

SWAZILAND

RDA Infrastructure Support

Project Paper

(645-0068)

SEP 20 1978

ACTION MEMORANDUM FOR THE ASSISTANT ADMINISTRATOR
FOR AFRICA *JW Koehring*

FROM: AFR/DR, ~~John W. Koehring~~

Problem: Your signature is requested for the attached Action Memorandum to the Administrator recommending authorization of the Swaziland RDA Infrastructure Support Project (645-0068).

Discussion: The total project cost of \$12,546,500 exceeds the approval authority of Assistant Administrators.

Recommendation: That you sign the attached Action Memorandum for the Administrator recommending authorization of the project.

Attachment:
Action Memorandum for the Administrator

Clearances:
AFR/DR/SA:JPGuedet *JPG*
AFR/DP:CWard *ew*
GC/AFR:EDragon *ED*
AFR/DR/ARD:BWhittle (draft)
AFR/DR/ENGR:MMorgan (draft)
SER/ENGR:RHenrikson (draft)
AFR/DR/SDP:BEoyd (draft)
AFR/SA:RWrin (draft)
AFR/SA:THEQuimby (draft)
SER/COM/ALI:BViragh (draft)
CM/ROD/AFR:PBullock (draft)
AFR/DP:DWilson (draft) *dw*

AFR/DR/SA:EM *EM* is:bks:09/15/78:X28818

SEP 21 1978

SEP 26 10 43 AM '78

EXECUTIVE SECRETARY DEPUTY

ACTION MEMORANDUM FOR THE ADMINISTRATOR

THRU: ES *pe*

THRU: AA/PPC, Alexander Shakow *CS*

FROM: AA/AFR, Goler T. Butcher *W/S*

Problem: Your approval is required to execute a grant of \$2,077,000 and a loan of \$5,400,000 from FY 1978 Security Supporting Assistance Funds to the Government of Swaziland for the Swaziland RDA Infrastructure Support project (645-0068). You are also requested to approve a total life-of-project cost of \$12,546,500 (\$5,400,000 loan and \$7,146,500 grant).

Discussion: This project represents a vital component in the Government of Swaziland's (GOS) multi-donor supported effort to assist Swazi farmers in making the transition from subsistence to semi-commercial and commercial farming. As an integral part of the Rural Development Area Program (RDAP), the project will build upon earlier GOS/AID activities to strengthen the RDAP's land use planning and land development capability and develop and install conservation works in Rural Development Areas (RDAs) designated for intensive development.

To accomplish these objectives, the project's technical assistance inputs will produce comprehensive land use plans which are technically, economically, socially, and ecologically sound; construct conservation infrastructure works on the basis of these plans; establish a program to rehabilitate works that require major maintenance; and prepare works maintenance schedules as part of each land use plan. The project will provide earth moving equipment, transport vehicles, spare parts, and supporting machinery and equipment needed to construct the conservation infrastructure and will provide technical assistance to strengthen the managerial capabilities of the existing maintenance workshop. To enable the GOS to conduct land use planning, land development, and equipment maintenance on a broader and more effective scale, the project will train Swazi technicians to assume positions of responsibility within the various divisions of the RDAP.

0000070

To support the project, AID will provide funding for the construction of senior staff houses for the U.S. technicians and a parts storage warehouse at the maintenance workshop. Additionally, funds will be provided for vehicles, office and field equipment, training equipment and supplies, and books and periodical subscriptions.

In order to accomplish the objectives of the project, \$7,477,000 is requested for obligation in FY 1978 (\$2,077,000 grant/\$5,400,000 loan); the life-of-project funding required is \$12,546,500 (\$7,146,500 grant/\$5,400,000 loan). The following table illustrates the specific areas in which AID funds will be used:

	<u>FY 1978</u>	<u>LOP</u>
<u>Grant</u>		
Technical Assistance	1,394,000	5,910,900
Participant Training	152,400	660,000
Construction	435,000	435,000
Commodities	<u>95,600</u>	<u>140,600</u>
Subtotal	2,077,000	7,146,500
<u>Loan</u>		
Heavy Equipment	<u>5,400,000</u>	<u>5,400,000</u>
Totals	7,477,000	12,546,500

In addition to AID's grant and loan, the GOS will contribute \$19,800,000 for equipment support and replacement, salaries and wages, vehicle operation and maintenance, in-country per diem, and furnishings and appliances.

The project has been thoroughly examined to determine its socio-economic feasibility; a specialist in rural sociology participated in the project design to ensure that relevant cultural factors were considered. During the project design, surveys were conducted to determine local perceptions and attitudes about the RDA Program; the results of these surveys served as a partial basis for the development of AID's technical assistance package.

The project has also been examined to determine its technical and environmental soundness. The project, as proposed, is judged to be technically and financially sound, satisfying the requirements of FAA Section 611 and related sections. An Environmental Assessment (EA), conducted in 1977, concluded that there are no long-term negative impacts and that the absence of conservation measures supported by this project would result in environmental disaster through degradation of the land. The findings in the EA have been incorporated into the design of the project; for example, the GCS and the technical assistance personnel will devise criteria for activity selection which takes into account the recommendations in the EA, and the Land Use Planning Section (Ministry of Agriculture) will be responsible for incorporating these criteria into the land use plans developed for the project.

The following waivers and approvals are necessary to facilitate project implementation:

- (1) A procurement source and origin waiver to permit procurement of one sedan from countries included in AID Geographic Code 935 (Special Free World) instead of from those included in Geographic Code 000 (U.S. only);
- (2) Proprietary procurement waiver to permit purchase of 14 closed utility vehicles and two pickup trucks from International Harvester;
- (3) Procurement source and origin waiver to permit procurement of construction materials estimated at \$220,000 from countries included in AID Geographic Code 935 (Special Free World) instead of from AID Geographic Code 000 (U.S. only) and local sources;
- (4) Waiver to permit procurement of construction services estimated at \$435,000 from firms of AID Geographic Code 935 (Special Free World) nationality instead of from those firms of AID Geographic Code 000 (U.S. only) or local nationality; and
- (5) Approval to deviate from policy expressed in AID Handbook 11, Chapter 2, which limits employment of third country nationals for AID-funded construction to 20% of the non-local work force.

A detailed justification for these waivers is included in the Project Paper as Annex XIV.

The project committee reviewed and recommended approval of this project on August 30, 1978. AID's policy toward support of non-food cash crops such as cotton was discussed at the committee meeting; it was determined that this project is in compliance with this policy since AID-financed inputs are directed toward building institutional capability and installation of conservation works in the Rural Development Areas. While the farmers in the project area do grow some cotton and tobacco, this project does not directly support the production of these crops.

The project was included in the FY 1978 Congressional Presentation; a Congressional Notification is not required.

The responsible project officer in the field will be Willie F. Cook, USAID/OSARAC, and the AID/W backstop project officer will be William D. Jones, AFR/DR/SA. The Swaziland Ministry of Agriculture, through its Land Use Planning and Land Development Sections, will be responsible for overall project implementation.

// There are no outstanding issues regarding GAO or AID audits, internal or external evaluations, or congressional inquiries. //

Recommendation: That you sign the attached PAF II, thereby authorizing both the proposed project and requested waivers.

Attachments:

1. PAF II
2. Project Paper

Clearances:

GC/MBall 09/15/78
PPC/DPRE:EHogan EH
DAA/AFR:WHNorth (initials)

AFR/DR/SA:EH 400A for is:bks:09/15/78:X28818

PROJECT AUTHORIZATION AND REQUEST FOR ALLOTMENT OF FUNDS

PART II

Name of Country: Swaziland

Name of Project: RDA Infrastructure Support

Number of Project: 645-0068

Pursuant to Part II, Chapter 4, Sections 531 and 532 of the Foreign Assistance Act of 1961, as amended, I hereby authorize a Loan and a Grant to Swaziland (the "Cooperating Country") of not to exceed Seven Million Four Hundred and Seventy-seven Thousand United States Dollars (\$7,477,000) (the "Authorized Amount") to help in financing certain foreign exchange and local currency costs of goods and services required for the project as described in the following paragraph.

The Project will assist Swaziland to strengthen its present land use planning and land development capabilities, and to develop and install conservation works in certain Rural Development Areas (RDAs) in Swaziland. These objectives will be attained through (1) preparation of detailed land use plans, (2) construction and maintenance of land and water infrastructure on the basis of such plans, (3) development of improved management procedures for planning, designing, constructing and maintaining RDA physical infrastructure, (4) establishment and implementation of a works rehabilitation program, and (5) improvement of the capability of the LDS to maintain equipment utilized for, inter alia, this project. To carry out the objectives of this project AID will provide financing for technical assistance, commodities, participant training, construction and other services.

Of the Authorized Amount Five Million Four Hundred Thousand United States Dollars (\$5,400,000) (the "Loan") will be loaned to the Cooperating Country and Two Million and Seventy-seven Thousand United States Dollars (\$2,077,000) (the "Grant") will be granted to the Cooperating Country to assist in financing certain foreign exchange and local currency costs of goods and services required for the Project.

I approve the total level of AID appropriated funding planned for this Project of not to exceed Twelve Million Five Hundred and Forty-Six Thousand and Five Hundred United States Dollars (\$12,546,500), of which \$5,400,000 will be Loan-funded and \$7,146,500 Grant-funded, including the funding authorized above, during the period of FY-1978 through FY-1983. I approve further increments during that period of Grant funding up to \$5,069,500, subject to the availability of funds in accordance with AID allotment procedures.

I hereby authorize the initiation of negotiations and execution of the Project Agreement either by the officer to whom such authority has been delegated in accordance with A.I.D. regulations and Delegation of Authority or by the principal diplomatic officer of the Government of the United States in the Cooperating Country, subject to the following essential terms and covenants and major conditions together with such other terms and conditions as A.I.D. may deem appropriate.

a. Interest Rate and Terms of Repayment. The Cooperating Country shall repay the Loan to A.I.D. in United States Dollars within forty (40) years from the date of first disbursement of the Loan, including a grace period of not to exceed ten (10) years. The Cooperating Country shall pay to A.I.D. in United States Dollars interest from the date of first disbursement of the Loan at the rate of (a) two percent (2%) per annum during the first ten (10) years, and (b) three percent (3%) per annum thereafter, on the outstanding disbursed balance of the Loan and on any due and unpaid interest accrued thereon.

b. Source and Origin of Goods and Services. Goods and services, except for ocean shipping and motor vehicles, financed by A.I.D. under the project, shall have their source and origin in the Cooperating Country or in the United States, except as A.I.D. may otherwise agree in writing. Ocean shipping financed under the Project shall be procured in the United States except as A.I.D. may otherwise agree in writing. Motor vehicles shall be manufactured in the United States except as set forth in paragraph e(3) below.

c. Prior to the disbursement, or to the issuance by A.I.D. of documentation pursuant to which disbursement will be made, for the purpose of financing construction of staff housing and the spare parts and equipment warehouse, the Borrower/Grantee will furnish to AID, (a) final plans and specifications for the construction of the warehouse in form and substance satisfactory to AID, (b) where appropriate, contracts with firms acceptable to AID, and (c) evidence that adequate sites have been identified and provided for the construction of staff housing. This condition precedent may be satisfied separately for the staff housing and the spare parts and equipment warehouse.

d. The Project Agreement will contain, in substance, the following covenants and understandings:

1. The Parties, recognizing the importance to the Project of maintaining an efficiently organized, managed, and operated Land Development Section Workshop, agree to consult at such times as either Party may request to examine the operations of the Workshop and to recommend ways by which any deficiencies, either in personnel or procedures, may be corrected.

2. The Parties agree that the Land Use Plan, the formulation of which is being assisted by this project, will be sufficient to demonstrate that the activities identified in such plans adequately address certain environmental criteria which will be developed by the Borrower/Grantee, AID, and Land Use Plan Technical Assistance personnel. Criteria, developed within six-months from the arrival of the technical assistance team, will be included in a subsequent Project Implementation Letter.

3. The Borrower/Grantee will covenant that it will identify and select qualified candidates for participant training on a timely basis. Candidates for the civil engineering, resource economics and range ecology programs will be selected no later than January 31, 1979, and for programs in heavy plant mechanics and parts supply management by January 31, 1980, or such other dates as AID may agree to in writing. The Borrower/Grantee will also covenant that those persons receiving long-term training under the Project will be placed, upon successful completion of their training and unless otherwise mutually

agreed by both parties, in specified positions for which training was provided within the Land Use Planning Section or the Land Development Section. The Borrower/Grantee will also covenant to provide on a timely basis such other counterpart personnel required for the project as these are identified in the Amplified Project Description to the Project Agreement or Project Implementation Letters.

4. The Borrower/Grantee will covenant to establish, prior to the return to Swaziland of the long-term participant trainees (in approximately, July or August 1983), positions for a Land Planning Officer, Resource Economist and Range Ecologist within the Land Use Planning Section.

5. The Borrower/Grantee will covenant to take steps to transfer responsibility for control and operation of its equipment sinking fund to the Ministry of Agriculture, establish a separate sinking fund within the Ministry of Agriculture, or take such other measures as would be acceptable to the Parties, to assist in the orderly replacement of Project equipment. Within one year from the date the Project Agreement is executed, or such other date as the Parties may agree to in writing, the Borrower/Grantee will submit to AID a plan describing, generally, the mechanism established to assist in the replacement of Project Equipment.

6. The Borrower/Grantee will covenant to establish and staff a post for a maintenance officer and/or establish a maintenance committee, or take such other steps as may be agreed to by the Parties so as to assure that (a) the status of maintenance of infrastructure works in each RDA is regularly and periodically reviewed, and (b) recommendations for the rehabilitation of these works are formulated and work plans for maintenance efforts are prepared. The Borrower/Grantee will also covenant to provide adequate budgetary support, personnel, and equipment time to carry out the recommended maintenance program. To this end, the Parties will consult on a periodic basis to review the adequacy of the maintenance program and the adequacy of funds available for its implementation.

7. The Borrower/Grantee will covenant to take such steps as may be necessary to maximize coordination between the Land Development Section and the Land Use Planning Section. The Parties, recognizing the importance of such coordination to the success of RDA activities, will agree to meet periodically to review progress towards achieving this coordination.

8. The Borrower/Grantee will covenant that equipment procured under the Project will be used, unless AID otherwise agrees in writing, exclusively for Rural Development Area activities.

9. The Borrower/Grantee will covenant that, unless AID otherwise agrees in writing, housing constructed under the Project will be reserved for use by the AID-financed project technicians and, upon completion of the Project, by AID-financed technical assistance personnel assigned to other projects in Swaziland or staff attached to the U.S. AID mission in Swaziland, or for such other purposes as the Parties may agree to in writing.

10. The Borrower/Grantee will covenant that all passenger vehicles procured from the Grant, unless otherwise mutually agreed to by the GOS and AID in writing, are for the exclusive use of the AID-financed project technicians. Notwithstanding the above, the maintenance and operating expense of these vehicles will be the responsibility of the Borrower/Grantee.

e. The following waivers to AID regulations are hereby approved:

(1) The requirement set forth in Handbook 1, Supplement B, limiting procurement of services under grant-financed projects to firms of AID Geographic Code 000 (and local) nationality is waived to permit procurement of approximately \$435,000 of construction services from firms of AID Geographic Code 935 nationality. The interests of the United States are best served by permitting the procurement of services from Free World countries other than the Cooperating Country and countries included in Code 941.

(2) The requirement set forth in Handbook 1, Supplement B, that commodities procured with grant funds have their source and origin in countries included in AID Geographic Code 000 (and local) is waived to permit procurement of approximately \$220,000 of construction materials which have their source and origin in countries included in AID Geographic Code 935. Exclusion of procurement of these construction materials from Code 935 countries would seriously impede attainment of U.S. foreign policy objectives and the objectives of the foreign assistance program.

(3) The requirement under Handbook 1, Supplement B, Chapter 5, that commodities procured with grant funds or with supporting assistance loans have their source and origin in the U.S. (and local) is waived to permit the procurement of one project vehicle (Sedan), at an approximate cost of \$7,000 which has as its source and origin countries included in AID Geographic 935. Exclusion of procurement of the project vehicle from countries included in Code 935 would seriously impede attainment of U.S. foreign policy objectives and the objectives of the foreign assistance program; and special circumstances exist which justify waiver of the requirement of Section 636(i) of the Act.

(4) The requirement under Handbook 15, to maximize competitive procurement of commodities is limited to allow proprietary procurement, from U.S. sources, of approximately 14 closed utility vehicles and 2 pickup trucks at an approximate cost of \$205,040.

(5) The policy set forth in Handbook 11 limiting employment of Third Country Nationals for AID-financed construction projects to 20 percent of the non-local work force is waived.

Date: 9/27/73

Robert H. Nooter

Robert H. Nooter
Deputy Administrator

AGENCY FOR INTERNATIONAL DEVELOPMENT PROJECT PAPER FACESHEET		1. TRANSACTION CODE <input type="checkbox"/> A ADD <input checked="" type="checkbox"/> C CHANGE <input type="checkbox"/> D DELETE	PP 2. DOCUMENT CODE 3
3. COUNTRY/ENTITY Swaziland		4. DOCUMENT REVISION NUMBER <input type="checkbox"/>	
5. PROJECT NUMBER (7 digits) <input type="text" value="645-0068"/>		6. BUREAU OFFICE A. SYMBOL: AFR B. CODE: <input type="text" value="06"/>	
8. ESTIMATED FY OF PROJECT COMPLETION FY <input type="text" value="84"/>		7. PROJECT TITLE (Maximum 40 characters) <input type="text" value="Swazi RDA Infrastructure Support"/>	
		9. ESTIMATED DATE OF OBLIGATION A. INITIAL FY: <input type="text" value="78"/> B. QUARTER: <input type="text" value="4"/> C. FINAL FY: <input type="text" value="83"/> (Enter 1, 2, 3, or 4)	

10. ESTIMATED COSTS (\$000 OR EQUIVALENT \$) -						
A. FUNDING SOURCE	FIRST FY			LIFE OF PROJECT		
	B. FX	C. L/C	D. TOTAL	E. FX	F. L/C	G. TOTAL
AID APPROPRIATED TOTAL	6,962.0	515.0	7,477.0	11,995.9	550.6	12,546.5
(GRANT)	(1,562.0)	(515.0)	(2,077.0)	(6,595.9)	(550.6)	(7,146.5)
(LDN)	(5,400.0)	(-)	(5,400.0)	(5,400.0)	(-)	(5,400.0)
OTHER U.S.						
1.						
2.						
HOST COUNTRY	490.0	490.0	980.0	1,725.0	18,075.0	19,800.0
OTHER DONOR(S)	2,990.0	345.0	3,335.0	15,400.0	4,275.0	19,675.0
TOTALS	10,442.0	1,350.0	11,792.0	29,120.9	22,900.6	52,021.5

11. PROPOSED BUDGET APPROPRIATED FUNDS (\$000)									
A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE		E. 1ST FY <u>78</u>		H. 2ND FY <u>79</u>		K. 3RD FY <u>80</u>	
		C. GRANT	D. LOAN	F. GRANT	G. LOAN	I. GRANT	J. LOAN	L. GRANT	M. LOAN
(1) SSA	200	060	060	2,077.0	5,400.0			864.6	
(2) FN						1,294.6			
(3)									
(4)									
TOTALS									

A. APPROPRIATION	N. 4TH FY <u>81</u>		O. 5TH FY <u>82</u>		LIFE OF PROJECT		12. IN-DEPTH EVALUATION SCHEDULED <input type="text" value="08"/> <input type="text" value="80"/>
	Q. GRANT	P. LOAN	R. GRANT	S. LOAN	T. GRANT	U. LOAN	
(1) SSA	979.9	-	1,024.4	-	7,146.5	5,400.0	
(2)							
(3)							
(4)							
TOTALS							

13. DATA CHANGE INDICATOR. WERE CHANGES MADE IN THE PID FACESHEET DATA, BLOCKS 12, 13, 14, OR 15 OR IN PRP FACESHEET DATA, BLOCK 12? IF YES, ATTACH CHANGED PID FACESHEET.

2	1 - NO	2 - YES
---	--------	---------

14. ORIGINATING OFFICE CLEARANCE		15. DATE DOCUMENT RECEIVED IN AID/W. OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION	
SIGNATURE 		<input type="text" value="08"/> <input type="text" value="11"/> <input type="text" value="78"/>	
TITLE Ted D. Morse, Acting Regional Development Officer		DATE SIGNED <input type="text" value="08"/> <input type="text" value="11"/> <input type="text" value="78"/>	

TABLE OF CONTENTS

Swaziland RDA Infrastructure Support Project

	<u>Page</u>
Face Sheet	i
Table of Contents	.ii
Annexes	.iv
Glossary of Acronyms	v
I. <u>PROJECT RECOMMENDATIONS AND SUMMARY</u>	
A. Recommendations.....	1
B. Problem.....	1
C. Project Description.....	1
D. Summary of Findings.....	2
II. <u>BACKGROUND</u>	
A. General.....	4
B. Agricultural Sector.....	6
C. The Rural Development Area Program (RDAP).....	7
D. Current and Potential Land Use.....	11
E. Need for Developing and Protecting the Land Resource Base.....	13
F. Land Use Planning and Land Development Activities to Date.....	15
III. <u>THE PROJECT</u>	
A. Program Goal.....	20
B. Project Goal.....	21
C. Purpose.....	21
D. Outputs.....	22
E. Inputs.....	24
F. Important Assumptions.....	28
IV. <u>PROJECT ANALYSES</u>	
A. Economic Feasibility.....	30
B. Social Soundness Analysis.....	34
C. Technical Feasibility.....	37
D. Administrative Feasibility.....	41
E. Environmental Concerns.....	53
V. <u>FINANCIAL ANALYSIS AND PLAN</u>	
A. Funding Summary.....	54
B. Cost Estimates and Type of Financing.....	54
C. Obligation and Expenditure Schedules by Fiscal Year.....	54
D. Sources and Uses of Funds.....	54
E. Costing of Project Outputs/Inputs.....	56
F. GOS/MDA Recurrent Budget Analysis.....	56

Table of Contents (con't)

	<u>Page</u>
G. GOS Ability to Repay Loan.....	58
H . MDA Sinking Fund for Equipment Replacement.....	58
 VI. <u>IMPLEMENTATION PLAN</u>	
A. Implementation Schedule.....	59
B. Project Phasing.....	59
C. AID Project Monitoring.....	62
D. Interdonor Coordination.....	62
E. Key GOS Implementation Responsibilities.....	62
F. Contracts and Procurement.....	65
 VII. <u>EVALUATION ARRANGEMENTS</u>	
A. Internal Evaluations.....	66
B. Annual Evaluations.....	66
C. External Evaluations.....	66
D. Data Collection and Analysis.....	66
 VIII. <u>CONDITIONS, COVENANTS AND NEGOTIATING STATUS</u>	

ANNEXES

ANNEXES

- I. Grantee's Application for Assistance
- II. AID/W PRP Approval Message
- III. Logical Framework Matrix
- IV. Implementation Schedule
- V. RDAP Accomplishments and Targets - Physical Infrastructure
- VI. IBRD Economic Rate of Return Calculation
- VII. Social Soundness Analysis
- VIII. Training Needs Analysis
- IX. Environmental Assessment
- X. Review of Environmental Assessment
- XI. Financial Annex
- XII. Equipment List
- XIII. Job Descriptions
- XIV. Waivers and Approvals
- XV. Statutory Checklist
- XVI. Engineering Analysis
- XVII. Mission Director's 611 (e) Certification
- XVIII. Map of Swaziland and RDAs
- XIX. Data Collection and Analysis

GLOSSARY OF ACRONYMS

Swaziland RDA Infrastructure Support Project

AID/S or USAID/S	-	AID Swaziland
CRDB	-	Central Rural Development Board
CTO	-	Central Transport Organization
GOS	-	Government of Swaziland
IBRD	-	International Bank for Reconstruction and Development
IRR	-	Internal Rate of Return
ITF	-	Individual Tenure Farms
LDC	-	Local Development Committee
LDS	-	Land Development Section
LDS Workshop	-	Land Development Section Workshop
LUPS	-	Land Use Planning Section
MOA	-	Ministry of Agriculture
MOW	-	Ministry of Works, Power and Communication
NRDA	-	Northern Rural Development Area
ODM	-	Overseas Development Ministry (United Kingdom)
OSARAC	-	Office of Southern Africa Regional Activities Coordination
PAR	-	Project Appraisal Report
RDA	-	Rural Development Area
RDAP	-	Rural Development Area Program
RDO	-	Rural Development Officer
REDSO/EA	-	Regional Economic Development Support Office/ East Africa (AID)
RSA	-	Republic of South Africa
SAAST	-	Southern Africa Academic and Skills Training
SAMDP	-	Southern Africa Manpower Development Project
SCOT	-	Swaziland College of Technology
SNC	-	Swazi Nation Council
SNF	-	Swazi Nation Farms
SNL	-	Swazi Nation Land
SRDA	-	Southern Rural Development Area
TCN	-	Third Country National
UBS	-	University of Botswana and Swaziland

PROJECT PAPER

I. Project Recommendations and Summary

A. Recommendations

Authorization of a grant of U.S. \$ 7,146,500 and a loan of U.S. \$ 5,400,000 subject to the following waivers and approvals*.

1. Procurement source and origin waiver to permit procurement of 1 sedan countries included in AID Geographic Code 935 (Special Free World) instead of from those included in Geographic Code 000 (U.S. only);
2. Proprietary procurement waiver to permit purchase of 14 closed utility vehicles and 2 pickup trucks from International Harvester;
3. Procurement source and origin waiver to permit procurement of construction materials estimated at \$220,000 from countries included in AID Geographic Code 935 (Special Free World) instead of from AID Geographic Code 000 (U.S. only) and local sources;
4. Waiver to permit procurement of construction services estimated from firms of AID Geographic Code 935 (Special Free World) nationality instead of from those firms of AID Geographic Code 000 (U.S. only) or local nationality; and
5. Approval to deviate from policy expressed in AID Handbook 11, Chapter 2, which limits employment of third country nationals for AID-funded construction to 20% of the non-local work force.

B. Problem

As in many if not most developing countries, the economic structure of Swaziland is sharply dualistic with a small modern export-oriented sector contributing about 86% to GDP and a traditional subsistence sector representing 70% of the population contributing only 14%. Unless this disparity is corrected, the benefits of growth will continue to accrue to a relatively small proportion of the Swazi people. Moreover, urban unemployment will continue to grow as rural people migrate to urban areas in search of job opportunities that do not now exist.

Under these circumstances, it is necessary to make small scale farming a more lucrative enterprise to improve the relative well being of those presently not sharing in the benefits of modern sector growth and to permit their transition to modern commercially-oriented agriculture.

Swaziland's major basic "factor of production" which permits this development and transition is its diverse, relatively well-endowed land base. However, unless adequate measures are taken soon to protect this fragile resource, the forces of nature and the increasing number of people and livestock will continue to deteriorate its stability and productivity. This project, and the overall rural development program of which it is an integral part, have been designed to address these problems of land conservation and rural development.

C. Project Description

The Swaziland Rural Development Area (RDA) Infrastructure Support Project represents a vital component in the Government of Swaziland's (GOS) multi-donor supported effort to assist Swazi farmers in making the transition from subsistence to semi-commercial and commercial farming. As an integral part of the Rural Development Area Program (RDAP), the project will build upon earlier GOS/AID activities to 1) strengthen the RDAP's land use planning and land development capability; and 2) develop, install and maintain conservation works in Rural Development Areas (RDAs) designated for * For justification, see Annex XIV "Waivers and Approvals".

intensive development.

To accomplish these objectives, the project's technical assistance inputs will produce comprehensive land use plans which are technically, economically, socially and ecologically sound; construct conservation infrastructure works on the basis of these plans; establish a program to rehabilitate works that require major maintenance, and include works maintenance schedules as a part of each land use plan. The project will provide earthmoving equipment, transport vehicles, spare parts, and supporting machinery and equipment needed to construct these works and will strengthen the managerial capacity of an existing equipment maintenance workshop to assure the ready availability of this equipment. To enable the Government of Swaziland to continue land use planning, land development, and equipment maintenance on a much broader and more effective scale than currently exists, the project will train Swazi technicians to assume responsibility for these functions. Improved management procedures will be established in the agencies concerned with the above functions as well.

The GOS and AID will provide the inputs summarized below to produce the above project outputs:

<u>USAID</u>	\$ 12,546,500
<u>Grant</u>	<u>(\$ 7,146,500)</u>
Technical Assistance	5,910,900
Training	660,000
Construction	435,000
Commodities	140,600
<u>Loan</u>	<u>(\$ 5,400,000)</u>
<u>GOS</u>	<u>\$ 12,942,600</u>
Equipment Support	12,228,600
Salaries and Wages	460,000
Other Project Support Costs	253,300
TOTAL:	<u>\$ 25,489,100</u>

When U.S. assistance is withdrawn in August 1984, infrastructure works including terracing, diversions, grass stripping, irrigation systems, dams, ponds, and fencing will be in place, and qualified Swazi staff will be performing land planning, land development, and equipment maintenance functions efficiently and effectively.

The project will be implemented within the Land Use Planning and Land Development Sections of the Ministry of Agriculture. The Land Use Planning team will function under the direction of a project team leader who will report directly to the Senior Land Use Planning Officer. The workshop maintenance team will be led by the workshop manager/advisor who will report to the Chief of the Land Development Section (LDS). The construction engineers will also report directly to the Chief of the LDS. Activities will be closely coordinated with other GOS agencies having land use planning and land development-related responsibilities, and with other donors to optimize the effectiveness of the overall RDAP.

D. Summary of Findings

It has been concluded from the analyses included herein that:

- 1) The RDAP is an economically sound approach to rural development in Swaziland and the project is cost effective;
- 2) The technology promoted by the RDAP and the project are socially acceptable to the target groups;

- 3) The conservation infrastructure to be constructed is technically sound and adequate provision has been made for its maintenance;
- 4) With the technical assistance provided by this project, the GOS organizational structures responsible for project implementation will be capable of effectively managing the project in terms of both staff and budgetary support;
- 5) Environmental concerns have been fully addressed and procedures to insure environmental protection have been included in the design;
- 6) The technical design and cost estimates are reasonable and adequately planned pursuant to FAA Section 611 and other applicable sections;
- 7) The timing and funding of the project activities are appropriately scheduled;
- 8) Sufficient planning has been made for the monitoring and evaluation of project progress; and
- 9) All statutory criteria have been met.

On the basis of the above findings, the GOS and OSARAC agree that the project is ready for implementation.

II. Background

A. General

The Kingdom of Swaziland is a small landlocked country in Southern Africa surrounded on three sides by the Republic of South Africa and on the remaining side by the People's Republic of Mozambique. Formerly a British Protectorate, the country has been independent since 1968.

With a total area of only 17,364 km², Swaziland is the second smallest country in Africa, and is about the size of the American State of New Jersey. The country is physically divided into four parallel regions running north to south (see map, Annex XVIII). Beginning in the west, these are the highveld, 900-1800 meters above sea level; middleveld, 300-1000 meters; lowveld 60-700 meters; and the Lobombo region, 300-800 meters. The varied ecological conditions found in these zones ranging from semi-desert areas to temperate highlands have permitted the development of a diverse agricultural sector as is described in the following section "Agriculture Sector".

Swaziland is also small in terms of its population. The country's 1976 census estimates the total population at about 525,000 (including 34,000 absentees, working in the Republic of South Africa), and the average population density is only 28 per km². However, with an estimated defacto population growth rate of 2.8%, the population is expected to double in about 20 years. Being an agriculturally-based economy, 86% of the population reside in rural areas.

Despite its size, the country is blessed with an abundance of natural resources, a favorable climate, and a varied topography conducive to the development of a well diversified economy. In its ten years since independence, the nation has prospered well. Gross domestic product (GDP) has grown at an average annual rate in excess of 7% in real terms and per capita GDP was estimated at US \$ 570 in 1976/77. However, the benefits of growth have not been equally distributed, and it is estimated that rural family cash incomes in the traditional sector are only about US \$115-280*.

The economy can be characterized as being agriculturally-based, export-oriented, reasonably well diversified and sharply dualistic. The close economic relationships the country has with the Republic of South Africa and the People's Republic of Mozambique are other prominent features.

In 1976/77, the major sectoral shares of GDP were estimated as follows: agriculture and forestry, 31%; manufacturing, 21%; community and other social services 16%; and mining and quarrying, 4%. This composition has shifted since independence with the share of agriculture and forestry rising from 29% to 31%, mining and quarrying falling from 21% to 4%; manufacturing increasing from 13% to 22%; and social services increasing from 14% to 17%. The mining and quarrying sector has thus declined in relative significance with the remaining sectors, most notably manufacturing, gaining in importance.

Though well diversified and enjoying favorable growth, the economy is also characterized by the familiar dualism which exists between the traditional and modern sectors of many developing countries. The modern sector is chiefly engaged in the production and processing of primary products for export including timber, sugar, cotton, citrus and pineapples. Important mineral exports include asbestos and iron ore although known resources of the latter have been almost depleted. It is estimated that

* This range reflects the variety of life styles and economic levels found in the traditional sector - see Annex VII "Social Soundness Analysis".

the modern sector now accounts for about 86% of GDP.

The traditional sector, on the other hand, comprises approximately 70% of the population and is dependent on subsistence cropping and cattle rearing. Important crops are maize, groundnuts, sorghum and cotton, and the overall contribution of the traditional sector to GDP is estimated at 14%. As will become evident later, this structure has a profound effect upon GOS policy decisions and development objectives.

The country's major exports are sugar, woodpulp, and iron ore although again the latter is of diminishing importance. Principal imports are petroleum products, machinery, and transport equipment. Since independence, the GOS has generally enjoyed favorable financial positions with respect to both its balance of payments and budgetary performance. This performance reflects favorably on the GOS' capability to manage its resources well. However, decisions in recent months to invest in such capital-intensive investments as a third sugar mill, a new airline, an international airport and a steamship line have raised questions as to whether these would help correct the sharp duality that currently exists in the economy*. More recently there has been a slight change in this investment pattern and OSARAC believes there are hopeful prospects that government investments are being reoriented to meet the country's more urgent needs for equitable growth.

Swaziland's economic ties to the RSA are strong. With South Africa, Botswana and Lesotho, Swaziland belongs to the Southern Africa Customs Union, and either the South African Rand (1 Rand = US \$ 1.15) or the Swazi Emalangi (1 E = US \$ 1.15) is the accepted currency. Movement of goods and funds between all of these countries is virtually free. This has created a favorable climate for private investment in Swaziland, but it has also imposed constraints on the Government's flexibility to control economic, monetary and fiscal policy. On balance, though, these relationships are of a positive net benefit to the GOS and it is unlikely that this relationship will change significantly in the near future.

Swaziland's economic relationship to Mozambique is also of major significance. While being heavily dependent upon the RSA for satisfying its import needs, Swaziland is equally dependent upon Mozambique's port of Moputo to ship its exports to world markets. Thus, bordered as it is by white minority ruled South Africa and socialist black ruled Mozambique, Swaziland is politically located in one of the most volatile areas in Africa.

Swaziland's political structure is also dualistic in nature consisting of a modern government headed by a Prime Minister and Cabinet, and a traditional government administered by the Swazi National Council (SNC) and a network of local chiefs. The former is called the "Kingdom of Swaziland"; the latter, "the Swazi Nation". The King, who has reigned for over 50 years, is the executive head of both governments.

* These investments are funded through the "Tibiyo Fund" which was established to support development activities on Swazi Nation Land. Although separate from the modern government accounts, it nevertheless reflects overall national priorities.

As all programs and actions relating to Swazi Nation Land require the approval of the SNC and the King, both the modern and traditional government will be directly participating in the implementation of this project. This will be elaborated upon further in section IV D "Administrative Feasibility" and Annex VII "Social Soundness Analysis".

B. Agricultural Sector

The agriculture sector of Swaziland holds a strategic position in the country's development program since it currently generates about 31% of GDP, contributes approximately 70% to national export earnings, and provides employment to approximately 75% of the total resident indigenous work force. It is also the source of 42 percent of all wage employment, and taxes on sugar exports are an important source of government revenue.

The sector is sharply dualistic with a modern, capital-intensive subsector mainly for export and a traditional subsector producing mainly for subsistence.

The modern subsector consists of 850 farms and estates (designated individual tenure farms or ITFs) averaging about 800 hectares and covering about 40% of the total land area. These are largely owned and managed by foreigners. In general, the ITFs are highly mechanized and use modern technology; consequently output per hectare is relatively high and growing at about 5% per annum. Although only about 70% of freehold land is economically exploited*, the output of ITFs accounts for 60% of total agricultural output. The principal commodities produced are sugar, timber, pineapples, citrus, cotton, and beef cattle.

The balance of agricultural production is on Swazi Nation Land which is held in trust for the Nation by the King and allocated to the traditional sector by local chiefs. About 70% of the population reside on Swazi Nation Land, while about half of the population depend directly on traditional agriculture for their livelihood.

The traditional sector consists of 42,000 small-scale Swazi Nation Farms (SNFs) with an average size of less than 3 hectares. These farms are run largely on traditional lines, that is, employing family labor and draught animals and producing mainly for subsistence. Approximately 13% of the area (114,000 hectares) is devoted to crop production with the remainder being used primarily for grazing. About 80% of the crop area is utilized for maize production, maize being the national staple food. Most of the remaining crop land is devoted to the production of alternative staple foods such as groundnuts, beans, sweet potatoes and pumpkin.

The low productivity of SNFs and the lack of adequate marketing facilities have combined to hamper the production of a marketable surplus of food crops. Although adequate data are not available, there is reason to believe that the growth of production in the traditional sector has kept pace with the rate of population increase, about 2.8% per annum. The table below summarizes the comparison between the modern and traditional subsectors.

* An estimated 30% of freehold land is considered underutilized and could be readily used by Swazi farmers. Some of this land is being repurchased under a grant from the U.K.

TABLE 1

Agriculture Land Ownership/Tenure

	<u>Individual Tenure Farms</u>	<u>Swazi Nation Farms</u>
Area (000 ha)	691	114*
Resident Population (000)	148	345
Number Farms/Estates	850	42,000
Average Holding (ha)	800	2.75
Ownership/Tenure (000 ha)		
Swazis	259	114
Major Companies	173	-
Non-Swazis	259	-
Percent of Total Agricultural Output	60	40
Production Growth Rate (%)	5	2.8

* Whereas virtually the total area of freehold land is included in the ITFs, the SNFs occupy a relatively small amount of Swazi Nation Land. Most of the rest is taken up by communal grazing land.

C. The Rural Area Development Program (RDAP)

1. Program Description and Development

The sharp duality and income disparity between Swaziland's modern commercial subsector and the traditional subsistence subsector has a significant influence upon GOS development strategy. For in the absence of programs to develop the traditional sector, this disparity will increase with most of the benefits of development accruing to the relatively small proportion of people employed in the modern sector. Moreover, further widening of this gap would result in a growing number of people migrating into urban areas, creating serious housing and unemployment problems.

In response to this problem, the GOS has implemented the Rural Area Development Program (RDAP) to serve as the main instrument of its rural development strategy. The overall objective of the RDAP is to increase the income and general standard of living of persons living on Swazi Nation Land. This will be achieved by assisting Swazi farmers in making the transition from subsistence to semi-commercial and commercial agriculture. More specifically, the program may be described as follows:

- a) Suitable blocks of arable land are separated from grazing land. The arable land is protected against erosion by appropriate structures (terraces, grass strips, grassed waterways, etc.) and by agricultural management practices (strip cropping, crop rotation, etc.).
- b) Grazing land is fenced from the arable so herds may be grazed with minimal supervision. Appropriate range management practices are sought to minimize grassland degradation and increase economic returns from livestock.
- c) Project centers are developed for administrative offices, staff housing, mechanization pool and workshops, and cooperative marketing. This becomes the hub of the project from which administrative, marketing, and extension services radiate.
- d) Locations are established for schools, clinics, churches, and other central services.

- e) Families are gradually encouraged to resettle in closer proximity along the boundaries between arable and grazing land. The intention is to allow them access to central services, and to roads and water supplies.
- f) Safe domestic water supplies are planned for project centers and expanded by piping water to the vicinity of homesteads.
- g) Small dams and reservoirs are constructed to provide water for livestock, and to provide about one acre or less of irrigated vegetable garden per family.
- h) Access roads within projects and feeder roads to the national highway system are constructed.
- i) Each project will have its complement of extension personnel to improve farming, marketing, and domestic science. Increased extension activity and consolidation of fragmented holdings will permit farmers to utilize their land more effectively. Greater use of improved seed, fertilizer, and pesticides is anticipated. Emphasis is placed on moving from a subsistence to a partial commercial economy.
- j) Where wood is scarce communal woodland plantings will be encouraged to provide the community with firewood and building poles.
- k) Provision of a major supply depot and subsidiary depots is an integral part of each RDA. The Central Cooperative Union (CCU) will eventually take over the marketing of crops and supply of inputs.

The above program is divided into three phases:

1. The Planning Phase. An RDA is selected, base data for the area are collected (see section VII D "Data Collection and Analysis") and a detailed development scheme is designed.
2. The Minimum-Input Phase. The RDAP introduces a minimal package of inputs and services to initiate the process of increasing crop and livestock production and improving marketing operations. Among the inputs at this stage are improved seeds, fertilizer and equipment; improved husbandry standards; construction of access roads, a project center and demonstration plots; and provision of extension and cooperative staffs.
3. The Maximum-Input Phase*. This phase culminates the RDAP process by introducing improved technology, intensive cropping, soil conservation and improved rural infrastructure and social services. These efforts are based on detailed land use plans developed during the preceding phase.

Upon completion of Phase I, which requires about one year, Phase II is readily initiated. However, the duration of Phase II is primarily dependent upon the availability of resources, particularly earthmoving equipment, to enter Phase III. Moreover, it is not necessary to pass through Phase II to enter Phase III; the two may begin concurrently. For example, the IBRD-promoted program noted below will support 10 RDAs. All will require about one year for Phase I planning. However, from year 2 to year 5, 8 will be in Phase II while 2 will be designated initially for both Phase II and Phase III development activities. As soon as resources permit, the Phase II RDAs will become Phase III RDAs.

This phased approach is taken because experience in the development of existing RDAs has indicated that conservation works and road construction tend to be slow and hold

* The terms maximum-input RDA, maxi-RDA, and intensive RDA are synonymous.

back progress on resettlement and consolidation. To break this bottleneck, Phase II was introduced so that farmers could benefit immediately from services and facilities such as fertilizer depots, mobile extension staff, supply of inputs, marketing facilities, and domestic water supplies.

While food self-sufficiency remains a high priority objective of the GOS, increasing emphasis is being placed on cash crops such as vegetables, cotton and tobacco. The RDAP strategy is to achieve an increased use of higher yielding varieties of hybrid maize which will enable families to satisfy consumption requirements with less land thus freeing larger parts of their holdings for cash crop production. In intensive input areas land consolidation and terracing of arable areas should contribute to raising yields by making farming more efficient.

Since 1970, the program outlined above has been implemented in four RDAs which are now in the third phase of development. This initial program was largely funded by the U.K. through the Overseas Development Ministry (O.D.M.). These four areas account for about 7% of the SNL area and 10% of its population. Results have been promising with respect to farmers acceptance, use of inputs, and changes in land use (see Annex VII); and the GOS is now anxious to expand the RDAP to eventually encompass all Swazi Nation Land.

Over the period of the Third National Development Plan (1978/79 - 1982-83), the four existing RDAs will be expanded in area to eight RDAs. These eight RDAs will continue to be developed at the intensive level. In addition, another 10 RDAs have been designated thus raising the total to 18. These RDAs now cover about 60% of Swazi Nation Land. Two of the ten new RDAs will be developed at the maximum-input level. Table 2 lists the RDAs and identifies basic characteristics such as area, population, etc.

2. Funding

The IBRD and other donors are assisting in financing development in the ten new RDAs, and the ODM has agreed to continue its program in the four areas which have been expanded now to eight. Funding support for the RDAP is summarized below:

a. IBRD

The IBRD is providing a \$4 million loan at 8.5% interest plus a 3/4% interest charge on the undrawn balance. Repayment is over 15 years including an initial 4 1/2 year grace period. Almost 30% of these funds will be used to finance extension operating services and infrastructure, with most of this going for salaries and wages. Other items to be financed include vehicles and equipment (particularly fencing for pasture control), land development, project management and services, and technical services. The IBRD funds are being used to finance the development of the eight minimum input RDAs and the two maximum input areas not principally supported by the U.K. Obviously, however, there is some spillage into the eight U.K.-supported RDAs to the extent the funds are used for shared services, e. g., Project Management and Services. All IBRD funds are channeled to the Ministry of Agriculture, except that the funds for improved health services are managed by the Ministry of Health and funds for agricultural credit are passed by the GOS to the Swazi Development and Savings Bank.

b. U.K. (ODM)

The U.K. is providing a \$7.4 million interest free loan to support the RDAP expansion program. The majority of these funds (\$7.1) are used to finance continuing activities in the four on-going U.K.-supported RDAs over the five-year project period and to support the formation of four new maximum input RDAs. Activities include construction, vehicles, land development, livestock development, irrigation, and extension services. In addition, the U.K. is providing \$330,000 for technical assistance services to the remaining ten RDAs.

TABLE 2

RURAL DEVELOPMENT AREAS

R. D. A. ^{1/}	MAXI-MINI	REGION	TOTAL AREA (HA)	TOTAL POPULATION	HOMESTEADS (NO.)	LIVESTOCK UNITS	AV ^{2/} HOLDING HOMEST./HA.
Lubombo-Mpolonjeni	Maxi	Lowveld & Lubombo	98,588	27,770	2,964	25,001	2.7
Mahamba-Zombodze	Maxi	Middleveld	19,810	16,168	2,543	13,232	2.4
Mahange-Hluti	Mini	Middleveld	32,453	17,779	1,722	19,030	3.2
BekiNkosi-Mliba	Mini	Middleveld	27,232	14,154	1,736	18,587	2.3
Masala-Vikisijula	Mini	Lowveld	22,585	4,923	682	10,262	3.6
Nkambeni-Madlangempisi	Mini	Lowveld	27,702	5,075	1,006	13,059	3.0
Sandleni-Qolweni	Mini	Middleveld	38,350	17,620	1,250	17,008	4.5
Siphofaneni-Maphobeni	Mini	Lowveld	24,993	5,075	750	8,754	3.6
Siphocosini-Motshane	Mini	Highveld	19,070	7,655	1,063	6,019	1.8
Sithobela-Madubeni	Mini	Lowveld	38,167	7,908	1,080	19,948	3.8
Northern	Maxi (UK)	Middleveld	14,571	14,700	1,430	12,000	3.2
Southern	Maxi (UK)	Middleveld	11,251	4,790	643	4,169	3.2
Central	Maxi (UK)	Middleveld	18,991	9,877	1,411	4,597	3.1
Mahlangatsha	Maxi (UK)	Highveld	22,510	5,500	573	8,000	5.5
Mayiwane-Herefords	Maxi (UK)	Middleveld	26,300	13,900	1,800	14,496	3.1
Mponono-Velezizweni	Maxi (UK)	Middleveld	32,775	16,650	1,634	17,135	3.3
Madulini-Mahlalini	Maxi (UK)	Middleveld	6,596	5,014	679	5,075	3.7
Ebulandzeni	Maxi (UK)	Middleveld	5,787	1,800	260	1,552	4.0
TOTAL			487,731	196,358	22,906	217,924	Avg. 3.3

^{1/} The last four RDAs listed are extensions of the Northern, Southern, Central, and Mahlangatsha RDAs.

^{2/} Refers to arable land only. Grazing land is communal.

c. African Development Bank

The ADB is providing a \$5.4 million loan at 7% plus a 1% statutory requirement and a 3/4% interest charge on the undrawn balance. Repayment is over 15 years including a five year grace period. The funds are being used to finance activities on the RDAs not receiving primary assistance from the U.K. including such civil works as buildings, roads, livestock infrastructure (except fencing), irrigation dams and fish ponds, agricultural credit services, and operating costs for livestock and development.

d. European Development Fund

The EDF is providing a \$2.875 million grant to finance some project management costs, the full costs of incremental agricultural inputs for four years, and project training costs.

e. GOS

The GOS is providing \$19.8 million of self-financing (including the \$12.9 million for this project). The majority of the GOS funds are being used to cover the local currency and recurring costs elements of the project, although the GOS is funding certain foreign exchange costs. The bulk of local funds will be used in support of heavy equipment maintenance and replacement.

f. Farmers

Farmers on the RDAs are providing approximately \$300,000 over the life of the project to finance seasonal inputs, contributions to livestock infrastructure, land development, buildings and on-going maintenance of project-related infrastructure.

g. US AID

The U.S. will provide project assistance totaling \$12.5 million. This will include:

1. a \$5.4 million loan for heavy earthmoving equipment, transport vehicles and machines; and
2. a \$7.1 million grant for technical assistance, training and other costs to strengthen the land use planning and land development capability of the MOA. The GOS requested that AID provide assistance for this component of the project in recognition of U.S. technical expertise in the field of land and water resource management, and the desirability of augmenting its present equipment fleet with that of similar manufacture. Moreover, other donors are providing sufficient assistance to meet other RDAP needs, and this project will build upon previous GOS/AID land use planning, land development and equipment maintenance activities (see section II.F.5.). AID inputs are itemized in Annex XI of the PP.

3. Implementation

The Ministry of Agriculture has principal responsibility for project implementation and for ensuring effective coordination with other ministries and agencies concerned notably the Swaziland Development and Saving Bank (SDSB), the Central Cooperative Union (CCU), the University (UBS), Rural Development Board (CRDB), and the Ministries of Health, Education, Finance, Economic Planning, Commerce and Cooperatives, Works, Power and Communication and Local Administration.

To enable proper implementation and co-ordination an interministerial coordinating committee has been established including representatives of all Ministries and agencies concerned with Rural Development. This committee has already begun to meet and the MOA has found these meetings to be valuable towards improving the management and implementation of the RDAP. An annual donors conference is also held with the MOA to review RDAP progress and make recommendations regarding future year(s) work plans.

D. Current and Potential Land Use

Data on past (1966), present, and potential land use in Swaziland has been compiled by the MOA's Land Use Planning Section and is indicated in Table 3 below. Potential land use was determined on the basis of soil tests and climatic conditions with consideration also being given to competing non-agricultural demands.

TABLE 3

PAST, PRESENT AND POTENTIAL LAND USE
(in thousands of ha)

	<u>1966</u>	<u>Present (1976)</u>	<u>Potential</u>
Cropland			
Crops	112	140	243
Fallow	26	25	81
Grazing Land ^{1/}	1,259	1,206	1,006
Commercial Forest			
Pines	89	69	134
Other	40	20	40
Other Farm Land	87	223	162
Total^{2/}	1,727	1,727	1,727

^{1/} Includes useless land (rock outcrops, etc.) of approximately 160,000 hectares

^{2/} Excludes urban areas of approximately 9,000 hectares.

Source: Land Use Planning Section, Ministry of Agriculture and Central Statistical Office, Annual Statistical Bulletin 1977

Current land use on Swazi Nation Land in particular and changes which have occurred from 1971/72 to 1975/76 are shown in Table 4 below.

TABLE 4

SWAZI NATION LAND: LAND USE AND MAJOR CROPS
1971/72 AND 1975/76
(Percentage Distribution)

	<u>LAND USE</u>		<u>MAJOR CROPS</u>		
	<u>1971/72</u>	<u>1975/76</u>	<u>1971/72</u>	<u>1975/76</u>	
Cultivation	9.3	9.8	Maize	73.6	66.9
Fallow	1.7	2.2	Groundnuts	5.8	4.6
Homesteads and Other Land	0.7	0.6	Cotton	4.6	11.3
Grazing Land	88.3	87.4	Jugo Beans	3.3	1.8
			Sorghum	3.0	3.2
			Beans	2.5	2.4
			Sweet Potatoes	1.1	2.0
			Pumpkins	3.4	3.9
			Tobacco	0.4	0.6
			Other Crops	2.3	3.3
	<u>100.0</u>	<u>100.0</u>		<u>100.0</u>	<u>100.0</u>

Sources: Agricultural sample Census, 1971/72

Central Statistical Office, Annual Survey of Swazi Nation Land 1975/76.

It is apparent from these figures that subsistence continues to predominate, although maize has lost some ground to cotton. This is to be expected and desired as less land is needed to grow the higher yielding varieties of maize thus making

more land available for cash crops production.

As already suggested, the diversity of Swaziland's four ecological zones - the Highveld, Middleveld, Lowveld and Lobomba Plateau - has a direct bearing on the land use patterns shown in Tables 2 and 3. These regions are described in the following paragraphs to present an overview of the physical setting within which land planning and development activities are being implemented.

The Highveld is mountainous country of which only 10 percent is classified as having fair potential for crop agriculture. Good soils with gentle or moderate slope and adequate drainage occur on only 3 percent of the area. Soil erosion is a constant threat, particularly on steeper slopes, many of which are now seriously overgrazed. Much of the area is well suited to forestry. There is a lack of remunerative cash crops, although some tobacco is grown in the south.

The middleveld is generally hilly but includes several large valleys. Close to 20 percent of the upper middleveld has good to fair arable soils, while in the lower middleveld the proportion is about 10 percent. The middleveld is the main area of arable farming in the country. On Swazi Nation Land maize is the predominant crop, though groundnuts, sorghum, beans, vegetables, cotton and tobacco are also of importance. On private freehold farms cotton and maize are the main annual crops, but citrus, pineapples, bananas, and other orchard crops are also important.

The lowveld is for the most part gently undulating country. About 12 percent of the western lowveld has good to fair arable soils, while in the eastern lowveld about 30 percent of the area falls into this category. The lowveld has a hot, dry climate with large annual variability in rainfall, making dryland cropping very hazardous. In the occasional years of above-average rainfall good crops of cotton, sorghum, and groundnuts can be harvested; in most years, however, yields are very poor and total crop failures, especially of maize, are commonly experienced. Irrigation is a prerequisite for intensive agriculture. Some 25,000 hectares are at present under irrigation, primarily for the production of sugar, citrus, rice, and cotton. Non-irrigatable areas of the lowveld are best suited to cattle production, although overstocking leads to severe depletion of grazing, bush encroachment, and increased soil loss whenever a sequence of dry years occurs.

In the Lubombo region good and fair arable soils account for about 12 percent of the area. The region is formed by a narrow plateau. Climatic conditions and vegetation are similar to those of the middleveld.

E. Need for Developing and Protecting the Land Resource Base

It can readily be recognized from the foregoing description of Swaziland and the agricultural sector that the land is the country's most valuable natural resource. From it the great majority of the people earn their living whether it be in the modern commercial sector or the traditional subsistence sector. Its diversity and productivity permit the development and growth of a thriving commercial agriculture and provides hope for small farmers interested and willing to bridge the transition from subsistence to commercial farming and a higher standard of rural living. It is therefore essential that this resource be preserved and protected.

Unfortunately, though, unless adequate measures are taken to protect Swaziland's

fragile land base, the forces of nature and the increasing numbers of people and livestock will continue to threaten its stability. As evidence of this, the Land Use Planning Section estimates the rate of erosion to be as high as 25 to 35 tons of soil loss per hectare per year. A maximum acceptable soil loss should be no greater than about 3 tons per hectare per year. This is especially a problem in the southern regions of Swaziland, but is true in most all sections. It is also greatest on Swazi Nation Land in areas of communal grazing. Those factors bearing most directly on the problem are the fragile nature of the soil and natural environment itself, overgrazing, and traditional cropping practices.

1. The Fragile Land Base

Physically, the nature of the soil itself is such that conservation measures are needed. Most of the arable land of the RDAs have a slope of 3 to 10 percent with relatively shallow soil. Root zones are less than 18 to 24 inches and topsoil coverage is less than 10 to 12 inches. Also, intensive rains are common and the soils are unprotected by plant foliage during most of the year since all of the crops are clean tilled.

Under these conditions, much damage already has been done by soil erosion. Much of the surface soil has been lost as indicated above, and the remaining root zone of much of the crop land is less than 45 cm in depth.

2. Overgrazing

As most recently recognized in the MOA Third Five-Year Plan (draft), "the grazing areas of Swazi Nation Land are severely over-stocked. It is estimated that 525,000 head of cattle and 270,000 head of sheep and goats graze 787,000 hectares. Converted to bovine equivalents this represents a stocking rate of 1.6 hectares of grazing land per stock unit -- the highest stocking rate in Africa^{1/}. This has inevitably led to the deterioration of soil and water resources^{2/}."

In many parts of Swaziland, pastures have degenerated, and soil erosion on grazing areas is plainly visible. This overgrazing problem is caused almost entirely by cattle, since the diet of goats consist to a large extent of browse. Goats graze in brush areas and very little on the open range. However, the cattle graze only on non-crop and range lands during the dry season, e. g. after harvest.

The average monthly rainfall in the highveld is only about 25cm during the four month period of May to August, and there is even less rain per month in the middleveld during the five month period of May to September. As a result, there is little growth of forage on the range during this period and the residues on crop land are largely consumed or destroyed before May. This leaves the land in these areas of overgrazing nearly devoid of vegetation when the heavy rains begin in September and October. The overstocking of cattle during the dry season is therefore the major cause of serious erosion damage as well as the deterioration of the quality of the forage.

In the highveld and middleveld, the slopes of grazing land are mostly 10% to 30%, although in other parts of the country, the slopes are generally more gradual. Thus, in the steeper areas the combination of overgrazing, slope and rainfall results is a serious erosion problem.

1/ Communal grazing areas of Swazi Nation Land constitute 69 percent of the total grazing land shown in Table V-3. The grazing stock on Swazi Nation Land are about 88 percent of the national herd. A stock unit = 5 small grazing animals or one adult cattle beast.

2/ Swaziland Third Five-Year National Development Plan.

3. Cropping Practices

Another problem contributing to the loss and deterioration of the soil is the clean tillage practices used by traditional farmers. Under high intensity rainfall, Swaziland's fragile soils are subject to severe sheet and gully erosion as the major crops are clean tilled; e. g. maize, cotton, tobacco peanuts, sorghum, and beans. No hay or pasture are grown on the arable land which would protect it during the dry season.

Vegetative measures, such as strip cropping and crop rotation, are not feasible with clean tilled crops. However, such measures can be applied in inter-cropping techniques, e. g., planting peas, pumpkins, squash, or beans between maize rows. Similarly, these measures can be applied where sorghum is broadcast by hand.

In general and as applicable, greater use of fertilizer, crop rotation, and conservation-oriented farming systems are also required to maintain and protect Swaziland's land and water resources.

F. Land Use Planning and Land Development Activities to Date

1. General

While all three of the causes of erosion identified above require solutions, this project will primarily focus on land use planning and the installation of physical conservation works to retard further loss and deterioration of the soil. However, efforts are now being undertaken by the MOA and other components of the RDAP to address the problems of livestock overstocking and traditional cropping practices. The UN and IBRD are assisting the GOS in addressing the livestock problems by means of demonstration fattening ranches, group ranch schemes, etc. A livestock marketing study is also planned to explore the possibility of destocking by means of an improved marketing infrastructure.

With regard to cropping practices, MOA agricultural research is now being more oriented to the needs of traditional farmers than has been the case in the past. The MOA also plans to significantly strengthen extension services in the areas of livestock, crops, and conservation education in order to further educate and bring about the adoption of conservation-oriented farming practices.

2. Grass-Stripping Campaign of the 1940s

The need for land use planning and development has been recognized by the MOA for many years. The first major effort to promote soil conservation began in 1944 as part of Swaziland's first significant attempt to promote rural development in an integrated fashion. For several years an extension campaign was implemented to establish grass strips on contours. Except where poorly aligned, these strips have been effective and have generally remained intact over the years. The strips have set the patterns for contour farming throughout the nation and have helped to prevent what would have been more serious soil erosion despite Swaziland's predominantly sloping terrain. In 1954, controls established for implementation of the rural development program were relaxed and this resulted in a general collapse of the scheme.

3. 1971 USAID Heavy Equipment Loan

GOS efforts in land development were given impetus again in 1970 with the launching of the U.K.-supported RDAP. The staffing and equipping of Soil Conservation Construction Units were given priority so that the large volume of civil engineering work involved in the physical reorganization of farming areas and the installation of infrastructure could be implemented. In 1971, AID authorized a \$2.2 million loan to provide construction equipment for the Soil Conservation Construction Units. (The loan included \$ 110,000 to equip a research and demonstration ranch in the highveld and \$ 290,000 for intermediate agriculture credit).

4. 1972 USAID Technical Assistance Grant

To further support the RDAP, AID made a \$1.855 million grant to the GOS in 1972 for technical services; participant training, and other AID assistance. Technical services included a soil conservation engineer for planning; a soil conservation engineer for the design of conservation facilities; animal husbandry and range management officers for the research ranch; and a marketing research officer in the MOA's economic planning office. To adequately maintain the equipment provided under the loan, the grant provided for the construction and equipping of a heavy-equipment repair facility and a workshop foreman, who after two years, was replaced by U.S. trained Swazi technicians. Funding was also included for the long-term training of Swazi personnel as counterparts for the technicians identified above.

5. 1974 Evaluation

In August 1974, AID financed an in-depth external evaluation of the Swaziland Rural Development Project (No. 690-11-110-024). The evaluation team initially found it difficult to judge the success of the project as it represented more of a collection of "selected inputs" to support the objectives of the RDAP rather than being structured as a discrete project activity.

However, the team believed that such a "bits and pieces" approach could be effective if basically two conditions were satisfied. These were that the host country have:

- 1- "A sound, well understood strategy for (RDA) development, and
- 2- the capability to manage (especially coordinate) a complete system, drawing inputs from multiple sources".

It was on the basis of this criteria and the effective use of project inputs that the "project" was evaluated.

With regard to the first condition, the team found that the RDAP is a sound strategy for rural development in Swaziland. It concluded that "The strategy, specifically the RDA approach, embodies almost every point the AID agencies are now pushing world wide with reference to small farmer programs and rural development in general". Moreover it found that "There is a great demand from local people to expand the RDA program -- a very healthy sign. The people involved especially like the terraces, irrigation facilities and domestic water construction. One result of the RDA program is that attitudes toward government in the RDAs are rather good".

With respect to the second condition regarding host country managerial/coordination capability, the team found that "if the pace of agri/rural development in Swaziland

is to be stepped-up..., the problem of coordinating activities will arise with increasing frequency unless the aid donors, with GOS cooperation; revise their systems of programming, and in general, tighten up their operations". OSARAC believes that since 1974 improvement has been made in this regard as evidenced by the annual conferences now being held by the GOS and donor agencies and by the recent establishment of an interministerial committee to better coordinate RDAP activities. Nevertheless, with the recent substantial expansion of the RDAP, the strength of coordination among GOS agencies and the donors involved is not yet at the level desired. OSARAC is nevertheless confident that the present structure of coordination is adequate as a building base for future improvements which will be directly addressed.

With regard to specific project inputs related to the land use planning and development elements of the project, the evaluation team found that:

- a. The equipment was being used very close to capacity and a good job was being done;
- b. The GOS/AID-financed workshop was without question the best managed and equipped heavy equipment repair facility in Swaziland and possibly in all Africa;
- c. The performance of the soil conservation engineers and the workshop foreman were found to be satisfactory or excellent;
- d. Only three counterparts were provided and trained; one soil conservation engineer and two workshop foreman mechanics (one of which did not complete academic training for personal reasons); and
- e. The accomplishments of the Land Development Section were reasonable given the equipment and time available.

Despite these generally favorable findings, the evaluation team determined that the GOS could not move the program ahead much faster without additional external assistance. The team suggested that AID do what it could to accelerate the RDA program.

The report made several recommendations to guide further AID involvement in the RDAP. One was to stress institution building within the GOS to improve its ability to design, implement and evaluate its rural strategy. The team suggested that AID encourage the GOS to review its mechanism for formulating rural strategy and its capability to carry out economically sound projects.

The team recommended that AID offer to help the GOS strengthen its agencies responsible for the RDAs, stressing project management in areas such as soil conservation and range management. The study also recommended that AID offer to supply RDA-related technical assistance and training requested by the GOS.

6. Current Status

In the interim period between the evaluation and the writing of this PP, the following developments have occurred:

- a. Due to excessive equipment downtime and a lack of sufficient equipment, the momentum of the RDAP has slowed considerably. For example, terrace construction in the RDAs has dropped from nearly 2,000 hectares in 1974 to 1,400 in 1977. This slowdown in terracing and other works construction is of concern to the GOS and all donors as other program activities are directly tied to this one. In many instances, other program elements such as those in the mini-input phase have been implemented despite the fact that they could be more effective were the land use planning and land development requirements performed on a more timely basis.

- b. Though the operation of the Land Development Section (LDS) workshop

was given high marks at the time of the evaluation, it has since lacked the managerial and technical talent necessary to maintain the earthmoving equipment at an acceptable level of downtime. After having made a careful and in-depth analysis of this situation, OSARAC believes that this is primarily due to 1) poor initial project design which did not provide for sufficient technical assistance; and 2) a lack of effective on-the-job training of the Swazi workshop manager and other management personnel by former AID-funded technicians.

c. Both the MOA's Land Use Planning Section and Land Development Section are severely understaffed and underequipped to complete and implement the land use plans necessary to achieve current RDAP land development targets.

d. Earthmoving equipment provided under the 1971 loan has now depreciated close to the end of its estimated life. More maintenance and repair is required accordingly. LDS workshop downtime is therefore attributed to this factor as well as the lack of efficient management.

e. With the expansion of the RDAs from four to eighteen, the need for additional equipment and effective maintenance is critical to RDAP success. Even had the preceding AID-funded activities under Project O24 been significantly more successful, the need for the assistance proposed in this PP would still be regarded as a vital need to the success of the greatly expanded RDAP.

On the basis of the status and need for assistance as described above, OSARAC strongly recommends approval of this project. Disapproval would seriously jeopardize GOS and other donor efforts to maintain the momentum of the RDAP, conserve the soil resource base, and improve the well-being of the rural people of Swaziland.

G. Development of Proposed Project

1. Project Identification Document (1976)

In 1976, a project identification document (PID) suggested that AID focus on helping the GOS to develop the institutions and personnel that would bolster RDA efforts in land planning, land development, equipment maintenance, range management, economic planning and evaluation and administration.

2. Project Review Paper (1976)

The Project Review Paper (PRP) was more specific in its suggestions for further AID involvement in the RDAP. It recommended that AID be most concerned with the creation of detailed land use and land development plans and the training of Swazis in this area; with the development of institutions to provide optimal soil conservation and engineering practices; with the provision of equipment, repair facilities and the training of operators and repairmen; and with the coordination of AID efforts in the RDAs with those of other donors.

3. Feasibility Study Team (1977)

In 1977 the GOS requested that AID examine several aspects of the RDA program, particularly: personnel requirements, the cost-effectiveness of soil conservation practices and the land use planning and land development operations of the MOA. Two studies have been prepared to respond to those requests from the GOS and to evaluate the feasibility of continued and expanded AID involvement in the RDAP. One identifies Swaziland's agriculture-related personnel requirements, personnel supply and training capacity. The other study examines the operation and adequacy of the heavy equipment purchased by the RDAP with the 1971 AID loan and the efficiency of the AID-funded equipment repair facilities. Other foci are the effectiveness of MOA land planning and land development activities — including administrative organization, soil and water conservation practices and range management, and the sociological

impacts of the RDA program.

It was the consensus of the Study Teams that the RDAP is a well-conceived and useful mechanism for rural development. It was found that the RDAP is targeted at the lower income rural population and is in concert with U.S. objectives in development assistance. The teams also concluded that a realistic time span of continued concentrated effort of at least a generation or two is required to bring about the economic and social changes envisioned.

The AID/USDA team strongly recommended that AID continue to support the MOA's land use planning, land development, and equipment maintenance activities. It further recommended that AID and other donors be willing to continue providing capital, technical skills and training to the RDAP over as realistic a time frame as their regulations permit. The activity would not be well-served by start-and-stop, crisis-oriented development assistance.

4. Project Paper Design Team (1978)

The project paper design team prepared this document during June and July of 1978 in Swaziland. The team consisted of the following members: Carol Allen, Rural Sociologist, Consultant; Ollie Broadway, Equipment Consultant; Willie Cook, Agriculture Development Officer, OSARAC; Dale Davies, Sanitary Engineer, AID/W; Forest Duncan, Design Officer and Team Coordinator, AID/W; Robert Goodier, Civil Engineer, Consultant; Steve Norton, Capital Development Officer, REDSO/EA; Niel Raudebaugh, Training Specialist, Consultant. The team was assisted by: Steve Klaus, Procurement Specialist, AID/W; Robert Lester, Legal Advisor, REDSO/EA; John Menz, GOS/Team Liaison Officer, GOS/MOA; Theodore D. Morse, Acting RDO, OSARAC; and Eugene Swanson, Agriculture Engineer, REDSO/EA.

III. The Project

A. Program Goal

As this project is part of the much broader Rural Development Area Program, both a project and program goal have been established. However, as the project is an integral part of the overall program, the linkage between the two goals is strong.

This proposed project to strengthen the GOS' land planning and land development capability will contribute significantly towards realizing the agricultural development objectives established in the GOS Third Five-Year National Development Plan (1978/79-1982/83*):. Those objectives are expressed in the Plan as follows:

"The overall policy of Government in the agricultural sector is to enhance the quality of rural well being and to assist Swazi Nation farmers to make the transition from subsistence to semi-commercial and commercial farming. The primary mechanism for accomplishing these goals is the Rural Development Area Program which, inter alia, has the specific target of doubling existing incomes in the RDAs within the plan period. The Ministry of Agriculture has vigorous programs in other areas as well....."

Considering the relationship among these goals, it can be hypothesized that higher incomes from agriculture and improved rural living are primarily dependent upon the transition of Swazi subsistence farmers to semi-commercial and commercial agriculture. Therefore, this latter objective has been established as the key program goal to which this project will contribute.

The extent to which progress is made towards achieving this goal will be measured by the program's impact upon net farm income and the reallocation of subsistence farm hectareage to higher yielding hybrid maize varieties and cash crops such as cotton and tobacco. Vegetables are also being emphasized to increase incomes and improve nutrition. However, much less data is available on vegetables to permit reliable measurement of their increased production as an indicator of program progress.

With respect to income, the GOS has set a target of doubling existing incomes in the RDAs by March, 1983. Assuming this to be real income derived from agriculture as opposed to alternative sources, it seems optimistic to apply this target in view of the time generally required to develop physical and institutional infrastructure and bring about the adoption of new farming technology. While, on one hand, this target may be achievable for RDAs which have been under intensive development for several years, it seems out of reach until well after 1983 for those RDAs just now undergoing intensive development. Therefore, to measure the RDAP's impact on incomes, the target of doubling incomes by 1983 will apply only to the 4,050 homesteads in the long-established RDAs - the Northern, Southern, Central, and Mahlangathsa RDAs. For the 9,800 homesteads in the six intensive RDAs most recently established, incomes are targeted to increase 50% by March, 1983.

The extent to which the transition to semi-commercial and commercial farming is occurring will also be measured by the extent to which subsistence farm hectareage is being reallocated to higher yielding varieties of hybrid maize and to cash crops such as cotton and tobacco. By March, 1983, the reallocation of hectareage to hybrid maize, cotton and tobacco is targeted to increase from approximately 2%, 7% and 1% of total arable land farmed in intensive RDAs to about 13%, 15% and 7% respectively. These figures are averages based on targets set in the GOS' Project Submission to the U.K.

It should be noted that while increasing emphasis is being placed on cash crop production in the RDAs, it is also GOS policy to achieve self-sufficiency in food production, * The GOS fiscal year is from April of the base year to March of the following year.

namely maize, by 1983. Therefore, extensive efforts are focusing on increasing the use of higher yielding varieties of maize so as to increase production and enable farmers to grow more on less land, thus freeing land for cash crop production.

B. Project Goal

The project will contribute to the program goal and other objectives described above through its efforts "to develop and protect the productivity of the land resource base in the intensive RDAs". Achievement of this project goal is necessary to retard the deterioration of the land resulting from the sloping nature of the land, the fragile soil base, the use of tradition cropping practices, and overgrazing.

Progress towards reaching this goal will be measured in terms of cropland productivity and livestock offtake rates. These indicators are chosen on the assumption that fewer cattle per hectare of land and the adoption of better cropping practices will result in less soil erosion and higher land productivity.

By March, 1983, crop yields for hybrid maize, cotton and tobacco per unit of arable land in the intensive RDAs are targeted to increase by 65, 50, and 75 percent respectively. These targets seem reasonable given (1) the land protection measures of this project and (2) the strengthening of extension services and improved availability of farm inputs and credit provided through other GOS/donor activities. Again, these figures are averages based on targets established in the GOS Project Submission to the U.K.

The cattle offtake rate at present is about ten percent annually, and the Third Five-Year Plan is aiming to increase this to twelve percent by March, 1983. In view of the early stage of experimentation with group ranch schemes and the need for an improved livestock marketing infrastructure, this target seems a bit ambitious. While a twelve percent offtake is certainly desirable and can hopefully be achieved, an eleven percent offtake would be more realistic and a commendable accomplishment given current constraints.

Before proceeding to a discussion of the project purpose, the obvious fact should be noted that this proposed project cannot in itself achieve the program and project level goals identified above. Rather, accomplishment of these goals requires the concerted efforts of the GOS, other donors, and the subsistence farmers themselves. To protect the land base, for example, earnest efforts must be continued to strengthen conservation education, to teach improved range management practices and to destock the livestock population. Through small-farmer-focused research and extension, improved conservation-oriented cropping practices must be encouraged and adopted. Similarly, the transition to semi-commercial and commercial farming requires improved marketing infrastructure, more effective extension efforts, and greater availability of farm inputs and credit. Nevertheless, despite this array of complementary development needs, the project's contribution is of major significance and vital to overall RDA Program success.

C. Purpose

The project's purpose is two-fold as follows: 1) to strengthen the RDA Program's land planning and land development capability; and 2) to develop, install, and maintain conservation works. The project will thus embody both physical and institutional infrastructure development and support to provide the land planning and land development components to the RDAP. Through the "localization" of MOA staff positions with Swazi personnel, it will enable the MOA to continue land planning and development functions on a self-sustaining basis after U.S. technical assistance is withdrawn.

By August 1984, when AID support ends, it is expected that (1) the land planning and development activities of the MOA will be functioning efficiently and effectively under the direction of Swazi technicians, and (2) the conservation infrastructure works identified in Phase I of the project will be in place. Project success in terms of the development and installation of physical infrastructure will be judged on the basis of the quality of works constructed, their effectiveness in protecting land and water resources, and maintenance. The quantity of works constructed will also be evaluated in light of needs and the resources available to implement land use plans.

Success criteria for the institution strengthening component of the project will focus on performance as opposed to simply having Swazi nationals posted in established positions. The Swazi technicians will be expected to be performing the land planning and development functions in a satisfactory manner from the initial planning phase to the design and implementation stages. Swazis assigned to the Land Use Planning Section (LUPS) and Land Development Section (LDS) will possess the skilled capability to carry out the interpretation of photomosaic maps, draft broad-gauge land utilization plans based on field data collection and soil analyses, and prepare detailed land development blueprints based on field surveys. Furthermore, they will be able to select appropriate alternative techniques, design all necessary structural devices, construct the designed infrastructure as planned, and coordinate with other agencies to assure proper structure maintenance. Swazis assigned to the LDS workshop will be able to function in a manner which will contribute positively to the timely installation of the infrastructure required by the RDAs. Further, the shop will be well organized and managed, employ a skilled cadre of technicians, and will maintain an inventory of parts and components which will enable the shop to operate efficiently.

It should be stressed that during project implementation, should circumstances unexpectedly evolve requiring some tradeoff between the two objectives, priority shall be given to guaranteeing successful completion of the institution-strengthening element of the project. Despite the critical need for physical infrastructure construction, the institutionalizing of an adequate on-going land planning and development capability in the MOA must rank first in the order of needs.

D. Outputs

The outputs of this project which will be produced to achieve the project purpose(s) are the following:

1. Conservation Infrastructure Works

On the basis of comprehensive land use plans, the Land Development Section will construct, rehabilitate, and maintain land and water physical infrastructure works to the extent resources will permit. These will include terraces, grass-strips, dams, irrigation systems, access roads, bush clearing, fencing, and other works appropriate to area needs. These works will be concentrated in the RDAs designated for intensive development. Priority will be given to constructing conservation infrastructure which will assist subsistence-level farmers in maintaining the productivity of their land.

The GOS and OSARAC envision that the needs for installing conservation works and for land use planning will exist over a very long period of time. This is because the RDAP will eventually extend to all Swazi Nation Land over a period of decades. Therefore, in examining the relationship between the amount of equipment support and the job to be done, it becomes a matter of determining what can be done with the resources available given the great needs that exist.

Quantitative targets have been established for the RDA works program in terms of number of hectares to be terraced, number of kilometers of access roads, etc. (see Annex XVIX). However, these targets do not reflect the slowdown in construction brought about by the

excessive equipment downtime experienced in the past two years. Moreover, due to price increases, the equipment package provided under this project loan will be smaller than was originally planned (approximately 37 pieces of heavy equipment vs. 57). While it is hoped that additional equipment can be procured in the near future, land development must nevertheless proceed at the pace that present projected equipment availabilities permit. Therefore, taking into account the above considerations, one of the project team's first major tasks will be to assist the RDA Management Unit in reviewing targets for the life of the project in view of projected available resources. This will be accomplished by August 1980. Rehabilitation and maintenance tasks as well as new construction will be targeted in the works program.

2. LDS Workshop

Critical to the construction of the infrastructure works and the rate at which the overall RDAP can be implemented is the efficient and prompt maintenance and servicing of the heavy equipment employed in the LDS. To insure that this capability exists, the project will contract with an U.S. firm to assure maintenance responsibilities of the existing workshop are met efficiently and effectively as described in section IV D and Annex XIII. In addition, the contract team will advise and train management counterparts and mechanics in order that an on-going maintenance capability commensurate with the assigned tasks will exist after U.S. technical assistance is withdrawn in 1984. By August 1981, the workshop will be maintaining equipment and vehicles such that downtime is no more than 10%**.

3. Land Use Plans

Detailed land use plans will be prepared by the LUPS in close collaboration with local people, RDOs, the LDS, and other GOS ministries and agencies as appropriate. Based on comprehensive analyses and on-site observations, plans will be initiated for all 18 intensive and non-intensive RDAs and completed for the 10 intensive RDAs by August 1984. After U.S. assistance is withdrawn, it is expected that the Swazi technicians trained under this project will continue preparing land use plans adequate in number and quality to meet the needs of the expanding RDA Program. All plans will be implemented by the LDS in accordance with final designs prepared by the LUPS.

4. Conservation Works Rehabilitation and Maintenance Programs

As a number of conservation works were poorly designed and constructed during the early phases of the RDAP, a three-year works rehabilitation program will be implemented by March 1982. A works maintenance schedule will also be an integral part of each new RDA land use plan.

5. Improved Management Procedures

Improved management procedures for planning, designing, constructing, and maintaining RDA physical infrastructure will be developed and in use by March 1980. The objectives of establishing these procedures is to insure that adequate coordination and participation of all GOS entities concerned with land planning and land development is achieved. With additional technical staff assigned to the LUPS and LDS, it is believed that the establishment of such procedures will be feasible and will increase overall efficiency and effectiveness. To avoid the development of an overburdensome system, expediency as well as thoroughness of analysis will be a major consideration in defining the procedures.

-
- *) Current cost estimates indicate that approximately 37 pieces of heavy equipment can be purchased with the \$5,400,000 provided under the loan. However, this number can change depending upon the extent to which current estimates will match actual costs.
- ***) This represents time that equipment and vehicles are mechanically disabled or "dead-lined". It does not include downtime for servicing, seasonal waiting time, or travel and daily waiting time. Equipment should be available for use at least 35 to 50 percent of the time

A cost accounting consultant will be provided to establish an effective financial record keeping system for both the LDS and LDS Workshop by March 1980.

6. Trained Swazi Personnel

By August 1984, 9 Swazi technicians, 8 surveyors, 60 mechanics, 158 heavy equipment (plant) operators, and 42 light plant operators, will have been trained and functioning effectively in the LUPS, LDS, and LDS Workshop. The 9 long-term trainees will be trained and assigned as counterparts upon their return from training. Each will have at least one year's on-the-job experience prior to the U.S. technicians' departure. Upon their return from training, the first 6 months will be spent working as understudies. However, in the last 6 months the Swazi counterparts will assume full responsibility with the U.S. technicians serving as advisors.

E. Inputs

The inputs required and believed sufficient to produce the outputs described above are indicated in the following discussion and tables:

1. <u>US A.I.D.</u>	Total	(000 US \$) <u>\$ 12,546,500</u>
a. <u>Technical Assistance</u>		<u>\$ 5,910,900</u>
b. <u>Training</u>		<u>\$ 660,000</u>

The project will provide 57.16 staff-years of long-term technical expertise and 2.5 staff-years of consultancies as described in Table I. Six technicians will be assigned to the LUPS, three to the LDS construction component and four to the LDS workshop*. Job descriptions of the long-term technicians are included in Annex XIII. Consultancies will be provided for socio-economic baseline studies if necessary and in the areas of soils, land surveying, geology, cost accounting, and others as required.

Long-term training will include 32 study-years of long-term U.S. training for 9 participants at the B.S. degree level. The proposed participant training schedule is shown in Table II. These participants will study areas covering the specialties being provided by the technical assistance personnel. In order that participants depart for training as soon as possible after the Project Agreement is signed, the MOA has been requested to identify and select qualified candidates by January 1979. As it is uncertain at this time whether college graduates will be available for graduate level training, four years each is being provided for the engineering, resource economics, and range ecology programs.

Less formal training will also play a major role in the project. An equipment operator-trainer will be assigned to the Land Development Section to train and supervise 158 heavy equipment operators and 42 light vehicle operators by August 1981. On-the-job training will also be provided by a land development surveyor to train 8 SCOT and/or UBS certificate holders in surveyor skills required in the Land Use Planning Section. (Present surveyor graduates do not possess these skills). This training will be completed by March 1980.

In the LDS Workshop, the U.S. heavy equipment mechanics will provide on-the-job training for a staff of 60 mechanics. The procurement contract for the heavy equipment will also provide for five in-country training courses to be taught by regional equipment

* The workshops parts controller position will be filled by a TCN if possible. However, funding is provided for a U.S. National in the event this cannot be done.

TABLE I
 SCHEDULE OF TECHNICAL ASSISTANCE
 SWAZILAND RDA INFRASTRUCTURE SUPPORT PROJECT

PERSONNEL		1979	1980	1981	1982	1983	1984	STAFF YEARS	NO. TECHN.
LUPS	Land Planning Officer (Team Leader)	7/79-----					-----8/84	5.16	1
	Land Planning Officer (Hydraulics)	9/79-----						5.00	1
	Land Planning Officer (Soil Mechanics)							5.00	1
	Land Planning Officer (Structure Design)							5.00	1
	Resource Economist							5.00	1
	Range Ecologist							5.00	1
LDS	Construction Engineers (2)							10.00	2
	Equipment Opr. Trainer			-----8/81				3.00	1
LDS Workshop	Workshop Manager/Advisor					-----8/83		4.00	1
	Heavy Plant Mechanic							4.00	1
	Heavy Plant Mechanic Instructor							4.00	1
	Workshop Parts Controller (TCN)				-----8/82				1 (TCN)
Consultants		.17	1.00	.34	.33	.33	.33	2.50	
TOTAL STAFF YEARS		4.67	14.00	13.00	12.00	10.33	5.66	59.66	13

TABLE II
PARTICIPANT TRAINING SCHEDULE
 SWAZILAND RDA INFRASTRUCTURE SUPPORT PROJECT

PARTICIPANT'S DISCIPLINE	1979	1980	1981	1982	1983	1984	STUDY YEARS
Civil Engineering (5) B.S.	9/79 ←	-----			→ 8/83		20.0
Resource Economics B.A.	←	-----			→		4.0
Range Ecology B.S.	←	-----			→		4.0
Heavy Plant Mechanics Tech. School		9/80 ←	-----		→ 8/82		2.0
Supply Management Tech. School			←	-----		→	2.0
TOTAL STUDY YEARS	2.33	7.67	9.00	8.33	4.67	-0-	32.00

dealer representative. A cost accounting consultant will also train the LDS accountant to maintain financial records in both the LDS and LDS Workshop for management and budget purposes. Long-term training for the heavy plant mechanic and parts controller will be scheduled as shown in Table II.

c. Construction \$ 435,000

The construction component consists of 10 senior staff houses* for the U.S.-funded technicians and a parts storage warehouse (\$35.0) at the LDS Workshop. (see Annex XVI "Engineering Analysis") Three houses will also be available under earlier GOS/AID projects to house three technicians.

d. Commodities \$ 140,600

Commodities will include vehicles, office and field equipment and supplies, training equipment and supplies, and books and periodical subscriptions. Annex XI provides a breakdown and individual cost estimates of these items. Vehicles are included in the grant element as opposed to the loan in order to 1) expedite their delivery for the project technicians' use, and 2) insure that these vehicles will be for the exclusive use of the project team.

e. Heavy Equipment \$ 5,400,000

A major cost component of the project is a loan for heavy equipment, farm equipment, spare parts, support equipment and supplies, and tools and equipment identified in Annex VII. As already noted, price increases have made it necessary to scale down the number of items that \$5.4 million can buy. Whereas 57 pieces of heavy equipment were previously recommended the package will now consist of approximately 37 items**. (The 57 pieces would cost \$9.4 million). This will obviously reduce the capacity of the LDS to expand the RDAP works construction, but this package is viable as a supplementary unit

Making up the \$4.0 million shortfall was considered from both GOS and US sources. The GOS indicated that its current capital budget has already been greatly expanded (E 37 million in 1977/78 to E 125 million in 1978/79), but is not available for this purpose. OSARAC and AID/W have agreed that the present heavy industrial balance in the Swazi development program does not justify a larger US loan to the RDAP at this time. Following a comprehensive evaluation on the use of this equipment package, it is agreed to review the policy positions of both governments at a later date in relation to supplementary equipment funding.

The equipment package identified in Annex VII was determined by the PP design team's heavy equipment expert and OSARAC working in close collaboration with officials of the MOA's Land Development Section. A procurement specialist provided by REDSO/EA assisted in arriving at reliable cost estimates.

2. GOS \$12,942,600

a. Equipment Support and Replacement \$12,228,600

The major costs provided in support of the project by the GOS will be those for equipment maintenance and repair and operating costs. In addition, MOA contribution

* If a TCN can be contracted for the workshop parts controller position, one less house will be constructed.

** Current cost estimates indicate that approximately 37 pieces of heavy equipment can be purchased with the \$5,400,000 provided under the loan. However, this number can change depending upon the extent to which current estimates will match actual costs.

to a sinking fund for equipment replacement will total \$ 5,152,700* over the life of the project.

b. Salaries and Wages \$ 460,700

Includes salaries for Swazi counterparts, secretaries, and daily hire equipment operators and mechanics.

c. Vehicle Operation and Maintenance \$ 126,000

For project vehicles identified in Annex XI.

d. In-Country Per Diem \$ 36,300

For in-country overnight travel of project technicians.

e. Furnishings and Appliances \$ 91,000

F. Important Assumptions

In this project, a number of assumptions are made which are relevant to project success. However, by definition, assumptions are factors over which project management has little or no control. To the extent possible, the design team has sought to include project inputs which will strengthen the likelihood of their occurrence. Those assumptions believed to be most critical to project success are discussed below.

1. Efforts to Control Overgrazing

It can readily be recognized that the conservation efforts promoted under this project treat the symptoms of the country's erosion problems rather than the contributing factors. Given the state of land deterioration and the understanding of its causes, it is necessary to treat both. The most significant cause is the overstocking of cattle relative to the land's carrying capacity. Therefore, GOS efforts to address the overgrazing problem in Swaziland are viewed by OSARAC as being crucial to the long run success of this project and the entire RDA Program.

The overgrazing problem has been recognized in earlier AID documentation related to this project and in practically every other donor study related to agriculture in Swaziland. Most recently, in April 1978, a seminar was held in the MOA to study the problem and arrive at an official MOA policy on the matter. The consensus of opinion was that there is indeed a serious overgrazing problem in many parts of Swaziland and that more has to be done to address it.

Current MOA efforts to address this problem are mainly in the form of group ranching schemes and fattening ranches. A major study will be undertaken by the GOS and IBRD soon to determine the feasibility of establishing a more effective livestock marketing system. Plans are also being considered to significantly strengthen range management extension efforts. These will focus on 1) raising farmer awareness and understanding of the problem and 2) encouraging livestock management practices which are conservation-oriented.

* This figure represents only accumulated funds during the life of the project. Total replacement cost would be about \$6,000,000 assuming price increases of 8% per annum and excluding contingencies and procurement agent's fee.

In recognition of the overgrazing problem, a range ecologist will be provided under this project as a member of the land use planning team. He/She will be responsible for recommending the proper separation of arable and grazing land in the RDAs and for collecting baseline data on the effects of overgrazing. This data will serve as a basis for guiding rangeland policy, determining the livestock carrying capacity of the land, and developing grazing lands in the RDAs.

2. Inter-Departmental and Inter-Ministerial Coordination

A serious requirement identified by this and previous design teams is the need for better coordination among units within the MOA concerned with land planning and land development. MOA coordination with related mid-management level units in other ministries such as the Ministry of Health and Ministry of Public Works has been of equal concern. This lack of coordination, as evidenced by the preparation of land use plans without the review of those tasked with implementing them, can in large measure be attributed to the shortage of technical personnel in the LUPS and LDS and the heavy workload expected of them. With the additional technicians trained under this project and the establishment of improved management procedures, it is believed that satisfactory coordination and cooperation will develop.

3. Effectiveness of Extension Service

The success of this project and the RDAP is heavily dependent upon the capability of the MOA's extension services to gain rural people's awareness and understanding of the RDA program. As is noted in section IV B 3 and Annex VII, local people's awareness of the RDAP in some areas needs to be significantly strengthened. Given the current low number of extension field officers, the existence of this need is not surprising. At present there are only 85 field officers whereas approximately 200 more are needed in order to reach an agent/farmer ratio of 1 : 250 in the RDAs and 1 : 300 in the non-RDAs. These are the ratios required to more effectively promote and bring about rural transformation.

The University of Botswana and Swaziland is able to graduate certificate level field officers at a sufficient rate to meet the above targets by 1984. (AID has already programmed funds to provide a teacher to this program). However, interviews with the recent graduates in the field revealed that they badly need better supervision to make them more effective in their communities. Therefore, it is proposed that an in-service training advisor be assigned to the MOA through the Southern Africa Manpower Development Project (SAMDP) to strengthen mid-management level supervision as well as recommend, organize, and implement appropriate in-service training programs at all echelons. In order to "localize" this position in the MOA, it is also proposed that three participant trainees be trained in agricultural education and extension program methodology through AID's Southern Africa Academic and Skills Training Project (SAAST). Annex VIII "Analysis of Training Needs" presents an appraisal of the current effectiveness of the extension service and offers other recommendations as to how it may be strengthened. Also a related discussion of the GOS' conservation education program is presented in section IV C 1 d.

A. Economic Feasibility

1. Methodology

To determine the economic soundness of the project, benefit-cost analysis, internal rates of return, and cost effectiveness were used to the extent possible. The economic soundness of the RDAP was first examined by studying the internal rates of return and benefit-cost analyses presented in the IBRD's Project Appraisal Report (January 1977), and the RDA project proposals submitted to the U.K. (September 1976) and IBRD (February 1976). To assess actual experience to date, agricultural economists in the MOA's Economic Planning Office were interviewed, and MOA documents and farm management surveys recently completed for the Southern and Mahlangatsha RDAs were studied. The project itself was then analyzed in terms of benefits accruing to subsistence farmers and the project's cost effectiveness. The cost effectiveness of the conservation technology being employed in the RDAs was examined in particular.

2. Results

a. RDA Program

As previously concluded by three other AID-funded study teams before this one, the PP team concurs in their finding that the RDAP approach to rural development in Swaziland is an economically sound one. Analysis as well as evidence of progress to date support this conclusion.

Economic analyses included in the GOS RDA project proposals submitted to the U.K. and IBRD were examined and, recognizing the qualifications noted below, were judged to be reasonably sound. Both proposals have estimated benefits and costs and internal rates of return (IRR's) over a 20-year period. The proposals indicate IRRs of 17.5% and 21.9%, respectively, in the RDAs planned for implementation by the U.K. and the IBRD. In addition, the IBRD proposal has estimated the benefit-cost ratio for an individual farm in each of the highveld, middleveld, and lowveld. The ratios are 4.5:1.0, 3.8:1.0, and 5.7 : 1.0, respectively, and their average is 4.67:1.00.

Sensitivity analyses included in the submission to the U.K. indicated that the IRR (17.5%) is relatively insensitive to substantial variations in either costs, benefits, or tobacco and cotton returns. However, the IRR was found to be particularly sensitive to the level of extension field officers. Unless the number of field officers is increased to planned levels*, the tests indicated that the IRR would be 11.75% instead of 17.5%. Sensitivity analyses included in the proposal to the IBRD indicated no unsatisfactory effects upon the IRR.

Most recently, the IBRD sent a project appraisal mission to Swaziland to design the present expanded program. Their appraisal (January 1977) updated the original analysis in the proposal just discussed and calculated the IRR to be 20-25% over 20 years (see Annex VI). It was found that the IRR was most sensitive to delays in field level implementation and to shifts in price relationships. However, these tests again indicated that the IRR would not be too adversely affected.

* The test was made for the Mponono-Veleziyweni RDA which needs 9 officers but in 1977/78 had only 2. Extension field posts are seriously understaffed in all RDAs. However, they will be significantly strengthened as a result of the certificate level extension course recently established at the UBS (see section III F.4. and Annex XIII).

One exception which OSARAC takes with respect to these analyses is the treatment of farm labor costs. The original proposal to the U.K. and IBRD assumed this to be zero whereas the IBRD Appraisal Report analysis assumed it to be E0.80 per day. Both of these assumptions seem inappropriate in view of findings that 1) wage rates of E2.00 per day attract farm labor to off-farm employment, and 2) farmers on RDAs are earning about E2.00 per day for work expended to produce crops. Assuming that 1) this E2.00 per day rate for farm labor is imputed into the analyses and 2) delays in strengthening the extension service will delay the realization of some benefits, the IRRs would likely approach 10-15%.

It is also recognized, though, that while a sufficient value for farm labor was not included on the costs side, non-quantifiable benefits were (by definition) not included on the benefits side. Such benefits include an improved quality of rural living, better health services, educational opportunities, family mobility, financial security, and increased purchasing power. Recognition of these benefits greatly strengthens the benefits side of the equation and would more than likely compensate for the higher costs.

To assess actual experience to date with respect to RDAP success, MOA studies and farm management surveys were analyzed. Change in land use since 1971/72 when the RDA program was initiated is indicated in Table 1. Although these figures relate to SNL as a whole rather than RDAs in particular, the SNL experience is believed to be indicative of both current and potential RDAP success.

The figures show that although subsistence cropping continues to predominate, the production of cash crops, particularly cotton and tobacco, has increased significantly over the 1971/72 - 1975/75 period. These increases are attributable to high prices, improved marketing facilities, increased inputs, and greater extension efforts. Although maize lost ground to cotton, the increased use of higher yielding varieties of maize has enabled production to increase in line with the population growth. Nevertheless, about 20,000 tons of maize is still imported each year and greater extension efforts are now being made to encourage increased production of the higher yielding hybrid varieties. The GOS/MOA has set a specific target to reach self-sufficiency in maize production by 1983.

It is estimated that Swazi Nation Farms now produce 80% of the tobacco and 48% of the cotton output. From 1970 to 1976 the production of tobacco on SNFs rose from 60 tons to 165 tons while cotton production rose from 960 tons to 6,013 tons.

With respect to livestock, there has been no improvement in the annual offtake rate of cattle since 1973. The MOA has therefore set a specific target "to increase the annual offtake of the national cattle herd to 12 percent" by 1983. This will be accomplished through extension, better livestock and pasture management, and the use of improved breeds and feeding techniques.

The above findings suggest that progress is being made towards assisting farmers in the transition to semi-commercial and commercial farming. With the exception of livestock development, these trends offer encouragement to further promote the RDAP approach to rural development in Swaziland.

b. The Project

1. Benefits

At the project level, the following benefits accruing to subsistence farmers were identified:

* See Table 4, page 12.

- Reduction in soil losses and protection of environment;
- Maintenance of land productivity;
- More productive use of land and water resources;
- Consolidation of fragmented farms into more productive units;
- Improved transportation permitting better access to markets, production inputs and extension services, social services, and general commercial life;
- Opportunity to increase farm income through cotton and tobacco production and vegetable cultivation on irrigated and non-irrigated land;
- greater availability of water for production and household use;
- improved public health and sanitation.

Thus, considering the nature of the above benefits, it becomes apparent that this joint GOS/AID project comprises a central key component of the overall RDAP. For this reason, it may be rationalized that the project's benefits actually extend beyond those outlined above to include those of the entire RDA program. It is also evident that a number of other donor projects would not have been implemented were it not for the outputs expected for this project. Thus, from the standpoint of benefits, the project can be justified in terms of those project-specific benefits above as well as the "leverage" it exercises with regard to benefits derived from the entire RDA program.

2) Cost Effectiveness

In practically every respect, this project is one which can be strongly supported in terms of cost effectiveness. This is evidenced as follows:

- The preparation of comprehensive land use plans based on on-site inspections and close collaboration with local people will result in 1) more productive use of land and water resources and 2) more efficient use of the costly equipment provided under the loan. More comprehensive planning will also help prevent instances such as have occurred in the past when field projects were halted in mid-stream because important social or technical factors were overlooked.

- The training of Swazi technicians in the LUPS and LDS will permit a continuation of the project activities beyond the project's life. This will not only reduce the MOA's dependence on expensive expatriate assistance, but will sustain the benefits accruing from effective land use planning and development as future RDAs are developed over time.

- The technical assistance to manage the LDS Workshop and to train Swazis to maintain and operate the equipment will protect the GOS' investment in the equipment and permit land development activities to proceed at a reasonable pace. Without adequate maintenance and management, equipment efficiency is greatly impaired from both a cost and performance perspective.

- The conservation works rehabilitation program and the works maintenance program to be incorporated in each land use plan will serve to protect the GOS' investment in infrastructure works.

3) Conservation

In examining cost effectiveness, a consideration of particular importance is the conservation technology employed in the RDAs. Since 1971, terracing has been the major treatment applied to the land. This highly capital-intensive technology has proven to be costly. Moreover, due to excessive equipment downtime and an inadequate maintenance capability, dependence on this technology has seriously slowed the momentum of the RDAP.

Recognizing the problems and shortcomings of this approach, the GOS has adopted a modified soil conservation program employing less capital-intensive processes. These mainly entail the use of grass-stripping techniques which have been successfully employed in the past. A given area is now analyzed to determine whether terracing or grass-stripping or a combination of the two is most appropriate. This approach enhances the cost effectiveness of the program by lessening the dependence on heavy equipment.

It should be noted, though, that the use of this modified system does not suggest that the capital inputs provided under this project are not needed. On the contrary, terracing is technically required in many if not most areas, and grass stripping is not always appropriate. In fact, there are instances where grass strips are being removed to install more effective terracing systems. Nevertheless, the modified system is more cost effective where it can be appropriately employed and in the sense that it frees the heavy equipment for the construction of other conservation systems such as terraces, reservoirs, irrigation systems, access roads, donga (gully) rehabilitation, and homesite leveling.

4) Conclusion

In view of the findings indicated above, OSARAC has concluded that the project and the RDA Program are economically sound.

B. Social Soundness Analysis

1. Methodology

The analysis summarized in this section and discussed at greater length in Annex VII is based on two surveys conducted by the PP team's rural sociologist; PP team interviews with MOA extension staff and UBS personnel; a UN-sponsored survey on the "Rural Homestead" conducted by the Department of Economics, University College of Swaziland; and COS and MOA publications.

The first survey conducted by the PP team's sociologist was concerned with perceptions and attitudes about RDAs in general. These interviews covered 25 households in the Northern RDA (NRDA). The second survey focused on communication patterns in the Southern RDA (SRDA) and included interviews with eleven households, the Project Manager, Extension Personnel, and the Rural Development Officer. Two Swazi university students conducted the interviews.

The NRDA and the SRDA were selected as interview sites because these were two of the first RDAs started in Swaziland. Thus, evidence of RDAP progress could be best assessed in these areas. No attempt was made to randomize these small samples - interviewers were instructed to visit houses at varying distances from the project centre.

Out of a population group of about 1,430 homesteads in the NRDA and 643 in the SRDA, the sample sizes of the survey groups are obviously small and subject to the question of reliability. Nevertheless, findings of the PP team's survey and the more extensive UN survey in the NRDA were similar. This latter survey covered economic questions in 183 households in the NRDA or 13% of the total number of households. OSARAC believes that the findings expressed herein are at least fairly indicative of existing conditions and attitudes.

2. Beneficiaries and Beneficiary Characteristics

Rural families comprise 86% of Swaziland's total population of 525,000 (1976 census). 70% of the Swazi population lives on Swazi Nation Land (SNL) which comprises about 60% of the country. With the expansion of the RDAP to 18 RDAs almost 60% of the SNL will be affected or roughly 196,000 rural people. All of these people will benefit directly or indirectly from the activities supported by this project.

These people are quite poor. Average income figures for the rural areas are lacking due to inadequate baseline information. However, a recent World Bank report suggests a figure for rural families varying from US \$115 - 280 per annum. In addition to farm income, many families must rely heavily on outside income from family members employed in the wage-earning sector. Those employed may live at home, but more often they must leave home for other areas of Swaziland or the RSA. This often leaves the homestead with only women and children to tend the land and animals, and make crucial farming decisions. The PP team's surveys found that 68% and 53% of the homes in the NRDA and SRDA respectively received cash or food assistance, mostly from absentee workers.

The general standard of health care that is available in Swaziland's rural areas is low and the majority of medical facilities are seriously deficient. Principal disease problems are respiratory (tuberculosis), gastro-intestinal, bilharzia and malnutrition.

Enrollments in both primary and secondary schools have increased substantially in recent years, with the average growth rate for primary institutions 6.4% per annum and secondary institutions 15.5% per annum since 1962. Despite this, only 60% of those in the 7-13 age bracket and 30% of those in the 14-18 age bracket were enrolled in educational institutions at the beginning of 1975.

The RDAP will provide these people with increased economic opportunities and better educational, health and community services. The AID contribution to the RDAP will provide them improved agricultural opportunities through land improvements and land conservation, increased access to goods and markets through new and improved access roads, and increased availability of clean domestic water supplies.

3. Beneficiary Participation

Swaziland is particularly unique in having maintained the existence and operation of a strong traditional sector of the national government. This sector reaches from the King to the farm families through Rural Development Officer (RDOs), chiefs, and the Local Development Committees.

On the modern side, the farm families are contacted by the RDA project management personnel and assisted by their extension services (see Annex 7 for description of the traditional and modern government structures). Structurally, this has the advantage of giving the rural people an opportunity to consult with both sectors of the government. However, increased institutional involvement and expansion of the RDAP will necessitate closer cooperation and coordination between the two sectors. Both sectors have indicated their full support for the RDAP.

Rural development experience throughout the world has conclusively shown that local understanding of and participation in government-sponsored rural development programs is essential to program success.

This problem is already apparent in Swaziland. A recent Ministry of Agriculture progress report on the NRDA elaborates on the problems with the RDA: "Consolidation and resettlement seem to lag behind because it takes more time to convince people that it is in their long-run interest to shift their homes to proper sites. The destocking program has not been encouraging". This also emphasizes the extreme importance of the active involvement of the local rural people at all stages of the program including constant and positive communication patterns being maintained, and the necessity of building confidence within farm families in their relationship with all of the involved institutions.

In order to assess the receptivity of the beneficiaries to the existing RDA program a study of attitudes and perceptions was conducted in the NRDA. The results of the survey were startling with strong evidence indicating that there is a lack of communication and coordination at many levels within the RDAP process.

Because this lack of communication was so evident in the NRDA survey results, a second survey was conducted in the SRDA. This second survey focused on communication patterns to see if this problem was endemic to only the NRDA or more widespread throughout other rural areas.

The results were dramatically different with significantly higher praise for the communication and coordination taking place throughout the rural development process. The respondents' answers exhibited a more positive and confident attitude toward the RDAP. This difference is largely attributable to the intensity of extension services in the two regions. The RDAP has a larger population and fewer extension agents than the SRDA and studies by the PP team's rural sociologist indicated a marked positive correlation between the degree of contact with the project through village meetings and visits by an extension agent and receptivity to resettlement, new agricultural practices and destocking. As described in Annex VII key personnel involved in encouraging local participation in the RDAP planning and implementation are the Kings representatives in each region (the RDO's), the local Chiefs, RDA project managers and extension officers.

s described more fully in Annex VII preliminary plans are prepared by the RDO, local Chiefs and a local Land Development Committee. These plans separate arable and grazing land, designate locations for irrigation, reservoirs, roads and new homesteads. The plans are then technically refined by the LUPS and returned to the community for acceptance or modification.

RDAP management is primarily responsibility for ensuring that RDO's and Chiefs are fully aware of RDAP objectives and activities and are able to effectively discuss proposed actions with the rural populace. The AID project manager and contract technicians will ensure that proposed land use plans, conservation works and village maintenance responsibilities are fully discussed with RDOs and Chiefs, and that they in turn discuss these proposed actions with the population to be affected and receive their acceptance prior to the initiation of major works.

Also, it is proposed that AID assist in strengthening extension services capacity through the provision of an Extension Training Officer* to conduct in-service training for extension officers, and the training of three Swazi technicians in extension programming methodology (see section III F 4 "Effectiveness of Extension Service").

Local participation is also essential if project-constructed works are to be effectively maintained. The LDS will have primary responsibility for major maintenance and repair of access roads, conservation works, fencing and ponds. However, effective periodic minor maintenance by villagers will often slow or stop the gradual deterioration of works and obviate the need for major reconstruction. Swazi villagers have traditionally worked together on self-help activities and, if made aware of the consequences of inaction or poor maintenance, can be expected to provide a substantial input towards the minor maintenance of project works. Village maintenance committees have recently been formed in some RDAs, and it is expected that the MOA will appoint a maintenance officer or select committee to periodically review progress and problems in establishing village maintenance committees. The maintenance officer and/or committee will also provide assistance, as necessary, in improving methods of educating villages to the need for periodic minor maintenance.

4. Role of Women

Special mention must be made of the role of women in agriculture and RDA extension work. Rural Swazi women provide the majority of labor input to the homestead and crop production. The importance of reaching these women and providing instruction and assistance to them is one of the cornerstones to the success of the RDAP. Women have been visited and assisted in crop production by extension officers and have attended courses at the RDA project centres on agricultural methods. Many women are already involved in home economics extension work and a number (6 of a class of 36) of women have recently completed certificate course training for positions as General Extension Officers.

The present Poultry Extension Officer in the Southern RDA is a woman and this trend in women extension workers is expected to continue. The efforts by the extension services to treat the home and farm as "one unit" will also assist the rural women who are involved in the total activities of the rural homestead.

* The Extension Training Officer will be funded via AID's Southern Africa Manpower Development Project (SAMDP). The participants through AID's Southern Africa Academic and Skills Training Project (SAAST).

C. Technical Feasibility

1. Appropriateness of Technology

As described in Section II. D. 1., the problem that this project addresses is the deterioration of Swaziland's land and water resources and the resulting deterioration in the productivity of the land. The main causes have been identified as the fragile nature of the land base itself, overgrazing and poor cropping practices. In response, the project will seek to protect these resources through the installation of conservation infrastructure works and the institutionalization of a land use planning and development capability within the MOA. The feasibility of this approach and the technology involved is assessed in the following paragraphs.

a. Conservation Technology

The land and water conservation technology to be employed in this project is based on sound conservation principles and application which have already been tested and found to be effective in Swaziland. The following practices will be used; bush clearing, fencing, terracing, grass-stripping, diversions, ponds, dams, irrigation systems, and canals.

In recent years, the MOA has adopted a modified soil conservation program incorporating terracing, grass stripping, or a combination of the two. This program is much more cost effective than the former strictly terracing approach and is discussed in section IV A 2 b.

b. Works Maintenance and Rehabilitation

A major element of any infrastructure development program is maintenance. However, in the rush to build RDA infrastructure works, it appears that maintenance of these facilities has been neglected. In addition, many structures installed in the early days of the program were not properly designed. These structures require not maintenance but rehabilitation. Rehabilitation of dams without spillways is especially critical.

The PP team was advised that the MOA will establish a post for a Maintenance Officer and/or a ministry-level committee to 1) review the adequacy of maintenance, and 2) advise RDAs on the establishment of maintenance funds and labor obligations for maintenance. A number of the RDAs have already established a maintenance fund account and have assigned labor contributions in proportion to each farmer's land areas.

While this is commendable, all maintenance cannot be done efficiently by farmer labor. Frequently heavy equipment is required. Such equipment has not been available due both to the emphasis of constructing new facilities and due to inadequate maintenance of the equipment itself. Therefore, it is envisioned that the following measures will be taken to address this problem and strengthen the maintenance program approach.

1) The proposed maintenance committee will conduct an annual review of the status of maintenance in each RDA. Included on such a committee at the time of inspection will be a design engineer from the LUPS and a construction engineer for the LDS. The committee will determine the condition of maintenance, assist the project managers where maintenance is inadequate, and set a schedule for correction.

2) With the assistance of two engineers, the committee will determine rehabilitation needs; establish a three-year rehabilitation program; include these elements in annual work plans; and budget for such work. This work will require a high priority as delays will result in greater costs in the long run and will even endanger lives.

3) The committee will establish an estimate of equipment hours needed by the LDS to perform maintenance and implement the rehabilitation program. The Permanent Secretary or the Director of Agriculture will order that priority equipment time be made available for maintenance purposes.

c. Land Use Planning

The land use planning element of this project involves the reallocation of land and households in accordance with the most efficient use of a given area's land and water resources. Under this system households are located on less productive land, the more arable land is used for crop production and non-arable land is designated for grazing. The feasibility of this approach in Swaziland is facilitated by the land tenure system whereby chiefs have authority to allocate land to families.

In general, this approach has proven to be acceptable and effective in Swaziland when the local people involved participate in the planning and understand why the reallocation is being done. However, there is a great need to strengthen extension services. This is required to explain the rationale of the RDAP to rural people and gain their active support and participation.

More specific technical needs and recommendations related to land use planning and development are discussed within the context of the project's administrative feasibility (see section IV.D.).

d. Other Considerations

1) Extension

The installation of conservation works and the application of sound land use plans is a rational technical approach to land and water resource development. However, there are still other technical considerations beyond the scope of this project which must be adequately addressed to guarantee the ultimate success of the RDAP. For what this project does is merely "set the stage" for tackling the truly difficult development tasks in the RDAs. These chiefly entail the adoption of improved conservation-oriented farming practices which are acceptable to farmers; sensitive to farmers management capabilities; appropriate to the resources available; and which are protective of the land and water resource base. A vital element identified by the PRP team in bringing this about is the need for a much stronger and effective extension service. An extension specialist was therefore assigned to the PP team to specifically investigate this area as well as assist in identifying project training needs. His findings and recommendations are included in Annex VIII "Analysis of Training Needs".

In order to respond to these needs AID is proposing that an in-service training advisor be provided to the MOA through AID's Southern Africa Manpower Development Project (SAMDP) and that three Swazi technicians be trained in extension programming methodology under AID's Southern Africa Academic and Skills Training Project (SAAST). Other donors are providing extension services support as indicated in section II.C.2.

2) Conservation Education

Noteworthy and directly related to the objectives of this project are the earnest efforts the GOS has made to date regarding conservation education. Much to the credit of the Director of the Mlilwane Game Park, the GOS conservation education program includes the training of all secondary school science teachers, radio broadcasts, conservation lectures and tours for school groups through the game park, and the establishment of soil conservation clubs. At the primary school level, the GOS-AID Primary Curriculum Unit Project is now developing a conservation education curriculum to be taught in all primary schools. To further support these nation-wide efforts, AID is currently considering an Operational Program Grant (OPG) to the Mlilwane Foundation.

OSARAC believes that the continuation of this conservation education program and the achievement of an extension field officer: farmer ratio of 1:250 in the RDAs by 1984 will represent significant steps towards gaining a greater understanding and appreciation of the value of the nation's natural resources and why they must be protected.

2. Implications of Technology

a. Employment Effects

The RDAP and the project are expected to have the following employment effects:

- As the scheme to repurchase land from free-hold titleholders continues more arable land will become available for Swazi farmers' use. Moreover, assuming that farming can be made more intensive and more profitable, it will provide increased inducement in the RDAs for individuals to work on farms. The IBRD estimates that RDAP investments will increase agricultural labor input by 2,500 person-years a year in the 10 RDAs supported by the Bank and other donors.

- While this project provides a heavy capital input, many of the uses to which it will be put involves complementary labor-intensive activities such as those associated with grass-stripping, donga (gully) rehabilitation, irrigation system development, access road construction, bush clearing, and fencing. The IBRD estimates that the construction of civil works will employ about 500 additional persons during much of the construction period.

- As the transition is made from subsistence to commercial farming, the need for services to market farm products and provide inputs will increase. Employment opportunities should therefore be generated in these areas.

- Controlled grazing will relieve young boys from herding cattle allowing them to attend school and develop other skills.

b. Host Country Capability for Operation and Maintenance

By August 1984, when U.S. assistance is withdrawn, Swazi technicians will have been trained to sustain land use planning, land development, and equipment maintenance activities at a much greater capacity than currently exists and at a level of performance sufficient to meet the continuing needs of the RDAP. Works rehabilitation and maintenance programs will be on-going to protect the infrastructure, and a MOA sinking fund will have been established to insure prompt replacement of worn-out equipment.

f. Technical Design and Costs

On the Basis of the present technology being employed in the RDAs and the findings of AID evaluation and design teams, the technology employed in the project has been found to be technically sound and appropriate.

With regard to project cost estimates:

- 1) itemized cost lists and schedules with accompanying explanatory note are included in Annex XI;
- 2) project costs are analyzed as to appropriate use in Part V "Financial Analysis and Plan";
- 3) construction costs estimates have been derived on the basis of the comprehensive "Engineering Analysis" included as Annex XVI;
- 4) equipment costs have been estimated by a procurement specialist provided by REDSO/EA working in collaboration with the PP design team's equipment specialist;

5) reasonable amounts have been included in project funding for inflation and contingencies; and

6) the Acting Regional Development Officer has certified that the GOS has the financial capability to effectively maintain and utilize the capital assistance to be carried out under this project (see Annex XVII, "611 (e) Certification").

In view of the above, the project, as proposed, is judged to be technically and financially sound and feasible, thus, satisfying the requirements of Section 611 and related sections of the FAA of 1961, as amended.

D. Administrative Feasibility

1. Overview of Administrative Units

a. General

As a major purpose of this project is to strengthen the RDA Program's land use planning and land development capability, the project's administrative feasibility warrants particular interest. Accordingly, a general overview of the land use planning and land development process is described below followed by an analysis of those administrative units most directly involved in this process; namely, the Land Use Planning Section (LUPS), Land Development Section (LDS), and the LDS Workshop.

b. Land Use Planning and Land Development Process

The land use planning and land development process is a particularly appropriate one in the Swaziland context as it involves both the traditional and modern structures of government (see Figure I and Annex VII). This process begins when the Chief in a given community calls a meeting of the local people to explain the purpose of the RDAP, how it is implemented, and how participants benefit. This is done with the assistance of the district's Rural Development Officer (RDO), a political appointee of the King who serves to protect Swazi traditional values and who is a vital link between the traditional and modern sectors of government. The RDO articulates the details of the RDAP to the Chiefs, indunas (Assistant Chiefs) and the people in a manner in which there is adequate understanding on the part of those involved. Upon deciding in favor of the program, a development committee is elected by the people of which the chief or the induna (Assistant Chief) usually serves as chairman.

The RDO, working with this committee, then assists the people in making a basic development plan for their area. After this plan has been approved by the people, it is submitted to the Central Rural Development Board (CRDB) for approval. This Board is a major governing body of the traditional government structure and is responsible for examining all development plans on Swazi Nation Land and for encouraging the involvement of the local population in rural development projects.

After receiving the CRDB's approval, the plans are forwarded to the Ministry of Agriculture (see Chart No. 1) through the Ministry's RDA Management Unit for detailed, technical planning and engineering design. The RDA Management Unit is primarily responsible for overall planning, coordination, and implementation of the RDAP, with technical backstopping and assistance by other MOA sections. Those Sections most directly concerned with this process are the Land Use Planning (engineering design, etc.), and the Land Development Section (LDS) (Construction).

After initial technical plans are discussed with the RDO and the local people, the LUPS prepares final detailed plans and designs. These are again reviewed by the traditional sector and, if approved, are implemented by the LDS.

FIGURE I
PRESENT STEPS IN PLANNING LAND USE AND DEVELOPMENT
IN RDAs

- | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| 1. <u>Local Draft Plan - "T" ^{1/}</u>
Chief, Local Farmers,
Indunas
Development Committee | 5. <u>CRDB Review & approval "T"</u>
RDO reviews with Central
Rural Development Board-
Approval for final design
plans. |
| 2. <u>General Land Use Plan "M" ^{1/}</u>
Land Use Planning Section
Based on soil, arable land,
grazing, roads, homesteads. ^{2/} | 6. <u>RDO Liaison "T" & "M"</u>
RDO submits to LUPS for final
design plan |
| 3. <u>Traditional Liaison step-"T"</u>
Rural Development Officer
receives plan - submit
to chief for approval | 7. <u>Design Plan - "M"</u>
LUPS final design; structure
fencing, terraces, dams,
irrigation |
| 4. <u>Review and approval "T"</u>
Chiefs, Indunas, Local
farmers
Chief approves and signs. | 8. <u>To Land Development Section "M"</u>
LDS builds facilities |

1/ "T" - Traditional; "M" - Modern.

These symbols identify the functions of the Traditional and Modern Government Sectors and illustrate their interweaving in the RDA planning process.

2/ This plan is only a map. The planning section does not prepare cost estimates. Those are made by the RDA Management Unit based on judgement figures with no relation to actual field conditions.

The Land Development Section is responsible for supervising construction through Unit Managers located in the RDAs and for maintaining its equipment. The LDS Workshop, located in the Matsapa Industrial Area, is the center for all major maintenance and repair of RDA construction equipment.

The land use planning and land development process is thus one which intricately involves both the modern and traditional government structures. While on one hand the complexity of this system may at times cause the process to be cumbersome and slow, it nevertheless provides a unique and vital communication link to those for whom both have been created to serve.

c. Significance of Traditional Structure

Though this project will primarily provide inputs to strengthen the LUPS, LDS, and LDS workshop, the vital role played by the traditional land use planning structure identified above is fully recognized and appreciated. For, as demonstrated by the findings of the PP team's rural sociologist (Annex VII), both structures must function well together to effectively accomplish the project's purpose. Therefore, it will be a major responsibility of project team members to establish a close working relationship with this structure and the RDO's in particular.

d. Recent Changes in MOA Organizational Structure

Before proceeding to the analysis of those modern/government units which directly relate to the implementation of this project, it is noteworthy that as the RDAP has evolved, the MOA has adjusted its organizational structure to improve its program efficiency and effectiveness. For example, on March 31, 1978, the MOA placed the Land Use Planning, Economics, and Research units under one section head (see Chart No. 1) to further improve coordination and planning activities. In addition, an interministerial committee was recently established to improve coordination among all ministries supporting RDAP-related activities*. This committee met earlier this year to review the 1979/80 RDA budget and to coordinate inputs from various ministries. As noted in Section IVc1b, the MOA will also establish a post for a Maintenance Officer and/or a ministerial level Maintenance Committee in the near future to insure that RDAP infrastructure works are well maintained. Changes such as the above are indicative of the MOA's interests in structuring and strengthening the Ministry to improve its effectiveness. In this same vein, the management capability of those MOA units most directly concerned with the project is assessed below.

2. Management Capability

a. Land Use Planning Section (LUPS)

1) Present Status

The land Use Planning Section has three major functions: (1) the creation of land and water development plans, (2) final

* The Ministry of Works, Power and Communications builds some of the Clinics, schools, public buildings in the RDAs.

design for all major construction activities, and (3) evaluation of freehold lands for possible purchase by the Swazi Nation. The present established staffing pattern for this section is shown in Table 1 below.

TABLE 1

STAFFING

Land Use Planning Section

<u>Grade of Post</u>	<u>Establishment</u>			<u>Post</u>
	<u>1976/ 1977</u>	<u>1977/ 1978</u>	<u>1978/ 1979</u>	
21	1	1	1	Senior Plan Planning Officer
20	1	2	2	Land Planning Officer*
20	3	3	3	Soil Surveyor
	1	-	-	Engineer
20	1	1	1	Soil Conservation Engineer
20	1	1	1	Irrigation Engineer
20	1	1	1	Land Surveyor
19	1	1	1	Cartographer
14	3	3	5	Draughtsman
10	1	-	1	Shorthand Typist
8	3	3	3	Technical Assistance
5	2	2	2	Tracer
5	1	1	1	Junior Clerical Officer
TOTAL	20	19	22	

Present land use plans are very general documents which separate arable and grazing land, identify water sources, homesites, sites for public buildings, and locate routes for access roads. They are generally based on aerial photographs and a reconnaissance soil survey of the country made in 1968 (G. Murdoch, Soils and Lands Capability in Swaziland).

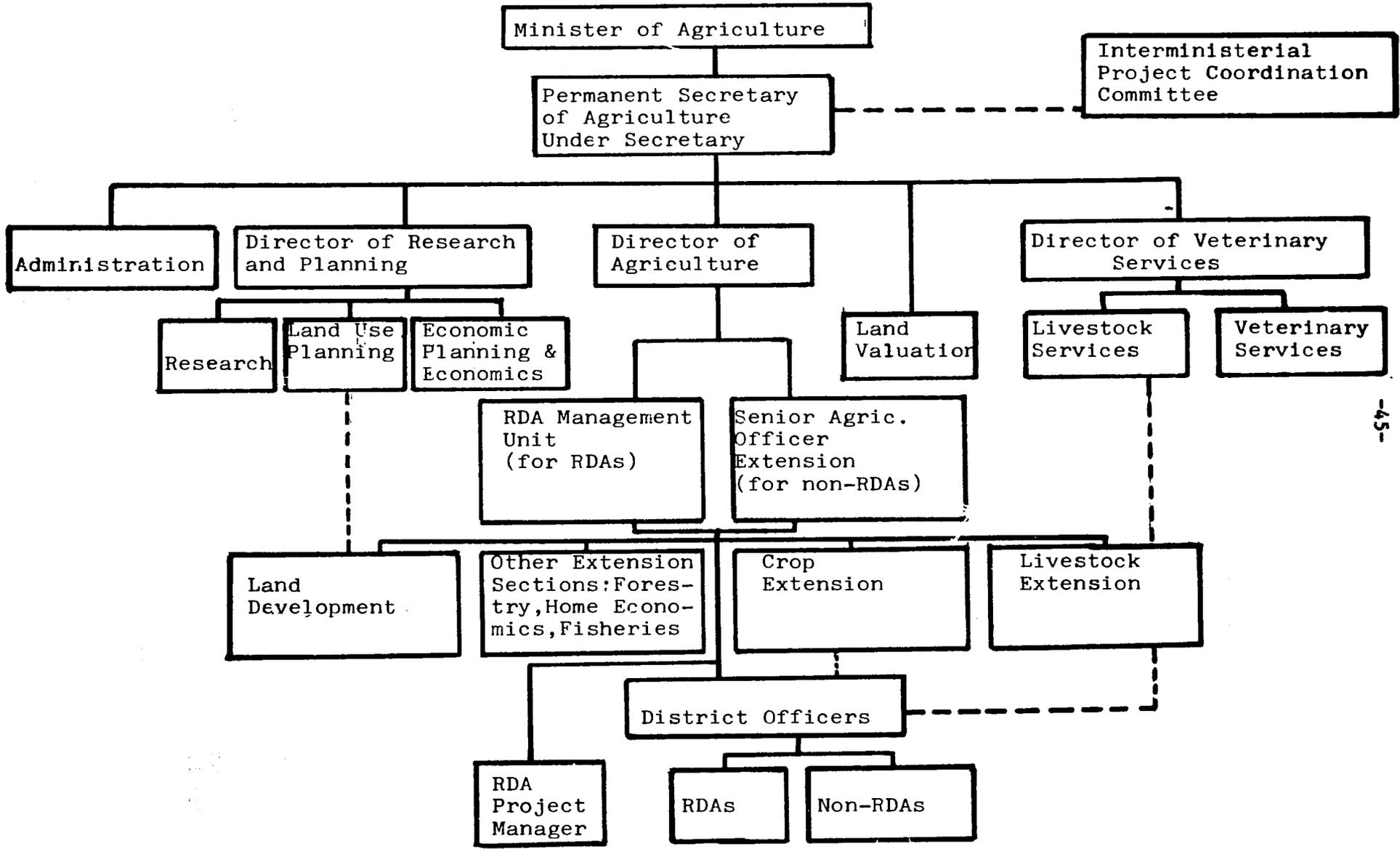
2) Problems and Deficiencies

a) General

Land use planning appears to be one of the weakest links in the RDA development process. There is very little documentation as to why certain decisions are made, what criteria is used in arriving at these decisions, or whether alternatives are considered. Frequent failure to verify actual field conditions has, on occasions, resulted in inappropriate land protection measures being applied in some areas and the actual stopping of development activities after substantial investments have been made. This lack of detailed planning is due mainly to an inadequate number of trained personnel to produce plans based on indepth study and on-site inspections.

* One additional post for a "Land Planning Officer" will be established.

CHART I
MINISTRY OF AGRICULTURE
 Organization Chart



-45-

b) Analysis of Alternatives

Sound land and water resource planning should include analyses of alternatives which would maximize benefits and conserve limited resources. This is not now being done because of lack of well qualified personnel. The 1974 Evaluation Report of Rural Development in Swaziland also identified this deficiency.

c) Preliminary Cost Estimates

To do an adequate planning job it is essential that realistic cost estimates be produced. Data on actual unit costs of construction infrastructure already completed is necessary for preparing cost estimates of future works and for justifying annual LUPS/LDS budget requests. In order that this data is readily available, reporting and record systems, and analysis must be improved.

d) Local Participation

It is the MOA's intent to insure local peoples' involvement and participation throughout the land use planning and land development process. Nevertheless due to an insufficient number of adequately trained staff in the LUPS and LDS, this cannot be achieved to the extent desired, and misunderstanding on the part of local participants sometime results. Adequate staffing and equipping of the LUPS and LDS will permit better planning and implementation and the degree of local participation that is required.

e) Coordination

Other ministries have responsibilities for such developments as clinics, schools, roads, domestic water supplies and the granting of water rights. Such activities need to be coordinated during the planning stage. The recent activation of an interministerial committee has improved coordination as demonstrated by the recent review of the 1979/80 RADP budget; however, additional improvement is needed. Coordination earlier and at lower levels in the GOS is needed for good comprehensive development planning.

f) Staffing and Training

The LUPS has insufficient technical personnel to do the needed planning job. The staff does not have an adequate range of disciplines (and experience) required for land and water resource development planning.

Staff limitations and the demands to meet final design deadlines frustrate attempts to provide the on-the-job training necessary to develop Swazi counterparts. Also, there are no trainees presently in the pipe line, nor apparent training plans or schedules to develop competent professional staff for future expansion and replacement of present staff.

3) Project Response

a) The Planning Process

As the RDAP expands, extension officers and other MOA

staff must become more involved at the beginning stages (step 1-Fig I) of the planning and development process. The general land use plans developed during step 2 (Fig I) will be more detailed and based on actual field information. Various alternatives and cost estimates will be considered and reviewed with the RDO, local chiefs, development committee, and local people before proceeding into final design and implementation. Other appropriate ministry field officials, i.e. Ministry of Health and Ministry of Education will be asked to participate in these reviews. Plan modifications will be made according to the outcome of these reviews. The plans will then be circulated to relevant ministries for general information and respective input into the planning process. The land use plans in final form will be submitted to the Director of Research and Planning who will certify that all planning requirements and processes have been accomplished. After receiving final MOA approval, the plans will be forwarded to the LDS for implementation.

b) Planning Documentation

A planning document will be prepared for all future RDAs or expansions of current RDAs. Such a document will include the following essential information:

- i. the plan selected and its cost and benefits based on preliminary design, cost estimates and field verified data;
- ii. a discussion of alternatives considered;
- iii. a statement concerning the status of water rights;
- iv. statements concerning comments of other ministries; and
- v. a bar chart showing an implementation schedule for all major features of the plan and a projected budget for each fiscal year of the implementation period. The schedule and budget would be modified annually as final designs and updated costs are developed.

c) Staffing and Training

In order to implement the above planning procedure and meet the land and water resource development needs of the expanded RDAP, the LUPS must be significantly strengthened both in terms of the number of personnel and the skills required. In addition to the land planning officer who will serve as team leader, no less than three more land planning officers are needed to provide the "package" of engineering skills necessary to develop comprehensive plans. In view of Swaziland's topographical features, these skills must include as a minimum a hydrologist, a soil mechanics engineer, and a structural design engineer. These engineering skills are required regardless of the size of the equipment package provided under the AID loan.

These engineering skills will be complemented by those of a Resource Economist and Range Ecologist. In addition to these long-term technicians, consultancies of 4 to 6 months each will be provided for an "Engineers Aide" to train LUPS draftsmen and a Land Surveyor to train RDA Field Unit Surveyors. The team leader will have line supervision authority over the existing staff under the Senior Land Use Planning

Officer. Job descriptions for the technical assistance described above appear in Annex XIII.

b. Land Development Section (LDS)

1. Present Status

The LDS implements the final plans developed by the local people and the LUPS. In this role the LDS supervises the construction of works throughout the RDAs, and is responsible for the maintenance and operation of a sizeable fleet of heavy earthmoving equipment (42 units), and support equipment. While construction and minor equipment maintenance are performed by the Field Units (5), major equipment maintenance and repair is done at the centrally located LDS Workshop at the Matsapa Industrial Site.

2. Problems and Deficiencies

a) General

The problems and deficiencies discussed in this section deal only with the supervision of construction and the operation of equipment. The problems concerning the maintenance and repair of equipment and the adequacy of parts and accounting records are discussed in section c. "LDS Workshop".

b) Supervision

The major problem encountered in construction is the need for close supervision. This is required to insure that facilities are constructed in accordance with designs and specifications. Presently (see present staffing patterns in Table 2) there are only two qualified supervisors available to monitor all project activities (one of which is a Construction Engineer provided by AID). These two individuals have five unit managers to supervise and, with the expansion of the number of RDAs, the number of construction units and unit managers will increase to seven in FY 1979/80. Most Swazi Unit Managers still lack the construction experience to build a structure as designed. Faulty construction (observed in the field) thus results in high maintenance cost, structural failures and the need for early repair and rehabilitation. The omission of hydraulic structures of cutoff walls and energy stilling blocks, the pouring of walls twice as thick as necessary, and the variation of pipe diameters when a uniform size was specified are examples of construction errors resulting from inexperience and lack of adequate supervision.

TABLE 2

Land Development Section

<u>Grade of Post</u>	<u>Establishment</u>			<u>Post</u>
	1976/ 1977	1977/ 1978	1978/ 1979	
21	1	1	1	Land Development Officer
19	1	1	1	Workshop Manager
20	-	1	1	Earthmoving Transport and Maintenance Officer*
20	-	1	1	Land Planning Officer*

* These 2 posts are currently vacant and they will be modified to the title of "Construction Engineer" utilizing the job description for comparable positions appearing in Annex XIII

Grade of Post.	<u>Establishment</u>			<u>Post</u>
	1976/ 1977	1977/ 1978	1978/ 1979	
18	1	1	1	Land Development Unit Manager
15	-	1	1	Workshop Foreman
15	3	3	3	Heavy Plant Mechanic
16	5	5	5	Land Development Unit Supervisor
15	-	-	4	Assistant Land Development Unit Supervisor
12	-	-	1	Assistant Accountant**
TOTAL:	11	14	19	

c) Equipment Operation

The selection of a specific type of earthmoving equipment to do a particular job is a skill acquired by extensive experience. Such skills are lacking in most Unit Managers and is not likely to be provided by Construction Engineers who are few in number and do not have adequate time to provide this sort of close supervision. There is a need for such a skill to make more effective use of the equipment to teach the "tricks of the trade" that are so essential to efficient equipment operation and performance.

d) Construction Costs

Although Unit Managers are beginning to submit cost reports to the LDS, this data is not compiled and analyzed to determine what each facility is actually costing. Therefore, no detailed information is available to determine where the budget was spent. Actual costs would be invaluable to LDS, LUPS, and RDA Management for future realistic budgeting.

e) Coordination with Design

Close coordination and cooperation between the Land Use Planning Section and the Land Development Section is essential. Such cooperation is currently functioning between the two AID engineers- one assigned to each section. The present organization structure, where each of the sections is responsible to a different Director (see Chart 1), does not insure that such cooperation will continue, particularly in light of the inevitable staff changes. As mentioned earlier, recent changes in the MOA's organization have occurred in an attempt to improve coordination between MOA sections and further MOA attempts to rectify this problem are expected.

3. Project Response

a) Supervision

Two U. S. Construction Engineers will be provided in

** This post is currently vacant and it is recommended that it be upgraded to the post of "Accountant" and that the job responsibilities be expanded to include the establishment and maintenance of all workshop record systems.

order to enable the LDS to properly manage the construction and development activities of the various units. The present Construction Engineer furnished by AID is serving as an advisor to the Land Development Officer until the end of his contract, at which time one of the newly arrived Construction Engineers will assume the advisory role.

b) Equipment Operation

An individual knowledgeable in the use of heavy earth-moving equipment and skilled in training others will be provided. The job description for an Equipment Operation Advisor/Trainer appears in Annex XIII.

c) Operating and Construction Costs

An Accountant consultant will be provided to assist in developing necessary accounting procedures and records. Reporting systems for analyzing costs for each structure and project will be developed. Operating costs for all major items of equipment will be determined as well.

d) Coordination with Design

To insure continued cooperation between the design and construction sections, the total project team will collectively work towards effective implementation of all projects.

C. LDS Workshop

1) Present Status

The LDS Workshop is presently lacking the necessary equipment and qualified personnel to fulfill the increasing workload required by the expanding RDAP. The previous AID loan and grant provided for constructing and equipping the workshop as well as the purchase of heavy earthmoving and construction equipment. However, the technical assistance provided under that package has proved to be inadequate. In order to assist in achieving the goals of the RDAP the LDS Workshop will need to be further assisted by providing U. S. technical assistance and equipment.

2) Problems and Deficiencies

a) LDS Workshop

The existing workshop facility is physically capable of handling the present amount of equipment and machinery but lacks the proper management systems needed for it to run effectively and efficiently. The addition of an additional 37 pieces of equipment and machinery will necessitate the construction of an additional warehouse building on the existing premises for the storage of spare parts, etc.

b) Supervision and Planning

Supervision must be strengthened to assure the timely availability of equipment. The absence of sufficient supervision has not only resulted in excessive equipment downtime but a decline in employee attendance and morale as well. Also, the workshop has not been able to satisfactorily plan for essential scheduled maintenance nor big jobs coming in from the field units.

c) Training

The earlier AID project developed a small cadre of semi-qualified mechanics and operators/drivers through on-the-job training provided by U. S. advisors, machinery dealers, distributors and manufacturers. Also, two senior-level Swazis were sent for shop management training in the U. S.; however, only one completed that training.

These activities have contributed toward improving the workshop's ability to provide the necessary service functions in support of the RDAP. However, if additional demands are placed on it by the addition of more equipment and expansion of the RDAP, further management improvements must be made.

d) Repair and Maintenance

Workshop difficulties in keeping up with the increasing demands of the RDAP is directly related to the lack of well-defined repair and maintenance systems and schedules. It is also a fact that as present equipment grows older it requires more maintenance and repairs thus adding to the demands of the workshop. Therefore, it is essential that measures be taken to establish an effective preventive maintenance program and a more adequate in-house repair capacity.

e) Records and Inventory

To properly maintain and repair equipment, it is necessary that proper records and inventories be maintained. This has not been adequately done. Because of this lack of proper field and workshop records adequate monitoring of equipment usage and maintenance schedules cannot be done. At the same time, advance planning for necessary inventories has not always taken place, and "deadlined" equipment has been "down" much longer than it should.

3. Project Response

a) LDS Workshop

To provide adequate storage space for the additional spare parts provided under the loan, a 30' x 60' warehouse will be constructed. At the same time, the existing workshop and storage areas will be properly organized and housekeeping systems will be established.

b) Supervision and Planning

An agreement has been made to bring in a strong management-oriented technical assistance team in order to provide the services demanded of the workshop. This team will not only increase the efficiency of the workshop but will assist in improving the attendance and morale of the workshop employees as well. It is believed that a team comprised of a Manager/Advisor, Senior Mechanic, Senior Mechanic Instructor, and a Parts Controller can provide the necessary inputs (see "Job Descriptions", Annex XIII).

c) Training

To keep up with the expanding workload, it is essential that training at all levels of the workshop staff be accelerated. Towards achieving this goal participant training will be provided for a senior mechanic and a parts controller. At the same time, the technical assistance team will conduct on-the-job training with their Swazi counterparts. During the last six months the team will work solely as advisors.

d) Repair and Maintenance

The U. S. team of workshop specialists provided by the project will be responsible for lowering the percent of equipment downtime to 10 percent or less by August 1981. This will be achieved through improved management, training, and the establishment of improved repair/maintenance management systems and schedules. An effective preventive maintenance program will also be implemented to lessen equipment downtime.

e) Records and Inventory

To improve records and inventory management, the project will provide a parts controller to review current procedures and implement improved procedures as necessary. As already noted, a Swazi counterpart to the parts controller will be sent for two years participant training in the U. S. The trainee will assume these responsibilities six months before the U. S. provided technician departs. A cost accountant consultant will also be provided to establish adequate financial record-keeping procedures and train the LDS Workshop accountant in maintaining them.

1. Environmental Assessment

During the preparation of the PRP, an initial environmental examination was made which drew the conclusion that a negative determination was justified. However, it was decided at the PRP review in AID/W that a negative determination was not valid and that an Environmental Assessment (EA) was required. This has since been prepared* and is available from AID offices in Mbabane, Swaziland and Washington, D.C.

In summarizing its findings, the EA concluded that "no significant long-term negative impact can be expected". It indicated that deterioration of health status due to water borne disease would have a short-term negative impact until the proposed AID-funded Water-Borne Disease project and other GOS actions were implemented. A second short-term negative impact -individual costs and anxiety attendant on resettlement- was judged unavoidable and minor".

The EA further concluded that "positive environmental impacts greatly outweigh any, or all, negative impacts", and that "NO PROJECT would result in environmental disaster through degradation of the land". The study thus supports the program hypothesis that achievement of the project purpose(s) will contribute towards the development and protection of the land resource base in the RDAs.

OSARAC has reviewed the EA and finds it to be a very comprehensive analysis of the real and potential environmental consequences of the project. However, it heavily stresses bilharzia control efforts, making only two clear recommendations: that clean piped water systems now planned receive higher priority; and that the digging of pit latrines receive more emphasis. These and other recommendations suggested by the PP team's Sanitary Engineer are further discussed in the "Technical Review of Public Health and Environmental Aspects" included as Annex X and have been incorporated into the project design. Although the procurement or use of pesticides are not part of the AID project, the EA considered the potential for agricultural chemical pollution. It concluded that the present use of pesticides is exceedingly low and that even a tenfold increase over present use would not contribute a measureable effect to surface water".

2. Environmental Procedures

The following procedures will be used to assure that to the maximum extent possible, consistent with the multi-donor nature of the RDAP, environmental considerations will be incorporated into project design:

a. A covenant will be included in the Project Agreement requiring that the GOS and the technical assistance personnel devise criteria mutually acceptable to the GOS and AID for activity selection taking into account, among other things, the recommendations contained in the Environmental Analysis done for the project.

b. The Land Use Planning Section will, in development of activities, take the criteria developed into account.

c. Documentation prepared by the LUPS should be adequate to demonstrate the extent to which these criteria have, in fact, been considered.

d. AID evaluations of the project will have, as one element, an analysis of how project activities have impacted on the environment and will make recommendations for necessary changes, if any are required, in the project's approach towards addressing environmental concerns.

It is believed that the above procedures will satisfy AID's obligations under Regulation 16 and still enable the project to function smoothly in a multi-donor context. In this context it is not felt that AID can, consistent with the multi-donor nature of the program require prior approval of each land improvement activity as meeting AID environmental criteria.

* Environmental Assessment, Swaziland RDAP, Wolf Roder, Ph.D. Geography, Oct. 1977, Contract No. 690-003-T

V. Financial Analysis and Plan

While the RDAP is a multi-donor activity, only GOS/AID funding for this specific project is presented and analyzed below. See section II.C. "Rural Development Area Program (RDAP)" for a summary of other donor inputs and terms of assistance.

USAID contributions to this project consist of a U.S. \$ 7.1 million grant and U.S. \$ 5.4 million loan as is described below and in Annex XI. The loan is being proposed for AID concessionary terms; i.e., a 40-year repayment agreement including an initial 10-year grace period with interest charged at 2% during the grace period and 3% thereafter. These terms translate into a "grant element" of 68%. Table 1 summarizes total GOS and AID funding.

A. Funding Summary

Table 1*
Project Funding

Swaziland RDA Infrastructure Support Project

FY 1978 - FY 1984

(000 U.S. \$)

	<u>Foreign Exchange</u>	<u>Local Currency</u>	<u>Total</u>	<u>Percent of Total</u>
USAID, Grant	6,595.9	550.6	7,146.5	28%
USAID, Loan	5,400.0	-	5,400.0	21%
GOS**	-	12,942.6	12,942.6	51%
TOTAL	11,995.9	13,493.2	25,489.1***	100%
Percent	47%	53%	100%	

* Prepared August 1978 in Mbabane.

** Except for equipment replacement allowances, figures exclude inflation in accordance with GOS budgetary procedures.

B. Cost Estimates and Type of Financing

Detailed cost estimates broken down by type of financing are included as Annex XI (A). Accompanying "Explanatory Notes" show how these were derived. Financing is weighed almost equally between foreign exchange costs (47%) and local currency costs (53%).

C. Obligation and Expenditure Schedules by Fiscal Year

See Annexes XI (B) and XI (C). Funding is timed to meet the sequence of events programmed in the "Implementation Schedule," Annex IV. Two GOS obligation schedules are also attached; one expressed in US \$, Annex XI (D); the other in Emalangeni, Annex XI (E).

D. Sources and Uses of Funds

Table 2 indicates the relative significance of each major assistance component in terms of costs and who will be financing them. Equipment costs including maintenance, operating costs, and replacement represent the major share, 60%, of total costs. This is followed by "staff and consultants", 20%; allowances for inflation and contingencies, 15%; training, construction, and miscellaneous support cost, 5%.

TABLE 2
Sources and Uses of Funds*
Swaziland RDA Infrastructure Support Project
FY 1978 - FY 1984
(000 US \$)

Use:	USAID		GOS**		TOTAL	
	FX	LC	FX	LC	\$	%
A. Staff and Consultants	4,783.3	-	-	460.7	5,244.0	20%
B. General Services	-	-	-	253.3	253.3	1%
C. Training	480.0	5.0	-	-	485.0	2%
D. Construction	-	435.0	-	-	435.0	2%
E. Commodities	23.0	96.0	-	-	119.0	-
F. Equipment	4,408.0***	-	-	10,839.1	15,247.1	60%
G. Inflation	1,561.4	8.8	-	1,389.5	2,959.7	12%
H. Contingency	740.2	5.8	-	-	746.0	3%
	11,995.9	550.6	-	12,942.6	25,439.1	100%

* Prepared August 1978 in Mbabane.

** Except for equipment replacement allowances, figures exclude inflation and contingencies in accordance with GOS budgetary procedures.

*** Includes procurement agent's fee of 7%.

The "equipment" costs greatly overshadow the other "use" categories in financial terms and distorts their relative significance from an operational standpoint. However, in the latter sense, OSARAC believes that project "sources and uses" are still appropriately allocated.

E. Costing of Project Outputs/Inputs

Table 3 measures project outputs against inputs in terms of costs. Although there are six outputs, these relate basically to three major areas of activity - land use planning, equipment maintenance, and construction. Therefore, the outputs are aggregated as such in Table 3 in order to make the analysis more meaningful. The breakdown shows the bulk of inputs, 69%, for "works construction" with the remaining two outputs about equally divided. This appears to be a reasonable breakdown recognizing the support nature of the planning and maintenance outputs.

Table 3
Costing of Project Outputs/Inputs*
Swaziland RDA Rural Infrastructure Support Project
FY 1978 - FY 1984
(000 US \$)

PROJECT INPUTS	PROJECT OUTPUTS		
	Land Use Planning	Equipment Maintenance	Works Construction
<u>U.S.</u>	<u>3,832.7</u>	<u>2,337.8</u>	<u>6,376.0</u>
Technical Assistance	2,483.3	1,270.0	1,030.0
Training	360.0	65.0	60.0
Construction	200.0	115.0	120.0
Commodities	70.0	36.0	14.0
Equipment	-	423.4	3,732.6
Inflation	659.5	354.5	557.3
Contingency	60.0	73.9	610.1
<u>GOS**</u>	<u>224.8</u>	<u>1,398.0</u>	<u>11,319.8</u>
Equipment Support	-	1,201.9	11,026.7
Wages and Salaries	65.1	161.6	234.0
General Services	159.7	34.5	59.1
<u>TOTAL</u>	<u>4,057.5</u>	<u>3,735.8</u>	<u>17,695.8</u>
Percent	16%	15%	69%

* Prepared August 1978 in Mbabane.

** Except for equipment replacement allowances, excludes inflation and contingencies in accordance with GOS budgeting procedures.

F. GOS/MOA Recurrent Budget Analysis

The 1978/79 expenditure estimates for the MOA total E4.9 million* compared to E4.1 million in 1977/78 and E2.6 million in 1976/77. This amounts to roughly 10.2% of total estimated GOS recurrent expenditures of E 48.0 million. Other major departmental allocations are for Education (21.4%), Defense and Police (15.9%), Work, Power and Communication (10.3%), and Health (9.2%).

* 1 Rand = U.S. \$.85

Within the MOA total, E2.219 million or 45% of expenditures are allocated to "Livestock"; E0.875 million or 18% to "Crops"; E0.452 million or 10% to "Rural Development and Settlement Schemes", and E0.348 million or 7% to "Land Use Planning". Compared to other MOA allocations and donor support notwithstanding, it is obvious that the RDA and Land Use Planning activities are in need of further strengthening and support.

GOS financial requirements for the RDAP over the next five years are estimated by the ODM and IBRD at about E 6.9 million or a yearly average of E 1.4 million. This is for funding support exclusive of the GOS contribution to this specific project. Including provision for an equipment replacement sinking fund as described below, it is estimated that this project activity will increase MOA annual recurrent costs to approximately E2.8 million by FY 1984/85 (E2.6 million per annum for equipment support and replacement; E135 - 140,000 for salaries, wages, and other costs). Thus, including the 1.4 million of other RDAP costs, total annual recurring costs will be of the magnitude of E4.2 million annually.

As significant as these figures may appear, they are not unreasonable in terms of the GOS overall financial position. Recent GOS budgetary performance is indicated in Table 4 below:

Table 4

GOS National Budget
FY 1976/77-FY 1978/79
(000 Emalangeni)

	<u>FY 76/77</u>	<u>FY 77/78</u>	<u>FY 78/79</u>
Recurrent Account			
Revenue	62	78	87
Expenditures	<u>46</u>	<u>51</u>	<u>48</u>
Surplus	16	27	39
Capital Account	22	37	125
(Local)	(17)	(30)	(85)
(Foreign)	(5)	(7)	(40)
Deficit	1	3	46

While recurrent expenditures have remained fairly stable over the past three years, capital expenditures rose sharply by 438% in FY78/79 after increasing 68% the year before. Although recurrent revenues have shown respectable increases over the same period, they have fallen far short of total expenditures resulting in an E 46 million deficit in 1978/79.

To finance this deficit the GOS will depend on foreign savings as well as other domestic resources. Foreign reserves have risen steadily from E56 million in 1976 to E 95 million in 1978, and it is expected that these will be drawn down to fund a large part of the deficit. The remaining balance will be made up from domestic sources.

This recent budgetary performance represents a sharp departure from past conservative fiscal policies. In years past, recurrent account surpluses have been sufficient to finance the capital fund. However, substantial investment capital was required for a number of large projects getting underway this fiscal year, and it is expected that expenditures will follow the more normal pattern in future years.

In view of the basic strength of the Swazi economy and the GOS' demonstrated ability to both generate domestic resources and attract foreign resources for development purposes, OSARAC believes the GOS can absorb the recurrent costs of this project activity without strenuous financial difficulty.

G. GOS Ability to Repay Loan

As the above section suggests, the GOS is in a position to undertake additional debt. GOS external debt totaled E64.6 million in August 1977 and interest and debt repayment reached E3.1 million in 1977. This compares to 1974 debt service payments of E0.1 million and E2.7 million in 1976.

With estimated 1977 export earnings of E157.3 million, Swaziland's 1977 debt service ratio was calculated at only 2.0%. While it is expected that debt servicing requirements will continue to rise as a result of recent foreign borrowings to finance its capital budget, the country still appears to be in a favorable position to absorb more long-term external debt given its current and projected overall financial position.

H. MOA Sinking Fund for Equipment Replacement

A financial matter of particular concern to the MOA and OSARAC is the present arrangement between the GOS Central Transport Office (CTO) and the LDS over the "ownership" and replacement of equipment. The CTO is responsible for all GOS vehicles and heavy equipment and holds title to all such property.

In effect, the various ministries of the GOS "rent" their vehicles and equipment from the CTO. This is achieved by having each ministry pay a petrol charge calculated at a certain rate per litre for each given vehicle or piece of equipment. This rate will amortize the cost of the vehicle over its estimated life time. Also included in the charge is an allowance to cover routine maintenance and repair. The CTO is thus supposed to maintain all such Government property and replace it as it wears out.

During the development of the AID "024" project preceding this one, the MOA recognized that given the CTO's performance at that time, the MOA could not depend on the CTO to maintain the costly earthmoving equipment provided under the 1971 AID loan. Therefore, the GOS and AID agreed to establish the present LDS workshop to perform these services. Now that the LDS performs its own maintenance and repair, the CTO charges it only one half the equipment hire rate. This charge is retained for equipment replacement as necessary.

Unfortunately, though, under past and present operating conditions current rates fall far short of the CTO's ability to accumulate enough reserves for equipment replacement at the end of the five year projected life of the equipment. CTO officials agree that these charges are insufficient and are consequently considering increasing the rates to put the operation on a sounder financial footing. These new rates still appear to be inadequate (e.g. D-8 dozer hire charge to the MOA of $E165.61 \div 2 = E83/\text{day} \times 365 \text{ days} = E150,000$ vs. cost of E 186,000).

Given this arrangement, the MOA and OSARAC are concerned about the CTO's ability to replace equipment at the end of its estimated five-year life. Two alternatives present themselves from the position of the MOA: (1) renegotiate a subsequent loan for equipment or (2) establish a sinking fund to cover the cost of machinery replacement. The second alternative represents current GOS policy, although, as indicated above, charges are inadequate.

The MOA proposes to provide a greater assurance of equipment replacement by establishing a sinking fund for vehicle and equipment replacement within the MOA. Inauguration of this program necessitates a complete severance of all obligations to the CTO, e.g., no use charges would be made by the CTO to the MOA against this equipment. Title to the vehicles and equipment would be transferred to the MOA concurrently.

The MOA would continue to be responsible for maintenance and repairs via the LDS Workshop and would also become responsible for ensuring vehicle and equipment replacement by depositing monies into a sinking fund account. Given a projected five year vehicle and equipment life, the MOA would deposit a minimum of 20% of the capital cost of the machinery and equipment into this fund on an annual basis. This fund would take the form of a trust account until the CTO is capable of effectively assuming responsibility for maintenance of this equipment. At that time, consideration would be given to having this trust account and accumulated funds transferred to the CTO.

While this is the preferred approach to assuring the MOA's ability to replace this equipment given the CTO's current financial position, two alternatives may be considered:

- 1) continue payment to the CTO as in the past at their current hire charges. At the time of replacement supplemental funds will have to be secured from MOA/GOS financial resources - or outside agencies;
- 2) continue payment to the CTO as in the past at their current hire charges. However, the MOA would supplement these charges by the calculated shortfall to insure sufficient funds within the CTO and the MOA accounts at the time of machinery and equipment replacement. As above, if and when the CTO is capable of taking over the equipment maintenance and repair, this supplemental fund could be transferred to the CTO.

The MOA believes that alternative one does not provide the assurance of monies being available as needed for machinery and equipment replacement. While alternative two provides sufficient funds via the CTO and MOA accounts, this procedure does not provide the internal control necessary for greatest assurance of an MOA/GOS ability to replace the vehicles and equipment. A complete separation from the CTO places the responsibility of vehicles replacement within the MOA.

OSARAC has discussed the above proposal with CTO management, and the latter found no problem with this arrangement. At this time, the Permanent Secretary of the MOA is negotiating with the Ministry of Finance and Planning to transfer the account. It should be noted that whether the transfer is effected or not the cost of vehicles and equipment maintenance and replacement remains the same. However, it is obviously in the MOA's best interest to transfer the amortization account to its control.

VI. Implementation Plan

A. Implementation Schedule

An approximate time schedule of actions and events to be implemented during the course of the project is presented as Annex IV. Indication is also made of the organization(s) primarily responsible for each action.

B. Project Phasing

Outlined below is a description of the project in terms of its four major phases - preparation, start-up, intermediate, and final. A more specific schedule of implementation events is presented in Annex IV. While actions planned over a 5-6 year period can hardly be expected to always occur as scheduled, the following description nevertheless offers a general and reasonably plausible overview of how the project will be carried out.

1. Phase I (September 1978 - August 1979)

The "preparation" phase will be the time period between the signing of the Project Agreement and the arrival of the Land Planning Officer/Team Leader. It will mainly be one of "setting the stage" for the project team's arrival as well as initiating timely actions vital to project success. Activities will in large measure

be those of the GOS and the USAID/Swaziland (USAID/S) Project Officer, including:

- Completion of construction of technician housing and the LDS Workshop parts warehouse;
- Establishment of recurrent budget;
- Selection of participant trainees and counterparts for the LUSP and LDS;
- Allocation of office space and acquisition of office furnishings;
- Approval and award of contracts for equipment, technical services, and workshop management;

The following actions, in addition to providing funds for the construction mentioned above, will be accomplished by AID and the Land Planning Officer/ Team Leader:

- Initial acquisition of commodities designated for local procurement;
- Processing of initial participant trainees;
- Preparation of work plan for Phase II;
- Preparation for remaining team members' arrival.

2. Phase II (September 1979 - August 1980)

This is the "Start-Up" phase commencing with the arrival of the technical teams and concluding with the project's first in-depth evaluation. Activities during this phase will focus on 1) the review and implementation of improved operating procedures in the LUPS, LDS, and LDS workshop, and 2) the establishment and strengthening of coordination with other units engaged in land planning and land development related activities. Coordination will be improved within both the modern and traditional planning structures, with the RDA Management Unit, and among units within and outside the MOA. In particular, coordination will be strengthened with units in the field where project technicians will be spending considerable time insuring that land use planning and development activities are performed in accordance with actual conditions.

The LUPS planning, design, and management procedures will be revised and instituted as the availability of personnel resources permits. Work will begin on 1) the review and preparation of comprehensive RDA land use plans, and 2) the preparation of a long-term works rehabilitation program. Surveyor training will be completed, and the need for consultants to undertake other training and perform special assignments will have been identified.

With the arrival of the equipment, the LDS will begin intensifying construction activities in the RDAs. Prior to its arrival, field training of heavy equipment operators will have begun. And, of major importance, management reports and records systems in the LDS and the workshop will be reviewed and revised as necessary to insure an optimal use of resources.

A most important event during this phase will be the departure of the participant trainees for training. It is imperative that the long-term trainees for the engineering, resource economics, and range ecology programs enter training by September 1979. Otherwise, there will be insufficient overlap for the advisory/understudy experience which is necessary and critical to project success. Participant trainees for management positions in the LDS workshop will also be selected and processed for two-year training assignments scheduled to begin in September 1980.

Where Swazi counterparts already exist, on-the-job training will commence immediately. This should be possible both in the LUPS and the LDS workshop. The GOS and project team will also be engaged in the following activities:

- Collection and analysis of baseline data to measure impact and effectiveness of the RDA program and of the project;

- Identification and procurement of project commodities;
- Establishment of a sinking fund to provide for the replacement of the equipment;
- Completion of work plan for Phase III.

Phase II will conclude with a major in-depth external evaluation to review project success towards producing outputs and achieving project purpose(s). The project design will be re-evaluated in view of current and projected conditions and revised as the latter may dictate†

3. Phase III (September 1980 - August 1983)

This "intermediate" Phase will be one of intensive work and refinement of the operating procedures established in Phase II. The planning process will be functioning smoothly, and the construction of infrastructure works should be proceeding on schedule.

The LUPS and LDS will continue to prepare and implement RDA land use plans, and preparation of the works rehabilitation program will be completed. Equipment downtime* will be kept to 10% as a result of improved workshop management developed in Phase II.

Training of heavy equipment operators will be completed by the U.S. technician but will be continuing as necessary under the direction of Swazi operator/trainers. In the workshop, the two-year trainees will have returned and will be assigned to understudy positions.

Mid-way through this phase, a second in-depth external evaluation will be performed to measure progress, re-examine project design, and make recommendations towards achieving successful completion of the project by August 1984.

Other activities by the GOS, AID, and the technical teams will include:

- Collection and analysis of economic and social data;
- Use of consultants as needed;
- Preparation of work plan for Phase IV.
- Establishment of government service posts for Land Planning Officer, Resource Economist, and Range Ecologist.

4. Phase IV (September 1983 - August 1984)

This "final" phase will be the period when the Swazi counterparts in all units assume their established posts and direct the activities in their respective units.

Upon their return from training, Swazis trained in the engineering, resource economics, and range ecology programs will initially assume understudy positions to their U.S. counterparts. After six months, the Swazi trainees will become fully responsible in their positions and the U.S. technicians will assume advisory roles. In this capacity, the project team will work intensively to adapt and employ their counterparts' training and abilities to meet the requirements of their positions.

By August 1984, the infrastructure works planned in Phase II will be installed, and land planning and development activities will be efficiently and effectively performed by Swazi personnel.

Prior to termination of the project, the GOS and project team will assess the impact of the project and RDA program in terms of the baseline data established in Phase I. A project completion evaluation will also be performed to determine its efficiency, effectiveness, and impact.

* This represents time that equipment is mechanically disabled, i.e., "deadlined".

C. AID Project Monitoring

AID monitoring responsibilities will be discharged through the preparation of a life of project work plan and work plans for each phase of the project, an annual Project Appraisal Report (PAR), and three external evaluations. Work plans will be developed jointly by the MOA, contractor, and AID staff. AID management responsibility and day-to-day monitoring and technical backstopping will be provided by the Agricultural Development Officer (ADO) USAID/S.

The Agriculture Development Officer, USAID/S, or an appointed project manager will serve as the primary contact point for the contract Chief of Party and will be responsible for identifying problems and obtaining necessary decisions on contract and project matters. It is expected that USAID/S administrative and technical staff will continue their present close liaison with the GOS and its MOA which involves frequent working meetings with the Permanent Secretary, the RDA Management Unit, and division chiefs.

Upon signature of the Project Agreement prepared by USAID/S, steps will be taken to initiate required construction contracts and services and to begin the selection and training of participants. Necessary project implementation orders (PIOs) will be prepared by USAID/S.

AID will disburse funds for local costs on a reimbursable basis following procedures to be defined in the project agreements. Funds for construction will be disbursed on a fixed amount reimbursement basis. If advances are necessary, procedures will be spelled out in the Project Agreement.

D. Inter-donor Coordination

As this proposed project is an integral part of a multi-donor program, the USAID/S Mission Director and USAID/S project manager will maintain close contact with local donor representatives and the RDA Management Unit to keep abreast of other donor activities. Furthermore, in accordance with the provision of the IBRD Loan Agreement Section 3.05, the GOS will submit to the Bank each year for its review and concurrence a draft annual work program by August 31 for the fiscal year beginning the following April 1. At the time this work program is submitted, USAID/S and other donors will meet to review the proposed program, to share comments and make recommendations regarding future RDAP implementation. OSARAC and the PP team Design Officer participated in this year's review as observers. At any such time that USAID/S determines that more frequent donor meetings are needed, it will make such requests through the RDA Management Unit.

E. Key GOS Implementation Responsibilities

In general, it is AID and recipient country policy that implementation be primarily a host country responsibility while AID plays a supporting and monitoring role such as described above. This is the preferred approach in recognition of the desire to institutionalize the implementation capability within the host country to continue project activities after donor assistance ends. With respect to this project, this policy is largely adhered to with the exception of AID direct procurement of the equipment package (see following section VI.E. 1).

While numerous important GOS implementation actions are noted above and in Annex IV, those viewed as being particularly critical to project success are highlighted below.

1. Establishment of Recurrent Budgets

To meet the recurrent costs projected in Annex VII (E), timely provision of

these funds is required to permit smooth project implementation. Estimated annual recurrent costs will be budgeted yearly in accordance with standard GOS budgetary procedures. These estimates should be reviewed each year to avoid over-funding or under-funding problems.

2. Transfer of Equipment Sinking Fund

As discussed in section V.H., it is in the best interests of the MOA to transfer the LDS equipment amortization fund from the CTO to a trust fund account of the MOA. This should be done as soon as possible to insure adequate replacement of present equipment as well as that to be provided under this loan. As regards amortization of the new equipment, in particular, the fund should be transferred by April 1980.

3. Selection of Participant Trainees

Recognizing the major objective of this project and the GOS to strengthen and localize technical positions in the LUPS and LDS, it is crucial that participant trainees for these posts depart for training by September 1979. Otherwise, there will be insufficient time for on-the-job training, and the project's success will be seriously impaired. To allow for adequate time to process trainees for university admission, it is necessary that trainees be selected by January 1979.

4. Establishment of Posts

Three new posts in the LUPS and LDS must be established and budgeted for prior to the participant trainees' return in July or August 1983. In addition, a fourth post must be upgraded in the LDS Workshop by August 1979. These posts are identified in the following table as are the positions requiring trainees.

Positions For Which Swazis Are To Be Trained*
And Posts Which Need To Be Established

<u>AID TECHNICIANS</u>	<u>STATUS OF POST</u>
Land Use Planning Section:	
1. <u>Land Planning Officer</u> (Team Leader)	Not Applicable
2. <u>Land Planning Officer</u> (AID Incumbent)	Soil Conservation Engineer
3. <u>Land Planning Officer</u>	Irrigation Engineer (Swazi Incumbent)
4. <u>Land Planning Officer</u>	<u>To be established</u>
5. <u>Resource Economist</u>	<u>To be established</u>
6. <u>Range Ecologist</u>	<u>To be established</u>
Land Development Section:	
7. <u>Construction Engineer</u>	Earth Moving Transport** and Maintenance Officer
8. <u>Construction Engineer</u>	Land Planning Officer **
9. <u>Equipment Operation Advisor</u>	No Post needed (Temporary training role)
LDS Workshop:	
10. Workshop Manager/Advisor	Workshop Manager

AID TECHNICIAN

STATUS OF POST

11. Workshop Foreman

Workshop Foreman

12. Heavy Plant Mechanic

Heavy Plant Mechanic

13. Assistant Accountant

Assistant Accountant***

* Jobs underlined under column "AID TECHNICIANS" require Swazi trainees.

** These 2 posts are currently vacant. They should be modified to the title of Construction Engineer utilizing the job description for comparable positions appearing in Annex XIII.

*** This post is currently vacant. It is recommended that it be upgraded to the post of "Accountant" and that the job responsibilities be expanded to include the establishment and maintenance of all workshop financial record systems.

F. Contracts and Procurement

1. Heavy Equipment Procurement

All equipment, machinery, and tools listed in Annex XII, except those being requested through a waiver (see Annex XIV), are expected to be of U.S. source and origin. AID standard policies with regard to excess property will be followed.

Both an AID direct contract and a host country contract will be let for the equipment; the direct contract for the non-waived equipment, a host country contract for the comparatively smaller package of waived equipment.

In the past, Swaziland has administered procurement of AID-financed project goods and services for relatively small contracts but lacks the administrative capability to handle procurement for the full size and magnitude of this package. Therefore, except for the equipment procured through the waiver, AID/W will be responsible for the procurement of all non-waived equipment and all technical assistance services. It is expected that AID direct contracting will be with the Afro-American Procurement Center (AAPC). For the waived equipment, a host country contract will be let with a Southern African firm using standard GOS procurement procedures. U.S. procurement and contract specialists will be provided by REDSO/EA and/or AID/W to assist in local procurement.

2. LDS Workshop Technical Assistance Team

Local firms were appraised for their ability to provide management assistance to the workshop and it was determined that they were not capable of providing the required services. Therefore, the decision was made to contract with a U.S. firm rather than risk the time and money invested in the workshop on an inexperienced local firm.

To provide the LDS Workshop TA team it is recommended that a direct AID contract be signed with a professional organization (such as the International Union of Operating Engineers) or a private maintenance firm (such as Morris-Knudson, Vinnell or Philco-Ford). Also, any internationally experienced heavy equipment maintenance or manufacturing firm may be able to provide this assistance.

3. Other Technical Assistance

All non-LDS Workshop technical assistance will be provided by a U.S. private contractor or consultant firm through a direct AID contract. Selection criteria for these technicians are included in Annex XIII "Job Descriptions".

4. Construction

Construction will consist of ten (10) additional houses needed for the technical assistance team and a basic parts warehouse for the LDS Workshop. Construction of the LDS Workshop parts warehouse will be done by force account. Housing will be built by private firms under contract to the GOS (see Annex XIV for a justification to allow use of Code 935 firms for the construction of project housing).

VII. Evaluation Arrangements

Evaluation is an on-going, critical component of this project. Continuous internal evaluations, annual evaluations, and three external evaluations are scheduled to insure that project objectives and commitments are met.

A. Internal Evaluations

Internal evaluations are "in-house" efforts on the part of the project and MOA staff to insure that project activities are being directed toward the achievement of project outputs and purpose(s). The form and scheduling of such reviews will be left to the discretion of project management. The intent of these evaluations is to emphasize the need to examine progress on a continuing basis to insure project effectiveness.

B. Annual Evaluations

AID project Appraisal Report (PAR's) will be prepared annually to examine progress toward achieving project objectives and the performance of the involved parties in meeting project commitments and requirements. Problems identified will be met with corrective actions as appropriate. These evaluations will be performed by USAID/S in accordance with standard AID procedures.

C. External Evaluation

Three external, in-depth evaluations are scheduled, one at the end of Phase II, a second one mid-way through Phase III, and a third one at the end of the project. The first two evaluations will: 1) determine progress towards achieving project outputs and purpose; 2) insure that data is being collected to permit measurement of progress; and 3) make recommendations to further assure that project objectives are realistic and can be accomplished. The final evaluation will be carried out after the project ends to determine its efficiency, effectiveness, and impact.

These evaluations will be undertaken with the assistance of AID-funded experts and done with the involvement and cooperation of the MOA. The use of outside personnel will add a degree of objectivity. Scopes of work for these evaluations will be prepared by AID and the MOA. Team personnel selected will receive the concurrence of both AID/S and the MOA and may include AID staff from AID/W, REDSO/EA, and /or USAID/S if appropriate.

D. Data Collection and Analysis

To measure RDAP impact and project progress and to facilitate implementation of the evaluation plan outlined above, the resource economist will be primarily responsible for collecting and analyzing target indicator data included in the project design (see Annex III logical Framework Matrix). This analysis will focus primarily on the 13,850 homesteads in the 10 intensive RDAs where project activities will be concentrated.

As discussed in Annex XVIX "Data Collection and Analysis", much data and information of this nature is already being collected and analyzed by the MOA's Economic Research and Planning Unit and the RDAP Monitoring and Evaluation Unit in particular. AID is also supporting a UN-sponsored economic research survey to develop more reliable socio-economic data on rural families living on Swazi Nation Land.

Working in close collaboration with the above units, the resource economist will establish initial project baseline data by March 1980 and update the analysis on an annual basis. By June 1984, a final analysis will be completed to assess RDA and project impact on the target group.

VIII. Conditions, Covenants and Negotiating Status

The Project Agreement will contain, in substance, the following conditions, covenants and understandings:

A. Prior to the disbursement, or to the issuance by AID of documentation pursuant to which disbursement will be made, for the purpose of financing construction of staff housing and the spare parts and equipment warehouse, the Borrower/Grantee will furnish to AID, (a) final plans and specifications for the construction of the warehouse in form and substance satisfactory to AID, (b) where appropriate, contracts with firms acceptable to AID, and (c) evidence that adequate sites have been identified and provided for the construction of staff housing. This condition precedent may be satisfied separately for the staff housing and the spare parts and equipment warehouse.

B. The Parties, recognizing the importance to the Project of maintaining an efficiently organized, managed, and operated Land Development Section Workshop, agree to consult at such times as either party may request to examine the operations of the Workshop and to recommend ways by which any deficiencies, either in personnel or procedures, may be corrected.

C. The Parties agree that the Land Use Plan, the formulation of which is being assisted by this project, will be sufficient to demonstrate that the activities identified in such plans adequately address certain environmental criteria which will be developed by the Borrower/Grantee, A.I.D., and the Land Use Plan technical assistance personnel. Criteria, developed within six months from the arrival of the technical assistance team, will be included in a subsequent Project Implementation Letter.

D. The Borrower/Grantee will covenant that it will identify and select qualified candidates for participant training on a timely basis. Candidates for the civil engineering, resource economics and range ecology programs will be selected no later than January 31, 1979, and for programs in heavy plant mechanics and parts supply management by January 31, 1980, or such other dates as A.I.D. may agree to in writing. The Borrower/Grantee will also covenant that those persons receiving long-term training under the Project will be placed, upon successful completion of their training and unless otherwise mutually agreed by both parties, in specified positions for which training was provided within the Land Use Planning Section or the Land Development Section. The Borrower/Grantee will also covenant to provide on a timely basis such other counterpart personnel required for the project as these are identified in the Amplified Project Description to the Project Agreement or Project Implementation Letters.

E. The Borrower/Grantee will covenant to establish, prior to the return to Swaziland of the long-term participant trainees (in approximately July or August 1983), positions for a Land Planning Officer, Resource Economist and Range Ecologist within the Land Use Planning Section.

F. The Borrower/Grantee will covenant to take steps to transfer responsibility for control and operation of its equipment sinking fund to the Ministry of Agriculture, establish a separate sinking fund within the Ministry of Agriculture, or take such other measures as would be acceptable to the Parties to assist in the orderly replacement of Project Equipment. Within one year from the date the Project Agreement is executed, or such other date as the Parties may agree to in writing, the Borrower/Grantee will submit to A.I.D. a plan describing, generally, the mechanism established to assist in the replacement of Project Equipment.

G. The Borrower/Grantee will covenant to establish and staff a post for a conservation works maintenance officer and/or establish a maintenance committee, or take such other steps as may agree to the Parties so as to assure that (a) the status of maintenance of infrastructure works in each RDA is regularly and periodically reviewed, and (b) recommendations for the rehabilitation of these works are formulated and work plans for maintenance efforts are prepared.

ANNEX I

SWAZILAND



GOVERNMENT

Ministry of Finance & Economic Planning,

P. O. Box 602,

MBABANE

19th April, 1976.

Our ref: MB/P11.13(111)/70

The Regional Development Officer,
P. O. Box 199,
MBABANE

DEAR SIR,

REQUEST FOR LAND DEVELOPMENT MACHINERY AND
SUPPORTING TECHNICAL ASSISTANCE

I enclose a list of Machinery and Technical Assistance requirements of the Ministry of Agriculture for Land Development Division. The request is for AID assistance in purchasing the new machinery and the provision of additional technical assistance to operate the equipment.

The machinery component includes that at present coded into the Rural Development Project, as well as the additional requirements for the existing R.D.A.s. This request is fundamental to the overall RDA programme.

The request is for:

- (a) The extension of the existing A.I.D. project to include technical assistance in the form of
 1. Land Development Officer
 2. Construction Engineer
 3. Transport and maintenance officer.
- (b) Additional Technical Assistance
 1. Workshop Manager. One who has the capability and willingness to train a Swazi counterpart.
 2. Heavy duty master mechanic
 3. Light duty master mechanic
 4. Heavy duty machine foreman
 5. Heavy duty equipment operator
 6. Civil Engineer.

It is requested that the six (6) additional technical assistance personnel being requested should form an integral part of the request for additional equipment and be therefore separate from the three AID positions available to Swaziland.

The master mechanics would give on the job training to workshop personnel as they actually worked on machines brought into the shop. They would also include some classroom work in a well planned structured training programme.

The heavy duty machine shop foreman would do the same as described

BEST AVAILABLE COPY

for master mechanics and would be in charge of both the heavy duty and light duty machine shops.

The heavy equipment operator would give on the site training to new men and also to the old hands in the techniques of earth moving machines.

The civil Engineer would assist the construction engineer and at the same cost amounts and performing cost analyses.

(c) Additional workshop facilities:

1. A heavy duty machine shop and adjoining battery room to be constructed and equipped.
2. Present machine shop to be equipped with additional machinery.

(d) Land Development machinery and equipment. A tabulated list of equipment is attached.

(e) Project design mission to write-up the project.

Yours sincerely,



E. RHEMBE
FOR PERMANENT SECRETARY.

HEAVY FARM MOVING EQUIPMENT REQUEST

The request for equipment for the Land Development Section of the Ministry of Agriculture, Swaziland Government, can be divided into two main sections:

Section 1. New types of equipment not now available

Section 1. Additional equipment.

Section 1

D-8 Cats. These heavy duty cats will be used in road construction to build access roads as part of the infrastructure needed to develop Swazi Nation Land to prepare the areas for settlement and intensive use.

Another major area where it is planned to use D-8's is in clearing land for the livestock section to improve grazing. A 13-ton ships anchor, modified with railroad rail sections welded to each link, is pulled parallel by having a heavy cat on each end. It has been found that D-7's are too light for this work in many cases and hence the need for D-8's to do a proper job. Several thousand acres of this type of clearing is planned by the Land Development Section in cooperation with the livestock division of the Ministry of Agriculture.

Back hoe (on wheels). A small mobile backhoe is needed for placing road culverts and for a multitude of other trenching jobs. Irrigation structures such as siphons, chutes etc, can be effectively and efficiently done with a small backhoe.

Land Plane: The majority of small farm irrigation schemes are watered by furrows type irrigation. All of these schemes need to have considerable land levelling done in order to properly irrigate the land.

Yard Crane: The heavy plant workshop of the Ministry of Agriculture needs a crane to do the multitude of different jobs for which a crane is designed. In addition, the workshop maintains an outdoor storage yard for building materials such as corrugated metal pipe, reinforced concrete pipe, structural steel etc. A yard crane is needed for correct

loading and unloading of these kinds of materials.

Tow Truck: The heavy earth moving equipment of the Ministry of Agriculture is deployed in five (5) construction camps at the moment in different locations in Swaziland. It is anticipated that two more such camps and a mobile maintenance unit will be established. A tow truck with a hoist can effectively be used by mechanics to bring in motors, parts etc, instead of sending lowbed to bring in the entire machine. This type of vehicle is also needed for towing vehicles in the transport fleet of the Land Development Section that need that kind of service.

Survey Panel Truck: Two mobile survey parties will be trained to serve the units. Two survey panel trucks are needed to transport the survey parties and their specialized equipment.

High Pressure Water Cleaner: This piece of equipment is needed at our heavy plant workshop to clean off equipment that has come from the field and is in need of major repairs.

Farm Tractor: This tractor is urgently needed for the preparation of grassed waterways, borrow areas and other critical areas that must be seeded. Vegetative control is highly important but cannot be effectively and efficiently done without the aid of a tractor and implements to prepare the seedbed, spread fertilizer, seed, mulch, etc.

Earth Core Drilling Machine: A drill rig is needed to properly investigate dam sites to determine the feasibility of the site and to identify the underlying strata for construction plans.

Portable Rock Crusher: A portable rock crusher is needed to enable the section to stock pile aggregate near the job site. At the present time crushed stone must be hauled long distances which is an expensive and inefficient operation.

Culvert Forms: are needed so that culverts can be made near the job site so as to eliminate long hauls.

Fork Lift: A fork lift is needed in the heavy equipment workshop to move parts and to handle construction materials.

Section 2

Motor Graders: To beef up our present fleet and in anticipation of two more active units we are requesting ten (10) new motor graders (caterpillar). These machines are used in road building, road maintenance, terrace construction, diversion construction building irrigation canals, levelling earth fill material for earth fill dams, maintaining haul roads for self-propelled scrapers bringing in fill on a job, building site levelling and other types of work.

D-7 Bulldozer (cats): These dozers are workhorses of our present fleet. We again need additional ones to supply a minimum of two for each of the two new units and two additional ones to beef up the present fleet. These dozers are used in road construction and all types of earth moving. A new use that we anticipate using them for is building push up until now has been done with road graders. Road graders are of no use in building pushup terraces except to help the dozers in stockpiling the topsoil, levelling the topsoil after construction and in smoothing up the newly constructed terrace foreslope and channel. By constructing this type of terrace on the steeper land (over 8%) we can build more terraces and thereby protect more land and prepare more land for resettlement and intensive use.

D-6 Bulldozers (cats): We need a D-6 cat in each unit. At the moment we have only two D-6's. These cats are the ones that do the majority of land forming or bench terracing for rice paddies. We anticipated an increase in this type of practice and need the D-6's for this work. The D-6 of course, is versatile and can also be used on pushup terracing, road building and other types of heavy construction.

D-4 dozers (cats): The D-4 is needed for small structures, pipe lines finish work on earth fill dams, etc. D-4's are also invaluable for maintenance work, repair of soil and water conservation practices and work that requires only a small amount of earth moving. They are light and can be easily transported for maintenance work.

-4-

Dragline: A dragline is needed for cutting cores for earth fill dams, and for ditching for major drainage project. The present dragline which we have is obsolete and not dependable.

Self-propelled earth movers (cats): In anticipation of expanded work we will need two more machines as described for road construction, water way construction for terrace outlets, and for earth fill dams.

Pushers 224: With two pushers we can divide our fleet of self-propelled earth movers and have two such projects going at the same time in Swaziland. At the moment we can only operate in one location as we only have one pusher that can do the job. If our one pusher is down for repairs the work is jeopardized as the large earth movers have to stop.

Lowloader and trailer: Another lowloader is needed for the expanded fleet of heavy plant. We also need it so the work does not stop or is held up when the one we have is down for repairs.

Compressor: An additional compressor is needed in anticipation of the expanded workload.

Vibrator roller (trailer type): This machine is needed for compacting earth fill dams; also needed to compact earth fills for gully control structures and for road bed stabilization after grader work has been completed.

Water trucks: are needed to provide water for mixing concrete, to add to earth fill material to get correct moisture content for compaction and for road building. Each construction unit should be equipped with a water truck.

Trucks, Lubrication Units: Our equipment must be fueled and serviced in widely scattered places. This necessitates mobile lubrication units or trucks for service and maintenance. Each unit requires a service truck.

Tractor Loaders: Front end loaders are needed to handle construction materials and supplies.

Trucks. Flat Bed 7.7 ton: Flat bed trucks are needed to transport construction supplies, light equipment, personnel, etc. Trucks are an integral and vital part of any construction outfit, and must be available to supplement and expedite the work of the heavy plant equipment.

Trucks. Tipper: Each construction unit and the workshop needs a tipper to expedite construction materials. The unit at the moment has two dependable tippers, three to be replaced, and three new ones added to provide for the new units.

Light truck, two-wheel drive: This truck is needed to chase spare parts for the workshop, and to do other related work mostly in the vicinity of Manzini and Mbabane.

Light trucks, four-wheel drive: These vehicles are needed to transport the staff working for the land development section. Without adequate transport for the staff to direct and supervise the work of the section, the work of land development in Swaziland will not progress.

Caravans: are needed to house the staff in the field. All caravans presently in use are obsolete. Additional new caravans are needed for housing men already working at anticipated new employees.

Water trailers: Two water trailer are needed per construction camp to provide potable water and also provide water for mixing concrete in remote areas.

Department of State

OUTGOING
TELEGRAMPAGE 01 OF 02 STATE #45883
ORIGIN #18-31

2134

STATE #45883

INFO OCT-81 AF-88 EB-88 IGA-82 /858 R

APPROVED BY AFR/DR/ESAP: J. WITHERS

AFR/DR/ESAP: SCOLE

AFR/DR: H. JOHNSON

AFR/DR/SDP: DOBILLE

AFR/ESA: LOURSO

AFR/DP: E. GONCHUE/R. FRIEDLINE

SER/ENGR: DO'R JORDAN

GC/AFR: THORN

PPC/DPRE: PHATHESON

DESIRED DISTRIBUTION

AG ACTION AFR CHRON 1 2 3 4 INFO AATA IDC PPC CC GCFLD CCAF ENGR TA

0

31P

-----#21651 114926 /44

E.O. #12812-1

FM SECSTATE WASHDC

TO AMEMBASSY USABANE PRIORITY

INFO AMEMBASSY GADDFONE

AMEMBASSY NAIROBI

UNCLAS STATE #45883

AIDAC, NAIROBI PASS PEDSO INFO

E.O. 11652: N/A

TAGS:

SUBJECT: SWAZILAND RURAL DEVELOPMENT AREA SUPPORT PRP

REFERENCE: (A) USABANE #52, (B) USABANE 292

1. AFR ECPR REVIEWED AND APPROVED SUBJECT PRP ON 2/1/77. BELOW IS SUMMARY ECPR DECISIONS FOLLOWED BY DISCUSSION OF TIMING FOR UNDERTAKING PRE-PROJECT ACTIVITIES.

--- (A) ECPR APPROVED REQUEST FOR PRE-PROJECT ACTIVITIES WHICH CONSIDERED ESSENTIAL TO ENSURE MORE SUCCESSFUL FOLLOW-ON PROJECT. PRE-PROJECT (FY 1977) ACTIVITIES TO CONSTITUTE PHASE I OF FOLLOW-ON AID ASSISTANCE TO RDAP ARE IN AREAS OF: (1) MANAGEMENT OF LAND PLANNING (APPROXIMATELY 3 PERSON-MONTHS TA OF SOILS SCIENTIST); (2) MANAGEMENT OF EQUIPMENT WCR SHOT (APPROXIMATELY 3 PERSON-MONTHS TA OF SHOP MAINTENANCE ADVISORS); AND (3) ASSESSMENT OF MANPOWER REQUIREMENTS (APPROXIMATELY 1.5 PERSON-MONTH EACH FOR THREE TRAINING ADVISORS). IN ADDITION, ECPR RECOMMENDED THAT PROPOSED STUDY OF COST-EFFECTIVENESS OF LAND CONSERVATION MEASURES BE INCLUDED IN PHASE I. THIS STUDY IN PARTICULAR SEEN AS NECESSARY ELEMENT IN DETERMINING CONSERVATION TECHNOLOGIES TO BE APPLIED AND EQUIPMENT AND TA TO BE SUPPLIED UNDER

FOLLOW-ON AID ASSISTANCE. PHASE I WILL BE FUNDED BY FY 1977 GRANT PROJECT. UPON RECEIPT OSARAC AND GOS CONCURRENCE THIS APPROACH, AID/W WILL PREPARE SHORT PP (BASED ON PRP) AND CONGRESSIONAL NOTIFICATION TO OBTAIN NECESSARY FUNDS. REQUEST OSARA/REDSO PROVIDE DETAILED SCM, MANPOWER REQUIREMENTS AND ESTIMATED FUNDING REQUIREMENT FOR PHASE I SOONEST.

--- (B) ECPR APPROVED PROJECT COMMITTEE'S RECOMMENDATION THAT ENVIRONMENTAL ASSESSMENT (EA) BE PREPARED THIS PROJECT PRIOR TO PROCEEDING WITH FINAL DESIGN FOR FY 1978 GRANT/LOAN PROJECT. THIS EA WILL BE FUNDED WITH FY 1977 PDS PROJECT FUNDS AND WILL BE PREPARED BY SER/ENGR IOC CONTRACTOR. AID/W PRESENTLY CIRCULATING PRP TO OTHER CONCERNED U.S.G. AGENCIES TO SOLICIT INPUTS FOR SCOPE OF WORK. IN PARTICULAR ECPR NOTED THAT IEE DID NOT ADDRESS HEALTH PROBLEMS RELATED TO EXPANDED RDAP ACTIVITIES, E.G., SCHISTOSOMIASIS ASSOCIATED WITH IRRIGATION ACTIVITIES. AFR/DR/HN PRESENTLY

ORGANIZING TEAM TO PREPARE HEALTH RELATED ENVIRONMENTAL ASSESSMENT IN SWAZILAND. ECPR RECOMMENDS THAT RESULTS OF THIS STUDY BE REVIEWED BY EA TEAM FOR SUBJECT TO ENSURE HEALTH RELATED ENVIRONMENTAL PROBLEMS ADEQUATELY ADDRESSED IN CONTEXT OF RDAP.

--- (C) ECPR CONCURS IN NEED FOR DIRECT-HIRE, AID P. MANAGER. IN VIEW CLOSE LIAISONS BETWEEN SUBJECT PROJECT AND FY 1976 SWAZILAND COOPERATIVES AND MARKETING PROJECT (EPR-2055), ECPR RECOMMENDS PROJECT MANAGER RESPONSIBILITIES BE EXPANDED TO INCLUDE MANAGEMENT COOPS PROJECT AS WELL.

ALSO IN VIEW NEED TO ESTABLISH CLOSE WORKING RELATIONSHIP WITH GOS AND OTHER DONOR COUNTERPARTS, ECPR RECOMMENDS OSARAC EXPLORE POSSIBILITIES FOR THIS FULL-TIME, DIRECT-HIRE AID P. PROJECT MANAGER TO BE PHYSICALLY LOCATED IN GOS. MOA

2. PROPOSED TIME-FRAME FOR UNDERTAKING ABOVE ACTIVITIES AS FOLLOWS:

--- 2/18/77 - 2/24/77: AID/W PREPARED PP FOR PHASE I PROJECT; OSARAC/GOS CONCURS; OSARAC/REDSO SUBMIT DOW, MANPOWER AND FUNDING REQUIREMENTS.

--- 3/18/77: AID/W PREPARES AND SUBMITS CONGRESSIONAL NOTIFICATION.

--- 2/13/77 - 3/18/77: AID/W CIRCULATE PRP TO APPROPRIATE UGS AGENCIES; PREPARE SOW FOR EA, SELECT SER/ENGR IOC CONTRACTOR TEAM.

--- 3/30/77: AID/W AUTHORIZES PHASE I PROJECT.

--- 4/05/77: OSARAC/GOS SIGN PRO/AG AND P10/T'S, EA CONTRACT SIGNED.

--- 4/28/77: THE CONTRACTS SIGNED FOR EA TEAM, TOY COST EFFECTIVENESS STUDY TEAM AND LAND PLANNING WORKSHOP MAINTENANCE TA.

--- 5/07/77: TEAMS ARRIVE USABANE.

--- 10/01/77: PP DESIGN TEAM ARRIVES USABANE.

--- 12/01/77: SUBMIT PP AID/W.

3. IN PREPARING FINAL DESIGN ANALYSIS AID/W SUGGESTS PP TEAM ADDRESS THE FOLLOWING POINTS RAISED DURING THE AID/W REVIEWS:

--- (A) INCLUDE A FULL ANALYSIS AND JUSTIFICATION OF ANY PROCUREMENT SOURCE ORIGIN WAIVERS REQUESTED; WITH RESPECT TO PARA 5 ANNEX A, AID/W ADVISES THAT RHD VEHICLES - EXCEPT 4 X 4 VAN TRUCKS - CAN BE FOUND AND DELIVERED WITH 6-8 MONTHS - E.G., I.N. ACCORDING FHD JUSTIFICATION INADEQUATE TO SUPPORT SOURCE WAIVER THESE ITEMS).

--- (B) CLEARLY DEMONSTRATE HOW THE AID PROJECT FITS INTO THE OVERALL RDAP SCHEME AND HOW THE AID TECHNICIANS AND CAPITAL INPUTS WILL RELATE TO OTHER DONOR ACTIVITIES. THIS SHOULD INCLUDE A DISCUSSION OF THE TIMELINES OF AID INFRASTRUCTURAL SUPPORT VIS A VIS THE PRODUCTION-ORIENTED ACTIVITIES OF OTHER DONORS AND THE TRAINING OF FARMERS AND RANCHERS TO EFFECTIVELY UTILIZE RDAP INPUTS;

--- (C) EXPLICITLY DISCUSS THE PROCESS BY WHICH ROADS, IRRIGATION FACILITIES AND LAND PROTECTION STRUCTURES ARE SELECTED; ENGINEERING DESIGN STANDARDS FOR THESE STRUCTURES; AND THE MANNER IN WHICH PROJECT BENEFICIARIES WILL PARTICIPATE IN SELECTION, CONSTRUCTION, AND MAINTENANCE OF THESE STRUCTURES;

UNCLASSIFIED

BEST AVAILABLE COPY

UNCLASSIFIED
Department of State

OUTGOING
TELEGRAM

PAGE 02 OF 02 STATE 01 543

--- (D) AS A FOLLOW-ON FROM IDENTIFYING HANDBOOK CONSTRAINTS IN THE MDR EXTENSION PROGRAM, FINANCE EXTENSION PROGRAMS TO DETERMINE THE EXISTENCE OF STRONG FARMER/RANCHER TRAINING ELEMENTS AIMED AT GETTING PEOPLE'S INVOLVEMENT IN THE COMPLETED AND TO-BE-COMPLETED "TURN-KEY" SOIL CONSERVATION AND MINOR IRRIGATION ACTIVITIES;

--- (E) INCLUDE A DETAILED ANALYSIS AND JUSTIFICATION OF THE TYPE AND AMOUNT OF EQUIPMENT REQUESTED IN RELATION TO THE TYPE AND AMOUNT OF WORK TO BE DONE, (E.G., HOW MANY KILOMETERS OF ROADS, HOW MANY DAMS, ETC. TO BE CONSTRUCTED). IN THIS REGARD, THE PP SHOULD INCLUDE ADEQUATE ASSURANCE THAT THE EQUIPMENT TO BE FINANCED IS INDEED APPROPRIATE FOR THE LAND CONSERVATION TECHNOLOGIES TO BE ADAPTED; PROPOSED ROAD OR DAM CONSTRUCTION SHOULD BE ANALYZED BY REDSO/ENGINEERING TO DETERMINE COMPLIANCE WITH SECTION 611 REQUIREMENTS

--- (F) EXPLAIN/EXPLORE ALTERNATIVES FOR INVOLVEMENT OF THE PRIVATE SECTOR IN VARIOUS CONSTRUCTION/MAINTENANCE ACTIVITIES;

--- (G) DISCUSS REQUIREMENTS FOR DETAILED WORK-PLANS WHICH WILL BE DEVELOPED PERIODICALLY;

--- (H) EXPLAIN ON-GOING EVALUATION PLANS TO ENSURE THAT LESSONS LEARNED ARE FED BACK INTO THE PLANNING/DESIGN PROCESS;

--- (I) REVIEW THE EXPERIENCE WITH MAINTAINING EXISTING LAND PROTECTION STRUCTURES WITH A VIEW TOWARD OUTLINING AN APPROPRIATE MAINTENANCE PLAN;

--- (J) ASSESS THE CAPABILITY OF THE GOB TO FINANCE THE INCREASING RECURRENT COSTS OF A SIGNIFICANTLY EXPLANCED ROAD AND ASSESS THE CAPABILITY OF THE MDR TO EFFECTIVELY DISBURSE ITS BUDGET ALLOCATIONS FOR THESE COSTS; AND

--- (K) DISCUSS PAST EXPERIENCE AND FUTURE PLANS FOR MARKETING SURPLUS PRODUCE GENERATED UNDER ROAD.

4. IN SUMMARY, KEY AID/W CONCERN, WHICH ALSO EXPRESSED IN PIO APPROVAL CABLE, IS THAT OSARAC CLEARLY DEMONSTRATES LINKAGES BETWEEN AID INFRASTRUCTURE SUPPORT ELEMENT, OTHER CONOP PRODUCTION ELEMENTS AND THE SMALL SWAZILAND FARMERS AND RANCHERS.

5. OSARAC/REDSO COMMENTS WELCOME.
VANCE

UNCLASSIFIED

BEST AVAILABLE COPY

ANNEX III

PROJECT DESIGN SUMMARY
TANICAL FRAMEWORK

Project Title: SWAZILAND RDA INFRASTRUCTURE SUPPORT PROJECT

Life of Project
From FY 78 to FY 84
Total U.S. Funding \$12,546,500
Date Prepared: August 1978

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATIONS	IMPORTANT ASSUMPTIONS
<p>Program Goal:</p> <p>To assist Swazi farmers in making the transition from subsistence to semi-commercial and commercial agriculture.</p>	<p>Farm income of 4,050 homesteads in the Northern, Southern, Central, and Matlangatsha RDAs increases 100% from 4/78 to 3/83; farm income of 9,800 homesteads in six newly established RDAs increases 50% by 3/83.</p> <p>Subsistence farm hectareage for hybrid maize, cotton and tobacco increases from 2%, 7% and 1% of total farm hectareage respectively to 13%, 15%, and 7% from 4/78 to 3/83</p>	<p>MDA RDAP Monitoring and Evaluation Unit surveys.</p> <p>MDA RDAP Monitoring and Evaluation surveys.</p>	<ul style="list-style-type: none"> -RDA will enhance rural livelihood and encourage rural people remain in rural areas. -Rural farm households are receptive to change. -Improvement in productivity increased productivity results increased net income. -Climatic conditions will be favorable. -Farm inputs and credit will be available when required. -GOS fills projected field extension positions and upgrades education/information delivery service to meet needs of expanded RDAP.

Project Goals:

To develop and protect the productivity of the land resource base in the "intensive" RDAs.

Crop production per hectare farmed by traditional farmers in intensive RDAs increases 65%, 50% and 75% for hybrid maize, cotton and tobacco, respectively from 4/78 to 3/83.

MOA RDAP Monitoring and Evaluation Unit surveys.

-GOS makes significant progress towards achieving targets set in Third Five-Year Plan to de-stock herds and improve range management.

Livestock offtake rate in intensive RDAs increases from 10% to 11% by 3/83.

Dip tank records, MOA Veterinary Services Division.

-Other donors continue to support RDAP.

Project Purpose:

1. To develop, install, and maintain conservation works in RDAs designated for intensive development.
2. To strengthen the RDA Program's land use planning and development capability.

Infrastructure works in place.

End of project evaluation; on-site inspection; MOA and project records. project.

Qualified Swazi staff performing land planning, land development and equipment maintenance functions efficiently and effectively.

End of project evaluation; MOA and project records.

-Inter-departmental and inter-ministerial coordination and cooperation exists among all CC units concerned with land plan and development.

Outputs:

1. Construction of terraces, grass strips, dams, canals, diversions and access roads.

RDA Management Unit and project team to re-evaluate and determine magnitude of infrastructure outputs by 8/80.

On-site inspection; MOA and project records.

-Rural people will adopt recommended conservation infrastructure maintenance practices.

2. Heavy equipment maintenance workshop.	Workshop employing good management practices and keeping equipment downtime at 10% by 8/81.	Workshop records	-GIS will establish posts required and will provide all necessary counterparts and participants for training in a timely manner.
3. Land use plans.	Plans initiated for all intensive and non-intensive RDAs and completed for all intensive RDAs by 8/84	GIS-AID evaluations; MOA and project records.	-Trainees will be working in positions for which trained
4. Conservation works rehabilitation program.	Program established and implemented by 3/82	On-site inspection; MOA and project records.	
5. Improved management procedures for planning, designing, and constructing RDA physical infrastructure.	Improved management procedures established and functioning by 3/80.	MOA and project records.	
6. Trained Swazi personnel for key posts in the MOA.	Swazi personnel trained and on the job as follows: 9 Swazi technicians in established posts of LUPS, LDS, and LDS Workshop by 4/84; 158 heavy equipment operators and 42 light vehicle operators by 8/81; 60 mechanics by 8/84 and 8 land surveyors by 3/81.	GIS/MOA project records.	

Inputs:

USAID

Technical Assistance, Long-Term:

59.66 staff-years; \$5,910,900

COS/AID, and project records.

COS, AID, contractors and suppliers provide goods and services on time as required.

Land Planning Officer (Team Leader);
Land Planning Officers (3 Civil
Engineers - Hydrolics, Soil Mechanics,
Structure Design);
Resource Economist; Range Ecologist;
Construction Engineers (2); Equipment
Operator Training; Workshop Manager/
Advisor; Workshop Foreman; Heavy Plant
Mechanics (2); Parts Controller. Con-
sultancies in Soil Science, Land Survey-
ing, Cost Accounting, and others as
required.

Training

Participants - land planning and land
development -related disciplines/skills

32 study-years; \$654,000

In-country courses - workshop-related

5 courses; \$ 6,000

Construction

\$ 475,000

Senior technician housing (10),
30' x 60' workshop parts warehouse

<u>Consultants</u>	\$ 140,600
Vehicles, office, field, and training equipment and supplies, books and periodical subscriptions.	
<u>GAS</u>	
<u>Equipment Support and Replacement</u>	\$12,228,600
Maintenance/repair and operating costs	\$ 7,075,900
Sinking fund for equipment replacement	\$ 5,152,700
<u>Salaries and Wages</u>	\$ 460,700
For Swazi counterparts, secretaries, and daily hire personnel	
<u>Vehicle Operation and Maintenance</u>	\$ 126,000
For project vehicles	
<u>In-Country Per Diem</u>	\$ 76,300
For overnight travel of project technicians.	
<u>Furnishings</u>	\$ 91,000
For senior technician housing	

NOTES: Soil erosion a major problem due to the sloping nature of the land, the fragility of the soil base, the use of traditional cropping patterns, overgrazing and lack of conservation infrastructure. MAM lacks technical and equipment resources to achieve land planning and development targets of RDAP.

ANNEX IV
IMPLEMENTATION SCHEDULE

Swaziland RDA Infrastructure Support Project

DATE	ACTION	ORGANIZATION(S) PRIMARILY RESPONSIBLE
August 78	PP completed and submitted	OSARAC/GOS
September 78	PP approved; Loan Agreement Authority granted	AID/W
September 78	Project Grant/Loan Agreement and Project Implementation Orders (PIOs) signed	AID/W, GOS
October 78	Specifications for new equipment prepared	AID/W
October 78	Request for Proposals (REPs) for technical services and workshop management contract issued.	AID/W, GOS
October 78	RFBs for housing and workshop parts warehouse issued	REDSO, AID/W, GOS
December 78	Contract awarded for construction of housing and workshop parts warehouse	REDSO, AID/W, GOS
December 78	Proposals for technical services and workshop management contract received and opened	GOS, AID/W, REDSO
January 78	Invitation for Bids (IFBs) for equipment issued	GOS, AID/W, REDSO
January 79	Construction starts on housing and workshop parts warehouse	REDSO, AID/S, GOS
January 79	LUPS and LDS counterparts and participants selected	GOS, AID/S
January 79	Contracts awarded for technical services and workshop management contract	GOS, AID/S, REDSO
February 79	Bids for equipment received and opened	GOS, AID/S, REDSO
March 79	Contract for equipment awarded	GOS, AID/S, REDSO
April 79	Letter of Commitment (L/COMM) for equipment issued	Contractor
July 79	Workshop parts warehouse completed	Contractor
July 79	Land Planning Officer (TL) arrives	Contractor

DATE	ACTION	ORGANIZATION(S) PRIMARILY RESPONSIBLE
July 79	Housing construction completed	Contractor
August 79	Initial commodities designated for local procurement acquired.	AID/S
August 79	GOS recurrent and capital budgets established	GOS
August 79	Office Space allocated; offices furnished	GOS
August 79	First Project Appraisal Reports (PAR) completed	AID/S
<hr/>		
SEPT 79-AUG 80	PHASE II	ORGANIZATION(S) PRIMARILY RESPONSIBLE
September 79	Civil engineers, resource economist, range ecologist, construction engineers, surveyor and workshop team arrive	Contractor
September 79	LUPS and LDS participants depart for training	GOS, AID/S
October 79	Initial equipment shipped (e.g.-transport farming equipment, etc.)	Contractor
December 79	Initial equipment arrives	Contractor
January 80	Local dealers service equipment	Contractor
January 80	Workshop participants identified	GOS, Contractor
March 80	Improved planning, design, and management procedures established	GOS, Contractor
March 80	Environmental criteria established	GOS, Contractor, AID/S
March 80	Surveyor consultant completes training of surveyors and departs	GOS/Contractor
April 80	Sinking fund for heavy equipment replacement transferred to MOA trust account	GOS
March 80	Baseline social and economic data collected and analyzed.	Contractor
June 80	Heavy equipment shipped	Contractor
August 80	Heavy equipment arrives	Contractor
August 80	Conservation works targets for RDAP re-evaluated and set for life of project	GOS, Contractor
August 80	Second PAR completed	AID/S
August 80	First external evaluation, PP review	AID/W

DATE	ACTION	ORGANIZATION(S) PRIMARILY RESPONSIBLE
<hr/>		
SEPT 80-AUG 83	PHASE III	
September 80	Workshop participants depart for training	GOS, AID/S
August 81	Equipment Operator Specialist completes training of equipment operators and departs	Contractor
August 81	Equipment downtime being maintained at 10 percent	Contractor
August 81	Third PAR completed	AID/S
March 82	Conservation works rehabilitation program implemented	GOS, Contractor
August 82	Fourth PAR completed	AID/S
August 82	Second external evaluation, PP reviewed	AID/W
August 82	Workshop trainees return from training and are assigned to LDS workshop as understudies to U.S. -funded technicians	GOS, AID/S
March 83	Swazi trainees assume management responsibility in LDS Workshop, U.S. technicians in an advisory role	GOS, Contractor
July 83	Posts for additional Land Planning Officer, Resource Economist, and Range Ecologist established	GOS
August 83	U.S.-funded workshop technicians depart	Contractor
August 83	Fifth PAR completed	AID/S
August 83	Work plan completed for Phase IV	
<hr/>		
SEPT 83-AUG 84	PHASE IV	ORGANIZATION(S) PRIMARILY RESPONSIBLE
September 83	Swazi counterparts return from training and assigned to LUPS and LDS as understudies to U.S.-funded technicians	GOS, Contractor
March 84	Swazi counterparts assume posts in LUPS and LDS; U.S.-funded technicians in advisory roles	GOS, Contractor
June 84	End of project analysis of project and RDAP impact on baseline socio-economic indicators	GOS, Contractor
August 84	Final U.S.-funded technical assistance staff departs.	Contractor

<u>DATE</u>	<u>ACTION</u>	<u>ORGANIZATION(S) PRIMARILY RESPONSIBLE</u>
August 84	LUPS, LDS and LDS Workshop functioning efficiently and effectively under direction of Swazi personnel	GOS
August 84	Planned conservation works in place	GOS, Contractor
August 84	Land use plans initiated for all RDAs and completed for all intensive RDAs	GOS, Contractor
August 84	Sixth PAR completed	AID/S
December 84	Project completion evaluation	AID/W

ANNEX V

ACCUMULATIVE ACHIEVEMENTS
SWAZILAND RURAL DEVELOPMENT PROJECT

	(1971-1977) <u>1/</u>	1977 Target	1977 Accomplishment	Targets for 5 Yr Development Plan 1978 -1983 <u>2/</u>
<u>Construction</u>				
Terraces	17,505 acres	6,342 acres	3,495 acres	80,350 acres <u>3/</u>
Artificial Waterways	-	-	-	115
Fencing	596 km	208 km	151 km	Unk
Access Roads	307 km	75 km	41 km	900 km
Bridges	27	5	1	Unk
Dams	21	4	2	Unk
Domestic Water Supply Systems	19	17	5	677
Livestock Dip Tanks	10	6	6	Unk
Cattle Sale Yards	2	-	-	Unk
Main Farm Supply Depots	4	-	-	3
Workshop/Stores	9	-	1	4
Agricultural Offices	4	-	-	2
Farmer Supply Sheds	8	2	1	13
Staff Houses	56	6	-	40
Junior Staff Quarters	37	8	7	15
Irrigation Reservoirs	12	10	4	Unk
Weirs	12	6	5	Unk
Irrigation Canals	46.8 km	3 km	7 km	Unk
Farms Consolidated	1,167	617	370	Unk
Farm Families Resettled	591	-	89	Unk

1/ It should be noted that, based on MOA records, most of the terracing and other construction under the project has been accomplished after the previous AID input was in place in 1973 (Project 690-0024)

2/ Source: IBRD and ODM/UK Project Proposals

3/ The target to terrace 80,350 acres is over optimistic in view of past performance. If the equipment package is doubled, at present rate of management and operator efficiency, this should permit approximately 35,010 acres to be terraced over the five year period. In the event management, operator, maintenance and repair efficiency can be increased by 50%, this would permit an additional 17,505 acres to be terraced for a total of 52,515 acres for a 5-year period

EMILIAN
FINAL DEVELOPMENT PROJECT
Economic Rate of Return Calculation
(R'000)

ANNEX VI

BENEFITS	Project Year																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17-20
Incremental Benefits																	
Wheat	174	168	342	247	604	774	822	866	850	802	906	982	972	972	1,008	1,008	1,008
Cotton	14	28	75	114	158	330	416	491	578	661	743	792	836	881	929	980	980
Tobacco	20	43	138	228	413	569	751	922	1,071	1,309	1,500	1,645	1,730	1,790	1,838	1,885	1,885
Other crops, fish, milk	70	141	242	352	639	800	974	1,098	1,246	1,390	1,500	1,581	1,645	1,693	1,738	1,781	1,781
Cattle	0	113	217	285	227	201	252	271	246	250	291	322	349	363	368	372	372
Total Incremental Financial Benefits	312	522	1,064	1,426	2,071	2,709	3,271	3,728	4,152	4,622	5,211	5,520	5,722	5,812	5,792	5,698	5,292
Adjustments																	
Price Increases 1975-76	28	74	154	214	311	434	494	569	621	714	800	879	941	980	1,008	1,036	1,036
Commodity Price Changes	-	0	(10)	(5)	(26)	(39)	(43)	(51)	(54)	(74)	(109)	(71)	(69)	(74)	(74)	(74)	(74)
Total Economic Benefits	216	547	1,168	1,625	2,356	3,134	3,742	4,236	4,723	5,337	6,111	6,447	6,711	6,844	6,811	6,651	6,292
COSTS																	
Fixed Investment Costs																	
Extension Infrastructure	180	589	304	227	74												
Livestock Infrastructure	18	157	294	187	181												
Land Development	68	138	805	198	196												
Credit Services	17	86	51														
Land Development	218	218	200	218	221												
Control Management Services	72	51	51	51	51												
Total Fixed Investment	573	1,298	1,045	681	723												
Incremental Operating Costs																	
Extension Services	103	376	447	479	481	377	377	377	377	377	377	377	377	377	377	377	377
Livestock Extension and Maintenance	10	40	80	54	97	99	99	99	99	99	99	99	99	99	99	99	99
Land Development Maintenance	-	3	8	12	17	19	19	19	19	19	19	19	19	19	19	19	19
Credit Services	18	64	54	56	55	55	55	55	55	55	55	55	55	55	55	55	55
Land Maintenance	14	41	60	95	123	123	123	123	123	123	123	123	123	123	123	123	123
BM Management	28	28	28	28	28	50	50	50	50	50	50	50	50	50	50	50	50
Total Costs	233	642	723	812	911	763											
Production Costs																	
Production Inputs	78	175	300	450	650	650	760	850	950	1,050	1,150	1,250	1,350	1,450	1,500	1,500	1,500
Farm Labor 2/	100	125	150	200	250	250	250	250	250	250	250	250	250	250	250	250	250
Total Financial Costs	978	2,214	2,292	2,444	2,494	1,713	1,863	2,203	2,163	2,313	2,363	2,413	2,463	2,463	2,463	2,463	2,463
Adjustments to Costs																	
Physical Contingency - 1% Taxes	89	209	214	220	218	141	151	161	171	181	186	191	196	196	196	196	196
Lab-r	(100)	(175)	(150)	(190)	(197)	(127)	(136)	(145)	(154)	(163)	(168)	(173)	(178)	(178)	(178)	(178)	(178)
Total Adjustments	(11)	(121)	(124)	(128)	(104)	(66)	(75)	(74)	(73)	(72)							
Example Costs	967	2,093	2,168	2,276	2,390	1,647	1,788	2,029	2,190	2,341	2,391	2,441	2,441	2,441	2,441	2,441	2,441
Cost of Other Program 1/ Estimate A	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300
Cost of Other Program 1/ Estimate B	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300
Net Economic Benefits-A	(178)	(1,748)	(1,233)	(941)	(174)	1,347	1,806	2,347	2,381	2,387	2,713	3,187	3,464	3,464	3,464	3,464	3,464
Net Economic Benefits B	(1,277)	(2,149)	(1,221)	(1,251)	(275)	1,347	1,806	2,347	2,381	2,387	2,713	3,187	3,464	3,464	3,464	3,464	3,464

1/ Incremental value, farm gate prices
 2/ Estimated value of incremental farm labor

High and low estimates of cost of other development program in Project BMA's that would be required to achieve expected Project benefits; two figures are given because of uncertainties involved, and a rate of return was calculated for each. See Annex 18, Text.

ANNEX VII

SOCIAL SOUNDNESS ANALYSIS

Swaziland RDA Infrastructure Support Project

1. Methodology

Information in the following section has been collected from PP team interviews, GOS* and MOA publications, a survey on the Rural Homestead executed by the Department of Economics, University College of Swaziland under the auspices of UN Women in Development Project (hereafter referred to as the "U.N. Survey"), and two surveys done in connection with the preparation of the PP by the rural sociologist on the team. The UN survey covered economic questions in 183 households in the Northern RDA. A few households in other areas were used for comparisons.

The first survey conducted by the rural sociologist for the PP team was concerned with perceptions and attitudes about RDAs in general. These interviews covered 25 households in the Northern RDA. The second survey focused on communication patterns in the Southern RDA. Interviews included eleven households, the Project Manager, Extension Personnel, and the Rural Development Officer. Two Swazi university students conducted the interviews. The NRDA and the SRDA were selected as interview sites because these were two of the first RDAs started in Swaziland and the location of the most possible and tangible progress in development. No attempt was made to randomize these small samples - interviewers are instructed to visit houses at varying distances from the project centre. Interviewers were instructed as to the interview topics and observations which they were to complete. (These surveys will subsequently be referred to as "NRDA Survey" and "SRDA Survey" in the text.)

2. Characteristics of Rural Households

Household size in all RDA areas is calculated at 8.6 persons per household. (The 1976 national average per household was slightly less than seven members, not including absentees. This figure includes urban households which tend to be on the average smaller than rural households. The UN survey found a 10.5 average including absentees in the NRDA; our NRDA survey average was 8.4, our SRDA survey average was 8.6 (both averages do not include absentees).

Household resources are often meager. The 1976 census has listed the following characteristics for homes in Swaziland.

<u>Walls</u>		<u>Water</u>		<u>Toilet</u>	
Permanent	22%	Tap Inside	14%	W.C.	20%
Mixed	38%	Tap Outside	20%	Pit Latrine	18%
Temporary	40%	Other	66%	Other	62%

These figures include both rural and urban homes and we can reasonably assume that the 86% of the homes in the rural areas are the most deprived of these amenities.

Baseline data on rural families is lacking - there is no average income figure for rural areas (the World Bank report suggests a figure of U.S. \$115-280). Many farm families must rely heavily on outside income from family participants employed in the wage-earning sector. Those employed may live at home, but more often must leave

*These survey reports are available from AID offices in Mbabane, Swaziland and Washington, D.C.

home for other areas of Swaziland or the RSA. This often leaves the homestead with only women and children to tend the land and animals, and make crucial farming decisions. The UN survey found 72% of NRDA homes and 67% of "other area" homes received regular cash or food assistance, mostly from absentee workers. Our NRDA survey found 68% of the homes assisted from outside- and in the SRDA survey, 53% of the homes reported outside incomes.

The general standard of health care available in Swaziland's rural areas is low, and medical facilities are seriously deficient. Prior to Independence, clinics were operated only by the Swazi Nation and the Nazarene Church. Death rate and life expectancy statistics indicate the magnitude of the problem: in 1975, the crude death rate for the country was 22 per thousand head of the population, and the life expectancy only 44 years. Emphasis is on curative medicine. Principal disease problems are respiratory (TB) and gastro-intestinal diseases, bilharzia, and malnutrition. An estimated 70% of the school age population has bilharzia. Diseases such as bilharzia, gastro-enteritis, typhoid and tapeworm infection are largely attributed to the inadequacy or absence of hygienic water supplies and safe methods of human waste disposal.

Enrollment in both primary and secondary schools in Swaziland have increased substantially in recent years, with the average growth rate for primary institutions 6.4% per annum and secondary institutions 15.5% per annum since 1962. Despite this, only 60% of those in the 7 - 13 year age bracket and 30% of those in the 14-18 year bracket were enrolled in educational institutions at the beginning of 1975. Failure and resignation rates during most years are reported as being high, while the standard of education is generally poor in most rural areas due mostly to unsuitable school curricula and poorly trained staff. Literacy for Swaziland is calculated at about 36%.

It would be a mistake to conceptualize the rural homestead as an undifferentiated group alike in capacity or achievement. In the rural area, rural families exhibit a variety of life-styles and economic levels. The UN survey attempted to differentiate farm families into 4 strata using as indicators cattle ownership, vehicle ownership and income patterns. Their findings estimated there were 27% "higher", 32% "moderate", 25% "poor" and 16% "very poor" rural households in their NRDA sample. They also concluded that "many households showed much greater initiative in virtually all sources of income and, on the other hand, most of the "very poor" homesteads tended to show no strong inclination in the generation of cash from any activity".

These are the people - some 196,000 rural dwellers, who are the potential beneficiaries from this expanded RDA program. It is envisaged that rural persons will benefit by a higher standard of living through increased economic opportunities, improved land use and agricultural productivity, and through better educational, health, and community services.

But what about the potential beneficiaries - those 196,000 rural dwellers. Do they know what they are being offered? Do they want what they are being offered? Are they ready to be willing participants in this major program?

To assess this receptivity to the RDA program, a study on attitudes and perceptions of the RDA program was run in the NRDA. The results were startling. Although the program has been in existence for several years, many respondents did not know what the RDA was, only 40% had been visited by an extension officer, only 24% had attended a demonstration course, only 8% of those to be resettled had been resettled at a new housing site, and there was little awareness of the major problems which must be addressed if RDAP objectives are to be achieved (such as overgrazing).

Indeed, the answers had a distinctly negative tone which showed a lack of confidence in the concept, the personnel, and the practices of the program. Analyzing the NRDA interviews, it quickly becomes evident that there has been a lack of communication and coordination at many levels in this area. Most respondents obviously do not feel that they are participants in the NRDA - they report that they were not called to meetings by the chiefs at the inception of the project; they are suspicious and unknowledgeable as to how decisions are made concerning project actions; they have had little or no contact with extension officers.

Because this lack of communication was so evident in the NRDA interviews, a second survey in the SRDA focused on communication patterns to see if this problem was endemic to the NRDA only or more widespread throughout other rural areas. The results of the second survey were dramatically different in that all respondents reported that meetings had been called to discuss the RDA with the community; all had been visited by extension officers; they were much more knowledgeable about how decisions were made; the answers exhibited a more positive and confident attitude toward the RDA program.

Understanding this problem in the NRDA prepares us for a recent statement from a MOA progress report on the NRDA which states: "Consolidation and resettlement seem to lag behind because it takes more time to convince people that it is in their long-run interest to shift their homes to proper sites. The destocking program has not been encouraging". This also emphasizes the extreme importance of the active involvement of the local rural people at all stages of the program, of constant and positive communication patterns being maintained, and the necessity of building confidence in the farm families in their relationship with all the institutions involved.

Swaziland is unique in having maintained the existence and operation of the strong traditional sector of the government. This is the arm that reaches down to the farm families from the King through, most especially, the Rural Development Officers (RDOs) and the chiefs and Local Development Committees. Through the modern arm, the farm families are contacted by the RDA project manager and the extension services (Annex VII A). Structurally this has the advantage of giving the rural peoples an opportunity for consultation with both sectors of government - but as more institutions are involved, the necessity for close cooperation and coordination increases. Both sectors have indicated their full support for the RDA program.

3. Traditional and Modern Institutional Structures Affecting the RDAs

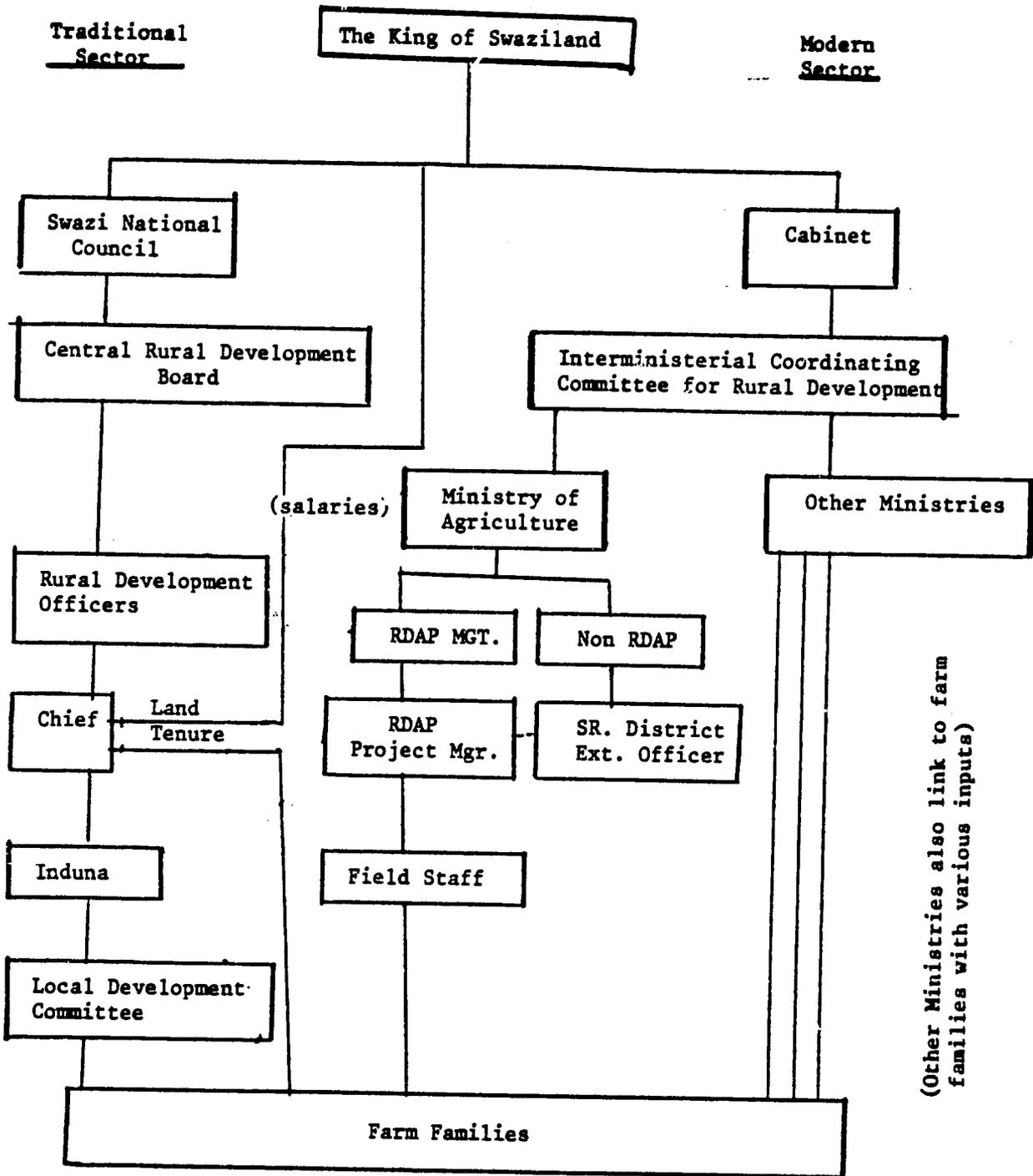
Figure 1 presents a diagram illustrating the relationship of the traditional (Swazi Nation) and modern (Government of Swaziland) sectors with the Rural Development Area Program.

The traditional social and political structure of Swaziland is closely related. The King is not only the head of the social order but also the supreme authority in the country (both in the traditional and in the modern sector). The honor and loyalty accorded the King is rooted in the sacredness of the traditional social system.

The traditional political structure is clearly defined. The King is at the top of the political pyramid and rules through chiefs at the local level. Chiefs gain their position mainly through kinship and all are subjects of the King. The

FIGURE 1

Development Decision Relationship Model



chief has authority over and represents the people in his area. Swazi Nation Land (SNL) is allocated through the chiefs acting on behalf of the King, who holds the land in trust for the Swazi Nation. Though the traditional political structure appears autocratic, generally speaking, political decisions are made on the basis of consensus and advisory groups are used extensively by the King and the chiefs.

In addition to the traditional government, there is a modern system of government composed of a cabinet of ministers that administer the affairs of the Kingdom of Swaziland. The King is also head of the modern government and must give his approval on all programs, especially those affecting SNL.

Rural development decisions impinge upon both the traditional and modern governments. In the traditional sector, the Central Rural Development Board (CRDB), acting on behalf of the King, is responsible for approving all rural development projects.

The Central Rural Development Board (CRDB); Largely because of disappointments and problems arising from pre-independence development schemes for rural areas, the King created by proclamation in 1954, a Central Rural Development Board to oversee all future programs affecting the rural population. The principal functions of the Board, as defined in the order, are to report to the King on the condition of resources, including water, soil, grass and timber on land held by the Swazi Nation, and on settlement schemes. The CRDB is to recommend steps to be taken to protect resources and improve their utilization. The CRDB approves all plans for resettlement schemes and agricultural development proposed by the local population, and oversees their implementation, including enforcement of decisions taken. An explicit function of the CRDB is to encourage the practical involvement of the local population in rural development projects. CRDB members are appointed by the King and they are an effective institutional link between the Ministry of Agriculture and the King, the Swazi National Council and the chiefs. The Board is responsible directly to the King. The CRDB in practice examines carefully and approves, often with modifications, all detailed plans for development on Swazi Nation Land.

Rural Development Officers: The CRDB appoints Rural Development Officers (RDOs) who act as its field officers. They work very closely with the extension staff of the Ministry of Agriculture (MOA). The RDOs have clearly specified functions, namely, to hold meetings and discussions with chiefs and other traditional leaders about the introduction and implementation of rural development projects. The RDOs have acted to enforce CRDB decisions in several instances; most notably, when the King decreed that grass strips should be established on all arable land, it was the RDOs who enforced the order, to the point of taking sanctions against recalcitrants. In those cases where grazing controls have been introduced, the RDOs have assisted in enforcing regulations. The RDOs work with the chiefs and Local Development Committees (LDCs) in the introduction and implementation of rural development projects. The LDCs consist of Indunas (assistants to chiefs) and other appointees of the chief. The opinion of the local people is expressed in open forum (Libandla) in which all homestead heads may speak. The chief then speaks for the consensus of his people. The modern sector of government does not extend directly to the local level. Development programs, therefore, are dependent upon the traditional structure for gaining local involvement. The RDOs provide the linkage between the modern and traditional structures. As facilitators, they assume political responsibilities, thus allowing the modern government's extension officers to devote full time to providing technical information to farm families.

The CRDB and the RDOs are crucial to the approval of rural development projects

and to bringing about the involvement of farm families in these projects. Planning and implementation processes for community programs are described in the following way by the MOA:

"It is the Government's intention that all of the Swazi Nation Land eventually be covered by the Rural Development Area Program."

"Part of the success of the existing program can be attributed to active involvement of communities in the planning and implementation of developments within their areas."

"The procedure for introducing programs to an area can be outlined as follows:

- a) A Rural Development Officer (RDO) and representative of local communities and field staff meet to discuss preliminary infrastructural plans for the area. Grazing and arable land are delineated, proposed access roads marked and proposed areas for resettlement identified. The major functions of the RDO are to act as a liaison between technical staff and chiefs together with their followers. The RDOs are also responsible for implementing a number of King's Orders in Council and also report back to His Majesty on developments taking place on Swazi Nation Land.
- b) Once a consensus of opinion has been formed on the preliminary plan this is forwarded to the Land Use Planning Section. The plan is then refined and any technical faults corrected.
- c) The refined plan is returned to the community where further discussions are held and the plan modified or accepted. The chief of the area introduces the plan to the people. When general approval is given to the plan the chief, through the RDO, calls in the Central Rural Development Board (CRDB) to examine the plan.
- d) The CRDB is a Board set up by His Majesty to ensure the correct development of Swazi Nation Land. RDOs sit on the Board as "ex-officio" members.
- e) The proposed plan for an area is presented to the CRDB by the chief and community of the areas. The CRDB assess the general reaction to the plan and examines the plan in the context of overall development policies. Given the CRDB approval of the plan, technicians may then proceed with implementation.
- f) This process ensures the participation of beneficiaries in the planning process and prevents the implementation of unsuitable plans by technicians."

In the modern sector, the principal organ responsible for coordination of all rural development programs is the Cabinet. A Rural Development Interministerial Committee of the Cabinet has been established to assist in coordination. It includes permanent secretaries of key ministries responsible for rural programs, notably Agriculture, Commerce and Cooperatives, Education, Public Health, Works, Power and Communication and Finance. The Committee meets to consider specific project and policy proposals and problems.

The Ministry of Agriculture has principal responsibilities for RDA Program imple-

mentation and for ensuring effective coordination with other ministries and agencies concerned, notably the Swaziland Development and Savings Bank (SDSB), the Central Cooperative Union (CCU), the Central Rural Development Board (CRDB) and the ministries of Health and Finance. Most services of the Ministry of Agriculture are directly involved in project implementation, and their activities would be coordinated by the RDA Management Unit.

The RDA Program is directed and supervised by the Ministry of Agriculture's RDA Management Unit. Field activities in the RDAs are handled by the Assistant Extension Officers (AEO) and Field Officers (FO) under direct guidance of Area Project Managers (APM). The APM is directly responsible to the RDA Management Unit, while keeping the District Extension Officer informed. All extension and supporting staff are directly responsible to the APM.

Other ministries are responsible for various additional inputs within the RDAs (i.e. health, water, educational services, community development services, etc.).

4. The Traditional Sector and the RDA: Interim Findings

The King - His Majesty has voiced his support for the RDA program, but we found that few people in the rural area were aware of this support. One respondent in the NRDA even said "I wonder if the King knows what is happening to his land". In the SRDA two-thirds of the respondents said they did not know what the King's attitude was towards the RDAs. The honor and respect accorded the King by the rural peoples is undoubted. His assurances of his support for the RDA program if widely known, would increase confidence and support at the local level.

The RDOs - The RDOs, who play a multiple role in assisting in the implementation of the RDA Program, while hearing the voice of the people and safeguarding the interests of the Swazi Nation, occupy a unique and pivotal position. Unfortunately, there are few RDOs in the country (one to each district). Possibly some RDOs lack the training to understand fully the technical aspects of the implementation of all portions of the RDA program. In the SRDA, respondents knew of the existence of the RDO and about half had some idea of his work, but few had had personal contact with the RDO, seeing him only at community meetings. The key position occupied by the RDO cannot be underestimated. Portions of the RDA projects could succeed or fail according to his approach to the people. The project will ensure that RDOs will receive training as required so that they can adequately explain the advantages of land conservation, land use planning and conservation works.

The Chiefs - The Chief, like the RDO, is a key figure in enlisting the support and participation of local people. In the NRDA, in the areas of three different chiefs, people reported that they were not contacted, not consulted, knew of no meetings being called about the RDA. They did not know who decided to have an RDA; they were "just told". Contrast these statements with those from the SRDA. Here everyone knew there were meetings to introduce the idea of the RDA and to decide if the people wanted to accept the RDA. One man confidently says: "The people decided to have one, because if the people refused to have one at the meeting, the RDA wouldn't be here today". This is exactly the kind of positive feeling which must be built in the rural people - a feeling that they have some control over their own destiny and can participate in the decision-making. Chiefs in the new RDAs have an opportunity to build and strengthen these feelings

and, like the RDOs, would undoubtedly benefit from additional training or courses which give them the knowledge of modern agriculture, land conservation and land use planning. Several years ago, the Agricultural College at Luyengo, ran week-long courses for the chiefs enabling them to see and hear about the latest agricultural developments. Unfortunately, this has been discontinued. The AID project implementation team will review the possibility of reinstatement of these courses, at least for AID project-related RDAP activities, and other options that may be appropriate for upgrading the technical knowledge of chiefs, RDOs and members of the Local Development Committees. All of these key people are more likely to be supportive if they are knowledgeable on the issues involved. Many projects fail because the people involved in roles of leadership become defensive and negative when faced with ideas which are new and strange to them and which may show up their lack of knowledge. For the Chief to be an able and articulate spokesman on these new issues would enhance and strengthen his leadership role in the community.

The Modern Sector - Contact with RDAP through the modern sector means to most rural families contact with extension officers. As briefly mentioned before, NRDA interviews show respondents having little contact with extension officers ("They have never visited this area and I have no knowledge of their work"), reports of frustrating and negative experiences with extension staff ("My household has received no assistance at all from these visits"); and limited knowledge of the scope of extension work ("provide tractors for ploughing and work with people able to pay tractor fees").

SRDA respondents, who expressed that their households had all been visited by extension staff, reported much more favorably. They were more able to verbalize the scope of the work of extension officer and were more positive concerning the assistance they had received ("Yes, they helped me. Now I can handle my vegetables without help").

The UN survey shows similar results: only 29% of the NRDA households claim to have "used" extension officers; compared to 80% of SRDA households. There are several variables to consider here in analyzing the differences in the NRDA and SRDA reports of extension work. The SRDA has a smaller number of households (650 to the NRDA's 1400). The SRDA Project Manager seemed extremely capable and well organized, reporting that his staff held weekly planning and organizational meetings and that all staff regularly turned in reports of their activities and progress. This kind of coordination may be lacking in the NRDA. However, AID looks forward to the strengthening of the extension service through (1) an increase in the number of field officers graduating from the certificate course at the Agricultural College and (2) an increase in the efficiency and effectiveness of the field staff through additional in-service training providing a new Extension Training Officer to be funded through SAMDP.

Awareness of the RDA: A first step in gaining the active involvement and participation of the rural people is to give them an awareness of the concept of the RDA and the feeling that they are potential benefactors from the program.

NRDA respondents were notably unaware of the concept of the RDA. Most had no idea as to what was involved; many equated the RDA with tractor pool activities alone. Most people saw the tractor pool as the major advantage but many people did not see that any benefits had been gained by their household because of the RDA.

SRDA respondents were more articulate about the concept of the RDA. One respondent finished by saying "...I would say the RDA is geared at promoting the standard of living of the Swazi rural dwellers". Over half expressed that most (or some) people approved of the RDA ("People seem very willing to have one"; "People want one - some people have started preparing the land for maize and vegetables"). Visits from extension officers and project centre courses and demonstrations have increased their awareness that the RDA can be of direct benefit to them ("Their visit was very useful because they then came back and sprayed my tobacco field").

SRDA interviews with rural residents and extension officers report the continuation of meetings to consult on various components of the program. This is very encouraging.

Building a climate of trust and confidence in the total program of the RDA is extremely important to its success, as many crucial issues will depend upon this as a foundation for enlisting cooperation. A few of these crucial issues are land reallocation, resettlement of household sites, destocking, and adoption of land conservation practices. This paper cannot go into each of these issues at length but can only touch on each briefly and note some of the problems in the NRDA and SRDA which emerged from the interviews.

Land Reallocation - In the NRDA many respondents did not know how land had been reallocated, some answered that the chief or the extension officers had been responsible. Over half felt that the amount of land they had was insufficient. Many felt that the chief, his relatives and friends got the most land. One extension officer in the NRDA told members of the PP team that the larger families got larger portions than the smaller families. SRDA respondents all knew that the imisumpe (or local committee) reallocated land on behalf of the chief. Again respondents in this area felt that the chief got more land and some were dissatisfied with the amount of land they received ("I have less land now and I am not satisfied. My sons haven't been given land, therefore, I find this system unfair. Of course, I want more land"). SRDA extension officers report that now everyone receives an equal allotment of land which creates dissatisfaction among those who had previously had larger land holdings. Thus, the criteria for allotment of land in the SRDA and the NRDA are reportedly different. The PP team did not have an opportunity to look into this and to ascertain how land allotment policies varied from chiefdom to chiefdom, or RDA to RDA, but it is anticipated that the question of allocation procedures and decisions will be studied in the future by the GOS and the RDAP donors. The question of the full utilization of the land is also involved here, and in one SRDA interview an extension officer mentioned that plots or irrigated lands were unused because the holders were too elderly to use them.

House Resettlement - RDAP plans call for resettlement of many households on new sites. Sites are to be cleared and leveled by heavy machinery; but farm families are expected to move and build new structures themselves. Farmers are asked to resettle at some emotional and financial cost to themselves. It must be remembered, however, that Swazi farmers until recently have periodically moved their homesteads in search of new or additional farmland. A move is not something unknown, nor are old accustomed ancestral homesteads abandoned. The old process of seeking new farmland or grazing ground is at an end owing to pressures of population numbers.

Resettlement is inevitably accompanied by a degree of anxiety, but also by the wish to get it over with, so that permanent new homes of a higher standard can be built. Distances between old and new homes are rarely great, but within easy walking distance. Consequently, the resettlement process is a gradual one, taking in some instances years, as new huts are built and old ones gradually abandoned. NRDA respondents spoke of the difficulties encountered in moving all of their possessions by wheelbarrow, in the loss of income for the household as male wage earners had to take leave and return to assist in the move; and the difficulty of obtaining and hauling water to the site for rebuilding. They also complained that they had not been consulted about the resettlement. SRDA respondents were not asked about the physical experience of moving but were asked if they had been consulted before their resettlement. All of the resettled households had been consulted (some several years before) and were satisfied with their new site. Moving a household to a new site is not easy. Delay by families scheduled for resettlement could retard progress of the RDA program. Resettled families are receiving no assistance in moving, but if piped water could be put into operation in the area of the new sites, this would provide a strong incentive for resettling families to complete their move quickly and at the same time would assist in their home construction.

Destocking - The MOA has addressed itself to the complex problems of overgrazing, destocking and upgrading the nation's cattle in the Third Five-Year Plan. Over one third of the agricultural targets in the plan involve different aspects of these issues. It is crucial in meeting those targets that major national policies be agreed upon and supported throughout both sectors. It is also essential that rural families become aware of the long-term advantages of destocking and range conservation through a variety of education program.

In NRDA interviews, respondents were confused concerning the intent of the fattening ranches - some felt that their cattle could be brought back for ploughing. One respondent related sending his cattle to Balagane Ranch and later receiving word that 8 had died, but no evidence of this was sent to him, and he felt he had been cheated. Another man expressed that he too might be cheated. SRDA attitudes differed. Our interviewers felt that, although respondents were not happy to part with their cattle, the extension officers had explained the problems of overgrazing clearly and that most people were ready to cooperate. The extension officer reported that all resettled homes had sent all their cattle off to Impala Fattening Ranch. Farmer experiences here had been positive too, with respondents reporting being invited to view and sell their own cattle or to give permission for the ranch to sell them. Some respondents had received remittances for cattle already sold.

Land Conservation - Attitudes toward adoption of improved land conservation practices, including the periodic minor maintenance of LDS-construction works, have unfortunately not yet been surveyed. Village maintenance committees have recently been formed in some RDAs and it is expected that the MOA will appoint a maintenance officer or select committee to periodically review progress and problems in establishing village maintenance committees. The maintenance officer and/or committee will also provide assistance, as necessary, in improving methods of educating villages to the need for periodic minor maintenance.

The Participants - It would be unrealistic to assume that all potential participants will indeed participate with equal receptivity in the RDA program. A reminder of the magnitude of this particular development strategy encompassing 196,000 potential participants each with his/her own values, aspirations, and capacity brings us back to the realization that we are touching and changing the lives of individuals.

One has only to read the interviews from the NRDA and the SRDA, and many types of personalities spring from the pages:

The Traditionalist: "We have lived this life and our forefathers and great-grandfathers were living this life, so why should we change suddenly now".

The Pessimist: "Instead it is getting from bad to worse because of what you educated people are doing to us".

'The Old Woman Who Lives in the Shoe': I do not attend classes because I have a large household to look after and I have eye trouble...."

The Realist: "My family started growing vegetables long before the RDA was established in the areas....very useful and valuable indeed because I have attended courses and demonstrations at the project centre- I can't remember how many times... Now I can handle my vegetables without their help".

Some rural peoples will become participants quickly, eagerly; some more slowly and cautiously when their neighbors have tested the "uncharted waters" of rural development, and some will never participate because as one respondent put it: I don't want to change".

5. Rôle of Women: Special mention of the role of women in agriculture and in RDA extension work must be made. Rural Swazi women carry the brunt of the labor input in home and agriculture. The importance of reaching these women and providing instruction and assistance for them has been noted repeatedly in many documents concerning the RDA program. SRDA women reported being visited and assisted in crop care by extension officers and also attended courses at the project centre on agricultural methods. Many women are already involved in home economics extension work. In the first certificate training course for general Extension Officers, there were 6 women in a class of about 36. The Poultry Extension Officer in the SRDA is a woman. We hope that these trends will continue and that women will be trained for the extension service in increasing numbers. The thrust to treat the home and farm as "one unit" by the extension services will also assist the rural women who are involved in the total activities of rural homestead.

Conclusion

In the hundreds of pages which have been written in analysis of the RDA program, these pages are unique in that they are the only pages which include statements by the rural people concerning their attitudes and experiences with the program.

We have been able to discuss only a few of the more important points which arise from the interviews. Even subtle vocabulary differences are important: some

people report that they were "told" what to do; others use the words "consult", "advise" and "encourage".

Attitude studies help us keep our finger on the pulse of the rural families. This can often help locate potentially difficult areas so that programs can be reshaped and made more acceptable. The RDA program offers a better life to thousands of rural families - it seeks to improve the quality of living through the improvement of economic opportunities, health, education and community services - all positive goals indeed.

But to achieve these objectives, the RDA program asks rural peoples to resettle their homesteads, perhaps moving their possessions in a wheelbarrow to a site without water to build a home on their own; it asks farmers to give up their farm lands perhaps receiving smaller portions to plough; it asks Swazis to give up their cattle-for generations their symbols of wealth and prestige, their promise of future marriage alliances and the continuation of their lineages; their honor to their ancestors of generations past.

To succeed, the RDA program must put forth the time and effort to ensure the active involvement, support and cooperation of these rural people. A political revolution can happen overnight; social and economic development takes more time.

ANNEX VIII

Analysis of Training Needs Swaziland RDA Infrastructure Support Project

I. Introduction and Summary

The following analysis of RDA program training needs is presented in recognition of the vital need for well-trained personnel at all government levels. In addition to identifying training requirements directly specific to this project, particular attention is focused on extension service needs.

This analysis on extension reflects the critical importance place upon it by the AID PRP and PP teams. From an overall program perspective, both teams regard extension services and training as the backbone of the RDA process. Recognizing this, the PRP team specifically recommended that the adequacy of current and project personnel levels be more fully examined. This analysis is in response to that recommendation and is based upon field observations and the review of previous studies as follows:

- (1) Project Review Paper (November 5, 1976);
- (2) Manpower Requirement Study (September 1977);
- (3) Swaziland Rural Development Project Appraisal Report (January 1977);
- (4) Field Observations by the Project Paper Team; and
- (5) Observations and data collected by two host country University students who interviewed random heads of households in two established RDAs (see Annex VII).

The paper consists of an analysis of personnel needs in the MOA's, LUPS, LDS and LDS Workshop, and the extension service; and an "Assessment of Local Institutions Capability to meet Training Needs". Two appendices are attached; one indicates assumptions relevant to the successful implementation of extension and training programs in the MOA; the other presents "Statements of Concepts and Philosophies Relevant to Rural Development".

II. Assessment of Training Needs

A. Land Use Planning Section

The MOA Land Use Planning Section is at present understaffed to meet RDAP demands for quality planning. If the projected expansion program is to be implemented with the assurance of sound land use plans, four experienced Civil Engineers*, a Resource Economist and a Range Ecologist are essential. Continuity in a staff must be a part of the job of planning and training. It is essential that a degree trainee in civil engineering be selected and trained to replace the Senior Land Use Planning Officer position. Ideally after training, this trainee should have the opportunity to serve in an understudy position with the current Senior Land Planning Officer before assuming the full responsibilities

*These include the team leader and one engineer in each of the following specialties - hydraulics, soil mechanics, and structural design.

of the post.

In order to meet the land planning needs for the RDAP expansion, three civil engineers with experience in hydraulics, soil mechanics, and structure design are needed.

In order to assure this kind of engineering competence when the expatriate engineers are phased out of the program, three Swazi degree trainees for replacement need to be provided. These trainees must have understudy overlaps with the expatriate engineers prior to assuming the responsibilities of these posts. An experienced Resource Economist and a Range Ecologist are also needed if land use planning is to be adequately done. These positions should be filled with Swazi degree trainees at least one year before the U.S.-funded technicians depart. The first six months should be spent with the Swazi counterpart serving as an understudy to the U.S. counterpart. The Swazi counterpart should assume full position responsibility the last six months with the U.S. technicians serving as advisors.

An experienced land development surveyor is needed to insure adequacy of surveying for land development infrastructural purposes. The person providing this competence will also provide on-the-job training for at least eight SCOT and UBS certificate holders to develop necessary surveying understandings and skills.

B. Land Development Section

Currently there is an obvious need for more construction engineers. Carefully developed land use plans need accurate interpretation and implementation on site. In order to assure that this step is carried out at the various construction sites, two experienced Construction Engineers are needed. Ideally, two Swazi degree trainees should be designated to feed into the system and serve as understudies to the U.S. technicians prior to their departure.

The operation of heavy equipment at the construction sites is an area of critical concern. Both to insure proper equipment usage for each particular construction job and to reduce downtime on the equipment, an experienced Equipment Operation Advisor/Trainer is needed. This advisor would provide in-service and on-the-job operator training in regard to the analysis of construction jobs from the standpoint of appropriate equipment usage, and would also perform a supervisory function in regard to general operation of the heavy equipment.

C. LDS Workshop

After careful study it has been determined that the workshop is a critical limiting link in the complex process and operations in the development program. The preferred solution to this situation is a contract agreement for the maintenance and repair of LDS heavy equipment. This contract from the standpoint of training needs to include:

- (1) Understudy experience for Swazis designated to assume the management positions after the project ends - Heavy Plant Mechanic, Parts Controller, and
- (2) Apprentice training for mechanics. Most of the employees and potential employees will have basic mechanics training as currently being done at SCOT.

The training at SCOT is basic but each of these mechanics need on-the-job carefully planned and implemented apprentice training to insure their development into skilled heavy equipment mechanics.

D. RDAP Extension Service

The projected five-year demand for additional extension field officers is approximately 200. The projected output for the UBS certificate program in Agriculture is currently based on a continued intake of only 40 students per year. Based upon the anticipated demand from both the private and parastatal sectors and potential attrition, the Certificate in Agriculture program should not only be continued but expanded if the farmer/field officer rate of 250 families per field officer is to be achieved.

To insure greater utilization of women in the RDAP, larger numbers of women need to be recruited by UBS for training in agriculture as well as in home economics. Home economics training needs to have a realistic balance of home improvement and family living content along with training in crafts. If field officers are to be effective in bringing about the adjustment of new practices, supervision and training are needed to insure the development of their abilities. Certificate level extension field officers have minimal exposure to agriculture education and extension programming methodology.

If extension field officers are to reach 250 families they need on-the-job help in planning and organizing their educational activities and time. To cope with this and related needs, another agricultural training officer should be added to expand the current training efforts in the Agricultural Information and Publicity section of the MOA. This officer would have the responsibility for in-service on-the-job council and training of RDA extension field officers. The in-service training phase of this assignment could possibly be jointly planned and conducted by MOA and UBS. This position would need to be filled by a person with extension experience in extension program development, methodology, supervision and skilled as a teacher and agent of change.

To assure the continuation of this kind of extension service competence after U.S. aid terminates, two or three Swazi degree trainees need to be selected for training and later serve in understudy roles prior to

assuming these posts.

E. MOA Extension Service

MOA extension service personnel operating outside the RDAs need to have continuous updating on extension program activities, methodology and accomplishments in the RDAs if in the future there is to be a unified overall extension service. Successful extension approaches, techniques, etc. in the RDAs should be analyzed and integrated into the total extension system as fast as possible. The RDA extension training officer could be a catalyst in effecting this process.

III. Assessment of Local Institutions Capability to Meet Training Needs

A. UBS Certificate and Diploma Education

From the standpoint of content the UBS Certificate and Diploma courses in agriculture include relevant and essential subject matter. However, it would be desirable if the problem solving approach along with the lecture method and practical experience could be employed to a greater extent. An evaluation of the course after graduates have been on the job for six months is recommended. The course should be evaluated in terms of content relevance, teaching methodology, time allocation and graduates suggestions for improvement.

Additional teaching staff for the certificate and diploma courses will be required at UBS if the needed extension field officers are to be available for filling new posts and vacancies in the expanded RDAP.

Some serious thinking and planning is necessary regarding certificate training for young rural farm people who will return to the rural community to farm. If the RDAP is to accomplish its goal, much thought needs to be addressed to reversing the movement of young people off the farm to the urban areas. The concept of education and returning to the rural community and engaging in the new commercial agriculture as conceived in the RDAP must become operational.

It is important that the MOA and the UBS jointly come to grips with this challenge.

B. SCOT - Training for Mechanics

The basic training of mechanics at this institution is relevant and effective. However, it is essential that employers of these trainees understand that on-the-job apprentice training following the SCOT basic training is a requirement if these men are to become competent and qualified mechanics. At present a void exists in diesel mechanic training.

Consideration needs to be given to possible expansion into this area.

The current cadastral surveying course offered at SCOT could well be expanded or supplemented to include appropriate land development surveying and construction layout techniques.

ANNEX VIII

APPENDIX I

Assumptions Relevant to Extension and Training

Extension and existing training services were studied to determine their current state of development. Commitment to continued development and improvement of both was explored with the MOA. The following assumptions are based on the findings of these explorations and are basic to the training needs presented in this proposal.

1. The MOA will continue to fill all currently established extension field posts.
2. The MOA will establish and fill new extension field posts in the RDAs as projected.
3. The UBS certificate level program for extension field officers will continue to operate at capacity and will possibly expand to supply qualified trained RDA field officers.
4. The extension certificate level curriculum at UBS will be directed towards developing field officers capable of teaching rural subsistence farmers and their families to
 - (1) improve their agricultural production and general well being, and
 - (2) maximize their benefits from the RDA infrastructure being developed.
5. In co-operation with SCOT, the MOA will develop a study-work program to strengthen mechanics training at IBRD financed rural technical training centres. Development of the program will be supported with AID funds.
6. The role and functions of the RDAP senior extension officer and the MOA training officer and his staff will be expanded to include:
 - (1) on-the-job training for extension officers,
 - (2) extension teaching materials geared to RDA extension programs, and
 - (3) on-the-job coaching, counselling and supervision of RDA extension field officers.
7. Extension staffs in each RDA will develop and implement annual extension program and plans of work which are well planned, prepared in a narrative format, and are based on the established goals of the RDAP. These will be prepared in collaboration with the RDA project manager and leaders in the community involved.
8. Annual and long-term RDA extension programs and plans of work will be developed at the MOA level. These will have a narrative format and will be based on the goals of the RDAP and the annual extension programs and

plans of work developed in each RDA. These programs and plans of work are required in order to provide co-ordinated and integrated extension support to each RDA.

9. The overall organization, program development, management and assessment of progress of the RDAP will be coordinated at the national level by the inter-ministerial committee.

10. The essential U.S. technical assistance posts will be established and filled to provide:

- (1) essential competencies to keep the RDAP moving, and
- (2) essential understudy training and experience for Swazi counterpart personnel.

Swazi counterparts will assume full responsibility for these posts when U.S. expatriate technical assistance is terminated.

ANNEX VIII

APPENDIX II

Statements of Concepts and Philosophies Relevant to Rural Development

A. Training - Educational Change Agents

A critical factor in achieving the goals of the Swaziland RDAP will be the supply of essential trained manpower. This is a priority not only for the land planning and development aspects of the project but for the educational job that must be done with rural people if they are to improve their quality of rural living.

A significant factor in the effectiveness of programs aimed at rural families is the quality of the change agents, particularly extension officers. Institutions producing change agents too often have a strong technical bias - there being far too little applied sociology and economics which helps change agents such as extension officers to understand people and their motivations. Supplying a "package" is quite a different notion from providing a "catalyst" who can:

- (1) open the way to development, and
- (2) enable people to have a part in determining the route they will take using the inherent ability they have.

Development needs both "top down" and "bottom up" approaches. Rural families often criticise government change agents for working "for" rather than "with" them. Change agents too often come with answers to unrecognized problems rather than approaching the task as a problem identifying and solving operation which complements the inherent knowledge and feelings of the people.

Highly capital intensive development operations can contribute to development. However, much more can be accomplished if there is a large ingredient of individual and group involvement, involvement which enables people to change and move forward by removing constraints and providing catalytic actions. Training and re-training people who function as agents of change is a key. In-service and on-the-job training is needed at all levels. Training at the central government level and at each level of the development service is as essential as training people who can work effectively at the grass roots level with the rural farm families.

B. Degree Trainees and their Transition into the Organization

Established posts for returning degree trainees are essential both from a practical and a psychological standpoint. In many instances the post will have been occupied by an experienced expatriate or a Swazi. If this is the case an overlap is needed - the incumbent should remain

in the post with the returning trainee as an understudy until the trainee has sufficient time to develop confidence. He will need to gain the specific skills essential to function effectively. It is essential to recognize that most trainees returning from academic training lack the actual job experience that enables them to move immediately into responsible posts. If they are given full position responsibility posts without successful understudy experience, the organization, program and the trainee will suffer.

C. Induction, On-The-Job Training and Supervision for Certificate and Diploma Employees.

Both newly trained and experienced personnel need to have an appropriate and well planned induction experience upon reporting for a new job. Such an experience enables new employees to develop a feeling of confidence if they understand at the outset the philosophy of the organization and the specific duties expected of them. The opportunity to experience actual procedures, policies, etc. first hand is also a significant contributing factor to the development of this confidence.

Not all aspects of a job and the organization can be adequately covered or absorbed in an induction training experience. Because of this, follow-up on-the-job training is essential to insure improved performance and personal growth and development.

Supervision, counselling and observation of employees on-the-job performance can serve to build the employees self-confidence and insure productivity. A capable supervisor or counsellor will detect on-the-job training needs and will assist in its planning and conduct to insure relevance and appropriateness. He will also recognize successes and accomplishments which will assist in building confidence in new employees.

D. Rural Development - Co-Ordination and Integration

Rural development essentially requires an integrated and inter-disciplinary approach. The very nature of the process of rural development and the complexity of the problems of promoting economic and social progress in rural areas requires that action be taken on several fronts simultaneously and not independently of each other.

The effectiveness of an integrated rural development approach depends upon the acceptance and sincere application of the philosophy and technology of planning and implementation. Effectiveness of the approach also requires the involvement of all relevant strata of the governmental ministries as well as the various social systems in society.

In pursuing co-ordinated and integrated rural development, one of the crucial factors is the training of personnel at each level involved - at the policy making, planning, implementation and target audience level

with whom these persons will work. Integration can best take place at the inception of the idea or project being implemented in order that basic problems of planning, organization and implementation may be clarified before they solidify.

Integrated rural development needs to be understood, accepted and co-ordinated to be meaningful. It needs to be a structured and systematic operation in which the importance of all components in the system are understood and appreciated for the part each plays individually and collectively.

At the national level, successful rural development requires the involvement of several ministries and agencies. This involvement and integration can best take place at the time of the inception of the idea or project and in turn be carried through to completion. The involvement of other agencies, departments and ministries after the project has already begun does not ensure integration. Administrators, field workers and the general public often need to be helped or taught to appreciate the benefits of an integrated approach. Such an integrated approach to rural development means the development and maintenance of both intra and inter departmental and ministerial co-operation and co-ordination, horizontally and vertically. The lack of such co-ordination can, at the farm and neighbourhood level present a bewildering picture of the ultimate target audience, the participating and potential participant families.

ANNEX IX

Environmental Assessment

Swaziland RDA Infrastructure Support

**Available from AID
offices in**

**Mbabane, Swaziland
and**

Washington, D.C.

ANNEX X

TECHNICAL REVIEW OF PUBLIC HEALTH AND ENVIRONMENTAL ASPECTS

SWAZILAND RDA INFRASTRUCTURE SUPPORT PROJECT

While this project is primarily concerned with bettering the life of the Swazi farmer through better land planning and development, many ancillary factors impinge on its successful implementation. Foremost among these are the environmental and public health aspects which must be of concern in all project activities.

Some activities being carried on in the project could prove to be highly detrimental to health if the necessary steps to ameliorate these conditions are not taken. The construction of irrigation and stock watering lakes, irrigation channels and, in a few areas, rice paddies are activities which create a favorable environment for the spread of vector born diseases such as schistosomiasis and malaria, both of which are endemic to Swaziland. These are quite thoroughly discussed in the Environmental Assessment.

Activities being carried out by the RDA project which serve to ameliorate conditions either pre-existing or created by the physical disruptions inherent in the RDAs include:

1. Fencing of reservoirs to discourage access by cattle and people. This is done primarily to protect the structure, but may have some deterrent effect which would reduce people-to-water contact.
2. Installation of buried pipelines for irrigation water distribution, thus reducing or limiting snail and mosquito breeding opportunities as well as potential people-to-vector contact in the case of schistosomiasis.
3. Installing bridges and drifts at stream crossings.
4. Installing piped clean water supplies primarily through the use of infiltration galleries.
5. Construction of health clinics.
6. Relocation of housing along an all-weather road, thus making the provision of health services (malaria control, visiting health nurses, etc.) a less formidable task.
7. Providing laundry slabs at the public hydrants.

While these activities serve to mitigate, to some extent, those negative factors associated with the land development works, there are areas where improvement can and should be made in order to more effectively

control human disease and other environmental problems. It is anticipated that these or similar actions resulting in a less favorable environment for water borne diseases will be dealt with under 3 programs: 1) the AID and other donor-funded components of RDAP; 2) the proposed AID-funded Swaziland Rural Clean Water project described in more detail below; and 3) a WMO/UNICEF/UNEP pilot study in the SRDA of bilharzia control methods.

These recommendations are:

1. A public drinking water supply and piped distribution system must be installed in every relocation site. This should be done concurrently with the clearing and leveling of the farmstead sites so that it will be functioning prior to the construction of housing, etc. This might also serve as a strong incentive for the farmers to relocate more rapidly. Ideally, water should be piped to the homesite itself, but as a minimum there should be one roadside or public hydrant located so that water need not be carried more than 200 meters.
2. Each public hydrant should be provided with a large paved laundry slab, both to provide an area for doing laundry and for adequate drainage away from the hydrant. Those slabs which were observed were too small and some pooling of waste water was noted.
3. A vigorous privy construction program must be initiated and carried out. This should be phased in with the present privy construction activities at the Ministry of Health.
4. Building stream crossings using so-called drifts (paved-fords) should be discontinued. The minimum standard for a stream crossing should be a low-water bridge or culvert. This is especially important in areas of high schistosomiasis endemicity (Low and Middle-veld). In these areas consideration should also be given to providing foot bridges where actively used footpaths exist.
5. An active water monitoring (stream sampling) program should be established in conjunction with the Ministry of Works laboratory in order to detect any build up of nitrates in the surface waters.
6. The capability should be introduced, either in the Ministry of Health or Works laboratory to analyze pesticide residuals. Present pesticides being supplied for crop pests by the Ministry of Agriculture are limited to Lindane, Dipterex, Dithane, Sevin, Thiodan and Thylene dibromide (for stored grain pests) and sodium arsenite for livestock dipping. Sodium arsenite is to be replaced with a biodegradable dip as soon as testing of various compounds is completed. The proposed Rural Water Borne Disease Project contains an activity devoted to expanding and strengthening Public Health activities. Capability to carry out analysis of pesticide residues can be made part of that activity.

7. A water weed control program, as part of overall RDA maintenance, should be introduced in order to either prevent or control the growth of water plants in and around the shores of all reservoirs.

8. Where it is necessary to use open channels for distribution of irrigation waters, they should be so designed as to maintain mean flow velocities in excess of 67cm/sec (2.2 ft/sec), which is the immobilizing velocity for snails.

9. Administratively, a closer liaison needs to be established at the working level with field personnel of the Ministry of Health. Both district sanitary inspectors and the bilharzia/malaria control unit should be included in the RDA planning and maintenance activities. The ongoing Health Manpower Project contains a rural health administration element devoted in part to strengthening the liaison. Under the project the post of District Rural Health Services Administrator is being created with responsibility for reviewing development activities for their health implications. This officer will also plan and organize the work of public health personnel so that health interests are most efficiently protected and promoted.

10. Closer supervision of construction activities in order to insure that environmental damage in obtaining borrow material for dams, etc. is kept at a minimum and that borrow areas are properly graded so as to prevent standing water and erosion. With the provision of adequate supervisory engineering staff in the Land Development Section, this should be accomplished.

11. All dam construction and/or reconstruction will include a properly designed spill/overflow tube and drawdown pipe and valving mechanism so that the water level fluctuation and reservoir drainage can be accomplished. This activity will be carried out in coordination with the proposed Rural Water Borne Diseases project which will install such mechanisms in existing dams.

Rural Water Borne Diseases Project

An activity which has particular significance to the environmental concerns of this project is the GOS/AID Water Borne Disease project to be initiated in U. S. FY 1979. This project will serve to strengthen and reinforce RDA activities in water supply and perhaps more importantly, waste disposal. The project will help reduce the incidence of water borne disease through: (a) building the technical capacity and extending the operational reach of the Government's investigative and control activities; (b) establishing and imposing controls upon water distribution activities; and (c) promoting popular use of appropriate hygiene measures. The project will include the (1) strengthening and expanding public health laboratory activities, (2) expansion of existing bilharzia control mollusciciding activities combined with the introduction of mechanisms to fluctuate reservoir water levels, and (3) extension of health education activities throughout rural areas. A national coordinating mechanism will be created to promote health interests in the establishment of national development programs.

The creation of the national mechanism under this project combined with the District Health Services posts under the Health Manpower Training Project constitute a major effort to insure that health interests are protected at both the national and the local-levels.

ANNEX XI (A)

COST ESTIMATE^{1/}

SWAZILAND RDA INFRASTRUCTURE SUPPORT PROJECT

FY 1978--FY 1984

(000US\$)

	FOREIGN EXCHANGE	LOCAL CURRENCY	TOTAL
I. GRAND TOTAL	<u>\$11,995.9</u>	<u>\$13,493.2</u>	<u>\$25,489.1</u>
A. USAID, Grant	6,595.9	550.6	7,146.5
B. USAID, Loan	5,400.0	-	5,400.0
C. GOS	-	12,942.6	12,942.6
II. USAID, Grant	<u>\$ 6,595.9</u>	<u>\$ 550.6</u>	<u>\$ 7,146.5</u>
A. Technical Assistance	<u>\$ 5,910.9</u>	<u>-</u>	<u>\$ 5,910.9</u>
1. Land Planning Officer (Civil Engineer), TL (5 1/4 S/Ys @ \$80.0)	413.3	--	413.3
2. Land Planning Officer (Civil Engineer) (3 for 5 S/Ys ea @ \$80.0)	1,200.0	--	1,200.0
3. Resource Economist (5 S/Ys @ \$80.0)	400.0	--	400.0
4. Range Ecologist (5 S/Ys @ \$80.0)	400.0	--	400.0
5. Construction Engineer (2 for 5 S/Ys ea @ \$80.0)	800.0	--	800.0
6. Equipment Operator Trainer (2 S/Ys @ \$80.0)	160.0	--	160.0
7. Workshop Manager/Advisor (4 S/Ys @ \$80.0)	320.0	--	320.0
8. Workshop Parts Controller (3 S/Ys @ \$80.0)	240.0	--	240.0
9. Heavy Plant Mechanic (4 S/Ys @ \$80.0)	320.0	--	320.0
10. Heavy Plant Mechanic/ Instructor (4 S/Ys @ \$80.0)	320.0	--	320.0
11. Consultants (30 S/Ms @ 7.0 per S/M)	210.0	--	210.0
12. Inflation: FY80-84=8% p.a.	1,127.6		1,127.6

	FOREIGN EXCHANGE	LOCAL CURRENCY	TOTAL
<u>B. Training</u>	<u>\$ 653.5</u>	<u>\$ 6.5</u>	<u>\$ 660.0</u>
1. Participant Training			
a. Seven for 4 S/Ys ea @ \$15.0, U.S.	420.0	-	420.0
b. Two for 2 S/Ys ea @ \$15.0, U.S.	60.0	-	60.0
2. In-Country Courses (5 courses @ \$1.0 ea)	-	5.0	5.0
3. Inflation: FY80-84; Item 1 = 8% p.a. Item 2 = 11% p.a.	100.7	1.2	101.9
4. Contingency: 15%	72.8	0.3	73.1
<u>C. Construction</u>	<u>\$ -</u>	<u>\$ 435.0</u>	<u>\$ 435.0</u>
1. Senior Staff Housing (10 @ \$40.0 ea)	-	400.0	400.0
2. Workshop Parts Warehouse	-	35.0	35.0
<u>D. Commodities</u>	<u>\$ 31.5</u>	<u>\$ 109.1</u>	<u>\$ 140.6</u>
1. Vehicles			
a. Four-Door Sedan (1)	-	7.0	7.0
b. 1/4-Ton Pickup (2)	-	9.0	9.0
c. Closed Utility Vehicle, 1/4 ton (4)	-	44.0	44.0
2. Office Equipment & Supplies	-	36.0	36.0
3. Field Equipment & Supplies	4.0	-	4.0
4. Training Equipment and Supplies	18.0	-	18.0
5. Books and Periodicals	1.0	-	1.0
6. Inflation: FY80-84; Item 2 = 8% p.a. Item 3, 4, 5 = 11% p.a.	5.0	7.6	12.6
7. Contingency: 15% (Items 2-5)	3.5	5.5	9.0
<u>III. USAID, LOAN</u>	<u>\$5,400.0</u>	<u>\$ -</u>	<u>\$5,400.0</u>
A. Heavy Equipment	3,402.0	-	3,402.0
B. Farm Equipment	302.6	-	302.6
C. Support Equipment	365.6	-	365.6
D. Tools and Equipment	28.0	-	28.0

	FOREIGN EXCHANGE	LOCAL CURRENCY	TOTAL
E. Inflation: FY80 = 8% ^{2/}	\$ 328.1	\$ -	\$ 328.1
F. Contingency	663.9	-	663.9
G. Procurement Agent's Fee = 7% (A-E)	309.8	-	309.8
IV. <u>GOS</u> ^{3/}	\$ -	\$12,942.6	\$12,942.6
A. <u>Equipment Support</u> ^{4/}	\$ -	\$12,228.6	\$12,228.6
1. Heavy Equipment	-	10,307.0	10,307.0
2. Farm Equipment	-	719.7	719.7
3. Support Equipment	-	1,104.2	1,104.2
4. Tools and Equipment	-	97.7	97.7
B. <u>Wages and Salaries</u>	\$ -	\$ 460.7	\$ 460.7
1. Land Planning Officer (3)	-	33.2	33.2
2. Resource Economist	-	11.1	11.1
3. Range Ecologist	-	11.1	11.1
4. Construction Engineer (2)	-	22.2	22.2
5. LDS Unit Supervisors (3)	-	53.1	53.1
6. Heavy Plant Mechanic	-	6.3	6.3
7. Workshop Parts Controller	-	6.3	6.3
8. Secretaries (2)	-	19.3	19.3
9. Equipment Operators (51)	-	298.1	298.1
C. <u>Other Project Support Costs</u>	\$ -	\$ 253.3	\$ 253.3
1. Vehicle Operation & Maint.	-	126.0	126.0
2. In-Country Travel Per Diem	-	36.3	36.3
3. Furnishings/Appliances, Senior Staff Housing	-	91.0	91.0

^{1/} Prepared August 1978 by OSARAC, GOS, and AID/W staff in Mbabane.

^{2/} GOS costs represent net additional costs incurred in order to implement this project; the GOS total contribution including current capital and recurrent costs in support of land use planning and land development activities would be considerably more.

^{3/} Includes maintenance and repairs, operating costs, depreciation, and allowance for inflation.

^{4/} Inflation is shown in Annex XII as 16.5% calculated on the basis of 1978 prices. As all other project inputs are costed in 1979 prices, equipment costs are adjusted here to 1979 prices with an 8% allowance for inflation.

ANNEX XI (A)

Explanatory Notes

Cost Estimates

Swaziland RDA Infrastructure Support Project

FY 1978-FY 1984

1. Estimates' Prepared August 1978 in Mbabane.
2. Conversion Rate' US\$1 = SA Rand .85
3. AID Fiscal Year (FY)' October to September following year.
GOS FY' April to March following year.

- U. S. Inputs -

4. Technical Assistance: Estimates include salaries, fringe benefits, and other allowances including travel to and from post for technicians and dependents, U. S. storage, HHE and car shipment, R & R travel, education allowance, etc. Based on recent OSARAC experience.
5. Participants:
 - a. Long-Term U. S. - Calculated at \$15,000 per year; based on current costs.
 - b. In-Country - Estimates of \$1,000 per course for one course each year; represents field trainee support costs for regional equipment dealer representatives instruction on proper use and maintenance of equipment.
6. Construction: See Annex XVI, "Engineering Analysis."
7. Vehicles: All prices are CIF Swaziland.
 - a. Sedan, 4-door (1)
 - b. Pickup Truck, 1/4 Ton, 2 x 2 (2)
 - c. Closed Utility Vehicles, 1/4 Ton, 2 x 2 (4)

8. Office Equipment and Supplies: Includes Office furniture (desks, chairs, file cabinets, conference table), drafting tables/chairs, drafting sets, 10-drawer map files (2), and daily office supplies.
9. Field Equipment and Supplies: Includes soil-sampling and testing equipment and survey instruments.
10. Training Supplies and Equipment: Includes (2) mimeograph machines, (1) movie projector, (2) 35 mm slide projectors, (3) screens, darkroom equipment, film, paper, paints, ink, etc.
11. Books and Periodicals: For reference books on project-related subjects and subscriptions to leading technical periodicals most appropriate to project needs. Books would cost about \$20 each, CIF basis delivered to Swaziland; estimate based on recent experience.

- GOS Inputs -

12. Equipment Support:

- a. Maintenance/Repairs: Calculated as a percent of capital cost as follows:

<u>FY 80</u>	<u>FY 81</u>	<u>FY 82-84</u>
5%	10%	20%

It is assumed that maintenance/repair expenses will be less during the first two years of equipment life due to its newness, and the ready availability of spare parts provided with the equipment. The 20 percent estimate for succeeding years is based upon the experience of the GOS Central Transportation Office which is the principal maintenance facility for almost all GOS-owned vehicles and equipment.

- b. Operating Costs: This is calculated at 20 percent of the base cost of the vehicles and equipment, including inflation, per year. Again, this is based on CTO experience.
 - c. Depreciation: It is assumed that there is a 5-year life for most of the equipment. Using the straight-line method, depreciation for most of the equipment is calculated at 20 percent of the base cost plus inflation per year. A few items are calculated at 10 percent. Also see section V.H which describes the sinking fund to be established for replacing the equipment.
13. Wages and Salaries: Estimates are based on the GOS salary and wage levels listed below and projected time of employment.

<u>TITLE</u>	<u>GRADE</u>	<u>SALARY/WAGE</u>
Land Planning Officer	20	E5,940
Resource Economist	20	5,940
Range Ecologist	20	5,940
Construction Engineer	20	5,940
LDS Unit Supervisor	15	3,252
Heavy Plant Mechanic	15	3,252
Workshop Parts Controller	15	3,252
Secretary	12	1,428
Equipment Operators	Daily Wage	4

14. Vehicle Operation and Maintenance: Calculated at 40 percent of base cost per year including 20 percent for maintenance and repairs and 20 percent for operating costs. Based on CTO experience.
15. In-Country Travel Per Diem: For overnight accommodation and board for technical staff in the field; per GOS rate of E19.00 per night(or actual charges whichever is less) for salary grades 14 to 20 inclusive.

16. Inflation Factors: Based on recent trends, U. S. and Swazi-land rates calculated at 8 percent and 11 percent compound rates as follows:

	<u>FY 79</u>	<u>FY 80</u>	<u>FY 81</u>	<u>FY 82</u>	<u>FY 83</u>
U.S. Procured	8.0%	16.6%	26.0%	36.0%	46.9%
GOS Procured	11.0%	23.2%	36.8%	51.8%	68.5%

ANNEX XI (B)
 OBLIGATION SCHEDULE^{1/}
 SWAZILAND RDA INFRASTRUCTURE SUPPORT PROJECT
 FY 1978-FY 1984
 (OOOUS\$)

	FY78	FY79	FY80	FY81	FY82	FY83	TOTAL
TOTAL	<u>£2,077.0</u>	<u>£1,294.6</u>	<u>£ 864.6</u>	<u>£ 979.9</u>	<u>£1,024.4</u>	<u>£ 906.0</u>	<u>£7,146.5</u>
A. Technical Assistance	<u>£1,394.0</u>	<u>£1,129.3</u>	<u>£ 749.9</u>	<u>£ 852.9</u>	<u>£ 889.1</u>	<u>£ 895.7</u>	<u>£5,910.9</u>
1. Land Planning Officer (TL)	105.0	75.0	52.5	52.5	52.5	76.8	413.3
2. Land Planning Officer (3)	275.0	225.0	157.5	157.5	157.5	227.6	1,200.0
3. Resource Economist	91.7	75.0	52.5	52.5	52.5	75.8	400.0
4. Range Ecologist	91.7	75.0	52.5	52.5	52.5	75.8	400.0
5. Construction Engineer (2)	185.8	147.6	105.0	105.0	105.0	151.6	800.0
6. Equipment Operator/Trainer	86.7	73.3	-	-	-	-	160.0
7. Workshop Manager/Advisor	96.7	70.0	46.6	46.7	60.0	-	320.0
8. Workshop Parts Controller	91.7	65.0	35.0	48.3	-	-	240.0
9. Heavy Plant Mechanic	96.7	70.0	46.6	46.7	60.0	-	320.0
10. Heavy Plant Mechanic (Instructor)	96.7	70.0	46.6	46.7	60.0	-	320.0
11. Consultants	98.0	28.0	21.0	21.0	21.0	21.0	210.0
12. Inflation: FY80-84 = 8% p.a. ^{2/}	78.3	155.4	134.1	223.5	268.1	268.2	1,127.6
B. Training	<u>£ 152.4</u>	<u>£ 155.3</u>	<u>£ 107.1</u>	<u>£ 118.4</u>	<u>£ 126.0</u>	<u>£ 0.8</u>	<u>£ 660.0</u>
1. Participant Training	124.8	117.0	79.4	79.4	79.4	-	480.0
2. In-Country Courses	1.0	1.0	0.7	0.7	0.8	0.8	5.0
3. Inflation: FY80-84=6%, item 1; 11% item 2	7.7	19.6	14.9	26.1	33.6	-	101.9
4. Contingency: 15%	18.9	17.7	12.1	12.2	12.2	-	73.1
C. Construction	<u>£ 435.0</u>	<u>£ -</u>	<u>£ -</u>	<u>£ -</u>	<u>£ -</u>	<u>£ -</u>	<u>£ 435.0</u>
1. Senior Staff Housing (10)	400.0	-	-	-	-	-	400.0
2. Workshop Part Warehouse	35	-	-	-	-	-	35.0

10

ANNEX XI (C)
 EXPENDITURE SCHEDULE^{1/}
 SWAZILAND RDA INFRASTRUCTURE SUPPORT PROJECT
 FY 1978 - FY 1984
 (000US\$)

	FY 79	FY 80	FY 81	FY 82	FY 83	FY 84	TOTAL
TOTAL	<u>\$ 929.6</u>	<u>\$1,184.9</u>	<u>\$1,256.7</u>	<u>\$1,292.6</u>	<u>\$1,330.3</u>	<u>\$1,152.4</u>	<u>\$7,146.5</u>
A. Technical Assistance	<u>\$ 374.3</u>	<u>\$1,057.3</u>	<u>\$1,091.7</u>	<u>\$1,110.4</u>	<u>\$1,139.5</u>	<u>\$1,137.7</u>	<u>\$5,910.9</u>
1. Land Planning Officer (TL)	40.0	70.0	70.0	70.0	70.0	93.3	413.3
2. Land Planning Officer (3)	80.0	210.0	210.0	210.0	210.0	280.0	1,200.0
3. Resource Economist	26.7	70.0	70.0	70.0	70.0	93.3	400.0
4. Range Ecologist	26.7	70.0	70.0	70.0	70.0	93.3	400.0
5. Construction Engineer (2)	53.4	140.0	140.0	140.0	140.0	186.6	800.0
6. Equipment Operator/Trainer	26.7	60.0	73.3	-	-	-	160.0
7. Workshop Manager/Advisor	26.7	70.0	70.0	70.0	83.3	-	320.0
8. Workshop Parts Controller	26.7	65.0	65.0	83.3	-	-	240.0
9. Heavy Plant Mechanic	26.7	70.0	70.0	70.0	83.3	-	320.0
10. Heavy Plant Mechanic (Instructor)	26.7	70.0	70.0	70.0	83.3	-	320.0
11. Consultants	14.0	84.0	28.0	28.0	28.0	28.0	210.0
12. Inflation: FY80-84 0 % p.a. ^{2/}	-	78.3	155.4	229.1	301.6	363.2	1,127.6
B. Training	<u>\$ 33.8</u>	<u>\$ 118.6</u>	<u>\$ 155.3</u>	<u>\$ 171.6</u>	<u>\$ 179.2</u>	<u>\$ 1.5</u>	<u>\$ 660.0</u>
1. Participant Training	29.4	95.4	117.0	120.6	117.6	-	480.0
2. In-Country Courses	-	1.0	1.0	1.0	1.0	1.0	5.0
3. Inflation: FY80-84 = 8%, item 1; 11% item 2	-	7.7	19.6	31.8	42.8	-	101.9
4. Contingency: 15%	4.4	14.5	17.7	18.2	17.8	0.5	73.1
C. Construction	<u>\$ 435.0</u>	<u>\$ -</u>	<u>\$ 435.0</u>				
1. Senior Staff Housing (10)	400.0	-	-	-	-	-	400.0
2. Workshop Parts Warehouse	35.0	-	-	-	-	-	35.0

ANNEX XI (U)

- 2 -

OBLIGATION SCHEDULE
(000 US\$)

	FY78	FY79	FY80	FY81	FY82	FY83	TOTAL
C. <u>Commodities</u>	<u>£ 95.6</u>	<u>£ 10.0</u>	<u>£ 7.6</u>	<u>£ 8.6</u>	<u>£ 9.3</u>	<u>£ 9.6</u>	<u>£ 140.6</u>
1. Vehicles	60.0	-	-	-	-	-	60.0
2. Office Equipment and Supplies	20.0	4.0	3.0	3.0	3.0	3.0	36.0
3. Field Equipment and Supplies	4.0	-	-	-	-	-	4.0
4. Training Equipment and Supplies	6.0	3.0	2.2	2.2	2.3	2.3	18.0
5. Books and Periodicals	0.2	0.2	0.1	0.1	0.2	0.2	1.0
6. Inflation: FY80-84=11% p.a.	0.8	1.7	1.5	2.5	3.0	3.1	12.6
7. Contingency: 15%	4.6	1.1	0.8	0.8	0.8	0.9	9.0

1/ Prepared August 1978 in Mbabane.

2/ Inflation allowances were calculated on the basis of amounts shown in the "Expenditure Schedule" for each FY on an item by item basis. The following compound inflation factors (%) were used:

FY:	80	81	82	83	84
US	8.0	16.6	26.0	36.0	46.9
Swazi	11.0	23.2	36.8	51.8	68.5

ANNEX XI (C)

EXPENDITURE SCHEDULE (Cont)
FY 1979-FY 1984
(000US\$)

	FY 79	FY 80	FY 81	FY 82	FY 83	FY 84	TOTAL
D. Commodities	£ 86.5	£ 9.0	£ 9.7	£ 10.6	£ 11.6	£ 13.2	£ 140.6
1. Vehicles	60.0	-	-	-	-	-	60.0
2. Office Equipment & Supplies	16.0	4.0	4.0	4.0	4.0	4.0	36.0
3. Field Equipment & Supplies	4.0	-	-	-	-	-	4.0
4. Training Equipment & Supplies	3.0	3.0	3.0	3.0	3.0	3.0	18.0
b. Books and Periodicals	-	0.2	0.2	0.2	0.2	0.2	1.0
6. Inflation: FY80-84 = 11% p.a., Item 2; 8%, Items 3,4,5	-	0.7	1.4	2.3	3.3	4.9	12.6
7. Contingency: 15%	3.6	1.1	1.1	1.1	1.1	1.1	9.0

1/ Prepared August 1978 in Mbabane.

2/ Inflation allowances were calculated on the basis of amounts shown in the "Expenditure Schedule" for each FY on an item by item basis. The following compound inflation factors (%) were used:

FY	80	81	82	83	84
U.S.	8.0	16.6	26.0	36.0	46.9
SWAZI	11.0	23.2	36.8	51.8	68.5

ANNEX XI (D)
 GOS RECURRENT COST BUDGET^{1/}
 SWAZILAND RDA INFRASTRUCTURE SUPPORT PROJECT
 FY 1979-FY 1984^{2/}
 (000US\$)

	FY79	FY80	FY81	FY82	FY83	FY84	TOTAL
TOTAL	<u>143.7</u>	<u>2,134.8</u>	<u>2,353.0</u>	<u>2,740.3</u>	<u>2,773.9</u>	<u>2,796.9</u>	<u>12,942.6</u>
A. Equipment Support	<u>33.2</u>	<u>2,042.7</u>	<u>2,247.7</u>	<u>2,635.0</u>	<u>2,635.0</u>	<u>2,635.0</u>	<u>12,228.6</u>
1. <u>Heavy Equipment</u>	(-)	(1,726.0)	(1,893.7)	(2,229.1)	(2,229.1)	(2,229.1)	(10,307.0)
a. Maintenance/Repairs	-	167.7	335.4	670.8	670.8	670.8	2,515.5
b. Operating Costs	-	670.8	670.8	670.8	670.8	670.8	3,354.0
c. Depreciation/Replacement (of which Inflation)	(-)	(234.9)	(234.9)	(234.9)	(234.9)	(234.9)	(1,174.5)
2. <u>Farm Equipment</u>	(29.3)	(117.3)	(132.7)	(146.8)	(146.8)	(146.8)	(719.7)
a. Maintenance/Repairs	3.8	15.3	30.7	44.8	44.8	44.8	184.2
b. Operating Costs	15.3	61.3	61.3	61.3	61.3	61.3	321.8
c. Depreciation/Replacement (of which Inflation)	(5.1)	(20.3)	(20.3)	(20.3)	(20.3)	(20.3)	(106.6)
3. <u>Support Equipment</u>	(-)	(183.7)	(204.1)	(238.8)	(238.8)	(238.8)	(1,104.2)
a. Maintenance/Repairs	-	18.4	38.8	73.5	73.5	73.5	277.7
b. Operating Costs	-	73.5	73.5	73.5	73.5	73.5	367.5
c. Depreciation/Replacement (of which Inflation)	(-)	(24.3)	(24.3)	(24.3)	(24.3)	(24.3)	(97.4)
4. <u>Tools and Equipment</u>	(3.9)	(15.7)	(17.2)	(20.3)	(20.3)	(20.3)	(97.7)
a. Maintenance/Repairs	0.4	1.5	3.0	6.1	6.1	6.1	23.2
b. Operating Costs	1.5	6.1	6.1	6.1	6.1	6.1	32.0
c. Depreciation/Replacement (of which Inflation)	(0.5)	(2.1)	(2.1)	(2.1)	(2.1)	(2.1)	(11.0)

ANNEX XI (D)

- 2 -

GOS RECURRENT COST BUDGET (Cont)
(000 US\$)

	FY79	FY80	FY 81	FY82	FY83	FY84	TOTAL
D. Wages and Salaries	£ 10.2	£ 61.5	£ 74.7	£ 74.7	£ 108.3	£ 131.3	£ 460.7
1. Land Planning Officer (3)	-	-	-	-	12.2	21.0	33.2
2. Resource Economist	-	-	-	-	4.1	7.0	11.1
3. Range Ecologist	-	-	-	-	4.1	7.0	11.1
4. Construction Engineers (2)	-	-	-	-	8.2	14.0	22.2
5. LDS Unit Supervisors (3)	-	7.5	11.4	11.4	11.4	11.4	53.1
6. Heavy Plant Mechanic	-	-	-	-	2.5	3.8	6.3
7. Workshop Parts Controller	-	-	-	-	2.5	3.8	6.3
8. Secretaries (2)	2.3	3.4	3.4	3.4	3.4	3.4	19.3
9. Equipment Operators (51)	7.9	50.6	59.9	59.9	59.9	59.9	298.1
C. Other Project Support Costs	£ 100.3	£ 30.6	£ 30.6	£ 30.6	£ 30.6	£ 30.6	£ 253.3
1. Vehicle Operation and Maintenance	6.0	24.0	24.0	24.0	24.0	24.0	126.0
2. In-Country Travel Per Diem	3.3	6.6	6.6	6.6	6.6	6.6	36.3
3. Furnishings/Appliances Senior Staff Housing	91.0	-	-	-	-	-	91.0

1/ Prepared August 1978 in Mbabane.

2/ The GOS fiscal year is from April of the base year to March of the following year.

ANNEX XI (E)

GOS RECURRENT COST BUDGET^{1/}
 SWAZILAND RDA INFRASTRUCTURE SUPPORT PROJECT
 FY 1979 - FY 1984^{2/}
 (000Emalangen1)

	FY 79	FY 80	FY 81	FY 82	FY 83	FY 84	TOTAL
TOTAL	<u>E 122.2</u>	<u>E1,814.5</u>	<u>E2,000.0</u>	<u>E2,329.2</u>	<u>E2,357.8</u>	<u>E2,377.5</u>	<u>E11,001.2</u>
A. Equipment Support	<u>28.2</u>	<u>1,730.2</u>	<u>1,910.5</u>	<u>2,239.7</u>	<u>2,239.7</u>	<u>2,239.7</u>	<u>10,394.0</u>
1. Heavy Equipment	(-)	(1,467.1)	(1,609.6)	(1,894.7)	(1,894.7)	(1,894.7)	(8,760.8)
a. Maintenance/Repairs	-	142.5	285.1	570.2	570.2	570.2	2,138.2
b. Operating Costs	-	570.2	570.2	570.2	570.2	570.2	2,851.0
c. Depreciation/Replacement (of which Inflation)	(-)	(754.4)	(754.3)	(754.3)	(754.3)	(754.3)	(3,771.6)
c. Depreciation/Replacement (of which Inflation)	(-)	(199.7)	(199.7)	(199.7)	(199.7)	(199.7)	(998.5)
2. Farm Equipment	(4.9)	(99.7)	(112.8)	(124.8)	(124.8)	(124.8)	(611.8)
a. Maintenance/repairs	3.2	13.0	26.1	38.1	38.1	38.1	156.6
b. Operating Costs	13.0	52.1	52.1	52.1	52.1	52.1	273.5
c. Depreciation/Replacement (of which Inflation)	(4.3)	(17.3)	(17.3)	(17.3)	(17.3)	(17.3)	(90.8)
c. Depreciation/Replacement (of which Inflation)	(-)	(156.1)	(173.5)	(203.0)	(203.0)	(203.0)	(938.6)
3. Support Equipment	(-)	(156.1)	(173.5)	(203.0)	(203.0)	(203.0)	(938.6)
a. Maintenance/Repairs	-	15.6	33.0	62.5	62.5	62.5	236.1
b. Operating Costs	-	62.5	62.5	62.5	62.5	62.5	312.5
c. Depreciation/Replacement (of which Inflation)	(-)	(78.0)	(78.0)	(78.0)	(78.0)	(78.0)	(390.0)
c. Depreciation/Replacement (of which Inflation)	(-)	(20.7)	(20.7)	(20.7)	(20.7)	(20.7)	(103.5)
4. Tools and Equipment	(3.3)	(13.3)	(14.6)	(17.2)	(17.2)	(17.2)	(82.8)
a. Maintenance/Repairs	0.3	1.3	2.6	5.2	5.2	5.2	19.8
b. Operating Costs	1.3	5.2	5.2	5.2	5.2	5.2	27.3
c. Depreciation/Replacement (of which Inflation)	(0.4)	(1.8)	(1.8)	(1.8)	(1.8)	(1.8)	(9.4)
c. Depreciation/Replacement (of which Inflation)	(0.4)	(1.8)	(1.8)	(1.8)	(1.8)	(1.8)	(9.4)
B. Wages and Salaries	<u>8.7</u>	<u>52.3</u>	<u>63.5</u>	<u>63.5</u>	<u>92.1</u>	<u>111.8</u>	<u>391.9</u>
1. Land Planning Officers (3)	-	-	-	-	10.4	17.9	28.3
2. Resource Economist	-	-	-	-	3.5	6.0	9.5
3. Range Ecologist	-	-	-	-	3.5	6.0	9.5
4. Construction Engineers (2)	-	-	-	-	7.0	12.0	19.0

ANNEX XI (K)
(000 Emalangeni)

	FY 79	FY 80	FY 81	FY 82	FY 83	FY 84	TOTAL
5. LDS Unit Supervisor (3)	K -	E 6.4	E 9.7	K 9.7	E 9.7	K 9.7	E 45.2
6. Heavy Plant Mechanic	-	-	-	-	2.1	3.2	5.3
7. Workshop Parts Controller	-	-	-	-	2.1	3.2	5.3
8. Secretaries (2)	2.0	2.9	2.9	2.9	2.9	2.9	16.5
9. Equipment Operators (51)	6.7	43.0	50.9	50.9	50.9	50.9	253.3
C. Other Project Support Costs	85.3	26.0	26.0	26.0	26.0	26.0	215.3
1. Vehicle Operation and Mainten.	5.1	20.4	20.4	20.4	20.4	20.4	107.1
2. In-Country Travel Per Diem	2.8	5.6	5.6	5.6	5.6	5.6	30.8
3. Furnishing/Appliances, Senior Staff Housing	77.4	-	-	-	-	-	77.4

1/ Prepare August 1978 in Mbabane.

2/ The GOS fiscal year is from April of the base year to March of the following year.

ANNEX XII

**HEAVY EQUIPMENT AND MACHINERY LIST *
SWAZILAND RDA INFRASTRUCTURE SUPPORT PROJECT**

ITEM NO.	DESCRIPTION	QTY	PRIOR LIST ITEM NO.	UNIT PRICE (CIF)	TOTAL 1978 COST (CIF)	1980 COST 8% INFLATION RATE COMPOUNDED (16.5%)
<u>HEAVY EQUIPMENT</u>						
1.	<u>GRADERS, MOTOR</u> Diesel Engine, 12' Mold-board, with scarifier and rear mounted ripper	9	1	72,000	648,000	754,920
	<u>MODEL:</u> CAT 130 or Gallion T-500 Deere-670					
	<u>SPARE PARTS:</u> 10% CIF value to include all parts necessary for 2 years normal operation.					75,492
2.	<u>CRAWLER DOZER</u> With Draw Bar, Angle Dozer Blade, with hydraulic connections and controls mounted on rear for pull-type hydraulically controlled equipment	5	2	88,000	440,000	512,600
	<u>MODEL:</u> CAT-D-6, 1H-TD-15, CASE 1450					
	<u>SPARE PARTS:</u> 10% CIF value to include all parts necessary for 2 years normal operation					51,260
2a.	<u>PULL TYPE SCRAPERS</u> 10 cu.yd. struck capacity minimum, rubber tire mounted hydraulically operated to be compatible with Item No. 2	5	2	25,000		145,625
	<u>SPARE PARTS:</u> 5% CIF value to include all parts necessary for 2 years normal operation					7,281

ITEM NO.	DESCRIPTION	QTY	PRIOR LIST ITEM NO.	UNIT PRICE (CIF)	TOTAL 1978 COST (CIF)	1980 COST 8% INFLATION RATE COMPOUNDED (16.5%)
3.	<u>CRAWLER DOZER</u> With Angle Rear Mounted Ripper, with quick detachable root rakes	4	3	94,000	376,000	438,040
	<u>MODEL:</u> CAT-D-6, iH-TD-15 CASE 1450					
	<u>SPARE PARTS:</u> 10% CIF value to include all parts necessary for 2 years, normal operation					43,804
4.	<u>CRAWLER DOZER</u> With Angle Dozer, Quick Detachable Back Hoe with 18" Bucket, and Draw Bar	4	4	62,000	248,000	288,920
	<u>MODEL:</u> CAT-D-4, 1H-TD-8 CASE 1150					
	<u>SPARE PARTS:</u> 10% CIF value to include all parts, necessary for 2 years normal operation					28,892
5.	<u>FRONT END LOADER</u> Rubber Tired, 4 wheel drive diesel engined, 2 cu.yd. bucket with teeth, back hoe attachment (18' bucket)	1	6	65,000	65,000	75,725
	<u>MFG:</u> CAT.1H, Case, Deere					
	<u>SPARE PARTS:</u> 10%					7,573
6.	<u>FRONT END LOADER</u> <u>CRAWLER TYPE</u> 2 cu.yd bucket with teeth, back hoe attachment with 18" bucket, diesel engined	1	7	70,000	70,000	81,550

ITEM NO.	DESCRIPTION	QTY	PRIOR LIST ITEM NO.	UNIT PRICE (CIF)	TOTAL 1978 COST (CIF)	1980 COST 8% INFLATION RATE COMPOUNDED (16.5%)
	<u>MFG:</u> CAT, 1H, Case Deere					
	<u>SPARE PARTS:</u> 10%					8,155
7.	<u>FRONT END LOADER</u> Rubber tired, 4 wheel drive 2 cu. yd. bucket with teeth, diesel engined	1	8	60,000	60,000	69,900
	<u>MFG:</u> CAT, 1H, Case Deere					
	<u>SPARE PARTS:</u> 10%					6,990
8.	<u>SELF PROPELLED SCRAPERS</u> 14 cu.yd. capacity struck, diesel	1	9	200,000	200,000	233,000
	<u>MFG:</u> WABCO, 1H, CAT, J.Deere, Clarke					
	<u>SPARE PARTS:</u> 10%					23,300
9.	<u>LAND PLANE</u> Minimum 40' Long Min 10' Blade	2	11	21,000	42,000	48,930
10.	<u>PULL TYPE SHEEP FOOT ROLLER</u> 2 Rollers (4-6 ft.rollers) in-line rillers	4	12	13,000	52,000	60,580
11.	<u>LOW BED TRAILER, 50-60 TON</u> Hydraulic Drop Type Goose Neck with one set spare tire	1	15	30,000	30,000	34,950

ITEM NO.	DESCRIPTION	QTY	PRIOR LIST ITEM NO.	UNIT PRICE (CIF)	TOTAL 1978 COST (CIF)	1978 COST 8% INFLATION RATE COMPOUNDED (16.5%)
12.	<u>TRUCK TRACTOR</u> Heavy duty-diesel, 80,000 GVW Minimum right hand drive, tandem axel-10 sped with auxiliary transmission-maximum road speed 80 kph, primarily for on- and off- road use, gradeability 14%, km instruments	1	16	75,000	75,000	87,375
	<u>SPARE PARTS:</u> 10%					8,737
13.	<u>TRUCK 20' STAKE BED</u> 27,000 GVW minimum diesel, 10 speed road ranger with deep under transmission, km instruments, gradeability 14% right hand drive, primarily for off-highweay use maximum road speed 80 kph	4	17	19,000	76,000	88,540
	<u>MODEL:</u> FORD F-700 Chevrolet C-80 <u>SPARE PARTS:</u> 10%					8,854
14.	<u>TRUCK, DUMP</u> Diesel, minimum 8 cu.yd. tanden drive axel, km. instruments, 14% gradeability, 10 speed road ranger with 4 speed auxiliary transmission primarily for off-road use, maximum road speed 80 kph, right hand drive	4	18	43,000	172,000	200,380
	<u>SPARE PARTS:</u> 10%					20,380
15.	<u>UTILITY VEHICLE, FULLY ENCLOSED BODY</u> 2 wheel drive, wheel base 100' minimum, 5 passenger, km instruments, diesel,					

ITEM NO.	DESCRIPTION	QTY	RIOR LIST ITEM NO.	UNIT PRICE (CIF)	TOTAL 1978 COST (CIF)	1978 COST 8% INFLATION RATE COMPOUNDED (16.5%)
	maximum road speed 80 kph, right hand drive, 14% gradeability	10	23 (19-22 deleted)	10,000	100,000	116,500
	<u>SPARE PARTS:</u>					
	10%					11,650
16.	<u>TRUCK, MECHANIC'S FIELD SERVICE</u>					
	2 wheel drive, wheel base 130" minimum km instruments, 3,000 GVW minimum, 4 speed manual transmission, gas or diesel, maximum road speed 80 kph, right hand drive, 14% gradeability, utility body with side opening doors, including complete set of heavy duty mechanic's tools, km instruments	4	24	16,000US	64,000	74,560
	<u>SPARE PARTS:</u>					
	10%					7,456
17.	<u>WATER TRAILERS, TWO WHEEL</u>					
	To carry minimum 450 gal. potable water, for highway use with electric brakes complete with controller unit	4	25	1,500	6,000	6,990
18.	<u>TRUCK, WATER, 1500 GAL. MINIMUM</u>					
	27,000 GVW minimum, right hand drive, with pto pump for filling tank with 100 ft suction hose, diesel, km instruments, 5 speed differential, maximum speed 80 kph, 14% gradeability, spray bar for water tank gravity flow)	4	26	27,500US	110,000	128,150
	<u>SPARE PARTS:</u>					
	10%					12,815

ITEM NO.	DESCRIPTION	QTY	PRIOR LIST ITEM NO.	UNIT PRICE (CIF)	TOTAL 1978 COST (CIF)	1978 COST 8% INFLATION RATE COMPOUNDED (16.5%)
<u>FARM EQUIPMENT</u>						
19.	<u>FARM TRACTORS</u>					
	Minimum 70 (PTD) Hp, 3 point hitch, 550 RPM take-off, front mounted weights, diesel, lights for highway use	6	27	8,600	51,600	60,114
	<u>SPARE PARTS:</u>					
	10%					6,012
20.	<u>HEAVY DUTY DISC PLOW</u>					
	3 Disc 30" minimum diameter, point hitch type, with spare set of discs	6	29 (28 deleted)	950	5,700	6,640
	<u>SPARE PARTS:</u>					
	5%					332
21.	<u>DISC HARROW, HEAVY DUTY</u>					
	6 foot width, 24" minimum disc blades, double gang 3 point hitch type	3	31 (30 deleted)	1,700	5,100	5,941
	<u>SPARE PARTS:</u>					
	5%					297
22.	<u>DISC HARROW, HEAVY DUTY</u>					
	8 foot width, 24" minimum disc blades double gang pull type. Wheel mounted bush and bag type	3	31	7,000	21,000	24,465
	<u>SPARE PARTS:</u>					
	5%					1,223
23.	<u>GRASSLAND SEEDER</u>					
	8 Foot width, pull type on wheels	6	32	5,500	33,000	38,445
	<u>SPARE PARTS:</u>					
	5%					1,922

ITEM NO.	DESCRIPTION	QTY	PRIOR LIST ITEM NO.	UNIT PRICE (CIF)	TOTAL 1978 COST (CIF)	1978 COST 8% INFLATION RATE COMPOUNDED (16.5%)
24.	<u>CULTIPACKER</u> 8 Foot width, mounted on wheels	6	33	900	5,400	6,291
25.	<u>FERTILIZER SPREADER</u> ull type, wheel mounted 10' wide, easy flow type	6	35 (34 deleted)	2,750	16,500	19,223
	<u>SPARE PARTS:</u> 5% CIF value to include all necessary for 2 years normal operation					551
26.	<u>TWO WAY BOTTOM PLOW HEAVY DUTY</u> High trash clearance 2 x 2 .x 16", 3 point hitch type, with 16 spare points	1	36	7,000	7,000	8,155
	<u>SPARE PARTS:</u> 5%					408
	<u>SUPPORT EQUIPMENT AND SUPPLIES</u>					
27.	<u>AIR COMPRESSOR</u> 250 cfm, diesel, trailer mounted for highway towing, electric brakes, complete with controller, complete with two 50 lb. jack hammer, 4 sets of 3'5 and 7' drill rods (7'8' diameter), 12 sets each star type, chisel type, and cone type drill bits, and 200 feet airline hose with quick disconnect couplers	2	37	16,000	32,000	37,280
	<u>SPARE PARTS:</u> 10%					3,728

ITEM NO.	DESCRIPTION	QTY	PRIOR LIST ITEM NO.	UNIT PRICE (CIF)	TOTAL 1978 COST (CIF)	1978 COST 8% INFLATION RATE COMPOUNDED (16.5%)
28.	<u>TRUCK MOUNTED LUBRICATION UNIT</u> For lubrication of heavy construction equipment, complete with 500 gal. fuel tank and all lubrication equipment including hoses and reels, 2 wheel drive 27,000 GVW minimum, 10 transmission, 14% grade-ability, km instruments, right hand drive, diesel, maximum speed 80 kph	3	38	22,000	66,000	76,890
	<u>SPARE PARTS:</u> 10%					7,689
29.	<u>WRECKER TRUCK</u> Diesel, 2 sheel drive, right hand drive, 27,000 GVWminimum, 10 ton capacity on hoist complete with dolly wheels, 10 speed transmission, km instruments	1	40 (39 deleted)	25,000	5,000	29,125
	<u>SPARE PARTS:</u> 10%					2,912
30.	<u>_____</u> For earth work investigation for small water impoundments to determine soil profiles up to 100 feet, hand o- perated and with a gasoline driven winch	1	43 (42 deleted)	10,000	10,000	11,650
	<u>SPARE PARTS:</u> 10%					1,165
	<u>MFG:</u> By soil test					

ITEM NO.	DESCRIPTION	QTY	PRICE LIST ITEM NO.	UNIT PRICE (CIF)	TOTAL 1978 COST (CIF)	1978 COST 8% INFLATION RATE COMPOUNDED (16.5%)
31.	<u>CEMENT MIXER</u> capacity mounted, engine driven	3	44	13,000	39,000	45,435
	<u>SPARE PARTS:</u> 10%					4,544
32.	<u>CEMENT MIXER:</u> capacity engine driven wheel mounted	3	44	1,500	4,500	5,243
	<u>SPARE PARTS:</u> 10%					524
33.	<u>CULVERT FORMS, CEMENT PIPE TYPE</u> 15", 18", 24", 30" diameter	6	45	2,500	15,000	17,475
34.	<u>FORK LIFT TRUCK</u> Diesel, 5 ton capacity rubber tired for off con- crete use	1	46	30,000	30,000	34,950
	<u>SPARE PARTS:</u> 10%					3,495
35.	<u>VHF RADIO SETS</u> Mobile for vehiles	10	48 (47 deleted)	3,000	30,000	34,950
	<u>SPARE PARTS:</u> 5%					1,748
36.	<u>MECHANICAL DRIVEN VIBRATING SOIL COMPACTOR</u>	3	-	2,000	6,000	6,990
	<u>SPARE PARTS:</u> 10%					699
37.	<u>CONCRETE VIBRATORS</u> Engine driven	3	-	2,000	6,000	6,990
	<u>SPARE PARTS:</u> 10%					699

ITEM NO.	DESCRIPTION	QTY	PRIOR LIST ITEM NO.	UNIT PRICE (CIF)	TOTAL 1978 COST (CIF)	1980 COST 8% INFLATION RATE COMPOUNDED (16.5%)
38.	<u>TRAILERS</u>					
	24' Tilt Deck 20 for Capacity Air Brakes equipped for Highway use	4	-	13,000	52,000	60,580
	<u>TOOLS AND EQUIPMENT</u>					
1.	Heavy Duty Mechanics Set	4	6	2,000	8,000	9,320
2.	Light Duty Mechanics Set	16	7	1,000	16,000	18,640
3.	Diesel Injector Testor	1	9	500	500	583
4.	Diesel Pump Tester	1	9	500	500	583
5.	Small Parts Cleaner	1	21	1,000	1,000	1,165
6.	Shop Equipment	LUT				60,000
	TOTAL COST:					\$4,465,352
	CONTINGENCIES 15.5%:					626,273
	PROCUREMENT AGENT FEE 7%:					308,375
	<u>G R A N D T O T A L:</u>					<u>\$5,400,000</u>

- Items 2 and 3 will be purchased from the same supplier as will items 6, 7 and 8 to increase serviceability and stocking of spare parts.
- List and cost estimates prepared June 1978 in Mbabane by Steve Klaus, procurement specialist, AID/W and Ollie Broadway, heavy equipment specialist, USDA.

ANNEX XIII

JOB DESCRIPTIONS

Swaziland RDA Infrastructure Support Project

- A. Job Title : Land Planning Officer (Team Leader)
Place of Assignment : MOA, Land Use Planning Section (LUPS) Mbabane
Type of Employment : U. S. Contract
Period of Employment : 2-5 years
Type of Control : Reports to Ministry of Agriculture and maintains liaison with AID/W.

Scope of Work

1. Serves as team leader for a team of six (including himself) U. S. multi-discipline professionals, and, as assistant to Senior Land Planning Officer, supervises existing staff of technicians in land and water resource planning and development. The U. S. team will consist of the following:

- (a) 3 Civil Engineers (various disciplines)
- (b) 1 Resource Economist
- (c) 1 Range Ecologist

The existing staff (largely Swazi) consists of the following:

- (a) 2 Land Planning Officers
- (b) 3 Soil Surveyors*
- (c) 1 Irrigation Engineer
- (d) 1 Land Surveyor
- (e) 1 Cartographer
- (f) 5 Draughtsmen
- (g) 2 Tracers
- (h) 3 Technical Assistants
- (i) 1 Shorthand Typist
- (j) 1 Junior Clerical Officer

2. Prepares and supervises preparation of land and water resource development plans for intensifying agriculture land use, making sure these are based on on-site inspections made by appropriate LUPS staff.

3. Is responsible for the integration of the work of the various disciplines into final planning and construction documents, being responsible for the content of these documents.

4. Plans and coordinates work schedules of the team in accordance with planning activities and responsibilities.

* The term Soil Surveyor and Soil Scientist are synonymous.

5. In close collaboration with the Senior LP Officer, trains Swazi technicians in the techniques and concepts of land use and water resources planning and directs the contract staff in training Swazi staff.

Employment Factors

1. A civil or agriculture engineer with experience in leadership of multi-discipline planning staffs comparable to those of the U. S. Soil Conservation Service Small Watershed Program or U. S. Bureau of Reclamation.
2. Sensitivity and ability to get along and work well with people of other cultures.
3. Interest in ability to train others resulting in the development of their skills and talents.
4. Good health and possesses somewhat of a pioneer spirit and the ability to live off the beaten path.

Education Requirements

B. S. Degree in Civil or Agriculture Engineering
Registered Engineer preferred

Salary and Support

Salary range: \$28,000 - \$34,000
Total salary and support costs: \$70,000 - \$80,000

B. Job Title : Civil Engineer (Hydraulic)
Place of Assignment : MOA, Land Use Planning Section, Mbabane
Type of Employment : U. S. Contract
Period of Employment : 2-5 years
Type of Control : Reports directly to Land Planning Officer (Team Leader)

Scope of Work

1. Serves as an interdisciplinary member of a land and water resource planning and development team on the larger projects.
2. Determines drainage areas, rainfall, runoff and water yield relationships. Makes computations for peak flows, water and sediment yields.
3. Prepares inflow and outflow hydrographs and does flood routing of reservoirs and channels. Determines the hydraulic proportioning for reservoirs and water control structures.
4. Works with other disciplines in evaluating benefits and damages.

5. Takes leadership in collection of hydraulic, sediment, engineering surveys and other basic data.
6. Provides consultation and on-the-job and in-service training in matters pertaining to hydraulics, hydrology, sedimentation and irrigation.
7. On smaller projects assumes leadership for completion of preliminary plans and designs, and in assisting the construction engineers in layout of designs for construction.
8. Prepares the hydraulic, hydrologic, and sedimentation sections of reports.
9. In cooperation with the Resource Economist will do preliminary cost estimating for irrigation structures, dams, water supply facilities, roads, and miscellaneous structures, and will assist the resource economist to analyse project alternatives based on criteria such as cost benefit ratios and internal rate of return.
10. Makes maintenance inspections of existing and completed hydraulic structures, and makes recommendations on maintenance needs to the Land Planning Officer (Team Leader).

Employment Factors

1. Experience in planning soil and water conservation projects and in preparing both preliminary and final designs for small irrigation storage dams, diversion dams, canals, pipelines and other hydraulic structures. Should have experience in project planning and preliminary and final design and cost estimating.
2. Sensitivity and ability to get along and work well with people of other cultures.
3. Interest and ability to train others resulting in the development of their skills and talents.
4. Good health and possesses somewhat of a pioneer spirit and the ability to live off the beaten path.

Education Requirements

B. S. Degree in Civil or Agriculture Engineering

Salary and Support

Salary range: \$22,000 - \$28,000

Total salary and support costs: \$70,000 - \$80,000

C. Job Title : Civil Engineer (Structural Design)
Place of Assignment : MDA, Land Use Planning Section, Mbabane
Type of Employment : U. S. Contract
Period of Employment : 2-5 years
Type of Control : Reports directly to Land Planning Officer
(Team Leader)

Scope of Work

1. Serves as an interdisciplinary member of a land and water resource planning and development team on the larger projects.
2. Reviews preliminary designs and prepares final structural plans. Prepares cost estimates for such structures in cooperation with Resource Economist.
3. Determines the type and quality of topographic soil mechanics, and other surveys to be used for structural design.
4. Provides on-the-job and in-service training, supervises and directs detailers, draftsmen and engineering aides in making structural computations, analysis, and detailed designs.
5. Works with the hydraulic and soil mechanics engineer in incorporating hydraulic, hydrologic, and soils data into structural plans and specifications.
6. Makes inspections of structural works and provides consultation to construction engineers on construction.
7. Makes maintenance inspections of existing and completed structural works, and makes recommendations on maintenance needs to the Land Planning Officer (Team Leader).

Employment Factors

1. Experience in planning soil and water conservation projects and in preparing both preliminary and final designs for small irrigation storage dams, diversion dams, canals, pipelines and other structures. Should have experience in project planning, preliminary and final design, and cost estimates.
2. Sensitivity and ability to get along and work well with people of other cultures.
3. Interest and ability to train others resulting in the development of their skills and talents.
4. Good health and possesses somewhat of a pioneer spirit and the ability to live off the beaten path.

Education Requirements

B. S. Degree in Civil and/or Agricultural Engineering

Salary and Support

Salary range: \$22,000 - \$28,000

Total salary and support costs: \$70,000 - \$80,000.

D. Job Title : Civil Engineer (Soil Mechanics)
Place of Assignment : MOA, Land Use Planning Section, Mbabane
Type of Employment : U. S. Contract
Period of Employment: 2-5 years
Type of Control : Reports directly to Land Planning Officer (Team Leader)

Scope of Work

1. Serves as an interdisciplinary member of a land and water resource planning and development team on the larger projects.
2. Assists in preparing the engineering section of reports originating in the LUPS.
3. Prepares core drilling plans, and interprets drilling results.
4. Performs stability analysis of dams and structures on earth foundations. In cooperation with the Resource Economist, prepares cost estimates of these structures and dewatering plans.
5. Provides assistance to the Structural Design Engineer in design, and the Construction Engineer with construction problems involving foundations, dewatering, and stability.
6. Makes recommendations and provides the environmental engineering for planning and construction projects.
7. Provides on-the-job and in-service training, supervises and directs detailers, draftsmen, and engineering aides in making structural computations, analysis, and detailed designs.
8. Makes maintenance inspections of existing and completed structural works, and makes recommendations on maintenance needs to the Land Planning Officer (Team Leader).

Employment Factors

1. Experience in planning soil and water conservation projects and in preparing both preliminary and final designs for small irrigation storage dams, diversion dams, canals, pipelines and other structures. Should have experience in project planning, preliminary and final design, and cost estimating.

2. Experience as an Environmental Engineer would be extremely useful.
3. Sensitivity and ability to get along and work well with people of other cultures.
4. Interest and ability to train others resulting in the development of their skills and talents.

5. Good health and possesses somewhat of a pioneer spirit and ability to live off the beaten path.

Education Requirements

B.S. Degree in Civil and/or Agricultural Engineering.

Salary and Support

Salary range: \$22,000 - \$28,000

Total salary and support costs: \$70,000 - \$80,000.

- E. Job Title : Resource Economist
Place of Assignment : MOA, Land Use Planning Section, Mbabane
Type of Employment : U. S. Contract
Period of Employment: 2-5 years
Type of Control : Reports directly to Land Planning Officer
(Team Leader)

Scope of Work

1. Collects cost data and determines economic benefits of soil conservation, land development and irrigation projects. In cooperation with the Land Planning Officers, determines benefit cost ratios and internal rates of return of projects, and assists engineers in selecting the most feasible alternatives as well as optimizing project size.
2. Provides on-the-job training for Swazi, a Resource Economist, to perform the type of analyses described in "1" above.
3. Collects and analyzes baseline and periodic data to measure project impact.

Employment Factors

1. Experience in evaluating and analysing soil and water conservation projects such as U. S. Soil Conservation Service Small Watershed projects (PL566) or U. S. Bureau of Reclamation projects. Must possess knowledge of agriculture production and marketing of crops and livestock.

2. Sensitivity and ability to get along and work well with people of other cultures.

3. Interest and ability to train others resulting in the development of their skills and talents.
4. Good health and possesses somewhat of a pioneer spirit and the ability to live off the beaten path.

Education Requirements

B.S. Degree in Resource or Agriculture Economics or B.S. Degree in Economics with a minimum of five years experience in project evaluation (including watershed planning).

Salary and Support

Salary range: \$22,000 - \$28,000
Total salary and support costs: \$70,000 - \$80,000.

- F. Job Title : Range Ecologist
Place of Assignment : MOA, Land Use Planning Section, Mbabane
Type of Employment : U. S. Contract
Period of Employment: 2-5 years
Type of Control : Reports directly to Land Planning Officer
(Team Leader)

Scope of Work

1. The Range Ecologist will strengthen the team of the Land Use Planning Section by advising on range use in such a manner as to obtain sustained maximum animal production consistent with the perpetuation of the natural resources with particular emphasis on the prevention of erosion and the rehabilitation of areas which have already been affected by erosion and overgrazing.
2. He will work in collaboration with the staff of the Land Development Section so as to ensure that plans are executed effectively at the field level.
3. He will set up appropriate systems to monitor trends in range condition in the RDAs as well as communal Swazi Nation grazing lands.

Employment Factors

1. Must have extensive experience, preferably in Africa, of range management planning together with experience in the use of techniques in range evaluation and the making of range inventories. Will have a sound base in taxonomy and knowledge of grasses, forbs, and shrubs encountered in the various ecosystems of the Swaziland High, Middle and Lowveld areas.
2. Must be prepared to undertake field work in all parts of Swaziland and to work and travel long hours under adverse conditions.

3. Sensitivity and ability to get along and work well with people of other cultures.
4. Interest and ability to train others resulting in the development of their skills and talents.
5. Good health and possesses somewhat of a pioneer spirit and the ability to live off the beaten path.

Education Requirements

B.S. Degree in Range Management or its equivalent with a minimum of five years experience in range use and ecology.

Salary and Support

Salary range: \$22,000 - \$28,000
Total salary and support: \$70,000 - \$80,000.

- G. Job Title : Construction Engineer - 2 positions*
Place of Assignment : MOA, Land Development Section, Manzini
Type of Employment : U. S. Contract
Period of Employment: 2-5 years
Type of Control : Reports directly to Land Development Officer.

Scope of Work

1. The two construction engineers will each supervise three to four Swazi unit managers who are in charge of construction in each RDA. Most of the engineers' time will need to be in the field following closely the installation of each facility to assure that structures are built in accordance with the design and specifications provided by the Land Use Planning Section.
2. Coordinates and reviews equipment and material needs for each project.
3. Maintains close liaison with the Land Use Planning Section of the MOA.
4. Assures that necessary project maintenance work is performed annually.
5. Trains a Swazi counterpart in all phases of construction.
6. Participates in periodic inspection of project facilities to determine the condition of project maintenance.

Employment Factors

1. Experience in supervising construction of earth fill dams, small concrete dams, hydraulic structures, canals and roads.

* The current staff positions for the Land Planning Officer and Earth-moving Transport and Maintenance Officer are now vacant and will be re-designated as Construction Engineer.

2. Must be prepared and willing to work and travel long hours under adverse conditions.
3. Sensitivity and ability to get along and work well with people of other cultures.
4. Interest and ability to train others resulting in the development of their skills and talents.
5. Good health and possesses somewhat of a pioneer spirit and the ability to live off the beaten path.

Education Requirements

B.S. Degree in Civil or Agriculture Engineering

Salary and Support

Salary range: \$22,000 - \$28,000
Total salary and support: \$70,000 - \$80,000.

H. Job Title : Equipment Operation Advisor/Trainer
Place of Assignment : MOA, Land Development Section, Manzini
Type of Employment : U. S. Contract
Type of Control : Reports directly to Land Development Officer.

Scope of Work

1. In cooperation with the Construction Engineer, reviews facilities to be built in the field and advises Unit Managers on the best type of heavy equipment to be used for various jobs.
2. Establishes on-the-job and in-service training programs that will:
 - a) improve skills of Swazi equipment operators by teaching them the "tricks of the trade", and
 - b) provides an adequate resource of trained operators.

Employment Factors

1. Must have extensive experience in the utilization and operation of a wide range of heavy earth moving equipment such as draglines, backhoes, rippers, scrapers, carry-alls, graders and bulldozers, and must be able to impart these skills to others.
2. Must be prepared and willing to work and travel long hours under adverse conditions.
3. Sensitivity and ability to get along and work well with people of other cultures.

4. Interest and ability to train others resulting in the development of their skills and talents.

5. Good health and possesses somewhat of a pioneer spirit and the ability to live off the beaten path.

Education Requirements

Secondary school completion essential, two-year technical schooling desirable.

Salary and Support

Salary range: \$20,000 - \$25,000

Total salary and support: \$60,000 - \$70,000.

- I. Job Title : Workshop Manager Advisor
Place of Assignment : MOA, Land Development Section Workshop, Matsapa
Type of Employment : U. S. Contract
Period of Employment: 2-4 years
Type of Control : Reports directly to the Land Development Officer and establishes liaison with AID Project Manager.

Scale of Work

1. Provides technical advice and assistance to the Workshop Manager in all matters relating to the overall operation and management of the LDS workshop.
2. Will make a study of present workshop operating and management systems, make recommendations to the Workshop Manager outlining what needs to be done to improve these systems giving advantages and disadvantages of the present system and the proposed system, and prepares detailed implementation plans for proposed systems.
3. Will, together with the Parts Manager, make a study of warehousing and storage facilities and systems, make necessary recommendations to establish adequate, up-to-date facilities and systems in-line with GOS budget and policy guidelines, and will assist in the training of Swazi Workshop employees in the use of those systems.
4. Will make a study of control systems relating to the dispatch, transport, delivery and receipt of materials, supplies, and equipment, and make recommendations to the Workshop Manager on corrections that need to be made to establish an adequate control system that provides for accountability and security of property and materials.
5. Provides technical advice and assistance to the Workshop Manager on the expansion and improvement of the radio communication system and provides training in radio communication techniques, and proper use of the radio system.

6. Provides technical advice and assistance to the Workshop Manager on the establishment of an overall management system that assures readily available spare parts for equipment being serviced and repaired, and on up-grading employee skills and disciplines to a satisfactory level resulting in decreased equipment down-time.
7. Provides guidance and assistance to Workshop Manager, Workshop Foreman, and Heavy Plant Mechanic(s) in stressing importance of proper maintenance of equipment, and the provision of training to Swazi mechanics and operators. Together with the Workshop Foreman establishes a systematic inspections and maintenance program for each piece of equipment.
8. With the assistance of an accountant consultant, the workshop accountant, and the Parts Manager, establishes an effective cost accounting system that can be used in planning management and budgeting.
9. Advises and assists the Land Development Officer in developing an adequate effective LDS Workshop and Field Unit reporting system which provides the necessary information and data to support an effective cost accounting records system.
10. Provides technical advice and assistance in planning and implementing adequate on-the-job training and in-service training programs for workshop mechanics and employees designed to improve individual qualifications and performance providing trained Swazi to assume efficient management and operational roles and responsibilities by end of project, or before.
11. Assists his Swazi counterpart to become proficient in performance of the above functions.

Employment Factors

1. Five or more years experience at junior management or supervisory levels in industry or agribusiness involving ordering, warehousing, inventory control, dispatch, and transport of materials.
2. At least two years experience with records keeping, billing systems, and payment certifications.
3. Two years experience as an expeditor in business or a government agency.
4. Must have familiarity with construction equipment, materials supplies, methods, and terminology.
5. Must have a sense of systems and how subsystems must interrelate to accomplish total system goals.
6. Sensitivity and ability to relate to and get along and work well with people of other cultures.

7. Must possess patience and a willingness to take time to explain the "reason why" in detail thereby achieving acceptance on the part of local employees rather than resorting to the "direct order" method.

8. Interest and ability to train others resulting in the development of their skills and talents.

9. Good health and possesses somewhat of a pioneer spirit and the ability to live off the beaten path.

Education Requirements

B.S. Degree in Business Administration with relevant experience in technical fields such as industrial engineering.

Salary and Support

Salary range: \$22,000 - \$28,000

Total salary and support costs: \$70,000 - \$80,000.

J. Job Title : Parts Controller (Manager)
Place of Assignment : MOA, Land Development Section Workshop, Matsapa
Type of Employment : U. S. Contract
Period of Employment: 2-3 years
Type of Control : Reports directly to the Workshop Manager

Scope of Work

1. Studies operating and records system of workshop parts department, and recommends changes as necessary to establish an effective, efficient spare parts operation that will assure that most commonly used/needed parts are available on a timely basis resulting in reduction of equipment down-time.

2. Implements those operating and records systems that are approved.

3. Responsible for making and maintaining an up-to-date record and inventory of parts, and within GOS budget limitations ordering/reordering on a timely basis to insure adequate stock on-hand when needed.

4. Organizes and implements a parts storage system that improves efficiency of workshop operations and provides for safeguards against pilferage and loss.

5. Costs out spare parts for each maintenance/service/repair job on an individual unit/equipment basis, and assists Workshop Manager, Workshop Accountant, and Workshop Foreman in establishing and maintaining an effective costs accounting system for the entire workshop operations including Field Units.

6. Assists the Workshop Manager in developing adequate reporting documents to support and provide for the establishment of an effective costs accounting system that can be effectively used in planning and budgeting.

7. Trains a Swazi counterpart and parts department staff to perform above functions, and as Swazi counterpart assumes operational role after 2- 2 1/2 years of understudy and training, during the last year of the project, assumes role as an advisor for the last six months to one year of tenure.

Employment Factors:

1. Experience in developing record keeping systems for mechanical workshops.
2. Understanding of necessary documentation for effective and efficient workshop management, e.g. project costs, parts ordering, and inventory control, etc.
3. Sensitivity and ability to relate to and get along and work well with people of other cultures.
4. Interest and ability to train others resulting in the development of their skills and talents.
5. Good health and possesses somewhat of a pioneer spirit and the ability to live off the beaten path.

Education Requirements

Associate Degree (two-year) in Parts Inventory, Supply, Control and Management desirable.

Minimum of five years experience as Parts Manager in a Heavy Equipment workshop essential.

Salary and Support

Salary range: \$22,000 - \$28,000

Total salary and support costs: \$70,000 - \$80,000.

K. Job Title : Senior Mechanic
Place of Assignment : MOA, Land Development Section Workshop, Matsapa
Type of Employment : U. S. Contract
Period of Employment: 2-4 Years
Type of Control : Reports directly to the Workshop Manager.

Scope of Work

1. Reviews systems of servicing and maintaining machines and equipment in the field units, determines in-service and OJT training needs, makes

appropriate recommendations to the Workshop Manager Advisor and the Workshop Manager on training that will bring about improvement in servicing and maintenance practices in the field units.

2. Provides in-service and OJT training for workshop and field unit mechanics in all phases of maintenance, repair, and service skills and technology including diagnostic procedures.
3. Reviews standard operating procedures for all repair and maintenance activities, makes recommendations for improvements to Workshop Manager, plans and provides training that will bring about needed improvement.
4. Develops standards for evaluating the field maintenance program.
5. Functions in an operational role in providing service, repair and maintenance for RDA equipment while providing in-service and OJT to workshop and field unit mechanics.

Employment Factors

1. Minimum of five years as a workshop/field service mechanic.
2. Background as a heavy equipment mechanic, having diagnostic skills, repair know-how, and analytical skills.
3. Sensitivity and ability to relate to and get along and work well with people of other cultures.
4. Interest and ability to train others resulting in the development of their skills and talents.
5. Good health and possesses somewhat of a pioneer spirit and the ability to live off the beaten path.

Education Requirements

Associate Degree (two-year) in Heavy Plant Mechanics highly desirable, and/or qualified as a Class "A" mechanic essential, completion of secondary school essential. Recent supervisory or management seminar training desirable.

Salary and Support

Salary range: \$22,000 - \$28,000

Total salary and support costs: \$70,000 - \$80,000.

- L. Job Title : Senior Mechanic Instructor
Place of Assignment : MOA, Land Development Section Workshop, Matsapa
Type of Employment : U. S. Contract
Period of Employment: 2-4 years
Type of Control : Reports directly to the Workshop Manager

Scope of Work

1. Studies individual level of qualifications of workshop and field units mechanics, and based on records, observations, and evaluations determines training needs in mechanical theory.
2. Based on above, and in collaboration with Workshop Manager and other members of TA team plans and implements classes of instruction in appropriate phases of mechanical theory with emphasis on diesel repair, maintenance, and service.
3. Provides "on-the-floor" instruction and supervision in a hands-on, practical approach as a follow-up to instructions in mechanical theory.
4. Cooperates with Workshop Manager, Workshop Foreman, and Field Unit Managers in working out the best possible training schedules that take into consideration workload at the workshop and field units, being especially cognizant of peak seasonal workloads.
5. Establishes liaison with Swaziland College of Technology (SCOT), Mechanics Training Department so that, inasmuch as possible, training offered at the Workshop can be designed to capitalize on training offered at SCOT.
6. Establishes liaison with appropriate equipment dealers in Swaziland and RSA to determine and obtain whatever training assistance that is available and desirable.
7. Prepares and/or procures appropriate teaching/training aids within GOS/MOA policy and budget limitations.

Employment Factors

1. Knowledgeable and experienced in gasoline and diesel engine repair, maintenance and service, and electrical and hydraulic system.
2. Skilled in the preparation and use of training aids.
3. Sensitivity and ability to relate to and get along and work well with people of other cultures.
4. Interest and ability to train others resulting in the development of their skills and talents.
5. Good health and possesses somewhat of a pioneer spirit and the ability to live off the beaten path.

Education Requirements

1. Associate Degree and/or equivalent training in heavy and gasoline engine mechanical skills.
2. A minimum of five years experience in teaching mechanical skills, especially diesel, at a technical, vocational, trade, or similar school or institution.

3. A minimum of five years experience as a mechanic on gasoline and diesel engine repair, maintenance, service, and repair.

Salary and Support

Salary range: \$22,000 - \$28,000

Total salary and support costs: \$70,000 - \$80,000.

ANNEX XIV

WAIVERS AND APPROVALS

Swaziland RDS Infrastructure Support Project

I. Waivers and Approvals Required

A. Procurement source and origin waiver to permit procurement of 1 sedan from countries included in AID Geographic Code 935 (Special Free World) instead of from those included in Geographic Code 000 (U.S. only).

B. Proprietary procurement waiver to permit purchase of 14 closed utility vehicles and 2 one-quarter ton pickup trucks.

C. Procurement source and origin waiver to permit procurement of construction materials estimated at \$220,000 from countries included in AID Geographic Code 935 (Special Free World) instead of from AID Geographic Code 000 (U.S. only) and local sources.

D. Waiver to permit procurement of construction services estimated at \$435,000 from firms of AID Geographic Code 935 (Special Free World) nationality instead of from those firms of AID Geographic Code 000 (U.S. only) or local nationality.

E. Approval to deviate from policy expressed in A.I.D. Handbook 11, Chapter 2, which limits employment of third country nationals for A.I.D.-financed construction to 20% of the non-local work force.

II. Justification for Waiver Requests

A. Procurement source and origin waiver is requested for one sedan to be used by the project technical assistance team at an estimated cost of \$7,000. The need for this waiver is based on the safety hazard of driving a left-hand drive while in Swaziland, a right-hand drive country.

Experience with left-hand drive vehicles in the right-hand drive BLS countries has been dismal. The high frequency of accidents due to poor road vision, particularly when overtaking a slower vehicle, is well documented. Specifically, the very rugged and mountainous terrain of Swaziland with its curving, steep dirt roads causes hardship for any experienced driver. With the driver situated toward the outside of the road, the driver and vehicle are not only in a potentially dangerous position, but they become a threat to other drivers and pedestrians,

especially during attempts to pass other vehicles on dirt roads in a cloud of dust. Additionally, the recent increase in tarred and improved roads and the concomitant increase in traffic loads only increases the likelihood of mishaps due to the operation of a left-hand vehicle. The vehicle requested under this waiver is one which will be regularly driven on major throughfares as well as dirt/gravel roads throughout Swaziland and will therefore confront the above difficulties on a regular basis.

B. Proprietary procurement waiver for fourteen (14) 2-wheel drive, diesel, closed utility vehicles (International Harvester Scout) and two (2) one-quarter ton, pickup trucks is requested for the following reasons:

- (1) the closed utility vehicles and pickup trucks are essential to the success of the project;
- (2) for safety reasons the vehicles must be right-hand drive;
- (3) the vehicles should have diesel engines to conform to presently used RDAP vehicles and maintenance experience; and
- (4) International Harvester is the only U.S. manufacturer of closed utility vehicles and one-quarter ton pickup trucks with right-hand drive and diesel engines.

The fourteen closed utility vehicles (10 for the LDC workshop and 4 for the technical assistance team) and two pickup trucks are essential for the workshop in order for the Field Unit mechanics (8 Field Units by FY-79/80) and managers to properly maintain and repair the equipment and supervise the activities of the units throughout the RDAs.

The closed utility vehicles will enable the U.S. technicians to make field visits to the RDAs as called for in their respective job descriptions.

Due to the multiplicity of the above jobs and the requirements to have an all-around utility vehicle, it is felt that a closed utility vehicle is best suited for the jobs.

As per the rationale given in Section II A above, the vehicle requested will be primarily driven on the major throughfares of Swaziland and, therefore, it is essential that they be provided with right-hand drive.

In addition, these vehicles should have diesel engines to conform to present mechanical service capabilities in Swaziland. The vehicles currently used by the LDS and serviced/repared by the LDS workshop have diesel engines. Swaziland mechanics are more familiar with diesels and spare parts inventory consist predominatly of diesel parts.

proprietary procurement waiver is therefore requested for the purchase of 14 International Harvester Scouts and 2 International Harvester Scout Terrain Pickups - the only U.S. manufactured right-hand drive, diesel engine closed utility vehicles and one-quarter ton pickup trucks.

C. Procurement source and origin waiver to permit procurement of construction materials is requested for the following reasons:

- ✓ (1) fixed amount reimbursement method will be used;
- (2) it would be impractical to purchase U.S. items in the small quantities needed;
- (3) cost savings; and
- (4) possible delay in project implementation.

Under this project, AID will finance the construction of ten (10) houses* for the AID-financed technicians and the LDS Workshop parts warehouse. The cost of construction materials and supplies is estimated to be 50 percent of the total building cost of \$220,000. Such items as the following will have to be procured from Code 935 sources:

- (a) electrical fittings and wire;
- (b) pipe, plumbing fittings and sanitary equipment;
- (c) iron or steel manufactured goods;

* If a TCN can be contracted for the workshop parts controller position, one less house will be constructed.

- (d) re-bar and other steel forms; and
- (e) building supplies including hardware and fittings.

A waiver for construction materials and supplies costing an estimated \$220,000 is necessary in part because the fixed amount reimbursement method will be used at least for construction of the parts warehouse, making the distinction between procurement sources in that instance difficult, if not impossible.

It would not be practical to purchase U. S. items in the small quantities needed when private dealers in Swaziland are equipped only to service and repair equipment made in South Africa or the U. K. Frequent incompatibility of U. S. procured items used in Swaziland has also been a problem, e.g. electrical and plumbing fittings. At the same time, the above listed items are not readily available from Code 941 countries.

Additionally, the shipping and delivery costs involved with such small quantities of commodities would substantially exceed prices for comparable and compatible items procured in South Africa. The long lead time required to procure from the U. S. could also delay project implementation if construction of housing for AID-financed technicians was unduly delayed. The serious shortage of housing in Swaziland makes it imperative that construction begin at the earliest possible date.

D. Waiver to permit procurement of construction services is requested for the following reasons:

- (1) in order to insure adequate competitive bidding from qualified contractors;
- (2) some services may have to be provided by non-Swazi owned firms;
- (3) no U. S. firms providing the required services exist in Swaziland; and
- (4) lack of U. S. construction firm interest.

As per Handbook 1, Supplement B, a waiver is being requested from the requirement that a contractor organized under the laws of Swaziland must be more than 50 percent beneficially owned by citizens of Swaziland.

Contracting firms in Swaziland that are 50 percent beneficially owned by Swazi citizens are usually small operators engaged in small construction or renovation. Their finances are limited and they have very little actual equipment in order to carry on the kinds of construction activities funded under this project. The number of eligible "local" firms, using the Handbook 1 B definition is not large; however, there are several construction firms that are well qualified, financially sound, well equipped and incorporated in Swaziland but the owners are not Swazi citizens. A waiver is requested in order to insure adequate competitive bidding from all qualified contractors. Customary competitive GOS contracting procedures will be used.

Additionally, it is anticipated that some construction services cannot be provided by Swazi owned firms and will have to be provided by local firms, many of which are owned by Portuguese, South African, or other Free World interests.

There are presently no U. S. firms in Swaziland which would provide the required services nor are there any construction firms in the U.S. that are likely to indicate interest in such a small construction project.

E. Contractors constructing the ten (10) houses and spare parts warehouse may require technical and supervisory services of TCNs to handle electrical, plumbing, and other design and installation since procurement of services may deal with Free World firms. Therefore, deviation from the employment policy in A.I.D. Handbook 11 to permit hiring of TCNs is considered necessary.

ANNEX XV

5C(1) - COUNTRY CHECKLIST

Listed below are, first, statutory criteria applicable generally to FAA funds, and then criteria applicable to individual fund sources: Development Assistance and Security Supporting Assistance funds.

A. GENERAL CRITERIA FOR COUNTRY

1. FAA Sec. 116. Can it be demonstrated that contemplated assistance will directly benefit the needy? If not, has the Department of State determined that this government has engaged in consistent pattern of gross violations of internationally recognized human rights?

Yes, it can be so demonstrated. Swaziland has not, to our knowledge, engaged in a consistent pattern of gross violations of human rights.

2. FAA Sec. 481. Has it been determined that the government of recipient country has failed to take adequate steps to prevent narcotics drugs and other controlled substances (as defined by the Comprehensive Drug Abuse Prevention and Control Act of 1970) produced or processed, in whole or in part, in such country, or transported through such country, from being sold illegally within the jurisdiction of such country to U.S. Government personnel or their dependents, or from entering the U.S. unlawfully?

No such determination has been made.

3. FAA Sec. 620(b). If assistance is to a government, has the Secretary of State determined that it is not controlled by the international Communist movement?

Yes

4. FAA Sec. 620(c). If assistance is to government, is the government liable as debtor or unconditional guarantor on any debt to a U.S. citizen for goods or services furnished or ordered where (a) such citizen has exhausted available legal remedies and (b) debt is not denied or contested by such government?

a) No
b) No

5. FAA Sec. 620(e) (1). If assistance is to a government, has it (including government agencies or subdivisions) taken any action which has the effect of nationalizing, expropriating, or otherwise seizing ownership or control of property of U.S. citizens or entities beneficially owned by them without taking steps to discharge its obligations toward such citizens or entities?

No

Form No. 5C(1)-2	Effective Date April 12, 1978	Print. memo no. 3:22	AID HANDBOOK 3, App. 5C
---------------------	----------------------------------	-------------------------	----------------------------

- A
6. FAA Sec. 620(a), 620(f); App. Sec. 107, II. Is recipient country a Communist country? Will assistance be provided to the Socialist Republic of Vietnam, Cambodia, Laos, Cuba, Uganda, Mozambique, or Angola?
 - a) No
 - b) No

 7. FAA Sec. 620(1). Is recipient country in any way involved in (a) subversion of, or military aggression against, the United States or any country receiving U.S. assistance, or (b) the planning of such subversion or aggression?
 - a) No
 - b) No

 8. FAA Sec. 620(j). Has the country permitted, or failed to take adequate measures to prevent, the damage or destruction, by mob action, of U.S. property?

Security and protection measures appear to be adequate and reasonable.

 9. FAA Sec. 620(1). If the country has failed to institute the investment guaranty program for the specific risks of expropriation, inconvertibility or confiscation, has the AID Administrator within the past year considered denying assistance to such government for this reason?

No

 10. FAA Sec. 620(o); Fishermen's Protective Act, Sec. 5. If country has seized, or imposed any penalty or sanction against, any U.S. fishing activities in international waters,

No such actions.

 - a. has any deduction required by Fishermen's Protective Act been made?
 - b. has complete denial of assistance been considered by AID Administrator?

 11. FAA Sec. 620(q); App. Sec. 503. (a) Is the government of the recipient country in default on interest or principal of any AID loan to the country? (b) Is country in default exceeding one year on interest or principal on U.S. loan under program for which App. Act appropriates funds, unless debt was earlier disputed, or appropriate steps taken to cure default?
 - a) No
 - b) No

 12. FAA Sec. 620(s). "If contemplated assistance is development loan (including Alliance loan) or security supporting assistance, has the Administrator taken into account the percentage of the country's budget which is for military expenditures, the amount of foreign exchange spent on military equipment and the amount spent for the purchase of sophisticated weapons systems?" (An affirmative answer may refer to the record of the taking into account, e.g.: "Yes as reported in annual report on implementation of Sec. 620(s)." This report is prepared at the time of approval by the Administrator of the Operational Year Budget.

Yes, as reported in annual report on implementation of Sec. 620 (s).

AWD HANDBOOK 3, App 5C	TRAILER DESIG NO. 3:22	EFFECTIVE DATE April 12, 1978	PAGE NO. 5C(1)-3
------------------------	---------------------------	----------------------------------	---------------------

A12

Upward changes in the Sec. 620(s) factors occurring in the course of the year, of sufficient significance to indicate that an affirmative answer might need review, should still be reported, but the statutory checklist will not normally be the preferred vehicle to do so.)

13. FAA Sec. 620(t). Has the country severed diplomatic relations with the United States? If so, have they been resumed and have new bilateral assistance agreements been negotiated and entered into since such resumption? No
14. FAA Sec. 620(u). What is the payment status of the country's U.N. obligations? If the country is in arrears, were such arrearages taken into account by the AID Administrator in determining the current AID Operational Year Budget? Payments are up to date.
15. FAA Sec. 620A. Has the country granted sanctuary from prosecution to any individual or group which has committed an act of international terrorism? No knowledge of any such action.
16. FAA Sec. 666. Does the country object, on basis of race, religion, national origin or sex, to the presence of any officer or employee of the U.S. there to carry out economic development program under FAA? No
17. FAA Sec. 669, 670. Has the country, after August 3, 1977, delivered or received nuclear enrichment or reprocessing equipment, materials, or technology, without specified arrangements or safeguards? Has it detonated a nuclear device after August 3, 1977 although not a "nuclear-weapon State" under the nonproliferation treaty?
a) No
b) No
18. FAA Sec. 901. Has the country denied its citizens the right or opportunity to emigrate? No

B. FUNDING CRITERIA FOR COUNTRY

1. Development Assistance Country Criteria

This is an SSA Project

Part I

AID HANDBOOK 3, App 5C	FORM NO. 3:22	EFFECTIVE DATE April 12, 1978	PAGE NO. 5C(1)-5
------------------------	---------------	----------------------------------	---------------------

B

2. Security Supporting Assistance Country Criteria

a. FAA Sec. 502B. Has the country engaged in a consistent pattern of gross violations of internationally recognized human rights? Is program in accordance with policy of this Section?

a) No
b) Yes

b. FAA Sec. 531. Is the Assistance to be furnished to a friendly country, organization, or body eligible to receive assistance?

Yes

c. FAA Sec. 533(c)(1). Will assistance under the Southern African Special Requirements fund be provided to Mozambique, Angola, Tanzania, or Zambia? If so, has President determined (and reported to the Congress) that such assistance will further U.S. foreign policy interests?

No

d. FAA Sec. 609. If commodities are to be granted so that sale proceeds will accrue to the recipient country, have Special Account (counterpart) arrangements been made?

No grant commodities will be sold and thus no sale proceeds will be generated

e. App. Sec. 113. Will security assistance be provided for the purpose of aiding directly the efforts of the government of such country to repress the legitimate rights of the population of such country contrary to the Universal Declaration of Human Rights?

No

f. FAA Sec. 620B. Will security supporting assistance be furnished to Argentina after September 30, 1978?

Not under this project.

AID HANDBOOK	3, App 5C	FRANK MEMO NO.	3:22	EFFECTIVE DATE	April 12, 1978	PAGE NO.	5C(2)-1
--------------	-----------	----------------	------	----------------	----------------	----------	---------

5C(2) - PROJECT CHECKLIST

Listed below are, first, statutory criteria applicable generally to projects with FAA funds, and then project criteria applicable to individual fund sources: Development Assistance (with a sub-category for criteria applicable only to loans); and Security Supporting Assistance funds.

CROSS REFERENCES: IS COUNTRY CHECKLIST UP TO DATE? IDENTIFY. HAS STANDARD ITEM CHECKLIST BEEN REVIEWED FOR THIS PROJECT?

A. GENERAL CRITERIA FOR PROJECT.

1. App. Unnumbered; FAA Sec. 653(b); Sec. 671
 - 1.a. AID's normal congressional notification procedure will be followed.
 - 1.b. Yes

(a) Describe how Committees on Appropriations of Senate and House have been or will be notified concerning the project;
(b) is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than \$1 million over that figure)
2. FAA Sec. 611(a)(1). Prior to obligation in excess of \$100,000, will there be (a) engineering, financial, and other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?
 - 2.a. Yes, see Annex XVI.
 - 2.b. Yes, see Annex XI.
3. FAA Sec. 611(a)(2). If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance?
 3. No further legislative action will be required.
4. FAA Sec. 611(b); App. Sec. 101. If for water or water-related land resource construction, has project met the standards and criteria as per *the Principles and Standards for Planning Water and Related Land Resources* dated October 25, 1973?
 4. Yes
5. FAA Sec. 611(e). If project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed \$1 million, has Mission Director certified the country's capability effectively to maintain and utilize the project?
 5. Yes, see Annex XVII.
6. FAA Sec. 209, 619. Is project susceptible of execution as part of regional or multi-lateral project? If so why is project not so executed? Information and conclusion whether assistance will encourage regional development programs. If assistance is for newly independent country, is it furnished through multi-lateral organizations or plans to the maximum extent appropriate?
 6. Yes, project is one aspect of a multi-donor funded project - the Rural Development Area Program (RDAP)

FORM NO. OC(2)-2	EFFECTIVE DATE April 12, 1978	FORM NO. 3:22	AID HANDBOOK 3, App 5C
---------------------	----------------------------------	------------------	------------------------

A

- 7. FAA Sec. 601(a); (and Sec. 201(f) for development loans). Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development and use of cooperatives, credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.
 - 7.a. The Development of cash crops will increase the flow of international trade.
 - b. Cash cropping will foster private initiative and competition.
 - c. Yes, as part of the overall RDAP.
 - d. Cash cropping will discourage monopolistic practices.
 - e. The RDAP will improve technical efficiency of agriculture and commerce.
 - f. No effect upon free labor unions.
- 8. FAA Sec. 601(b). Information and conclusion on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).
- 9. FAA Sec. 612(b); Sec. 636(h). Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized to meet the cost of contractual and other services.
- 10. FAA Sec. 612(d). Does the U.S. own excess foreign currency and, if so, what arrangements have been made for its release?
- 11. ISA 14. Are any FIA funds for FY 78 being used in this Project to construct, operate, maintain, or supply fuel for, any nuclear powerplant under an agreement for cooperation between the United States and any other country?

B. FUNDING CRITERIA FOR PROJECT

- 1. Development Assistance Project Criteria

This is an SSA Project

PAGE NO. SC(2)-6	EFFECTIVE DATE April 12, 1978	TRANS. LOG NO. 3:22	AID HANDBOOK 3, App SC
---------------------	----------------------------------	------------------------	------------------------

3. Project Criteria Solely for Security Supporting Assistance

a. FAA Sec. 531. How will this assistance support promote economic or political stability?

b. FAA Sec. 533(c)(1). Will assistance under the Southern African Special Requirements Fund be used for military, guerrilla, or paramilitary activities?

3.a. The assistance provided will enable Swaziland to achieve self sufficiency in their basic food crop while at the same time advancing their economic status through encouragement of cash cropping. Additionally, the RDAP will assist Swaziland in land utilization/conservation activities.

3.b. No

The Standard Item Checklist has been reviewed for this project.

ANNEX XVI

ENGINEERING ANALYSIS SWAZILAND RDA INFRASTRUCTURE SUPPORT PROJECT

A. The Project

The Rural Development Area Program (RDAP) is an established and on-going activity in Swaziland designed to assist the rural population on the Swazi Nation Land move from subsistence agriculture to a commercial or semi-commercial enterprise. Under this program, land areas are identified in which the GOS/MOA concentrates assistance consisting of land planning, extension services, resettlement (relocation of houses and improved construction), safe domestic water, improved sanitary facilities, farm inputs (fertilizer and seed), etc. In addition actual construction of terraces, conservation structures, and access roads are installed to conform to the scientifically prepared land plan. The design and development of these Rural Development Areas (RDAs) is directed primarily at improving the lot of the small Swazi farmer and at the same time introducing land use and farming systems that will protect and conserve the land resources of Swaziland.

The program has defined, designed and installed four intensive RDAs to date and plans to install fourteen more including six more intensive RDAs during the life of this proposed project. This increased activity will require additional technically trained personnel, machinery and equipment and efficient and timely maintenance and service. Therefore, this RDA Infrastructure Support project proposes to assist by furnishing 13 Technical Assistants, participant training in the U. S. for nine qualified Swazi, and machinery and equipment valued at \$5,400,000. In addition funds will be provided for the construction of ten houses* for the U. S. technicians and a storage warehouse for spare parts at the present LDS Workshop.

B. Preliminary Studies and Plans

Plans and specifications that have been used for the construction of houses for U. S. technicians are presently available at the Building Branch of the MOW. These houses are classed as Standard Senior Officers houses and are compatible to the grade and rank of the expected technicians. The houses are also of the grade and rank of the grade and rank of the Swazi who will ultimately occupy the house when AID has no further need. There are two designs to choose from; one is a standard Senior three bedroom house for sloping sites and the other is called standard Senior officers three bedroom house. Proposed disposition of the expected technicians indicate that seven¹ will be posted in the Manzini area and the other six will be posted in Mbabane. It is expected that one house previously constructed with U. S. funds in Mbabane can be made available and two U. S. houses in Manzini. Therefore funds will be programmed for the construction of only ten houses - five of which will be in Mbabane

* If a TCN can be contracted for the workshop parts controller position, one less house will be constructed.

and five* in Manzini.

The designs and specifications for either of these two models are acceptable. Both were chosen because acceptable level building lots in Mbabane are becoming more and more difficult to find, and the design for sloping sites will likely be required. In Manzini lots are available that are fairly level so the other design can be used there.

The proposed parts storage warehouse will be located in the south west corner of the LDS Workshop lot. The building is designed as a simple concrete block structure with timber trusses and IBR roof. The dimensions are 18 x 9 meters and a floor to joist height of 3 meters. The ground slopes to the north which will permit the construction of a loading dock utilizing the natural slope of the land. The building will only be used to store spare parts and will not be occupied. Therefore, sewer and sanitary facilities are not included. Electricity is presently in the workshop so that if lighting is required a line from the shop to the warehouse could easily be installed. Access is readily available.

Cost estimates for the house construction are easily calculated since recent contracts have been bid and awarded. The following calculation has been presented by the quantity surveyor at the MOW:

Accepted tender as of November 1977	E22,593
Inflation - 14 months @ 1.1/4%	E 3,954
External works 15%	E 3,982
Contingencies 10%	<u>E 3,052</u>
	E33,581
1E = US\$1.156	US\$38,819

It is suggested that due to the amount of construction presently going on in Swaziland and the competition for materials and supplies that \$40,000 should be programmed for each house or a total of \$400,000 for the entire ten houses.

The simple construction of the spare parts warehouse permits the use of a cost of E120.00 per square meter derived from recent similar construction. The following calculations were also prepared by the above quantity surveyor:

Area 162 M ² @ E120.00	E19,440
External works 15%	E 2,916
Inflation one year @ 15%	E 3,354
Contingencies @ 10%	<u>E 2,570</u>
for a total of	E28,280

Also due to the construction climate mentioned above it is proposed that E30,000 or US\$35,000 be programmed for the construction of the spare parts warehouse.

* If a TCN can be contracted for the workshop parts controller position, one less house will be constructed.

The Ministry of Agriculture has initiated a request to the proper authorities for the assignment of ten building lots suitable for the Senior Officers houses to this project. However, actual definition of lot numbers and location has not been received to date. Acceptable lots are known to be available and assurance has been given that legal assignment will be forthcoming.

C. Construction Standards

Building codes and standards have not been legalized in Swaziland. However, standards and criteria developed by the Building Branch of the MOW will be utilized for all construction.

D. Construction Labor and Materials

There is no shortage of unskilled labor in Swaziland and building contractors maintain their own staff of skilled and semiskilled workers.

Sand and gravel as well as cement block are available locally; however, hardware and fittings and other building materials will have to be imported or purchased from local imported stock. Metric fittings of British standards are also standards in Swaziland. It will therefore be necessary to secure a waiver that will permit the procurement of

- electrical fittings and wires;
- iron or steel manufactured goods;
- re-bar and other steel forms and shapes and building supplies including hardware and fittings that have their source and origin in Geographic Code 935 countries.

The above commodities are estimated to cost approximately 50 percent of the total construction cost or \$220,000.

The construction as planned should not require any sophisticated construction machinery or equipment. Most contractors have machinery and equipment available or they can rent it for the job.

E. Plan for Executing Construction Phase of Project

Contracting firms in Swaziland that are 50 percent beneficially owned by Swazi citizens are usually small operators engaged in small construction or renovation. Their finances are limited and have very little actual equipment, usually limited to a few shovels and wheelbarrows. There are however, several construction firms that are well qualified, financially sound and well equipped; however, the owners are not Swazi citizens. Several such firms have been in business in Swaziland for many years, and the only business they have is in Swaziland. However because they are not 50 percent beneficially owned by Swazi citizens, they do not qualify as "Local". It is therefore suggested that a waiver be secured to permit procurement of services from Geographic Code 935 countries to insure competitive bidding from qualified contractors.

It is proposed that the Fixed Amount Reimbursement method (FAR) be utilized for funding the construction element of this project. This system has been successfully used in Swaziland for other house construction and for the Institute for Health Sciences.

A condition precedent to the disbursement of funds will be included in the Project Agreement which will require the GOS/MOA to furnish evidence in form and substance satisfactory to AID that the ten building lots have been assigned to this project, and, the lots assigned have been inspected and accepted by AID.

Prior to contracting for the construction, AID will examine the bids and selection procedure and determine that the contractor selected is technically competent and financially responsible. In addition, AID will make periodic inspections as the work progresses and will make a final inspection prior to acceptance at the completion of the construction.

F. Conclusion

The design and cost estimates have been reviewed by REDSO Engineering and appear to be firm and reasonable. An amount has been included for inflation and contingencies based on data available in the MOW where a continuous record of inflation trend is maintained.

The lot on which the spare parts warehouse will be constructed has been inspected and found to be acceptable. Thus it is concluded that subject to assignment and acceptance of building lots for ten houses, the requirements of Section 611(a) of the FAA of 1961 as amended will be met.

ANNEX XVII

611 (e) Certification

Swaziland RDA Infrastructure Support Project

I, Ted D. Morse, the principal officer of the Agency for International Development in the Southern Africa Region (OSARAC) having taken into account, among other things, the maintenance and utilization of projects in Swaziland previously financed or assisted by the United States, the availability of financial and technical assistance from other donors for Swaziland's RDA Infrastructure Support Program, and the performance of the several Ministries of the Government of Swaziland (Agriculture, Works, and Health) with regard to the RDA Program, do hereby certify that in my judgement the Government of Swaziland has both the financial capability and the human resource capability to effectively maintain and utilize the capital assistance to be carried out under this project.



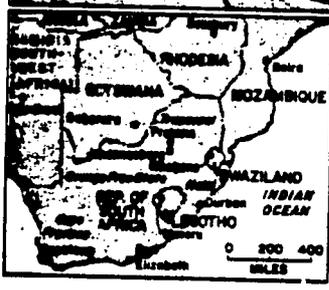
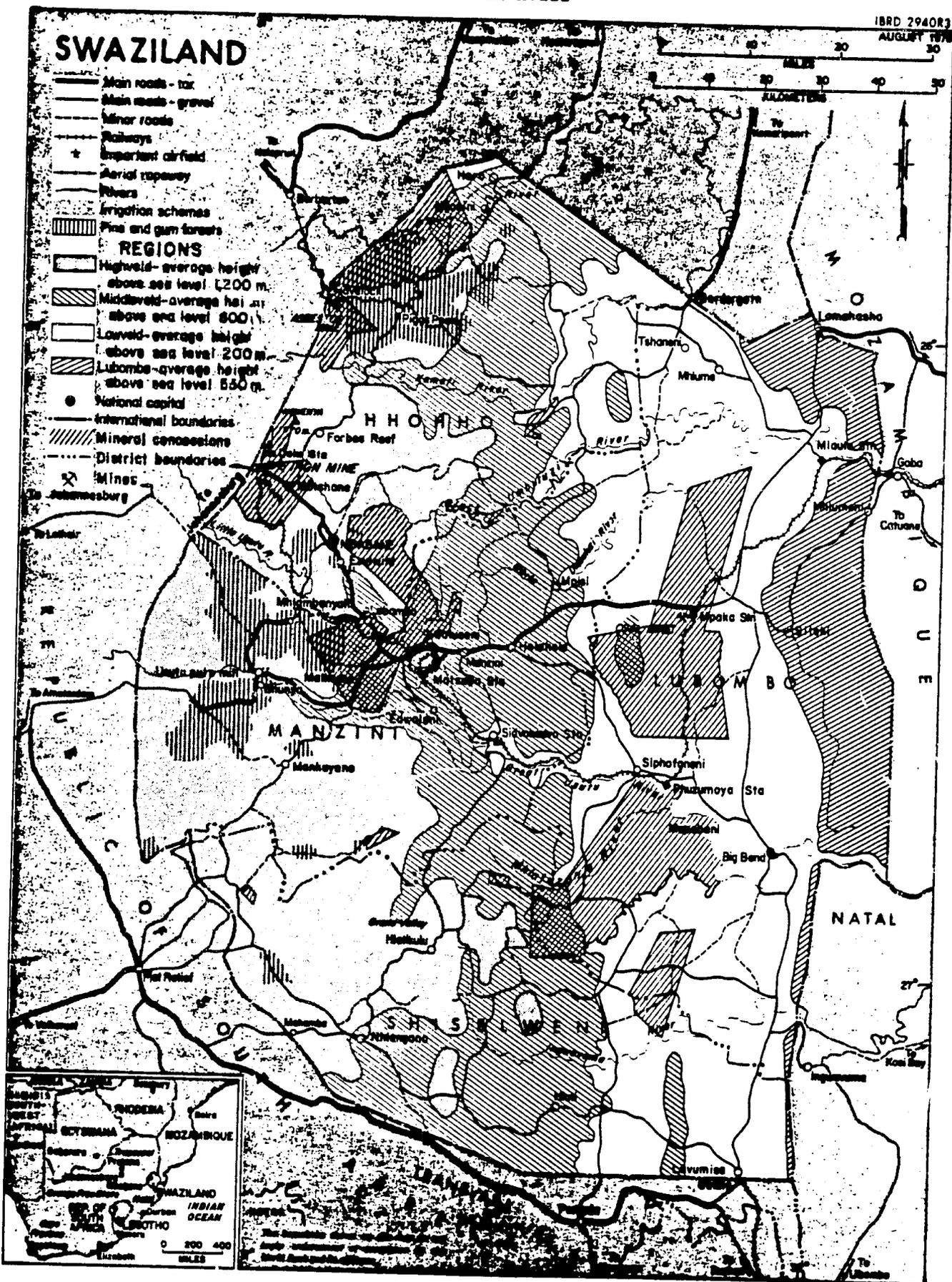
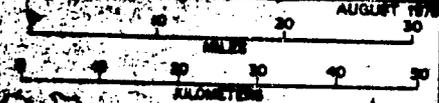
Ted D. Morse

Acting Regional Development Officer

Date: Aug. 11, 1978

SWAZILAND

- Main roads - tar
- Main roads - gravel
- Minor roads
- Railways
- + Important airfield
- Aerial ropeway
- Rivers
- Irrigation schemes
- ▨ Pine and gum forests
- REGIONS**
- ▨ Highveld-average height above sea level 200 m.
- ▨ Middleveld-average height above sea level 500 m.
- ▨ Lowveld-average height above sea level 200 m.
- ▨ Lubombo-average height above sea level 550 m.
- National capital
- International boundaries
- ▨ Mineral concessions
- District boundaries
- ⚡ Mines



ANNEX XIX

Data Collection and Analysis

Swaziland RDA Infrastructure Support Project

The MOA's Economics and Farm Management Section began developing a farm management survey and data processing system in 1974. Although these activities are continuing to be refined, much useful information has already been collected and analyzed. The farm management surveys collect specifically detailed farm input/output data while the GOS Department of Statistics gathers yearly data on cropping patterns and average crop yields by district and ecological region.

Since Swaziland's main strategy for development of traditional agriculture is the RDAP, the farm management surveys have been located in and around the intensive RDAs.

Information gathered to evaluate the RDAP's impact has covered three major areas: 1) Farm work only - information on plots and crops (including yields); the type of work done and equipment used; material inputs applied; the person doing the work; and the time spent; 2) Non-farm activities - such as cooking, repairing non-farm structures, socializing, etc; and 3) Farm and non-farm receipts and expenditures - information on the form of payment; whether cash, credit or kind; and the amount of farm production generated. Also included in the surveys is any relevant livestock information which was not gathered in the above areas.

Recent establishment of the RDA Monitoring and Evaluation Unit, headed by an MOA Economist, will further expand these data gathering and analysis efforts. The information provided by this unit falls into three major categories: 1) Reports on procurement of inputs - such as improved seeds, fertilizers, pesticides, machinery, equipment, and buildings; 2) Report on critical phases of project implementation - such as staff recruitment, training program development, land development planning, farmers participation, and group ranch developments; and 3) Report on project achievements and expenditures - such as buildings, roads, terraces, dams, waterways constructed, fencing erected, water supplies provided, number of farmers contacted, and machinery and equipment utilization. The above information will be analyzed and made available as a management aid tool to the RDA Management Unit.

At the same time, the farm management surveys will continue to be used to evaluate the effectiveness of the project at the farm level. The information required for this purpose, which will be derived from the farm surveys, is the measurement of:

- 1) household farm incomes,
- 2) crop and livestock production levels,
- 3) crop and livestock sales,
- 4) profitability of crop and livestock enterprises in terms of the land and labor resources devoted to them,
- 5) response to the inputs and innovations being extended to farmers,
- 6) changes in the areas under crops and pastures,
- 7) level of adoption of improved practices by farmers,
- 8) farmers attitudes and wants,
- 9) changes in farmers expenditure patten and
- 10) use and source of farmer credit.

Along with analyzing the above, the unit will do a more detailed analysis of relative crop profitability, response to farm inputs, and labor productivity.

In order to assess the extent of the overgrazing situation in the RDAs, the unit will devise acceptable control measures, and measure the increase or decrease in cattle numbers. The unit will also gather information on the cattle herd ownership structure, offtake and deaths.

It is felt that the above activities provide the basic foundation for any and all future requirements for measuring the attainment of program/project objectives. The AID-funded Resource Economist will work jointly with the RDAP Monitoring and Evaluation Unit to gather information necessary to evaluate the project's success.

ANNEX XX

PROJECT AUTHORIZATION AND REQUEST FOR ALLOTMENT OF FUNDS

PART II

Name of Country : Swaziland
Name of Project : RDA Infrastructure Support
Number of Project: 645 0068

Pursuant to Part II, Chapter 4, Section 531 of the Foreign Assistance Act of 1961, as amended, I hereby authorize a Loan and a Grant to Swaziland (the "Cooperating Country") of not to exceed Seven Million Four Hundred and Seven Thousand United States Dollars (\$7,407,000) (The "Authorized Amount") to help in financing certain foreign exchange and local currency costs of goods and services required for the project as described in the following paragraph.

The Project will assist Swaziland to strengthen its present land use planning and land development capabilities, and to develop and install conservation works in certain Rural Development Areas (RDAs) in Swaziland. These objectives will be attained through (1) preparation of detailed land use plans, (2) construction and maintenance of land and water infrastructure on the basis of such plans, (3) development of improved management procedures for planning, designing,

constructing and maintaining RDA physical infrastructure, (4) establishment and implementation of a works rehabilitation program, and (5) improvement of the capability of the LDS to maintain equipment utilized for, inter alia, this project. To carry out the objectives of this project AID will provide financing for technical assistance, commodities, participant training, construction and other services.

Of the Authorized Amount Five Million Four Hundred Thousand United States Dollars (\$5,400,000) (the "Loan") will be loaned to the Cooperating Country and Two Million and Seven Thousand United States Dollars (\$2,007,000) (the "Grant") will be granted to the Cooperating Country to assist in financing certain foreign exchange and local currency costs of goods and services required for the Project.

I approve the total level of AID appropriated funding planned for this Project of not to exceed Twelve Million Five Hundred and Forty-Six Thousand and Five Hundred United States Dollars (\$12,546,500), of which \$5,400,000 will be Loan-funded and \$7,146,500 Grant-funded including the funding authorized above, during the period of FY-1978 through FY-1983. I approve further increments during that period of Grant funding up to \$5,139,500, subject to the availability of funds in accordance with AID allotment procedures.

I hereby authorize the initiation of negotiations and execution of the Project Agreement either by the officer to whom such authority has been delegated in accordance with A.I.D. regulations and Delegation of Authority or by the principal diplomatic officer of the Government of the United States in the Cooperating Country, subject to the following essential terms and covenants and major conditions together with such other terms and conditions as A.I.D. may deem appropriate.

a. Interest Rate and Terms of Repayment. The Cooperating Country shall repay the Loan to A.I.D. in United States Dollars within forty (40) years from the date of first disbursement of the Loan, including a grace period of not to exceed ten (10) years. The Cooperating Country shall pay to A.I.D. in United States Dollars interest from the date of first disbursement of the Loan at the rate of (a) two percent (2%) per annum during the first ten (10) years, and (b) three percent (3%) per annum thereafter, on the outstanding disbursed balance of the Loan and on any due and unpaid interest accrued thereon.

b. Source and Origin of Goods and Services. Goods and services financed by A.I.D. under the Loan portion of

the project shall have their source and origin in the Cooperating Country or in countries included in A.I.D. Geographic Code 941, except as A.I.D. may otherwise agree in writing. Goods and services financed by A.I.D. under the Grant portion of the project shall have their source and origin in the Cooperating Country or in the United States, except as A.I.D. may otherwise agree in writing. Ocean shipping financed hereunder shall be procured in any eligible source country except the Cooperating Country.

c. Prior to the disbursement, or to the issuance by A.I.D. of documentation pursuant to which disbursement will be made, for the purpose of financing construction of staff housing and the spare parts and equipment warehouse, the Borrower/Grantee will furnish to AID, (a) final plans and specifications for the construction of the warehouse in form and substance satisfactory to AID, (b) where appropriate, contracts with firms acceptable to AID, and (c) evidence that adequate sites have been identified and provided for the construction of staff housing. This condition precedent may be satisfied separately for the staff housing and the spare parts and equipment warehouse.

d. The Project Agreement will contain, in substance, the following covenants and understandings:

1. The Parties, recognizing the importance to the Project of maintaining an efficiently organized, managed, and operated Land Development Section Workshop, agree to consult at such times as either Party may request to examine the operations of the Workshop and to recommend ways by which any deficiencies, either in personnel or procedures, may be corrected.

2. The Parties agree that the Land Use Plan, the formulation of which is being assisted by this project, will be sufficient to demonstrate that the activities identified in such plans adequately address certain environmental criteria which will be developed by the Borrower/Grantee, AID, and Land Use Plan Technical Assistance personnel. Criteria, developed within six-months from the arrival of the technical assistance team, will be included in a subsequent Project Implementation Letter.

3. The Borrower/Grantee will covenant that it will identify and select qualified candidates for participant training on a timely basis. Candidates for the civil engineering, resource economics and range ecology programs will be selected no later than January 31, 1979, and for programs in heavy plant mechanics and parts supply

management by January 31, 1980, or such other dates as AID may agree to in writing. The Borrower/Grantee will also covenant that those persons receiving long-term training under the Project will be placed, upon successful completion of their training and unless otherwise mutually agreed by both parties, in specified positions for which training was provided within the Land Use Planning Section or the Land Development Section. The Borrower/Grantee will also covenant to provide on a timely basis such other counterpart personnel required for the project as these are identified in the Amplified Project Description to the Project Agreement or Project Implementation Letters.

4. The Borrower/Grantee will covenant to establish, prior to the return to Swaziland of the long-term participant trainees (in approximately, July or August 1983), positions for a Land Planning Officer, Resource Economist and Range Ecologist within the Land Use Planning Section.

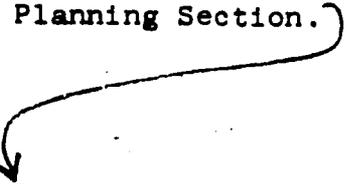
5. The Borrower/Grantee will covenant to take steps to transfer responsibility for control and operation of its equipment sinking fund to the Ministry of Agriculture, establish a separate sinking fund within the Ministry of Agriculture, or take such other measures as would be

acceptable to the Parties, to assist in the orderly replacement of Project equipment. Within one year from the date the Project Agreement is executed, or such other date as the Parties may agree to in writing, the Borrower/Grantee will submit to AID a plan describing, generally, the mechanism established to assist in the replacement of Project Equipment.

6. The Borrower/Grantee will covenant to establish and staff a post for a maintenance officer and/or establish a maintenance committee, or take such other steps as may be agreed to by the Parties so as to assure that (a) the status of maintenance of infrastructure works in each RDA is regularly and periodically reviewed, and (b) recommendations for the rehabilitation of these works are formulated and work plans for maintenance efforts are prepared. The Borrower/Grantee will also covenant to provide adequate budgetary support, personnel, and equipment time to carry out the recommended maintenance program. To this end, the Parties will consult on a periodic basis to review the adequacy of the maintenance program and the adequacy of funds available for its implementation.

7. The Borrower/Grantee will covenant to take such steps as may be necessary to maximize coordination

between the Land Development Section and the Land Use Planning Section.)



The Parties, recognizing the importance of such coordination to the success of RDA activities, will agree to meet periodically to review progress towards achieving this coordination.

8. The Borrower/Grantee will covenant that equipment procured under the Project will be used, unless AID otherwise agrees in writing, exclusively for Rural Development Area activities.

9. The Borrower/Grantee will covenant that, unless AID otherwise agrees in writing, housing constructed under the Project will be reserved for use by the AID-financed project technicians and, upon completion of the Project, by AID-financed technical assistance personnel assigned to other projects in Swaziland or staff attached to the U.S. AID mission in Swaziland, or for such other purposes as the Parties may agree to in writing.

10. The Borrower/Grantee will covenant that all passenger vehicles procured from the Grant, unless other-

wise mutually agreed to by the GOS and AID in writing, are for the exclusive use of the AID-financed project technicians. Notwithstanding the above, the maintenance and operating expense of these vehicles will be the responsibility of the Borrower/Grantee.

e. The following waivers to AID regulations are hereby approved:

(1) The requirement set forth in Handbook 1, Supplement B, limiting procurement of services under grant-financed projects to firms of AID Geographic Code 000 (and local) nationality is waived to permit procurement of approximately \$435,000 of construction services from firms of AID Geographic Code 935 nationality. The interests of the United States are best served by permitting the procurement of services from Free World countries other than the Cooperating Country and countries included in Code 941.

(2) The requirement set forth in Handbook 1, Supplement B, that commodities procured with grant funds have their source and origin in countries included in AID Geographic Code 000 (and local) is waived to permit procurement of approximately \$220,000 of construction

materials which have their source and origin in countries included in AID Geographic Code 935. Exclusion of procurement of these construction materials from Code 935 countries would seriously impede attainment of U.S. foreign policy objectives and the objectives of the foreign assistance program.

(3) The requirement under Handbook 1, Supplement B, that commodities procured with grant funds have their source and origin in the U.S. (and local) and AID Geographic Code 941 (and local) for loan funds, is waived to permit the procurement of 30 project vehicles, at an approximate cost of \$898,566 which have as their source and origin countries included in AID Geographic 935. Exclusion of procurement of the project vehicles from countries included in Code 935 would seriously impede attainment of U.S. foreign policy objectives and the objectives of the foreign assistance program; and special circumstances exist which justify waiver of the requirement of Section 636 (1) of the Act.

(4) The requirement under Handbook 15, to maximize competitive procurement of commodities is limited to allow proprietary procurement, from U.S. sources, of approximately 14 closed utility vehicles.

(5) The policy set forth in Handbook 11 limiting employment of Third Country Nationals for AID-financed construction projects to 20 percent of the non-local work force is waived.