senior health inspector formally recognized the need to "cooperate with the RWSB on water projects." In October of 1984, the RWSB spelled out the need for coordination with the Health Education Unit to develop community understanding and support, and with the Health Inspectorate, to coordinate latrine construction with the RWSB. A spring protection workshop was planned to respond to these needs.

By November of 1984, the RWSB was beginning to identify specific areas for cooperation among units, especially on such topics as:

- . establishing a method to rank sites for their priority in receiving water systems,
- . drafting questionnaires on community willingness to assist with construction and commit to the continuation of maintenance after the system was complete and involving health assistants in this process;
- . coordinating water system construction with latrine building;
- . organizing community workshops involving both health inspectors and community development officers; and
- . listing human resources active in the water and sanitation sector and circulating that list to clerks of works and community development officers.

In August of 1986, a coordinated memo was issued from the senior health inspector and the senior engineer in the RWSB. It covered two main points: that health assistants be involved early in the planning process, and that the regional clerk of works participate in monthly Health Inspectorate regional meetings.

5.4.4 Areas for Strengthening Coordination Among Units

1. The Ministry of Health Water and Sanitation subcommittee should be reactivated.
2. The Health Education Centre should be fully staffed, especially at the regional level so that it can have an impact in regional coordination meetings.
3. The Health Inspectorate must be assisted with its transport problems, which affect its ability to function at the regional level.
4. Clerks of works must be involved in efforts to assure a commitment at the community level to water supply operation and maintenance.
5. Latrine construction activities of the health assistants must be linked to water system development.
6. The RWSB must assist health assistants with the technical design of spring protection systems, by dividing the responsibilities to include:
 - . site location and assessment of community participation potential by the health assistant;
 - . mobilization of community involvement by both the community development officer and the health assistant;
 - . design of the system by both the health assistant and the RWSB inspector of works;
 - . approval of the final design by the RWSB clerk of works;
 - . assistance with allocation and delivery of materials to the site by the RWSB;
 - . construction supervision by the RWSB's foreman, lead builder/plumber with the community providing the labor contribution under the direction of the health assistant;
7. There must be more donor and non-governmental organization coordination by
 - . continuing the momentum of the sectoral planning process; and
 - . establishing more linkages among the donors and NGOs themselves.

5.5 Institutionalization of Health Education and Community Participation Activities in RWSB's Water System

5.5.1 Chances for Successful Projects

Chances for the successful integration of a water and sanitation project into a community are greatly enhanced by the following factors:

- (a) if the community itself has approached the RWSB to ask for the system;
- (b) if the community has raised the E1000 maintenance deposit and understands that the fee is not for the building of the system, but for its continued operation;
- (c) if a strong chief or indvuna support the system and are willing to fine members of the community who do not provide the labor to build the system or their share of the maintenance fees;
- (d) if a strong Water and Sanitation Committee is in place and working;
- (e) if the process of resettlement in the community is complete; and
- (f) if the community is not involved in many other projects that compete with the water and sanitation efforts.

In addition, several factors outside the community come into play as well:

- (a) the presence of an active, respected health assistant who can reinforce the link between clean water, sanitation, and health;
- (b) active RWSB involvement, both by the community development officer to assure the community's understanding and commitment, and the district inspector of works and clerk of works to assure technical acceptability;
- (c) the often informal coordination of various community development workers on the local level, including
 - public health nurses,
 - regional health inspectors and health assistants,
 - Ministry of Agriculture community development officers,
 - headmasters or teachers;
- (d) the presence of rural health motivator..

Geography and recent history play a role as well. Success is more likely if:

- (a) alternate sources of untreated water are far away or very scarce;
- (b) the area is flat and open, necessitating the building of latrines;
- (c) a catastrophic event - cholera, typhoid, the cyclone - has focused the community on the need for available clean water.

5.5.2 Assuring Successful Community Development in RWSB Projects

How can one assure that the health education and community participation components that have led to successful projects in the past can be included in RWSB projects in the future?

Among the prime actors for assuring this are the RWSB's community development officers. The team met with the four regional CDOs during the field visit portion of the evaluation. They were knowledgeable both in technical areas and in community issues, and seemed dedicated to and

respected within the regions. Because they are responsible for an entire region, however, they need to be supported in efforts to work with other community development workers. In the short term, support should be provided by in-service workshops in such areas as:

- . Management training: one 3-week workshop during a 2 year period - (1 person month).
- . Development communications: two 3-week workshops over 2-year period (1.5 person months).
- . Rural health issues: two 2-week workshops over 2 year period (1.5 person months).
- . Project evaluation: two 2-week workshops over 2 year period (1 person month).

In the long term, posts for at least two CDO assistants in each region should be established and filled.

In addition, workshops should be offered in the regions in setting up regional community development teams including:

Health inspectors
Health assistants
RWB community development officers
public health nurses
Ministry of Agriculture community development officers
Headmaster/Ministry of Education personnel.

Short-term technical assistance to plan these workshops might be offered to the Health Education Centre (one person-month).

This process has already begun with the MOH's move toward decentralization, and has been working on an informal level in many communities for some time. Some of the most effective community development workers the evaluation team met were already coordinating their efforts with the Public Health Unit, interested teachers at local schools, Peace Corps volunteers, and/or other regional level development workers.

5.5.3 Impact on RWSB Health Education/Community Participation Component

This coordination will have three positive impacts on institutionalizing the health education/community participation component of RWSB projects:

- (a) Such coordination can provide needed technical advice to health assistants on technical topics such as spring protection methods.
- (b) It will extend the influence of the RWSB CDOs and inform other community workers of their plans and needs.
- (c) It will fill the vital need for a two-way information flow. Not only will information be disseminated to health assistants and other community development workers, but badly needed data on what is really occurring at the local level can be reported and relayed back to the RWSB in Mbabane. This will result in stronger community development strategies, and a more focused approach to integrating health issues with water supply issues.

5.6 Other Evaluative Factors

5.6.1 The Issue of Operation, Maintenance, and Recurrent Costs

Conclusions

- That as more water systems are built in the rural areas, the costs of maintaining those systems will put an increasing burden on the GOS;
- That the difficulties in transport exacerbate the maintenance problem;
- That community participation and involvement in water projects from the outset is a necessary prerequisite to assuring that the system is maintained properly and that recurrent costs are covered;
- That the RWSB's policy of requiring an E1000 deposit from the community before the system is started is an effective one, as long as the community has been made aware that the money does not buy a completed system, but assures its ongoing maintenance.
- That health issues are at stake as well, for
 - (a) if system breaks down, the community goes back to using unsafe water;
 - (b) that the concept of paying a fee for water, if only a small one, can meet with enough resistance that community members will go back to using the "free" unsafe source.

Recommendations

- That before any new system is built, the following prerequisites be achieved:
 - (a) a standing active Water and Sanitation Committee be functioning in the community;
 - (b) the community has raised the E1000 for maintenance and repair, and understands the use of the funds;
 - (c) an estimate of fuel and other operating costs has been made, and a monthly water charge has been estimated if necessary;
 - (d) the RWSB CEO confirm that the community is willing to provide the labor required for the system.
- That the area's health assistant be involved in every phase of the system's design, since his will be a continuing presence in the community after the system is complete;

- That one resident of the community be selected at the beginning of the project to monitor the system's operation, do routine maintenance, and minor repairs.

The Increasing Importance of Maintenance and Recurrent Costs

The issue of recurrent and maintenance costs becomes increasingly important as more water systems are built in more areas of the country. Because of the priority of water projects now, the GOS is committed to maintaining the systems through the RWSB at the present time. But discussion with the Principal Secretary for Finance revealed that the budget for such costs is getting tighter, both in absolute and relative terms.

The Importance of Community Participation

Community participation is at the heart of this issue, as site visits during the evaluation revealed. The contrast between a small, well maintained spring protection in Maqhobeni in Shiselweni and a huge multi-system project in Makhoseni form a prime example of the difference community involvement can make in a system's maintenance. At the first site, the community was mobilized by an active, imaginative health assistant, with the help of the RWSB CDO. The community was involved in the building of the spring protection system from the start, is in the process of raising the E1000 maintenance fund, and has built latrines in almost every homestead in the area.

Near this region, the contrast is striking. Makhosini is an area of over 600 homesteads which was the site of a macro system with 7 different water systems. Built solely by contractors for the UN/WHO in 1981, the system is now functioning at less than 60%. It is a near-classic example of the effects of the lack of community participation on system maintenance. The chief and indvuna were not involved in the planning, the community was not organized or instructed in the use of the systems, and was not told of what its future responsibilities in maintaining the system would be. As a result, the systems have been vandalized, the CDO for the RWSB is striving to undo the damage done by the community's lack of faith in the broken system, and to devise a way to rally the community around again to support future projects.

As one astute health assistant stated "a community must suffer a bit to feel the system is really theirs." That "suffering" - in the form of community mobilization and involvement in the system's planning and construction, - is of prime importance if the system is to be maintained and used.

See Section 5.5 for further comments on community participation strategies

5.6.2 The Issue of Transportation

Conclusions

That problems with transportation have affected nearly every phase of the project, including:

- school visits of the BCU
 - community development efforts of the RWSB and MOH
 - regional efforts of the Health Education Centre
 - delivery of materials for latrine construction to motivated communities
 - technical design and inspection activities of the RWSB clerk of works and inspector of works
 - the regional activities of the senior health assistants and the health inspectors
- That the system of CTA repair and maintenance is the prime reason for vehicle unavailability.

Recommendation

- That USAID adopt a policy similar to the ODA policy in effect in RWSB support projects that mandates that:
 - 75 percent of project vehicles be in working order at any given time; and
 - if a vehicle is not repaired by CTA within two weeks, the services of a private garage be used, and that the cost of such repair be split between the GOS and the project.

**SWAZILAND RURAL WATER BORNE DISEASE CONTROL PROJECT
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for the USAID Mission to the Kingdom of Swaziland**

**APPENDIX A
TERMS OF REFERENCE OF THE FINAL EVALUATION**

APPENDIX A

TERMS OF REFERENCE FOR FINAL EVALUATION

(Prepared by USAID/Swaziland)

1. Background

This multidisciplinary health project addresses the problem of high morbidity and mortality caused by diseases related to water and sanitation in Swaziland by strengthening and expanding the delivery of preventive health services. The project provides technical assistance in health education, sanitation, public health engineering, epidemiology, and social sciences; participant and in-service training; construction and equipping of health education and bilharzia (schistosomiasis) laboratory facilities; and limited support for construction of latrines and production of health education materials.

The scope of the project has recently been expanded to include sectoral planning and construction of water supplies in rural areas. Major efforts have been made to achieve coordination of project components and units and ministries operating in the sector. The Academy for Educational Development (AED), with a sub-contract to the American Public Health Association (APHA), has been contracted to provide long-term expertise in all component areas. The project has also drawn heavily on short-term consultant services obtained through the Water and Sanitation for Health (WASH) project. A mid-project evaluation was conducted between 31 October and 18 November 1983.

2. Original Scope of Work

The end-of-project evaluation will be conducted in-country during the period August 4 to August 22, 1986 by an evaluation team consisting of a public health engineer, a sanitarian, and an expert in community development provided by the contractor, as well as a Swazi engineer. The evaluation team will coordinate its work through the USAID/Swaziland Regional Health/Population Development Officer.

The team will conduct interviews with the project chief-of-party and officials of the Ministry of Health (MOH), Rural Water Supply Board (RWB), and other agencies as required; will review project reports, memoranda, workplans and other relevant materials; and will make selected field visits. The evaluation team will have up to two working days in the Washington, D.C., area to review project documents available in AED/Washington (to be coordinated with AED/TE/HR). Within the context of the project purpose, the evaluation team will assess progress since the mid-project evaluation in meeting the following overall project objectives and outputs:

1. Strengthening health education emphasis and community participation in water and sanitation projects at the community level.
2. Strengthening management in the MCH health inspectorate.
3. Strengthening the FWSB Public Health Engineering Unit and its linkages with the MOH, including both assignment of counterparts and counterpart training.
4. Involving the Public Health Engineer in the development and review of new water projects.
5. Surveying bilharzia in the northern lowveld, and developing and implementing a bilharzia control strategy.
6. Training staff of the Bilharzia Control Unit.
7. Strengthening the effective utilization of epidemiologic data.
8. Evaluating target behavior changes.
9. Planning for development of the water supply and sanitation sector in Swaziland.
10. Constructing small rural water systems.
11. Strengthening coordination among units and programs involved in the water and sanitation sector.

The evaluation team will also be expected to review the overall project scope and assess the appropriateness of approaches used in its implementation. Attention should also be given to the extent and nature of support provided by AID/Washington and USAID/Swaziland. The evaluation report should assess remaining needs to achieve overall goals of the project and of the Government of Swaziland (GOZ) through development of the water supply and sanitation sector. The draft evaluation report will be completed and submitted to USAID/Swaziland no later than August 18, 1986. USAID/Swaziland and the GOZ will provide comments on the draft report to the evaluation team no later than August 21, 1986. The evaluation team leader will remain in Swaziland for up to one additional week to incorporate any necessary changes to the draft report and to submit a final report acceptable to USAID/Swaziland prior to departure.

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**APPENDIX B
PRINCIPAL DOCUMENTS REVIEWED**

APPENDIX B

PRINCIPAL DOCUMENTS REVIEWED

- Alt David R., Personnel Management Advisor, GOS, "Comments on 'Curriculum for the Certificate in Environmental Health for Health Assistants (Two Year Programme)' by J.B. Sibiya F.R.S.H., WHO short-term consultant, Health Assistants Curriculum August 1985," Memo to Health Planner/MOH, dated September 30, 1985.
- Chaine Jean-Paul a) Report on Epidemiological Activities of the Project, "Swaziland RWBDCP 1981-1985, American Public Health Association (no date).
b) "Prevalence of Intestinal Parasites in Kingdom of Swaziland," Swaziland RWBDCP 1984-85.
c) "Schistosomiasis Prevalence and Control in Kingdom of Swaziland," Swaziland RWBDCP, 1984.
- DeBose Charles, (USAID Swaziland) 13 July 1984 "Memorandum on Status of Health Education and Mass Media Support for Control of Diarrheal and Other Water Related Diseases."
- Gearheart, R. and David Yohalem, "Development of a Water Supply and Sanitation Policy and Strategy Document in Swaziland; WASH Field Report No. 175, April 1986.
- Gelfland Henry, "Epidemiological Surveillance for Diarrheal Disease Control in Kingdom of Swaziland," Swaziland RWBDCP, American Public Health Association, 1984.
- Government of Swaziland, Fourth National Development Plan, 1983-85.
- Green, Edward C., a) Traditional Leadership, Community Participation, and Development Education: Results and Implications of Two Surveys in Swaziland." April 27, 1984.
b) "Knowledge, Attitudes, and Practices Survey of Water and Sanitation in Swaziland" Sept. 1982
c) "Community Mobilization for Health and Development in Swaziland." Sept. 1983.
- Hoadley, A.W., "Draft 1986 Progress Report on RWSBDCP," Academy for Educational Development, August 1986.
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b) "Guidelines to strengthen the Health Education Unit - MOH" Jan. 1985.
c) "Final Report of the Health Education Component of the Rural Water Borne Disease Control Project", Jan. 1985.
- Institute for Research Development/Westinghouse, "External Evaluation of Combatting of Childhood Communicable Disease (CCCD), Swaziland," (DRAFT), August 1986.

Matsebula J.S.M., A History of Swaziland, 1972.

Ministry of Health, GOS, "Guidelines for Future Operations of Health Services in Swaziland," January 1986.

Mletwa L.L., Senior Health Inspector, MOH. "Re: Comments on the 'Proposed Curriculum for the Certificate in Environmental Health for Health Assistants,'" Memo to Director of Health Services/MOH, dated October 7, 1985.

Nxumalo D., Health Planner, "Minutes of working groups meeting of May 17, 1984 to discuss initiation of Health Assistant Training," to Acting Principal Secretary, DHS, DDHS, Acting PPO, Principal IHS, SHI, dated May 28, 1984.

Phillips H.T. and Eva J. Salbe, "Strengthening the Management of the Public Health Inspectorate of Swaziland," WASH Field Report No. 108, April 1984.

Sibiya J.B., "Curriculum for the Certificate in Environmental Health for Health Assistants (Two-Year Programme), WHO Short-term consultant, August 1985.

WASH, a) "Community Participation Workshop" - Field Report 176, July 1986.
b) "Mid-term Evaluation Report," April 1984.

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**APPENDIX C
OVERVIEW OF OTHER USAID PROJECTS AFFECTING
THE RWBDC PROJECT**

APPENDIX C OVERVIEW OF OTHER USAID PROJECTS AFFECTING THE RWBDC PROJECT

Reference Memo of 4 August 1986

Mary Pat Selvaggio to Dr. Qhing Qhing Dlamini, Medical Officer, PHU

Combatting Childhood Communicable Diseases Project (CCCD):
Training provided to health providers in the areas of CDD, EPI, and malaria. Commodity support to clinics in form of cold chain equipment and drugs/supplies for three interventions listed above. Funding and support for community health education through Health Education Unit, health providers, and mass media channels.

Primary Health Care Project: Although this project has not yet started, its proposed activities include training health providers in the areas of pre- and post-natal care, EPI, nutrition, ORT, and treatment of infectious/parasitic diseases. Limited commodity support to clinics (e.g. laboratory and communications equipment) is planned. Technical assistance to clinics in operational management, and strengthening of health education is planned over the next five years.

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Development Communications Project: Through technical assistance to Swaziland Broadcasting System (SBS), strengthening of development radio broadcasts directed at the community. Content of radio messages has focused on health interventions appropriate for the home and community, agricultural information, education programming for the schools, etc.

Swaziland Manpower Development Project: Community leadership development workshops provided to chiefs, tindvuna, and women's organizations in the areas of:

- a) leadership development, (e.g. group formation, management, record keeping, and civil registration),
- b) environmental conservation,
- c) income generating activities (e.g. handicrafts),
- d) methods of food handling and storage.

OTHER U.S. GOVERNMENT FUNDED ACTIVITIES

Peace Corps Small Project Assistance Funds: USAID provides the Peace Corps with small grants to promote community level development. These funds are available to Peace Corps Volunteers in pursuit of community level projects (e.g. construction of waters systems, health education activities, agricultural production improvements, etc.) through the Volunteers' guidance and supervision.

The Ambassador's Self-Help Fund: The US Embassy has a limited amount of funds available each year to communities for community level development. These funds are available for construction of community facilities, improvement in community services or other related activities. In the past, these funds have been successfully used for construction of water systems, for building of clinics and schools and related activities.

OTHER USAID FUNDED ACTIVITIES

Family Life Association: Assistance to FLAS in its efforts to provide family life services to individuals and communities in the Kingdom. Future technical support is anticipated.

Salvation Army: Through a grant to Salvation Army, 50% of start-up costs provided for the construction of a clinic at Msunduza, a peri-urban area of Mbabane.

Private Voluntary Organizations (PVO): USAID is currently conducting a survey of PVO activities in Swaziland to determine possible future support. PVO activities which will be most closely examined include agricultural organizations providing community based improvements in production and marketing, PVOs involved in health services delivery, and PVOs involved in economic development support to community groups and small enterprises.

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**APPENDIX D
FINAL EVALUATION PROGRAM CALENDAR**

APPENDIX D

FINAL EVALUATION PROGRAM CALENDAR

Sunday	Aug 3	Arrival in Swaziland
Monday	Aug 4	Meetings with Alan Foose Mary Pat Selvaggio Robert Huesmann Alan Reed USAID Meeting with A.W. Hoadley Madoda Dlamini USAID
Tuesday	Aug 5	Meeting with Principal Secretary, Mr. T.M.J.Zwane Senior Health Inspector, Leslie Mthethwa Ministry of Health Meeting with Napoleon Ntezinde Madoda Dlamini A.W. Hoadley Isaac Ngwenya Rural Water Supply Board
Wednesday	Aug 6	Meeting with Leslie Mthethwa A.W. Hoadley Madoda Dlamini Ministry of Health Meeting with Lemma Menouta Health Education Unit Meeting with Zandile Tshabalala Health Statistics/MOH
Thursday	Aug 7	Meeting with Mr. P. Metcalf UNDP Meeting with Mrs Pitnera Mthembu Health Education Centre Meeting with Principal Secretary, Mr. V.E. Sikhondze Dept. of Economic Planning and Statistics
Friday	Aug 8	Meeting with Ms Sibongile Mthupha Bilharzia Control Unit Site visits - Siphocosini, Mantabeni Hhohho Region

Sunday	Aug 10	Meeting with Dr. A.W. Hoadley Meeting with Rajan Soni of Emanti Esive Swazi Inn, Mbabane
Monday	Aug 11	Meeting with Esta de Fossard USAID, Development Communications Meeting with N. Ntezinde Rural Water Supply Board Meeting with members of Public Health Unit Public Health Unit Meeting with Sibongile Mthupha and Health Assistants, Bilharzia Control Unit
Tuesday	Aug 12	Site visits: Duze Siphofaneni Siteki Mphundle Entjonjeni Lubombo Region
Wednesday	Aug 13	Site visits: Piggs Peak Mphofu Mhlangatane Sigqumeni Hhohho Region
Thursday	Aug 14	Site visits: Lobamba Embekelweni Madvulini Manzini and Shiselweni Regions Meeting with PVO consultants: Sean Bradley and John Benson
Friday	Aug 15	Site visits: Makhosini Mbukwane Holneck Shiselweni Region Meeting with PVO consultants: Sean Bradley and John Benson
Monday	Aug 18	Site visits: Motshane Ntonjeni Hhohho Region
Saturday Wednesday	Aug 16- Aug 20	Draft Preparation
Thursday	Aug 21	Preliminary Draft; Briefing with USAID Briefing with GOS

Thursday Monday	Aug 21- Aug 25	Draft Revision
Monday	Aug 25	Final Review Meeting, with USAID Debriefing with RWSB's Design Engineer Debriefing with MOH's Principal Secretary
Tuesday	Aug 26	Debriefing with MONR's Under Secretary Debriefing with Health Education Centre Debriefing with USAID's Director and Staff Departure of Ashelman and Curtis
Tuesday Monday	Aug 26- Sept 1	Final Report preparation by Team Leader
Tuesday	Sept 2	Final debriefing Departure of Team Leader Adrien.

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**APPENDIX E
OFFICIALS CONTACTED DURING EVALUATION**

APPENDIX E

OFFICIALS CONTACTED DURING EVALUATION

Academy for Educational Development (Contractor)

Dr. J.W. Hoadley, Technical Advisor RWSBDCP, Mbabane
Dr. A.M. Kulakow, Project Manager, Washington, D.C.
Ms. L. Lander, Project Assistant, Washington, D.C.
Ms. E. de Fossard, Technical Advisor, Development Communications
Project (USAID) Mbabane

Bilateral Institutions in Swaziland

Mr. J.J. Mayle, Third Secretary, (AID), British High Commissioner,
Overseas Development Administration, Mbabane
Mr. Luc C.J.D. Schillings, Third Secretary (AID), Royal Netherlands
Embassy, Pretoria, S.A.

Department of Economic Planning and Statistics, GOS

Mr. V.E. Sikhondze, Principal Secretary

Health Education Centre, MOH, GOS

Mrs. Pitnera Mthembu, Senior Health Education Officer
Mr. Lemma Menouta, WHO Health Education Advisor

Health Inspectorate, MOH, GOS

Mr. L. Mthethwa, Senior Health Inspector
Ms. Sibongile Mthepha, Health Inspector, Acting Director,
Bilharzia Control Unit, Manzini
Mr. Jerry I. Nxumalo, Regional Health Inspector, Manzini

Ministry of Health, GOS

Mr. T.M.J. Zwane, Principal Secretary, Mbabane
Mr. J.J. Thuku, Director of Medical Services, Mbabane
Ms. Zandile Tshabalala, Director, Statistics Unit

Non-governmental Organizations in Swaziland

Mr. Rajan Soni, Founder, Emanti Esive (Water for the Nation),
Mbabane, Swaziland

Public Health Unit, MOH, GOS

Dr. Qhing Qhing Dlamini, Public Health Unit
Mr. Bongani Magongo, Public Health Unit (CCCD/EPI) RWBDC
Ms. E.T. Mndzebele, RHM Program Coordinator
Ms. Hilda Mdluli, EPI Program Manager
Ms. E. Ntiwane, Matron, Public Health

Rural Water Supply Board, Ministry of Natural Resources, GOS

Mr. N.M. Ntezinde, Senior Engineer, Mbabane
Mr. I.M.V. Ngwenya, Design Engineer, Mbabane
Mr. M. Dlamini, Public Health Engineer, Mbabane

Ministry of Natural Resources

Mr. Ambrose N.N. Maseko, Under Secretary

United Nations Development Programme, Swaziland

Mr. C.P.C. Metcalf, UNDP Resident Representative, Mbabane

U.S. Agency for International Development/Swaziland

Mr. R. Huesmann, Mission Director, Mbabane
Mr. H. Johnson, Deputy Director, Mbabane
Mr. R. Solloway, Regional Financial Manager, Mbabane
Mr. A. Reed, Program Officer, Mbabane
Ms. L. Keays, Assistant Program Officer, Mbabane
Mr. A.C. Foose, Regional Population Development Officer and
Acting Regional Health Development Officer, Mbabane
Ms. M.P. Selvaggio, AHDO, Health
Ms. M. Wernette, CCCD Technical Director
Mr. C. Crowe, on short-term mission from REDSO, Nairobi

U.S. Agency for International Development, Washington, D.C.

Dr. C. DeBose, Regional Health Development Officer,
USAID/Swaziland, on leave to Washington
Dr. G.V. Van Der Vlugt, M.D. African Bureau (AFR/TR/HN)
Mr. D. Eckerson, Africa Bureau (AFR/TR/HN)
Mr. J.H. Thomas, Water & Sanitation Specialist, Africa Bureau
Mr. S. Baker, Program Director, Africa Bureau

Water and Sanitation for Health Project, Washington, D.C.

Dr. D.B. Warner
Mr. C. Hafner
Dr. R. Gearhert
Mr. D. Yohalem

WASH consultants for Swaziland's International Water Supply and Sanitation Decade Planning.

**SWAZILAND RURAL WATER BORNE DISEASE CONTROL PROJECT
FINAL EVALUATION REPORT**

**Prepared by the Pragma Corporation
for the USAID Mission to the Kingdom of Swaziland**

**APPENDIX F
FINAL EVALUATION REVIEW MEETINGS
AND COMMENTS**

APPENDIX F

SUMMARY OF COMMENTS EXPRESSED DURING REVIEW MEETING
WITH USAID AND GOS - 21 AUGUST 1986

- 2.1 Memo to MP counted - lowveld sites
AID Think that is enough?
Head of Unit should be in charge of evaluation
Rec 3 - Reword. Take out last section
Rec 6 - Check with Pitnera on percentage that USAID is providing on materials - put it in ().
Rec 7 - Try to find out why Hoff's recommendations were not accepted.
Rec 2 - Lynn direction it should take if posts cannot be filled.
- Alan Change two to one, also in last section.
Reed What makes some health assistants effective? In Sect. 5.7
Prioritize personnel needs in TA.
- GOS Need evaluation alone and not others.
Interviewers - add + establish + check with AID on what can be said.
Rec 11 - Need officer for communications officer to handle radio
Mention difficulties in regional transport/housing/office space
Rec 4 - Define person needed.
Don't use personal names
Need for personnel chart of Hoadley's to be done.
Change Director HEU to Senior Health Education Officer
Should we recommend that KAP study be done somewhere else?
- 2.2 Examine proposed HA program done by Lesotho advisor + see how it
Rec 7 affects Rec. 7.
Rec 7&8 Any ideas for how curricula can be strengthened?
Rec 6 (Lynn) Question on increasing number of health assistants
administrative feasibility problems that might arise in management, budget, feasibility, and supervision in MOH if those HAs were increased.
Justify the need for these additional HAs
(Alan Reed) Why wasn't the existing HA plan implemented.
Question of comparing number of HAs to be assessed in Plan (20 over 4 years) to the report recommendation (15 graduates/year starting with 2nd year).
- Concl. 2 Concerning transport - don't blame MOH for general transport problems that exist in all ministries.
- Concl. 3 Lack too strong a word.
Perhaps combine 2 and 3
Note distinction between trained and untrained HAs
- Rec 4 Look at sectoral plan regarding training of Deputy + Regional Health Inspectors.

2.3 Recommend that 2 No. KAP study be included in the Proposed Extension.

3.0 Epidemiology

Rec 2 MOH fill the established but vacant post of Health Planner (clarify title).

If the technical assistance is provided in epidemiology he must have a counterpart.

Rec 3 Dr. Thuku suggests that this be "Director of Preventive Services"

Rec 1 Where should the epidemiologist be based? Who should supervise him?

Scratch out "Canadians"

How would epid that we are proposing fit in with CCCD Epid?

4.0 Suggestion that TSG and NAG look at issues rather than forming a new group, or that a site consultant be used.

Rec 2 Specify the type of water projects referred to.

Rec 5 Need for a mechanism to lead to integration.
Need to indicate at what level integration would take place.

Bill clarified that there is a workplan for the PH unit.

5.0 Bill reports Entandweni is now 85 percent complete.

5.1.1 Second minor reservation should be reworded;

Word "lack" is too strong

For "insufficient emphasis on h.e.",
indicate instead "insufficient result"
of no.e.

Behavioral issue

Issue of variable effectiveness of HAs
on maintenance costs, mention situation that government normally pays for them, now.

Add information from Carlos Crowe on pilot O & M cost project at Embekelweni.

Check with Isaac on whether this pilot project involves just operating costs or both O&M/ or OMRR

The question was raised by AID about how realistic the 2 year plan was and whether the provisions were taken into account in determination of capacity of RWSB capacity.

5.5 USAID - There were a lot of questions concerning the assumptions used to determine RWSB's capacities and commitments.

In the GOS session, the design engineer of RWSB took issue with some of them.

There was no final consensus on the issue.

Look at the specific types of systems involved in chart and how that impacts the cost and capacity of RWSB to do the work.

5.5)

5.6)

GOS meeting: Economic planning may not want to deal with NGOs
Government may not want to manage fund spent by
NGOs.

5.8

USAID - CoW of RWSB needs help in doing bookkeeping, reporting and accounting through.

Need to set up a standard format so that it will be easier for the CoWs to report back.

The design engineer cannot comment on RWSB's capacity to carry out proposed program because of lack of information about the program.

Persons Attending Review Sessions August 21, 1986 of
Draft Report for Final Evaluation by Pragma Corporation
of the Rural Water Borne Disease Control Project

Venue: USAID/Swaziland, Mbabane

Meeting with USAID/Swaziland, 11:00 - 13.15

Allan Reed, Project Program Development Officer
Lynn Keeyes, International Development Intern/ PPD
Alan Foose, Acting Regional Health Officer / Population Development Officer
Mary Pat Selvaggio, Assistant Health Development Officer
Neal Cohen, Regional Economist, based at USAID/Swaziland
Carlos Crowe, Regional Engineer, based at REDSO/ESA in Nairobi

Evaluation Team

Nicolas Adrien, Team Leader, Pragma
Peter Ashelman, Sanitarian, Pragma
Caroline Curtis, Community Development Specialist, Pragma
Madoda Dlamini, Public Health Engineer, Rural Water Supply Board, GOS

Meeting with Government of Swaziland, 14:30 - 17:30

Ministry of Health

Dr. J.J. Thuku, Director of Medical Services
Pitnera Mthembu, Senior Health Education Officer, Health Education Unit
Dudu Dube, Health Inspector/Public Health Engineering Unit
Leslie Mthethwa, Senior Health Inspector, Health Inspectorate
Sibongile Mthupha, Health Inspector, Health of Bilharzia Control Unit

Rural Water Supply Board

Isaac Ngwnya, Design Engineer/Acting Senior Engineer
Dr. A.W. Hoadley, Technical Assistant to Public Health Engineer and
Rural Water-Borne Disease Control Project Team Leader

USAID/Swaziland

Allan Reed
Lynn Keeyes
Alan Foose
Mary Pat Selvaggio
Carlos Crowe
Harry Johnson, Dep. Chief of Mission

Evaluation Team

Nicolas Adrien
Peter Ashelman
Caroline Curtis
Madoda Dlamini

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**APPENDIX G
SCOPE OF WORK OF TECHNICAL ASSISTANCE TEAM**

APPENDIX G

SCOPE OF WORK OF TECHNICAL ASSISTANCE TEAM

The AID Health Education Advisor will provide leadership to the HEU after the WHO consultant leaves and before the Swazi Director has completed the necessary graduate training. He/she will also function as an advisor to the Swazi Director when he/she returns from training which will assure continuity to the program. The Social Scientist will organize the KAP studies and ensure that the results are incorporated into the health education schemes in the appropriate ways.

The public health engineer's advisory functions will include: (1) the development of criteria for the design of water supply systems as well as selection criteria for use in determining target communities to receive water supplies and excreta disposal systems; and (2) review of the designs and plans for irrigation works, including dams, canals, reservoirs, and drains to determine the potential health implications, particularly related to schistosomiasis; and recommendation on feasible engineering alternatives to alleviate or minimize potential negative health impacts.

Under this project, the previous approach used by the MOA to provide pit latrines will be modified. As described more fully in the Project Description, the project will emphasize a self-help (and self-financing approach to latrine construction. The AID-funded environmental sanitation will develop a set of appropriate latrine designs and will set minimum criteria; four senior health assistants, one in each district, will work closely with the sanitarian in the selection of designs. The senior health assistants will be trained in the siting and construction of the various options which will range in price from E11 to E17 in 1979 prices (E1 = \$1.19).

The sanitarian advisor will also assist in the development of materials ordering and delivery procedures to be managed at the district level by the senior health assistants. The system will be organized through the private market or by renting space on other GOS vehicles. The Rural Water Supply Division (RWSD) has expressed a willingness to haul latrine materials on their vehicles, probably at no charge. This service would be limited to areas where water supplies are being installed. Additionally, the Swaziland Central Cooperative Union (CCU) operates a fleet of trucks that has excess capacity during the winter and the union is actively looking for additional business. Supplies could be hauled by the CCU vehicles during the off season and stored at either their four district centers or at the numerous farm sheds in the rural areas. The senior health assistants could arrange for the delivery of the latrine materials to the CCU district center or farm shed where they will either be picked up by the homesteads or arrangements for delivery will be made through the numerous private truck rentals. It is likely that in many instances, the CCU trucks will be able to deliver the materials directly to the site. In some cases, the private system may be used for the delivery of materials. Materials for both the demonstration scheme and the future program will be delivered using procedures established during the early stages of the project by the sanitarian advisor; maximum flexibility concerning the source of transport will be encouraged to help ensure timely deliveries.

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**APPENDIX H
EXECUTIVE SUMMARY OF MID-TERM EVALUATION REPORT**

APPENDIX H

EXECUTIVE SUMMARY OF MID-TERM EVALUATION REPORT

This mid-term evaluation was undertaken in November 1983 by a three-person team staffed by the Water and Sanitation for Health (WASH) Project and entailed three weeks of documentation review, interviews, observation of field activities resulting in an assessment of project progress to date, existing problems and future progress.

The principal project input is technical assistance (17 person years) from a social scientist, health educator, sanitarian, public health engineer, epidemiologist, and short-term consultants (mass-media, diarrheal surveillance). Other inputs include academic training in the U.S. of three people, a senior health educator, a public health engineer, and a graphic artist; construction of the first Health Education Unit, vehicles and materials for the health education and sanitation components, and housing for technical advisors.

Contractor performance by the Academy for Educational Development (AED) was found to be satisfactory given constraints not expected when the project was planned and contracted out. Home office support for the field was considered to be superior by the USAID Mission.

The public health engineering component has run into problems in trying to train a Swazi counterpart. Candidates returning with degrees are tempted away to the private sector by higher salaries. The Ministry of Health declined to establish the public health engineering position, but the position was established in the Rural Water Supply Board within the Ministry of Works, Power and Communications. The AED technical advisor for this component has been defining the role of the public health engineer and has been creating demand for those professional services. There had never been a public health engineering position in government service prior to the project. Public health engineering output has included health impact evaluations for a major dam project and for irrigation and water supply projects. Water quality guidelines and water-system design criteria have been drafted and an attempt made to get them legislated.

The epidemiological component outputs include the expansion and upgrading of the Bilharzia Control Unit (BCU) laboratory facilities. In-service training has also improved the professional skills and capacities of the staff. A young, newly named director is being trained by the AED epidemiologist and groomed for leadership. The Unit has constraints due to supply problems, transportation difficulties, and lack of data analysis facilities. However, a national schistosomiasis survey has been completed leading to identification of the highly endemic areas and the areas of infection of the different schistosomal species. This first-of-its-type survey will be useful for planning the disease control strategy. In addition, with the increasing shift of emphasis of the project away from schistosomiasis to diarrheal diseases, a new program of longitudinal, small-scale diarrheal surveillance has recently been started. The results are eagerly awaited by the Ministry of Health.

The sanitation component outputs include the training of Health Assistants in vented pit-latrines construction. One thousand latrines have been completed since 1981, and annual construction starts have been tripled since the start of the project. Demand for concrete slabs has outpaced

supply, and, rather than face delays in construction, the use of locally available materials, such as logs, is being promoted. Through the example of the practice of good management, the AED sanitarian has created the demand for the creation of a central office program manager to assist the director of the Health Inspectorate, an example of unplanned institutional development. There is an emphasis in the project of training the field agents, the health assistants, in communications and community mobilization skills.

The health education component has faced the most constraints to program implementation and institutional development. Staff positions in the Health Education Unit have still not been established, and the AED health educator is in an advisory position rather than the directorship position planned for in the project paper. Due to resulting conflicts, the original technical advisor was withdrawn and there was an 8-month hiatus until the arrival of his replacement. In effect, this component has experienced a one to two year delay and it was difficult to really evaluate its progress and future potential. Through the input of a social scientist, several useful studies were completed on values, knowledge and practices in rural areas related to water, sanitation, personal hygiene and child care especially in relation to infant diarrhea prevention and treatment; factors affecting community organization and mobilization; and on the practices of traditional healers with respect to water- and sanitation-related diseases. The purpose of these studies was to collect information on which to base a culturally appropriate health education strategy. One successful health education program has been the mass-media campaign tied to the objective of diarrheal disease control. Over thirty programs have been produced by an enthusiastic and highly productive interministerial and inter-agency group under the direction of a senior public health nurse. The programs have been aired over a year and preliminary evaluation indicates that the programs reach 65 percent of those rural homesteads with radios. Training of extension agents from several ministries is planned to make them aware of and involved in diarrheal disease control, sanitation, and the use of communications and community mobilization skills.

Key recommendations by program component are:

Public health engineering - review of all major water projects for health implications; push for legislation of water quality standards; delay decision to train counterpart until his interest in the position has been firmly established.

Epidemiology - extend the technical assistance for one year to ensure adequate preparation of the Unit Director for its management; send the BCU Director for management training; increase the interaction between the epidemiological component and the other project components; improve data analysis capabilities; complete national survey on other parasites; develop the diarrheal disease surveillance study and increase its representation of different sub-populations within the country.

Sanitation - evaluate the pit-latrines program; extend the program into peri-urban squatter areas; support the establishment of the needed management position in the Health Inspectorate.

Health Education - establish the Health Education Unit staff positions; integrate the Rural Water Borne Disease Control Project activities fully with those of the unit; implement a longitudinal

behavior change evaluation process rather than the two cross-sectional surveys stipulated by the contract; further evaluate the progress of the health education component in April 1984.

Despite constraints, the evaluation team concluded that the project has a good probability of leaving a long-term mark on the control of water-related diseases in Swaziland, in developing institutional capabilities in public health engineering, sanitation, epidemiology and health education, and in enabling the Government of Swaziland to reach stated national health goals.

SWAZILAND RURAL WATER BORNE DISEASE CONTROL PROJECT
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APPENDIX I
GUIDELINES TO STRENGTHEN THE HEALTH EDUCATION CENTRE
OF THE MINISTRY OF HEALTH
by Wilbur Hoff, January 1985

APPENDIX I

GUIDELINES TO STRENGTHEN THE HEALTH EDUCATION UNIT

MINISTRY OF HEALTH

OBJECTIVES

A major health education goal of the Rural Water Borne Disease Project is to strengthen the Health Education Unit (HEU) so it will have the capability to plan, implement and evaluate health education programmes that are responsive to the needs of rural people. These programmes should promote the objectives and priorities of the Ministry of Health (MOH) and they should promote community involvement and self-sufficiency. In addition, the HEU should be trained to use innovative and traditionally appropriate communication and education methods.

METHODS

To accomplish the above objectives certain actions must be taken.

Step 1. Determine the needs for health education programmes

Health problems and conditions vary from one geographic community to another. In order to be responsive to the needs of rural people and to promote the objectives and priorities of the MOH, a system must be established for gathering information from different sources about health problems, needs and conditions.

The following activities are suggested toward identifying health needs:

- (a) Designate HEU staff to meet with key persons at MOH headquarters, Public Health Unit, Health Inspectorate, Communicable Disease, Malaria Control, hospitals and other appropriate units.
- (b) Have HEU staff meet with extension programme people in all four district offices.
- (c) Meet with persons in health related programmes in the Ministries of Agriculture, Education, and in non-governmental organizations such as Sebenta, Rural Water Supply, FLAS, Red Cross and churches.
- (d) Make field visits to selected communities in the high, middle and low velds to discuss with chiefs, other traditional leaders, women's groups and health committees what their health needs and priorities are.
- (e) Review evaluations of previous workshops and programmes, health surveys, reports and other relevant documents to help identify health needs of different target groups.

Step 2. Assess the resources that are available to the HEU.

There are resources available within the current and proposed budgets for health education. There may also be resources available outside the unit such as in other MOH units and in other ministries and health organisations.

- (a) Assess the current 1984-1985 budget for monies available for staff, travel, printing, supplies, equipment, etc.
- (b) Inventory and evaluate the status of existing educational materials and audio-visual equipment in the HEU.
- (c) Identify from other health project budgets and health programme units monies and staff that might be available for health education activities.

Step 3 Plan health education programmes that are responsive to the health needs of rural communities, that promote the MOH objectives and priorities and that promote community self sufficiency.

After a careful evaluation of the needs assessment data, develop programme objectives for health education. These objectives should be aimed at both short and long range accomplishments and should be formulated according to MOH priorities and the resources that are available to the HEU.

DEVELOPING AN EFFECTIVE HEALTH EDUCATION PLAN

The following activities could be carried out to develop an effective Health Education Plan.

- (a) Review the 1984 HEU work activities together with the additional needs determined from Step 1. Allocate priorities to these activities.
- (b) Formulate programme objectives that can be realistically accomplished within a defined period of time. When writing programme objectives for activities such as workshops, community activities, developing educational materials, etc. it is essential that the behavioural changes desired in the target population groups be specified. Without this information, the results of the programmes cannot be evaluated.
- (c) Using the above programme objectives and considering the resources available to the HEU, formulate a Work Plan for 1985.
- (d) Review the Health Education 5 Year Plan and modify it in view of the needs assessment, priorities and programme objectives.

Step 4. Allocate resources and staff responsibilities to implement the work plans established.

Once programme objectives have been formulated it will be necessary to allocate monies and other resources and to assign staff members specific responsibilities.

Each staff member should prepare monthly individual work plans showing outputs and target dates for completion. This will enable the staff as a group to periodically assess their own progress and accomplishments and to modify the work plan as needed.

Step 5 Evaluate the effects of the health education programmes.

In order to assess the benefits and results of the programmes on the target population groups it will be necessary to develop a plan to systematically evaluate health education programmes. Evaluating health education activities and programmes is essential in order to determine if they are achieving their goals and to provide feedback to the HEU and MOH staff in revising existing programmes and in planning future ones.

The types of evaluation mechanisms that could be used include the following:

- (a) A process to test the readability and understanding of education materials that are developed by HEU.
- (b) A process to evaluate the extent to which knowledge and skills have been learned by participants in training workshops. And a method of follow-up after workshops are completed to find out if these skills are being used in the field.
- (c) A system for conducting quick sample surveys among representative community groups to evaluate the results of radio programmes or community health education programmes that aim to change health behaviours.

Step 6. Coordinate the health education and training activities of all units and projects within the MOH and health related programmes in other ministries and non-governmental organisations.

This type of coordination is essential to eliminate duplication of efforts and conflicts in scheduling and to make the most efficient use of limited resources.

This coordination could be achieved by officially designating the HEU as the coordinating body and by holding periodic intersectoral meetings.

The Director of the HEU should also be included where decisions are made regarding health programmes and projects that involve health education activities and resources.

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**APPENDIX J
HEALTH INSPECTORATE JOB DESCRIPTIONS--ACTUAL AND PENDING**

APPENDIX J

JOB DESCRIPTION

JOB NO. 048-A

Job No. 048-A Cont.

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SENIOR HEALTH INSPECTOR (GRADE 18)

APPROVED

PERSONNEL MANAGEMENT COMMITTEE

MINISTRY OF HEALTH

(Drafted November 1985)

CHAIRMAN DATE

GENERAL DESCRIPTION OF DUTIES: Develops and oversees the implementation of all MOH water, sanitation, and other environmental health programs, and liaises with other ministries and organizations whose activities affect water and sanitation programs.

SUPERVISORY AND COLLABORATIVE RELATIONSHIPS:

1. Reports directly to the Director of Health Services
2. Supervises a Deputy Senior Health Inspector and a Health Inspector - Public Health Engineering.

Works closely with agencies involved in community development.

EXAMPLES OF PRINCIPAL DUTIES:

1. Reviews and analyzes monthly sanitation and water reports submitted by the Regional Health Inspectorate Units through the Deputy Senior Health Inspector.
2. Makes periodic field visits to the Regions, and attends periodically the Regions monthly meetings of the Health Inspectorate Unit.
3. Provides technical support to Regional Health Management Teams in the planning and budgeting for programmes in environmental health and sanitation; attends a minimum of one meeting per year of each of the four RHMTs.
4. Advises the Liquor Licensing Board on Health matters.

5. Serves as a member of the Celebrations Committee.
6. Meets periodically with officials in Education, Labour, Rural Development Areas, Community Development Board and other agencies in order to establish or strengthen collaborative links with units.
7. Meets with the Director of Health services routinely to discuss problems and progress of the Health Inspectorate regard to water and sanitation programmes and other environmentally related activities.
8. Compiles annual report of the activities of the Health Inspectorate Unit.
9. Chairs the quarterly meetings of the Health Inspectors at the Central Headquarters.
10. Performs other related duties as required by the Director of Health Services.
10. Enforces the Public Health Act and Health Regulations.
- ii. Performs other duties as necessary.

QUALIFICATIONS:

Bachelor's degree in Environmental Health (preferable Master's degree) and 5 years experience after the degree or equivalent training and experience, e.g. health inspector diploma and several years experience a minimum of two of which must have been as Deputy Senior Health Inspector, Regional Health Inspector, Health Inspector-Public Health Engineering, Health Inspector in charge of Malaria Control, or Health Inspector in charge of Bilharzia Control.

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DEPUTY SENIOR HEALTH INSPECTOR (GRADE)*

APPROVED

REGIONAL MANAGEMENT COMMITTEE

MINISTRY OF HEALTH

(Drafted November 1985)

M. A. K. 15/11/80
CHAIRMAN DATE

(This title does not exist on the present GOS Establishment Register but has been proposed in the revised Scheme of Service for Health Inspectors.)

GENERAL DESCRIPTION OF DUTIES: Assists the Senior Health Inspector in implementing MOH water, sanitation, and other environmental health programs.

SUPERVISORY AND COLLABORATIVE RELATIONSHIPS:

1. Reports directly to the Senior Health Inspector.
2. Supervises Regional Health Inspectors.

Works closely with the Public Health Unit, Malaria and Bilharzia Control Units, Tuberculosis Centre, and town council health inspectorates to ensure a well coordinated approach to community health services.

EXAMPLES OF PRINCIPAL DUTIES:

1. Attends monthly regional health inspectorate meetings on a rotational basis, serving as liaison between the central office and the regional offices.
2. Receives, reviews, and monitors the monthly regional health inspectorate reports and provides feedback to the Regional Health Inspectors.
3. Provides technical support to Regional Health Management Teams in planning and budgeting for environmental health

Job No. 048-B

-2-

programmes; attends a minimum of one meeting per year of each RHMT.

4. Supervises the purchase of materials and supplies, e.g. construction materials for latrine construction and sprays, insecticides, spray cans and spare parts, too protective clothing, and meat inspection knives for field staff; maintains an adequate inventory of these materials and organizes the issue and delivery of the materials.
5. Provides technical and logistical support for field staff
6. Conducts annual performance evaluation of Regional Health Inspectors under his supervision.
7. Assists the Senior Health Inspector in the preparation of the annual report.
8. Assumes the duties of the Senior Health Inspector in that officer's absence.
9. Performs other duties as necessary

QUALIFICATIONS:

Bachelor's degree in Environmental Health and two years experience after the degree or equivalent training and experience, e.g. three year Health Inspector diploma, preferably supplemented by a diploma for meat and food inspection, special training in planning and management, epidemiology, and entomology and five years work experience.

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HEALTH INSPECTOR-PUBLIC HEALTH ENGINEERING (GRADE)

APPROVED

PERSONNEL MANAGEMENT COMMITTEE

MINISTRY OF HEALTH

(Drafted October 1985.)

CHAIRMAN DATE

GENERAL DESCRIPTION OF DUTIES: Serves as liaison between the Ministry of Health and the Rural Water Supply Board (RWSB); assists the Public Health Engineer in meeting health objectives; and provides Ministry of Health inputs into water supply, sanitation, and other water resource development programs.

SUPERVISORY AND COLLABORATIVE RELATIONSHIPS:

1. Reports directly to the Senior Health Inspector, MOH.

Works closely with the Public Health Engineer, Rural Water Supply Board, spending at least three days per week in his office carrying out specific duties. Works closely with the Health Education Unit in preparing messages related to water usage.

EXAMPLES OF PRINCIPAL DUTIES:

1. Ensures that health policies, guidelines and regulations relating to water supply and sanitation are followed in the planning, design, and implementation of water supply, sanitation, and water resources development projects.
2. Inspects rural water supplies and monitors any required follow up actions.
3. Monitors water quality and ensures that required follow up action is taken.
4. Drafts and revises guidelines and regulations relating to health aspects of water, sanitation and other programmes to ensure compliance with Ministry of Health requirements.

5. Provides liaison between the MOH Health Education Unit and the Rural Water Supply Board to meet the health education needs of rural water and other water resources development programs.
6. Provides liaison between the MOH Health Inspectorate and Rural Water Supply Board to achieve integration of sanitation and water resources development activities.
7. Assists in planning and executing impact studies and evaluations to meet GOS needs and to satisfy terms of loan.
8. Assists in the maintenance of an inventory of water supplies.
9. Advises on and approves conceptual designs for springs developed by the health inspectorate.
10. Inspects MOH spring projects upon completion.
11. Provides technical support to Regional Health Management Teams in planning and budgeting for water supply programs in their regions; attends a minimum of one meeting per year of each of the four RHMTs.
12. Performs other duties as necessary.

QUALIFICATIONS:

Bachelor's degree in environmental health and two years experience or equivalent, e.g. three year Health Inspector Diploma plus a two year diploma in public health engineering three years experience as a health inspector.

REGIONAL HEALTH INSPECTOR (GRADE)*

APPROVED

PERSONNEL MANAGEMENT COMMITTEE

MINISTRY OF HEALTH

(Drafted November 1985)

CHAIRMAN

DATE

(This title doesn't exist in the present GOS Establishment Register but has been proposed in the revised Scheme of Service for Health Inspectors.)

GENERAL DESCRIPTION OF DUTIES: Provides general supervision of all water and sanitation and other environmental health activities within the district. With the other members of the Regional Health Management Team, is responsible for planning, monitoring and supervising the health related matters of the region, for both government and non-government health services. Promotes equitable distribution of preventive and curative services to the population and communities. Does other related work as required.

SUPERVISORY AND COLLABORATIVE RELATIONSHIPS:

1. Receives technical supervision from the MOH Senior Health Inspector and other MOH specialists. Receives general direction from the Regional Health Management Team on programme services and operations within the Regional service area.
2. Provides general supervision to other health inspectorate activities within the region and technical assistance to other health workers such as medical doctors and nurses.

Works closely with other members of the Regional Health Management Team on planning and managing the work of the region. Collaborates with all sectors on environmental health programmes.

EXAMPLES OF PRINCIPAL DUTIES:

1. Develops the annual work plan for the Region in cooperation with other members of the Regional Health Management Team.
2. Attends regular Regional Health Management Team meetings for joint problem solving and for scheduling weekly and monthly work activities.
3. Assists with development of integrated primary health care services for the region.
4. Assists with the evaluation of programmes and services.
5. Identifies training needs within the region; provides inservice continuing education training; assists with training of rural health motivators.
6. Attends Regional Health Advisory Council meetings as a technical advisor; encourages the development of community health advisory committees and provides technical assistance.
7. With the other Team members, assists with such personnel actions as recruitment, disciplinary action and performance evaluation.
8. Develops annual budget requests in cooperation with other team members.
9. Advises the Senior Health Inspector (through Deputy Senior Health Inspector) and the MOH Communicable Disease Control Unit on the overall environmental health and sanitation needs of the region.

HEALTH INSPECTOR (GRADE 14\16)

APPROVED

RURAL MANAGEMENT COMMITTEE

MINISTRY OF HEALTH

(Drafted October 1985)

CHIEF CLERK

DATE

11/1/85 15/3/86

GENERAL DESCRIPTION OF DUTIES: Provides directly or supervises others in providing environmental health sanitation and communicable disease control services in a sub-area of a region.

SUPERVISORY AND COLLABORATIVE RELATIONSHIPS:

1. Reports directly to the Regional Health Inspector
2. Supervises Senior Health Assistants and Health Assistants.

Works closely with Clinic Nurses, Public Health Nurses and Rural Health Motivators in his area. Cooperates with other government workers e.g. Community Development Officers, Agriculture Extension Officers.

EXAMPLES OF PRINCIPAL DUTIES:

1. Provides routine supervision of Senior Health Assistants under his/her jurisdiction and jointly Health Assistants including routine visits to project sites.
2. Assures that monthly reports from Health Assistants are correct before submission to Regional Health Inspector.
3. Carries out routine inspections of food handling and non-food handling establishments, e.g. bakeries, bakery trucks, dairies, industrial premises, stores, restaurants.
4. Conducts meat inspections at abattoirs and rural slaughter poles as required, and submits copies of inspection report to Regional Health Inspector.

5. Carries out emergency communicable disease control activities as directed by Regional Health Inspector. This would include contact tracing, health education sessions with public, conveyance of water samples and faecal samples appropriate lab facilities, and burials.
6. Carries out routine inspections of residential and institutional housing.
7. Carries out destruction of condemned food stuffs and carcasses.
8. Supervises communicable disease control activities in his area.
9. Assures that ordering and distribution of construction and other materials occur smoothly.
10. Approves building plans and submits his reviews to the Regional Health Inspector.
11. Carries out health education at schools, mosques, and other institutions.
12. Convenes weekly area meetings for Senior Health Assistants and Health Assistants.
13. Attends monthly Regional Health Inspectorate meetings.
14. Participates in training of Rural Health Motivators.
15. Attends community meetings as necessary.
16. Monitors refuse disposal and advises on how to remedy nuisance situations caused by improper refuse disposal.

17. Enforces regulations under the Public Health Act and ass
in the prosecution of defaulters.
18. Participates in weekly work planning meetings with the s
of health facilities and other community development wor
in his/her working area.
19. Provides toilets during state celebrations.
20. Assumes duties of Regional Health Inspector in that
officer's absence.
21. Performs other duties as necessary.

QUALIFICATIONS:

"O" Levels, three year Health Inspector diploma, and a
government driving authority.

BEST AVAILABLE COPY

SENIOR HEALTH ASSISTANT (GRADE 12)

APPROVED

PERSONNEL MANAGEMENT COMMITTEE

MINISTRY OF HEALTH

(Drafted November 1985)

[Signature]
 CHAIRMAN DATE

GENERAL DESCRIPTION OF DUTIES: Directs the activities of Health Assistants in providing environmental health, sanitation, communicable disease control, and first aid services.

SUPERVISORY AND COLLABORATIVE RELATIONSHIPS:

1. Reports directly to the Health Inspector for the area.
2. Supervises Health Assistants.

Works closely as a member of a health team with clinic and public health nursing staff. Coordinates with Rural Water Supply Board staff on water projects.

EXAMPLES OF PRINCIPAL DUTIES:

1. Supervises and controls ordering and distribution of construction materials for spring protections and latrines, tools, and chemicals for control of vectors and pests, and maintains accurate stores records within the district.
2. Submits a written monthly summary of stores records to Health Inspector.
3. Supervises all work of Health Assistants as described in the job description for Health Assistants through weekly field visits on a rotational basis.
4. Collects revenue for construction materials used in toilet construction (ceasing, reinforcement, screening, and vent pipes).

Job No. 050-A Cont.

-2-

5. Attends weekly area Health Inspectorate meetings to set weekly work plans and discuss general problems.
6. Attends monthly meetings with Health Assistants and Rural Health Motivators.
7. Attends community meetings as required by Health Inspector.
8. Participates as a member of the health team with clinic nurses and other health personnel.
9. Performs other duties as assigned by Health Inspector, including those related to the duties included in the job description for Health Assistants.

QUALIFICATIONS

Junior Certificate

Health Assistant Certificate

Five years experience as a Health Assistant

Government Driving Authority

10. Collaborates with the Regional Development Committee, Tankhundla, other organizations, agencies and community leaders in the development of primary health care services.
11. with the Public Health Nurse, Health Educator and the Senior Medical Officer, establishes communicable disease control measures for the region.
12. Meets regularly with other health inspectors, assistants, and other workers for planning, supervision and management of environmental health activities (including those related to malaria, schistosomiasis, and tuberculosis control).
13. Carries out an active malaria control programme which may include case detection, prophylactic treatment, spraying and treatment of mosquito breeding sites, and surveillance activities.
14. Carries out an active Health Education programme for the control of bilharzia.
15. Inspects periodically factories, institutions, and agricultural estates in conjunction with Labor/factory inspectors; carries out routine inspections of food handling establishments, abattoirs, and butcheries.
16. Coordinates, supervises, and provides technical assistance on environmental health and sanitation practise to other health units and health workers within the region; promotes and motivates communities to adopt sound water and sanitation practises.
17. Reviews plans for all new buildings, water supplies and waste treatment facilities to assure protection of health; inspects and monitors existing water supplies and treatment

- facilities, including those for schools, clinics and water systems.
18. Provides technical assistance at meetings of Town Board Liquor Licensing Board.
 19. Prepares necessary records and reports to RHMT and MOH Headquarters.
 20. Supervises this Vacuum Tanker Services and other Health Inspectorate Vehicles in the region.
 21. Carries out Vector control and other related duties at Airports and border posts.
 22. Implements Public Health Act and related acts and applic public health regulations.
 23. Performs other duties as necessary.

QUALIFICATIONS:

Bachelor's degree in environmental health and 2 years experience or equivalent, e.g. diploma for a public health inspector, preferably supplemented by a diploma for meat and food inspection and five years experience as a health inspector, supplemented by experience and training in health planning & management, epidemiology and entomology.

HEALTH ASSISTANT (GRADE 10)MINISTRY OF HEALTH

(Drafted November 1965)

APPROVED

WATER MANAGEMENT COMMITTEE

W. F. G. L. 15/5/65
 CHAIRMAN DATE

GENERAL DESCRIPTION OF DUTIES: Provides environmental health/sanitation, communicable disease control, and first aid services at the community level.

SUPERVISORY AND COLLABORATIVE RELATIONSHIPS:

1. Reports directly to a Senior Health Assistant or in the absence of an SHA to the Health Inspector in charge of the area.
- Works as a member of a health team with Public Health Nurses, School Health Nurses, Clinic staff, and Rural Health Motivators. Cooperates with Rural Water Supply Board technicians in the planning, construction, and maintenance of water supplies and latrines.

EXAMPLES OF PRINCIPAL DUTIES:

1. Assists in the organisation of community health and sanitation committees which will coordinate latrine construction in the community.
2. Promotes community understanding of environmental disease through discussions with community leaders and health and other appropriate committees, through health education at clinics and through community meetings.
3. Advises on and assists with the construction of sanitary pit latrines in the community. Liaises with RHMs, health and other appropriate committees routinely.

4. Advises and assists community in the construction of small spring protections in liaison with Rural Water Supply Board.
5. In communities where the RWSSB or other agencies and organizations are involved in providing community water supplies, the Health Assistant will provide health education, promote latrine construction, and assist in organizing the communities to participate in construction and in maintenance of the facilities after construction.
6. Visits regularly (twice weekly) schools in the immediate area to promote and assist in the construction of pit latrines and refuse pits and provide health education concerning use and benefits.
7. Prepares a monthly report of activities and submits report to Senior Health Assistant. Report should include status water and sanitation projects, material use and inventory information, inspection activities, and meetings at school and RWSSB.
8. Carries out extensive health education on the prevention control of malaria, bilharzia, and tuberculosis.
9. Assists in the control of mosquitoes by applying chemical to breeding and resting places.
10. Advises on mosquito control through drainage of breeding places and other methods such as application of oil, control of vegetation, and area sanitation.
11. Does community surveillance of malaria by taking blood smears for laboratory examination.
12. Administers prophylactic drugs for the control of malaria.

13. Submits regular reports as required on malaria control activities to the Malaria Control Unit and the Senior Health Assistant.
14. Assists the entomology team from the Malaria Control Unit in the night collection of mosquitoes when requested.
15. Identifies cases of urinary bilharzia using Hemoastix and refer cases to health centres for treatment.
16. Controls snails through application of chemicals and other means such as providing drainage and control of vegetation.
17. Advises farmers and estates on bilharzia control.
18. Submits regular reports as required on bilharzia control activities to the Bilharzia Control Unit and Senior Health Assistant.
19. Assists the school screening team from the Bilharzia Control Unit in gathering and examining stool and urine specimens when requested.
20. Refers suspected cases of tuberculosis to the nearest clinic for examination.
21. Assists/encourages tuberculosis patients to take treatment.
22. Traces tuberculosis treatment defaulters reported to him by the clinic staff.
23. Looks for signs of other communicable diseases such as cholera, typhoid, dysentery, measles, and paratyphoid and advises public health nurses and clinic nurses in the area where suspected cases are found.

24. Assists the public health and clinic nursing staff in organizing people in the community for immunizations as required, e.g. in instances of large outbreaks of a disease.
25. Provides basic first aid in the community.
26. Carries out health education on control of vectors and pests, e.g. flies, cockroaches, bed bugs, rodents, etc.
27. Does vector and pest control in the community and government institutions using chemicals.
28. Advises farmers, estates, government and non-government institutions on control of vectors and pests.
29. Submits monthly reports on vector and pest control activities to the Senior Health Assistant.
30. Maintains up-to-date records of all activities and inventories of all tools and materials.
31. Attends weekly area Health Inspectorate meetings to set work-plans and discuss problems.
32. Participate as a member of the health team with clinic nurses and other health personnel.
33. Performs other duties as necessary.

QUALIFICATIONS:

Junior Certificate, Health Assistant Certificate.

**SWAZILAND RURAL WATER BORNE DISEASE CONTROL PROJECT
FINAL EVALUATION REPORT**

**Prepared by the Pragma Corporation
for the USAID Mission to the Kingdom of Swaziland**

**APPENDIX K
WHO PROPOSED CURRICULUM FOR HEALTH ASSISTANTS**

APPENDIX K

PROPOSED CURRICULUM FOR HEALTH ASSISTANTS BY WHO CONSULTANT, AUGUST 1985

PART I YEAR 1

1. Background to Public Health
2. Personal Hygiene
3. First Aid
4. Applied Calculations
5. Building Construction
6. Refuse Collection and disposal
7. Standards for Rural Housing
8. Office Routine, Records and Returns
9. Vector Control, Insecticides and Spraying Equipment
10. Nutrition
11. Sociology (Community Health)

PART II YEAR 2

1. Primary Health Care and Health Education
 2. Elementary Anatomy and Physiology
 3. Microbiology and Parasitology
 4. Communicable Diseases and their Control
 5. Sanitation (Human Excreta Disposal Systems)
 6. Water Supplies
 7. Food Hygiene and Food Premises
 8. Bacterial Food Poisoning
 9. Rodent Control
 10. Occupation Health
 11. Health and Vital Statistics
 12. Health Legislation
 13. Disposal of the Dead
- TIME ALLOCATION

Reference and Text-Books

1. Health Education in Developing Countries by Allan C. Holmes
2. Health Education by N. Scotney.
3. W.H.O. Pamphlets and Manuals.

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**APPENDIX L
MONTHLY SURVEY FORM OF RHM's**

**SWAZILAND RURAL WATER BORNE DISEASE CONTROL PROJECT
FINAL EVALUATION REPORT**

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**APPENDIX M
INFORMAL EVALUATION SURVEY**

RURAL WATER BORNE DISEASE EVALUATION TEAM SITE VISITS
INFORMAL EVALUATION SURVEY

Aug 8-18

SITE: _____

REGION: _____

High Middle Lowveld

Resettlement area: _____ RDA _____

Accompanying the team: _____

People Contacted within the Community: _____

COMMUNITY STRUCTURE:

- 1. Rural health workers who are active in the community now: _____
5 years ago: _____
- 2. Local Committees active in Development and WS projects in area now: _____
5 years ago: _____
- 3. Level of support from Chief and indvuna now: _____
5 years ago: _____
- 4. Where do people get their water now: _____
5 years ago: _____

SYSTEMS THEMSELVES

- 5. Latrines: _____ Water systems _____ Age _____
- 6. Who built them _____ Motivation _____
- 7. Who maintains _____ Good or bad repair _____

M-1

EVALUATION

- 7. Do statistics exist at the local level on the impact of facets of WBDisease for 5 year span of project involvement _____
- 8. What is the general perception of the changes that have occurred: _____
- 9. What projects have been directly linked to the Rural Water Borne Disease Project: _____
- 10. What other donors have been active in community: _____
Projects and field staff in the area: _____
- 11. Are there untreated sources of water nearby: _____
- 12. Can it be determined if the traditional healers in the area have been to workshops MOH sponsored: _____
Is it the perception that they have incorporated the info into their practices: _____
- 13. What is general level of Community Organization: Now _____
5 years ago: _____
(e.g) Dip Tank Committees, Zenzele, School Committees, Gardens, Red Cross Other: _____
- 14. What changes have you seen in the community in the W#s area in the last 5 years _____
- 15. Why do you think these changes have occurred: _____
- 16. Are there Health Education Materials in the Community now: _____
5 years ago: _____

M-2

**SWAZILAND RURAL WATER BORNE DISEASE CONTROL PROJECT
FINAL EVALUATION REPORT**

**Prepared by the Pragma Corporation
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**APPENDIX N
ACCOMPLISHMENTS, CONSTRAINTS AND RECOMMENDATIONS
OF THE PUBLIC HEALTH ENGINEERING ADVISOR**

APPENDIX N

ACCOMPLISHMENTS, CONSTRAINTS AND RECOMMENDATIONS OF THE PUBLIC HEALTH ENGINEERING ADVISOR

N.1 Accomplishments

Accomplishments can be understood best when viewed in relation to strategies, which can be institutional and operational. Both strategies have been successfully implemented and a firm institutional base has been established, which is effective in carrying out its responsibilities. Implementation of activities of the unit and establishment of the water quality laboratory were assisted by a Canadian public health engineer and water quality analyst who worked under the supervision of the public health engineer and in collaboration with him. The assistant public health engineer was in Swaziland from July 1984 to December 1985. The water quality analyst, from 1982 to 1984.

To be effective, it is essential that an institutional base be established with clear responsibilities and recognized authority. Much effort under this component has been devoted to establishing an institutional base for public health engineering and framework within which the public health engineering activity can operate:

- Establishment of public health engineering unit and position. Prerequisite to recruitment and participant training of a public health engineer was the establishment of a position for him. As originally conceived, this was to be within the Ministry of Health. A post was created within the Ministry of Health early in 1982, but at an inappropriate grade. It was, however, considered inappropriate to local the public health engineer in the Ministry of Health as there was no career structure into which he could fit. A position was therefore established within the Rural Water Supply Board in late 1983 and a public health engineering unit was created.
- The scope of responsibilities of the public health engineer were set out in the application of establishment of the post, and included:
- Recruitment of two public health engineers trained in Canada resulted in resignations. Both engineers entered the private sector. The incumbent was recruited following graduation from an American institution where he was supported by USAID funds. Following a period of work at Berkeley, he took up his present position in May 1985. In his training he emphasized water quality and environmental engineering and he is well suited to the job of public health engineer.
- Training of the public health engineer has been conducted on the job. First by exposing him to all activities of the unit in which he participated fully and by discussions. Secondly, by secondment to the Design Unit to build his familiarity with water systems and their design in Swaziland. In doing this, he has developed his competence in an area essential to his public health engineering activity and built his credentials. He will spend the remainder of the project in the public health engineering unit which he must take over. The short period of training and experience in the unit is insufficient to fully prepare the newly appointed public health engineer. Additional assignments to the construction Unit, and on-the-job training with an advisor-public health engineer are necessary to strengthen his

background and expand it into new areas of environmental health related to water resource development in which he will be expected to participate in the future. Participant training is not seen as an immediate need (although it is planned). On-the-job training and experience are viewed as most benefit to both the incumbent and the organization in the immediate future.

- A health inspector was assigned to the public health engineering unit in March 1985 to assist in implementing the activities of the unit and assure liaison between the RWSb and the Ministry of Health. He was assigned to a two-year diploma course in public health engineering in Mauritius, and was immediately replaced by a second health inspector. Both health inspectors have performed well and have created an important link between the two ministries.
- While linkage is very effective at the working level, it is somewhat limited, however, when there is a need to coordinate at higher administrative levels. The public health engineer will have to provide linkage when this must take place.
- Training of the health inspector/PHE has taken place on-the-job through participation in activities of the unit. An effort has been made to expose both incumbents to as many field situations as possible. Training of the present incumbent in planning, design, and construction of small spring protections is being started so the health inspector can take on an increasing responsibility for providing assistance to health assistants. The incumbent health inspector/PHE is scheduled to depart for the diploma course in Mauritius upon the return of the health inspector presently in training.
- Guidelines have been prepared by, or with the full participation of, the public health engineering unit. These include:
 - . water quality guidelines,
 - . standards for design,
 - . guidelines for review and approval of projects

The water quality guidelines have been approved by the Ministry of Health- The design standards are generally accepted and applied. In addition, a framework for development of guidelines for recreational waters has been drafted.

- The public health engineering unit has played a major role in sectoral planning activities. The policy guidelines and two-year action plan call for many activities that involve the public health engineer, including:
 - . construction of new water systems,
 - . rehabilitation of failed systems,
 - . maintenance of water supplies,
 - . planning and design of water systems,
 - . water quality surveillance,
 - . sanitary inspection,
 - . inventory of water supplies,
 - . coordination,
 - . provision of technical assistance,
 - . review of proposals for water supply and sanitation projects,
 - . evaluation,
 - . preparation of a five year master plan for sectoral development.

- A water quality laboratory has been established with assistance from the Canadian water quality analyst and support from British aid. The laboratory was developed in collaboration with the public health engineering advisor and is under his supervision. The public health engineering advisor provides guidance and training, regularly reviews data and procedures, and provides follow-up where required. The laboratory carries out routine surveillance and provides support for special studies and technical assistance.

Simultaneously, with the building of a sound institutional base from which the public health engineer can operate, the public health engineering unit has been actively involved in carrying out its responsibilities and in meeting special needs under emergency conditions. Thus:

- During the cholera outbreak of 1981-1982, the public health engineering advisor assisted in:
 - . recommending measures to provide water in high risk peri-urban areas paid for by the Ministry of Health,
 - . participated in emergency planning meetings,
 - . recommended procedures for emergency disinfection,
 - . undertook and coordinated field sampling and laboratory testing,
 - . was a member of a special Swaziland/South Africa Cholera Committee.
- Following the cyclone in January 1984, participated in the assessment of damage to water supplies, the preparation of proposals for repairs, monitoring of purchasing and the approval of work done.

Routine activities established in the public health engineering unit include:

- Participation in source investigations, planning, and design of water supplies;
- Providing technical assistance to other agencies planning and designing water systems as well as to individuals or institutions experiencing water quality problems;
- Conducting sanitary inspections of water supplies and providing follow up;
- Conducting special studies to assess performance of treatment processes and infiltration galleries;
- Conducting evaluations. Those completed include:
 - . water system at Ntsintsa,
 - . effect of salinity of water consumption,
 - . utilization of wash-houses;
- Recommending priority areas for development of water supplies. Priorities have been recommended for drilling of test boreholes under a CIDA/Swaziland Groundwater Exploration Project. Drilling will be scheduled first in priority area so that boreholes can be utilized for supply of water. High priority was given to the Sithobela-St. Phillips area most severely affected during the cholera outbreak, areas of the northern lowveld where prevalence of schistosomiasis is very high, and in the south eastern lowveld where water is very scarce;

- Provision of assistance in training health assistants in protection of small springs through two workshops and drafting of a spring protection manual;
- Conducting two workshops on laboratory methods and sampling surveys for laboratory technicians;
- Preparation of a manual on latrine construction for extension workers.

N.2 Constraints

The public health engineering unit is considered an important part of the RWSB. Since the beginning of the project, the public health engineering advisor and his counterpart have been able to function well within that organization and in collaboration with the Ministry of Health. Constraints have been primarily in the form of delays:

- establishment of post,
- grading of post,
- availability of suitable candidate for post.

These delays have affected the schedule of training

Other activities in which the public health engineering advisor has been heavily involved, such as sectoral planning, which strengthen the role of the unit, have been delayed. In large measure these resulted from the reorganization of ministries. But once initiated, they take place smoothly and with commitment.

It is thus that the institutional base has been created and the unit carries out its responsibilities. Training is behind schedule and further technical support of training and implementation is called for as a result.

N.3 Recommendations

The institutional base for carrying out the activities of the public health engineer is well established. So are his responsibilities. The primary needs are for:

- Strengthening the role of the public health engineering advisor in coordinating with the Ministry of Health;
- Building on the developmental role of the public health engineer in the implementation and evaluation of treatment systems for high surface sources, which, while highly contaminated at times, can be distributed at low cost. This will also involve collaboration with the Health Inspectorate either to assist in maintenance or working closely with communities to obtain their full participation.
- Evaluation in collaboration with the health education centre. These should include:
 - . operation and maintenance,
 - . linkage of water supply, sanitation, and health education,
 - . knowledge, attitudes, and practices,
 - . financing of maintenance;

- Supervision of the water quality laboratory.

The public health engineer and the health inspector/PHE require further training on-the-job.

It is recommended that technical assistance be obtained for a period of two years for the purpose of:

- Training of public health engineer and health inspector/PHE;
- Strengthening linkage between the public health engineering unit and the Ministry of Health;
- Assisting in preparation of the five year master plan for sectoral development;
- Assisting in research and development and evaluations.