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THE PRAGMA CORPORATION

SWAZILAND RURAL WATER BORNE DISEASE CONTROL PROJECT
CONSIDERATIONS FOR PROJECT EXTENSION

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.
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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/SWAZILAND

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3

SWAZILAND RURAL WATER BORNE DISEASE CONTROL PROJECT

CONSIDERATIONS FOR PROJECT EVALUATION

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 a three-year extension of the project. This report deals only with project extension; the results of the evaluation are reported separately.

SUMMARY OF FINDINGS AND RECOMMENDATIONS

The Rural Water Supply Board's four construction units have a combined potential of two million five hundred Emalangeni (E2,500,000) per year. However, due to various difficulties, an estimated output of E1,500,000 per year is more reasonable, corresponding for instance to 10 macro and 40 micro projects. Proposed projects will exceed the estimated capacity over the next 20 months. If the RWSB undertakes the construction of the water systems considered under the extension of the USAID project, it will have to increase its output by two thirds or else progress on all funded projects will be slowed down considerably. These impacts can be reduced by increasing the number and efficiency of RWSB's construction crews, spreading the work over a longer period, and providing some technical and equipment assistance.

At the review of the draft report, the public health engineering advisor and the RWSB's design engineer have seriously questioned the validity of the findings of this section as well as the underlying assumptions. There was not enough time for a verification but no evidence was presented to warrant a revision. However, the evaluation team cautions that the findings of this section are based on rough estimates and advises that they be checked further.

Two private voluntary organizations were identified as having capabilities in the construction of small water supply systems. Emanti Esive is an emerging organization with considerable potential and a water supply construction capacity estimated at E240,000 per year, half of which could be easily devoted to the USAID project extension. USAID might also encourage reinforcement and further expansion of this non-governmental organization by providing some equipment as well as training or even salary of national technical staff to eventually replace the expatriates. Before embarking on a partnership with Emanti Esive, however, USAID should make sure that a suitable replacement has been found for the current project director (Mr. R. Soni) who is scheduled to leave soon and that the organization will become autonomous and managed by Swazis as originally intended. If an expatriate is selected as project director, a Swazi counterpart is strongly recommended.

The Council of Swaziland Churches has also had some experience in the field although a couple of the earlier projects were not designed or executed adequately. Its current capacity, estimated at E100,000 per year, can be easily doubled as a considerable amount of work can be subcontracted. USAID should also consider technical reinforcement of this organization.

The Rural Water Supply Board has indicated that it can work with these organizations, as it has done in the past, provided they comply with the established standards. The RWSB is considering cooperation with the PVO's particularly for the implementation of micro systems, where they have experience. However, RWSB cannot guide and supervise them as it will have to review and approve their work.

Chances for the successful integration of a water and sanitation project into a community are greatly enhanced by several social factors in and outside the community. Geography and recent history play a role as well. The RWSB's community development officers (CDO) are a prime factor for success.

In view of the extension of the project, the RWSB would need some technical assistance: a civil-sanitary engineer for two years and several short-term consultants for a total of 15 person-months (including some assistance to the MOH's Health Inspectorate).

TABLE OF CONTENTS

	Page
Abstract	i
Summary of Findings and Recommendations	ii
Table of Contents	iii
Acronyms	iv
Scope of Work	v
A. RWSB's Construction Capacity	A-1
A.1 Overview	A-1
A.2 Estimate of Capacity	A-1
A.3 Capacity vs Commitments	A-4
A.4 Conclusion	A-5
B. PVO's Involvement in the Construction of Water Systems	B-1
B.1 Overview	B-1
B.2 Identification and Qualifications of PVO's	B-1
C. Institutionalization of Health Education and Community Participation Activities in RWSB's Water Systems	C-1
C.1 Chances for Successful Projects	C-1
C.2 Assuring Successful Community Development in RWSB Projects	C-2
C.3 Impact on RWSB Health Education/Community Participation Component	C-2
D. Technical Assistance Needs of RWSB	D-1

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

SCOPE OF WORK

In view of the proposed 3-year project extension to fund construction of additional water systems, the evaluation team will examine, to the extent that time allows, the following:

(a) Rural Water Supply Board's (RWSB) capability to construct annually 16 new systems and renovate annually 4 existing systems, and RWSB's capacity to utilize anticipated mix of donor funds (USAID, British Aid, UNDP, other) to conduct these activities.

(b) Identification of select PVOs who could expand their involvement in water systems construction, and the conditions under which RWSB would guide and supervise these PVOs.

(c) Institutionalization of health education/community participation activities to assure their inclusion in all water systems development undertaken by RWSB.

(d) Identification of technical assistance required to assist RWSB in their continuing efforts to construct water systems and assure appropriate community participation/health education.

A. RWSB's Construction Capacity

A.1 Overview

The Rural Water Supply Board's four construction units have a combined potential of two million Emalangeni (E2,500,000) per year. However, due to various difficulties, an estimated ouput of E1,500,000 per year is more reasonable, corresponding, for instance, to 10 macro and 40 micro projects. Proposed projects will exceed the estimated capacity over the next 20 months. If the RWSB undertakes the construction of the water systems considered under the extension of the USAID project, it will have to increase its output by two thirds or else progress on all funded projects will be slowed down considerably. These impacts can be reduced by increasing the number and efficiency of RWSB's construction crews, spreading the work over a longer period, and providing some technical and equipment assistance.

At the review of the draft report, the public health engineering advisor and the RWSB's design engineer have seriously questioned the validity of the findings of this section as well as the underlying assumptions. There was not enough time for a verification but no evidence was presented to warrant a revision. However, the evaluation team cautions that the findings of this section are based on rough estimates and advises that they be checked further.

A.2 Estimate of Capacity

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

- Micro systems serving up to 1000 people, consisting mainly of small spring protection structures or boreholes equipped with hand pumps (average population served: 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: 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

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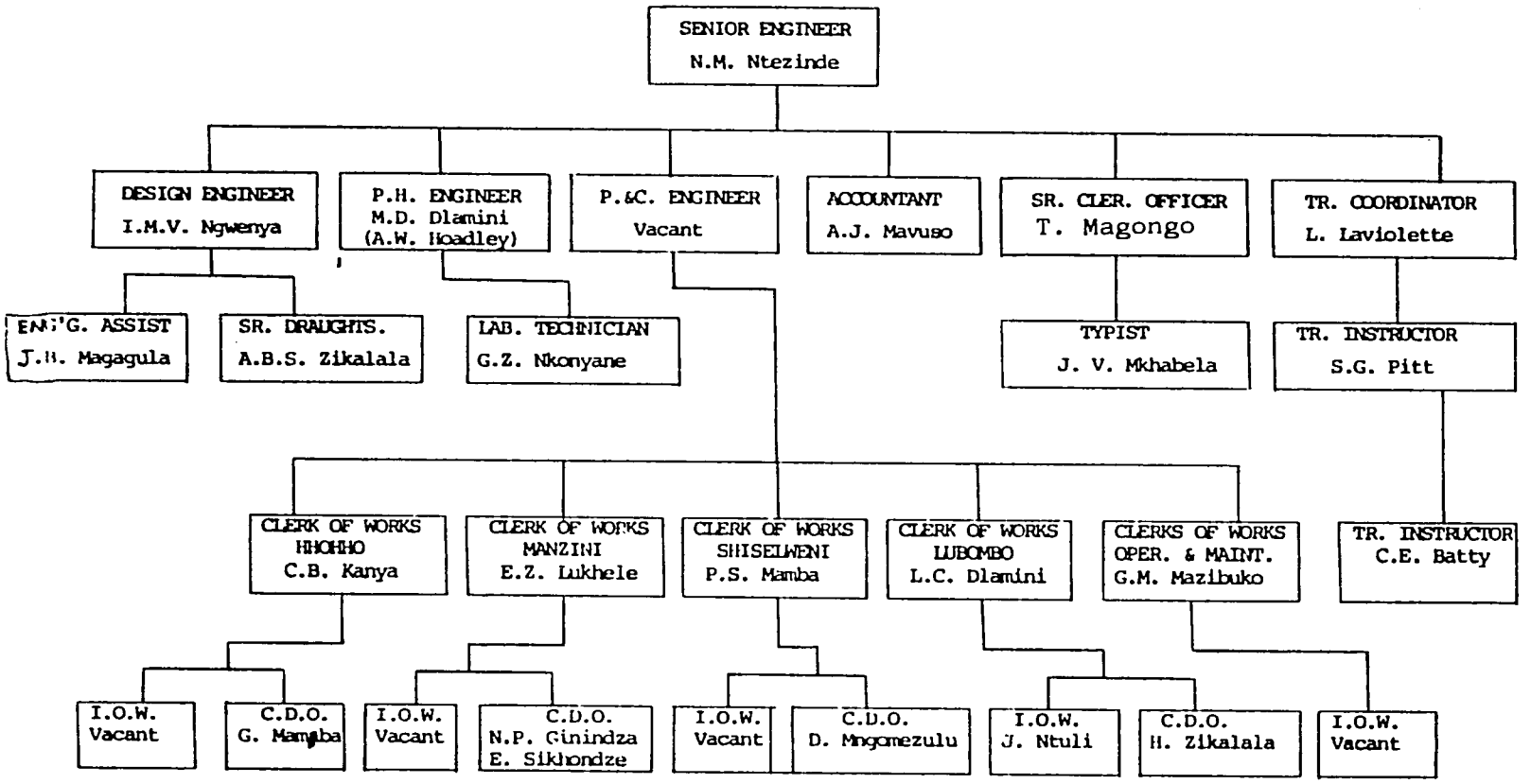
Figure 5-1

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



NOTE: ( ) ADVISERS

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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.

Based on conversations with project staff and a review of progress reports submitted by regional clerks of works, the evaluation team estimates the current construction capacity of the Rural Water Supply Board as follows: potentially the Board can execute work of a total value of E2,500,000 per year; however, due to various difficulties, an estimated output of E1,500,000 per year is more reasonable. This conclusion was reached on the following basis.

(i) The RWSB estimates its construction capacity to be 16 new macro systems and 4 rehabilitations or micro sytems per year. While the distinction between micro and macro systems is not well defined, one may estimate their average costs to be respectively E15,000 and E90,000. Because of this lack of definition, we will use construction Emalangeni (E) output instead of number of projects or systems as a measure of capacity. Thus, according to the estimate, the capacity of the four construction units would be E1,500,000 per year. In all this discussion, output represents the total of project capital costs, that is, the contributions of the Government of Swaziland and of donors such as USAID and UNDP. For example, for the systems recently funded under the USAID Rural Water Borne Disease Control Project, the total cost estimate of E463,335 represents:

	Cost in E.	Percent
Labor	87,372	18.9
Overhead	32,005	6.9
Government of Swaziland	119,377	25.8
Materials	204,070	[illegible]
Transport	52,618	11,4
Subcontracts	56,000	12.1
Contingencies	31,270	6.7
USAID	343,958	74.2
Total:	463,335	100.00

(ii) The salaries of the permanent staff at RWSB's headquarters are not included. Subcontracts are for work performed by others, mainly hydrogeological surveys, borehole drillings and electrical subcontracts.

(iii) The performance of the construction unit varies from one region to another. The Lubombo's clerk of works estimates the capacity of his unit to be 2 macro systems of the size of Duze or Mphundle and 8 micro systems like Emthongeni. This is a low output of E210,000 that reflects some difficulties and delays experienced in the region. On the other hand, the Hhohho region is confident it can complete annually 12 projects of the size of Motshane, that is an output of more than E600,000 if everything goes according to schedule. However, this unit is experiencing delays due to lack of community participation and lack of order books without which materials cannot be purchased.

From April to the end of July, the Hhohho region has done the following: 10 percent of the Sigangeni project, 95 percent of Motshane and 75 percent of Sigqumeni.

(iv) If one assumes that the RWSB will complete the 8 USAID sponsored water systems on 30 September, and that, on the average, the construction units devoted 50 percent of their capacity (based on actual average output) to these projects since April, their actual output may be estimated as E1,500,000 per year. This is a more reasonable estimate of the capacity of the RWSB, unless special measures are taken to improve performance. This output corresponds to the following mixes of projects:

	No. Macros		No. Micros
	0	and	100
or	5	and	70
or	10	and	40
or	15	and	10

A.3 Capacity vs Commitments

How much of this capacity can be devoted to water supply systems funded under the proposed extension of the Rural Water Borne Disease Control Project? One must then take into consideration the other current and potential requirements of the RWSB over the three-year period from January 1987 to December 1989. All estimated commitments are based on remaining construction work and not on grant amounts.

1. United Kingdom/Swaziland project, financed through a loan of the Overseas Development Agency; started in April 1985; work remaining to be done consists of 5 macro and 28 micro systems of a value of E484,000 over the period of September 1986 through April 1987, that is an average of E60,500 per month (E726,000 per year).

2. UNDP (EOTF) project SWA/84/001, financed by a grant of US$750,000 consisting of 2 macro and 51 micro schemes. The work to be done between September 1986 and April 1988 is estimated at E42,750 per month (E513,000/year for all except 6 micro schemes).

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3. Project number 5100.71.49.007, financed by a loan of ECU 2,456,000 of the European Economic Community, will be completed in June 1987. As it is executed by subcontractors, it involves only the headquarters staff and not the construction units of the RWSB.

4. A macro project financed by the Canadian International Development Agency remains to be completed by April 1987; that is an average of E11,250 per month from September (or E135,000 per year).

5. The Netherlands aid agency is considering a proposal to finance 6 macro and 150 micro schemes throughout Swaziland. This project, to be managed through UNDP, could start in May 1987 and last 2 years. It will concern mainly the equipment of some of the CIDA test boreholes with submersible or hand pumps. It is expected that the request will be granted. Consequently, we have included a monthly requirement of E116,250 for this project (or E1,395,000/year).

6. The Government of Swaziland is considering other requests for which no proposals have been prepared.

RWSB's commitments and capacity are compared on Figure 5-2, which shows that:

1. Between September 1986 and April 1987 the combined commitments to the UK, UNDP and CIDA projects are below the estimated capacity of the RWSB.

2. Between May 1987 and April 1988, the combined requirements of the UNDP and Netherlands projects will exceed the RWSB's estimated capacity by 27 percent. However, because these commitments represent only 75 percent of the potential output, we believe that the RWSB can do it successfully by improving its operations.

3. Between May 1987 and April 1989, with only the Netherlands project remaining, the RWSB can meet its commitments without difficulty.

A.4 Conclusion

Under the foregoing assumptions it is not advisable for USAID to add another water supply construction program to the RWSB unless measures are taken to increase the number of construction units and/or their performance. If USAID were to ask the RWSB to construct the proposed program of thirty systems over the next three years, beginning in January 1987, the capacity of the RWSB units would be exceeded by two thirds between May 1987 and April 1988 (assuming the average cost of a system to be E60,000). The RWSB would have to perform at its full potential to complete all work on schedule.

One way to avoid the overload would be for the RWSB to increase its actual capacity by 50 percent and spread the work over a long period. It may achieve this capacity increase by adding two construction units or by boosting efficiency. With such an increase, the RWSB could complete the program under consideration in about 36 months. However, this may entail slowing down the other donor programs to accommodate the USAID sponsored systems. If the number of construction units increases, more field technicians will be needed, who may not be available, and that will require more supervision by the headquarters staff. This staff is already overloaded particularly because of the absence of the planning and construction

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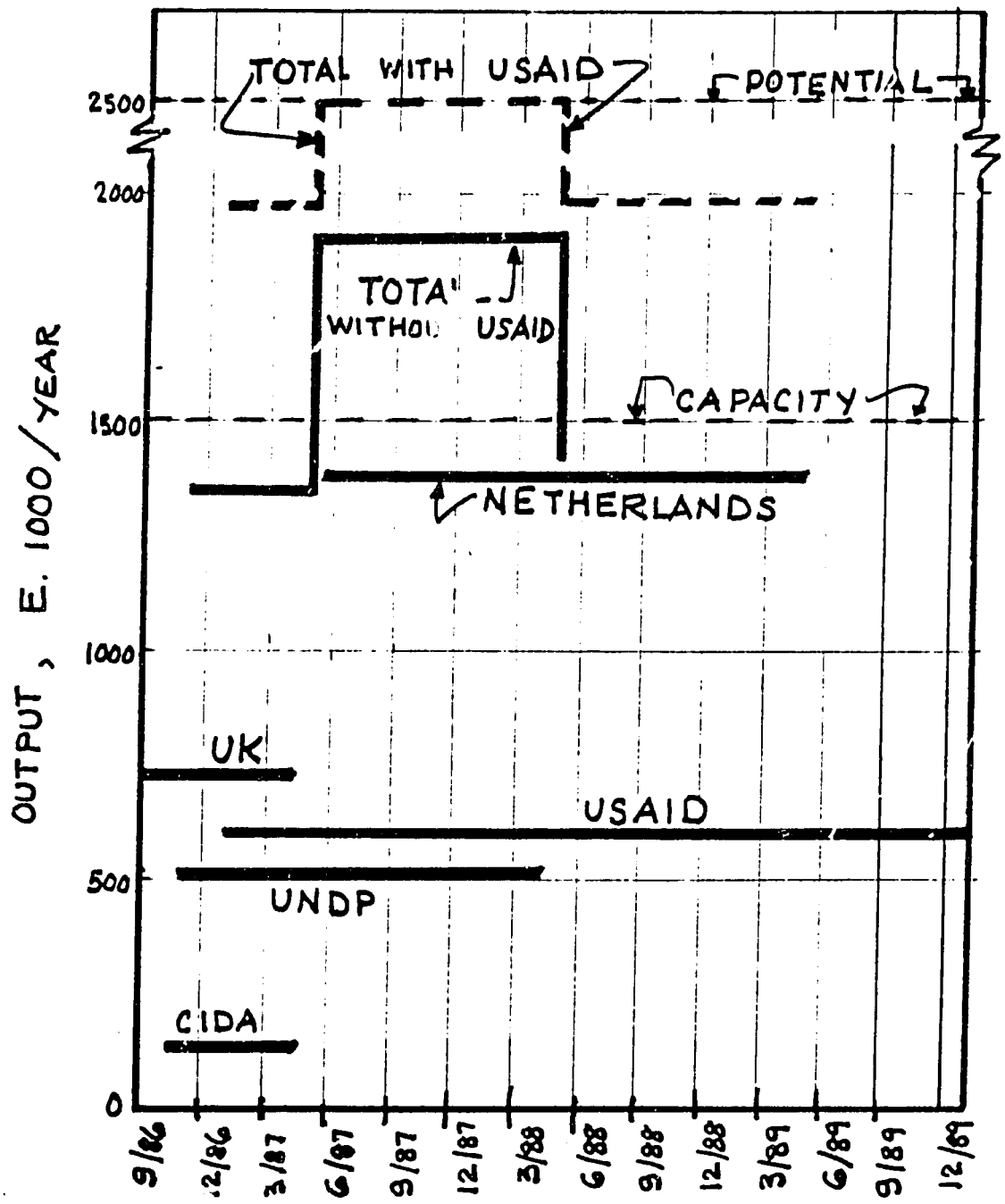
FIGURE 5-2

RWSB's CAPACITY & COMMITMENTS



engineer who would normally supervise the clerks of works. The increase in construction units would also put an additional burden on the operating funds of the RWSB for labor costs and overhead. Finally if the level of donor assistance is not maintained after January 1990, the RWSB will have to lay off some of its construction forces.

A.5 Answer to Some Comments

At the review of the draft report, the public health engineering advisor and the RWSB's design engineer have seriously questioned the validity of the findings of this section as well as the underlying assumptions. They think that (a) some information reportedly received from RWSB's headquarters and the regional clerks of works is not accurate; (b) the capacity of the RWSB is greater than estimated; (c) total commitments to funded projects are lower than estimated. There was not enough time for a verification, particularly since the senior engineer is out of the country and clerks of works out in the regions, but no evidence was presented to warrant a drastic revision. On the other hand, the evaluation team cautions that the findings of this section are based on rough estimates and advises that they be checked further. Also we have increased the estimated capacity and potential by 25 percent. Here are some pertinent comments; others will be found in Appendix F of the main report.

From the Public Health Engineering Advisor

- E1,500,000 is a more reasonable estimate of RWSB's annual output (than E1,200,000).
- Micro schemes, e.g. hand pump installation, require very little effort on the part of the RWSB.
- The comparison of RWSB's commitments and capacity is wrong, misleading and potentially damaging.

From 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).

B. PVO's Involvement in the Construction of Water Systems

B.1 Overview

Two private voluntary organizations were identified as having capabilities in the construction of small water supply systems. Emanti Esive is an emerging organization with considerable potential and a water supply construction capacity estimated at E240,000 per year, half of which could be easily devoted to the USAID project extension. USAID might also encourage reinforcement and further expansion of this non-governmental organization by providing some equipment as well as training or even salary of national technical staff to eventually replace the expatriates. Before embarking on a partnership with Emanti Esive, however, USAID should make sure that a suitable replacement has been found for the current project director (Mr. R. Soni) who is scheduled to leave soon and that the organization will become autonomous and managed by Swazis as originally intended. If an expatriate is selected as project director, a Swazi counterpart is strongly recommended.

The Council of Swaziland Churches has also had some experience in the field although a couple of the earlier projects were not designed or executed adequately. Its current capacity, estimated at E100,000 per year, can be easily doubled as a considerable amount of work can be subcontracted. USAID should also consider technical reinforcement of this organization.

The Rural Water Supply Board has indicated that it can work with these organizations, as it has done in the past, provided they comply with the established standards. The RWSB is considering cooperation with the PVO's particularly for the implementation of micro systems, where they have experience. However, RWSB cannot guide and supervise them as it will have to review and approve their work.

B.2 Identification and Qualifications of PVO's

In view of the proposed three-year extension of the project to fund the construction of additional water systems, USAID/Swaziland has asked the evaluation team to identify Private Voluntary Organizations (PVO), also called Non-government Organizations (NGO), who can implement part or all of the proposed program. Such organizations include those who are already involved in the construction of water systems or could expand their capabilities into this field. This item is important not only because the Rural Water Supply Board may not be able to carry out the entire extension program in addition to its current workload, but also because such PVOs would need guidance and approval of the RWSB in accordance with the national water and sanitation policy.

The use of private voluntary organizations in the implementation of rural water supply systems is under consideration at the RWSB. It is not clear as to which areas their assistance can be used but the Board has identified the construction of micro projects as a possible cooperation ground because:

1. RWSB's set up is geared for macro projects. Only recently has it undertaken micro systems.

2. Most micros do not require major maintenance provided they are properly designed and executed.

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3. Some private voluntary organizations have experience in micro system construction.

We have indentified two Private Voluntary Organizations we can recommend for participation in the proposed construction. Below we describe briefly the capabilities of Emanti Esive and the Council of Swaziland Churches. This description is based on information and reports provided to us by Mr. Rajan Soni (Project Director of Emanti Esive) and two USAID consultants conducting field research on Swaziland PVOs (Messrs. Jon Benson and Sean Bradley). Three other organizations mentioned by other sources but that we cannot recommend for lack of information are: Mennonite Central Committee, Peace Corps and Red Cross.

EMANTI ESIVE

Emanti Esive (siSwati for "water for community development") is an organization set up by International Voluntary Services (IVS) with financial assistance from British and Canadian sources (Overseas Development Assistance and Unitarian Services Committee of Canada). Its purpose is to undertake projects of community development in rural areas, where the main problem is water supply. Emanti Esive has been in operation for about one year. Within this period, a Swazi board was to be set up to manage the organization independently from IVS, which has not happened. Emanti Esive will be autonomous perhaps by December 1986.

Besides its program administrator, Emanti Esive currently employs two field technicians with experience in the field of water supply, one being a former employee of the Rural Water Supply Board in charge of micro systems. The second technician is a former independent contractor who handles construction aspects for Emanti Esive. A third expatriate technician, also a former employee of RWSB, will be hired to start working before the end of August and a fourth technician will come on board in January 1987. One of the expatriates will be replacd by a Swazi technician. For preliminary surveys, design and field studies, Emanti Esive uses the services of the firm Carl Bro (also a consultant to Rural Water Supply Board). Design and construction are in accordance with RWSB's standards.

In January 1987, Emanti Esive will have two field crews with different areas of responsibility:

1. Construction of gravity fed systems. The organization can complete four such systems a year, with an average of E20,000 - E30,000.

2. Installation of hand pumps on the test boreholes drilled by the Canadian hydrogeological survey team; capacity: 40 pumps/year.

A rainwater catchment project is under consideration in the lowveld.

Emanti Esive has already completed two projects. The first, at Dvumbe in the Lubombo Region, is a gravity fed water system serving 450 people and a primary school at a total cost of E25,000. Included in this cost are a soil erosion control program and the construction of pit latrines for the school and the community. The second project is another gravity system supplying water to 650 people at Sihhohhweni and costing E42,000. At Dvumbe, a community garden was established, the community's headman and school headmaster were trained for operation and maintenance of the water system. At Sihhohhweni a maintenance manual was prepared. In all projects, the

organization expects a certain amount of skills transfer by technicians to communities for operation and maintenance. Five or six other projects are scheduled for the next fifteen months.

Financing for Emanti Esive's projects comes from the organization's funds for personnel salaries and from donors for community project costs. For example, the Sihhohhweni system was financed 55% by USCC and 45% by USAID. The organization's overhead and administration's cost is about E70,000 per year.

COUNCIL OF SWAZILAND CHURCHES

The Council of Swaziland Churches (CSC) is the local action arm of the Federation of Churches, with a central office at Manzini and two regional branches, one north of Pigg's Peak in Hhohho, the other in the south east corner of Shiselweni. CSC requires beneficiary communities to invest a minimum of 25% of the capital costs of water projects and to provide local labour for unskilled work. In poor communities, this contribution may be reduced to 10%. CSC usually holds several meetings with the communities for health education and maintenance training, with significant women participation. It also makes sure that tools for routine maintenance are available locally.

CSC's program administrator, Mr. Mose Tsabedze, is a Swazi plumber who used to work for the Rural Water Supply Board. In addition to administration, he handles pump installation. He can also design piping; he supervises pipe laying and the beginning of backfill. His assistant, Mr. Hlophe, is a retired rural health motivator. CSC uses subcontractors:

- Olivier Pumps from South Africa for drilling and, sometimes, pump installation;

- Gibb Hawkins and Partners in Mbabane for the selection of borehole sites;

- Emanti Contractors, occasionally, for the installation of hand pumps.

Over the past three years, CSC has undertaken thirty rural water projects of an average capital cost of E6,000 (see Table B-1). They include seven boreholes, one shallow well and twenty-two spring protections. It subcontracts out the boreholes but does the spring work on its own. They are all relatively small systems, few of them exceeding a distribution of 2 km. Of the 30 systems, 25 are completed and in operation. Reportedly, some of these projects do not function well, particularly those at Kaphunga and Mhlabubovu Primary, because of poor design or defective construction. The combined capacity of the three CSC locations is estimated as 12 systems per year. The majority of the projects executed by the central office are not far from Manzini; Lubombo and the northern part of Shiselweni have low priorities.

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Table B-1: Council of Swaziland Churches' Water Systems

Systems	Sources	Cost in Emalangeni
1. Kabhudla Primary	Spring	
2. Edwaleni	Spring	
3. Kaphunga	Spring	
4. Esigcaweni	Borehole	
5. Hhohho A.M.E. Primary	Borehole	
6. Maphalaleni Primary	Spring	
7. Hlathikhulu New Warm Primary	Spring	
8. Engcoseni	Spring	
9. Mbekelweni Lutheran Primary	Spring	
10. Mahlanya Market	Spring	
11. KalaMdladla Secondary	Spring	
12. Mafutseni	Borehole	
13. Bethany	Spring	
14. Mhlatane	Spring	
15. Khalangilile Primary	Spring	6,000
16. Beaconkop Primary	Spring	
17. Mnyokane Primary	Spring	4,000
18. Mnyokane Primary	Spring	
19. Phuzumoya	Borehole	5,000
20. Ekuthuleni Primary	Spring	6,000
21. Eluhlendlweni Primary	Spring	5,000
22. Mhlabubovu Primary	Spring	6,000
23. Lavumisa Qomntaba	Borehole	5,500
24. Esitjeni Spring Protection	Spring	
25. Mbikwakhe	Spring	6,000
26. Gebeni	Shallow Well	
27. Encabaneni	Spring	9,000
28. Bhekinkosi Primary	Spring	6,000
29. Kandangu	Borehole	
30. Maloyi Central School	Borehole	

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

C.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 motivators.

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.

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C.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 offerred 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.

C.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.

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(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.

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D. Technical Assistance Needs of the Rural Water Supply Board

This section is in direct response to the fourth element of the additional scope of work, that is the identification of technical assistance required by the RWSB in its continuing efforts to construct water systems and to assure appropriate community participation/health education. It is just a list of the long and short term recommendations presented in other sections of the main evaluation report and related to the RWSB. In view of the proposed project extension, this represents the overall priority recommendations for technical assistance.

Long-Term Assistance (24 person-months). One civil engineer for two years, with experience in public health or sanitary engineering and management of water supply field operations. It would help to recruit somebody already familiar with the project for this position. This technical assistance will

a) Carry out the training and assistance recommended for the public health engineering unit under Chapter 4 of the main report.

b) Act as the RWSB's planning and construction engineer for the USAID - sponsored water supply construction program and assist the Board in this area with the other funded programs. Recommend ways for the Board to operate as efficiently as possible in the absence of a planning and construction engineer.

c) Plan and manage all short-term technical assistance recommended in this section, including the preparation of terms of reference.

Short-Term Assistance (15 person-months) for the Rural Water Supply Board and the Health Inspectorate (references are to sections of the main report):

a) 1 person-month for a report on recurrent costs (see section 5.6).

b) 1 person-month for assistance in sectoral planning (see chapter 4 and section 5.1).

c) 1 person-month for assistance in organizing workshops for regional community development teams (see section 5.5)

d) 5 person-months for assistance in organizing in-service workshops for the community development officers: management training, development communications, rural health issues and project evaluation (see section 5.5).

e) 3 person-months of a public health or environmental engineer to help carry out recommendations 1, 2, 4 and 5 of chapter 4.

f) 1 person-month to organize workshops for clerks of works on bookkeeping, reporting and other administrative tasks. (This is in response to a comment, expressed by a representative of the RWSB during the draft review meeting).

g) 3 person-months to finalize the spring protection manual, organize related training of health assistants and health inspectors, and follow up the previous consultancy on the management of the Health Inspectorate (see section 2.2 and the last minor concern listed in subsection 5.1.4)