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ISN-16845

TANZANIA

ARUSHA PLANNING AND VILLAGE DEVELOPMENT PROJECT

VOLUME I - PP AND APPENDICES

Project Paper No. 621-0143

Submitted: September 1977
Revised: February 1978

TANZANIA

Arusha Planning and Village Development Project

Project Paper

Project Number: 621-0143

Prepared By
USAID/Tanzania with the assistance of Development Alternatives, Inc., 1823 Jefferson Place, N.W., Washington, D.C. 20036 (Contract No. AID/otr-C-1383 Work Order No. 29 & 32)

U.S. Contributors
Richard Cobb, USAID/T
Thomas Worrick, USAID/T
Charles F. Sweet, DAI
Peter F. Weisel, DAI
Donald R. Jackson, DAI
Louise Fortmann, PSC-USAID/T
Garry Thomas, PSC-USAID/T

TanGov Contributors

William Shellukindo	RDD/Arusha
Emanual Mazalla	RPD/Arusha
A. Hamza	DDD/Arumeru
W. T. Kisanai	DDD/Hang'ng
M. A. Babu	DDD/Mbulu

Many others too numerous to mention including Village Councils and small farmers.

Questions Can Be Addressed to the AID/W Project Officer - Rose Marie Depp, AFR/DR/EAP, Room 2450, Phone 202/632-8286

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT PAPER FACESHEET

1. TRANSACTION CODE: C (A = ADD, C = CHANGE, D = DELETE)

PP

2. DOCUMENT CODE: 3

3. COUNTRY ENTITY: TANZANIA

4. DOCUMENT REVISION NUMBER:

5. PROJECT NUMBER (7 digits): 621-0143

6. BUREAU/OFFICE: A. SYMBOL: afr; B. CODE:

7. PROJECT TITLE (Maximum 40 characters): ARUSHA PLANNING VILLAGE DEVELOPMENT

8. ESTIMATED FY OF PROJECT COMPLETION: FY 82

9. ESTIMATED DATE OF OBLIGATION: A. INITIAL FY 78; B. QUARTER 3 (Enter 1, 2, 3 or 4); C. FINAL FY 81

10. ESTIMATED COSTS ($000 OR EQUIVALENT $1 =)

A. FUNDING SOURCE	FIRST FY B. FX	FIRST FY C. L/C	FIRST FY D. TOTAL	LIFE OF PROJECT E. FX	LIFE OF PROJECT F. L/C	LIFE OF PROJECT G. TOTAL
AID APPROPRIATED TOTAL						
(GRANT)	5947.7	887.1	6834.8	9327.5	5263.8	14591.3
(LOAN)						
OTHER U.S. 1.						
OTHER U.S. 2.						
HOST COUNTRY		991.0	991.0		6472.0	6472.0
OTHER DONOR(S)						
TOTALS		1878.1	6580.9	9327.5	11935.8	21063.3

11. PROPOSED BUDGET APPROPRIATED FUNDS ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE C. GRANT	PRIMARY TECH. CODE D. LOAN	E. 1ST FY 78 F. GRANT	E. 1ST FY 78 G. LOAN	H. 2ND FY 79 I. GRANT	H. 2ND FY 79 J. LOAN	K. 3RD FY 80 L. GRANT	K. 3RD FY 80 M. LOAN
(1) FN	B253	B250		6834.8		2658.6		1348.2	
(2)									
(3)									
(4)									
TOTALS									

A. APPROPRIATION	N. 4TH FY 81 O. GRANT	N. 4TH FY 81 P. LOAN	O. 5TH FY ___ Q. GRANT	O. 5TH FY ___ R. LOAN	LIFE OF PROJECT S. GRANT	LIFE OF PROJECT T. LOAN
(1) FN	1740.6				14591.3	
(2)						
(3)						
(4)						
TOTALS						

12. IN DEPTH EVALUATION SCHEDULED: MM 3 YY 80

13. DATA CHANGE INDICATOR. HERE CHANGES MADE IN THE PID FACESHEET DATA BLOCKS 12, 13, 14 OR 15 OF THIS PP FACESHEET DATA, BLOCK 12? IF YES ATTACH CHANGED PID FACESHEET.

2 (1 = NO, 2 = YES)

14. ORIGINATING OFFICE CLEARANCE

SIGNATURE: Richard L. Podol

TITLE: Acting Director, USAID/Tanzania

DATE SIGNED: MM 03 DD 10 YY 78

15. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION: MM DD YY

AID 1330-4 (-74)

ARUSHA PLANNING AND VILLAGE DEVELOPMENT

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ABBREVIATIONS AND SWAHILI WORDS USED IN THIS DOCUMENT

AFO	Agriculture Field Officer - extension worker/interchangeable with Bwana Shamba
ARCU	Arusha Region Cooperative Union
ARIRDP	Arusha Region Integrated Rural Development Plan
ARUDECO	Arumeru Development Corporation
Bwana/Bibi Shamba	- Agricultural extension worker (literally Mr/Ms Farm)
CCM	Chama Cha Mapinduzi - The Political Party of the United Republic of Tanzania
CDTF	Community Development Trust Fund
ComWorks	Ministry of Works
DADO	District Agricultural Development Officer
DDC	District Development Committee
DDD	District Development Director
DDPC	District Development and Planning Committee
DLDO	District Livestock Development Officer
DMT	District Management Team
DPO	District Planning Officer
EAR	East African Railways
KILIMO	Ministry of Agriculture
LPO	Local Purchase Order
MAJI	Ministry of Water Development
MATI	Ministry of Agriculture Training Institute
NAFCO	National Agricultural and Food Corporation
NBC	National Bank of Commerce
NMC	National Milling Corporation
PVO	Private Voluntary Organization
RDD	Regional Development Director
RDS	Rural Development Specialist
RPO	Regional Planning Officer
RTC	Regional Trading Corporation
Shamba	Plot, field
SIDA	Swedish International Development Agency
SIDO	Small Industries Development Organization
TAMTU	Tanzania Agricultural Machinery Testing Unit
TanGov	Tanzanian Government
TANU	Tanganyika African National Union: The Political Party of Mainland Tanzania prior to 5 February 1977
TCA	Tanzania Cotton Authority
TCB	Tanganyika Coffee Board
TFA	Tanganyika Farmers Association
TIB	Tanzania Investment Bank
TLMC	Tanzania Livestock Marketing Corporation
TPB	Tanzania Pyrethrum Board
TRDB	Tanzania Rural Development Bank
UJENZI	Ministry of Works
Ukulima wa Kisasa	- Modern Agriculture, a Radio Program
UPE	Universal Primary Education
USAID	United States Agency for International Development
UWT	Umoja wa Wanawake wa Tanzania, the National Organisation of Women

PART ONE: SUMMARY AND RECOMMENDATION

A. Grantee and Implementing Agencies

The Grantee will be the Government of the United Republic of Tanzania and the primary executing agency will be the Office of the Regional Development Director, Arusha Region. The implementing agencies will be the participating District governments, under the supervision of the District Development Director and with the involvement of each District's technical offices and their field staffs. At the local level, the Village Councils will have planning and implementation responsibilities.

B. Recommendations

1. Grant for:

   Preparation of Arusha Region Integrated Rural Development Plan and Village Development Activities

TOTAL AID	$14,591,300.00
TanGov Contribution	6,472,000.00
Total Project Cost	$21,063,300.00

2. The following waivers are requested for the purchase of

   - non-U.S. source/origin (Code 935) 4-wheel drive Land Rovers and spares
   - non-U.S. source/origin (Code 935) 125 cc Motorcycles and spares
   - non-U.S. source/origin (Code 935) construction materials
   - non-U.S. source/origin (Code 935) diesel engines
   - proprietary procurement of selected items of heavy equipment.

The justification is contained in Appendix E of this Document.

C. Project Description: Summary

The goal of the Arusha Planning and Village Development Project (AP/VDP) is to improve the production, income and well-being of people in the rural areas of Arumeru, Mbulu and Hanang Districts of Arusha Region. To help achieve this goal, the project is designed to strengthen the capabilities of the Region, three project districts and villages in these districts to plan, implement and evaluate development activities within the framework of the policies and priorities of the Tanzanian Government (TanGov). Included in this effort is the preparation of Arusha Region Integrated Rural Development Plan (hereinafter the Plan). (See Annexes B and C) The project thus has two purposes: Village level development in the three districts noted above and the Plan preparation.[1/]

The basic strategy for implementing the first project purpose will be to identify and develop a process to enable villages to plan and implement production activities tailored to the potentials of their particular ecological zones and to remove major constraints to production through development of the needed social and economic infrastructure. Project activities will evolve from village level decision making and resource commitment, requiring considerable flexibility in the use of project resources to respond to these initiatives. This part of the project will start with a planning year in selected villages, and move into an implementation phase (three years) with the gradual extension of project activities. Based on systematic evaluation, a third phase will be formulated to cover the remaining less developed areas in the three districts. Consideration will be given to including Monduli and Kiteto Districts (these areas now encompassed by the Masai Livestock and Range Management Project and referred to as the Masai District) in Phase III activities.

The Plan - the second project purpose - will be achieved through the provision of specified technical assistance (see Volume II, Annex C); this assistance is aimed at helping to develop the capacity of the regional administration to prepare development plans and to produce, in collaboration with the regional administration, the Arusha Region Integrated Rural Development Plan document.

A summary of the principle project activities and major project inputs follows:-

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1/ These two purposes are discussed throughout this document as the two primary project components. Various activities are included in the village development component.

I. STRENGTHENING THE PLANNING, IMPLEMENTATION AND EVALUATION CAPABILITIES AT THE REGIONAL, DISTRICT AND VILLAGE LEVELS.

The project will provide a Regional Planner/Economist, an Agriculture Specialist and an Information Specialist (to be assigned to the regional administration), plus three Rural Development Specialists (to be assigned to the districts). In addition, a number of short-term specialists will be supplied. Training in planning and management will be provided to local officials and village leaders as part of the ongoing process and special long- and short-term training programs in the U.S. and other African countries have been developed for regional and district officials. An information system will be designed and implemented to meet decision-making needs from the farmer to the regional level.

II. IMPROVING AGRICULTURAL PRODUCTION.

Technical assistance under the direction of an Agricultural Production Specialist, will be provided to help identify and develop crop and livestock technological innovations suitable for the various ecological zones in the project area, beginning with those technologies currently in use by the most productive farmers in the area and drawing on the findings of the National Research Institutes. An agricultural extension strategy will be implemented that evolves from the establishment of Farmers' Centers to serve villages, with the functions of these Centers defined locally. A technical training program will be developed for government agricultural and livestock officers as well as villagers. The agricultural support system in the area will be strengthened, drawing on current USAID assisted national programs. Further, village storage facilities will be developed.

III. IDENTIFYING AND PROMOTING OTHER ECONOMIC ACTIVITIES.

The project provides support for the development of a center aimed at the promotion of appropriate technology and local level enterprise. Prior to project start-up, a feasibility study will be undertaken to better define the effective approaches to pursue. It is envisioned that such a center would focus on the development, production and introduction of improved agricultural implements and agricultural processing equipment, as well as provide planning and management assistance for the promotion of village enterprises.

IV. IMPROVING THE SOCIAL AND ECONOMIC INFRASTRUCTURE DIRECTLY RELATED TO PRODUCTIVE ACTIVITIES.

Primary focus will be on the rehabilitation of the road system (up to 476 miles) which is currently the major impediment for assisting small farmers. In addition, the project will provide assistance to the government's program to develop village water systems in up to 52 villages. For both water and road systems development activities, the project will establish the necessary maintenance capabilities at the village and district levels. A third activity will be to develop village level soil and water conservation programs. U.S. inputs include technical assistance, commodities and training.

D. Summary Finding

The Project Committee has reviewed the technical, economic, financial environmental and sociological aspects of the proposed project. On the basis of this review and the investigations of specialized consultants, and in light of the project's evolutionary approach, the Committee recommends the authorization of the total requested grant funds. This includes authorization for the fundingof the first and second phases of the Village Development Component (planning, agriculture, other economic and infrastructure activities) as well as authorization of funds required for the complementary effort of preparing the Plan. The activities for which the funds can be obligated are detailed in Part Three B, Financial Plan.

The need for the assistance proposed herein is clearly identified in the revised DAP and supporting studies. Moreover, the appropriateness of the emphasis and strategy of the project for increasing small farmer production, income and well-being is consistent with the priorities of the TanGov and USAID.

E. Project Issues

The following issues were identified by the Project Design Team, USAID/Tanzania and AID/Washington.

1. Process of Project Development

The PRP for this project was being prepared when the new guidance was received from AID/Washington, dropping this requirement and asking Missions to move directly to the preparation of the Project Paper. Originally, the Mission was planning a lengthy project development period (about one year) between the preparation of the PRP and the PP. Activities to be carried out during that period have been incorporated into the first year of the Village Development activities, including remaining required technical analyses,

The PP team formulated project requirements for the Village Development activities on the basis of USAID's experience in the area -- the Masai Livestock Project, the Arusha Drought Roads Project, and the activities carried out in the Arusha Region under the USAID-assisted national programs in support of the agricultural sector. Therefore, even though this is a complex, experimental effort, it was recommended that project implementation begin, recognizing that modifications would have to be made by the Mission on the basis of the knowledge gained in the first year. (See AA/AFR Memo on Project Design of August 1, 1977, particularly with reference to need for including rolling design in implementation of projects.)

Based on PC and ECPR meetings in September 1977, guidance has been provided for meeting section 611(a)(1) of the FAA and other needed revisions and clarifications. (See Appendix F.) The PC now recommends authorization of this project based on its assessment that AID/W guidance has been fulfilled.

2. Relationship between the Village Development Activities and Preparation of Arusha Plan

The Tanzanian government has formally requested USAID to provide technical assistance in the preparation of the Plan. A primary focus of the Plan will be identifying the long-term rural development strategies for the Region, an activity requiring a considerable amount of micro-level data which the Village Development activities will provide. Over the long run, the Plan will in turn provide guidance in developing district and village level programs. Because of this interdependent relationship between the preparation of the Plan and the Village Development activities and the similarity of the technical assistance requirement, the Mission has decided to integrate the two activities into one project and request funding for the entire effort. The details of the relationship between the two components is found in the Project Description (Part Two, E.), the Implementation Arrangements (Part Four), and Technical Assistance Analysis and Job Descriptions (Volume II, Annex C).

For purposes of clarity, the Mission wishes to emphasize that the preparation of the Plan does not imply a commitment by AID to support activities beyond the described Village Development activities in Arusha Region.

3. Funding Arrangements

The Mission anticipated using Project Development Support (PDS) or Accelerated Impact funds so that project activities and the

preparation of the Plan could proceed on a timely basis; however, these costs are now included in the Project. The FY 78 Congressional Presentation shows $800,000 for this project, therefore, the funding requires an Advice to Congress in the amount of $. One reason for the increase is the inclusion of funding for preparation of the Plan.

4. Consistency of Project with AID's Congressional Guidelines

The development priorities of the Tanzanian Government coincide with the guidelines established for the provision of development assistance, in particular the Government's emphasis on an equitable distribution of the benefits from development.

While Arusha Region is sometimes known as one of the more developed areas of Tanzania, it contains some of the very poorest areas in the country and is characterized by a wide range of incomes and standards of living.

The AP/VDP has been designed to focus on the less prosperous areas of the three districts to help overcome these disparities. In addition, the project, again consistent with the TanGov's stated objectives, will attempt to develop the productive potential of women. Further, project activities are tailored to the particular environmental and social characteristics of each locality, attempting to build on existing systems and practices while introducing basic land use planning and soil and water conservation techniques (See Part Three, A., Technical Analysis and C, Social Analysis). Such an approach will help insure that appropriate and environmentally sound technologies are developed and extended.

5. Satisfaction of Section 611(a)(1) of the U.S. FAA of 1961.

This project attempts to provide the information needed to prepare reasonably firm plans and cost estimates and at the same time allow flexibility in planning specific village activities so that local participation in decision making is assured. Participation requires extensive contact with local people which is difficult until the project is underway, however the PP submitted in September 1977, failed to demonstrate sufficient planning for project authorization. In order to deal with this issue, the PP team, AID/W and the Mission undertook the following actions for those activities for which more detailed planning was required.

- Road and Water Systems - Special engineering studies were undertaken. The analyses of these proposed activities are presented in Annex D and E and are considered adequate. Supporting documents are contained in Annex F.

- In certain cases (i.e., construction of Farm Centers, Appropriate Technology Center, and small-scale irrigation), it was not possible to conduct more than general planning. Therefore it was concluded that while the planning is adequate for purposes of authorization, it is not adequate for obligation. Appendix G presents the requirements which must be met before obligation. The Mission Director, with assistance from REDSO, will be delegated the authority to determine when these requirements have been met.

- Planning for the Technical Assistance has been extensive. Requirements for the preparation of the Plan were established by the Prime Minister's Office and are deemed adequate by AID. The need for the technicians for roads and water systems are supported by the analyses in Annexes C, D and E. At the specific request of the TanGov, we have attempted to keep the U.S. personnel at the lowest possible level consistent with project objectives. Planning for technical assistance was considered adequate in the September 1977 PP. (See Appendix F.)

In order to provide some flexibility within the budget to allow changes in emphasis and to respond to villagers' felt needs the project proposes to allow up to 15 percent increase in funds allocated for roads and water activities by shifting funds from other project activities without prior approval from AID/W. This approach was approved in the ECPR review. (See Appendix F.)

It is inevitable under this type of project that some important activities are not identified in advance, for example villagers will be asked to decide what income producing enterprises are needed. The PP team originally wanted to address this possibility through the provision of a general development fund. Given the practical problems this posed, we have dropped this idea. In its place we hope the Regional Administration will use the small amounts of unearmarked funds at its disposal to support such activities and that the resources of existing institutions such as SIDO, TAMTU can be utilized.

The PP team feels that the additional analyses provides AID with the assurances that costs are reasonable and planning is adequate to allow authorization, but there still remains flexibility in the project to allow response to needs expressed by villages during implementation. The financial plan and Appendix C contain a breakdown of those activities which the PP team believes can be immediately obligated.

PART II: PROJECT BACKGROUND AND DESCRIPTION

A. Tanzanian Development Philosophy and Priorities

The TanGov's philosophy toward development is spelled out succinctly in a number of government statements, among the most significant being the Arusha Declaration (1967) and the Decentralization Act (1972). Tanzanian socialism has as its goal a society in which privilege and exploitive relationships are eliminated -- a society where the people participate in decisions pertaining to their social and economic well-being and have control over the nation's resources and means of production. In the process of working towards this goal, the government has emphasized the need for self-reliance, an attempt to break away from the "dual economy" of the pre-independence era with its export sector producing raw materials for processing abroad and its traditional agrarian economy. Just as important, this emphasis upon self-reliance has been a response to the fact that 95 percent of the Tanzanian population living in rural areas often failed to adequately feed themselves, let alone to produce sufficient food surpluses for the urbanized five percent working in the wage-earning sector of the economy. Another dimension of the government's development strategy rises from its concern that a disproportionate amount of government services and investment has been allocated to those living in the cities and towns during the pre- and early years of independence. To redress this imbalance, a series of targets have been set for the provision of basic social services in rural areas. Finally, since as early as December 1962, President Nyerere has argued that the creation of modern villages -- the process of "villagization" is the main pre-requisite for achieving increases in agricultural production and social well-being, a more equitable distribution of the benefits from development, and the existence of a more active, responsive citizenry.

Although villagization has been central to Tanzania's development philosophy for nearly 15 years, there have been a series of important changes in villagization policies and implementation strategies. In 1963, capital-intensive "pilot village settlements" were initiated on a small scale. There followed a "national urge for resettlement" and several village settlements were started by Regional authorities, which had the effect of spreading government investment over a wider area. Four years later, after most of these "pilot" and "mushroom" villages had shown themselves to be economically non-viable and overly dependent on government largesse, "development villages" were begun with the promise only that government extension and social services would be expended more on them than on "natural villages" of dispersed homesteads.

In the latter part of 1973 this effort, after having experienced spotty success, was greatly intensified, resulting in the establishment of villages over nearly 70 percent of rural Tanzania by the end of 1976. In this effort, the priority has been on "villagization" - the grouping of families into surveyed and registered village units - and not initially on "ujamaaization" -- the reorganization of the means of production into

collective work. At present, the major thrust of the government's strategy is to assist the villages to improve their capabilities to identify and find solutions to their own problems -- a process of decentralization that involves generating greater local participation and self-reliance.

B. USAID Assistance Strategy in Tanzania

The main thrust of the USAID strategy in Tanzania has been to assist in the development of the country's agricultural delivery system and of economic infrastructure in support of the agricultural sector. It was recognized that for village development to take place necessary conditions must include: A strong, applied research capability, an effective system for delivering extension advice, credit and agricultural supplies, and a valuable marketing system. Of particular importance is the availability of trained manpower, both for planning and implementing the country's agricultural activities. The result has been a series of USAID assisted nationwide programs aimed at addressing these issues. Crop-specific (e.g. National Food Crops Research Program) and livestock development efforts are being undertaken. The problem of providing adequate seed is addressed through a program of seed production and multiplication in conjunction with the Tanzanian Seed Company. Agricultural credit has been made available through the Tanzania Rural Development Bank (TRDB). A variety of training activities are underway to increase the number and quality of skilled manpower, ranging from training of agricultural field officers to graduate university work. And finally, assistance to upgrade the marketing systems for both crops and livestock.

As described in the Agricultural Sector Strategy Paper and the revised Development Assistance Program (1977), the USAID strategy was modified in 1976. While continuing support for the development of the national agricultural support systems, USAID is giving a greater focus to channeling these inputs to the rural poor through projects which directly affect specific geographic areas. It was apparent that for significant progress to be made in improving the well-being of the least advantaged - the rural poor - village level activities must be undertaken in which local residents are involved in both the planning and implementation of the projects which affect them. This approach complements and supports the basic development strategy being pursued by the Tanzanian Government of self-reliance and local participation aimed at promoting a greater degree of social and economic equity throughout the country.

This project, with its approach of working directly with villages to define production programs tailored to the potentials of their particular ecological zones as well as to remove constraints to increased production, is a major effort designed in accordance with this development strategy. In line with requesting specific donors to concentrate their assistance in specified regions, the TanGov has asked USAID to undertake the Village Development activities of this project in three districts of Arusha Region - Hanang, Mbulu and Arumeru. The remaining two rural

districts in Arusha Region have been the focus for the past seven years of the USAID financed Masai Livestock Project.

The TanGov has also requested USAID to undertake a planning exercise in Arusha Region, the output of which would be a long-term development Plan for the Region. The village development program also complements and supports this proposed planning effort; it will provide micro-level data essential for developing the small farmer component of the Plan.

C. Project Purpose and Goal

The goal of this project is to improve the production, income and well-being of people in the rural areas of Arumeru, Mbulu and Hanang Districts of Arusha Region. The project purposes are (a) to strengthen the capabilities of the Region, the three project districts, and villages in these districts to identify, plan, implement and evaluate development activities within the framework of the policies and priorities of the TanGov, and (b) to prepare a long-range development Plan for Arusha Region.

D. Project Activities

The project has four main activities which are listed and then described below:

I. Strengthening the planning, implementation and evaluation capabilities at the regional, district and village levels, including the preparation of the Arusha Region Integrated Rural Development Plan.

II. Improving agricultural production.

III. Identifying and promoting other economic development activities.

IV. Improving the social and economic infrastructure directly related to production activities.

I. STRENGTHENING PLANNING, IMPLEMENTATION AND EVALUATION

A. Situation

A central tenet of the TanGov's development strategy is to decentralize development planning and administrative decision making to the ward and village levels. Village Councils, elected by village assemblies, are to meet regularly to discuss the economic and social development of the village and prepare development priorities and requests for assistance from the Government. At the same time, village committees, chosen by and composed of council members, are responsible for the implementation of

village development and administrative decisions. While this structure is well defined, the ability of villages to effectively carry out planning and technical responsibilities is severely limited. There is, as noted below, a lack of trained village leadership and inadequate coordination between villages and other governmental and quasi-governmental agencies.

At the same time that efforts are being made to increase decentralization, many decisions related to development priorities and to the initiation of development activities which directly affect villages are made at the district level and above. For example, national targets have been set for universal primary education by the end of 1977, clean water in every village by 1991, increased agricultural production in an effort to achieve food self-sufficiency by 1980, and a prescribed coverage of medical care. In addition, officials on the district and regional levels play important coordinating roles in effecting village development. There are, for instance, elaborate procedures for approving and implementing requests of villagers for development assistance. Requests initiated by villages in an area go to the District Development Director (DDD) and the District Planning Officer (DPO) after which a team from the District travels to the ward headquarters to meet with representatives from each of the villages to discuss the requests. The District Management Team (DMT), made up of each of the district's department heads, heads of various parastatals, the DDD who chairs the meeting, and the DPO, then meets to review all requests from the villages. The committees work out what they think are the priorities and what is feasible. The preliminary requests are presented to the District Development and Planning Committee (DDPC), whose membership includes all those on the DMT plus ward councillors. The DDPC is chaired by the District Chairman of the Party. From the DDPC, the plan goes to the District Development Committee (DDC), which is also chaired by the Chairman of the Party. A District Development Plan, which includes the proposed allocations for each government department, emerges from this process and is then sent to the Regional Development Director (RDD) and Regional Planning Officer (RPO), where it goes through several committees with names, functions and membership paralleling the district-level machinery.

Once these plans are approved, there is the need for close coordination between both regional and district staff and ward and village officials to effectively initiate development activities. With such an involved planning process, along with the responsibilities placed on local staff for efficient project implementation, there are enormous demands on the planning, implementation and evaluation capabilities of staff at each level of government.

Discussions between the project design team, village leaders and district and regional government and party officials stressed the importance of developing these capabilities and streamlining the process. More specifically, the following problems were identified:

- Because a number of administrative and institutional changes have been made and are continuing to be proposed (e.g., it is being proposed that wards be given responsibility for selected extension activities and certain marketing and input supply functions have been reallocated from the cooperative unions to various parastatals and villages), the linkages have become weak between villages and the marketing agencies and between villages and certain technical ministries.

- There is a limited ability of the regions and districts to respond quickly to certain village needs because funds are allocated nationally to the functional ministries. Delays are frequent in channeling resources into the villages.

- Increasing responsibilities are being given to the villages for both planning and implementing development activities without developing the needed technical and organizational skills of their leaders.

- The staff capability at the Regional, district and village levels that is necessary for preparing a regional development plan -- an exercise which is a high priority of the TanGov -- is not adequate.

- Many development activities which involve government inputs lack adequate planning and coordination at both regional and district levels.

- Data needed for planning, monitoring and evaluation development activities are not adequate, nor have mechanisms been developed for their systematic collection and analysis.

Overcoming these problems requires a component in the project for strengthening planning, implementation and evaluation capabilities at the village, ward, district and regional level.

B. Project Approach

Strengthening capabilities at all levels will be accomplished through developing a process which will involve a continuing dialogue with village councils and farmers aimed at identifying development activities which take account of the production potentials and constraints within each geographical area. In addition, the specification of appropriate development activities for each locality will involve the collection and analysis of farm level data. This process will be carried out through the provision of technical planning and rural development assistance at the regional and district level, training of both local government officials and village leaders, and the specification and implementation of an information system that takes account of the decision making requirements at each level from the farmer to national level ministries.

-- Developing processes and procedures for planning and implementing development activities that are appropriate to specific areas

During the first year the project will focus on the twelve wards identified in section F below (four per district) which are representative of the various ecological zones found in the project area. The process of initially planning and implementing village development activities will involve two thrusts. First, a systematic data collection and analysis effort will be initiated (see the summary on p. 18 and Volume II, Annex B). The specifications of appropriate technological innovations and village development activities will depend on the collection and analysis of detailed data on farming systems, markets, input supply availability, etc. The information system described in the above references sets out the approach through which this activity will be carried out.

Secondly, at the commencement of the project an informal dialogue will be initiated -- to be continued on an ongoing basis throughout the life of the project -- between project staff, village leaders and villagers. This dialogue is deemed essential in order to bring villagers into decision-making concerning activities to be undertaken in their own villages and to provide the staff with adequate knowledge of the potentials and constraints within each local social and economic setting. This dialogue complements the more structured information system referred to above, and at the same time it builds on the approach being encouraged by the Tanzania Government.

The process will utilize the approach developed by an educator, Paulo Friere. The Friere System is essentially an effort to bring local residents into a dialogue through which they define and communicate their own needs and find solutions to them. It will involve the following:

- For each of the wards in which the project will work, a Bwana Shamba will be selected and given responsibility for implementing agricultural extension activity in all of the villages of the ward. They along with selected district staff and more importantly village representatives or leaders, will initiate and carry on the dialogue with the villagers. This effort will be assisted by a Rural Development Specialist who will be provided by the project to each district.

- The dialogue concept encompasses the following general approach. The first step is to gain some understanding of the types of concerns and perceptions which the villagers have concerning their lives and potential improvements in their lives. A general knowledge of these issues will be gained through listening to and having informal discussions with villagers -- often most effectively carried out at local

meeting places, markets, bars, etc. The issues which are raised will be certain types -- for example, perceived problems in maize production, marketing, etc.

- The Friere System helps identify the issues which are most critical to villagers and defines ways to deal with them. It is an important dimension to (a) understanding what types of village development activities are feasible to undertake and that can be sustained over time, i.e., subsequent to the termination of resources available through the project, and (b) developing a consciousness on the part of villages of their problems and potentials.

- As noted, this process will be carried out by project staff as well as selected villagers. They will receive intensive training in these communication techniques aimed at giving them the tools to effectively implement the dialogue activity.

This process is aimed at accomplishing a number of objectives:

- It will allow project staff to identify the production priorities of the villages and wards and to understand problems peculiar to a local environment which need to be overcome in effectively initiating production activities. Only with this knowledge can the project staff, in cooperation with Village Councils and local leaders, begin to formulate a production plan for villages and wards.

- The process of involving villagers on a continuing basis will enable project staff to determine the level of resource commitment which the village is willing to make to prospective project activities. The objective will be to maximize the return to investment; this will be accomplished to the extent that external resources are complemented by a village-level resource commitment -- land, labor, capital, time and leadership. In addition, such a commitment is an indicator of the level of interest on the part of villagers in the proposed development activities and an indicator of probable success in implementing and sustaining the activities after A.I.D. assistance ends.

- At the same time, the management and organizational skills of the Village Councils and leaders will be enhanced This increased capability will help the formal planning and

decision making structure (Village Councils, village committees, hamlets and ten-cell units) become effective functioning organizations. Village management skills will be improved in the process of working with the project staff in planning and implementing village and ward activities as well as project-provided training. Selected village residents will act as the liaison between project staff and villagers. These persons, through training in communication methods to be provided by the project and knowledge gained as the project progresses, will become primary facilitators within the village and will serve to expedite the flow of information both from and to the village.

- The types of development activities which the villages and wards decide to implement and the form which they take will vary widely. First, villages differ in needs and the production plans which emerge from such villages will reflect these different needs. Second, villages and wards with similar needs will decide upon different methods of implementation. As will be discussed below in the agricultural production component of this project, the establishment of Farmers' Centers will be one approach available through which to address certain of the village production needs.

- Ongoing training will be required in order to allow the process to work effectively. All individuals involved, from village leaders through regional and district government and party staff, will need various types of instruction. Those involved in data collection and those who are the primary facilitators with villagers will need specialized training. (See section below on training to be provided under this component.) Further, the extension staff, such as the agricultural field officers, will need frequent upgrading of both extension techniques and technical training. Requirements for both will change over time as more is learned through the information system and as activities and approaches are implemented.

Not only will organizational skills improve at the village and ward levels, but improvement will result at all levels through the region. The Bwana Shambas, through the ongoing two-way communication established with villagers, will better understand the problems and potential facing different localities. In addition, the activities in which these

officers become involved, e.g., organized group extension through Farmers' Centers (see discussion of the following activity), will improve the organization and effectiveness of their work. The same considerations apply to officers from the district through the region who are involved with village and ward development.

-- Expanding the capacities of the region and districts to encourage and respond to village plans and initiatives

In support of the steps being taken by the TanGov to decentralize development decision making, the project will provide funding and technical assistance directly to the regional and district governments. Funds will be appropriated yearly on the basis of implementation plans and work plans prepared by the districts, in cooperation with the Village Councils, and approved by the regional administration and USAID (see Part Four: Implementation Arrangements). Long-term technical assistance will be provided to help develop the plans in addition to improving planning, management and evaluation procedures. Channeling assistance to the regional and district levels will not only allow these government agencies to respond more quickly to village needs but also strengthen the linkages between the government and villages.

As noted above, a total of three (one per district) Swahili-speaking, expatriate Rural Development Specialists (RDS) will be provided by the project for four years. AM RDS will be assigned as a staff member in the office of each District Development Director, with responsibility for helping to:

- organize the data collection and analysis effort for planning and implementing project activities in the selected villages, including direct involvement in developing effective approaches to two way communication between the project staff and the villages;

- develop with district government and party officials improved methods and procedures for planning, managing and evaluating village development activities;

- organize and coordinate training of selected district, ward and village government and party officials to develop planning and management skills; and

- plan and coordinate USAID assistance to promote village production activities and the needed social and economic infrastructure to support these activities.

In addition to the three RDS, the project will provide a Regional Planner/Economist to be assigned as a staff member in the office of the Regional Development Director. This person will be the chief of the

American technical assistance team and will assist the regional administration as follows:

- assist in the development of the information system for project planning, management and evaluation;
- develop with regional officials improved development planning and management methods and procedures;
- assist in the analysis and review of district and village development plans;
- coordinate USAID inputs with regional resources to the three districts;
- coordinate USAID assistance to the region in the preparation of the Arusha Region Integrated Rural Development Plan; and
- coordinate with the RDO preparation of an annual project work plan.

The Regional Planner/Economist will be required for four years. Two of the ten Tanzanian government officials trained in regional planning will be available to begin assuming some of the Regional planning functions upon return to Arusha in the third project year. During the first year, the Regional Planner/Economist will coordinate the preparation of the Plan.

The Project also provides for a Regional Agricultural Specialist (see also Agriculture Production activity) to be assigned to the RDD's office. This specialist will be responsible to:

- assist in the development of the agricultural components of the information system for project planning, management and evaluation (for greater detail, see the discussion of the information system in Volume II, Annex B).
- serve as coordinator between the district agriculture components and the supporting national programs in manpower development, research, seed multiplication, marketing and credit;
- provide technical backstopping to RDS in the development of the village production plans;
- assist in the preparation of the Arusha Region Integrated Rural Development Plan; and
- serve as Assistant Chief of Party and be responsible for administrative support as assigned by the Chief of Party.

A variety of additional short-term technical assistance will be provided as shown in Volume II, Annex C.

The PP team found that transport for staff at all levels was a major problem. In order to relieve this constraint, we propose the assignment of vehicles as follows:

Regional (Shown under Planning Budget)

1 Landrover	Regional Planner/Economist
1 Landrover	Agricultural Specialist
1 Landrover	Agricultural Economist
2 Landrovers	Regional Planning Office
18 Motorcycles	District Development Directors

District (Shown on Agriculture Budget)

3 Landrovers	District Development Directors
3 Landrovers	Rural Development Specialists
6 Landrovers (pickup)	District Agriculture Offices
6 Trucks(10 T)	District Development/Agriculture Offices
40 Motorcycles	District Agriculture Offices (for Bwana Shambas)

Roads

3 Landrover (pickup)	Road Specialists
3 Landrover (pickup)	District Engineers

(other equipment detailed elsewhere)

Water Systems

1 Landrover (pickup)	Water Systems Construction Specialist
5 Landrover (pickup)	District MAJI Crews
6 Trucks (7 T)	District MAJI Crews

Appropriate Technology Center

2 Landrovers	Appropriate Technology Specialists
2 Landrover (pickup)	Appropriate Technology Center
2 Motorcycles	Appropriate Technology Center

The Landrover four-wheel drive vehicles and motorcycles are intended to provide transportation for the project staff and extension officers. It is assumed in this project that a constraint to development is the inability of villages to communicate with government officials regarding needs and the failure of the government to disseminate information and inputs. Increasing mobility of the project staff should increase the effectiveness of these individuals. Pickups and heavy trucks are provided in the infrastructure activities to transport commodities and equipment. Trucks are provided for the Appropriate Technology Center and at the district and regional offices to increase their ability to deliver agricultural and other inputs.

A procedure similar to one currently in use by the TanGov will be used whereby the motorcycles will be sold to the field officers on a long-term credit basis. Several alternative plans have been discussed with the TanGov including (i) placement of Tanzanian shilling proceeds into a Trust Fund to be used to support local cost components of the project or (ii) establishment of a suspense account to be used for direct local contribution to the project. A covenant will be contained in the project agreement whereby the cooperating country will covenant to provide a mutually acceptable plan within 90 days after execution of the proag which will detail the procedure for providing credit to extension officers to purchase project provided motorcycles and the uses of the shillings derived from these sales.

The project will also provide the following for each district: Office furniture and equipment, housing for two of the RDS, funds for vehicle operation, salaries for the additional secretaries and accountants required to implement project activities, and funds for in-country travel. On a reduced scale, similar inputs will be provided by the regional administration which, in turn, will provide housing for the Regional Planner/Economist and the Agricultural Specialist.

Along with the equipment and transport provided for road and water activities, these inputs should provide needed mobility and logistical support which is currently a critical constraint to effective use of staff.

-- Establishing an Ongoing Information System

One of the primary responsibilities of the technical assistance team will be to assist regional and district officials to establish an ongoing information system. A full description of the system and its development may be found in Volume II, Annex B "Information System for Planning, Monitoring and Evaluating Project Activities." The following will briefly summarize this activity and the required inputs.

Concurrently with the initiation of the dialogue with the villagers, a systematic data collection and analysis effort will be undertaken. As noted above, the specification of appropriate technological innovations and village development activities will depend on the collection and analysis of detailed data on farming systems and other potential economic activities by project staff and their assistants.

In addition, as villages begin to implement various activities, the following questions must be answered: Do the technical innovations result in increased crop yields? What are the most effective ways of helping Village Councils build their capabilities? Will pricing, supply and marketing operations insure that the benefits from the development activities will become self-sustaining? In effect, it will be necessary for the regional, district and ward officials, and the village leaders and farmers to monitor and evaluate activities against project goals and purposes. The system of collecting and analyzing the appropriate data for project monitoring, evaluation and modification forms the core of the information system that will enable measurement of overall project impact.

To carry out the work, two data collectors per Bwana Shamba (paid by the project) will be recruited and assigned as assistants to the agricultural extension workers in each ward. Additional data collection will be carried out by Village Management Technicians and Village Managers concerned with the production of small-scale village enterprises. The data collectors and village liaison workers will receive short-term training in communication methods as well as data collection and analysis techniques.

In addition to the micro-level data collection and analysis, and as part of the project's information system, management and reporting requirements will be defined to allow the effective monitoring of the flow of project resources and its initial results. Further, the system will be structured to meet the information requirements of the functional agencies at the regional and district levels, especially concerning policies and practices that may impede or facilitate the achievement of project objectives. Finally, the system will be structured to evaluate the changes in the environment and the reasons for these changes.

Responsibility for the information system will be centralized in the Regional and District Planning Offices. Technical assistance in developing the system will be provided by the Regional Planner/Economist, the Agricultural Specialist, the Rural Industries Specialist, and the three Rural Development Specialists; short-term assistance from a Management/Information Systems Specialist will be available as required. Training will be provided in communication and management skills for village officials. In addition, training in data collection and analysis methods will be given at each level - the farmers, Village Councils and officers in district, ward and regional administration. Also, for district level personnel, short-term training will be provided in social and economic development evaluation methods, most probably at the University of Michigan or the University of Massachusetts (both have summer programs).

The eventual aim of the project will be to develop an information system that can be replicated by the government in other regions and districts. Creating a system appropriate for Tanzanian rural areas will require experimentation and modification. Over time it should be possible to simplify the requirements so that the system can be replicated with a minimum of outside assistance.

-- <u>Training of Local government officials and selected village leaders</u>

As has been indicated several times above, an important element in strengthening the capabilities of staff and leaders from the village level through the region is the provision of appropriate training. Mention has been made of the on-the-job training to be provided by the project and of the variety of instruction to be given outside of the project area. A summary of the important training inputs follows:

U.S. and Third Country Training Programs:

- Ten government officials selected from throughout Tanzania will receive Masters degree training in regional planning at a U.S. university, at least two of whom will return to work in Arusha region. The general focus of the training will be on building the methodological skills and technical capabilities needed to carry out effective planning. This includes (1) building the skills needed for identifying, collecting and analyzing the data required for area planning and project identification and design, (2) bringing the analysis together in developing consistent and relevant area based plans, and (3) providing background in relevant technical fields needed for effective development planning. Among the schools under consideration are Cornell University, the University of Wisconsin, Michigan State University, Syracuse University and Princeton University. The first three of these are suggested because of the relationship between their regional planning and international development programs. The regional and city planning department at Cornell ties into the University's international agricultural program so that basic courses in regional planning can be coupled with technical courses in agriculture as well as with the work of Cornell's Rural Development Committee (work that includes AID-sponsored research on participatory development projects). Of these three universities, Michigan State has had the most direct African experience. Courses in regional planning could be most usefully tied into work in the Agricultural Economics Department where regional and national analyses of agriculture are being conducted in, among other countries, Niger and Upper Volta. Wisconsin is probably the least strong of the three, but does have a program directed towards regional planning in the Third World which is linked to the work of the Land Tenure Center. Syracuse was included in the list because of the extensive work being done there with project design, management and evaluation. The focus of this work has been in the Maxwell School in its Foreign and Comparative Studies Program and Development Management Program. In the Comparative Studies Program considerable emphasis is given to East Africa, and it has at present nearly a dozen Tanzanians enrolled in Masters degree work. Finally, the Woodrow Wilson School at Princeton has a strong program which combines excellent courses in economics and project planning methodology and evaluation.

- Four government officials, most likely from the district governments, will be sent on university tours to the U.S. Experience has shown that short-term work experience in such countries as Kenya as well as Tanzania, if organized well, can be an extremely effective method of developing skills in a relatively short time. These tours will involve work in county governments or local area organizations, focusing on local involvement in development decision making.

and providing practical experience in planning and project management.

Locations in the U.S. which emphasize popular involvement in local decision making to improve the economic and social conditions of poorer residents include:

-- Virginia Assemblies: This organization has about 100,000 members and works in 20 rural Virginia counties. From the neighborhood to the state level committees have been formed that involve people in defining and solving their own problems, combining efforts to change public policy as well as initiate action programs.

-- Arkansas Community Organizations for Reform Now: Local communities in rural Arkansas are involved in developing and carrying out viable local economic projects, as well as feeding ideas and recommendations into country and state planning agencies. This organization is financed largely by the local communities themselves, with some aid through outside technical assistance.

-- The Knox County Community Development Corporation: This organization was set up to develop economic alternatives in an impoverished area of Appalachia. To date a number of agricultural and light manufacturing industries have been developed into viable economic enterprises.

In addition to these, several other counties or local areas, primarily in the south, have planned and are implementing local development programs -- programs that have goals for its rural population similar to those of the Tanzanian Government. Included in this category are the Mexican American Council for Economic Development, the Missouri Delta Ecumenical Ministry and the Southeast Alabama Self-Help Association. Each of these offers a potential for training opportunities.

-- Two government officials will receive training in social and economic evaluation methods. As described earlier, the purpose of this training is to develop and methodological skills necessary to plan and implement an effective information system. This work can be accomplished through a 3 to 4 month summer program at a U.S. university which specializes in evaluation.

To a large extent, the choice of location for this type of training will depend on the backgrounds of the Tanzanians chosen for the training. One of the best is a summer program given by the University of Michigan which concentrates on sample selection, data collection methods, and techniques of data analysis. Candidates for this program are required to have a basic background in statistics.

Alternatively, the University of Massachusetts has a yearly program that concentrates on evaluation of socio-economic change and alternative methodologies that might be employed; this program encourages the participation of representatives from developing areas.

To the extent that those selected for training have had no previous statistical/information systems background and thus would not qualify for either of these programs, basic training during a summer session in statistics and quantitative methods should be sought. Such a course could be tailored to the needs of the Tanzanians from the core program of any major U.S. university.

Short-term study tours have been programmed for eight government officials (two per year) to visit similar area development projects in other parts of Africa. Tours will provide experience in such areas as methods of project planning and implementation as well as the development of appropriate technologies. Among the projects that would provide worthwhile insights are:

- The Umbo Project in Nigeria which is sponsored by the Nigerian Government and Shell-BP Petroleum Company. This project utilizes a bottom-up process approach as lessons are learned and appropriate interventions are identified. Through interaction with villagers project activities are expanded and/or modified. Of particular importance in this project to the Tanzanians is the process of identifying mechanisms for promoting popular involvement in development decision making.

- The work of ORDEB - The Organization for the Rehabilitation and Development of the Egyptian Village. This effort emphasizes area physical planning, giving a priority to economic development activities (income generating) and creating mechanisms for village initiative and responsibility in decision making.

- The work of the Ghanian Rural Reconstruction Movement. The approach has been to delineate a relatively small geographical area, select and train a corps of development workers in the area, e.g., agricultural and health extension workers, develop a dialogue with the people in the villages aimed at identifying needs and understanding the dynamics of the local economic and social systems, and, based to a large extent on this knowledge, promote economic and social development activities with a focus on the introduction of appropriate technologies.

- The Southern Gamu Gofa Rehabilitation Project in Ethiopia. This project is an experimental area development project aimed at improving the production and socio-economic well-being of people living in drought-stricken areas. It is aimed to help develop capabilities of peasant associations and local government institutions to identify, plan and implement cost effective approaches to their environmental problems.

- The North Shaba Rural Development Project in Zaire. This activity is designed to develop a replicable process for improving small farmer production and income by (1) testing and introducing improved maize and other crop technologies, (2) developing farmer organizations, (3) identifying and producing improved agricultural implements and processing equipment, (4) expanding market services, (5) rehabilitating rural roads, and (6) developing the planning, management and evaluation capabilities of government agencies.

In-Country Training Programs:

An extensive in-country and on-the-job training component is to be developed by the implementing entity for village and ward officials. These programs must be developed as the project progresses and are programmed for maximum flexibility. In each of the four project components there has been identified the following in-country training requirements:

- Communication Skills: Seminar programs for village leaders, extension staff and district officials on methods of effective communication will be provided. The seminars will serve the purpose of introducing project objectives and provide training in how to organize meetings, insure participation, record discussion and prepare for effective follow-up. Approximately six sessions for fifty participants are scheduled each year to provide training as new villages are added to the program. Various village and ward leaders will be utilized as facilitators in the process of defining and initiating the village development activities. The general approach to training these leaders will

be based upon the psycho-socio method developed by Paulo Friere and involves bringing local residents into a dialogue aimed at defining their own problems and needs and finding solutions to them. It is an approach which emphasizes maximum involvement of people in their own problem solving. This type of training is being carried out in a number of areas in Tanzania, including in a village health project in Hanang District. Individuals involved in this work will be drawn upon for the training of village and ward officials and leaders.

- Village Planning and Management: At present the TanGov is conducting training in a variety of management skills through a Village Management Technician training program. Training centers for this program are located throughout the country, including one in Mbulu District. The project will draw upon the Mbulu Center as well as specialists trained at the Centers and assigned to Arusha Region to carry out short-term training for local level officials. In addition a program developed by an IBRD/Nordic team operates a program to train village members in planning and management. Project funds would be used to expand this program to insure that all villages in the project could send selected members for training. Courses are short (2-6 weeks) and include bookkeeping, banking, store management, credit management and related subjects. Village members would be sent to these courses on an as required basis throughout the project implementation period. The project will determine the feasibility of providing further courses in village planning especially concentrating on simple calculations to decide the economic value of various actions proposed by village councils. Funds are provided to cover costs of six sessions per annum.

- Data Collection and Analysis: If a suitable program cannot be found in-country, the project will develop a training program to provide a capability in the District Office, with extension agents and hired enumerators to conduct the baseline surveys and monitor project activities. Several projects are under planning by other donors which could provide a sound in-country program for the proposed training. If these programs are not yet operational short-term consultant funds will be used to develop appropriate seminars. The project design team estimates two courses are needed for 50 participants per annum.

- District Level Training: Members of the staff of the participating districts will be sent for short courses at the Institute of Development Management and the Institute of Finance Management. Courses will include accounting, planning concepts, calculations of costs and returns, project evaluation and implementation. Courses generally last six months.

II. IMPROVING AGRICULTURAL PRODUCTION

A. Situation

As is indicated in the district profiles (Volume II, Annex A) several district ecosystems cut across the project area. At the foot of Mt. Meru and in parts of Mbulu District high rainfall and highly productive areas are found. At the same time, portions of all three districts are semi-arid, suitable only as cattle grazing lands and, in some cases, drought tolerant crops.

The most productive areas are intensely cultivated primarily with wheat, coffee, bananas and, to a lesser extent, pyrethrum. In addition, considerable dairy production is undertaken. A number of farmers utilize tractors and a considerable amount of irrigation is done. A field crop zone typifies a less productive ecological zone and covers better than 40 percent of the three districts. A large variety of crops are grown -- maize, beans, finger millet, wheat and, to a lesser extent, castor, bananas and a variety of vegetables. Furrow irrigation is used to increase the productivity of some of the drier areas. Finally, a semi-arid cattle zone covers 15-20 percent of all three districts in the project area. Considerable dairy production is undertaken and dry land crops such as finger millet and sorghum are grown.

There is considerable potential for improving agricultural production in the districts. In the drier areas an improved variety of sorghum, Serena, has considerable promise. Cash crops such as pyrethrum and, in some areas, coffee can be expanded. Through pasture management and improved husbandry, livestock production can be improved. At the same time, a number of obvious constraints exist. Soil and water erosion have occurred in parts of all three districts due largely to overgrazing, destruction of the watershed by indiscriminate cutting of trees and poor farming practices. Destocking is a high priority and a prerequisite to effective project activity in parts of the project area. Marketing of crops and input supply likewise is a problem, though this is due primarily to an inadequate road network. The basic marketing support system would be adequate with improved communication. Two additional problems confronting the agricultural support system need to be addressed - insufficient agronomic research in the project area and a poorly functioning agricultural extension system.

In addition, it must be stresed that while considerable production potential exists, the project will be assisting farmers who have developed farming systems which insure that at least a minimum level of subsistence will be obtained. Any changes that are introduced will not only have to be proven successful within their own farming systems but will also have to involve a minimum amount of risk.

B. Project Approach

The approach which will be taken for improving agricultural production builds on the process described in the planning component above. As noted, through developing a two-way communication with Village Councils and residents and carrying out the collection of farm-level data, production activities appropriate for individual areas and constraints on improved production will be identified. Specific outputs and inputs of this component are described below.

-- Development and introduction of appropriate technologies for crop production

Before improving crop production, it is necessary to recognize that considerable differences already exist in farming practices among farmers in the project area. There are significant differences for a variety of crops in the method of land preparation, date of planting, density of plant population, weeding and crop rotation practices. Moreover, the types and levels of input used, such as fertilizer and insecticides, vary a great deal.

At the same time, limited crop research and adaptation has been done in the region. Research on a variety of crops has been/is being carried out in various other parts of the country. Work is being done at Lyamungu (Moshi) with wheat and coffee; at Ukiriguru (Mwanza), sorghum, maize, peas, millet; and at Ilonga (kilosa), maize and legumes.

As previously described, the project will start with data collection of ongoing practices and farming systems in order to understand what differences exist by locality. Concurrently, a systematic effort will be made to gather information concerning past and ongoing research which might be applicable to the area. Ongoing projects such as the National Maize Project will also be studied. These efforts will form the basis from which attempts to identify and introduce new practices and farm technologies will be made.

In the villages the process will begin through the dialogue and data collection initiated by the Bwana Shambas and their assistants. This effort will produce a primary agricultural production plan, or, more broadly, a plan of action for the village. The substance of these plans will vary widely by village, but in nearly every case will include as a priority improved crop production. A determination will have to be made as to what crops need to be encouraged, what obvious constraints exist and what approaches to use to increase production.

The project approach builds on the existing ward and village structure (some variation of which would be applicable in most localities) by encouraging villages to establish Farm Centers at the ward level from

which the necessary activities in support of agricultural production take place.[1/] The type of Center built and the functions it performs will be largely prescribed by the villages. Centers will be established only when villages see the need for them and are prepared to make a resource commitment to their construction. The Bwana Shamba assigned to a particular area will be in charge of the Centers and will reside nearby.

The Centers will be utilized for the following:

- The organization of farmer extension activity. The Bwana Shamba would organize and carry out extension work for the ward from the Center. In addition, many villages will have a village manager trained in accounting, planning, etc., and this person would be a major point of contact for the Bwana Shamba and other project staff. In dialogue with Village Councils they would encourage villages to choose one or more village agricultural leaders with whom they would work directly in organizing village activity. Both group and individual demonstrations could be carried out and villagers would be encouraged to become involved in preparing demonstration plots at the Center and in the villages. One objective would be to develop the capabilities of the village agricultural leaders so that they would become para-professionals and themselves initiate extension activity in their villages.

- Testing and demonstration of agricultural practices. Initially, extension activities will revolve around extending to less productive farmers practices such as appropriate land preparation already being carried out by the more productive farmers in the area. Data on practices used will be generated by the data collection system. At the same time, new techniques and practices (some of which will come from research centers elsewhere in the country) will be tested on farmers' land. As new methods are proven, they will be extended more broadly throughout the area.

- Testing and demonstration of appropriate agricultural technology. Farm equipment appropriate to farmers' environments is being developed at several places throughout the country. This project likewise will assist in the development of appropriate farm technology (see activity 3 discussed below). Through the Centers such technology can be tested and demonstrated both on farmers' land and on the plots at the Center.

- Soil testing for local farmers. Centers will be provided by the project with simple soil testing kits. The Bwana Shamba responsible for the Center would carry out this work.

1/ FAA 611(a)(1) requirements for Farm Centers will be met using REDSO assistance prior to obligation of funds for construction.

- Provision of agricultural inputs for sale. In those localities where the need arose and where the necessary management capability existed, Centers could be used as outlets for agricultural supplies.

It must be stressed that the use of such Centers will vary by locality depending upon the production plans of and constraints faced by different areas. (They also could be used for other than crop production related activities -- see discussion below on livestock). In addition to the facilities related to specific production activities, a typical center will have an office for ward personnel and a meeting place.

Intensive technical training will be provided by the project, especially at the village level. As technological innovations are identified and proven successful, in-service training will be given to the agricultural and livestock officers, either on-the-job or in special programs at the Ministry of Agriculture Training Institutes (MATIs) and/or training facilities available in the region. Periodic, short-term training programs will be organized to upgrade their skills. At the village and ward levels, Bwana Shambaa (with assistance of district officials and the Rural Development Specialist) will organize workshops and training programs related to specific crops. Special training activities will be developed for members of the Village Council's Agricultural Committee. For District Agricultural Officers, third country study/work tours will be provided with a farming systems/crop specific focus. The first purpose of this training will be to introduce the agriculturalists to farming systems, in essence to introduce them to the considerations that go into farmer decision making regarding the adoption of innovations. Probably the best work in this area is being done by the International Institute of Tropical Agriculture in Ibadan. They have shown, for example, that instead of focusing only on high-cost technology research, a more effective approach is to begin by examining farming systems, understanding differences in technologies already in use, and testing the most advanced of these innovations on the lands of the less productive farmers.

The second purpose of this training is crop specific instruction. As the project identifies opportunities to introduce specific crops, visits to areas in which such crops are being successfully grown will be essential. In the case of arid land crops, such as millet or guinea corn, Northern Ghana provides a good opportunity for useful interaction. The point of this training will be to provide ideas regarding crop specific research and extension as it relates to local farming systems.

The project will provide a variety of other inputs in support of this activity. As noted earlier, an Agricultural Specialist attached to the RDD's office will be provided. A U.S. Agricultural Economist for the planning phase and various other short-term consultants will be used throughout the life of the project. U.S. short-term training in land use planning and soil conservation is also anticipated. Two TanGov staff positions - a Technical Agricultural Development Officer and an

Assistant Agricultural Development Officer - will be added to the three project districts. The former will provide technical backstopping to the Farm Centers through, for example, supplying information and advice on agricultural research being carried out elsewhere in the country. The latter will be directly responsible for agricultural extension activities related to women's needs. These officers will be hired locally and attached to the office of DADO; their salaries will be covered for the first four years by the project. In addition, short-term technical assistance will be provided by a Plant Scientist and Crop Storage Specialist when needed.

Housing is currently available for most Bwana/Shambas. However, project funds include funds for six houses at the district level for the Bwana Shambas (as well as the livestock field officers - see discussion below) - where needed - and for the purchase of materials for the construction of Farm Centers. Villages must provide labor and, where possible, a cash contribution for their construction. In addition, the following equipment and supplies will be provided:

- soil testing equipment for Farm Centers;
- extension and training materials;
- agricultural supplies for trials and demonstrations; and
- office supplies for Farm Centers and for the agricultural and livestock field officers.

Transportation will also be provided at the district and ward levels including motorcycles to be supplied on loan to Bwana Shambas. Each District Agricultural Development Office will be provided with a pick-up truck.

-- <u>Development and introduction of appropriate technologies for livestock production</u>

The mechanism through which the project will promote livestock production is parallel to the one described above for crops. Livestock related activities will be identified in the dialogue with the Village Councils and farmers and the bulk of the activities will be carried on through local Farm Centers. Livestock and crop Agricultural Field Officers will be assigned to wards and attached to Centers. A variety of livestock related work could be carried on from the Farm Centers:

- rationalization of an integrated livestock/crops management pattern;
- extension related to animal husbandry practices;
- extension of practices related to the production of pasture/grasses;

- ox-training and/or dairy centers; and

- veterinary services.

A central issue which must be addressed in many parts of the project area relates to the stocking rates for cattle. Under prevailing communal grazing systems there are areas which are overstocked and other areas which are underutilized. In those areas where overstocking is considered a problem, the project will attempt to get a commitment to destock before providing project assistance for livestock improvement components. In the underutilized areas, the provision of dips and other improved husbandry practices will be used to achieve its full potential.

The project will provide short-term technical assistance with animal and range management specialists, provide transport for livestock field staff, and provide veterinary supplies.

-- Strengthening the Agricultural Support System

The field data collection and analysis effort during this project design exercise indicated the primary strengths and weaknesses of the region's agricultural support system. One major weakness already noted is the lack of any adaptive research work. To a large extent, identifying, testing and introducing technological innovations suitable for the diverse farming systems in the area is a main aim of the project. Much of this work will be carried out through the Farmers' Centers, backstopped by the project-provided Agricultural Specialist and District Technical Agricultural Development Officer. These officers, with the assistance of the Rural Development Specialists will tap the knowledge of the National Research Institutes as well as provide feedback to these Institutes about farmer reactions to their recommendations. This process will be facilitated by the fact that the officers can draw upon the findings and technicians of the USAID-sponsored Agricultural Research Project which is conducting applied research on maize, legumes and sorghum which are primary crops in the project area. Also, a soil-testing capability (provided by the project) will be developed at the district level to assist in the identification of appropriate technologies.

To transfer agricultural knowledge, the project will develop the capabilities of the Bwana Shamba both technically and in extension methods. The experimentation in this project will define training requirements for agricultural field officers, complementing the current assistance to the MATIs provided by the USAID-sponsored Agricultural Manpower Project. In turn, the MATI's may be able to assist in giving in-service training for the agricultural field officers. Also, through the Manpower Project, the availability and quality of agricultural officers for the regions and districts are being increased.

Agricultural supplies for farmers in the project area were found to be readily available, though problems of delivery existed in areas where the road system was in disrepair or inadequate - a constraint that will be addressed under the social and economic infrastructure activities of this project. Seeds are available from the Tanzania Seed Company which receives foundation seed from the USAID-supported Seed Multiplication Project and which sells both directly to farmers and to distributors such as TFA. It is unlikely that agronomic chemicals will be introduced by the project until they have proven to be economical. The availability of the small amounts that might be needed for the project should not be a problem. Credit for the purchase of supplies did not appear to be a constraint for farmers because it is available through the crop authorities for cash crops and food crops. Such credit, if needed, can be provided by the Tanzania Rural Development Bank which is being assisted by the USAID-sponsored Agricultural Credit Project.

In discussions with village leaders and farmers, one problem that was continually identified as being critical is the lack of village storage facilities. Storage and inadequate roads are the two largest constraints to effective marketing of agricultural output and to input supply. Poor storage facilities are also responsible for large losses of crops. In response to this need, the project will provide material support for construction of village stores in up to 50 locations over a four year period. Funds for construction of storage units will be obligated after the criteria in Appendix G and Annex G are met and after REDSO concurrence. The District Works Department will provide construction supervision and the villages must commit the necessary labor. The determination of whether a specific village needs a village store and the size of the store will be made during the course of preparing village production plans. The project will also provide short-term technical assistance from a Crop Storage Specialist. If additional marketing assistance is required, inputs will be available from the USAID-assisted Livestock Marketing Project. This project provides funding and technical assistance to one of the parastatals that has the primary livestock marketing responsibility in the project area.

Finally, AID does not propose to fund such things as input purchases because they can be financed by TRDB, NMP, Cotton Authority and the like. It is the intention of the project to provide the linkages to make these existing programs more responsive to farmer needs.

III. IDENTIFYING AND PROMOTING OTHER ECONOMIC DEVELOPMENT ACTIVITIES

A. Situation

Both the potential and opportunity exist in the project area for developing non-agricultural economic activities as well as introducing appropriate technologies that meet local needs. At present, numerous village and group enterprises exist which are engaged in a variety of activities:

- production of burned bricks;
- pyrethrum processing;
- blacksmithing;
- weaving;
- pottery;
- carpentry;
- local art promotion;
- machinery/equipment maintenance;
- maize milling; and
- local processing of agricultural products.

At the same time, a survey of managers of village level enterprises and government officials indicated that the goods and services provided by these enterprises fall short of local demand and that a primary constraint to expanded activity is limited management and accounting skills. For instance, a survey of twenty villages in Arumeru District revealed that seven have no maize mill; none have a bakery; 14 have no carpenter; most have no bicycle repair shop and 16 have no brick making machines.

Moreover, the opportunities for introducing appropriate technologies are many: improved agricultural implements, the construction of carts and other wood and metal work, the introduction of primary agricultural processing techniques, and improved building materials are just a few examples. Further, there exists the opportunity to promote local arts and crafts production.

At present a number of government and private agencies are working on both the promotion of small-scale enterprise and the question of appropriate technologies and their extension to the rural population.

- The Small Industrial Development Organization (SIDO) is involved with establishing and funding small-scale enterprises through the provision of marketing services, procuring commodities wholesale, and technical advice in such areas as establishing bookkeeping systems.

- The Tanzania Agricultural Machinery Testing Unit (TAMTU) has a mandate to design and produce agricultural implements appropriate for small farmer needs. The Arusha Appropriate

Technology Project has been experimenting in villages with prototypes of chain pumps, water collection containers and methane digesters.

- The Building Research Unit, an agency of the Ministry of Lands, Housing and Urban Development, is testing improved building materials and designs.

Finally, a number of missionary groups have developed and are testing a large number of devices -- improved windmills, pumps, grain threshers, plows and ox-carts.[1/]

The primary constraints identified by the PP design team to the promotion of these activities revolve around inadequate organizational arrangements and local level management capabilities. Though, as noted, a number of organizations are involved, there is not at present a clearly defined structure through which the activities can be promoted or mechanisms which insure that the assistance will effectively reach the village level. Less of a problem are funds available for the work; the TRDB has credit resources which are not presently fully utilized, there exists a fund at the disposal of the RDD available for small-scale enterprises and SIDO has financial resources.

B. Project Approach

A problem in designing this component was to determine the appropriate approach given the types and coverages of agencies and organizations already involved in the promotion of group and village enterprises, as well as the design, testing and distribution of improved, appropriate level technologies. In settling on an approach for these activities, a number of questions must be addressed. There is the question of how the project can complement the work already being carried out by others in the area. There is the question of how to interface with villages in determining what activities to focus upon. Further, there is the question of the most reasonable institutional arrangement to carry out this work.

After extensive discussions with local government officials and management staff of several organizations involved in this work, agreement was reached that the project would initially carry out a feasibility study to determine the most efficacious approaches to be pursued. This study will be done prior to the start-up of the project using Program Development Support Funds for a feasibility study on assistance for small scale industries and agricultural tools development.

Though the specific approach will emerge as the study proceeds and as more is learned during Phase I of project activities, it is envisioned that the activity will focus on the establishment of a center for the promotion of appropriate technology and local level enterprise at a site

1/ This includes a USAID funded PVO, "Operation Bootstrap," working in Arusha Region.

to be selected in the project area. For the promotion of appropriate technology the Center, in collaboration with the other organizations involved in parallel work, will focus on the following:

- identifying technologies currently in use and the groups using these technologies;

- assessing local technology needs through discussions with local villagers and other organizations involved in similar and complementary work;

- constructing prototypes of selected items not available from other sources;

- testing prototypes in local villages as well as providing training in their use and maintenance or assisting other organizations to carry out such testing and training; and

- determining the best approaches to the production of innovations which have proven acceptable and finding resources to support production enterprises.

Funds for the center are not ready for obligation. Obligation will be made on the basis of Appendix 9 and Annex 3.

The promotion of group and village enterprises has two dimensions. On the one hand, it will focus upon promoting production as well as developing maintenance capabilities and facilities for the innovations discussed above. Particular interest will be in assisting local artisans already active in the area in improved production and maintenance techniques.

On a second level, the project will assist in promoting viable small-scale village enterprises. This will involve, as in the agricultural production activities, identifying at the village level what potential local demand exists for various consumer and producer goods, what local level management capability exists for promoting local production, and what enterprises should be encouraged to facilitate this production.

The approach which will be used will revolve around initially working with those organizations already charged with the responsibility to promote small-scale enterprises and defining with them the most effective approaches to interface with village councils and village leaders. As in the case of identifying appropriate technology, the work will be carried out from the Center established to promote appropriate technology and local level enterprise. The focus will be upon developing effective linkages from the regional and district levels to the villages so that resources, both technical/personnel and financial, can be drawn upon when needed by villages. It will involve

largely a coordinating/facilitating role on the part of the project, i.e., defining with SIDO how best to utilize their staff and resources, identifying which areas have available Village Management Technicians and how they can best be used, and working with the newly selected cadre of Village Managers in interacting with leaders in the villages.

Once this process is begun the efforts will revolve around, with the agricultural production activities, identifying through data collection and dialogue with villagers activities that have some potential and which would be incorporated into the village production plans. Funds to support these activities are available from several sources and it will be the focus of the project to help develop the mechanisms to insure that these funds can be drawn upon, i.e., defining with Village Managers and leaders procedures to obtain TRDB funds.

An Appropriate Technology Specialist and a Rural Industries Specialist will be supplied to the Center for three person years each and a staff of 4 Tanzanians with technical and research skills will be recruited. For the first three years the project will pay the salaries of the Center staff (including clerical staff and laborers) with this responsibility being assumed by SIDO in the fourth year.

-- Training

The project will develop skill capabilities of the Center through the provision of U.S. short-term technical assistance in management and accounting techniques and appropriate technology. In addition, training will be provided in data collection and analysis to the staff working with the villagers. (Funds for this training are provided in the first project activity.)

The project will also fund approximately four study tours to West African appropriate technology centers. The purpose of these tours will be to acquaint the Tanzanian staff with approaches being used elsewhere to develop and disseminate appropriate technology. This will include approaches to assessing local technology needs, constructing and testing prototypes in local villages, and producing and introducing innovations that have proven successful. Ghana, where much work in this area has been done by a variety of groups, is one of the best countries from which this experience can be drawn. Activities in Ghana which should be visited include the following:

- The Technology Consultancy Center of the University of Science and Technology, Kumasi. This center is developing and is involved in the testing of a number of items -- bullock carts, soapmaking machines, hoes, threshers and plows. It draws upon the resources of a number of

other institutes, including academicians at the University who are involved in appropriate technology issues, the International Rice Research Institute in the Philippines which has supplied it with prototypes for a rice thresher and irrigation equipment, and the Intermediate Technology Development Group in London.

- Council for Scientific and Industrial Research. The CSIR network of research and development institutes gathers information about appropriate technologies for rural areas. Its Food Research Institute, for example, experiments with techniques for processing, preserving and marketing food crops. Other institutes, such as the Crop Research Institute and the Animal Research Institute, also are involved in studying new technologies appropriate for farmers.

- The Ghanian Rural Reconstruction Movement. This organization is a privately funded development effort located in Mamport and is performing valuable work in the research, testing, distribution and extension of appropriate technologies for small farmers. Modelled on the successful Philippines Rural Reconstruction Movement, it receives much of its prototype design material from the Philippines and tests it under Ghanian conditions. This is a small-scale area specific effort.

It is anticipated that the appropriate technology work, the feasibility study and the provision of the necessary technical assistance could best be provided by an organization which has considerable experience in this field. The technicians would operate under the guidance of the Regional Planner/Economist.

IV. IMPROVING THE SOCIAL AND ECONOMIC INFRASTRUCTURE DIRECTLY RELATED TO PRODUCTION ACTIVITIES

A. Rehabilitation and extension of the road systems

1. Situation

The road network in Arusha Region consists of approximately 1,621 miles of roads of the following categories:

Paved Trunk Roads	171 miles
Gravel Trunk Roads	125 miles
Local Main Roads	357 miles
Regional Roads	670 miles
District Roads	298 miles

These categories are used by the TanGov mainly for purposes of budgeting maintenance allocations. The last three groups are all of the same general earth standard and include the use of culverts, fords and gravel for year around passage; they are all included as part of the secondary road system.

For the past several years, the budget for road maintenance has been inadequate and the general condition of roads has deteriorated. This has adversely affected the quality of life and has increased the problems of agriculture producers. Bus and truck services have been interrupted and are expensive under these conditions.

Starting with FY 78, the TanGov has greatly increased funds for road and other infrastructure maintenance. Assuming that this trend will continue, the entire road network can be expected to be improved.

Maintenance and construction work is carried out on a decentralized basis by the regions and districts. The region is in charge of trunk roads and provides funding and supervision to districts for the remaining roads. Feeder or village roads are not allocated regular funding but are maintained on a self-help basis. These roads are not inventoried or included in the Government road classification. Since the formation of villages there is at least one minor track to each village. These are frequently impassable much of the year.

In the assessment of the agricultural support system, the PP team found that the inadequate road system is a serious constraint to increased agricultural production, hindering the provision of input supply and markets for output. The condition of the roads has led some areas to be refused service by lorry owners. In other areas high transport fees are charged to pay for the damage caused to vehicles by corrugations and potholes, thus driving up the cost of inputs, lowering profits on cash crops and rendering services less accessible.

2. Project Approach

The approach to the problem of road improvement is to assist in improving the capability of the region and districts to construct and maintain low cost roads. Districts' Co.works Offices have the primary responsibility for rehabilitation and maintenance. Technical assistance from a Road Operations Manager, Equipment Maintenance Specialist, and Construction Engineer will be provided by the project. All three specialists will work out of the regional Comworks Office, providing assistance to districts as the road rehabilitation work progresses. Short-term assistance will be provided by a transport economist in the first year and an Environmental Specialist throughout the project.

In addition, equipment, selected operating costs and on-the-job training will be provided by the project.[1/] The intent is to strengthen the District's capacity to plan and organize its work on roads and make more operational the support linkages between the regional ComWorks and the district ComWorks.

Details of the inputs, the work to be undertaken and costs are presented in Volume II, Annex D. In conjunction with the regional and district officials, 276 miles of secondary roads to be rehabilitated have been identified. The roads chosen are essential to the existence of the minimum road system capable of supporting increased production activities and are within the capability of the Government to maintain. The selected roads are as follows:

Hanang District	Mileage
First Priority	
Gallapo - Bonga	10
Mondunga - Bashanet	15
Secondary Priority	
Gitting - Endasaki	25
Riroda - Babti	15
Bassutu - Ufana	25
Gidos - Bary	12
Sirop - Endasaki	25
	127

Mbulu District	
First Priority	
Mbulu-Kainam-Murray-Mbulu	45
Dongabesh - Haydom	29
Secondary Priority	
Mong'ala - Oldeani	30
Rhotia-Kambi ya Simba-Kitate	22
	126

1/ Arusha Drought Project Evaluation conducted in January 1977 confirmed cost estimates, effectiveness of on-the-job training, proper labor/capital mix, etc.

Arumeru District

First Priority

Nduruma-Kikwe	9
Makiba-Kikatiti	10

Secondary Priority

Makiba - Majengo	4
	23
TOTAL	276

These roads were identified and placed into first and second priority order on the basis of:

(a) the economic potential of the area and the condition of the roads in relation to that potential;

(b) the potential of the villages in the area to participate in other project activities; and

(c) the relationship of the roads to the entire road network and the likelihood that alternative sources of funding for rehabilitation would not be available.

In addition to the rehabilitation of the roads identified above, the project provides resources to construct up to 200 miles of lower standard feeder roads to connect project villages to the district road network. These roads are generally 2 to 10 miles long and will be constructed by labor intensive methods and maintained by the villagers. Not all of these roads have been identified but the engineering surveys carried out confirm that no unusual conditions are present to prevent construction to the approved standard at the estimated costs.

The technical analysis justifying the type and level of project assistance for road rehabilitation is presented in Volume II, Annex D. This analysis satisfies the criteria necessary under FAA 611 (a)(1) to obligate all funds authorized for road construction. Additionally, each road activity will be included in a work plan which will be submitted and approved prior to the commencement of work on the activity. Appendix G specifies the procedures to be followed for submission of the work plan and the content required for each type of road activity (i.e., roads identified for rehabilitation,

roads identified for construction, other roads). A specific environmental examination will be prepared as part of the work plan for each road activity.

B. Rehabilitation and extension of the drinking water and irrigation systems

1. Situation

The Government is engaged in a nationwide effort to provide clean drinking water to every village by 1991. Despite the increase in piped

water systems, several areas, most notably Hanang District, suffer from lack of adequate drinking water. Some areas of Arumeru and Mbulu go without water for long periods because of heavy water use in villages "up-pipes" from them or because the higher villages divert the water for other uses. In addition, in all three districts a number of villages are several miles from adequate, year round water sources.

Traditional irrigation is carried out in selected areas in all three districts. At present it is estimated that in Arumeru District there are 570 acres under irrigation (with an additional 910 acres suitable for cultivation, for which a suitable water source for irrigation exists); in Hanang 200 acres (with an additional 200 potential), and in Mbulu 215 (with an additional 700 potential).

2. Project Approach

The project will provide resources for the development of village water systems where water availability is identified as a constraint to village production activities. In addition, it will supply construction materials and short-term technical assistance for the rehabilitation of selected village irrigation systems. The process through which this will be carried out and the resources to be provided by the project are spelled out in detail in Volume II, Annex E.

-- Water Systems

The Ministry of Water, Energy and Minerals (MAJI) -- the ministry responsible for water development -- has identified 14 villages in the three project districts as having the greatest water needs. In the survey work done by the PP team, a preliminary judgment was made that in all 14 cases the lack of water is a constraint to increased production activities. While this judgment preempts decisions by the village councils concerning project activities in which the villages will engage, because of the extreme need in these villages the TanGov has included them in a preliminary list to receive initial support.

As a result, REDSO and AID engineers conducted a survey of these villages to determine the types of water systems which are feasible and to prepare cost estimates. The villages and the types of systems are as follows:-

District	Village	Type of System
Arumeru	Ilkurot	Bore hole
"	Olwingoni	"
Mbulu	Daudi	Shallow well and hand pump
"	Masieda	"
"	Barghish	"
"	Gunyoda	"

District	Village	Type of System
Mbulu	Maretadu	Shallow well and hand pump
"	Arri	Spring catchment
Hanang	Giydamar	Shallow well and hand pump
"	Majengo "A"	"
"	Majengo "B"	"
"	Hayamango	"
"	Hala "A"	Spring catchment
"	Hala "B"	"

As project implementation takes place, additional villages will likely need assistance with water system development. It is projected that, of the total anticipated 75 villages that become involved in the project, approximately 70% - or a total of 52 - will request this assistance. Cost estimates for the development of such systems have been made and are presented in the technical annex referred to above.

In addition, the project will provide technical assistance to support the MAJI offices at the regional as well as district levels, finance three water development crews to carry out the construction work, provide transport for the activities, and supply spare parts to rehabilitate the present MAJI equipment in the Arusha warehouse and to adequately stock the offices in the three districts. In addition, MAJI will provide six months of training in well construction techniques for the mechanics and for the construction crews. These various inputs -- and the rationale for them -- are given in Volume II, Annex E. The technical analysis meets the criteria for obligating all monies budgeted for water system development. Additionally, each water supply activity will be included in a work plan which will be submitted and approved prior to the commencement of work on the activity will be submitted and approved prior to the commencement of work on the activity. Appendix G specifies the procedures to be followed for submission of the work plan and the content requirements for each type of water supply activity (water systems for identified villages, water systems for unidentified villages, other water systems). A specific environmental examination will be prepared as part of the work plan for each road activity.

-- Irrigation Systems

The type of irrigation systems noted above and being considered for assistance are low cost, consisting of hand-dug unlined ditches which bring water from the hills into the lower plains. Identification of which systems will be improved or developed will be done as village production plans are generated.

The construction/repair of the systems will be the primary responsibility of the villagers. The project will provide minimal supplies and equipment -- largely hand tools and cement -- through the Farm centers in the vicinity of the chosen villages. If needed, irrigation specialists from the Ministry of Agriculture can be drawn upon; a short-term technician will also be provided by the project to assist with construction and design problems.

The PP requests that all funds for the irrigation systems component be authorized at the outset of the project. However, funds for specifi activities undertaken as part of this component will be obligated only after approval by A.I.D. of work plans for these activities in accordance with the procedures set out in Appendix G. Satisfaction of th criteria set forth in Appendix G will allow for satisfaction of the requirements of FAA 611(a)(1) for each activity.

C. Provision of short-term training and assistance in support of soil and water conservation activities developed by village councils as part of their production plans

1. Situation

Parts of the project area suffer from wind and water erosion. In the Mukulat and Ngarenanyuki area of Arumeru, deforestation, overgrazing and poor farming practices have resulted in 66 miles of deep gullies. In addition, a scarcity of firewood in both Arumeru and Mbulu Districts has resulted through deforestation. This not only increases the workload of women whose job it is to gather firewood, but it also increases the rate of destruction of such forest as remains.

Responsibility for soil and water conservation rests with the District Natural Resources Office. In the past, their work has focused primarily on reforestation. However, the erosion problems in the three districts suggest the need for a more comprehensive program aimed at encouraging the villages to make the necessary investment for the long-term benefits from improved conservation practices.

2. Project Approach

The project will attempt to identify and test methods for generating village investments in soil and water conservation measures. Because there will be no immediate return on this investment, it will be a difficult process to initiate. The basic project approach will be to encourage the Village Councils to develop a land use plan as a major part of their village production plans. Technical advice on needed soil and water conservation measures will be provided as the villages formulate their plans. Where it is recognized that erosion is a problem and where villagers are prepared to make the changes in behavior required by adopting conservation practices, existing funds will be made available to supplement the village's contribution.

The development of the conservation program will begin with the selection of three Natural Resources officials to receive six months of training in the United States in land use planning and soil and water conservation techniques. These officials will then be sent for a one month study/work tour of an African country (such as the Lesotho Land and Water Resources Project) where successful village level conservation programs have been developed through involving villagers in decision making regarding land use and the introduction

of conservation practices. These officials will then be assigned to the District Natural Resources Office to initiate this approach in cooperation with the Bwana Shamba and ward Livestock Officers through the Farm Centers.

For this experimental effort, the project will provide short-term assistance from a soil and water conservation specialist to the three District Natural Resources Offices. Project vehicles would be used to support the delivery of inputs such as tree seedlings to the villages.

B. Relationship Between the Village Development Activities and The Arusha Region Integrated Rural Development Plan

Prior to the initiation of developing the third five year plan, the TanGov made the decision to concentrate designated donor inputs including assistance in designing Plans by geographical area. Arusha Region is one of the four regions in the country for which such a Plan has not been developed. As a result, the TanGov recently made a formal request to USAID to assist in the preparation of a long range development Plan for Arusha Region.

The primary purpose of the Plan will be to specify a long-term strategy for the integrated development of the region. It will examine main sectors of the economy in relation to its present state of development, the type and extent of development achieved in the recent past, and the potential for future development. A primary consideration in the strategy will be to insure that equity goals of the government are met while at the same time an acceptable level of economic growth is achieved (see Volume I, Appendix G for details).

The project will provide the important element to the development of a long range plan by supplying the necessary micro-level data. Through the information system data will be collected on a variety of important aspects of the village environment and local economic and social systems, e.g., on farming practices and production related issues, on levels of village health and health related problems, on infrastructure needs and potentials. It is essential that this type of information be fed into the Plan in structuring the form and settling on the geographical location of alternative development initiatives.

At the same time the Plan will feed into decisions related to the village development activities. While micro-level data are essential in determining what types of activities should be undertaken by the project on the village level, it is necessary to also consider certain macro-level issues. For instance, roads, while having an impact on a local area, are a part of a larger transport and communications network. How they relate to the larger structure

must be taken into account by the project when considering alternative investment decisions. Parallel considerations must be made with regard to decisions on a variety of development related issues that will arise in the formulation of each district's yearly development program.

Because the two efforts - the village development activities and the preparation of the Arusha Region Integrated Rural Development Plan -- are directly related, there is a need to centralize control over these efforts as well as to insure that funding for both efforts is provided on a timely and correct basis. Coordination of the two projects will be handled in the following manner. The Regional Planner/Economist will be Chief of Party and responsible for coordinating USAID inputs in preparing the Plan; as described in Part Four (Implementation Arrangements). The technical assistance for both activities will be provided under a single contract with an institution or consulting firm. In terms of the requirements for funding, the costs and timing of the inputs are spelled out in the Financial Plan (Part Three, B), the Implementation Plan (Part Four, B) and Appendix B.

F. Project Development Strategy and Approach

The basic strategy of the project will be to initiate and develop a process to enable villages to plan and implement production activities tailored to the potentials of their particular areas and to remove major constraints to increased production through the development of needed economic infrastructure. It will at the same time, provide the technical assistance needed to prepare the Plan.

The village development activities of the project will consist of three parts. The first part (one year) will involve the planning and initiation of critical development activities in selected wards and villages and the preparation of the Plan. The second part (three years) will involve the improvement of the economic infrastructure in the three districts as well as the expanded implementation of production activities at the ward and village level. Upon completion of the second phase, a third phase will be considered to include expansion of this project to the other districts in the Region.

The village development activities will begin with a dialogue among regional district and village officials to determine development priorities and with the intensive data and analysis effort necessary to identify appropriate production activities within the various ecological zones. The dialogue process with the villages will be initiated by appropriate district officers and the Bwana Shamba (agricultural extension worker) selected to work in a particular area. The Party will be represented through the Area Commissioner in each district, the Ward Secretary, and the CCM

chairperson in each village. The process will be continued over time by the Bwana Shamba, and assistants hired to aid them in data collection (Village Management Technicians where they are available) and selected villagers who will be the primary liaison between the villagers and project staff. With the Village Councils they will develop a production plan for the villages, identifying priority development activities and addressing critical constraints to increased production. At the same time the Bwana Shamba will begin, with the assistants, systematic data collection on farming systems and farm management practices from a sample of farms in the area. Their data along with the information generated informally in the dialogue in the villages, will form the basis for selecting appropriate production activities to be carried out in a particular village and ward. The initiation of production activities in each village will most likely be confined to the two to three areas which are the highest priority as the management/resource capability to carry out more is limited.

During the first year, the project will initiate activities in four areas (wards) in each of the three districts. In choosing these areas the following criteria were used:

- They are representative of the major ecological zones found in each district.
- Demonstrated organizational capability of the villages in the area, including prior village resource commitment to development activities.
- District Development priorities.
- Economic potential of the areas.
- Need/equity considerations.1/

The areas chosen in the districts with a brief statement on the appropriateness of selecting such, is given below.2/

Arumeru District

Ngarenenyuki Ward - This ward consists of four villages with a population of 1,007 households. Dairy, maize, mixed beans, finger

1/ This same set of criteria will be used in selecting villages within the wards to receive project assistance.

2/ Profiles of the three districts may be found in Appendix A of this Volume. The following background papers were prepared as part of this project design exercise: Garry L. Thomas, (Baseline Information and Situational Overview Requisite to the Design of Integrated Rural Development Projects in Mbulu District, Tanzania," May 1977; and Louise Fortmann, "Development Prospects in Arumeru District," May 1977. See Volume III. A third paper will be prepared in July 1978 on Hanang District.

millet and various vegetables and root crops comprise the primary production in the area. A small portion of the ward is cultivated under traditional irrigation. The irrigated area could be increased by approximately one-third with more efficient management of the existing system.

There is a substantial potential for increased dairy and maize/bean production. Improvement as well as regular maintenance of the area's access road is needed. This ward, as well as the others chosen in Arumeru, are relatively high development priority areas of the district in that they are alternative production areas for people moving from crowded conditions on Mount Meru as well as being areas of significantly lower per capita income than villages in the high productivity areas on the mountain.

Kikwe Ward - Kikwe consists of three villages lying on the plains south of Mount Meru. Primary production consists of dairy, coffee, castor, beans, maize and finger millet with considerable potential for the expansion of each. A central need is investment in a traditional irrigation system to reduce seepage which is approximately 50% at present. The existing water systems in the villages as well as the road connecting the area are adequate.

Kikatiti Ward - This ward lies on the plains southeast of Mount Meru. It is comprised of three villages with a total population of 1,268 households. The major production consists of coffee, castor, maize, beans, bananas, millet and vegetables. There is substantial potential for the improvement of maize production and the introduction of serena (improved sorghum) and oil seed crops. Part of the area is suitable for the introduction of ox plows. The area suffers a general water problem and there is insufficient water for irrigation.

Olkokola Ward - This ward lies in the area on the west side of Mount Meru. It consists of six villages with a total of 2,359 households. The major crops are pyrethrum, maize and beans Pyrethrum production will be reduced next year with the return of crop acreage to forest reserve. The potential for dairy production in the area along with intensive maize and bean production will be explored with the village councils.

There is a high potential for the introduction of serena and oil seed crops. The government considers the area a high priority for development.

2. Mbulu District

Daudi Ward - The ward's 1,077 households are divided amongst five villages, ranging in population from 436 to 1,546. It is a subsistence farming area, each family having roughly three to four

acres of land for field crops, for the most part maize and beans. The only cash that the area generates comes from the sale of a small surplus of local cattle and smaller livestock. In the recent past the area has suffered from a lack of rainfall. The DADO sees potential in introducing serena and oil seed crops. The area is over-grazed, and soil erosion is a problem, suggesting a priority on land use planning and soil conservation measures.

Dongabesh Ward - This ward consists of six villages with a total of 2,086 households. It is a semi-arid area, with crop concentration on maize and sorghum. All six of the villages have large cattle populations, especially the three largely Barabaig villages in the area bordering Hanang District. Ox plows could open up larger acreage in most parts of the ward, but higher yields through the introduction of serena and improved beef cattle production are the most promising potentials. Dongabesh village has a Piggery Unit and Bull Ranch, both under construction, and a Veterinary Investigation Center. Only two of the villages have permanent water sources in their villages, both provided by boreholes.

Murray Ward - This ward consists of four villages, with 1,218 households. It is situated in the high altitude ecological zone, with sufficient rainfall for more intensive agriculture than the rest of the district. Maize, beans and millet are the staple crops and pyrethrum is grown by over half the families in the area as a cash crop. Pigs and cattle are also raised by most families. While water is not a major problem, the road system is in such poor condition that the ward is isolated about half the year. It has a high population density, and is a priority development area for the District.

Maghang Ward - Five villages comprise this ward, with 1,795 households. This is a low rainfall area, and the people depend primarily on livestock production, though sorghum, maize and millet are grown. There is a need to upgrade livestock production while reducing herd size as well as the need to introduce the drought tolerant serena sorghum variety. Access to water is a severe problem for four of the villages, and three of the villages have extremely limited access to road transport. There is receptivity to self-help road work in the area in addition to the use of oxen to expand acreage under cultivation.

3. Hanang District

Magara Ward - This is a two-village ward located at the foot of the Rift Valley wall escarpment. It is an area with medium rainfall. Of greater importance, it is an area where there is considerable irrigation potential. The traditional crops in the area are maize, beans and millet, but swamp rice is gaining popularity. A former estate is being used by the government to grow

and demonstrate coffee, groundnuts, sunflower seed and swamp rice. Because of its potential and past neglect, it will be an area for increased government attention.

Gallapo Ward - This ward, located in hilly country on the eastern slopes of Babati Mountain, consists of seven villages with a population of 2,401 families. It is in a medium rainfall ecological zone suitable for a variety of field crops - maize, beans, traditional sorghums, millet and pigeon peas. The Gorowa living in the areas are mixed agriculturalists who keep herds of small and large livestock. There is a potential for increasing dairy production. Towards this end, there are now 100 acres of improved pasture as part of a Veterinary Investigation Center complex that has been built.

Katesh Ward - Two of the five villages lie in a medium rainfall zone, and the other three occupy a semi-arid area suitable primarily for grazing lands and drought tolerant crops. The ward is ethnically mixed. The pastoral Barabaig keep large herds of livestock but are becoming increasingly more settled due to the advance of agriculturalists into their area. The mixed agriculturalists Iraqw, who have a tradition of colonizing new lands for farming, also keep cattle. This ward has a training program for girls, run by the Marynoll Sisters, that teaches skills for improving village life and that may be a source for female agricultural field officers (bibi shambas).

Madunga Ward - This ward, located at an altitude of nearly 7,000 feet, receives relatively high rainfall, and grows some cash crops such as pyrethrum, onions and wheat to supplement such staples as maize, beans and potatoes. Until the recent drought years, the area was overstocked with cattle and smaller livestock. The area has attracted attention for its possibility as a dairy area -- and possibly sheep. Only the Ward's remote location and poor roads prevent it from expanding its cash agriculture. The Pyrethrum Board is especially eager to expand the pyrethrum acreage here.

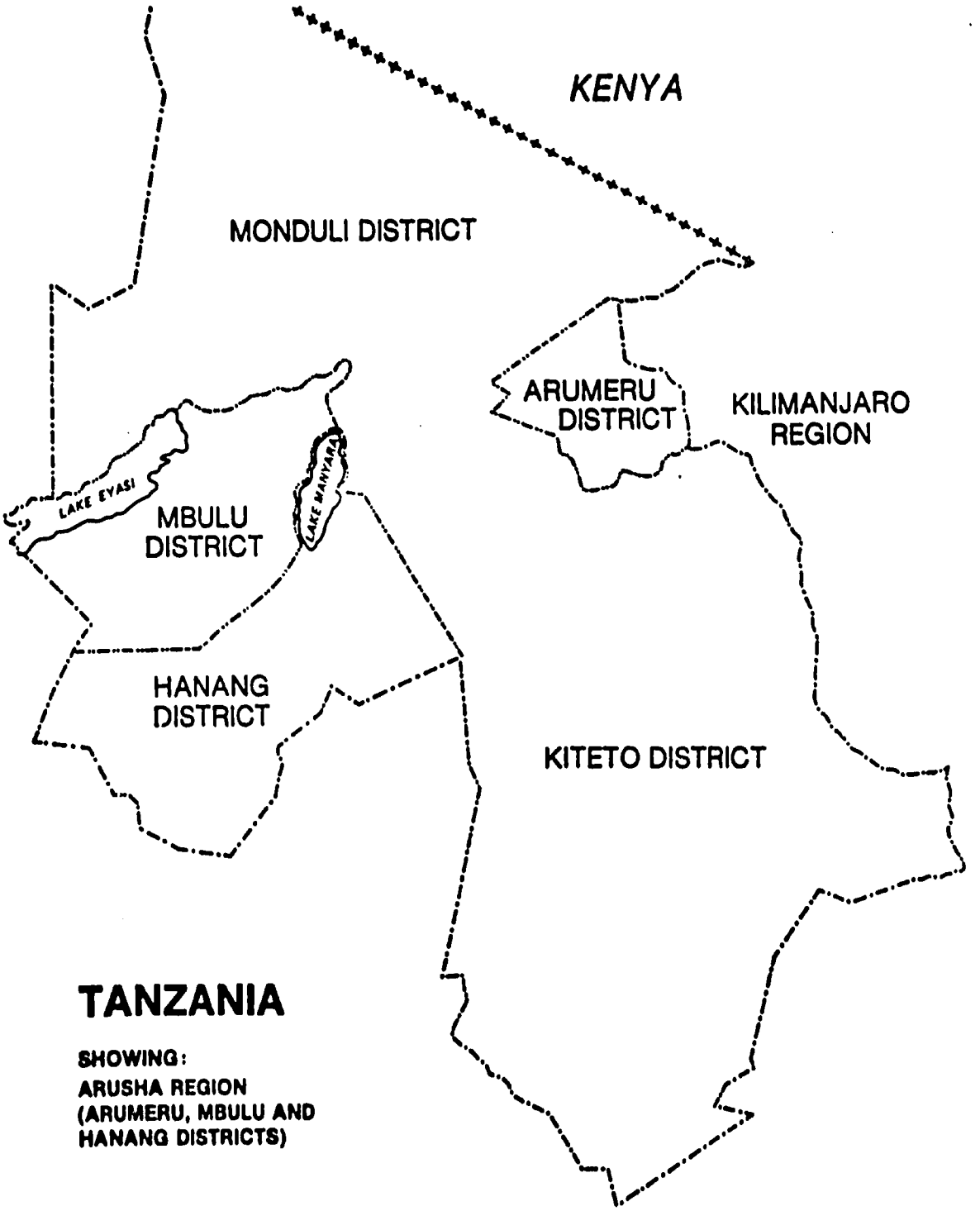
4. Extension of Project Activities

During the PP design exercise, fifty-four villages in Arusha Region were surveyed (See Volume II, Annex A: Village Profiles). Project activity in year one will be initiated in each of the three districts with activity in four wards per district (12 wards). Between 12-20 villages will likely become involved. No additional wards will be added in year two, however, one to two villages per ward will be added, bringing the total number of villages to 30-40. In year three, one ward per district will be added, totalling 15 wards and approximately 50 villages. In the final year, three wards will be added, totalling 18 wards, and approximately one

village per ward will be added, totalling approximately 75 villages. Thus by end of the project, approximately 4-5 villages per ward will be involved. The following table summarizes expansion of project activities:

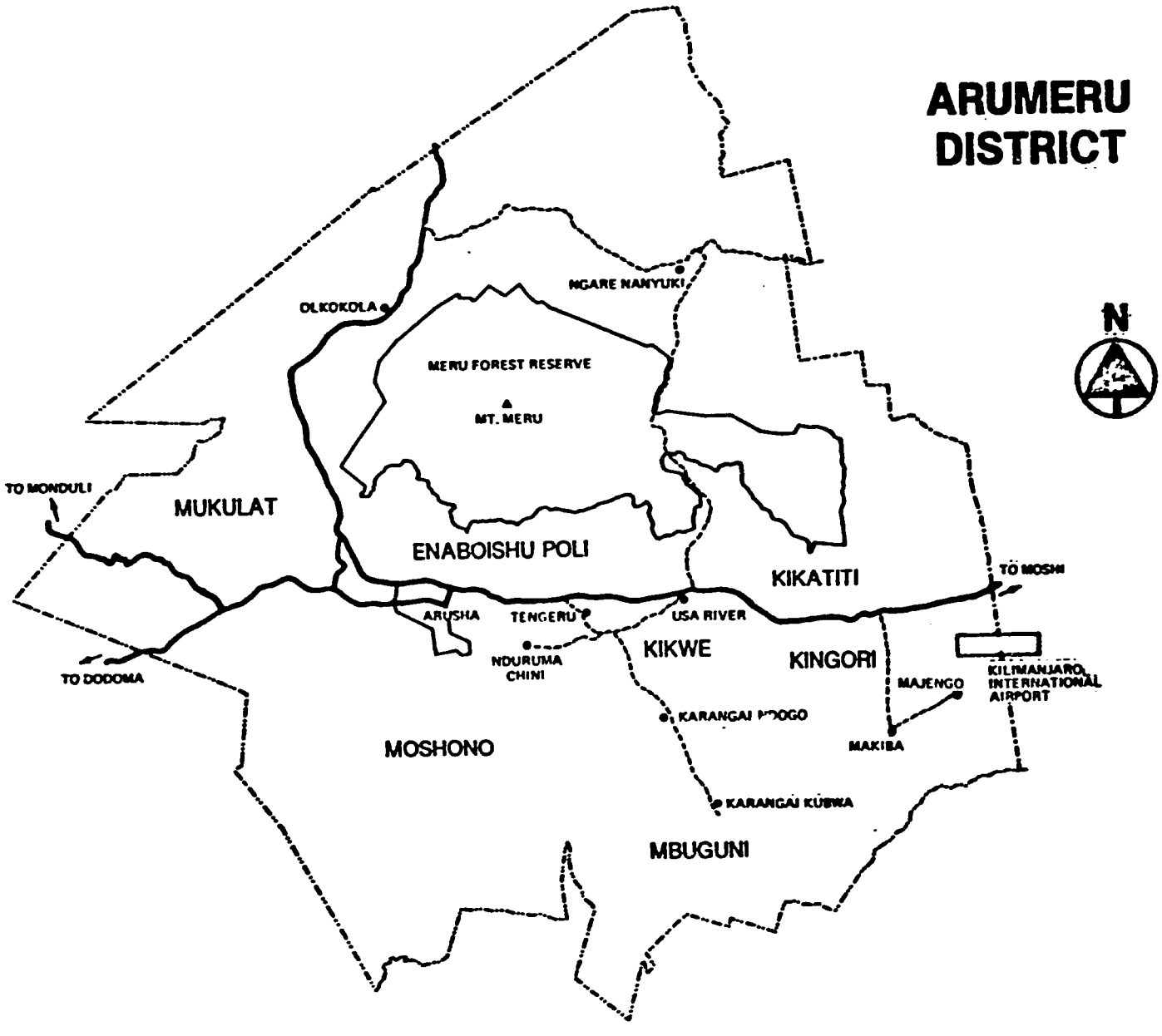
ARUSHA REGION VILLAGE DEVELOPMENT - EXPANSION OF ACTIVITIES

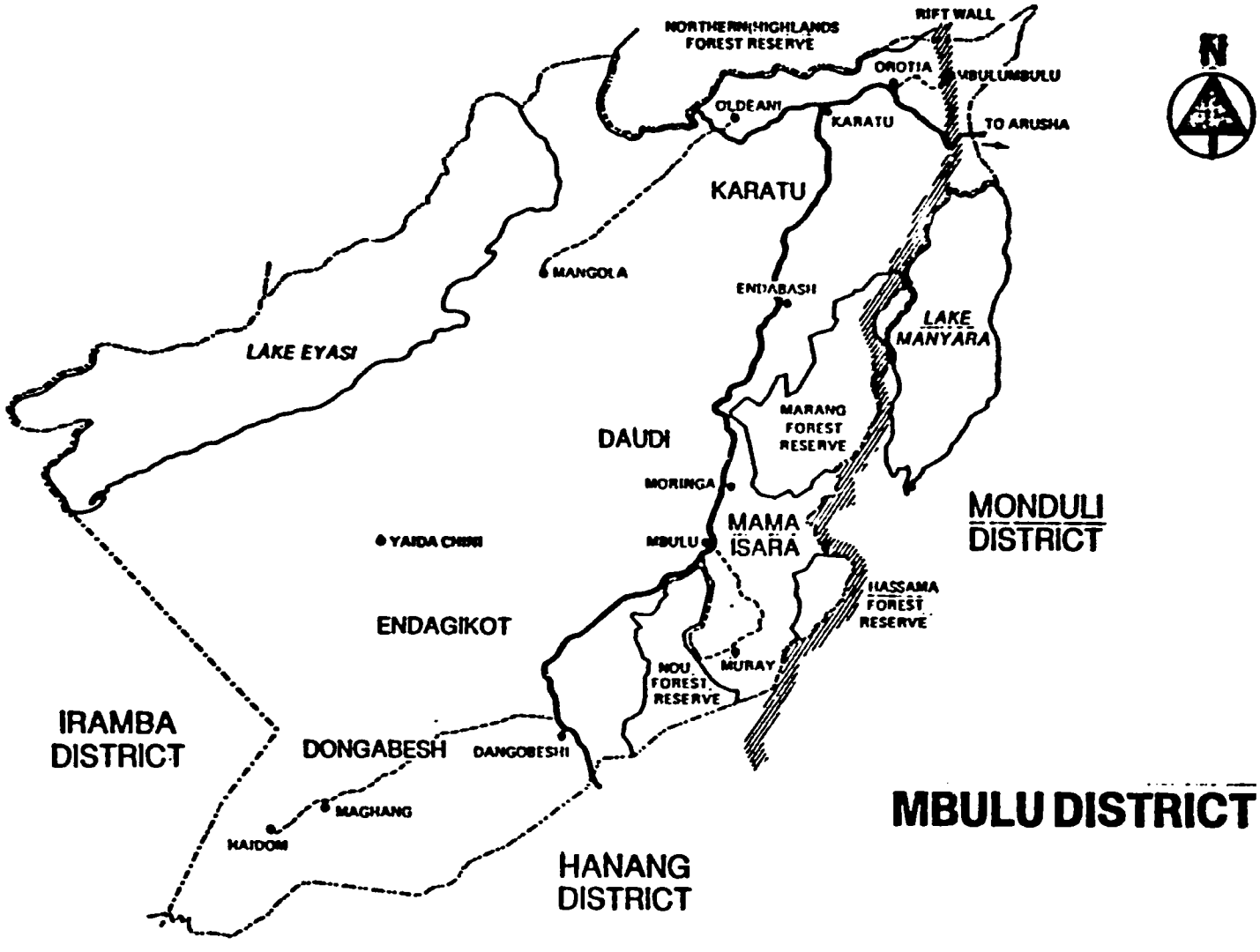
Year:	1	2	3	4
DISTRICTS (Arumeru, Hanang and Mbulu	3	3	3	3
Wards	12 (4 per district)	12	15 (5 per dist.)	18 (6 per dist.)
Villages (Approx. 4 per ward)	12-20 (Approx. 1 per Ward)	30-40 (2-3 per ward)	40-50 (3-4 per ward)	up to 75 (4-5 per ward)

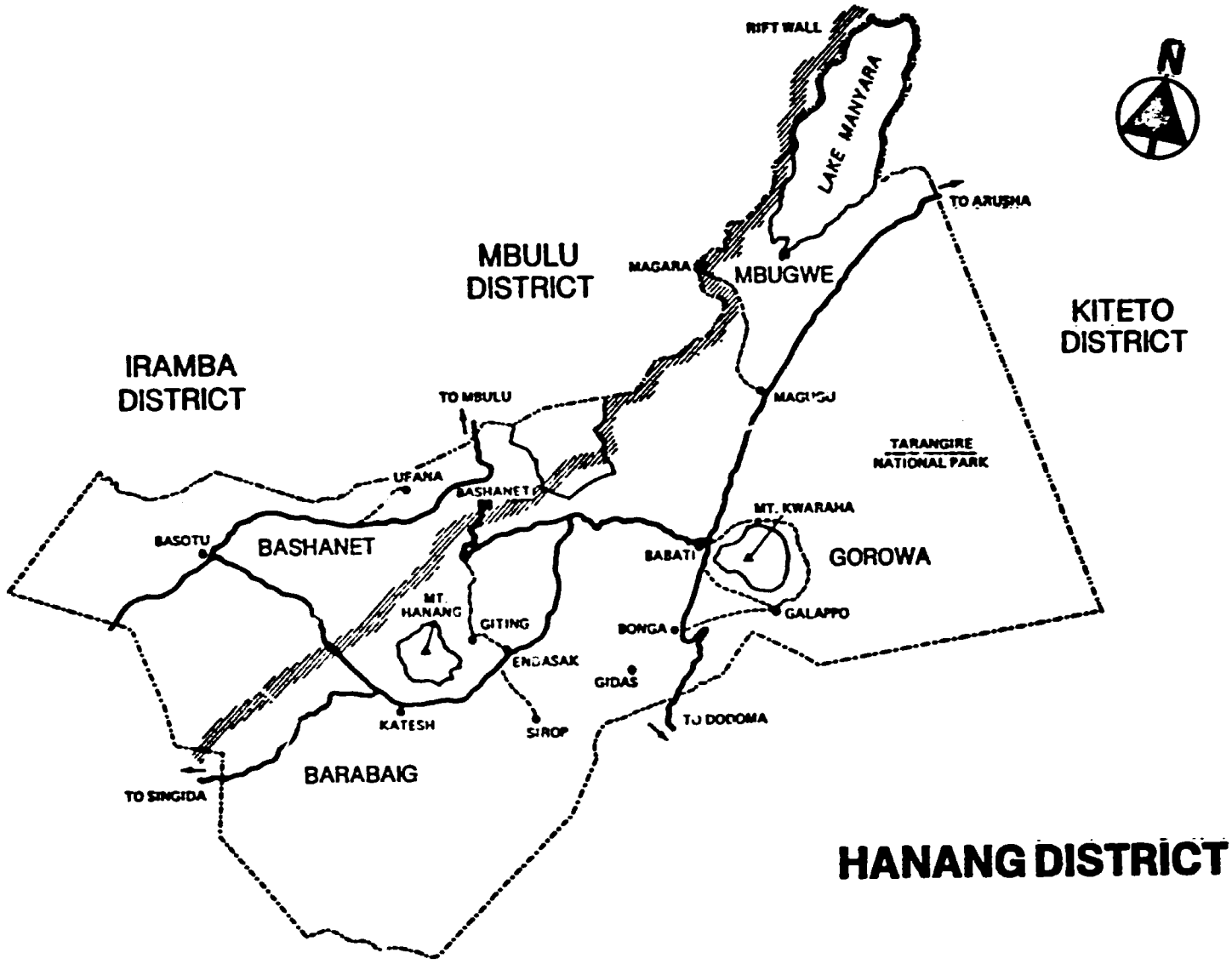


TANZANIA

SHOWING:
ARUSHA REGION (ARUMERU, MBULU AND HANANG DISTRICTS)


ARUMERU DISTRICT
N
NGARE NANYUKI
OLKOKOLA
MERU FOREST RESERVE
MT. MERU
TO MONDULI
MUKULAT
ENABOISHU POLI
KIKATITI
TO MOSHI
ARUSHA
TENGERU
USA RIVER
NDURUMA CHINI
KIKWE
KINGORI
KILIMANJARO INTERNATIONAL AIRPORT
MAJENGO
TO DODOMA
KARANGAI POOGO
MAKIBA
MOSHONO
KARANGAI KUBWA
MBUGUNI


NORTHERN HIGHLANDS FOREST RESERVE
RIFT WALL
OROTIA
MBULUMBULU
OLDEANI
KARATU
TO ARUSHA
N
KARATU
MANGOLA
ENDABASHI
LAKE MANYARA
LAKE EYASI
MARANG FOREST RESERVE
DAUDI
MORINGA
MONDULI DISTRICT
MAMA ISARA
YAIDA CHINI
MBULU
HASSAMA FOREST RESERVE
ENDAGIKOT
MURAY
NOU FOREST RESERVE
IRAMBA DISTRICT
DONGABESH
DANGOBESHI
MAGHANG
HAIDOM
HANANG DISTRICT
MBULU DISTRICT


RIFT WALL
LAKE MANYARA
N
TO ARUSHA
MBULU DISTRICT
MAGARA
MBUGWE
KITETO DISTRICT
IRAMBA DISTRICT
TO MBULU
MAGUGU
TARANGIRE NATIONAL PARK
UFANA
BASHANET
MT. KWARAHA
BASOTU
BASHANET
BABATI
GOROWA
MT. HANANG
GITING
GALAPPO
BONGA
ENDASAK
GIDAS
KATESH
SIROP
TO DODOMA
BARABAIG
TO SINGIDA
HANANG DISTRICT

PART THREE: ANALYSES

A. Technical Analysis

1. Rationale for Project Approach

The Tanzanian Government has chosen a policy of villagization as the core of its development strategy. In conjunction with this approach the Government has also embarked on a major effort to decentralize Government decision making to the village levels. Regional and particularly District officials have been given increased responsibility for the planning and implementation of development activities in collaboration with Village Councils. Staff of government agencies have been strengthened at lower levels. There is a need to generate data on which to base effective decision making particularly in helping small farmers improve production and their general standard of living. The recognition of this need combined with the progress being made towards decentralization provides an excellent environment for the initiation of this project.

High priority is placed by the Tanzanian Government on involving villages in development decision making and encouraging their commitment of resources to the development process. The project is designed to support their effort through the provision of technical assistance, training and funding assistance. It is the intent of the government through this project to develop the processes and mechanisms necessary to insure that the benefits of development are self-sustaining. Tanzanian development strategy and the approach of this project is consistent with recent studies and experimentation which have been shown that the involvement of the local population is critical for successful rural development projects.[1/]

Small farmer involvement in the project will take several forms. First, an on-going dialogue will be established between the villagers and government workers to improve the planning capabilities at the village level so that land and other resources can be more effectively used. Second, in conjunction with this dialogue, a constant monitoring and evaluation system will be instituted which will enable a flexible tailoring of project assistance towards village goals. Third, the development and testing of

1/ The most significant works include the World Bank studies of African rural development projects done by Uma Lele and the USAID-financed study, Strategies for Small Farmer Development An Empirical Study of Rural Development Projects (1975).

technological innovations will be carried out in cooperation with Village Councils and on the farmers' land. Finally, project activities will only be implemented according to the specific needs and requests of the Village Councils and at the pace and level dictated by conditions in each village. Except for the necessary investments in social and economic infrastructure outside assistance will be minimized so that the chances of the benefits continuing are improved.

2. Technical Issues

Within the framework of Tanzanian development strategy, village development will be stimulated through the introduction of adaptive technologies designed according to the actual needs and means of recipients to support them. A major downfall of many development projects has been the promotion of technological innovations aimed at achieving rapid increases in production, without regard for the recipients' ability to pay for the technology, for his perceptions of the risks involved in adopting it, and for his ability to maintain it over the long run. A further consideration frequently disregarded is the recipient nation's ability to pay for imported innovations, especially in the light of scanty foreign exchange holdings.

The above issues at both the small farmer and national levels have been taken into consideration in the project design. The project will first identify the practices in different farming systems that result in higher yields; these practices currently in use will provide the basis for encouraging improvements in livestock and crop production. Applied research will be done on the farmers' fields to determine the efficacy of more intermediate stage innovations. It is not anticipated that chemical agricultural inputs will have to be promoted in the project area. For example, in terms of fertilizer needs the design team determined through representative soil sampling that a lack of macro-nutrients was not a limiting factor for crop production. Indeed, the natural fertility of soils plus the traditional practice of manuring shows the use of chemical fertilizers to be unnecessary as well as uneconomical.

One of the first project activities that will be carried out in the participating villages will be the design, with the Village Council, of a land use plan. This plan will identify village areas that are appropriate for crop production and expansion as well as equitable rational grazing patterns. Based on this land use plan

suitable innovations will be developed including an attempt to generate a commitment by the village to improve soil and water conservation practices.

The emphasis of the project activity for developing appropriate technologies and small industries will be on using locally available materials and energy sources. While there are a small number of tractors and combines in the project area, there is also receptivity to increased use of ox-plowing. At present locally manufactured ox plows are available; though there is a need for improving quality. Other ox-drawn equipment will be developed and tested. Further, materials are available for constructing project facilities (i.e. burned bricks) and carrying out self-help projects. The capabilities of small industries to produce and maintain these innovations will be developed.

Both the road and water development (potable and irrigation) activities have been designed using data concerning costs and methods from current USAID and Tanzanian Government efforts in the Region. In the case of roads REDSO engineers and engineers involved in the Arusha Drought Roads Project have been consulted regarding their experiences in areas of similar terrain and working conditions. In addition, the costs for this activity will be reduced since some of the equipment from the Drought Project will be available for the three districts. Data for water development has been obtained through consultations with Tanzanian water engineers working in the project area and through TDY assistance from an AID/W hydrologist and REDSO engineers. (See Annexes D and E.) For the village roads and expanded water systems criteria for selection and all design requirements are covered in Volume II, Annexes. Both activities have been designed to take account of existing self-help activity in several wards of the area. Training for the District Comworks in road maintenance and for villagers in water system maintenance will help insure that both systems continue to function.

3. Initial Environmental Examination

Project Location	:	Arusha Region, Tanzania
Project Title	:	Village Development Project
Funding	:	FY 77 - $14,645,000
Life of Project	:	FY 77 through FY 81
IEE Prepared by	:	USAID/Tanzania
Date	:	July 4, 1977
Environmental Action Recommended	:	Negative Determination
Concurrence	:	R Johnson — Vernon C. Johnson, Mission Director — 29 Sept. Date

I. Description of the Project

This project is designed to improve the production, income and well being of people in the rural areas of Arumeru, Mbulu and Hanang Districts of the Arusha Region. This will be achieved through (a) strengthening the capabilities of the Region, the three project districts, and villages in these districts to identify, implement and evaluate development activities within the framework of the policies and priorities of the Tanzanian Government and (b) to provide information that will assist in the development of the small farmer component of the Arusha Plan.

As a result of the undertakings in identifying, implementing and evaluating development activities the project will facilitate improvement in agriculture production, the construction and rehabilitation of roads, potable water and small scale irrigation systems and soil conservation works.

II. The four major project components are discussed in detail in the Part II entitled Project Description. These components are:

A. Strengthening the planning, implementation, and evaluation capabilities at the Regional, District and village levels

1. Developing processes and procedures for bottom up planning

and implementing development activities that are appropriate to specific areas.

2. Developing a low cost information system for monitoring, evaluation and modifying development activities.

3. Developing an ongoing capability with the village as the core, at all levels, to carry out these functions.

4. Preparation of Arusha Region Integrated Rural Development Plan.

The improvement in the capacity to identify, implement and evaluate development programs does not appear to have environmental implications by itself since the activities are not identified. Since the project proposes to incorporate environmental considerations into the program to enhance this capability the effect should be positive.

B. Improving agricultural production

Development and introduction of appropriate technologies for crop production, livestock production, and strengthening of the agricultural support system.

Major activities will include:

1. Development of a farm level data collection and analysis system for identifying appropriate technologies.

2. Development with village councils of village production plans.

3. Establishment of farm centers at the ward level to assist in the implementation of village production plans.

4. Training of agricultural field and livestock officers.

5. Establishment of Farmer Center, at ward level, which will organize:

   - testing and demonstration of technology
   - extension efforts
   - provision of agricultural supplies
   - development of village storage facilities
   - provision of appropriate marketing and processing assistance.

6. Providing logistical support, equipment and supplies.

7. Providing short term assistance in plant and animal science.

This component which addresses the need to increase agriculture productivity has the potential to improve the human environment through higher income, better nutrition and the like but also could degrade the physical environment if proper safeguards are not included.

C. Identifying and promoting other economic development activities

Major outputs:

1. Identification, testing and delivery of appropriate technology for agricultural production and processing as well as small enterprise development.

2. Establishment of small enterprises through the provision of funds.

Major activities will include:

1. PDS funds to cover costs of carrying out a feasibility study for establishing an appropriate technology delivery system have been provided. The study will be completed prior to program authorization.

2. Based upon the feasibility study the provision of necessary technical assistance by an organization specializing in appropriate technology and facilities and equipment for implementing this component.

3. Establishing a mechanism for providing funds in support of small enterprise development and short term management/ accounting assistance to the enterprises.

The component which addresses the need to promote other economic activities while having the potential of improving human welfare and environment can also degrade the physical setting though air, water and soil pollutants, concentrations of populations and related problems.

D. Improving the social and economic infrastructure directly related to productive activities

Major outputs will include:

1. Rehabilitation and extension of the road and water systems (to include both water for irrigation and consumption) in the three districts through the provision of the necessary technical assistance, equipment and operational support.

2. Development and implementation of village soil and water conservation activities.

The component which attempts to provide improved road and water systems while having the same positive potentials described above could result in at least four environmental adverse impacts.

a. increased access to areas of fragile wildlife, rangelands and forest reserves.

b. effects of changes in industrial, commercial and agricultural land use patterns.

c. effects of drainage, air pollution, borrow pits of roads to new areas.

d. The effects of improved water systems on health can be adverse if design and maintenance are inadequate.

There is not a separate component dealing with questions of soil erosion, but rather an intention to include land use planning, soil erosion, drainage control and related matters into each of the above four specific project activities. This is not intended to imply that such activities are not important. It is meant to impress from the beginning, the idea that every activity must consider the long term impact of actions undertaken. This is of particular importance at the stage when villages identify and plan programs to be implemented. The Project Paper stresses the importance of concepts of national land use planning and requires that they be incorporated into the (AID supported) village, district and regional programs.

III. Environmental Impact in Selected Project Areas

1) The agriculture, road and water improvement programs to be supported under this project are not closely associated with areas designated as wildlife preserves or migration routes. In fact the areas selected particularly exclude these areas because they are under the exclusive control of the Ministries concerned with tourism and the protection of National Parks and Forest Reserves.

2) The three districts to be covered by this project are populated by small subsistence farmers interspersed with a few large private and government run estates. It is not envisioned that the increased production, improved access and better water systems will have a significant impact on industrial or commercial activity in the area. However, the provision of these inputs is expected to positively impact upon the environment by increasing agriculture production, facilitating movement of agricultural products to markets and improve land use in the project areas.

3) The roads designated for improvement already exist as a network of secondary and minor roads. These roads presently are surfaced with earth, with a limited amount of gravel or laterite. The intent of this program is to upgrade these roads by adding select surfacing material. The minor proposed changes in the vertical and horizontal alignment does not infringe upon or involve historic sites, natural landmarks, archaeological sites, etc. nor does the project destroy timberland, cropland or other resources.

4) It is expected that the rehabilitation program, which includes shaping parallel ditches and stream crossings, will change the drainage patterns now existing on the unimproved road network. The change is anticipated to result in an improvement of water run-off control by channeling and controlling water into designated ditches and thus minimizing erosion effects. Due to erosion, the improved drainage areas will have some minor environmental impact until the disturbed areas are re-established with vegetation.

5) The rehabilitation and new road construction program will be implemented by use of suitable gravelling material from borrow pits. The pits will be selected in areas where it is not densely populated. Borrow pits will ultimately be graded to drain and the natural condition will be restored. These pits are not expected to shelter malaria mosquitos or other water borne insect disease vectors. Therefore, it is expected that this phase of the operation will have very little effect on the environment.

IV. Environmental Impact of Selected Activities

Even though relatively minor, all new infrastructure changes affect the human and physical environment to some degree. Careful consideration has been given to the effects. The considerations are summarized below:

Resource Linkage.

- Effect of new access routes into previously inaccessible or barely accessible areas.

  The new access routes from the farm to an all weather road will provide mixed benefits.

  Pro:

  - Animal drawn vehicle and/or motor transportation will substitute for the physical porterage of farm produce to an all weather road.

  - Transportation costs will be lower, thereby making farm input costs closer to farmer ability to pay.

  - Lower Transportation costs will provide a higher profit on crops produced encouraging more output.

  - Easier access to markets will give a farmer better information on food demands, adding to the variety of crops produced.

  - Easier access to technical services and credit put the farmer in a stronger position vis-a-vis the merchant.

  - School is more accessible.

  - Health care will be more reliable

  - Women, who do most of the farming and men who do most of the marketing will have the physical burdens lessened.

Con:

- There will be increased noise, dust and related disruptions due to increased traffic.

- Ease of access will allow increased interference by private, government and other agents resulting in increase pressures on the local societies.

- There will result an increased demand for local support for maintenance and pressures to organize to meet this requirement although much of these costs are now met by government.

In the case of improved or new water projects both human and physical changes in the environment can be expected to occur.

Pro - the time required to procure adequate water for domestic use will be reduced. The quality of the water will be enhanced.

- the additional time saved from the procurement of water can be used in other productive activities.

- there will result a net gain in useable water in small scale irrigation projects due to a reduction in losses due to seepage uneven spreading and evaporation.

Con - There is the danger that water systems will be located improperly, constructed faultily or be engineered to specifications which could lead to contamination, an increase in water borne disease, death due to structual or other failures.

- that a particular system could have adverse affects on other of the same supply.

- that the system cannot be maintained due to lack of villagers' commitment.

far in excess of the minor changes proposed in this project.

There are many ethnic groups in the three districts. There are important cultural, historical and agricultural differences between these groups and these differences will be taken into account during project implementation. It is expected that the degree of local participation and cooperation will vary between groups. More importantly, the entire project area is more or less involved in a similar process of rapid change. The effects of community-level adaptation to a range of different local micro-systems make environment and specific locational considerations far more relevant to the achievement of the project objectives than ethnic or cultural ones.

B. Rural Employment, Women in Development, Nutritional Considerations, Family Life

An integrated development project of the nature proposed in this paper will cause complex interrelationships and effects to emerge which cannot be fully anticipated in advance. The agriculture, roads and water programs will create the demand for wage labor, plus special demands on women, change nutritional habits and cause upsets in the traditional roles of family members. This cannot be avoided but the project does include an elaborate system of data collection and monitoring to insure that modifications can be made to minimize the adverse effects of these interrelationships. The TanGov is also committed to improving conditions in rural areas to minimize adverse effects.

Evaluations

Evaluating the environmental impact of the Village Development Project will be conducted as follows:

1. Each year, during Phase II (the implementation phase) the implementing agent with the assistance of the Region will be required to present a work plan for the year under consideration. These work plans will continue yearly until project completion. In addition to the requirements which are to be detailed elsewhere, the annual work will address the following environmental issues:

   a) Land Use Planning
   b) Water Projects
   c) Pollution Control
   d) Natural Resource Exploitation
   e) Cultural factors
   f) Health Considerations
   g) General

The evaluations will be conducted jointly by the USAID and the TANGOV. The criteria to be followed will be spelled out to the TANGOV in the Pro Ag. Further, the TANGOV will periodically report to the USAID on the status of the program by means of an Annual Work Plan. These reports will comment on the environmental effects, both positive and negative, of the Projects undertaken and will serve as a monitoring device to identify at an early stage any adverse effects on the environment, and problems related thereto, that may arise during the period.

Finally, special consideration will be given to the environmental impacts during the regularly scheduled project evaluation. Since these concerns are of increasing importance USAID/T plans to place special emphasis on environmental considerations during all project evaluations.

Summary Recommendations

The above discussions examine the project in general; from this point of view the project has beneficial effects on the population it will serve and will have no significant adverse impact. However, any discrete activity or subactivity may have significant environmental impacts. The approval of a negative determination for the project as a whole does not automatically extend to each activity. This is especially true, of course, for those activities for which funds have been authorized but obligation awaits completion and approval of adequate planning and cost estimates.

Specific environmental examinations will be done prior to the obligation of funds for each activity, except that if the activity appears on its face not to pose significant environmental problems the specific environmental examination will be done prior to commencement of work on the activity. The specific environmental examinations will take the form of the IEE and will address the same concerns as the IEE.

In the even the specific environmental examination result in a positive determination, one of two courses of action are available: (1) an environmental assessment will be performed and the results of the assessment will either be incorporated into the design of the activity to minimize environmental problems or a decision will be made by the TanGov and A.I.D. to not go forward with the activity or (2) the TanGov and A.I.D. will decide at the outset and prior to the preparation of an EA not to proceed with the activity. Sufficient alternative activities, satisfactorily meeting selection criteria can be undertaken so that there is little likelihood that funds, once obligated for the project, will remain unexpended.

The Tanzania Mission Director will be responsible, with assistance from REDSO, for reviewing all specific environmental examinations and making a threshold decision for each. A provision requiring the specific environmental examination no later than initiation of work on an activity will be included in the Project Agreement.

N.B. - Page 63 has been deleted.

MISSING PAGE

NO. 63

IMPACT IDENTIFICATION AND EVALUATION FORM

Impact Areas and Sub-areas 1/	Impact Identification and Evaluation 2/
A. LAND USE	
1. Changing the character of the land through:	
a. Increasing the population	L
b. Extracting natural resources	N
c. Land clearing	L
d. Changing soil character	L
2. Altering natural defenses	N
3. Foreclosing important uses	N
4. Jeopardizing man or his works	N
5. Other factors	-
_____	_____
_____	_____
B. WATER QUALITY	
1. Physical state of water	N
2. Chemical and biological states	L
3. Ecological balance	M
4. Other factors	-
_____	_____
_____	_____

1/ See Explanatory Notes for this form.

2/ Use the following symbols: N - No environmental impact
L - Little environmental impact
M - Moderate environmental impact
H - High environmental impact
U - Unknown environmental impact

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IMPACT IDENTIFICATION AND EVALUATION FORM

C. ATMOSPHERIC

1. Air quality	L
2. Air pollution	N
3. Noise pollution	N
4. Other factors	-

D. NATURAL RESOURCES

1. Diversion, altered use of water	U
2. Irreversible, inefficient commitments	N
3. Other factors	-

E. CULTURAL

1. Altering physical symbols	N
2. Dilution of cultural traditions	U
3. Other factors	-

F. SOCIOECONOMIC

1. Changes in economic/employment patterns	M
2. Changes in population	N
3. Changes in cultural patterns	M/U
4. Other factors	-

IMPACT IDENTIFICATION AND EVALUATION FORM

G. HEALTH

1. Changing a natural environment _____ N
2. Eliminating an ecosystem element _____ N
3. Other factors

_____ _____

_____ _____

H. GENERAL

1. International impacts _____ N
2. Controversial impacts _____ N
3. Larger program impacts _____ L
4. Other factors _____ –

_____ _____

_____ _____

I. OTHER POSSIBLE IMPACTS (not listed above)

_____ _____

_____ _____

_____ _____

See attached Discussion of Impacts.

B. Financial Plan

1. Summary

The Financial Plan presented below summarizes the requirements for the Arusha Planning/Village Development Project. Detailed cost estimates by project activity and by year are presented in Appendix C attached. The requirements are summarized as follows:

a.	Technical Assistance	$ 5,416.4
b.	Training	673.7
c.	Commodities	8,376.2
d.	Other Costs	125.0
	Total USAID	$14,591.3
	Total TanGov	6,472.0
	Combined Total	$21,063.3

Based on a systematic evaluation of the project, a third phase is planned and will be designed during the Second Phase.

The Tanzanian Government's contribution to this project is based solely on the current development and recurrent budgets of Arusha Region in support of development activities in the three selected districts. Additional contributions from several national government programs providing support for development activities in the project area could not be costed because of the difficulties of obtaining accurate data. The project design also anticipates a significant resource commitment (labor and cash) from the villages in the area. This contribution is not costed or included in the TanGov total contribution.

The recurrent cost requirements for continuation of the project by the Tanzanian Government are low. A supporting financial analysis will be prepared during the first year of the project. It should be noted, however, that the Government has significantly increased its budgetary allocations to cover recurrent costs and for this reason it is expected that it will be able to cover any recurrent costs.

2. Project Financing

The AID grant of $14,591.3 and the TanGov contribution of $6,472.0 provide a total of $21,063.3 to finance the project activities during the four years. The AID contribution will be provided in yearly allotments, with technical assistance and off-shore procurement handled

by AID and the contractor. AID funding for local costs will be placed in a special regional bank account initially on a quarterly advance basis and thereafter replenished on a basis of vouchers for actual expenses.

In the case of those activities which have not met 611(a)(1) FAA requirements, a Work Plan based on the criteria outlined in Appendix G would have to be approved by the Mission Director prior to the obligation and use of funds.

Given Mission interpretation of the requirements of FAA 611(a)(1) and other rules and regulations of AID the following components and costs can be approved for obligation. The components and costs which require additional planning prior to Mission Director approval of obligation are also given.

Approved for Obligation 1/		Further Plans Required
Planning/Implementation Evaluation	$ 3,089.9	-0-
Agriculture Production	2,391.3	$ 720.0 2/
Other Economics	820.8	161.3 3/
Road Improvement	3,667.7	-0-
Water Supply and Irrigation	3,049.5	280.0
Conservation	410.8	
TOTAL	$13,430.0	$1161.3 4/

1/ This includes all the T.A. requirements and equipment and vehicles per State 011808 of 17 January 1978.
2/ Includes funds for Farm Centers, requiring 611(a) FAA certificate.
3/ Includes funds for Appropriate Technology Center, Center Staff and equipment and supplies for the Center.
4/ General planning is deemed adequate for authorization.

As is standard with AID projects in Tanzania a direct-hire Project Manager will oversee the contractor and backstop procurement and provide limited administrative support.

As agreed with AID/W the local AID contribution for roads, water, agriculture and other economic activities will be accounted for separately. USAID/T can approve movements of up to 15% of the total budgeted line items to other line items without prior approval from AID/W. Such changes will be based on the preparation of work plans by the contractor and approved by the USAID Project Manager.

USAID has financed many technical assistance projects in Tanzania using similar methods as those described above without undue problems.

3. TanGov Contribution

The TanGov contribution has been estimated by projecting the Regional Development and Recurrent Budgets for three districts in those activities which directly or indirectly are supporting project components. This is the only feasible method since the actual TanGov allocations to Regions in the future cannot be accurately determined in advance.

The TanGov contribution directly supporting the project consists of: Long-term housing and office space for seven Arusha-based technicians, trust fund contribution toward salaries of each U.S. technician, salaries of local staff, provision of existing equipment for roads and water construction, and miscellaneous recurrent costs. Since this is an integrated type of project, the entire development and recurrent budgets for road construction and maintenance, water development, agriculture extension (including NMP and parastatal programs) is directly supportive of our activities. Hence, for purposes of estimating the TanGov contribution, 50% of these projections for the three districts have been considered part of the direct contribution. In addition, since the TanGov allocations to the regions are expected to rise over time, the contribution will most likely be larger than when using our straight line projections.

4. Arusha Region Development and Recurrent Budget Analysis

a. The development budget of Arusha Region has been around T.Shs. 20,000,000 in recent years, showing slow but steady increase. The breakout is as follows:

Crop Development	4,500,000
Livestock Development	5,000,000
Education	3,500,000
Health	1,000,000
Roads	1,500,000
Water	2,500,000
Other	2,000,000
	20,000,000

USAID/T believes the priorities and allocations expressed in the above are sound in view of the area's potential. The USAID inputs will increase the share for roads and water systems which are the weakest elements.

b. The recurrent budget of the Region is in the area of T.Shs. 60,000,000. The breakout is as follows:

Administrative expenses (salaries, travel, office expenses, maintenance of buildings, etc.)	10,000,000
Agriculture (extension, administration)	5,000,000
Education	16,000,000
Health	14,000,000
Roads	1,300,000
Water	1,200,000
Game Parks	1,100,000
Forestry	1,400,000
Other (urban services, fishing, crops, land management, surveys, culture, research, etc.)	10,000,000
	60,000,000

The recurrent budget's high expenditure on health and education reflects the TanGov priority on Universal Primary Education, Adult Literacy and Rural Health. Recurrent expenditure for road maintenance has been low but was raised to T.Shs. 6,000,000 this year. Expenditure for water systems maintenance has also not been adequate but will be increased during the project.

With the reorganization and streamlining of planning and implementation proposed under the project, these recurrent cost levels represent the minimum requirements for maintenance of project and other activities in the Region. The project agreement will provide a covenant that the TanGov will maintain these minimum levels during the life of the project.

C. Social Soundness Analysis

The population of the 23,000 square kilometers of the project area is as culturally diverse as any in Tanzania. Three major language groupings are represented among people whose mode of living ranges from hunting and gathering through pure pastoralism to mechanized agriculture.

Population densities range from the lowest to among the highest in Tanzania. The PP team held discussions with farmers, officials and development workers throughout the project area. Those discussions form the basis for this section in which major issues which must be faced in project implementation are explored.

The Social Environment: Receptivity to Change

The response to project initiatives is likely to vary significantly by ethnic group. The groups in the project area considered to be the most conservative are the pastoralists. The conservatism of these groups is the result of their semi-arid environment which allows only the smallest margin within which innovation can be attempted.

The government goal of a pattern of settled village is a direct challenge to the semi-nomadic way of life. Concentration of pastoralists and their cattle will lead to a deterioration of the local environment unless herd size is controlled. Large herds traditionally provide insurance against the harsh vagaries of the weather. The move to villages will require a shift from this "maximization model" to an emphasis on small numbers of quality animals. An equally major change required by the move to villages is the shift to dependence on field crops. The increasing availability of drought tolerant varieties will allow agricultural settlement in areas once suitable only for pastoralism.

Settlement of pastoral peoples will also require changes in values and social structure. Pastoralist societies have traditionally emphasized solidarity to bind together a community living atomistically much of the time. The proximity of residents in farming communities, in contrast, requires an emphasis on social control to maintain community harmony. The shift to villages will require both a change in the nature of solidarity building devices (which in past included aggression against settled neighbors) and an increase in social control.

While the changes required of the pastoralists are great, such changes have taken place among these peoples in the past. For example, the Arusha (tribe) of semi-arid Mukulat Division are primarily pastoralists who also grow maize. Other Arusha living immediately to the east on the southern slopes of Mount Meru have become intensive agriculturalists in response to population pressure and the shortage of new arable land. The successful adjustment of so many Arusha to the new mode of life indicates that a similar adjustment among the Mukulat Arusha is

not inconceivable. Similarly the Iraqw in the high rainfall areas of Northern Mbulu District have made the transition from pastoralism to mechanized wheat farming. The Iraqw have a tradition of change, having evolved an intensive agricultural subsistence system and methods of animal husbandry in the face of hostile neighbors and geographical constraints. The Barabaig while preferring a pastoral existence have also undertaken agriculture as it has become necessary.

The people of the project areas can be expected to respond positively to those change initiatives which do not increase their risks in a precarious environment. The nature of the response will vary according to the values and social organization of each group, requiring flexibility responsiveness to each situation on the part of the project staff.

Social Issues in Project Implementation

1. Establishing a process of consultation with and participation by villagers to ensure the project is responsive and accountable to local people.

In order to ensure that the project is sufficiently responsive to the varying situations in the District, it is essential that project staff engage in continuous consultation with the district. Not only is this an administratively sound practice but it is consistent with the hypothesis of the planning team that the development process requires that local people develop the capacity to identify and solve their own problems and that this capacity develops only through actually engaging in the problem solving process. A related hypothesis is that farmers will be more willing to accept new ideas and techniques if they have been involved in formulating them. The process of actively participating in the formulation of a plan creates a psychological identification with and commitment to the plan. Plans formulated with the active participation of the ultimate beneficiaries are also likely to avoid some of the mistakes which result from misconceptions, lack of adequate information about the local area or the imposition of alien values by outside planners. The consultative process will also enable project staff to acquire an accurate and wide ranging knowledge about the villages on which to base formulation and adjustment of project components.

Such an approach has been tested successfully in a variety of places in Tanzania including the Arusha Appropriate Technology Project in the semi-arid areas of Arusha Region and the Community Development Trust Fund (CDTF) grain storage project in Bakwira Chini in the

Uluguru Mountains of Morogoro Region. In both cases discussions with villagers have resulted in the identification of problems and their solutions using modifications of local technology or the adoption of new intermediate technology. In Bakwira Chini villagers actually carried out their own series of experimental testing of grain storage models. These experiences in two widely different settings indicate that the general model has a good chance of success in other areas.

Although the consultative model has proved successful, most development policies and programs are formulated at the national, regional or district level and announced to the villages. This top down planning approach is reflective of the strongly hierarchical structure of the society as a whole. Persons in authority, be they heads of household, elders, teachers, or officials, are to be respected and obeyed (or at least ignored very discreetly). The education system is largely based on rote learning from an authoritarian teacher, not on questioning and challenging. The proposed consultative planning runs counter to this trend and hence must be initiated with great care.

Persons making the initial contacts with the village must avoid from the start establishing any kind of authority relationship with the villagers. Situations which might evoke a response of submission to authority must be circumvented. Simple techniques such as using circular seating rather than a formal classroom or baraza arrangement for meetings will help accomplish this. The important role of the villagers must be emphasized from the beginning. Such things as writing down on a large piece of paper the suggestions of every person are useful in symbolizing the importance of these suggestions and the people who made them.

As rapidly as possible, persons chosen by the village should be trained in leading group discussions in order to put control of the planning process in the hands of the villagers themselves. Center staff should be trained with the people from the villages they serve in order to give them a thorough understanding of the method. The process of learning together should help to break down any hierarchical relationship that might exist and to build up group solidarity.

2. Establishing and maintaining communication between villagers and government officials:

"The truth is that despite our policies and despite all our democratic institutions, some leaders still don't LISTEN to the people.

They find it much easier to TELL people what to do. Meetings are too often monologues without much, if any, time being devoted to discussions; and even then the speech is usually an exhortation to work hard rather than an explanation of how to do things better.

Our leaders at all levels must make more effort to reach decisions by discussion. They must encourage the people to criticize mistakes which have been made and they must be willing to work with the people in rectifying past mistakes and avoiding new ones."

Julius K. Nyerere
5 February, 1977

Part of the reason for the top down approach is the implicit assumption on the part of many government officials that villagers know little if anything that would be useful in the development process. In order to develop the recognition that villagers' knowledge is in fact essential to a successful development process, a pattern of free and open communication between villagers and officials must be established.

Government officials in the project area vary considerably in their respect for villagers and their opinions and in their willingness to talk to them. As a start towards opening up communication channels a priority should be placed on maintaining open communications between villagers and government officials. In particular, project sponsored interactions between government officials and villagers should be structured in such a way as to minimize hierarchical responses.

The collection and analysis of data from the intensive farmer study will provide concrete evidence of the usefulness of the villagers' information. The communications training and the on-going consultative process should help the villagers to develop the ability to articulate their views persuasively to outsiders. With these skills villagers should be more easily able to obtain access to necessary resources outside their immediate control from the government.

3. Involving women significantly and equitably in the development process.

Iraqw women (Mbulu District) do most of the farm work although male work parties may weed or harvest in return for local beer. Arusha

women (Arumeru District) plant and harvest maize with the men and do all the weeding themselves. They mulch coffee and are responsible for milking the cows. Meru women (Arumeru District) plant, harvest and fertilize maize together with the men and do most of the weeding and thinning. They cultivate and harvest coffee with the men. Women and children carry much of the grass for the stall-fed cows.

There is a tendency to consider agricultural decision makers to be male since the male position as head of the household is unquestionably dominant. Women, however, are decision makers in a number of ways. Female heads of households, (widows, divorcees, single women) make their own agricultural decisions. Women nearly always have complete responsibility for the kitchen garden where fruit and vegetables for household consumption are grown. Finally, women decide in the shamba how their husband's decisions are to be implemented. He may decide to use fertilizer, but she decides how much will be put on which plants and when.

Women's involvement in agriculture, although substantial, is less often in their own right than as unpaid laborers on their husband's or father's shambas. Traditionally it was unheard of among the Arusha and the Meru for a woman to hold land in her own right. As a widow, she could be given land which went eventually to her male children. A divorced woman who was not at fault might also be given land by her husband's clan. This has changed over the years and women may now be given land by their fathers although this is still rare. Women are also in a stronger position as a result of the policies of villagization and ujamaa. A woman can be a member of a village in her own right and thus obtain access to land and share in the communal production. However, frequently women score fewer labor points than men and thus do not benefit to a degree commensurate with their inputs. Women also benefit from ujamaa through organizations such as the UWT which can receive land for agricultural production. In Arumeru, however, the UWT has generally been unable to obtain land for coffee production and hence women are excluded from the most lucrative form of agricultural production.

Women have difficulty in obtaining access to other means of agricultural production in addition to land. Women are under-represented in production input programs (only 8 percent of National Maize Project participants in a sample of 21 villages were women) and credit programs. They also have significantly less access to information as

the Bwana Shamba generally works with the men. Women do make an effort to obtain information for themselves. Women comprise the majority of participants in adult education. They also attend farming demonstrations and meetings and listen to Ukulima wa Kisasa, the agricultural radio program. Where access to information is simply a matter of personnel initiative, women seek it at least as often, sometimes more often than do men. The problem is that the male dominated extension service does not, as a general rule, work with women. Where there are female extension agents, they appear to work successfully with the men and offer much more help to women cultivators.

Although the project can do nothing about the factor of land, it can facilitate access to information for women. Because of the constraint on interaction between women and men other than their husbands, it is essential that a woman agricultural agent be available, (as is provided for by the project) to each center to work with the women. Not only will she be able to communicate with the women more easily than a man, but she will also have a better understanding of their problems.

Because of prevailing male attitudes toward women, the part of the project directed toward women must be developed and implemented by women. There are a number of strong women leaders and politicians in the area who could be utilized to help women develop confidence to speak out in public and otherwise assert themselves.

4. Insuring that development benefits are self-sustaining.

Effective development efforts must be self-sustaining. It is not intended that project funds be used to replace local self-help efforts. Rather, funds should be a catalyst to encourage action on the part of villagers.

Existing self-help efforts should be preserved. Capital should not be substituted for self-help labor where it exists and is not burdensome. Self-help is prevalent in school and pipeline construction and maintenance of feeder roads and should be continued. In addition, infrastructure provided by the project should be constructed in such a way as to allow self-help maintenance.

Rather than spreading resources thinly, it is recommended that the project concentrate on a few activities to which villagers are willing to commit their own resources. The commitment of resources

to a project is an indication of a level of commitment to the project without which it is likely to fail. The lack of commitment of resources is generally a fairly strong indication that activities are inappropriate. Because this sort of feedback is necessary, grants should be avoided at the village level.

Self-help in the form of labor should, however, not become an end itself. Where a task can be more effectively done with hired labor or where self-help is an imposition on the local populace, resource commitment in the form of cash should be used to hire labor or machines.

5. Developing a viable conservation program.

Parts of the project area are eroded and require action if they are to be improved. On the part of the government this will require commitment of resources to afforestation, planting of grass, stabilization of gullies, and flood control. The project can help by assisting villagers in establishing a land use plan for the village and in introducing basic soil and water conservation practices.

6. Assuring Effectiveness of Personnel in the Project Area.

It is essential that all expatriate staff having direct contact with villagers speak Swahili. It is also very important that staff be recruited who have adequate professional qualifications. This means possession of at least a Masters degree for higher level positions. It also means a reasonable amount of professional experience. The government looks with disfavor upon its development projects being used to give field experience to unseasoned professionals.

Staff must be sensitive to cultural differences which affect working relationships. The importance of observing the niceties of greeting, showing respect to elders, and avoiding personal confrontation or hostilities cannot be over-emphasized in a society in which personal relationships are the basis of most proceedings.

Social Consequence and Benefit Incidence

The project is designed to help farmers in the less prosperous parts of the project area to develop the full production of the area. Further, the project is designed to achieve certain major social objectives which are discussed below:

1. The development of a capacity to identify and solve problems on the part of villagers by involving them in a consultative process of project planning and implementation. This is consistent with the government policy of developing villages as viable economic units. This approach has been tried on a pilot basis in the region with reasonable success.

2. The Centers are being placed in the less prosperous areas of the region. Not only is this consistent with the government's aim of equity among areas, but once the project is successful it should serve as a pull for settlers from the areas of high population density and land pressure.

3. During the first years of the project the technology and improved practices to be identified and developed by the farmers will be improved traditional practices for the most part. These techniques will therefore be accessible to all farmers without the necessity of capital investment.

4. The provision of infrastructure, most notably drinking water, will ease the work burden on women.

5. Women will have direct access to agricultural information through the project. To the extent that the information enables them to significantly increase the production of the kitchen garden which they control, it will put cash into the hands of women. This would have a direct beneficial affect on family welfare.

6. The project should help to establish free and open channels of communication between villagers and government officials.

7. The project is designed with an emphasis on self-help, local decision making and the use of local materials in order to enable villagers to carry on the project on their own. Local initiative is to be encouraged and developed rather than be replaced by massive infusion of capital and equipment.

8. By establishing with the people a conservation program, the project will in the long run improve the quality of the environment.

D. Economic Analysis

To carry out an adequate economic analysis it requires considerably more data than is presently available for the project area. The

generation of such data is built into the project through the information system--the collection of monitoring and evaluation data, including hard data on project impact. What is possible at present is to estimate the size of the target group which will benefit directly from some of the project components and, in certain cases, the magnitude of the benefits generated.

The Village Development activities of the project proposes to provide assistance to twelve wards during the first year, affecting a population of approximately 50,000. By the fourth year, project activity will have expanded to eighteen wards with a population totaling over 150,000.

The project will focus on promoting production related activities in the project area. Of the activities to be assisted, those that will most directly affect local residents include increased agricultural production -- crop production as well as livestock -- and the development of social and economic infrastructure, including roads and potable water and irrigation systems.

As is spelled out in detail in the project description, the process which will be pursued in promoting increased agricultural production will involve the establishment of Farm Centers from which a variety of farmer services will be organized. The initial step will be to understand the farming systems in use within the project area. The objective will be to identify the improved practices currently being used by the more productive farmers and which may be recommended to other farmers within their area to help increase yields.

It is anticipated that after the first year of the project, certain improved husbandry practices will be identified involving the date of planting, sowing techniques, plant density, weeding and thinning practices, time of harvest, and methods of storage which are location specific and which can be recommended to farmers. Experience with this approach elsewhere, e.g. a maize program in Western Kenya and an FAO fertilizer project in Zaire, indicates that significant yield increases can be obtained at minimum cost through the adoption of improved practices. In the Kenya case, the adoption of certain practices -- early planting, increased plant density, and more frequent and timely weeding -- resulted in production increases as high as 72 percent. Normally, however, not all practices are adopted by all farmers and of those which are adopted recommended practices are generally not strictly adhered to. Utilizing this approach, increase in yields of, on average, 50 percent can be

expected. Only after technologies which are not being utilized in the area but are brought in from the outside are satisfactorily tested and proven will they be promoted among the local farmers.

A similar approach will also be utilized for improving husbandry practices of local farmers with regard to livestock production.

It is estimated that on the average each Farm Center will serve 1000-1500 farm families. At the end of the second year, and after selected farm practices have been extended over one cropping cycle, approximately 21,000 farm families will be served, and at the end of the third, 42,000 families. (The number of families to be served are rough estimates.) Only through the data provided by the project's information system (see Annex B) will it be possible to project the actual magnitude of project benefits.

The upgrading and expansion of the road system in the project area likewise will have considerable impact. As has already been described, a serious deficiency in the agricultural support system is the lack of adequate roads to facilitate efficient marketing of agricultural output and the provision of needed inputs to local farmers. At present transport costs to a number of wards in the project area from major centers are prohibitively high and make the production of agricultural surpluses uneconomical; substantial reductions in these costs are expected as the transport system is improved. Of the total population in the project area of 900,000, it is estimated that 480,000 will be directly affected by having available greater access through improved roads by the end of the project.

Investment in water systems will also have a measurable impact on the local population. The provision of reliable potable water is expected to impact on village health as well as on labor demands for obtaining water. It is estimated that by the end of the project (four years) reliable water sources will have been provided to 52 project villages with approximately 110,000 persons.

Finally, it must be stressed that a primary concern in designing a village development project of this type is the staffing and recurrent cost implications to the Tanzanian Government. A total of only eight new positions have been added to existing staffing loads. Initially, the salary costs of these positions will be covered by the project, but it is projected that the government will be able to cover these increases

after the first three years. Further, the primary recurrent costs resulting from project activity will result from investment in infrastructure. As noted previously, the government is rapidly increasing resources allocated to the maintenance of its infrastructure system. It is projected that, in conjunction with local resources which will be committed to the maintenance of specified roads and village water and irrigation systems, the government will be able to cover recurrent costs increases. In general, therefore, it is believed this project will have significant economic benefits. The information system will provide both baseline and the measurement of impact.

PART FOUR: IMPLEMENTATION ARRANGEMENTS

A. Analysis of Recipients', AID's and U.S. Contractor Administrative Arrangements

1. Recipients' Administrative Arrangements

The implementing agency for the project is the Office of the Regional Development Director and the District governments of each of the three project districts--Arumeru, Hanang and Mbulu. The district government is an intermediate step in a line of governing bodies intended to maximize grass roots participation. The line of governing extends from 10 cell leaders in the villages to the Prime Minister's Office.

Ten cell leaders are chosen by the residents of ten to fifteen households. They are responsible for settling disputes and helping to carry out government policy. A larger group of 100 households, kitongoji (hamlet) is replacing the 10-cell as the smallest unit of government due to the problems of finding a sufficient number of 10-cell leaders.

All residents of a village over the apparent age of 18 are members of the village assembly which elect a Village Council, usually of 25 members comprising 5 committees (Agriculture, Planning, Health, Education, Defense). Villages are to submit ordered development priorities, a development plan and requests for assistance to the District Development Director (DDD) and District Planning Officer (DPO) each year.

A ward is an administrative unit of about three to eight villages. The Ward secretary attends village committee and council meetings and is responsible for administration of ward affairs. There are 27 wards in Arumeru, 26 in Hanang and 21 in Mbulu. The ward is a basic development unit where government agricultural, livestock and other technical personnel are being assigned as part of the decentralization program.

A higher administrative subdivision, the Division, has recently been abolished.

The district government is responsible for formulating district development plans and for carrying out national and regional policy. The political party is represented in district government by the Area Commissioner, a political appointee, who serves as the District Secretary of the CCM and, in theory, works under the popularly elected CCM District Chairman.

The civil services section of district government is headed by the DDD who falls under the Prime Minister's Office and is responsible to the Regional Development Director. The DDD is the head of the District Management Team which is made up of heads of departments (functional managers) and the heads of parastatals (Development corporations, cash crop authorities, etc.). As part of the policy of decentralization, an effort has also been made to place high caliber people in the District offices. Increasingly functional managers are degree holders and some, especially DDDs are advanced degree holders.

An organizational chart of the Tanzanian Government is found in Figure 1. (See pp 83 and 84.)

The key departments involved with project implementation are Planning, Agriculture, Water, Livestock and Comworks. The Rural Development Specialist in each district will be placed in the DDD's office and will work with the functional managers and their staffs.

The District Agricultural Development Officer, DADO, is responsible for most agricultural problems in the district. While the cash crop authorities are responsible for supplying inputs for their particular crops, they often use the Bwana Shamba as tributors. The DADO has some district level staff and a network of extension agents (Bwana/Bibi Shamba) who live and work in the villages. Bwana Shambas may be Form IV leavers with a two year certificate course or Standard VII leavers receiving on-the-job training.

Tanzania Go. .nent Organization:

Development Ministries, (National, Regional and District Levels), Ward and Village Officials

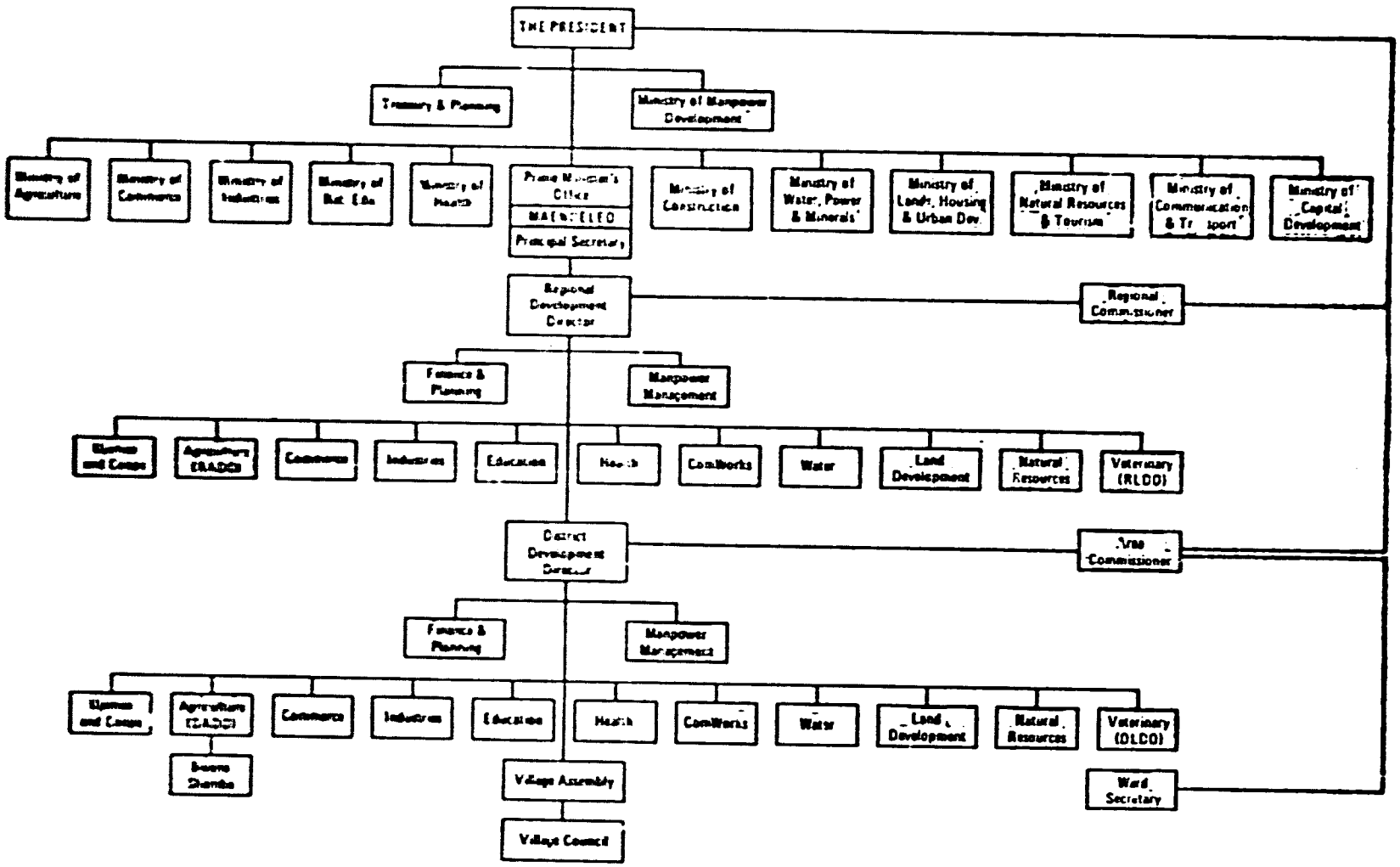
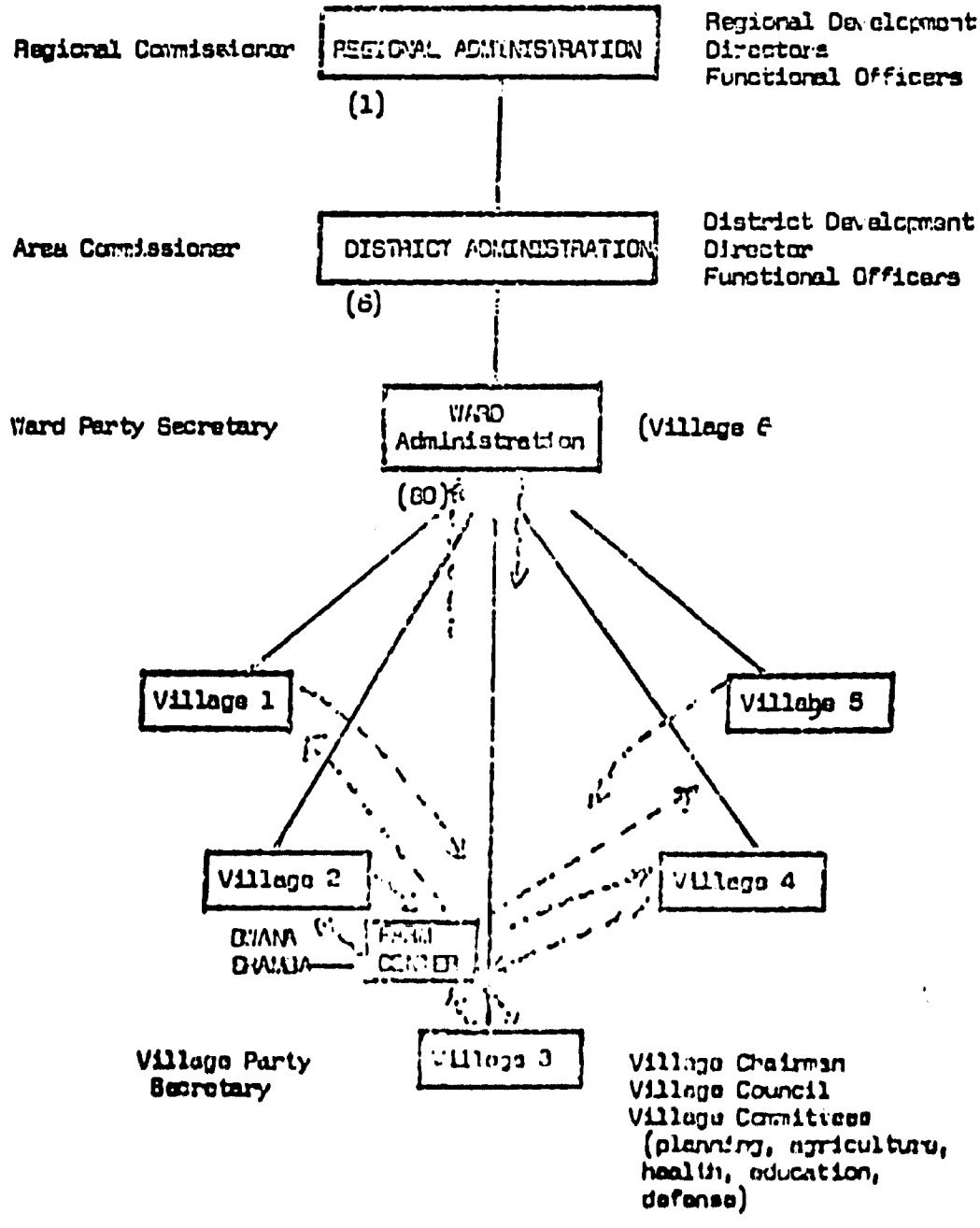


FIGURE 2: TANZANIA GOVERNMENT ORGANIZATION

REGIONAL, DISTRICT, WARD AND VILLAGE ORGANIZATION



Competence and dedication of district staff vary widely. The dramatic increase in the 1977/78 recurrent budget may help alleviate some of the weak spots.

The functional departments at the regional level primarily provide budgeting, coordinating and some technical backstopping to the district departments. While regional approval is required for budgets and plans, both the initial planning and implementation are done by district staff. The regional officers serve as channels through which district requests are sent upward and national policy is communicated downwards. Regional staff spend a minimum of time in the field.

The project will attempt to work through the existing institutions and personnel at each level to the regional administration. It appears there are only a few critical gaps, primarily at the District level. The additional staff positions in the district government include: the Technical Agricultural Development Officer responsible for technical backstopping of the Farmers' Centers; the Assistant Agricultural Development Officer responsible for the development of production programs for women; and the Soil and Water Conservation Officer responsible for the development of village level programs. Initially the project will provide funds to the region to pay these salaries on an experimental basis. If the positions prove useful, the region will assume this responsibility. Though capabilities vary greatly within the administrations responsible for the project area, it is the conclusion of the project design team and USAID that the personnel and institutional structure is capable, with the project training and technical assistance, of successfully carrying out project activities.

2. USAID's Administrative Arrangements

This project is designed to support the Tanzanian Government's development policies and its institutional structure for formulating and implementing activities to carry out these policies. In line with the Government's effort to decentralize development decision making and resources, USAID will provide project funds and technical assistance directly to the Arusha Regional Administration which will channel these resources, along with those available from the Regional and National budgets, to the three Districts.

USAID Monitoring and Management Arrangements

Annual Work Plan 1/

An essential administrative task will be the preparation of an Annual Work Plan which is intended to be a comprehensive document prepared by the RDD and his staff and submitted to USAID/Tanzania.

The Work Plan is intended to be an evaluation of current activities and a request for assistance in the upcoming year. This plan will consist of the following:

- status of current activities;
- evaluation of current activities;
- identification of new activities, including sufficient information in order to determine whether 611(a)(1) requirements have been met;
- environmental review of expected new activities;
- economic and social analysis performed in order to determine whether villages in which new activities are proposed meet project criteria;
- appropriate feasibility and technical analysis for infrastructure activities primary road and water systems and construction activities.

For a detailed description of the information to be provided and criteria to be met see Appendix G.

On the basis of the information provided in this work plan the Tanzania Mission Director with the assistance of REDSO, and any other assistance as may be required, may obligate project funds.

1/ For clarification, there are three types of plans to be produced under this project. The first is the Five Year Development Plan for the Region as a whole. This is a comprehensive document covering the major sectors of rural economy. The second plan will be an annual implementation plan for the Region which will accompany the preparation of the Region's Annual Budget Submissions. A third plan, which incorporates much of the above, will be the Annual Project Work Plan. This plan will spell out what is to be done, what allocations are provided by AID, the justifications (planning, cost estimates, etc.) required so that USAID is assured that the legal requirements (Section 611(a)FAA) are met and that activities to be undertaken meet the criteria put forth in Appendix G for project planning. In addition to the justifications in the Annual Work Plans, specific project activity justifications may be presented to AID at any time during the life of the project so long as they meet the criteria for support. (See Financial Plan re what components require future planning to be included in the Work Plan)

Procurement

Project vehicles and the equipment for roads and water activities will be procured by the Mission. Given the long lead times required for delivery of vehicles and the road equipment implementation orders will be prepared by the mission as soon after project authorization as possible.

Disbursement and Expenditure Arrangements

Because of the time required in transferring funds from Central Ministries to the Regions, USAID funds will be "channelled" through a special project account established in the Arusha Regional branch of the National Bank of Commerce. Such an arrangement is being used by the German-assisted project in Tanga Region with considerable success. Details of this account are to be provided by the Regional Development Director within 90 days after the execution of the project agreement. An initial quarterly advance will be made to the account. Thereafter, quarterly reports will be prepared by the office of the Regional Development Director, indicating progress, problems and expenditure during the previous period. The USAID project officer will on the basis of an account and report of previously released funds certify vouchers and subsequently initiate replenishment of the NBC account.

The USAID Director will specify the arrangements for monitoring and managing this project within the Mission, including arrangements in the Arusha USAID Office. Unless the current reporting requirements are significantly reduced and given the total magnitude of USAID activities in Arusha Region there may be a need for an additional USAID project manager to handle this project.

3. Arrangements for the Provision of Technical Assistance

In the Description of the Project (see Part Two), the relationship between the village development activities and the preparation of the Plan is explained. Because of the need to coordinate and integrate the inputs for both of these efforts, a single umbrella contract will be entered into with an institution or firm that has the technical capabilities and experience to provide the necessary assistance. This contract will be executed directly between AID and the institution or consulting firm selected to carry out the Arusha Planning/Village Development Project. While it is AID's policy to emphasize host-country contracting it is not usually done in Tanzania. The TanGov has expressed its preference for AID-administered contracts. The question of contracting was addressed during review of this project in September 1977 (and a host-country contracting was recognized as not practical in this case. See ECPR guidance cable, Appendix F.)

The prime contractor for this project will be procured through open competition. Notice of the procurement activity will be published in the COMMERCE BUSINESS DAILY (CBD) and will solicit proposals from any interested parties. This may include small business firms, 8(a) firms, universities, non-profit organizations, or other educational institutions. The selected contractor will have responsibility for oversight activities authorized and financed by the project.

This firm will be authorized to sub-contract with other firms and organizations subject to AID approval and in accordance with AID procurement regulations, Code of Federal Regulations 41, Public Contracts Property Management, Chapter 7, Revised July 1, 1977. This authority is required because of the diverse nature of activities funded by the project.

Contractors will be selected on the basis of the responsiveness of their technical proposals and interviews conducted in AID/W. Initially, written proposals will be reviewed by an AID/W technical committee. The three top ranked proposal offerors will then be invited to Washington for a two day interview session. Travel will be at the offeror's expense. Offerors are expected to have present as many of the technicians nominated for long-term positions as feasible. Further, the three rural development specialists and the regional planner are expected to be available for life of project assignment, i.e., four years. Candidates will be interviewed by AID/W, USAID and TanGov representatives. Final selection will be made on the basis of the results of the interviews by AID/W in consultation with the USAID and TanGov.

B. Implementation Plan

As described above, there is need for considerable flexibility in the development of this project, for its success depends on involving villagers in the development decision making process and on their resource commitments to the development activities within their localities. Nevertheless, it is possible to project in some detail the activities of the project. There is a need to integrate the scheduling of all activities: this is done below:

February 1978

Completion of the Project Paper.
Submission of the Project Paper to regional and district officials in Arusha for their review.

March/April 1978

Submission of the Project Paper to AID/Washington.
AID/W Project Review, Project Authorization and Allotment to Field.

Year 1 - Month 1*

Project Agreement signed for those FY 78 funds approved for obligation.
Publication of the RFPs.

* All dates computed - beginning from authorization date.

Month 2

Procurement of the equipment for the road system component as well as the vehicles for all project components.
Procurement of two trailers for Rural Development Specialists in Mbulu and Hanang Districts.
Selection of two TanGov officials to receive long-term training in Regional Planning.
Receipt, review and selection of the contractor to provide technical assistance.

Month 3

Final selection of contractor, contract negotiation.
Contract for technical assistance signed.
Arrangements with TanGov to provide necessary housing in Arusha completed.

Procurement of local contractor for necessary housing.
Establishment of Special Project Account and Funding arrangements.

Month 4

Regional Planner/Economist Agriculture Specialist and three Rural Development Specialists in place.
Plans formulated for initial communications training and for the micro-level data collection and analysis effort in the 12 wards.
Initial short-term assistance by Information Systems Expert recruitment, selection and training of data collectors initial release of funds.
Officials from Prime Minister's Office assigned to Arusha for preparing the Plan.

Month 5

Data collection and analysis effort commences.
Feasibility Study for Appropriate Technology completed and planning for economic activities formulated.
Plan developed with Regional Officials and those from the Prime Minister's Office to prepare Plan.
Agricultural Economist to assist with Plan in place.

Month 6

Short-term assistance from hydrologist and sanitation engineer to review and develop water systems implementation plan.
Initial training for regional, district and ward officials in planning and management techniques.

Month 7

Finalization of the appropriate technology component of project.
Selection of Natural Resources personnel for U.S. training in land use planning and soil and water conservation; training to commence in May.
Initial short-term assistance for preparation of the Plan.

Month 8

Initial activities in support of MAJI water systems development activities.
Continued short-term assistance in preparation of the Plan.

Month 9

Initial short-term assistance by plant scientist and animal scientist to help identify appropriate technologies in the twelve Wards under study.
Arrival of the Appropriate Technology Specialists to initiate preliminary activities.
Completion of first phase of the planning effort.

Month 10

Initial technical assistance by grain storage specialist; finalization of plans to develop village storage facilities.
Initial village production plans formulated as well as locations determined for first six Farming Centers.
Continued in-service training for TanGov officials.

Month 11

Preliminary sector plans developed, drawing on the on-going data collection and analysis effort.

Month 12

Village production and development plans completed in most of the 12 Wards. Annual Work Plan for following 12 months submitted to USAID/T for approval on basis of criteria laid down in Appendix G.

Year 2 - Month 1

District plans prepared for Arumeru, Hanang and Mbulu. Farmers' Training Center physical development commences.
Officials for short-term training in U.S. selected.
Village self-help activities commence.
First cropping cycle data analyzed as input into the Plan.

Month 2

Macro-economic analysis and sector plans completed in draft form for review and modification.

District plans reviewed and approved.

Environmental Review conducted in terms of specific activities proposed in district plans.

Month 3

Road system component initiated.

Extension of data collection and analysis.

Agricultural production-related activities intensified.

Arusha Region Integrated Rural Development Plan completed.

Month 10

Second year Annual Work Plan submitted to USAID/T for approval.

Month 12

In depth evaluation and preparation of FY 80 and 81 implementation plan.

C. Evaluation Plan

An integral par the project is its information system for planning, monitoring and evaluating project activities, the details of which are spelled out in Annex B of Volume II. This system will provide the continuing information required for decision making and on-going evaluation by the farmers, village councils and ward, district and regional officials to develop and modify development activities for achieving project objectives.

In addition to the project's internal monitoring and evaluation system, two evaluations will be carried out by USAID/Tanzania with possible assistance from AID/Washington and from private consultants. The first will be done at the mid-point of project implementation and the second at project termination. Further, the various plans (the Five Year Plan, the Annual Implementation Plan, and the Annual Project Work Plans) will be prepared as required. The data and analysis generated by the project's information system will be valuable inputs to each of these activities.

D. Covenants and Negotiating Status

1. Covenants

The Project Agreement shall contain covenants, providing in substance, as follows:

a. The Cooperating Country will covenant that the selection of villages for participation in the project will be in accordance with the criteria set forth in the Project Agreement. The criteria in Volume I, Appendix F of the PP will be used for this purpose. The criteria may be modified, by mutual agreement, to reflect periodic evaluation of the project.

b. The Cooperating Country will covenant to fill approved ComWorks staff positions in a timely manner.

c. The Cooperating Country will covenant to provide AID with a mutually acceptable plan within 90 days after execution of the project for disbursing project funds in a timely and sound business manner, to the Arusha Regional Administration for project use.

d. The Cooperating Country will covenant to insure that the MAJI organizes and trains three additional water system development crews which will be used to build and rehabilitate village water systems.

e. The Cooperating Country will covenant to provide a Coordinator and two Assistant Planning Officers for the Arusha Development Plan.

f. The Cooperating Country will covenant to provide staff housing for the eight long-term U.S. technicians to be stationed in Arusha.

g. The Cooperating Country will covenant to assign two of the Regional Planning Specialists trained under the project to the Arusha Region.

h. The Cooperating Country will covenant to provide land for the Rural Development Specialists housing to be constructed in Hanang and Mbulu Districts.

i. The Cooperating Country will covenant that the Arusha Regional Development Director is authorized to implement the project.

j. The Cooperating Country will covenant to maintain the level of development assistance and recurrent cost budgets required for the three project districts.

k. The Cooperating Country will covenant to ensure that sufficient funds, personnel and equipment are available to maintain the road and water systems built or renovated under this project.

l. The Cooperating Country will covenant for provision of local cost funding for the Appropriate Technology Center Staff, in FY 80/FY 81.

m. The Cooperating Country will covenant to maintain Arusha Region recurring cost budget.

2. Negotiating Status

This PP, and specifically the covenants outlined above have been discussed with the Government of Tanzania. The Government is in agreement as to the scope of the project and the requirements imposed on it by the above covenants.

A P P E N D I X A

Logical Framework

APPENDIX A: LOGICAL FRAMEWORK

GOAL: Improve the production, income and well-being of people in the rural areas of Arumeru, Mbulu, and Hanang Districts of Arusha Region.

OVI:

1. Increase in agricultural production
2. Increase in per capita income
3. Decrease in incidence of disease and malnutrition
4. Increase in individual self-help capability
5. Increase in satisfaction with life situation
6. Improvement in the distribution of income
7. Improvement in the productive utilization of the agro-ecosystem

MOV:

1. Information system, regional records (aggregate)
2. Information system
3. 1978 census, special investigations
4. Information system, periodic evaluations
5. Information system, surveys
6. Information system
7. Field evaluations

Assumptions: Higher order objectives and long-term benefits

1. Decrease in need for agricultural imports
2. Increase in self-reliance of villages

PURPOSE: Strengthen the capabilities of the region, the three project districts, and villages in these districts. Identify, implement and evaluate development activities within the framework of the policies and priorities of the Tanzanian Government.

Provide the micro-data that will assist in the preparation of the Arusha Region Integrated Rural Development Plan.

End of Project Status

1. Process, system and capabilities developed in up to 75 villages, 18 wards, three districts and the region to plan, implement and evaluate development activities

from the village level upwards. The project has the potential of directly reaching approximately 150,000 persons. Others will benefit indirectly from infrastructure and improved capability.

2. Increased livestock and food crop production through using improved local practices (in 18 wards).
3. Agricultural-related technologies (implements and processing equipment) identified, tested, produced by village enterprises and extended through Farmers Centers.
4. Major social and economic infrastructure constraints to improved production within the 18 wards reduced.
5. Micro-data generated by the project's information system analyzed and used to prepare and periodically revise regional development plan.

MOV:

1. Information system, periodic evaluations
2. Information system, regional records
3. Information system, field investigations
4. Information system, regional records, field visits
5. Evaluation of Arusha planning exercise.

Purpose to Goal Assumptions

1. Involvement in the planning and implementation of development activities by the intended beneficiaries will increase the probability of the success of the project and develop their capacity to carry out the process in the future.
2. Adequate demand exists for the increased supply of agricultural production.

OUTPUTS

1. Planning, implementation and evaluation component

   a. Dialogue between 75 villages and TanGov local leaders/staff established and maintained.
   b. Village production plans formulated by up to 75 villages.
   c. Government officials and village leaders trained in communication.

d. Planning methods and procedures developed and adopted by the three districts and the region.
e. District development plans developed yearly for four years.
f. Work plans developed yearly for three years.
g. Ten government officials complete Masters degree training in regional planning and 4 district level officials receive short-term U.S. training in planning/management/evaluation training and 2 district officials receive short-term training in socio-economic evaluation.
h. Training in systematic data collection and analysis is being conducted in the 18 wards.
i. Regional and district information system established and is providing timely information for decision-making.
j. Village Council members and leaders receive training in management/implemantation techniques and 2 seminars per year offered on data collection and analysis.
k. Regional and district logistical support system performing satisfactorily.

2. Agricultural Production Component

a. Range of existing crop and livestock technologies identified through dialogue and systematic data collection.
b. Suitable crop and livestock technologies tested and proved successful onthe farmers' lands.
c. Effective coordination of National Research Institutes inputs into project area.
d. Up to 42 Farmers' Centers established.
e. Thirty Bwana/Bibi Shambas and 20 livestock officers trained.
f. Nine district officials receive intensive crop specific training.
g. Effective extension methods developed and being implemented.
h. Village Agricultural Committees, Village Councils and farmers in up to 75 villages receive specific crop and livestock training.

i. Soil testing capability developed and functioning in three districts.
j. Establishment of extension programs appropriate for production activities carried out by women.
k. Village storage facilities built in up to 50 villages.
l. Agricultural supplies and credit available as required in up to 75 villages.
m. Nine district level officials trained in crop specific subject or farming systems.
n. Six seminars per year offer similar training for extension officers.

3. Other Economic Activities Component

a. Appropriate technology center built in one district.
b. Innovations for improving agricultural implements identified and tested.
c. Village transport technologies identified and tested.
d. Agricultural processing equipment identified and tested.
e. Eight government officials receive short-term training in appropriate technology.
f. Village artisan training program developed to repair agricultural equipment.
g. Village agriculture-related small-scale enterprises established.
h. Management/accounting training received by up to 32 villages responsible for Farmers Centers activities.

4. Social and Economic Infrastructure Component

a. Roads rehabilitated: 276 miles of secondary roads
Roads constructed: 200 miles of feeder roads
b. Technical, management and equipment capabilities of district Coraworks in three districts developed to the point that they can maintain roads.
c. Hydrology surveys completed.

d. Water systems improved in up to 52 villages.
e. MAJI technical capabilities developed.
f. Village water technicians trained in up to 52 villages.
g. Three government officials receive U.S. and third country training in land use and soil and water conservation techniques.
h. Methods for generating village investments in soil and water conservation measures identified and tested.

Means of Verification

1. a. Information system, field visits
   b. Field evaluation, information system
   c. Project reports
   d. Periodic evaluation
   e. Field evaluation
   f. Field evaluation
   g. Project/AID reports
   h. Information system, field investigation
   i. Field interviews
   j. Project reports
   k. Field evaluation

2. a. Reports of plant scientist and animal scientist
   b. Information system
   c. Field evaluation
   d. Project reports, field investigation
   e. Project reports
   f. Project reports
   g. Information system, field evaluation
   h. Project reports
   i. Field evaluation
   j. Field evaluation, information system
   k. Field inspection, project reports
   l. Information system
   m. Project reports
   n. Project reports, information system

3. a. Field inspection
   b. Information system
   c. Information system
   d. Information system
   e. Project reports
   f. Project reports, field evaluation
   g. Project reports, field investigation
   h. Field evaluation

4. a. Project reports--construction management specialist
   b. Field evaluation
   c. Review of study
   d. Project reports, field investigation
   e. Field evaluation
   f. Project reports, field evaluation
   g. Project reports
   h. Information system, field evaluation

Output to Purpose Assumptions

1. A shift away from the Tanzanian Government policy of decentralization will not occur.
2. Government officials will be willing and able to enter into a consultative planning process with villages.
3. Adequate incentives exist for farmers to want to increase their incomes through increased agricultural production.
4. Roads and water systems will be maintained by self-help and improved government departments after completion of the project.
5. The Tanzanian Government will continue to increase and make effective use of the recurrent costs portion of its budget.
6. Production activities in the project area will generate sufficient revenues to cover these recurrent costs.

Inputs

1. Planning, Implementation and Evaluation

U.S. Technical Assistance:	246 p.m.
Local Technical Assistance:	2,232 p.m.

Training: 10 M.A. degrees in Regional Planning (U.S.)
6 short-term study tours (U.S. and Africa)
8 Africa study tours
50 in-country seminars

Commodities:
2 houses for Rural Development Specialists
2 house trailers for temporary housing
5 vehicles and operating costs[1/]
18 motorcycles and operating costs[1/]
Equipment supplies for U.S. long-term technicians

Other Costs:
Evaluations

2. Agricultural Production
U.S. Technical Assistance: 90 p.m.
Local Technical Assistance: 288 p.m.

Training: 9 short-term study tours (Africa)
48 in-country seminars

Commodities:
6 houses for field officers
42 Farm Centers
50 Storage facilities
18 vehicles and operating costs[1/]
40 motorcycles and operating costs[1/]

3. Other Economic Activities
U.S. Technical Assistance 80 p.m.
Local Technical Assistance 144 p.m.

Training: 8 short-term study tours (Africa)

Commodities:
1 Appropriate Technology Center
4 vehicles and operating costs[1/]
2 motorcycles and operating costs[1/]
Equipment and supplies for Appropriate Technology Center

4. Social and Economic Infrastructure

a. Road Systems
U.S. Technical Assistance 114 p.m.
Local Technical Assistance: 2700 p.m.
Training: On-the-job
Commodities: Equipment, spare parts and supplies for road construction[1/]

b. Water Systems
U.S. Technical Assistance 43 p.m.
Local Technical Assistance 1008 p.m.
Training 8 seminar/workshops
Commodities 12 vehicles and operating costs[1/]
Equipment and supplies for water and irrigation systems.

c. Conservation
U.S. Technical Assistance 29 p.m.
Training 3 short-term study tours (U.S.)
3 short-term study tours(Africa)

1/ Waivers required for purchase of 33 Land Rovers and 60 motorcycles for total project.

Input to Output Assumptions

1. Tanzanian Government perceives b ..efit of plan and provides full political and logistical support (funds, personnel, etc.).
2. Project inputs do not become a substitute for national government development activities in the area.
3. Participation of the villagers in the development decision making process leads to a greater commitment of their own resources.
4. Cooperation of local level government officials is achieved.

5. Hierarchical traditions are overcome through the communications training and dialogue process.

6. Villagers perceive value of the Farmers Centers and utilize them.
7. Villagers and government officials perceive importance of information system for decision making.
8. Maintenance capabilities can be developed at the district level for project provided vehicles.
9. Swahili-speaking expatriates are available for the rural development specialist positions.

A P P E N D I X B

Detailed Cost Estimates

APPENDIX B

DETAILED COST ESTIMATES

This Appendix is made up of the following Tables:

I. Summary Cost of Project Inputs and Outputs by Activity

II. Expenditure Budget

III. Obligation Budget - Budgets for Each Activity

IV. Planning, Implementation and Evaluation

V. Agriculture Production

VI. Other Economic Activities

VII/A. Roads Systems

VII/B. Water Systems and Irrigation

VII/C. Conservation

VIII. TanGov Contribution

Footnotes supporting budgets

TABLE I

Summary Cost of Project Inputs and Outputs by Activity
($000's)

		TA			Training			Commodities			Other Costs			TOTAL ALL COSTS		
		FX	LC	Total	FX	LC	Total	FX	LC	Total	FX	LC	Total	FX	LC	Total
I.	Planning Implementation and Evaluation Capability	2075.0	74.4	2149.4	366.4	84.0	450.4	213.6	151.5	365.1	125.0	-0-	125.0	2780.0	309.9	3089.9
II.	Increased Agro-Cultural Production	812.5	48.0	860.5	63.0	72.0	135.0	484.5	1631.3	2115.8	-0-	-0-	-0-	1360.0	1751.3	3111.3
III.	Other Economic Activities	625.0	34.8	659.8	32.0	-0-	32.0	129.9	160.4	290.3	-0-	-0-	-0-	786.9	195.2	982.1
IV.	Social and Economic Infrastructure	1637.5	109.2	1746.7	48.3	8.0	56.3	2714.8	2890.2	5605.0	-0-	-0-	-0-	4400.6	3007.4	7408.0
	A. Roads	862.5	-0-	862.5	-0-	-0-	-0-	2291.6	513.6	2805.2	-0-	-0-	-0-	3154.1	513.6	3667.7
	B. Water Systems	412.5	109.2	521.7	-0-	8.0	8.0	423.2	2376.6	2799.8	-0-	-0-	-0-	835.7	2493.8	3329.5
	C. Conservation	362.5	-0-	362.5	48.3	-0-	48.3	-0-	-0-	-0-	-0-	-0-	-0-	410.8	-0-	410.8
	GRAND TOTAL	5150.0	266.4	5416.4	509.7	164.0	673.7	3542.8	4353.4	8376.2	125.0	-0-	125.0	9394.6	5196.7	14591.3

TABLE II

EXPENDITURE BUDGET

	YEAR 1			YEAR 2			YEAR 3			YEAR 4			LIFE OF PROJECT		
	FX	LC	TOTAL	FX	LC	TOTAL	FX	LC	TOTAL	FX	LC	TOTAL	FX	LC	TOTAL
TECHNICAL ASSISTANCE															
Planning	800.0	9.6	809.6	425.0	9.6	434.6	425.0	17.6	442.6	425.0	37.6	462.6	2075.0	74.4	2149.4
Ag. Production	175.0	12.0	187.0	212.5	12.0	224.5	212.5	12.0	224.5	212.5	12.0	224.5	812.5	48.0	860.5
Other Economic	175.0	11.6	186.6	200.0	11.6	211.6	212.5	11.6	224.1	37.5	-0-	37.5	625.0	34.8	659.8
Infrastructure															
Roads	25.0	-0-	25.0	287.5	-0-	287.5	275.0	-0-	275.0	275.0	-0-	275.0	862.5	-0-	862.5
Water	168.7	27.3	196.0	200.0	27.3	227.3	43.8	27.3	71.1	-0-	27.3	27.3	412.5	109.2	521.7
Conservation	150.0	-0-	150.0	100.0	-0-	100.0	100.0	-0-	100.0	12.5	-0-	12.5	362.5	-0-	362.5
TRAINING															
Planning	33.4	21.0	54.4	178.2	21.0	199.2	149.8	21.0	170.8	5.0	21.0	26.0	366.4	84.0	450.4
Ag. Production	21.0	18.0	39.0	21.0	18.0	39.0	21.0	18.0	39.0	-0-	18.0	18.0	63.0	72.0	135.0
Other Economic	-0-	-0-	-0-	16.0	-0-	16.0	16.0	-0-	16.0	-0-	-0-	-0-	32.0	-0-	32.0
Infrastructure															
Roads	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-
Water	-0-	2.0	2.0	-0-	2.0	2.0	-0-	2.0	2.0	-0-	2.0	2.0	-0-	8.0	8.0
Conservation	-0-	-0-	-0-	48.3	-0-	48.3	-0-	-0-	-0-	-0-	-0-	-0-	48.3	-0-	48.3
COMMODITIES															
Planning	213.6	57.0	270.6	-0-	31.5	31.5	-0-	31.5	31.5	-0-	31.5	31.5	213.6	151.5	365.1
Ag. Production	342.1	368.5	710.6	51.7	423.5	475.2	50.6	434.0	484.6	40.1	405.3	445.4	484.5	1631.3	2115.8
Other Economic	66.7	58.6	125.3	39.1	42.0	81.1	15.5	29.9	45.4	8.6	29.9	38.5	129.9	160.4	290.3
Infrastructure															
Roads	1858.8	66.4	1919.2	216.4	220.5	436.9	216.4	166.4	382.8	-0-	66.3	66.3	2291.6	513.6	2805.2
Water	237.8	241.1	478.9	19.8	341.1	360.9	82.8	907.2	990.0	82.8	887.2	970.0	423.2	2376.6	2799.8
Conservation	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-
OTHER COSTS (Evaluations)	-0-	-0-	-0-	50.0	-0-	50.0	-0-	-0-	-0-	75.0	-0-	75.0	125.0	-0-	125.0
TOTAL	4267.1	887.1	5154.2	2065.5	1160.1	3225.6	1820.9	1678.5	3499.4	1174.0	1538.1	2712.1	9327.5	5263.8	14591.3

TABLE III

OBLIGATION BUDGET

	FY 78			FY 79			FY 80			FY 81			LIFE OF PROJECT		
	FX	LC	TOTAL	FX	LC	TOTAL	FX	LC	TOTAL	FX	LC	TOTAL	FX	LC	TOTAL
TECHNICAL ASSISTANCE /a															
Planning	1,225.0	9.6	1,234.6	-0-	9.6	9.6	850.0	17.6	867.6	-0-	37.6	37.6	2075.0	74.4	2149.4
Ag. Production	387.5	12.0	399.5	-0-	12.0	12.0	425.0	12.0	437.0	-0-	12.0	12.0	812.5	48.0	860.5
*Other Economic	375.0	11.6	386.6	-0-	11.6	11.6	250.0	11.6	261.6	-0-	-0-	-0-	625.0	34.8	659.8
Infrastructure															
Roads	312.5	-0-	312.5	-0-	-0-	-0-	550.0	-0-	550.0	-0-	-0-	-0-	862.5	-0-	862.5
Water	368.7	27.3	396.0	-0-	27.3	27.3	43.8	27.3	71.1	-0-	27.3	27.3	412.5	109.2	521.7
Conservation	250.0	-0-	250.0		-0-	-0-	112.5	-0-	112.5	-0-	-0-	-0-	362.5	-0-	362.5
sub-total	2918.7	60.5	2979.2		60.5	60.5	2231.3	68.5	2299.8	0	76.9	76.9	5150.0	266.4	5416.4
TRAINING /b															
Planning	289.0	21.0	310.0	36.2	21.0	57.2	36.2	21.0	57.2	5.0	21.0	26.0	366.4	84.0	450.4
Ag. Production	21.0	18.0	39.0	21.0	18.0	39.0	21.0	18.0	39.0	-0-	18.0	18.0	63.0	72.0	135.0
Other Economic	-0-	-0-	-0-	16.0	-0-	16.0	16.0	-0-	16.0	-0-	-0-	-0-	32.0	-0-	32.0
Infrastructure															
Roads	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-
Water	-0-	2.0	2.0	-0-	2.0	2.0	-0-	2.0	2.0	-0-	2.0	2.0	-0-	8.0	8.0
Conservation	-0-	-0-	-0-	48.3	-0-	48.3	-0-	-0-	-0-	-0-	-0-	-0-	48.3	-0-	48.3
sub-total	310.0	41.0	351.0	121.5	41.0	162.5	73.2	41.0	114.2	5.0	41.0	46.0	509.7	164.0	673.7
COMMODITIES															
Planning	213.6	57.0	270.6	-0-	31.5	31.5	-0-	31.5	31.5	-0-	31.5	31.5	213.6	151.5	365.1
*Ag. Production	342.1	368.5	710.6	51.7	423.5	475.2	50.6	434.0	484.6	40.1	405.3	445.4	484.5	1631.3	2115.8
*Other Economic	66.7	58.6	125.3	39.1	42.0	81.1	15.5	29.9	45.4	8.6	29.9	38.5	129.9	160.4	290.3
Infrastructure															
Roads	1858.8	60.4	1919.2	216.4	220.5	436.9	216.4	166.4	382.8	-0-	66.3	66.3	2291.6	513.6	2805.2
*Water	237.8	241.1	478.9	19.8	341.1	360.9	82.8	907.2	990.0	82.8	887.2	970.0	423.2	2376.6	2799.8
Conservation	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-
sub-total	2719.0	785.6	3504.6	327.0	1058.6	1385.6	365.3	1569.0	1934.3	131.5	1420.2	1551.7	3542.8	4833.4	8376.2
OTHER COSTS (Evaluations)	-0-	-0-	-0-	50.0	-0-	50.0	-0-	-0-	-0-	75.0	-0-	75.0	125.0	-0-	125.0
TOTAL	5947.7	887.1	6834.8	498.5	1160.1	1658.6	2669.8	1678.5	4348.3	211.5	1538.1	1749.6	9327.5	5263.8	14591.3

a/ 24 mo. forward funding of U.S. TA
b/ Includes forward funding 10 U.S. long-term participants

*Contain amounts not ready for obligation

TABLE IV

PLANNING, IMPLEMENTATION & EVALUATION - YEARLY REQUIREMENTS BUDGET

	YEAR 1		YEAR 2		YEAR 3		YEAR 4		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
TECHNICAL ASSISTANCE										
Long-term (U.S.)[a]										
Regional Economist/Planner (4 p.y.)	87.5		87.5		87.5		87.5		350.0	
Rural Development Specialist (3x4 p.y.)	262.5		262.5		262.5		262.5		1050.0	
Short-term (U.S.)[b]										
Management Information Specialist (24 pm)	75.0		75.0		75.0		75.0		300.0	
Arusha Plan (30 pm)	375.0								375.0	
Long-term (Local)										
Data Collectors ($400 p.a.)		9.6		9.6		17.6		37.6		74.4
Sub-total Technical Assistance	800.0	9.6	425.0	9.6	425.0	17.6	425.0	37.6	2075.0	74.4
TRAINING										
Long-term (U.S.)[c]										
MA. in regional planning (10 degrees for 2 yrs./ea.	28.4		142.0		113.6				284.0	
Short-term (U.S.)[d]										
Study/Work tour in (4 for 4 mo/ea)			20.8		20.8				41.6	
Socio-economic evaluation (2 for 4 mo/ea)			10.4		10.4				20.8	
Short-term (Africa)[e]										
Study tours to area development projects (8 for 1 mo/ea @ $2,500)	5.0		5.0		5.0		5.0		20.0	

TABLE IV

PLANNING, IMPLEMENTATION & EVALUATION - YEARLY REQUIREMENTS BUDGET

	YEAR 1		YEAR 2		YEAR 3		YEAR 4		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
In-Country Training f/										
Communication Seminars (6 sessions p.a. @ $1,500)		9.0		9.0		9.0		9.0		36.0
Planning & Management Seminars (6 sessions p.a @ $1,500)		9.0		9.0		9.0		9.0		36.0
Data Collection (2 sessions p.a. @ $1,500)		3.0		3.0		3.0		3.0		12.0
Sub-total Training	33.4	21.0	178.2	21.0	149.8	21.0	5.0	21.0	366.4	84.0
COMMODITIES										
Facilities										
House Trailers (2 @ $31,000)	62.0								62.0	
Housing Construction 1 @ $40,000	32.0	8.0							32.0	8.0
1 @ $45,000	36.0	9.0							36.0	9.0
Transportation										
Landrovers (5 @ $12,000)	60.0								60.0	
125 cc Motor cycles (18@ $1,000)	18.0								18.0	
Operating Costs g/										
Landrovers (5 @ $4,000 p.a.)		20.0		20.0		20.0		20.0		80.0
Motorcycles (18 @ $500 p.a.)		9.0		9.0		9.0		9.0		36.0
In-country Air Travel		2.0		2.0		2.0		2.0		8.0
Equipment & Supplies										
Printing		2.5								2.5
Hand Calculators (15@ $75)	1.1								1.1	
Desk Calculators (4 @ $325)	1.3								1.3	
Duplicating Stencil Machine (4 @ $450)	1.8								1.8	
Typewriters (5 @ $275)	1.4								1.4	
Expendable Supplies		.5		.5		.5		.5		2.0
Furniture (4 @ $1,500)		6.0								6.0
Sub-total Commodities	213.6	57.0	-0-	31.5	-0-	31.5	-0-	31.5	213.6	151.5

TABLE [illegible]

PLANNING, IMPLEMENTAT[illegible] & EVALUATION - YEARLY REQUIREMENTS BUDGET

	YEAR 1		YEAR 2		YEAR 3		YEAR 4		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
OTHER COSTS - Evaluations			50.0				75.0		125.0	
TOTAL - PLANNING, IMPLEMENTATION & EVALUATION	1047.0	87.6	653.2	62.1	574.8	70.1	505.0	90.1	2,780.0	309.9

TABLE V

AGRICULTURAL PRODUCTION - YEARLY REQUIREMENTS BUDGET

	YEAR 1		YEAR 2		YEAR 3		YEAR 4		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
TECHNICAL ASSISTANCE										
Long-Term (U.S.) a/										
Agricultural Specialist (4 p.y.)	87.5		87.5		87.5		87.5		350.0	
Agricultural Economist (1 p.y.)	87.5								87.5	
Short-Term (U.S.) b/										
30 p.m. (e.g. Plant Scientist, Animal Scientist, Crop Storage Specialist, Livestock and Crop specialists)			125.0		125.0		125.0		375.0	
Long-Term (Local)										
District Ag. Officer (6 @ $2000 p.a.)		12.0		12.0		12.0		12.0		48.0
Sub-Total Technical Assistance	175.0	12.0	212.5	12.0	212.5	12.0	212.5	12.0	812.5	48.0
TRAINING										
Short-Term (Africa) g/										
District Level in Farming systems/ Crop Specific (3 p.a. for 4 mos.)	21.0		21.0		21.0				63.0	
In-Country f/										
Ag and Livestock Officers (6 p.a. @ $1,500)		9.0		9.0		9.0		9.0		36.0
Village-Level (6 p.a.@ $1,500)		9.0		9.0		9.0		9.0		36.0
Sub-Total Training	21.0	18.0	21.0	18.0	21.0	18.0	-0-	18.0	63.0	72.0

TABLE V

AGRICULTURAL PRODUCTION - YEARLY PROJECTED BUDGET

	YEAR 1		YEAR 2		YEAR 3		YEAR 4		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
COMMODITIES										
Facilities										
Ag & Livestock Field Officers										
Housing (6 @ $15,000)		90.0								90.0
* Farm Centers (42 @ $15,000)	18.0	162.0(8)	27.0	153.0(12)	27.0	153.0(12)	22.5	127.5(10)	94.5	535.5
Village Storage Facilities (50 @ $8,000)		48.0(3)		120.0(15)		120.0(15)		120.0(15)		400.0
* Supplies for Demonstrations, soil testing, etc.	5.0	10.0	10.0	15.0	10.0	20.0	5.0	15.0	30.0	60.0
Transportation										
Land Rover (6 @ $12,000)	72.0								72.0	
Land Rover Pickup (6 @ [illegible])	72.0								72.0	
Tractor Truck (6 @ $22,[illegible])	132.0								132.0	
125 cc Motorcycles (40 @ $1,000)	12.0		12.0		9.0		9.0		42.0	
Operating Costs										
Land Rover (6 @ $4,000 p.a.)		24.0		24.0		24.0		24.0		96.0
Pickup (6 @ $4,000 p.a.)		24.0		24.0		24.0		24.0		96.0
Tractor Truck (6 @ $6,000 p.a.)		36.0		36.0		36.0		36.0		144.0
Motorcycles ($500 p.a.)		6.0		11.0		15.5		20.0		52.5
In-Country Air Travel		2.0		2.0		2.0		2.0		8.0
Sub-Total	311.0	335.0	47.0	383.0	46.0	394.5	36.5	368.5	440.5	1483.0
Contingency 10%	31.1	33.5	4.7	38.3	4.6	39.5	3.6	36.8	44.0	148.3
Sub-Total Commodities	342.1	368.5	51.7	421.5	50.6	434.0	40.1	405.3	484.5	1631.3
TOTAL AG. PRODUCTION	549.1	798.5	285.2	413.5	784.1	444.0	252.6	433.3	1367.0	1751.3

TABLE VI

OTHER ECONOMIC ACTIVITIES - YEARLY REQUIREMENTS BUDGET

	YEAR 1		YEAR 2		YEAR 3		YEAR 4		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
TECHNICAL ASSISTANCE										
Long-Term (U.S.) a/										
Appropriate Technology Specialist (3 p.y.)	87.5		87.5		87.5				262.5	
Rural Industries Specialist (3yy)	87.5		87.5		87.5				262.5	
Short-Term (U.S.) b/										
Management/Accounting (3 p.m.)			12.5		12.5		12.5		37.5	
Ag Processing (5 p.m.)			12.5		25.0		25.0		62.5	
Long-Term (Local)										
Center Staff (2 @ $2000 ea/p.a.)		4.0		4.0		4.0				12.0
Economist (1 @ $2500 p.a.)		2.5		2.5		2.5				7.5
Sociologist (1 @ $2500 p.a.)		2.5		2.5		2.5				7.5
Laborer (2 @ $600 ea/p.a.)		1.6		1.6		1.6				4.8
Clerk-Typist (1 @ $1000 p.a.)		1.0		1.0		1.0				3.0
Sub-Total Tech. Assistance	175.0	11.5	200.0	11.6	212.5	11.6	37.5	-0-	625.0	34.8
TRAINING										
Short-Term (Africa) c/										
Study Tour (8 for 2 mo/ea)			16.0		16.0				32.0	
Sub-Total Training			16.0		16.0				32.0	

TABLE VI

OTHER ECONOMIC ACTIVITIES - YEARLY REQUIREMENTS BUDGET

	YEAR 1		YEAR 2		YEAR 3		YEAR 4		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
COMMODITIES										
* Facilities - Appropriate Technology Center	8.0	32.0							8.0	32.0
TRANSPORTATION										
Land Rover (2 @ $12,000)	24.0								24.0	
Land Rover Pickup (2 @ $12,000)	24.0								24.0	
Motorcycle (2 @ $1,000)	2.0								2.0	
Operating Costs										
Land Rover (2 @ $4000 p.a.)		8.0		8.0		8.0		8.0		32.0
Pickup (2 @ $4000 p.a.)		8.0		8.0		8.0		8.0		32.0
Motorcycle (2 @ $500 p.a.)		1.0		1.0		1.0		1.0		4.0
In-Country Travel		2.0		2.0		2.0		2.0		8.0
* Equipment & Supplies for Center										
Office Furniture (7 sets @$1500)				10.5						10.5
Workshop Tools, benches, cabinets			5.0		3.0		2.0		10.0	
Library & Documentation Units			20.0		5.0				25.0	
Prototypes			5.0		2.5		2.5		10.0	
Office Equipment (Duplicator=$450; Typewriters=2 @ $275)			1.0						1.0	
Expendable Supplies			3.0	7.0	3.0	7.0	3.0	7.0	9.0	21.0
Sub-Total	58.0	51.0	34.0	36.5	13.5	26.0	7.5	26.0	113.0	139.5
Contingency 15%	8.7	7.5	5.1	5.5	2.0	3.9	1.1	3.9	16.9	20.9
	66.7	58.6	39.1	42.0	15.5	29.9	8.6	29.9	129.9	160.4
Other Economic Activities - TOTAL	241.7	70.2	255.1	53.6	244.0	41.5	46.1	29.9	786.9	195.2

TABLE VII

SOCIAL AND ECONOMIC INFRASTRUCTURE - YEARLY REQUIREMENTS BUDGET

A. ROAD SYSTEMS

	YEAR 1		YEAR 2		YEAR 3		YEAR 4		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
TECHNICAL ASSISTANCE										
Long-Term (U.S.) a/										
Road Operations Manager (3 p.y.)			87.5		87.5		87.5		262.5	
Equipment Maintenance Specialist (3 py)			87.5		87.5		87.5		262.5	
Construction Engineer (3 p.y.)			87.5		87.5		87.5		262.5	
Short-Term (U.S.) b/										
Transport Economist (6 pm @ $12,500 p.m.)	25.0		25.0		12.5		12.5		75.0	
Sub-Total Technical Assistance	25.0		287.5		275.0		275.0		862.5	
TRAINING										
No Cost. All On-Job-Training										
COMMODITIES										
Equipment, Spare Parts & Supplies										
Dozer D-7 (2 @ $105,000)	210.0								210.0	
Grader Cat-130 (3 @ $69,000)	207.0								207.0	
Loader Cat-930 (1 @ $58,000)	58.0								58.0	
Dump Truck 5-7 yd (8@$31,000)	248.0								248.0	
Farm Tractor 75 hp (10@$15,000)	150.0								150.0	
Tipping Trailer (15 @ $4,500)	67.5								67.5	
Land Rover Pickup (6@ $12,000)	72.0								72.0	
Towed Service Trailer (2@$25,000)	50.0								50.0	
Towed Low Boy (1 @ $20,000)	20.0								20.0	
Towed Roller (3 @ $5,000)	15.0								15.0	
Water Trailer, 750 g (5 @ $5,000)	25.0								25.0	
Fuel Tank, 750 g (5 @ $5,000)	25.0								25.0	
Mechanic Tools (5 @ $500)	2.5								2.5	
District Workshop Tools (2 @ $12,500)	25.0								25.0	
Regional Workshop Tools (1@$25,000)	25.0								25.0	
Water Pump (2 @ $1,500)	3.0								3.0	
Sub-Total	1203.0								1203.0	

TABLE VII

SOCIAL AND ECONOMIC INFRASTRUCTURE - YEARLY REQUIREMENTS BUDGET

	YEAR 1		YEAR 2		YEAR 3		YEAR 4		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
COMMODITIES (Contract)										
Sub-Total (Carried Over)	1203.0								1203.0	
Inflation @ 1.5% pm x 6 mo = 9%	108.3								108.3	
	1311.3								1311.3	
Spare Parts @ 45% purchase value	196.7		196.7		196.7				590.1	
	1508.0		196.7		196.7				1901.4	
Contingency 10%	150.8		19.7		19.7				190.2	
Sub-Total	1658.8		216.4		216.4				2091.6	
Materials for Drainage										
Fords (21 @ .8)		2.4		7.2		7.2				16.8
Culverts (276 @ .5)		38.0		50.0		50.0				138.0
		40.4		57.2		57.2				154.8
Mobilization POL & Labor Costs										
Mobilization	200.0								200.0	
Operating Costs										
Secondary Roads (276 miles@$582)		20.0		100.0		40.6				160.6
Feeder Roads (200 miles @ $116)				5.0		10.3		7.9		23.2
Direct Labor Costs (3 crews of 25 at $600/ea. plus $40,000 contingency for additional labor)				58.3		58.3		58.4		175.0
Sub-Total Commodities	1858.8	60.4	216.4	220.5	216.4	166.4	-0-	66.3	2291.6	513.6
TOTAL ROAD SYSTEMS	1883.8	60.4	503.9	220.5	491.4	166.4	275.0	66.3	3154.1	513.6

No Contingency or Inflation on Total. Sub-Totals Contain Such Factors.

TABLE VII.

SOCIAL AND ECONOMIC INFRASTRUCTURE - YEARLY REQUIREMENTS BUDGET

B. WATER SYSTEMS AND IRRIGATION	YEAR 1		YEAR 2		YEAR 3		YEAR 4		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
TECHNICAL ASSISTANCE										
Long-term (U.S.)[a]										
Water Systems Construction Specialist (4 pm)	43.7		87.5		43.8				175.0	
Short-term (U.S.)[b]										
Hydrologist (6 pm)	37.5		37.5						75.0	
Water Quality Chemist (1 pm)	12.5								12.5	
Water Systems Engineer (6 pm)	37.5		37.5						75.0	
Irrigation Systems Specialist (6 pm)	37.5		37.5						75.0	
Long-term (Local)										
Pipefitters (2 @ $1,500 x 3 crews)		9.0		9.0		9.0		9.0		36.0
Mason (1 @ $1,500 x 3 crews)		4.5		4.5		4.5		4.5		18.0
Clerk (1 @ $800 x 3 crews)		2.4		2.4		2.4		2.4		9.6
Watchman (1 @ $800 x 3 crews)		2.4		2.4		2.4		2.4		9.6
Water Technician (1 @ $1,500 x 3 crews)		4.5		4.5		4.5		4.5		18.0
Sr. Water Technician (1 @ $1,500 x 3 crews)		4.5		4.5		4.5		4.5		18.0
Sub-total Technical Assistance	168.7	27.3	200.0	27.3	43.8	27.3	-0-	27.3	412.5	109.2
Training										
Seminars/Workshops (2 p.a. @ $1,000)		2.0		2.0		2.0		2.0		8.0
Sub-total Training	-o-	2.0	-o-	2.0	-o-	2.0	-o-	2.0	-o-	8.0
Commodities										
Water Systems (14 Villages surveyed)	19.8	179.1	19.8	179.1					39.6	358.2
Water Systems (38 villages (includes 15% contingency)					82.8	745.2	82.8	745.2	165.6	1,490.4
*Irrigation Systems				100.0		100.0		80.0		280.0

TABLE VII

SOCIAL AND ECONOMIC INFRASTRUCTURE - YEARLY REQUIREMENTS BUDGET

	YEAR 1		YEAR 2		YEAR 3		YEAR 4		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
Transportation										
Landrover Pickup (6 @ $12,000)	72.0								72.0	
Seven-ton Trucks (6 @ $16,000)	96.0								96.0	
Operating Costs:[a]										
Landrover Pickup (6 @ $4,000 p.a.)		24.0		24.0		24.0		24.0		96.0
Trucks (6 @ $6,000 p.a.)		36.0		36.0		36.0		36.0		144.0
Spares for Existing Equipment	50.0								50.0	
In-country Travel		2.0		2.0		2.0		2.0		8.0
Sub-total Commodities	237.8	241.1	19.8	341.1	82.8	907.2	82.8	887.2	423.2	2,376.6
Total-Water Systems and Irrigation	406.5	270.4	219.8	370.4	126.6	936.5	82.8	916.5	835.7	2,493.8

TABLE VII

SOCIAL AND ECONOMIC INFRASTRUCTURE - YEARLY REQUIREMENTS BUDGET

C. CONSERVATION	YEAR 1 FX	YEAR 1 LC	YEAR 2 FX	YEAR 2 LC	YEAR 3 FX	YEAR 3 LC	YEAR 4 FX	YEAR 4 LC	TOTAL FX	TOTAL LC
TECHNICAL ASSISTANCE										
Short-term (U.S.)[b/]										
Range management (7 pm)	37.5		25.0		25.0				87.5	
Land-use Planner (7 pm)	37.5		25.0		25.0				87.5	
Soil & Water Conservation (7 pm)	37.5		25.0		25.0				87.5	
Environmental Specialist (8 pm)	37.5		25.0		25.0		12.5		100.0	
Sub-total Technical Assistance	150.0	-0-	100.0	-0-	100.0	-0-	12.5	-0-	362.5	-0-
Training										
Short-term (U.S.)[d/]										
Work/study tours in land-use planning/ conservation (3 for 6 mo/ea)			43.8						43.8	
Short-term (Africa)[e/]										
Study tours to conservation projects (3 for 1 mo/ea)			4.5						4.5	
Sub-total Training			48.3						48.3	
TOTAL Conservation	150.0	-0-	148.3	-0-	100.0	-0-	12.5	-0-	410.8	-0-

TABLE VIII

TANGOV CONTRIBUTION

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	TOTAL
Technical Assistance 1/	21.0	30.0	32.0	35.0	118.0
Housing Office 2/	70.0	85.0	90.0	94.0	339.0
Equipment	200.0	50.0	-0-	-0-	250.0
Production Inputs 3/	400.0	500.0	550.0	600.0	2050.0
Water Construction	40.0	50.0	50.0	50.0	190.0
Road Labor 4/	10.0	30.0	30.0	30.0	100.0
Labor (Self-Help) 5/	50.0	250.0	500.0	700.0	1500.0
Parastatal Projects 6/	100.0	300.0	400.0	500.0	1300.0
Other	100.0	150.0	175.0	200.0	625.0
	991.0	1445.0	1827.0	2209.0	6472.0

1/ Includes PMO planning team members, A.T. Center staff, etc.

2/ Includes housing for eight full time Arusha based staff.

3/ Mainly NMP inputs, veterinary supplies, etc.

4/ TanGov supplied equipment operators, etc.

5/ Estimated for 200 miles feeder roads, construction of storage facilities, etc.

6/ Including Pyrethrum Board, Livestock Authority, etc.

FOOTNOTES

* Items not sufficiently planned for obligation.

a/ Long-Term U.S. Technician costs are based on the following:

(Two year contract for one technician with spouse and three children. Duty Station - Arusha Region)

1.	Salary	60,000
2.	Post Differential (15%)	9,000
3.	Organizational Benefits Allowance	1,700
4.	Travel to Post	5,000
5.	Air Freight/Return	1,000
6.	Medical disability insurance	600
7.	Temporary lodging	1,000
8.	Quarters allowance	5,000
9.	Education allowance/Educational travel	20,000
10.	Home Leave/Return	10,000
11.	Guard Services	4,000
12.	R&R Travel	5,125
13.	In-Country Travel	5,000
14.	Furnishing Allowance	1,500
15.	Storage	1,000
16.	Miscellaneous and Contingency	4,825
17.	Overhead	40,250
	TOTAL TWO YEARS	175,000
	Average Technician Cost per year	87,500

b/ Short-Term U.S. Technical Assistance - (per person month)

1.	Salary - 27 days @ $150/day	$ 4,050
2.	Travel and Transportation	1,500
3.	Per Diem - 31 days @ $42/day	1,302
4.	Miscellaneous (including secretarial support, medical, visas)	100
	Sub-Total	6,952
	Overhead Estimated at 80%	5,562
	TOTAL	$ 12,514
	ROUNDED	$ 12,500

c/ Long-Term Academic Training (@ 1,100 per month = 13,200 per year plus travel)

1.	OIT Costs	$ 1,200
2.	RSSA Costs (USDA)	2,460
3.	Communication Seminar	375
4.	Books	240
5.	Equipment (Requires Special Authorization)	150
6.	Master's Thesis	200 1/
7.	Typing Academic Papers	125
8.	Shipment/Mailing of Books (Master's/B.S.)	60
9.	Professional Society Memberships	75
10.	U.S. Travel	415
11.	Maintenance & Per Diem Allowances	4,100 2/
	Sub-Total	9,400
	Tuition Fees	3,800 3/
	Sub-Total	13,200
	Round Trip International Airfare	2,000
	TOTAL	$ 15,200

$1,100 per mo. = $13,200 per year excluding travel.
$2,000 each partitipant = travel

1/ $500 Thesis
2/ Range is from $200 to $425 per month
3/ Ranges up to $10,000 for Yale, Williams, etc.

d/ Short-Term U.S. Technical Training (@ $2,100 per mo. plus travel)

1.	Tuition/Training Fees per month	600
2.	Per Diem @ $35 per day	1,050
3.	Books	115
4.	Shipment of Books	30
5.	Professional Society Membership	100
6.	U.S. Travel - compute individually	
	Sub-Total	1,895
	USDA Costs	205
		2,100 a month excluding travel
	Travel	2,000 Round Trip

e/ Short-Term Technical (Africa) (per person month)

1.	Tuition (per month)	$ 400
2.	Per Diem @ $35/day	1,050
3.	Books	25
4.	Shipment of Books	30
	TOTAL	$ 1,505
	Rounded to exclusive of travel	1,500
	Airfare per Round Trip	1,000

f/ In-Country Seminars/Workshops

1.	Local Consultant - 5 days @ $25/day	125
2.	Per Diem - 7 days @ $21/day	147
3.	Travel and Transportation	200
4.	Materials -- Preparation (10 local consultant days)	250
	Reproduction (50 sets @ $5)	250
5.	Participants -- Site Rental 50 @ $1.50	75
	Per Diem 50 @ $5.00	250
6.	Miscellaneous	250
	TOTAL	$ 1,547
	ROUNDED TO	$ 1,500

g/ Recurring Costs for Vehicles

	Pickups & Landrovers	Trucks	Motorcycles
Fuel	2,600	3,500	250
Parts	1,000	1,650	125
Repairs	300	700	100
Insurance	100	150	25
	$4,000	$6,000	$500

No registration, duty or sales tax.

h/ See Annex D of Volume II for itemized cost breakdown on road systems.

i/ See Annex E of Volume II for itemized cost breakdown on water systems.

A P P E N D I X C

Statutory Checklist

APPENDIX C

STATUTORY CHECKLIST
6 C (1) Country Checklist

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. See social soundness analysis in PP.
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
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?	Not to our knowledge.

5.	FAA Sec. 620(a)(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?	The TanGov has nationalized a coffee estate (1973), a gasoline station and adjacent buildings (1972) and two houses (1972) previously wholly owned by U.S. citizens. The TanGov has taken some steps to resolving these obligations in recent months.
6.	FAA Sec. 620(f): App. Sec. 107 Is recipient country a Communist country? Will assistance be provided to the Socialist Republic of Vietnam, Cambodia, Laos or Uganda?	No
7.	FAA Sec. 620(i). 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?	Not to our knowledge
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?	No
9.	FAA Sec. 620(l). 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, a. has any deduction required by Fishermen's Protective Act been made? b. has complete denial of assistance been considered by AID Administrator?	TanGov has not, to our knowledge, seized or imposed any penalty or sanction against U.S. fishing activities in international waters.
11.	FAA Sec. 620(q); App. Sec. 504. (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?	No
12.	FAA Sec. 620(s). What percentage of country budget is for military expenditures? How much of foreign exchange resources spent on military equipment? How much spent for the purchase of sophisticated weapons systems? (Consideration of these points is to be coordinated with the Bureau for Program and Policy Coordination, Regional Coordinators and Military Assistance Staff (PPC/RC.)	Over past few years military budget has remained about 12 percent of total Tanzanian budget. The FY 78 Budget devotes $141 million capital and recurrent expenditures about half of which is foreign exchange. See Embassy reporting for information on purchase of sophisticated weapons systems.
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 determing the current AID Operational Year Budget?	Payments are current.
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
16.	FAA Sec. 659. If (a) military base is located in recipient country and was constructed or is being maintained or operated with funds furnished by the United States, and (b) U.S. personnel carry out military operations from such base, has the President determined that the government of recipient country is authorized regular access to U.S. correspondents to such base?	No such military base exists in recipient country.
17.	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
18.	FAA Sec. 669. Has the country delivered or received nuclear reprocessing or enrichment equipment, materials or technology, without specified arrangements on safeguards, etc.?	No
19.	FAA Sec. 670. Has the country delivered or received nuclear reprocessing equipment material or technology? Is the country not a "nuclear-weapon state" as defined in Article IX(3) of the Treaty on Non-Proliferation of Nuclear Weapons and which detonates a nuclear explosive device?	No

20. 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

a. FAA Sec. 102(c),(d). Have criteria been established, and taken into account, to assess commitment and progress of country in effectively involving the poor in development, on such indexes as: (1) small-farm labor intensive agriculture, (2) reduced infant mortality, (3) population growth, (4) equality of income distribution, and (5) unemployment.	Being satisfactorily considered.
b. FAA Sec. 201(b)(5),(7) & (8): Sec. 208; 211(a)(4), (7). Describe extent to which country is:	
(1) Making appropriate efforts to increase food production and improve means for food storage and distribution.	Country currently undertaking program with goal of reaching food self-sufficiency by 1981 Program includes grain storage and marketing components.
(2) Creating a favorable climate for foreign and domestic private enterprise and investment.	Tanzania's socialist policy and development strategy stress public investment. Tanzania has a Foreign Investment Protection Act and has entered into an Investment Guaranty Agreement.
(3) Increasing the public's role in the development process.	The government is attempting to implement decentralization plan which places decision making responsibility for development programs at the regional, district and village levels.
(4) (a) Allocating available budgetary resources to development.	Satisfied. In recent years, recipient country has experienced difficulty increasing budget because of drought and balance of payments problems caused largely by oil crisis.

(b) Diverting such resources resources for unnecessary military expenditure and intervention in affairs of other free and independent nations.	Budgeted Defense expenditures have averaged about 12% of total since FY 75. Recipient country has a record of non-intervention into affairs of other free and independent nations.
(5) Making economic, social, and political reforms such as tax collection improvements and changes in land tenure arrangements, and making progress toard respect for the rule of law, freedom of expression and of the press, and recognizing the importance of individual freedom, initiative, and private enterprise.	Tanzania is committed to an egalitarian system of distribution for land and wealth. Tanzania is weak in conventional political and legal rights. The one party system controls internal media and does not allow dissent from basic party government policies. Detention without trial is not uncommon. In early 1978 the government released a number of detainees.
(6) Otherwise responding to the vital economic, political, and social concerns of its people, and demonstrating a clear determination to take effective self-help measures.	The TanGov development policy is specifically aimed at poorer classes, and at improving equality of opportunity and welfare for all people.
c. FAA Sec. 201(b), 211(a). Is the country among the 20 countries in which development assistance loans may be made in this fiscal year, or among the 40 in which development assistance grants (other than for self-help projects) may be made?	Tanzania is in the latter group.
d. FAA Sec. 115. Will country be furnished, in same fiscal year, either security supporting assistance, or Middle East peace funds? If so, has the Congress specifically authorized such funds, or is assistance for population programs, humanitarian aid through international organizations, or regional programs?	No. Recipient country will receive development assistance.
2. Security Supporting Assistance Country Criteria	Not applicable.
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?	
b. FAA Sec. 531. Is the Assistance to be furnished to a friendly country, organization, or body eligible to receive assistance?	Not applicable.
c. 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?	"

II. Project Checklist

A. General Criteria for Project

1. App. Unnumbered: FAA Sec. 653(b)

(a) Describe how Committees on Appropriations of Senate and House have been or will be notified concerning the project;	(a) Project in FY 78 C.P. Advice of program change will be submitted to Congress advising of increase in amount to be obligated in FY 78.
(b) is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than $1 million over that figure plus 10%)?	(b) Assistance is within country allocation reported to Congress in OYB.

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?	(a) Yes (b) Yes. See Technical, financial analyses in PP for explanation of satisfaction of Section 646 (1).

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?	Further legislation not 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 Memorandum of the President dated Sept. 5, 1973 (replaces Memorandum of May 15, 1962; see Fed.Register, Vol 38, No. 174, Part III, Sept. 10, 1973)?	Least cost analysis and hydrological analysis have been conducted. See economic analysis.
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?	Yes. See Appendix D.
6.	FAA Sec. 209, 619. Is project susceptible of execution as part of regional or multilateral 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 multilateral organizations or plans to the maximum extent appropriate?	Project is directed toward Tanzania's villagers. There are no known regional (inter-country) implications. Project not directly compatible with existing or planned multi-lateral programs.
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	(a) the project is not directed at the National level and it is unlikely that the project will increase international trade; (b) assistance is planned to develop small-scale local enterprises; (c) Project will encourage use of credit

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.	opportunities and thrust of Agr. production activities is to increase efficiency of agr. systems in subject villages of Arusha Region; (d) project will promote small farmer initiative; (e) a major activity will include efforts to improve agricultural efficiency and production; (f) the project will encourage the development of cooperatives.
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).	Project will not likely encourage U.S. private trade and investment in Tanzania.
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.	The government contributes local currency for support of projects on a pro rata basis for each project technician. The U.S. does not own foreign currencies in Tanzania.
10. FAA Sec. 612(d). Does the U.S. own excess foreign currency and, if so, what arrangements have been made for its release?	No. The U.S. does not own excess foreign currency.

B. Funding Criteria for Project

1. Development Assistance Project Criteria

a. FAA Sec. 102(c); Sec. 111; Sec. 281a. Extent to which activity will (a) effectively	(a) The primary focus of project activity is at the village level. A complementary effort is to strengthen

involve the poor in development, by extending access to economy at local level, increasing labor-intensive production, spreading investment out from cities to small towns and rural areas; and (b) help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward better life, and otherwise encourage democratic private and local governmental institutions?

regional, district and ward level government institutions.
(b) assistance to develop small-scale local institutions is planned by providing technical assistance and in-country training.

b. FAA Sec. 103, 103A, 104, 105, 106, 107. Is assistance being made available: (include only applicable paragraph--eg., a, b, etc.--which corresponds to source of funds used. If more than one fund source is used for project, include relevant pargraph for each fund source.)

(1) Sec. 103 - for agriculture, rural development or nutrition; if so, extent to which activity is specifically designed to increase productivity and income of rural poor; (103A) if for agricultural research, is full account taken of needs of small farmers;

The project goal is to increase the wellbeing, production and income of rural residents of Arusha Region. Primary attention is to increased agricultural production and providing services to market those products.

c. FAA Sec. 110(a); Sec. 208(e). Is the recipient country willing to contribute funds to the project, and in what manner has or will it provide assurances that it will provide at least 25% of the costs of the program, project, or activity with respect to which the assistance is to be furnished (or has the latter cost-sharing requirement been waived for a "relatively least-developed" country)?

Tanzania is a relatively least developed country, however the 25% cost sharing requirement is met by the TanGov.

d. FAA Sec. 110(b). Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to Congress been made, and efforts for other financing?	Yes. Length of project described in FY 78 and FY 79 Congressional Presentation.
e. FAA Sec. 207: Sec. 113. Extent to which assistance reflects appropriate emphasis on: (1) encouraging development of democratic, economic, political, and social institutions; (2) self-help in meeting the country's food needs; (3) improving availability of trained workers-power in the country; (4) programs designed to meet the country's health needs; (5) other important areas of economic, political, and social development, including industry; free labor unions, cooperatives, and voluntary agencies; transportation and communication; planning and public administration; urban development, and modernization of existing laws; or (6) integrating women into the recipient country's national economy.	(1) The project approach is based on the concept that local participation is a prerequisite to development planning. (2) Village participation and provision of some local resource is a criteria for a particular village participation in the project. (3) Extensive in-country and on-job-training is planned. In addition, 10 participants will receive lon-term training in U.S. institutions. Various other short-term U.S. training programs are planned. (4) Supply of clean water sources is one project activity. Complementary AID-funded health projects are on-going in the Region. (5) Assistance to improve transportation and water systems, provide appropriate technology inputs and development of small-scale enterprises are planned. (6) Emphasis has been placed on training women agricultural officers and development of Farm Centers to assure project activities provide services to women.
f. FAA Sec. 281(b). Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage institutional development; and supports civic education and training in skills required for effective participation in governmental and political processes essential to self-government.	Planning for the project being done at village levels and attempts to have villagers identify their development needs. Project assistance is planned to improve local government capabilities to plan and implement these requests.

g. FAA Sec. 201(b) (2)-(4) and -(8); Sec. 201(e); Sec. 211(a)(1)-(3) and -(8). Does the activity give reasonable promise of contributing to the development: of economic resources, or to the increase of productive capacities and self-sustaining economic growth; or of educational or other institutions directed toward social progress? Is it related to and consistent with other development activities, and will it contribute to realizable long-range objectives? And does project paper provide information and conclusion on an activity's economic and technical soundness?	Yes. The accomplishment of this objective will be difficult to measure. An on-going monitoring system has been established. See Annex B. The project is consistent with both the Tanzania development objectives and the Congressional guidelines for assistance.
h. FAA Sec. 201(b)(6); Sec. 211(a)(5),(6). Information and conclusion on possible effects of the assistance on U.S. economy, with special reference to areas of substantial labor surplus, and extent to which U.S. commodities and assistance are furnished in a manner consistent with improving or safeguarding the U.S. balance-of-payments position.	Yes. A major portion of project funds (approximately $5.5 million) will be for U.S. Technical Assistance. Other costs (training and commodities) are requested from various sources; however, in most instances, these are of local or U.S. source.

6C(3) - STANDARD ITEM CHECKLIST

Listed below are statutory items which normally will be covered routinely in those provisions of an assistance agreement dealing with its implementation, or covered in the agreement by exclusion (as where certain uses of funds are permitted, but other uses not).

These items are arranged under the general headings of (A) Procurement, (B) Construction, and (C) Other Restrictions.

A. Procurement

1. FAA Sec. 602. Are there arrangements to permit U.S. small business to participate equitably in the furnishing of goods and services financed?	Yes. Small business will be eligible for prime contract financed under project.
2. FAA Sec. 604(a). Will all commodity procurement financed be from the U.S. except as otherwise determined by the President or under delegation from him?	Yes. Procurement will be undertaken in accordance current delegations and waivers as authorized.

3. FAA Sec. 604(b). Will all commodities in bulk be purchased at prices no higher than the market price prevailing in the United States at the time of purchase?	No bulk commodity purchases are to be financed under project.
4. FAA Sec. 604(c). Will all agricultural commodities available for disposition under the Agricultural Trade Development and Assistance Act of 1954, as amended, be procured in the United States unless they are not available in the United States in sufficient quantities to supply emergency requirements of recipients?	No such procurement is to be financed under this project.
5. FAA Sec. 604(d). If the cooperating country discriminates against U.S. marine insurance companies, will agreement require that marine insurance be placed in the U.S. on commodities financed?	Procurement will be done by USAID or U.S. contractor. Condition will be satisfied.
6. FAA Sec. 604(e). If offshore procurement of agricultural commodity or product is to be financed, is there provision against such procurement when the domestic price of such commodity is less than parity?	Not applicable. Only equipment, hardware and related materials will be procured.
7. FAA Sec. 608(a). Will U.S. Government excess personal property be utilized wherever practicable in lieu of the procurement of new items?	Yes.
8. FAA Sec. 901(b). (a) Compliance with requirement that at least 50 per centum of the gross tonnage of commodities (computed separately for dry bulk carriers, dry cargo liners, and tankers) financed shall be transported on privately owned U.S.-flag commercial vessels to the extent that such vessels are available at fair and reasonable rates.	Yes.
9. FAA Sec. 621. If technical assistance is financed, will such assistance be furnished to the fullest extent practicable as goods and professional and other services from private enterprise on a contract basis? If the facilities of	Technical assistance will be from U.S. private firm. No Federal agencies will be involved.

other Federal agencies will be utilized, are they particularly suitable, not competitive with private enterprise, and made available without undue interference with domestic programs?	
10. International Air Transport. Fair Competitive Practices Act, 1974 If air transportation of persons or property is financed on grant basis, will provision be made that U.S.-flag carriers will be utilized to the extent such service is available?	Yes, all contracts financed under the grant will contain a provision requiring utilization of U.S. Flag carriers to extent such service is available.
B. Construction	
1. FAA Sec. 601(d). If a capital (e.g., construction) project, are engineering and professional services of U.S. firms and their affiliates to be used to the maximum extent consistent with the national interest?	Yes, Although this is not a capital assistance project, per se, there is a significant capital component. To the extent possible, services of U.S. firms will be used.
2. FAA Sec. 611(c). If contracts for construction are to be financed, will they be let on a competitive basis to maximum extent practicable?	Yes
3. FAA Sec. 620(k). If for construction of productive enterprise, will aggregate value of assistance to be furnished by the U.S. not exceed $100 million?	Not applicable.
C. Other Restrictions	
1. FAA Sec. 201(d). If development loan, is interest rate at least 2% per annum during grace period and at least 3% per annum thereafter?	Not applicable.
2. FAA Sec. 301(d). If fund is established solely by U.S. contributions and administered by an international organization, does Comptroller General have audit rights?	Not applicable. There will be no contributions to an international organization under this project.

3. FAA Sec. 620(h). Do arrangements preclude promoting or assisting the foreign aid projects or activities of Communist-Bloc countries, contrary to the best interests of the U.S.?	No foreign aid projects or activities of Communist-Bloc countries are being undertaken or planned in project area.
4. FAA Sec. 636(i). Is financing not permitted to be used, without waiver, for purchase, long-term lease, or exchange of motor vehicle manufactured outside the U.S. or guaranty of such transaction?	Yes. The grant agreement will so provide.
5. Will arrangements preclude use of financing:	
a. FAA Sec. 114. to pay for performance of abortions or to motivate or coerce persons to practice abortions.	Yes. Project activities are defined sufficiently to preclude such use.
b. FAA Sec. 620(g). to compensate owners for expropriated nationalized property?	Yes "
c. FAA Sec. 660. to finance police training or other law enforcement assistance, except for narcotics programs?	Yes "
d. FAA Sec. 662. for CIA Activities?	Yes "
e. App. Sec. 103. to pay pensions, etc. for military personnel?	Yes "
f. App. Sec. 106. to pay U.N. assessments?	Yes "
g. App. Sec. 107. to carry out provisions of FAA Sections 209(d) and 251(h)? (transfer to multilateral organization for lending).	Yes "

A P P E N D I X D

Detailed Justification for Waivers

APPENDIX D

DETAILED JUSTIFICATION FOR WAIVERS

I. REQUEST FOR PROCUREMENT SOURCE/ORIGIN WAIVER

Problem: Request for Source Waiver from Geographic Code 941 (Selected Free World). AID Geographic Code 935 (Free World).

(a) Cooperating Country: United Republic of Tanzania
(b) Authorizing Document: PP and PAR II
(c) Project: Arusha Planning and Village Development
(d) Nature of Funding: Grant
(e) Description of Commodities and Approximate Value:

(i)	Thirty-three Landrover-type Vehicles and spare parts	$396,000 32,000	$428,000
(ii)	Sixty 125 cc Motorcycles & spare parts	60,000 23,125	83,125
(iii)	Construction materials		62,500
(iv)	Fifteen diesel pump engines (4 cyl)		12,000
(f)	Approximate Total:		$585,625

(g) Procurement Origin: United Kingdom, Japan, Spain, Italy
(h) Procurement Source: United Kingdom, Kenya, Japan

Justification for Procurement Source/Origin Waiver Requests

(i) Motor Vehicles

Discussion: Village Development activities are being initiated by the Government of Tanzania with AID support in three districts of Arusha Region. Transportation will be required for field trips and supervision of the village activities. Over 90 percent of the travel will be on poorly maintained secondary or unsurfaced roads off the main arteries. The main arteries themselves are often badly maintained. Indicative of the transportation problems to be confronted is the location of the districts and villages supported by the project. In each case the villages are located in remote sections of Arusha Region. Therefore, the need exists for especially ruggedly constructed vehicles which can be maintained by local mechanics using local facilities.

The types of "Land Rover" to be procured will be thirteen four-cylinder station wagons with a metal top, 109 inch wheelbase, four side and one rear door, and with a carrying capacity of 10 persons (including the driver) plus 200 lbs., and twenty four-cylinder pickup trucks with 109 inch wheelbase and a capacity of 1,000-2,000 lbs. A waiver is requested for these thirty-three vehicles and spare parts of an approximate value of $428,000.

U.S. manufactured vehicles, on the other hand, are not common in East Africa, including Tanzania. Section 636(i) of the Foreign Assistance Act of 1961, as amended, provides that none of the funds made available to carry out the Act shall be used to purchase motor vehicles unless such motor vehicles are manufactured in the United States. Section 636(i) further provides, "that where special circumstances exist, the President is authorized to waive the provisions of this section in order to carry out the provisions of the Act." In the Conference Report on the Foreign Assistance Act of 1967 (which added Section 636(i) to the Act) it was reported that the committee of conference was in agreement that motor vehicles manufactured in the United States should be procured except where there are emergency or special situations such as a need for right-hand drive or other types of vehicles not produced in the United States (House Report No. 892, dated November 7, 1967).

The Administrator has the authority to waive the provisions of Section 636(i) by virtue of Executive Order No. 10073 and State Department Delegation of Authority No. 104.

<u>Primary Justification</u>: Experience with American-made "Jeep Wagoneers" in Tanzania indicates that frequent breakdowns have been the rule rather than the exception and access to adequate supply of spare parts is impossible because of the wide dispersion of project vehicles. Even minor breakdowns prevent operation of U.S. vehicles for days and perhaps weeks while spare parts are obtained from Dar es Salaam or even the U.S. This situation becomes more serious yearly as U.S.-made vehicles get more complicated. The vehicles to be furnished under this project will be used very widely through Arusha Region often at considerable distances from the TanCov regional repair facilities. Project personnel must then depend on local village mechanics for maintenance and repairs.

It is impractical to attempt to stock adequate repair parts at each district for a U.S.-made vehicle which probably will be the only one of its type in the entire district.

A system of preventive maintenance for "land rovers" has been developed by the Ministry of Communications and Works. When breakdowns occur an adequate supply of parts is available in all cities and large towns, making it unnecessary to deadline the vehicle for long periods. The manufacturers of the "Land Rovers" has had long experience in Tanzania and can guarantee services which, until an American firm is established in Tanzania, will not be available. The rugged construction of the "Land Rover" plus its lighter weight than the jeep and other U.S. models, makes it more adaptable to road conditions in Tanzania. The Ministry of Agriculture and Arusha Region have strongly urged USAID/Tanzania to request this source/origin waiver in order to maintain the standardization of vehicles, (in this case Land Rovers) for which they must provide servicing and to enable the Tanzanian Government to provide the best possible transportation services to the Centers. Spare parts can be purchased locally, therefore, the TanGov has dependable, experienced mechanics familiar with the overall maintenance of Land Rovers. An adequate supply of spare parts is also available in the country to ensure continual operation and reduction of down time.

By law all driving in Tanzania is on the left hand side of the road. In view of the project need for ruggedly constructed right-hand drive vehicles with an adequate backup of drivers, mechanics, and spare parts and the unavailability of a comparable vehicle with maintenance and parts support from the United States, it is appropriate to exercise the waiver authority in these circumstances.

(ii) Motorcycles: The type of motorcycles to be procured will be a single cylinder (125 cc) "trail" model. There are no lightweight motorcycles of this type made in the United States. A waiver is requested for sixty 125 cc motorcycles and spare parts of an approximate value of $83,125.

Primary Justification

There is no experience with American made motorcycles in East Africa. The sole manufacturers do not produce the type of vehicle required and do not market or provide service or spare parts in Africa.

Motorcycles from Japan, and Spain are imported in large numbers into East Africa. Suppliers provide adequate spare parts and service facilities. More important, however, mechanics in rural areas are familiar with and can repair these vehicles.

(iii) Construction Materials: The project is undertaking construction of technician housing, Farm Centers, an Appropriate Technology Center and village storage units. Most construction materials will be of local source and origin. However, while certain materials are locally available they are of European manufacture. An origin waiver is therefore requested for approximately $62,500.

Primary Justification

First, materials such as window frames, plumbing fixtures, electrical fittings, etc., are normally imported from European manufacturers. For the most part, these are manufactured to standards (size, threads, units of measure, etc.) different from and incompatible with U.S. specifications. It is essential that facilities be constructed using fixtures and materials for which replacement parts and service facilities are readily available in Tanzania.

Second, it would not be practical to purchase U.S. items in the small quantities needed when dealers in Tanzania are equipped only to service and repair equipment made in Europe or Japan. Moreover, considering shipping costs and the small quantities involved, U.S. delivered prices would substantially exceed prices for comparable items procured in Tanzania.

The long lead time required to procure from the U.S. could delay project implementation if the construction of housing for AID-financed technicians were to be delayed. The severe shortage of housing in Tanzania and the normal length of time required for any construction makes it imperative that construction begin at the earliest possible date.

(iv) Diesel Pump Engines: The type of pump engine to be procured will be fifteen four-cylinder Lombardi engines of an approximate value of $12,000. In order to be able to supply spare parts and train village water systems operators the Tan-Gov Ministry of Water has standardized on this type of engine. The project will provide about 15 such engines for the motorized systems to be built in conjunction with boreholes.

Primary Justification:

There are no U.S. made diesel pumps which are compatible with water system equipment now in use in Tanzania.

II. REQUEST FOR PROPRIETARY PROCUREMENT WAIVER

Problem: Request for Proprietary Procurement of Certain Types of Heavy Equipment.

(a) Discussion

For certain items of equipment needed under the road construction activities proprietary procurement is requested. This need comes about for two reasons (1) equipment standardization plans and (2) other equipment and spares already supplied to the region under other projects. Caterpillar loaders, dozers and graders are preferred by TanGov. These items have been supplied under AID projects including the Drought Roads Project and the Masai Project. Supplying other makes of equipment would result in the need for additional quantities of spare parts and additional down time while repairs are made on equipment which local mechanics are not familiar.

The waiver for proprietary procurement includes:

2	D-7 Dozers	$210,000
3	Cat 130 Graders	207,000
1	Cat 930 Loader	58,000
	Total	$475,000

Recommendation:

For the reasons stated above, that you conclude that sufficient special circumstances exist at this time which warrant the procurement of non-United States manufactured vehicles, motorcycles, construction materials, and diesel pumps and the proprietary procurement of certain heavy equipment. Further, that you determine that procurement of vehicles from the origin requested above is necessary for achievement of the project purpose and attainment of U.S. foreign policy objectives and the objectives of the Foreign Assistance Program.

A P P E N D I X E

Mission Director's Certification

APPENDIX E

CERTIFICATION PURSUANT TO

Section 611(e) of the

FOREIGN ASSISTANCE ACT

As Amended

I, Richard L. Podol, the principal officer of the Agency for International Development in Tanzania, do herewith certify that in my judgment, Tanzania has both the financial capability and human resources to maintain and utilize effectively the roads, water facilities, farm centers and other construction financed under this project entitled Arusha Planning and Village Development.

This judgment is based upon the record of implementation of AID-financed projects in Tanzania and the results of the consultations undertaken during the intensive review of this new project.

R L Podol

Richard L. Podol
Acting Director, USAID/Tanzania

27 Feb 78
Date

A P P E N D I X F

Approval and Guidance Cables

APPENDIX F: APPROVAL AND GUIDANCE

1. PID Approval Cable

   STATE 51881, 9 March 1977

2. ECPR for PP

   STATE 269621, 10 November 1977

3 Completion of ARP/VDP Design

   STATE 011808, 17 January 1978

4. Completion of ARP/VDP Design

   DAR 0272, 23 January 1978

5. Completion of ARP/VDP Design

   STATE 032059, 7 February, 1978

DEPARTMENT OF STATE OFFICIAL FILE

TELEGRAM

FROM: 621-0145 (FID)
" 621-0136 (")
" 621-0119 (")

AMEMBASSY DAR ES SALAAM

USAID DISTR. (3/10/77)

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NO ACTION NECESSARY
REPLIED BY: [illegible]
Initials

AIDAC, NAIROBI FOR REDSO

E.O. 11652: N/A

TAGS:

SUBJECT: TANZANIA - PROGRAM DEVELOPMENT

REF: (A) PID - EXPERIMENTAL VILLAGE DEVELOPMENT (B) PID - AG FACULTY (C) DAR 642

1. AFR AUTHORIZES MISSION PROCEED WITH PRP FOR EXPERIMENTAL VILLAGE DEVELOPMENT PROJECT.

2. AUTHORIZATION PREMISED ON FOLLOWING ASSUMPTIONS:

A. THAT PID REFLECTS NEW VILLAGE BASED/INCOME PROGRAM STRATEGY AND IS INITIAL ACTIVITY IN WHAT IS EXPECTED TO BE CENTRAL TO COUNTRY PROGRAM. BELIEVE IT IMPORTANT THAT MISSION/AFR AGREE ON STRATEGY NOW AND TOGETHER STRUCTURE DESIGN EFFORT TO ASSURE BASIS FOR EXPANDING ASSISTANCE LEVELS TO TANZANIA IN THE NEAR TERM (I.E. FY 1979).

B. THAT WHILE MISSION MAY WISH TO CONTINUE NATIONAL/REGIONAL INSTITUTIONAL ACTIVITIES, SUCH PROPOSALS MUST ARISE FROM AN ANALYSIS OF VILLAGE/INCOME REQUIREMENTS AND NOT FROM EITHER INTERNALLY SELF-CONTAINED INSTITUTIONAL GROWTH MODELS OR FROM MACRO PRODUCTION AGRICULTURE TARGETS.

C. THAT CURRENT STRATEGY REVIEW IS FOCUSING ON ENTIRE PROGRAM AND ITS RELATIONSHIP TO AGREED VILLAGE/INCOME PROGRAM PREMISE.

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3. IN PREPARING PRP, MISSION SHOULD CONSIDER POSSIBILITY ACTION PHASE I (UTILIZING AIP OR SIMILAR PILOT TYPE DEVICE) AS DISTINGUISHED FROM PROPOSED LENGTHY INVENTORY RESOURCE SURVEY APPROACH. AFR RECOMMENDS DECISION ON INSTITUTIONAL RESPONSIBILITIES, I.E. DISTRICT/REGIONAL ADMINISTRATION OR MINISTRY OF AGRICULTURE (MARI) BE LEFT OPEN THIS STAGE. ALSO RECOMMEND THAT ARUSHA, AS AN ATYPICAL REGION, NOT APPROPRIATE AS ONE OF TWO LOCATIONS FOR INITIAL APPLICATION THIS PROJECT.

4. GIVEN IMPORTANCE THIS ACTIVITY TO PROGRAM ELABORATION, REQUEST PODOL AND CORNELIUS SCHEDULE FIVE DAY TDY TO FINALIZE DESIGN SCOPE/SCHEDULE. GIVEN REDSO DIRECTOR TDY AID/W THROUGH MARCH 27, BELIEVE ARRIVAL BEFORE HIS DEPARTURE CONVENIENT. ADVISE.

5. ON BASIS PARA. 2B ABOVE, AG FACULTY PROPOSAL NOT APPROVED. AFR FULLY SUPPORTIVE MISSION CONCERN FOR MANPOWER DEVELOPMENT AT ALL LEVELS AND BELIEVES AG FACULTY MAY BE IMPORTANT RESOURCE IN THAT REGARD. NEVERTHELESS, PROPOSAL APPEARS TO REFLECT FACULTYAS INTERNALLY RATIONALIZED GROWTH REQUIREMENTS RATHER THAN GOT/MISSION ASSESSMENT ITS ROLE VIS-A-VIS VILLAGE/INCOME STRATEGY. BELIEVE REEXAMINATION ONGOING AGRICULTURE MANPOWER (MATI) PROJECT, AND OTHERS IN MISSION PORTFOLIO (E.G. RESEARCH), COULD RESULT IN RANGE OF SIGNIFICANT AID INPUTS TO AG MANPOWER DEVELOPMENT IN CONTEXT VILLAGE/INCOMES STRATEGY, PERHAPS INCLUDING AG FACULTY ELEMENT.

6. AFR PREPARED DISCUSS PARA. FIVE FURTHER WITH PODOL/ CORNELIUS DURING TDY.

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APPROVED BY DAA/AFR, MANCRYN
AFR/DR/EAP:SCOLE
AFR/DR:SALEIN
AFR/DR:JMELLY
AFR/EA:RJOHNSON/TD:REEFE (DRAFT)
AFR/EA:RENEY (DRAFT)
AFR/..P:RJOHNSON (DRAFT)
SER/ENGR:PSTEARNS (DRAFT)
SER/COM/ALL:CRALEY (DRAFT)
GC/AFR:CDRACCH (DRAFT)
TA/EA:RADANNER/AREED (INFO)
AFR/DR/TNR:EHIRABAYASHI (DRAFT)
AFR/DR/SDP:DSIBBLE (DRAFT)
TA/RD:JWEAVER (INFO)
PPC/CPRE:PMATHESON (INFO)
AFR/DR/ARD:WJONES (DRAFT)
AFR/DR/HR:CPARKREY (INFO)
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E.O. 11652:N/A

TAGS:

SUBJECT:TANZANIA ARUSHA REGION PLANNING/VILLAGE DEVELOPMENT PROJECT ECPR MEETING

1. AFR ECPR MET 9/28/77. ALTHOUGH BUREAU ANXIOUS PROCEED WITH AUTHORIZATION ASAP, PP NEEDS BE STRENGTHENED AS DISCUSSED PARA. 3 BELOW PRIOR SEEKING ADMINISTRATOR'S APPROVAL. FYI: PROJECTS EXCEEDING DOLS 10 MILLION ARE SUBMITTED FOR ADMINISTRATOR'S APPROVAL. END FYI.

2. SUMMARY OF ECPR DECISIONS FOLLOWS:

-- BE MEETING 611(A)(1) ECPR WILL RECOMMEND PROJECT AUTHORIZATION PRIOR TO MEETING THESE REQUIREMENTS. AUTHORIZATION ACTION PEPO WILL INCLUDE CRITERIA TO BE MET IN BE PLANNING AND ESTIMATING COSTS FOR ROAD AND WATER AND ASSESSING IMPACT OF ENVIRONMENTAL ACTIVITIES. FYI SER/ENGR PREPARED CRITERIA. COPY FORWARDED TO AARION OF PEDSO. GC HAS CLEARED. END FYI. OBLIGATION OF FUNDS FOR ROAD AND WATER ACTIVITIES WILL NOT BE MADE UNTIL PEDSO ENGINEER HAS COMPLETED ALL WORK NECESSARY TO MEET 611(A)(1) REQUIREMENTS AND WCAID/T'S MISSION DIRECTOR CERTIFIES THAT ALL REQUIREMENTS HAVE BEEN MET AND CONDITIONS SATISFIED. IN FUNDING THESE COMPONENTS LEVEL REQUESTED IN PP

WILL BE TREATED AS CEILING WITH ALLOWANCE FOR 15 PERCENT FLEXIBILITY TO SHIFT FUNDS FROM OTHER LINE ITEMS. THERE-
-, IF FUNDS PROVE INSUFFICIENT FOR CONSTRUCTION OF ROAD MILEAGE PROJECTED IN PP EFFORT WILL BE REDUCED FUNDING HELD AT CEILING.

---AAP/TDP APPROVED AS ONE PROJECT AND CONCEPT THAT TWO ACTIVITIES ARE INTEGRATED ACCEPTED. BELIEVE THIS APPROVAL STRENGTHENS POSSIBILITY THAT ARUSHA REGION PLANNING COMPONENT WILL ENHANCE REGIONS CAPABILITY OF DEVELOPING ON-GOING PLANNING PROCESS.

---IN RESPONSE TO ISSUE THAT INADEQUATE LEVEL OF AG TECHNICAL ASSISTANCE, ISSUE RESOLVED BY ADDING ONE AGRICULTURE SPECIALIST AT REGIONAL LEVEL TO BE RESPONSIBLE TO CDP AND SERVE AS DEPUTY CDP. PRIMARY RESPONSIBILITY TO PROVIDE TECHNICAL BACKSTOPPING AND MANAGEMENT SUPPORT. (SEE DRAFT SOW PARA. 3).

---AFRICA BUREAU WILL RECOMMEND ADMINISTRATOR APPROVE REVISED ANNEX J FOR VEHICLE WAIVER. ALTHOUGH AID/W INCREASINGLY CONCERNED WITH NUMBER VEHICLE WAIVER REQUESTS, THIS WAIVER WILL BE CONSIDERED BECAUSE OF NATURE AND REMOTE LOCATION PROJECT AND MAINTENANCE PROBLEMS. SUGGEST MISSION SUBMIT STANDARDIZATION PLAN FOR MISSION OPERATIONS VEHICLES USED IN AND SURROUNDING DAR.

---PC CONCERNED THAT LEVEL OF TRAINING IS INADEQUATE. RECOMMEND PP BE REVISED TO INCLUDE 10 LONG TERM PARTICIPANTS. TRAINING TO BE AVAILABLE FOR QUALIFIED INDIVIDUALS FROM THROUGHOUT TANZANIA. TWO OF RETURNING PARTICIPANTS SHOULD BE ASSIGNED TO ARUSHA, HOWEVER OTHER 8 MAY BE ASSIGNED BY CDT AS APPROPRIATE.

---QUESTIONS RAISED IN PC RE MAINTENANCE OF ROADS AND OTHER FACILITIES TO BE CONSTRUCTED. ECPR DETERMINED REQUIREMENT THAT STANDARDS FOR MAINTENANCE SHOULD BE INCLUDED IN CRITERIA MENTIONED PARA 2. SER/ENGR HAS INCLUDED MAINTENANCE REQUIREMENTS IN CRITERIA. MISSION DIRECTOR'S CERTIFICATION THAT 611(A)(1) REQUIREMENTS MET SHOULD INCLUDE STATEMENT RE MAINTENANCE STANDARDS.

---PC QUESTIONED WHAT WAS MARKETING POTENTIAL THAT COULD BE EXPECTED, AND WHAT WERE EFFECTS IF DESIGNING EFFORTS FAILED? ECPR AGREED BOTH THESE POTENTIAL PROBLEMS THAT SHOULD BE CAREFULLY ADDRESSED IN PLANNING ACTIVITIES.

--- ROAD AND WATER ACTIVITIES UNDERTAKEN MUST BE DETERMINED TO HAVE AN ADEQUATE ECONOMIC RETURN (EXCLUDING DEMONSTRATION PROJECTS) AND THAT THE MONITORING SYSTEM INCLUDE A SIMPLIFIED PROCEDURE TO CALCULATE COSTS AND BENEFITS FOR GROUPS OF ACTIVITIES. THIS ALREADY INCLUDED IN CRITERIA FOR MISSION DIRECTOR'S CERTIFICATION.

--- QUESTION RAISED WHETHER IMPLEMENTING CONTRACT FOR ARUSHA REGION PLANNING SHOULD BE HOST COUNTRY CONTRACT SO

WHILE IN THEORY HOST COUNTRY CONTRACTS DESIRABLE, THEY ARE NOT ALWAYS PRACTICAL. THEREFORE HOST COUNTRY CONTRACT NOT REQUIRED.

3. BASED ON FOLLOW-UP CONVERSATION WITH DAA/AFR DEFICIENCIES IN PP DESIGN CAN BE IDENTIFIED. WE REALIZE THIS IS DESIRE ELIMINATION OF PRP DOCUMENT. FOLLOWING IS GUIDANCE FOR ADDITIONAL ANALYSIS REQUIRED. SEVERAL HAVE SUGGESTED PHASING PROJECT TO ALLOW TIME TO PREPARE ADDITIONAL ANALYSIS, HOWEVER AID/W UNDERSTANDS PROBLEMS CREATED BY ANY PHASING APPROACH AND THUS GIVES OPPORTUNITY PROVIDE ADDITIONAL ANALYSIS PRIOR TO AUTHORIZATION. AID/W IS WILLING TO FUND TA REQUIRED FOR ANY EXERCISE IF USAID DESIRES.

A. FINANCIAL TABLES

---REQUEST COLLATION TABLE BE SUBMITTED ASAP AND SUGGEST EXPENDITURE TABLE BE PREPARED AS WELL. IN PREPARING

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PAGE 02 OF 02 STATE 269621

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'ION TABLE, FY 78 FUNDING CONSTRAINT SHOULD BE INTO CONSIDERATION. RE TECHNICAL ASSISTANCE, SUGGEST COSTS BE SPLIT BETWEEN FIELD AND BACKSTOPPING COSTS. EXPECT FY 78 FUNDING LIMITATION WILL NECESSITATE 18 MONTH FUNDING. RE COMMODITIES, SUGGEST PROJECT TEAM DETERMINE WHICH, IF ANY, CAN BE PUSHED INTO FY 79. SUGGEST ALSO USEFUL TO PRESENT SUMMARY BUDGET BY TA, TRAINING, INFRASTRUCTURE, ETC. BY YEAR. TABLES AS PRESENTED SHOW THESE COSTS BY COMPONENT. FYI: PP HAS BEEN REVISED TO CITE THESE AS ACTIVITIES. COMPONENTS USED TO DESCRIBE (1) VILLAGE EFFORT AND (2) ARUSHA PLAN. END FYI. WHILE THESE TABLES ARE USEFUL IT DOES NOT PRESENT COSTS FOR TOTAL PROJECT. IN ADDITION FOOTNOTES SHOULD BE USED AS NECESSARY TO EXPLAIN HOW PARTICULAR LINE ITEMS DERIVED.

B. PROJECT COSTING

---ENGINEERING STAFF BELIEVES ROADS TO BE UNDERCOSTED. IN VIEW ECPR DECISION TO HOLD TO AMOUNT IN PP AS CEILING ANY REVISED ITEM COSTS OR ADDITIONS SHOULD BE PROVIDED. REDSO INPUT SHOULD BE HELPFUL.

---EQUIPMENT COSTS PP. 5 AND 11 OF ANNEX D HAVE BEEN REVIEWED BY COMMODITIES AND BELIEVE ITEMS NOT UNDERCOSTED (SHOLLENBERGER TO SEPP MEMO OF 9/29/77 POUCHED MISSION 10/5/77). MISSION MAY WISH TO REVIEW COSTS TO VERIFY THEY ARE SUFFICIENT.

--VEHICLE COSTS. BUDGET SHOULD SPECIFY WHETHER COSTS ARE CIF OR FOB, WHETHER INCLUDES SPARE PARTS. COMMODITIES

BELIEVE FIGURE ADEQUATE, HOWEVER OTHER PC MEMBERS P[illegible] MAY BE UNDERCOSTED.

[illegible]ICAL ASSISTANCE COSTS. PP SHOULD BE MORE SPECIFIC AT THIS STAGE PROJECT DESIGN AS TO LONGTERM TA COSTS. BUDGET TABLES SHOULD BREAKOUT INDIVIDUAL COST OF TECHNICIANS AND OVERHEAD/BACKSTOPPING COSTS OF IMPLEMENTING CONTRACTOR. OBVIOUSLY, THIS DEPENDS UPON MISSION EXPECTATIONS AS TO TYPE CONTRACTOR TO BE USED, E.G. INSTITUTION, CONSULTING FIRM, ETC.

C. FINANCIAL ANALYSIS

MAJOR PROBLEM WITH THIS PRESENTATION IS FAILURE TO DESCRIBE HOW PARTICULAR COSTS DETERMINED. FOR EXAMPLE, DOLS. 5.7 MILLION IS SHOWN FOR INFRASTRUCTURE. TO MEET GSS (A) (1) WE MUST SHOW WHY THIS IS A REASONABLE FIGURE. THEREFORE WHY SHOULD FUNDS BE APPROVED FOR DOLS. 5.7 MILLION AND NOT SOME OTHER AMOUNT SUCH AS DOLS. 3 MILLION OR DOLS. 10 MILLION? REDSO ENGINEER ASSISTANCE SHOULD BE HELPFUL. THIS ANALYSIS SHOULD BE PREPARED FOR ROAD, WATER, OTHER ECONOMIC ACTIVITIES ETC. TO EXTENT POSSIBLE.

D. TECHNICAL ANALYSIS.

REDSO ENGINEER ASSISTANCE SHOULD PROVIDE ADDITIONAL ANALYSIS REQUIRED. HANDBOOK 3, CHPT. 6, PP. 6-7 SPECIFIES REQUIREMENTS FOR ANALYSIS. AID/W CONCERN FOCUSES ON "JUDGEMENT AS TO WHETHER THE PROJECT IS REASONABLY PRICED AND DESIGNED" AND WHETHER THE "COST ESTIMATE IS REASONABLY FIRM AND ADEQUATE PLANNING HAS TAKEN PLACE."

E. AGRICULTURAL SPECIALIST POSITION

FO[illegible]NG IS DRAFT SOW AND QUALIFICATIONS FOR POSITION FOR P[illegible] REVIEW. SOW INCLUDES RESPONSIBILITY AS DEPUTY C[illegible] PART TO BE ASSIGNED TO FOD'S OFFICE. RESPONSIBILITIES INCLUDE (1) COORDINATE PROJECT AGRICULTURAL ASSISTANCE COMPONENTS WITH TANZANIAN TECHNICAL AG [illegible] DEVELOPMENT OFFICERS WORK BEING DONE AT NATIONAL LEVEL; (2) ASSIST DEVELOP AGRICULTURE ASPECTS OF INFORMATION SYSTEM; (3) ASSIST INTEGRATE MICRO AND MACRO LEVEL AGRICULTURE DATA FOR ARP; (4) PROVIDE TECHNICAL BACKSTOPPING TO RURAL DEVELOPMENT SPECIALISTS IN DEVELOPING VILLAGE AGRICULTURE PRODUCTION PLANS; (5) ADVISE AND ASSIST PLANNING/IMPLEMENTING AREA/DISTRICT PROGRAMS, SUCH AS SOIL CONSERVATION, INPUT OUTPUT DELIVERY SYSTEMS, IRRIGATION PROJECTS AND TRAINING; AND (6) PROVIDE BACKSTOPPING FOR SHORT-TERM AGRICULTURE CONSULTANTS. GIVEN WIDE RANGE OF U.S. FINANCED INPUTS REQUIRING COORDINATION AND MANAGEMENT, IT IMPORTANT THIS INDIVIDUAL HAVE BROAD GUAGED AGRICULTURE TECHNICAL AND MANAGERIAL BACKGROUND. A DEGREE IN FARM MANAGEMENT COMPLEMENTED WITH CROP AND ANIMAL SCIENCES OR RELATED FIELDS REQUIRED. A MINIMUM OF FIVE YEARS WORK EXPERIENCE IN AGRICULTURE/RURAL DEVELOPMENT PROGRAMS, PREFERABLY IN AFRICA, REQUIRED.

F. RURAL DEVELOPMENT SPECIALISTS

AID/W CONCERNED THAT JOB DESCRIPTION DOES NOT ADEQUATELY EXPRESS REQUIREMENT THAT POS HAVE AGRICULTURAL EDUCATION AND/OR EXPERIENCE. SUGGEST REVISION TO READ, QUOTE, IN ADDITION, THIS P'OSN SHOULD HAVE AT LEAST EDUCATION OR EXPERIENCE EQUIVALENT OF BS IN AGRICULTURE; TWO YEARS WORK EXPERIENCE IN AGRICULTURE/RURAL DEVELOPMENT PROGRAM", PREFERABLY IN AFRICA, AND MUST HAVE A GOOD TO EXCELLENT KNOWLEDGE OF SWAHILI. END QUOTE. (SEE ANNEX E, P. 10, PARA. 2.1). AID/W REALIZES NEED TO MAINTAIN FLEXIBILITY WHEN REVIEWING QUALIFIED CANDIDATES WHO MAY NOT MEET JOB DESCRIPTION REQUIREMENTS. THEREFORE SUGGEST ABOVE LANGUAGE ALLOWS SUCH FLEXIBILITY, BUT STRESSES NEED FOR AG QUALIFICATIONS TO MEET ONE OF PROJECT PURPOSES, I.E., INCREASING AG PRODUCTIVITY.

G. TRAINING

AID/W CONCERNED REGARDING ADEQUACY U.S. SHORT-TERM TRAINING AND IN-COUNTRY MANAGEMENT TRAINING. AID/W HAS CONTACTED SEVERAL UNIVERSITIES TO PROVIDE SPECIFICS AS TO HOW U.S. PROGRAMS TO BE DEVELOPED, CURRICULA AND SKILLS DEVELOPED AS RESULT TRAINING. REQUEST MISSION DESCRIBE WHAT IN-COUNTRY TRAINING TO ENTAIL AND HOW TRAINING SESSIONS TO BE SET UP, HOW OFTEN, ETC.

H. AA/AFR ANXIOUS FOR FIRST QUARTER OBLIGATION. ADVISE MISSION ASSESSMENT OF TIME REQUIRED FOR COMPLETING DESIGN. CHRISTOPHER

WORKING FILE

Mr. Warick

TELEGRAM

PROJ: 621-0143(77)

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E.O. 11652: N/A

TAGS:

SUBJECT: COMPLETION OF ARP/VDP DESIGN (621-0143)

REFS: (A) NAIROBI 15793 (B) DAR 4306 (C) LUSIN REPORT - A/AFR-C-1130, U.O. NO. 79 (D) NAIROBI 15573

1. SUMMARY: RELEVANT PROJECT COMMITTEE MEMBERS MET DEC. 19, 1977 TO CLARIFY ISSUES RELATING SUBJECT PROJECT AND CLEARLY DEFINE WHAT REMAINS TO BE DONE PRIOR MEETING 611(A). FOLLOWING IS AID/W UNDERSTANDING STATUS VARIOUS DESIGN ACTIVITIES AND SUMMARY OF REMAINING TASKS. REQUEST REDSO AND USAID COMMENTS AND CONCURRENCE SO ALL PARTIES REACH CONSENSUS REGARDING REMAINING DESIGN ACTIVITIES.

AID/W VIEW IS THAT SECTION 611(A) IS SATISFIED WITH REGARD TO TECHNICAL SERVICES AND THE ROAD COMPONENT AND PROBABLY WILL BE SATISFIED FOR THE WATER COMPONENT AFTER THE REMINGTON TOY DESCRIBED PARA 3 BELOW. REQUIREMENTS OF SECTION 611(C) PLANNING NOT YET SATISFIED WITH RESPECT TO A FUND, AGRICULTURAL PRODUCTION OR FOR OTHER ECONOMIC ACTIVITIES, INCLUDING INTERMEDIATE TECHNOLOGY. THIS MESSAGE OUTLINES THE TYPE OF PLANNING CONSIDERED ADEQUATE IN A PROJECT SUCH AS THIS WHICH INVOLVES A LARGE NUMBER OF ACTIVITIES AND PROPOSES TO INVOLVE BENEFICIARIES IN THE PROCESS OF DECIDING WHAT WILL BE FINANCED UNDER THE PROJECT. THESE INTERESTS MUST BE BALANCED WITH THE SECTION 611(A) REQUIREMENT THAT PRIOR TO OBLIGATION OF FUNDS FOR IMPLEMENTATION OF AN ACTIVITY, PLANNING SHOULD IDENTIFY WHAT THE

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ACTIVITY IS, HOW IT WILL BE DONE AND IN GENERAL, THE KINDS OF GOODS AND SERVICES REQUIRED FOR THE ACTIVITY. THE PURPOSE OF THIS REQUIREMENT IS TO AVOID OBLIGATING FUNDS FOR IMPLEMENTATION AND HAVING THE FUNDS TIED UP DURING THE PERIOD NEEDED TO DO THE GENERAL PLANNING AND NEGOTIATION FOR WHAT WILL BE DONE IN THE PROJECT. AN OBLIGATION TO FINANCE ACTIVITIES THAT ARE NOT YET IDENTIFIED DOES NOT SATISFY THIS REQUIREMENT. WHEN IT IS NOT POSSIBLE TO IDENTIFY AND PLAN THE ACTUAL ACTIVITY TO BE DONE, SUCH AS THE ACTUAL LOCATION OF WELLS TO BE DUG, SECTION 611(A) MAY BE SATISFIED BY GENERAL PLANNING OF THE KIND OF ACTIVITY THAT WILL BE DONE AS IN THE WATER COMPONENT DESCRIBED PARA 4. WHEN IT IS NOT POSSIBLE TO IDENTIFY AND PLAN THE ACTIVITY OR EVEN THE KIND OF ACTIVITY (I.E. WATER AND WELLS) IT WILL BE FINANCED IN CERTAIN CASES, PROJECTS MAY BE APPROVED BY AID/W ALTHOUGH COMPONENTS OF THE PROJECT HAVE NOT BEEN PLANNED IN ACCORDANCE WITH SECTION 611(A) CRITERIA. IN THAT CASE, A PROJECT PAPER WOULD IDENTIFY IN GENERALWHAT IS INTENDED TO BEACCOMPLISHED AND PROVIDE ENOUGH INFORMATION AND ANALYSES TO JUSTIFY APPROVAL OF FUNDING BY AID/W, IN MUCH THE SAME WAY AS THE SUBJECT PROJECT. ALLOTMENT OF FUNDS MAY BE MADE TO THE FIELD WHICH MAY THEN OBLIGATE FUNDS (I.E. EXECUTION OF PROAG OR AN AMENDMENT ADDING FUNDS) WHEN PARTICULAR ACTIVITIES OR TYPES OF ACTIVITIES ARE IDENTIFIED AND PLANNED, AS INDICATED PARAS 4 AND 5 BELOW. GUIDANCE FOR PARTICULAR ACTIVITIES OF SUBJECT PROJECT FOLLOWS.

2. ROAD ACTIVITIES: THE MANNER IN WHICH SECTION 611(A) IS BEING SATISFIED AS INDICATED REFS A,B, AND C, WITH RESPECT TO THE ROAD ACTIVITIES OF THE PROJECT PROVIDES A USEFUL LESSON FOR THE FUND FOR THE AGRICULTURAL PRODUCTION AND OTHER ECONOMIC ACTIVITIES COMPONENTS. IN THE ROAD COMPONENT, LOCATION IS KNOWN FOR 276 MILES OF SECONDARY ROADS WHICH ARE TO BE REHABILITATED OR EXISTING ALIGNMENT. IN ADDITION, SOME 200 MILES OF NEW FEEDER ROADS HAVE BEEN IDENTIFIED ON A GENERALIZED BASIS WITH CORRIDOR LOCATION IDENTIFIED FOR 120 MILES OF THESE FEEDER ROADS. SUFFICIENT PLANNING HAS BEEN COMPLETED TO IDENTIFY AT LEAST THE GENERAL LOCATION OF THE ROADS, THE KINDS OF ROADS TO BE BUILT, THE DESIGN AND CONSTRUCTION STANDARDS FOR THE ROADS, THE TERRAIN IN WHICH THEY WILL BE BUILT, THE MATERIALS NEEDED FOR THE ROADS, THE GENERAL NUMBER OF

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MILES OF ROADS THAT WILL BE BUILT, WHO WILL DO THE DESIGN

= + - ++ STRUCTION. THE AMOUNT OF SKILLED AND UNSKILLED AND THE CONSTRUCTION. THE AMOUNT OF SKILLED AND UNSKILLED LABOR NEEDED FOR THE ROADS (INCLUDING SOURCE OF LABOR AND TRAINING NEEDED) AND THE AMOUNTS AND TYPE OF EQUIPMENT NEEDED. THIS DEGREE OF PLANNING WILL PERMIT A REASONABLY FIRM ESTIMATE OF COST, WILL SUPPORT THE OBLIGATION OF FUNDS, AND WILL PERMIT CONTRACTING FOR THE GOODS AND SERVICES NEEDED EVEN THOUGH THE EXACT LOCATION OF SOME ROADS THAT WILL BE CONSTRUCTED ARE UNDECIDED AT THE TIME FUNDS ARE OBLIGATED. CRITERIA FOR THE SELECTION OF ACTUAL ROADS ARE DEVELOPED IN SUCH A WAY AS TO GIVE THE PEOPLE IN THE PROJECT AREA AN OPPORTUNITY TO PARTICIPATE IN DETERMINING LOCAL PRIORITIES FOR ROAD CONSTRUCTION.

3. WATER SUPPLY ACTIVITIES: REF D OUTLINES INFORMATION REQUIRED TO MEET 611(A) AND 611(B) REQUIREMENTS FOR WATER SUPPLY ACTIVITIES. REMINGTON TDY ASSISTANCE SHOULD PROVIDE INFORMATION

EQUIRED IF SUFFICIENT GROUND WATER HYDROLOGY DATA AVAILABLE, OR IF REMINGTON CAN SUPPLY INFORMATION FROM PERSONAL OBSERVATIONS. LEAST CONST ANALYSIS SHOULD BE SUFFICIENT TO COMPLY WITH 611(B) REQUIREMENT. SER/EMOR OF OPINION THAT THE FEASIBILITY STUDY MENTIONED REF A, PARA 3C, WOULD BE UNNECESSARY AND MORE COSTLY IN LONG RUN. REMINGTON ASSISTANCE MAY BE ABLE TO PROVIDE SUFFICIENT INFORMATION IN ORDER TO SATISFY SECTION 611(A) BY DETERMINING: (1) AVERAGE DRILLING COSTS FOR WELLS= (2) KINDS AND AMOUNTS OF EQUIPMENT REQUIRED= (3) INSTITUTIONAL STRUCTURE REQUIRED FOR IMPLEMENTATION= (4) OPERATING COSTS FOR EQUIPMENT= (5) LIST OF POSSIBLE SITES AND CRITERIA TO DETERMINE WHERE WELLS WILL BE LOCATED= (6) TRAINING NEEDED AND HOW IT WILL BE IMPLEMENTED AND (7) MAINTENANCE REQUIREMENTS, INCLUDING THE INFORMATION LISTED REF D, PARA 2. BELIEVE 611(A) AND (B) CAN BE SATISFIED IF THIS INFORMATION CAN BE OBTAINED.

4. AG PRODUCTION ACTIVITIES: THE PP INDICATES THE KINDS OF TECHNOLOGIES PROVIDED WILL DEPEND UPON THE NEEDS AND INTERESTS AS PERCEIVED BY PARTICIPATING VILLAGES AND APPROVED BY THE VILLAGE COUNCIL, THE REGIONAL GOVERNMENT AND AID. IT HAS BEEN STATED THAT CRITERIA WILL BE DEVELOPED FOR

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SELECTING ACTIVITIES AND FUNDS WILL BE OBLIGATED AGAINST THESE CRITERIA. THE PP PROPOSES THIS APPROACH WILL ALLOW (1) VILLAGE PARTICIPATION AND (II) A PROMPT RESPONSE TO PERCEIVED NEEDS. HOWEVER AS EXPRESSED IN THE PP.THIS DOES NOT SATISFY SECTION 611(A). BECAUSE WE DO NOT KNOW THE KINDS OF ACTIVITIES THAT WILL BE FINANCED TO INCREASE AGRICULTURAL PRODUCTION. THIS IS TO BE CONTRASTED TO THE ROAD AND WATER COMPONENTS FOR WHICH SECTION 611(A) CAN BE SATISFIED WITH THE GENERALIZED PLANNING DESCRIBED IN PAR 2

THE ROAD COMPONENT IN WHICH ROADS WILL BE PROVIDED OVER AND OVER. AN UNNUMERABLE AMOUNT OF KINDS OF ACTIVITIES MAY BE CONDUCTED TO INCREASE AGRICULTURAL PRODUCTION. SUCH AS INTRODUCTION OF ANIMAL TRACTION AS ONE KIND OF ACTIVITY. TRAINING OF EXTENSION AGENTS AS ANOTHER. THE INTRODUCTION OF FERTILIZER. AGRICULTURAL RESEARCH. AGRICULTURAL CREDIT. THE INTRODUCTION OF IRRIGATION. DISTRIBUTION OF IMPROVED VARIETIES OF SEEDS. ETC. THERE IS A TREMENDOUS NUMBER OF DIFFERENT KINDS OF ACTIVITIES THAT MAY BE CONDUCTED TO IMPROVE AGRICULTURAL PRODUCTION. WITHOUT KNOWING THE KINDS OF ACTIVITIES TO BE CONDUCTED IN THIS PROJECT. IT CAN NOT BE SAID THAT THE PLANNING OF SECTION 611(A) IS SATISFIED. THIS MUST BE CONTRASTED. FOR PURPOSES OF ANALYSIS WITH THE MANNER IN WHICH SECTION 611(A) IS SATISFIED WHEN THE PURPOSE OF A PROJECT IS TO SATISFY A PERCEIVED NEED IN AN ECONOMY OR AREA FOR CREDIT. IN THAT CASE. THE ACTUAL USES OF THE FUNDS BY THE ULTIMATE BORROWERS. THE FARMERS. ARE UNIDENTIFIED BEFORE FUNDS ARE OBLIGATED BY AID. HOWEVER. THE PURPOSE OF AIDOS INTERVENTION IS NOT TO PROVIDE AS ASSISTANCE THE ACTUAL ACTIVITIES CONDUCTED BY THE FARMERS BUT TO INSTITUTIONALIZE THE AVAILABILITY OF CREDIT TO THEM. SECTION 611(A) PLANNING THEN RELATES TO THE DEMAND FOR THE CREDIT. THE ADMINISTRATIVE CAPABILITY OF THE LOCAL INTERMEDIATE INSTITUTION THAT WILL PROVIDE THE CREDIT TO MAKE JUDGEMENTS REGARDING THE LOANS TO BE MADE. THE NUMBER AND KINDS OF PEOPLE NEEDED TO ADMINISTER THE CREDIT PROGRAM. TA AND TRAINING NEEDED. COSTS OF ADMINISTRATION OF THE PROGRAM. ANTICIPATED DEFAULT RATE. AND INTEREST AND MATURITY TERMS TO COVER THE COSTS OF ADMINISTRATION AND PREVENT DECAPITALIZATION OF THE FUNDS SO THAT THE AVAILABILITY OF CREDIT IS INSTITUTIONALIZED. BUT THAT IS NOT THE PURPOSE OF THE AG PRODUCTION COMPONENT OF THIS P

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PROJECT. THE PURPOSE IS TO INTRODUCE TECHNOLOGIES AND TRAINING THAT WILL INCREASE AGRICULTURAL PRODUCTION IN THE AREA. AS NOTED ABOVE, THIS MAY BE ACCOMPLISHED BY A LARGE NUMBER OF DIFFERENT KINDS OF ACTIVITIES, AND SECTION 611 (A) REQUIRES THAT THEY BE IDENTIFIED AND PLANNED, IN A GENERAL WAY AT LEAST, BEFORE FUNDS MAY BE OBLIGATED FOR THEM. THERE ARE TWO OPTIONS FOR SATISFYING SECTION 611 (A) FOR THE AG PRODUCTION ACTIVITY.

--A. THE FIRST IS COMPARABLE TO THE MANNER IN WHICH SECTION 611(A) IS SATISFIED FOR THE ROAD COMPONENT BUT INVOLVES IDENTIFICATION AND PLANNING OF A NUMBER OF KINDS OF ACTIVITIES WHEREAS THE ROAD COMPONENT INVOLVES ONLY ROADS. THAT IS IDENTIFY THE KIND REPEAT KIND OF ACTIVITIES THAT WILL BE PROVIDED AS A STARTING POINT FOR

THE AG PRODUCTION ACTIVITY AND PLAN EACH KIND IN A GENERAL WAY COMPARABLE TO THE PLANNING IN THE ROAD COMPONENT. A SPECIFIC LIST OF THE POSSIBLE ACTIVITIES THAT WILL BE FINANCED CAN BE DEVELOPED AND THE PLANNING OF HOW EACH ACTIVITY ON THE LIST WILL BE CONDUCTED MAY BE DESCRIBED. THIS WOULD NOT BE AN ILLUSTRATIVE LIST, BUT IT WOULD BE A LIST OF ACTIVITIES THAT COULD BE OFFERED TO THE PEOPLE FOR SELECTION. THIS WOULD SATISFY SECTION 611 (A) IN THE SAME MANNER AS FOR THE ROADS DESCRIBED IN PARA 2 ABOVE. THIS LIST OF ACTIVITIES SHOULD BE BASED ON THE PERCEIVED NEEDS AND PREFERENCES OF THE PEOPLE IN THE PROJECT AREAS. IT SHOULD BE ADEQUATE TO PERMIT DISBURSE-MENT OF THE FUNDS OBLIGATED FOR THIS PURPOSE IN A TIMELY MANNER. WHEN THIS STARTING POINT IS IDENTIFIED AND PLAN-NED THE ENTIRE AMOUNT AUTHORIZED FOR THE AG PRODUCTION ACTIVITIES MAY BE OBLIGATED (WITHIN THE CONSTRAINT OF ANNUAL AVAILABILITY OF FUNDS FOR THIS ACTIVITY). IN ADDITION, TO PROVIDE FLEXIBILITY DURING IMPLEMENTATION FOR THE PROJECT CRITERIA MAY BE DESIGNED AND APPROVED FOR IDENTIFYING, PLANNING AND APPROVING NEW KINDS OF ACTIVITIES THAT CAN BE ADDED TO THE LIST DURING IMPLEMENT-ATION TO REFINE THE PROJECT AND TO RESPOND TO CHANGED CIRCUMSTANCES AND INFORMATION LEARNED IN IMPLEMENTATION.

THE LIST SHOULD INCLUDE (1) PARTICULAR TARGET CROPS, (2) KINDS OF TECHNOLOGIES, (3) PROBABLE INPUTS PER UNIT OF ACTIVITY AND ESTIMATES OF THE COST OF PROVIDING EACH KIND OF ACTIVITY.

--B. AS AN ALTERNATIVE, OR IN ADDITION, SPECIFIC ACTIVI-

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WOULD INCLUDE THE ACTIVITIES THAT COULD BE OFFERED FOR IMPLEMENTATION. THE STUDY WOULD INDICATE THAT IT IS APPROPRIATE TO FINANCE PRODUCTION OF BURNED BRICKS, BLACKSMITHING, WEAVING, POTTERY, APPROPRIATE TOOLS AND MACHINERY, TRAINING, SOLAR ENERGY, WHATEVER= (3) HOW THESE ACTIVITIES WILL BE IMPLEMENTED THROUGH NEW OR EXISTING INSTITUTIONS= (4) DESCRIBE ADMINISTRATIVE MECHANISM= (5) CRITERIA FOR ADDING ACTIVITIES, VILLAGES OR INDIVIDUALS FOR THIS ASSISTANCE DURING IMPLEMENTATION.

--C. ALTERNATIVELY THE PROJECT COULD BE AUTHORIZED ON THE BASIS OF GENERAL INFORMATION SUCH AS THAT NOW IN THE PP. AN ALLOTMENT OF FUNDS MAY BE MADE TO THE FIELD AFTER AUTHORIZATION, AND INDIVIDUAL OBLIGATIONS WOULD THEN BE MADE AS SPECIFIC ACTIVITIES OR GROUPS OF ACTIVITIES ARE IDENTIFIED AND THE MISSIONHAS REVIEWED ANPHAIJLHVED TOA ACTIVITIES AGAINST CRITERIA ESTABLISHED IN THE PP AND APPROVED BY AID/W.

AID/W OFFERS FOLLOWING COMMENT BASED ON REVIEW OF SOW FOR FEASIBILITY STUDY. TEAM HAS CONSIDERABLE TASKS TO ZBGCYZOLGZHIXWEDELIEVE TASKS 1, 2 AND 3 HF OR AT LEAST DEEMPHASIZED AND MAJOR EFFORTS BE DEVOTED TO NUMBERS 4 AND 5 AND THOSE TASKS IDENTIFIED IN 5(D).

6. ARUSHA FUND: IN GENERAL ESTABLISHING SUCH A FUND

CREATES 611(A) PROBLEMS UNLESS, AS NOTED ABOVE, IT CAN BE DETERMINED AT LEAST WHAT KIND OF ACTIVITIES WILL BE FINANCED BY THE FUND. IF A FUND IS NEEDED, THE SAME GENERAL APPROACH EXPLAINED FOR THE AG PRODUCTION AND OTHER ECONOMIC ACTIVITIES SHOULD BE FOLLOWED.

7. ENVIRONMENTAL REGULATIONS AND 611(A): SATISFYING AIDRS ENVIRONMENTAL REGULATIONS IN AN EFFECTIVE MANNER IS ANOTHER CONCERN IN A PROJECT SUCH AS THIS IN WHICH MANY DIFFERENT ACTIVITIES WILL BE CONDUCTED AT DIFFERENT SITES. BASICALLY, AIDRS JUDGMENT REGARDING THE ENVIRONMENTAL EFFECT OF AID FINANCED ACTIVITIES MUST BE MADE AT A TIME WHEN (A) THE SPECIFIC ACTIVITY IS PLANNED FOR A SPECIFIC PLACE- BECAUSE ENVIRONMENTAL JUDGMENTS CANNOT BE MADE IN GOOD FAITH WITHOUT KNOWLEDGE OF WHAT WILL BE DONE AND WHERE AND (B) BEFORE AID IS COMMITTED IN A SPECIFIC WAY AT A SPECIFIC LOCATION SO THAT ADJUSTMENTS CAN BE MADE (AN EA MAY BE PERFORMED ON A SITE OR TYPE OF INTERVENTION NOT CONDUCTED) [illegible] INDICATES THAT AN

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TIES CAN BE IDENTIFIED DURING IMPLEMENTATION BY THE VILLAGES AND THE TA TEAM. FUNDS MAY BE ALLOTED TO THE FIELD AFTER AUTHORIZATION OF THE PROJECT AND THESE ACTIVITIES ARE THEN SUBJECT TO THE RDO AND MISSION REVIEW AGAINST APPROVED CRITERIA. OBLIGATION MAY PROCEED AFTER THE ACTIVITIES ARE IDENTIFIED AND PLANNED. INDIVIDUAL OBLIGATIONS MAY BE AVOIDED TO THE EXTENT THAT ANNUAL (OR BI-ANNUAL, ETC.) WORK PLANS CAN BE PREPARED FOR SPECIFIC ACTIVITIES AND APPROVED BY THE MISSION. THERE WOULD BE NO NEED TO OBTAIN AID/W APPROVAL OF THE SPECIFIC ACTIVITIES FINANCED AS LONG AS THE MISSION ACCEPTS RESPONSIBILITY FOR NOT OBLIGATING FUNDS FOR SPECIFIC ACTIVITIES UNTIL THEY ARE IDENTIFIED AND PLANNED.

5. OTHER ECONOMIC ACTIVITIES: WITH RESPECT TO ECONOMIC DEVELOPMENT ACTIVITIES, INCLUDING THE INTERMEDIATE TECHNOLOGY ACTIVITIES, THE PP INDICATES THAT A FEASIBILITY STUDY WILL BE CONDUCTED IN THE FIRST PHASE TO INVESTIGATE INTERMEDIATE TECHNOLOGY ALTERNEZIVES. FOR THIS COMPONENT IT IS SUGGESTED THAT SECTION 611(A) BE SATISFIED IN MUCH

THE SAME WAY AS FOR AG PRODUCTION AS FOLLOWS:

--A. PRIOR TO APPROVAL OF THE PROJECT, PDS FUNDS CAN BE OBLIGATED FOR GOODS AND SERVICES REQUIRED FOR THE FEASIBILITY STUDY. FYI: FEASIBILITY STUDIES FINANCED WITH PDS FUNDS AT A COST OF DOLS 50,000 OR MORE REQUIRE AA/AFR APPROVAL. END FYI.

--B. THERE ARE AGAIN TWO ALTERNATIVES FOR SATISFYING 611(A). THE FEASIBILITY STUDY MAY IDENTIFY AND PLAN, IN COOPERATION WITH THE VILLAGERS, THE SPECIFIC KINDS OF ACTIVITIES THAT WILL BE OFFERED TO THE VILLAGERS AND FINANCED. FEASIBILITY STUDY SHOULD THEN (1) EXAMINE EXISTING INSTITUTIONS AND ACTIVITIES IN ARUSHA AND MAKE RECOMMENDATIONS REGARDING COLLABORATION WITH THESE GROUPS= (2) BASED ON WHAT WE KNOW BE VILLAGES PREPARE A LIST OF THE TYPES OF ACTIVITIES TO BE UNDERTAKEN AND PLAN HOW EACH TYPE OF ACTIVITY WILL BE CONDUCTED INCLUDING GOODS AND SERVICES NEEDED. FOR EXAMPLE, THE STUDY COULD INDICATE THE KINDS AND AMOUNTS OF GOODS AND SERVICES AND THE COST NEEDED TO PROVIDE A SINGLE UNIT OF EACH KIND, REPEAT KIND OF ACTIVITY. AGAIN THIS LIST IS NOT ILLUSTRATIVE, BUT

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INTERVENTION WILL HAVE A SIGNIFICANT EFFECT ON THE ENVIRONMENT. PROBLEMS SATISFYING ENVIRONMENTAL CONCERNS ARE INCREASED WHEN A PROJECT INVOLVES A LARGE NUMBER OF DIFFERENT SMALL ACTIVITIES. THE FOLLOWING GUIDANCE IS OFFERED TO THE MISSION, REDSO AND DESIGN TEAM FOR CONSIDERATION AND COMMENT.

--A. FUNDS MAY BE OBLIGATED FOR THE ROAD AND WATER COMPONENTS TO SUPPORT CONTRACTS FOR GOODS (EQUIPMENT WITH LONG LEAD TIMES) AND SERVICES FOR THESE COMPONENTS. BEFORE OPERATIONS ON EACH PARTICULAR ROAD AND WATER INTERVENTION ARE COMMENCED, AN IEE MUST BE PERFORMED AND REVIEWED BY THE MISSION. IF AN IEE FOR A ROAD OR WATER INTERVENTION INDICATES THAT IT WILL HAVE A SIGNIFICANT EFFECT ON A LOCALITY, AN EA WILL BE CONDUCTED OR THE ROAD OR WATER FACILITY WILL NOT BE CONSTRUCTED. (AN IEE MAY BE DONE FOR AN INDIVIDUAL ROAD OR WATER ACTIVITY OR FOR A GROUP OF ROADS OR WATER ACTIVITIES, BUT IT MUST BE ACCOMPLISHED BEFORE THE ROAD OR WATER ACTIVITY COMMENCES).

--B. IF SECTION 611(A) IS SATISFIED FOR THE AG. PRODUCTION AND FOR THE ECONOMIC ACTIVITIES COMPONENTS BY DEVELOPMENT OF THE LISTS OF POSSIBLE ACTIVITIES TO BE OFFERED TO VILLAGERS AND FUNDS OBLIGATED AGAINST THESE LISTS IN THE MANNER DESCRIBED PARA 417-) (AG PRODUCTION) AND PARA 5(B) (ECONOMIC ACTIVITIES), AN IEE SHOULD BE COMPLETED FOR EACH SPECIFIC ACTIVITY PRIOR TO THE TIME FUNDS ARE ALLOCATED FROM THE FUND FOR A SPECIFIC AG PRODUCTION ACTIVITY OR ECONOMIC ACTIVITY IN A SPECIFIC PLACE.

OR, IF THE OPTION OF DEVELOPING A LIST OF AG PRODUCTION ACTIVITIES AND A LIST OF ECONOMIC ACTIVITIES IS NOT CHOSEN, THE MISSION PREFERS TO OBLIGATE FUNDS FOR SPECIFIC ACTIVITIES AS THEY ARE IDENTIFIED AND PLANNED. AN IEE MUST BE COMPLETED FOR EACH AG PRODUCTION ACTIVITY AND EACH ECONOMIC ACTIVITY BEFORE FUNDS ARE OBLIGATED FOR IT IN THE MANNER DESCRIBED ABOVE IN PARA 4(B) AND 5(C).

B. OTHER TASKS:

-- REVISE GOT REQUEST FOR AID ASSISTANCE TO INCLUDE VILLAGE COMPONENT;

-- REVISE BUDGETS;

-- REVISE CHECKLIST;

-- PREPARE ADVICE TO CONGRESS;

-- INSTRUCTIONS MUST BE COMPLETED AND COST ESTIMATES FOR EARV.....

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... REVISE CHECKLIST=

-- PREPARE ADVICE TO CONGRESS=

-- CONSTRUCTION PLANNING AND COST ESTIMATES FOR FARM CENTERS MUST BE COMPLETED AND APPROVED BY REDSO ENGINEERS.
CHRISTOPHER

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January 1970
GPO: 1970

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Department of State

INCOMING TELEGRAM

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INFO OCT-01 AF-10 /042 W

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P R 231000Z JAN 75
FM AMEMBASSY DAR ES SALAAM
TO SECSTATE WASHDC PRIORITY 7375
INFO AMEMBASSY NAIROBI

UNCLAS DAR ES SALAAM 0272

AIDAC

AID/W FOR NORTH, DAA/AFR

NAIROBI FOR REDSO

E.O. 11652: N/A
SUBJ: COMPLETION OF ARP/VDP DESIGN - 621-0143

REFS: A. STATE 011500 B. STATE 000349

1. PER REF B AND YOUR OFFER OF HELP UNRAVEL QUOTE UNDUE DELAYS UNQUOTE IN AID/W SUPPORT EFFORTS, WE HAVE A PROBLEM.

2. IN SEPTEMBER, USAID ASST. DIRECTOR AND AG ECONOMIST PARTICIPATED IN PC AND EPRC REVIEWS OF SUBJECT PROJECT. DURING EPRC MEETING WE AGREED TO STIPULATIONS REGARDING 611 (A) REQUIREMENTS FOR ROAD AND WATER ACTIVITIES SINCE THESE CAUSED CONCERN. MISSION AND REDSO ARE WELL ON WAY TO COMPLETING THESE COMPONENTS AND UNDERSTOOD AID/W WAS TO PREPARE AUTHORIZING MEMO CONTAINING CONDITIONS AGREED AT EPRC.

3. NOW WE RECEIVE REF A REPORTING ON PC MEETING HELD ONE MONTH AGO THAT RAISES WHOLE NEW DESIGN AND PROCEDURAL ISSUES REGARDING 611 REQUIREMENTS FOR AGRICULTURE AND OTHER ECONOMIC ACTIVITIES AND LEAVING UPON MISSION FURTHER EXTENSIVE DESIGN WORK. WE UNDER IMPRESSION THAT FIRST PC MEETING LAST SEPTEMBER WAS FOR PURPOSE OF IDENTIFYING DETAILS TO BE [illegible] FOR FINAL REVISION AT SUBSEQUENT EPRC REFERENCED PARA 2 ABOVE. NONE OF THESE NEW ISSUES WERE RAISED IN ANY WAY DURING PC OR EPRC MEETINGS. ALSO [illegible] FEBRUARY APPROVAL DATE GIVEN TO PRIME MINISTER DURING [illegible] DECEMBER VISIT WE VERY SURPRISED THESE NEW TACKS HAVE BEEN RAISED. FOLLOWING YOUR VISIT, BOTH PRIME MINISTER AND REGIONAL OFFICIALS ANTICIPATED [illegible] ARRIVAL OF [illegible]. IN FACT TANGOV HAS ALREADY OBTAINED HOUSING AND OFFICE SPACE. [illegible] THIS VERY DIFFICULT COURSE OF ACTION AND UNEXPECTED SPONTANEOUSLY GROWING LIST OF DESIGN REQUIREMENTS. WE FORESEE PROJECT OBLIGATION MAY NOT OCCUR AT ANY TIME IN FY 1975. BY THEIR [illegible] NATURE, AGRICULTURAL PRODUCTION AND OTHER ECONOMIC ACTIVITIES [illegible] VARY GREATLY IN [illegible] VILLAGE AGRICULTURE AND ALTERNATIVE INCOME-GENERATING ENTERPRISES NOW UNDERWAY IN THE THREE DISTRICTS.

4. 611 (A) PLANNING FOR AGRICULTURAL PRODUCTION AND OTHER ECONOMIC ACTIVITIES CAN ONLY BE DONE IN ANY REASONABLE WAY DURING PHASE I OF PROJECT DURING WHICH TIME DATA TO BE GATHERED AND PROJECT ACTIVITIES IDENTIFIED FOR DISTRICT PROGRAMS. REF B SEES [illegible] SEVERAL ADDITIONAL PERSON MONTHS OF WORK. WE BELIEVE THAT ATTEMPTING TO PROVIDE THIS INFORMATION PRIOR TO COMPLETION OF DISTRICT PLANS PREJUDICES OUTCOME OF PHASE I AND DESTROYS MISSION INTENT TO BASE PROJECT UPON LOCAL INITIATIVES. AID/W MUST DECIDE WHETHER IT SUPPORTS GENUINE VILLAGE DECISION MAKING [illegible] AID PLANNING AND CONTROL. THE FORMER FOLLOWS THE CONGRESSIONAL MANDATE, TANGOV DECENTRALIZATION AND ORIGINAL PROJECT DESIGN. THE LATTER REPRESENTS AID TRADITIONAL AND OUT OF DATE WAY OF DOING BUSINESS. THE TWO APPROACHES ARE INCOMPATIBLE.

5. VERY CONCERNED THAT 611 AND OTHER LEGAL REQUIREMENTS WILL CONTINUE TO TIE AF BUREAU WITH EFFECT THAT IT IMPOSSIBLE TO GET PROJECT APPROVED IN LESS THAN ONE YEAR FROM TIME OF PP SUBMISSION, AS WAS RECENTLY THE CASE WITH USAID/T SEED AND RESEARCH PP REVISIONS. THERE SIMPLY MUST BE BETTER WAY TO GET PROJECTS MOVING. SINCE BUREAU ON RECORD THAT THIS PROJECT FIRST PRIORITY AMONG FY 75 NEW STARTS, WE KNOW YOU SHARE OUR INTEREST AND THAT OF TANGOV TO PROCEED AS RAPIDLY AS POSSIBLE.

6. ACTION REQUESTED: AS MINIMUM, REQUEST YOU PRESS TO SECURE LATE MARCH AUTHORIZATION TOTAL PROJECT WITH MISSION DIRECTOR GIVEN AUTHORITY TO APPROVE 611 FOR AGRICULTURE AND OTHER ACTIVITIES. ALLOTMENT OF DOLS 1.9 MILLION TO FOLLOW SO THAT PHASE I PLANNING AND PROCUREMENT ROAD AND WATER EQUIPMENT CAN PROCEED. USING WORK ALREADY DONE ON ROADS AND REMINGTON DATA ON 611 WATER COMPONENT AND WITH DEPP ASSISTANCE, MISSION WILL REWRITE RELEVANT PORTIONS OF PP FOR DEPP TO HANDCARRY END OF FEBRUARY. ONCE PHASE I COMPLETED, MISSION DIRECTOR CAN MAKE DETERMINATION REGARDING SATISFACTION 611 (A) REQUIREMENTS PRIOR TO OBLIGATION FY 76 FUNDS FOR IMPLEMENTATION AGRICULTURAL AND OTHER REMAINING ACTIVITIES.

7. FOLLOWING YOUR ANSWER THIS APPEAL, MISSION WILL REPORT BACK TO PRIME MINISTER AND REGIONAL OFFICIALS REGARDING LIKELY COMMENCEMENT PROJECT ACTIVITIES SO THAT TANGOV EXPECTATIONS DO NOT CONTINUE TO EXCEED OUR ABILITY TO RESPOND.
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Best Available Document

DEPARTMENT OF STATE

TELEGRAM

PROJ: 621-0143(PP)

ACTION
AID-5
INFO
CHANGE
A/DCI:
ADMIN:
CPTCH:
RF

USAID DISTR.(2/9/78)
ACTION: AGR
INFO: PRM
ZND
RF
CHRON

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STATE 032059
Feb 8, 1978
0320 Hrs

O P 071352Z FEB 78
FM SECSTATE WASHDC
TO RUVSDA/AMEMBASSY DAR ES SALAAM IMMEDIATE 1996
INFO RUVCC/AMEMBASSY NAIROBI PRIORITY 6414
BT
UNCLAS STATE 032059

AIDAC, PASS NAIROBI FOR REDSO

E.O. 11652: N/A

TAGS:

SUBJECT: COMPLETION OF ARP/WCP DESIGN

REF: (A) STATE 011800; (B) STATE 250621(1977);
(C) DAR 3272

1. I HAVE REVIEWED REFTELS AND BELIEVE REF A TO BE CONSISTENT WITH REF B AND POSITIONS TAKEN IN FC AID FCPR MEETINGS REGARDING SUBJECT PROJECT. REF A WAS INTENDED TO CLARIFY CONFUSION WHICH APPARENTLY DEVELOPED AFTER MEETINGS. I BELIEVE REF A TO BE A HELPFUL STATEMENT CONSISTENT WITH AID AND TANGOV EFFORTS TO DECENTRALIZE AUTHORITY AND WILL ACCELERATE PROJECT AUTHORIZATION. ALSO BELIEVE GUIDANCE WILL PERMIT USAID TO MOVE FORWARD ON OBLIGATION OF FUNDS AND PROJECT IMPLEMENTATION IN ORDERLY WAY RESPONSIVE TO THE NEEDS AND VIEWS OF THE PEOPLE OF PROJECT AREA AND TANGOV.

2. TO SUMMARIZE PREVIOUS GUIDANCE, SET FORTH IN REFTELS, THE FOLLOWING IS PROVIDED.
(A) USAID, USING TECHNICAL/LEGAL SKILLS AVAILABLE IN NAIROBI AS APPROPRIATE, WILL HAVE THE RESPONSIBILITY TO DETERMINE, IN ACCORDANCE WITH GUIDANCE PROVIDED ON THIS SUBJECT AT TIME OF AUTHORIZATION, WHEN SECTION 611(A) IS SATISFIED WITH RESPECT TO AGRICULTURAL ACTIVITIES AND OTHER REMAINING ACTIVITIES WITHOUT TURNING TO A.I.D./W IN EACH INSTANCE. REF A WAS INTENDED TO DESCRIBE HOW THAT MIGHT BE ACCOMPLISHED.
(B) PROJECT CAN BE AUTHORIZED PRIOR TO COMPLETE SATISFAC-

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FORM PS-41300
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DEPARTMENT OF STATE

TELEGRAM

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-2-

TION OF SECTION 611 WITH RESPECT TO THE AG PRODUCTION AND OTHER ECONOMIC ACTIVITIES COMPONENTS. OBLIGATION OF FUNDS MAY BE MADE ONLY FOR THOSE COMPONENTS OF PROJECT WHICH HAVE BEEN PLANNED IN ACCORDANCE WITH SECTION 611. OBLIGATION FOR COMPONENTS THAT DO NOT SATISFY SECTION 611 AT THE TIME OF AUTHORIZATION SHALL BE MADE WHEN ADEQUATE PLANNING (AND COST ESTIMATES) IS COMPLETED. PROJECT AUTHORIZATION WILL IDENTIFY BY COMPONENT WHICH ELEMENTS OF PROJECT ARE TO RECEIVE FURTHER ANALYSIS.

(C) BASED ON REVIEW OF EXISTING DOCUMENTS, IT IS AID/W OPINION THAT STATUS OF EACH MAJOR COMPONENT IS AS FOLLOWS:

---1. TECHNICAL SERVICES - 611 CAN BE SATISFIED

---2. ROAD ACTIVITIES - 611 CAN BE SATISFIED

---3. WATER SUPPLY ACTIVITIES - PROBABLY CAN BE SATISFIED BY PERMISSION WORK

---4. AG PRODUCTION ACTIVITIES - PROBABLY WILL HAVE TO BE SATISFIED AFTER OTHER COMPONENTS OF PROJECT HAVE STARTED

---5. INTERMEDIATE TECHNOLOGY - PROBABLY WILL HAVE TO BE SATISFIED AT THE TIME OF AUTHORIZATION AFTER OTHER COMPONENTS OF PROJECT HAVE STARTED

---6. SINCE SECTION 611(A) EXPECTED TO BE SATISFIED FOR ROAD AND WATER COMPONENTS PROCUREMENT OF GOODS AND SERVICES TO SUPPORT ROADS/WATER COMPONENT CAN BE UNDERTAKEN PRIOR TO SATISFACTION OF SECTION 611(A) WITH RESPECT TO THE AG PRODUCTION AND OTHER ECONOMIC ACTIVITIES COMPONENTS.

3. FINAL DECISION ON STATUS OF COMPONENTS CANNOT REPEAT CANNOT BE MADE UNTIL RECEIPT OF REVISED PP.

4. TASK OF USAID IS TO INCORPORATE INTO PP THE INFORMATION AS TO WHICH OPTION FOR SATISFYING 611 CONCERNS IS BEING ADOPTED AND TO PROVIDE THE INFORMATION (SUGGESTED IN REFTELS) WHICH SUPPORTS THE SELECTED APPROACH.

5. BELIEVE USAID WORKING WITH DEPP AND ELA CAN FINALIZE PP. HOWEVER, IF ADDITIONAL ASSISTANCE REQUIRED, PLEASE ADVISE.

6. WE INTEND TO ACCELERATE REVIEW ASAP TO EXTENT POSSIBLE.

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FORM DS-1624 (11-74)

A P P E N D I X G

Planning Requirements for Project Activities

PLANNING REQUIREMENTS FOR PROJECT ACTIVITIES

The Administrator has authorized funds for certain activities, but the funds may not be obligated until planning for the activities is completed. The authority to determine when plans are completed and funds may be obligated has been delegated by the Administrator to the Mission Director of USAID/Tanzania. The determination is to be based on a conclusion that the proposed activity complies with all policies, rules, regulations and laws applicable to the provision of AID assistance, and will serve to accomplish the purpose of the project. In order to facilitate this determination process, criteria have been set forth against which each activity is to be judged.

The administrative vehicle for applying the criteria will be the preparation of an Annual Work Plan. The Work Plan is intended to be an evaluation of current activities and a request for assistance for the upcoming year. It will consist of the following:

- -- status of current activities;
- -- evaluation of current activities;
- -- identification of new activities;
- -- environmental review of expected new activities; and
- -- any economic, social, technical analyses or feasibility studies needed to implement new activities.

It shall be submitted for approval to the USAID/Tanzania Mission Director at a time agreed upon and specified in the project agreement. This does not preclude submission of supplementary plans as the need arises.

Although it is expected that actual preparation of the Work Plan will be a collaborative effort among A.I.D., TanGov and the technical assistance contract team, responsibility for the submission of the plan for AID approval will be that of the RDD and his staff. The Mission Director may request advice and assistance from REDSO and other sources as needed.

While a Work Plan may be submitted for a discrete activity, it is envisioned that a series of activities in a particular village will be identified and described in the Work Plan. This should simplify USAID and REDSO backstopping requirements by allowing any technicians required for field inspection to review several activities.

The following criteria shall be applied to determine whether or not an activity is eligible for obligation of funds:

I. Mandatory Criteria for All Activities

These criteria shall be applied to all activities.

A. 611(a) criteria:

1. Project activity must be identified;

2. The manner in which activity will be carried out shall be described;

3. The approximate date project will begin and end must be described;

4. The site of t activity must be identified or criteria for selecting ..te set forth;

5. Nature of goods and services to be provided must be identified;

6. Cost of goods and services identified sufficiently to enable reasonably firm cost estimate;

7. Where applicable, engineering or other technical planning necessary to carry out particular activity will be identified. See engineering criteria for infrast ucture activities in following section.

B. Environmental Criteria

While a negative determination has been approved for the Initial Environmental Examination, specific environmental examinations must be done for each activity or group of activities, and must be completed prior to initiation of the activity, except for activities which by their nature appear to have no obvious environmental impact. If the determination is negative the activity may be undertaken without further environmental review. If the determination is positive an EA will be conducted, or the activity not be undertaken. If an EA is undertaken the results will be taken into consideration in reaching a decision on the final design of the activity and whether or not to finance the activity.

II. Selective Criteria

Criteria to be used to judge agricultural and other economic activities are set forth below. The information required to satisfy the criteria will be generated by the on-going information system for planning, monitoring and evaluating project activities as described in detail in Annex B. In addition to the mandatory criteria set forth above, the following must be taken into account:

A. Economic Criteria:

1. That projected costs and returns result in benefits sufficient for the target population to become involved in the activity;

2. That the technologies being introduced and tested are appropriate for the local economic systems;

3. Where applicable, that the agricultural support system is adequate, including availability of inputs, extension assistance and a marketing system for both inputs and outputs;

4. That the costs are reasonable in relation to the expected number of beneficiaries;

5. That recurrent costs and maintenance of the activity can be provided by the village or Tambov;

6. That an adequate administrative/organizational structure exists through which to implement the activity, including adequate staff, operating funds, and management procedures.

B. Social Criteria:

1. The number and composition of the beneficiary group must be identified and must consist primarily of the poor majority;

2. Social disruption caused by the project activities must be minimal;

3. The activity must be designed to enhance the position of women;

4. The project must encourage participation of the community in the development activities and improve the decision-making organizational structure at the local level.

III. Criteria for Infrastructure Activities (Including Roads, Water Systems, Irrigation and Construction of Facilities)

A. Rural Roads:

1. Locality

a. Establish corridor location or zonal location as appropriate.

b. Perform site reconnaissance of corridor or zone with special emphasis on identification of obstacles and expensive areas of construction, i.e., different topography, major stream or river crossings, large areas of black cotton or compressible soils, etc.

2. Traffic

Estimated and project (if possible) anticipated traffic by type and amount.

3. Materials Investigation

   a. Perform sufficient soils and materials investigation for determination of soil types and to locate necessary quantities of select materials.

   b. Determine appropriate construction materials in light of local customs, preference, availability and cost.

4. Design Criteria

   a. Establish typical cross sections for traversing out and fill areas; establish other geometric standards as appropriate such as minimum sight distance, maximum grade etc.

   b. Establish design criteria for pavement structure as appropriate.

   c. Establish typical criteria for stream crossings or water transfers (pipe culverts, box culverts, masonry culverts, fords, etc.).

   d. Establish design criteria for bridge loading.

   e. Prepare prototype designs and sketches for any bridges which might be necessary. This could include determination of span lengths, types of superstructures and types of substructures.

5. Cost Estimates

   a. Prepare roadway cost estimates based on typical construction costs per kilometer of road over various types of terrain for the design and construction standards best suited to serve the needs.

   b. Prepare cost estimates for bridges on a total linear or total area basis. Complex structures should be evaluated on a case-by-case basis.

6. Execution of Project

   a. Investigate construction techniques, i.e., optimum mix of labor, simple tools and equipment, and conventional construction machinery.

   b. Investigate local government's availability/capability.

c. Investigate possible methods of construction, i.e., contracting or force account.

d. Develop a plan for execution of the project including a plan for design, sequence and description of major construction operations, methods of construction, control of construction, equipment and personnel needs, logistical requirements, etc.

e. Prepare schedule for major operations including procurement, design, and construction operations.

7. Maintenance

a. Describe maintenance requirements upon completion project.

b. Prepare maintenance plan and determine agency responsible for maintenance.

B. <u>Water Systems</u>:

1. Obtain following data:

a. Location and size of villages

b. Ground water hydrology

— i. Depth of aquifer
-- ii. General subsurface strata to producing aquifer

2. Estimate well production

3. Estimate number and spacing of wells by type, i.e., hand dug or bored.

4. Establish criteria to insure sanitation precautions

5. Estimate materials, equipment and labor requirements

6. Estimate costs and prepare least cost analysis

7. Maintenance

a. Describe maintenance requirements upon completion of wells.

b. Determine viability of organization responsible for maintenance.

c. Recommend changes for organization.

d. Estimate maintenance budget.

C. Facilities Construction:

1. A description of the facility, construction plans and costs;

2. Review and approval of these activities by REDSO;

3. Plans for maintenance of the proposed facility, including identification of available resources to fund recurrent costs;

4. Analysis of the availability of technical services required for construction;

5. The timely availability of any machinery and materials required for construction;

6. Accessibility of the area in which the construction is proposed;

7. The use of local materials to the extent possible.

IV. Planning Requirements for Project Activities

A. For the activities listed below specific environmental examinations and select criteria must be met prior to initiation of each activity. All other criteria have been met.

Planning, Implementation, Evaluation		$3,089.9
Technical Assistance	$2,149.4	
Training	450.4	
Commodities	365.1	
Other (evaluation)	125.0	
Agricultural Production		$2,391.3
Technical Assistance	860.5	
Training	135.0	
Commodities (housing, vehicles & operating costs)	1,395.8	
Other Economic		820.8
Technical Assistance (all except local staff for appropriate technology center)	625.0	

Training	32.0		
Commodities (vehicles and operating costs)	163.8		
Road Systems			3,667.8
Technical Assistance	862.5		
Commodities	2,805.2		
Water Systems & Irrigation			3,049.5
Technical Assistance	521.7		
Training	8.0		
Commodities	2,519.8		
Conservation			410.8
Technical Assistance	362.5		
Training	48.3		
		TOTAL	$13,430.0

B. For the activities listed below all criteria remain to be satisfied.

Agriculture Production			720.0
Commodities (farm centers, supplies for centers)	720.0		
Other Economic			161.3
Technical Assistance (local staff for appropriate technology center)	34.8		
Commodities (appropriate technology center and equipment and supplies)	126.5		
Water Systems Irrigation			280.0
Commodities (materials for irrigation)	280.0		
		TOTAL	$1,161.3

C. TOTAL PROJECT $14,591.3

A P P E N D I X H

Tanzanian Government Request for Assistance

ANNEX I

"Non U.S. Government Classification"

TEL: 621-0143

THE UNITED REPUBLIC OF TANZANIA

OFFICE OF THE PRESIDENT
P.O. BOX 980,
DODOMA.

Ref. No. [illegible]/20/53/1) 5th May, 1977

The Principal Secretary,
Ministry of Finance and Planning,
P.O. Box 9111,
Dar es Salaam. (Att. of Mr. Mutalemwa,
Commissioner for External Finance)

REQUEST FOR TECHNICAL ASSISTANCE FOR THE PREPARATION OF REGIONAL INTEGRATED DEVELOPMENT PROGRAMS (RIDP) PHASE TWO FOR ARUSHA REGION

In 1974 the Government of the United Republic of Tanzania approached the Government of Sweden for technical assistance with a view to preparing Phase I of a Regional Integrated Development Programme for Arusha Region. Following the acceptance of this request the Swedish Government dispatched a team of three experts who arrived in Arusha Region in the month of November, 1974. The team stayed in the region for twelve months during which time they made a general review of development and identified future opportunities for the region. This was contained in their "Integrated Development Planning Arusha Region - Observations and Proposals for the Improvement and Better Integration of long term Development Planning".

Needless to emphasise here that the usefulness of this report is only through a follow-up study. It is felt that a team that another team be dispatched to Arusha Region to continue the preparation of the RIDP from where the first team left off. In Phase II team would have the task of preparing a detailed feasibility study resulting in the preparation of bankable projects.

The time table of Phase Two of RIDP work will be [illegible] years. Assuming an early start in January 1978 the study should be finished by December of the same year so that implementation of some projects could start there after.

"Non U.S. Government Classification"

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In the light of the foregoing, we would therefore request you to submit a formal application to the United States Agency for International Development seeking for Technical assistance for the preparation of Phase II of the Integrated Regional Development Programme for Arusha Region. The terms of Reference for the Technical assistance Team are summarized below with the job description appended as annex.

<u>Terms of Reference for the Preparation of Phase Two of Arusha Integrated Regional Development Plan</u>.

1. Conduct studies on soil surveys, ground water availability, micro-climatic conditions, aerial photography, etc. to determine suitable locations for projects and land-carrying capacity.

2. Prepare detailed investment programmes concerning the rural development sectors with major emphasis on directly productive investments e.g. sub-sectors of agriculture, livestock, small - scale industry, forestry, etc. with a view to raising real incomes of the rural population.

3. The team will determine and devise suitable production mix relevant to the various ecological areas in the light of their natural resources and constraints to achieve an adequate production mix for the region as well as for the neighbouring regions (e.g. Dodoma Capital City).

4. Prepare the most appropriate scale of the Project Investment.

5. Determine optimal techniques of production to be used in crop and livestock production in order to maximize the use of land and labour e.g. the most utilization of labour and land through the Ujamaa Village Settlement pattern.

6. Prepare village integrated plans. The selection of project villages should be based on both technical/social and economic considerations.

7. A step-wise approach will be applied in selecting directly productive investment projects. This

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will also be applied to both economic and social infrastructure wherever possible. Where this is not possible then the least cost alternative should be applied.

8. Local expertise and past experiences in various fields should be investigated and utilized wherever possible.

9. Particular attention should be given to manpower requirements, training and institutional building. These requirements should be treated a part of project preparation so as to ensure smooth planning and implementation of projects during and after the departure of the foreign experts.

10. The External Technical Assistance team for the Regional Integrated Development Plan for Arusha Region will work in close collaboration with the Regional Authorities. They will all report to the Prime Minister's Office which has the overall responsibility for coordination of Regional Planning.

In conclusion this Office attaches high priority to preparation of Phase Two of Arusha Region Integrated Development Plan. We hope therefore that this request will be treated urgently to facilitate the arrival of the External Technical Assistance Team from the United States.

Yours sincerely,

O.[illegible]

for. PRINCIPAL SECRETARY

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COPY: Principal Secretary,
State House,
P.O. Box 9120, DAR ES SALAAM.

" Regional Development Director,
Regional Commissioner's Office,
P.O. Box 3050, ARUSHA.

" Mr. Cornelius, Jr.,
Consultant,
P.O. Box 9130,
DAR ES SALAAM.

MINISTRY OF FINANCE AND PLANNING (PROJ: 62?-0128)

Telegrams "Treasury", Dar es Salaam.
Telephone: 11171.
(All Official communications should be addressed to the Principal Secretary to the Treasury and NOT to individuals)
In reply please quote:
Ref. No. TYC/D/50/23

THE TREASURY,
P.O. Box 9111,
DAR ES SALAAM.

"Unclassified Government Classification"

10th February, 1978.

The Director,
USAID,
P.O. Box 9130,
Dar es Salaam.

DIST	ACT	INT
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MCH		
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JUR		X

Dear Sir,

REQUEST FOR UNDERTAKING ARUSHA REGIONAL INTEGRATED DEVELOPMENT PLAN

Further to our letter TYC/D/50/23 of 12 May 1977, the Government of the United Republic of Tanzania would like to request USAID the following:-

a) To undertake the preparation and planning of Regional Integrated Development Plan for Arusha Region.

b) The implementation of:- i) Road Construction,
ii) Village water supply
iii) Agricultural projects
iv) Other Economic projects

Further, we would like to suggest that the execution of this Integrated Development Plan should be under the supervision of the Regional Development Director, Arusha.

Thank you for your assistance and Cooperation in this matter.

Yours sincerely,

"Unclassified Government Classification"

F.S. Isaa
for PRINCIPAL SECRETARY

RECEIVED
14 FEB 1978
C & R

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R.D.D. - Arusha.

P.M.O. - Dodoma.

TTC/E/550/7 (USAID main file)

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T A N Z A N I A

ARUSHA PLANNING AND VILLAGE DEVELOPMENT PROJECT

VOLUME II - ANNEXES

Project Paper No. 621-0143

182

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ANNEX A : District Profiles

ANNEX B : Information System for Planning, Monitoring and Evaluating Project Activities

ANNEX C : Technical Assistance Analysis and Job Descriptions

ANNEX D : Technical Analysis - Roads

ANNEX E : Technical Analysis - Water and Irrigation Systems

ANNEX F : Supporting Data and Reports for Annex D and E

F-1 : "Trip Report, Arusha, Tanzania, October 17-21, October 31 - November 4, November 15-17, 1977 (Baker and Brahmbhatt Memorandum dated November 29, 1977)

F-2 : Samuel Lubin "Report on Road Rehabilitation and Water Supply Development. Included in the Tanzania Village Development Project," (Experience Inc. Contract No. AID/afr-C-1130 W.O. 79), November 1977.

F-3 : Stafford Baker, "Trip Report, Arusha, January 16 to 24, 1978," Baker to Bell Memorandum, dated February 3, 1978.

F-4 : Stanley Remington, "Trip Report, Kenya-Tanzania," dated January 26, 1978.

ANNEX G : Technical Analysis Facilities Construction

ANNEX A

DISTRICT PROFILES

HANANG DISTRICT PROFILE

Introduction. Hanang District is one of the newest Districts in Arusha Region, its 8405 square kilometers having been carved out of the old Mbulu District in 1969. Most of the District lies in the Rift Valley with the Great Rift Wall forming much of the western border of the District. Part of one of the District's four Divisions, Bashanet, however, lies above this escarpment at an altitude of 6500 to 7000 feet. Two other physical features dominate the landscape: Mount Hanang (11,212 feet) and Babati Mountain (7,923 feet). The District's administrative headquarters, Babati, lies about 100 miles south of the regional headquarters of Arusha.

The District's population of approximately 190,000 people is divided into four distinctly different ethnic groups: the Bantu-speaking Mbugwe, the Cushitic-speaking Iraqw and Gorowa (or Fiome), and the Nilotic-speaking Barabaig. The Mbugwe, Iraqw and Gorowa are all mixed agriculturalists with herds of cattle and smaller livestock. The Barabaig traditionally have been semi-nomadic pastoralists with large herds of cattle. In the last generation they have begun to cultivate their land in order to prevent the further encroachment of agricultural peoples onto the land that their cattle seasonally graze. Babati town (population 5,000) is another population group altogether, which might be best described as "urban" or "Swahili". Situated at a major junction on the national trunk road to Dodoma and Singida, it is more a commercial center than a mere administrative headquarters, drawing its population from many parts of Tanzania.

Project Area Environment. There are three ecological zones in the District. The first is the high-altitude/medium-to-high rainfall zone. The larger part of this zone is part of Bashanet Division, which lies above the Rift Valley Wall next to a forest reserve. Other land areas in this zone include the highland cultivated areas on Mount Hanang and Babati Mountain. These areas receive between 30" and 40" of rainfall in good years, the young volcanic soils are fertile and have not been intensively cultivated, in many cases, for longer than two generations. The second ecological zone includes the medium rainfall areas farther down the slopes of the two mountains and along the base of the escarpment wall. Here rainfall might range from 20 inches to 30 inches in good years, falling between November and May. Here the soils do not keep their moisture as long as in

ANNEX A: DISTRICT PROFILES

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the high altitude zones, the growing season is shorter, and the area is much more prone to drought. These soils are less fertile, although many of these areas have not been farmed for many generations. The third ecological zone is the semi-arid zone, located farther from the mountain slopes and Rift Wall, extending into the vast eastern and southern plains of the District. Rainfall in this zone averages between 15 inches and 20 inches in good years, but the area's evapotranspiration rate is so high that growing seasons are short and drought is the rule. One of these plains areas is so unsuited to agriculture that it has recently been turned into Tarangire National Park, a game preserve, while the other is largely grazed by large herds of cattle owned by Barabaig pastoralists.

The weather pattern has been such for the last five or six years that to speak of "good years" is a misnomer. Even the high altitude zones suffered from drought during s veral of these years, and people in the lower rainfall and semi-arid zones were dependent upon famine relief. It has been estimated that nearly half the livestock in the District either died during this period or were sold in emaciated condition.

Farming Systems. In the high-altitude. medium-to-high rainfall areas, the November-to-May rains often are heavy enough to support two growing seasons. The main food crops are maize and beans, usually interplanted, and one or two varieties of local sorghum or millet. It is in these high altitude zones that cash crops are grown: pyrethrum, Irish potatoes, and onions in Bashanet Division, and wheat on the eastern and northern slopes of Mount Hanang. Surpluses of food crops are also sold in years of good rainfall. Sorghums and millet are grown primarily as an ingredient for local beer-making (and selling). Small farmer holdings are typically three to four acres, and are worked with a hand hoe, although some ox-drawn plows are used. Wealthier farmers with tractors might also "own" three to six acres but they are able to control, through a form of land rent, blocks of 100 to 500 acres. Other than these few wealthy farmers in the Gitting and Dareda areas, most farmers are little more than subsistence earners, earning less than $200 a year from the sale of cattle and the cash crops they raise. In the medium rainfall zone, the crops and technology are much the same excluding pyrethrum. The growing season is shorter, double cropping is generally out of the question, and the risk of crop failure is higher. Maize is just as popular a food crop in these areas, although its moisture needs are greater than the more drought-tolerant

sorghum and millets. Irrigation is possible year round in one part of the District in this zone. This land area lies at the foot of the escarpment, northwest of Babati town, and is farmed on a small scale by several villages of Mbugwe farmers. The normal field crops are all under irrigation, but increasingly swamp rice is being grown as well. The largest Government expenditure for agricultural development the past two years has gone into expanding the irrigation system and increasing the amount of acreage (especially of rice) in production. In this area, two cropping seasons are the rule.

The semi-arid ecological zone is largely the domain of the pastoral Barabaig. There are also some Iraqw who, compelled by the desire for large herds of cattle, lead almost Barabaig-like lives. Not too long ago the Barabaig followed a pattern of long-term migrations and seasonal grazing. Increasingly the Barabaig are planting maize, sorghum and millet and are leading a more sedentary existence. Barabaig men often follow the adaptive strategy of marrying Iraqw women who have been raised as cultivators, so that they can continue to focus their attention on pastoral pursuits.

Throughout much of the three zones, overgrazing is a serious problem. This problem, coupled with the fact that the fine volcanic soils in many places are left exposed for months between the harvest and first rains, has meant that the District's soils have suffered seriously from wind and water erosion.

The vast majority of the economic activity in the District has to do with livestock and agriculture. Babati town is growing as a commercial center, and the transport and building industries are contributing to its growth. However, if the District is to develop as a whole, the rural sector must generate most of the wealth.

Agricultural Support System. Farmers in Hanang District have begun to grow hybrid and composite maize in recent years, and frequently report getting between 10-20 bags of shelled maize (90 kilogram bags) per acre--without fertilizer. (In much of the District, the soil is of sufficient fertility that there is no response to fertilizer.) To some extent, the successful introduction of hybrid maize in some areas is due to the World Bank

and USAID-supported National Maize Program which provided agricultural inputs free--some others subsidized--and yet others on credit. Other innovations, such as the growing of newly-developed drought-tolerant sorghum or oil seeds (sunflower, sesame, groundnuts, and castor) have been less popular. It is expected that the highly successful growing of large acreages of serena sorghum this past year on State and District commercial farms will have a wide demonstration effect. Very often the Government-controlled producer prices are so low as to keep crops off the Government-sanctioned market. The existence of a widespread "black market" system mitigates the effect of low official prices for most crops on production. The critical factor in introducing agricultural change must be the agricultural and livestock field staff. The quality of both extension staffs is very uneven. The small livestock field staff has the further disadvantage that none of its 13 Veterinary Investigation Centers are equipped with drugs. The building of such centers has proceeded at a faster rate than the provision of equipment (and often staffing), because the Government has allocated more money to its development budget than to its recurrent budget. Beginning with the 1977/78 budget, this problem is beginning to be rectified.

Economic Support Structure. With two main trunk roads in the District, the main transport system is generally good, and petrol and diesel fuel are generally in good supply. Some work needs to be done on selected feeder roads to better connect farmers with their markets. A large number of buses going between Babati and points north, south and west supplement the small telecommunications system in maintaining contact with the rest of the country. The town of Babati is scheduled to get electricity before the end of this decade.

Social Support Infrastructure. The District has 20 Government-run dispensaries, eight private (mostly mission) dispensaries, three preventive health centers, and one hospital in Dareda. This means that the District has sufficient facilities to meet the Government-set target of one health facility for every 10,000 inhabitants. Many of the centers, however, need upgrading and are receiving only about half the medicines they need to cater to the health needs of the population. The main health disabilities are malaria, tuberculosis, respiratory illnesses, and sleeping sickness. Fewer than half the more than 120 villages in the

District have a clean, permanent water source. The target of supplying potable water to every village by 1981 would seem to be unobtainable. The District is going to be close to meeting the 1977 Universal Primary Education target in three of its four Divisions. Only in the pastoral Barabaig Division are there problems in getting schools built and good attendance figures. It is in this area of education (again, in the non-Barabaig Divisions) that self-help projects in the District have been most impressive.

Socio-Political System. The socio-political system is in a state of flux in Hanang District as it is throughout the country. While the level of political organization does not seem to be nearly as high in Hanang as it is in most of neighboring Mbulu District, the District is in the process of creating an effective two-way political communication process that links leaders of each "cell" of ten to fifteen houses to a structure that reaches senior District-level officials. Such a structure is used for everything from village development planning to implementation. While it is safe to say that traditional decision-making models still exist in families and villages, the developing political structure coupled with the creation of new, permanent villages has had a profound impact of village life. Informal village leaders are now (often) in elected positions on their village councils, and any new ideas for village development are raised in that forum before they are implemented.

Political and Administrative Systems. Hanang District's development funds have never been sufficient to test the question of whether its system has either the planning or implementation capacity to carry out an integrated development plan, which fully mobilizes personnel, financial and physical resources. The political and administrative structures exist. Certainly, some departments and officials are in a better position than others to meet their responsibilities. The extent to which Government officials are responsive to local initiatives and priorities is also untested.

ANNEX: HANANG WARD PROFILES

WARD	NUMBER OF VILLAGES	NUMBER OF HOUSEHOLDS	ECOLOGICAL ZONE	PRESENT SMALL FARM ACTIVITIES	POTENTIAL PROJECT ACTIVITIES
Magugu	7		Medium altitude. Medium rainfall. Field crops to grassland.	Rice under irrigation, serena, maize and seed beans.	Expanded irrigation. Rice, maize, introduction of serena/ oilseed production and use of ox-plow. Land use planning.
Mwoda	3		Semi-arid field crops to grasslands.	Maize, millet, minimal cattle.	Introduction of serena/oilseed production and use of ox-plows; irrigation Land use planning.
Magara	2		Medium rainsfall field crops to grasslands	Maize, beans (on demonstration farm: groundnuts, sunflower beans, coffee, etc.).	Irrigation;introduction of rice, oilseed production and use of ox plow.
Kikatiti	2		Semi-arid field crops to grasslands.	Maize, millet, minimal cattle.	Introduction of serena/ oilseed production and use of ox plows. Land use planning.
Kiru	6	1993	Medium rainfall, field crop to grassland.	Maize, millet, minimal cattle.	Introduction of serena/ oilseed production and use of ox plows. Land use planning.
Bonga	4	1440	Medium rainfall, field crops to grassland.	Maize, millet, minimal cattle.	Introduction of serena/ oilseed production and use of ox plow. Land use planning.

Riroda	6	2450	Medium rainfall, field crops to grasslands.	Maize, millet, beans, beef cattle.	Introduction of serena/ oilseed production and use of ox plow. Land use planning.
Gallapo	7	2401	High altitude, medium rainfall, field crops to grasslands.	Seed beans, pigeon peas, millet, maize, beef cattle.	Introduction of Dairy, sunflower production and use of ox plows.
Gideo	5	1760	Medium altitude, medium rainfall, field crops to grasslands.	pigeon peas, millet, maize, beef cattle	Land use planning
Mumire	5	1500	Medium altitude, medium rainfall, field crops to grasslands.	Maize, seed beans, beef cattle.	Introduction of serena/ oilseed production and use of ox plows. Land use planning.
Singe	5	1730	Medium altitude, medium rainfall, field crops to grasslands.	Maize, millet, beef cattle	Introduction of serena/ oilseed production and use of ox plows. Land use planning.
Basootu	5	1287	Low altitude, low medium rainfall, field crops to grasslands.	NAFCO wheat, maize, beans, pastoralism.	Introduction of serena/ oilseed production and use of ox plows. Land use planning.
Katesh	5	2172	Low altitude, low medium rainfall, field crops to grasslands.	Maize, millet, beans, wheat.	Introduction of serena/ oilseed production and use of ox plows. Land use planning.

Gendobi	2	470	Semi-arid, field crops to grasslands.	Millet, maize,	Introduction of serena/ oilseed production and use of ox plows. Land use planning.
Gehandu	3	437	Semi-arid, field crops to grasslands.	Millet, minimal maize, pastoralism	Introduction of serena/ oilseed production, and use of ox plows. Land use planning
Bassodesh	2	640	Semi-arid, field crops to grasslands.	Maize, millet, minimal pigeon peas, pastoralism	Introduction of serena/ oilseed production and use of ox plows. Land use planning.
Masakta	2	800	Semi-arid, field crops to grasslands.	Maize, millet, minimal pigeon peas, pastoralism	Introduction of serena/ oilseed production and use of ox plows. Land use planning.
G/Biek	3	611	Arid, marginal field crops to sparse bush.	Minimal maize, millet, pastoralism.	Introduction of serena/ oilseed production and use of ox plows. Land use planning.
Gitting	2	810	Medium altitude medium rainfall field crops to grasslands	Maize, millet, beans, wheat, beef cattle	Introduction of serena/ oilseed production and use of ox plows. Land use planning.
Sirop	3	710	Arid, marginal field crops to sparse bush	Millet, maize, beans.	Introduction of serena/ oilseed production and use of ox plows. Land use planning.
Endasaki	6	2510	Medium altitude medium rainfall	Maize, Millet, beans, wheat, pigeon peas, seed beans, beef cattle	Introduction of serena/ oilseed production and use of ox plows. Land use planning.

Barbanet	4	1375	High altitude medium rainfall field crops to grasslands.	Maize, potatoes, pyrethrum, beef cattle	Pyrethrum improvement and expansion, pasture improvement, land use planning. Introduction of sheep and use of ox plows, potatoe and onion improvement.
_____	3	1409	Medium altitude medium rainfall field crops to grasslands	Maize, beans, millet, beef cattle.	Introduction of serena/oil seed production and use of ox plows. Land use planning.
Dareda	7	1808	Medium altitude medium rainfall field crops to grasslands	Maize, beans, millet, pigeon peas, beef cattle	Swamp irrigation for rice production, introduction of serena/oilseed production and use of ox plows. Land use planning.
Madunga	3	1143	High altitude Medium rainfall field crops to grasslands.	Maize, pyrethrum, onions, potatoes, beef cattle	Pyrethrum improvement and expansion. Dairy cattle introduction, pasture improvement. Land use planning Introduction of sheep. Introduction of seren/oilseed production and use of ox plows.
Ufana	4	240	High altitude low rainfall field crops to grasslands	Maize, marginal cattle	Introduction of serena/ oilseed production and use of ox plows. Land use planning.

MBULU DISTRICT PROFILE [1/]

Introduction. Mbulu District is situated in the western portion of Arusha Region. Its administrative headquarters, Mbulu town (pop. 3000), is 175 miles from Arusha. Almost all of its 7,620 square kilometers lie at an altitude of over 5,000 feet above sea level. As in other parts of the Region, the District has both fertile highlands with relatively high rainfall, where very progressive farmers produce a sizeable proportion of the nation's wheat, and marginal agricultural lands, where tradition-oriented, semi-nomadic pastoralists graze large herds of cattle. While there are people who are thoroughly enmeshed in the cash economy, almost three quarters of the District is inhabited by subsistence farmers, many of whom only barely manage to scrape by during years of unreliable rainfall.

The vast majority of the District's 220,000 people are the Cushitic-speaking Iraqw, sedentary mixed agriculturalists. Their immediate neighbors are Nilotic-speaking pastoralists to the north, east and south (Masai and Barabaig), numerous Banru agriculturalists, primarily to the southwest, and a Khoisan-speaking remnant of hunters-and-gatherers (the Hadza or Tindiga) in the western part of the District. The Iraqw survived largely hostile contacts with waves of pastoral neighbors by fashioning adaptive subsistence technologies and land-use strategies in a bounded, protective enclave in the central Mbulu highlands. This adaptiveness and the rapid expansion out of this enclave in the last three generations, their history as a cultural "remnant" and their feeling of cultural difference, have all molded the Iraqw character and world view. More important, from the point of view of planned change and village-level development projects, this "tradition of change" has enabled the Iraqw to accept innovation without feeling alienated from their past.

Project Area Environment. Mbulu District can be divided into four ecological zones. The high-altitude/medium-to-high rainfall zone includes the Iraqw homelands or "enclave" wards of Murray and Kainam in the central highlands southeast of Mbulu town, and the wheat-growing wards of northern Karatu Division, adjacent to the Ngorongoro Conservation Area and Forest Reserve. Annual rainfall in this zone averages

1/ This paper is extracted from a longer background paper on Mbulu District, prepared for USAID/Tanzania by Garry L. Thomas, "Baseline Information and Situational Overview Requisite to the Design of Integrated Rural Development Projects inMbulu District, Tanzania", May 1977.

between 35 inches and 45 inches, the volcanic soils are highly fertile, and the moisture retention of the soils facilitates a long-growing season and (sometimes) double-cropping. A second ecological zone is a medium rainfall/field crops zone which is a fairly contiguous area including most of the wards of the two central Divisions, Daudi and Endagikot, to the immediate north and south of Mbulu town. Rainfall in the zone averages 25 inches to 30 inches a year. The sandy loam and red soils remain surprisingly fertile, considering the high population density and length of time of constant cultivation. Double-cropping is out of the question, however, and drought is a recurrent possibility. A third zone is most of semi-arid Dongabesh Division, including Maghia Ward, where rainfall might average 20 inches to 30 inches a year, but rainfall reliability is poor. Here too, the moisture retention rate is low due to the sandy soils and higher temperatures, and people are very satisfied if they get one decent growing season a year. The final ecological zone is the Yaida Valley laying below the Mbulu plateau in the western part of the District near the salt flats of Lake Eyasi. This semi-arid savannah area is lightly populated by the small population of nomadic hunters-and-gatherers and by Barabaig pastoralists. Rainfall is too unreliable to support an agricultural population in most of the valley, but parts of the zone do receive as much as 20 inches to 22 inches of rainfall in a "good year". The whole District experienced a succession of "bad years" from 1971 to 1977 when sufficient rain fell.

Farming Patterns. The high-altitude/medium-to-high rainfall zone supports the only populations which grow cash crops in the District: mechanized wheat production in the northern highlands and pyrethrum in the Kainam and Murray Wards. The wheat farmers in Karatu Division manage highly mechanized farms. The agricultural decisions revolve around which varieties to plant and who should receive contract work. The bulk of the work is done by privately-owned tractors and combines, and the bulk of the profits go to those African farmers who own this machinery. Whereas a wheat farmer might typically put three or four acres of land into wheat, pyrethrum is such a labor-intensive crop that few farmers would have more than a quarter to half an acre in production. In both of these cash crop areas, more than half the arable land is in food crops, especially maize and beans, and these foods are often supplemented by bought food. Because good incomes can be made growing wheat in Karatu Division and because population densities are high in Kainam and Murray, these two areas have relatively few cattle. An additional cash earning activity in the pyrethrum wards is raising pigs, an activity which seems to be ever more lucrative than farming pyrethrum.

In the central plateau ecological zones of Daudi and Endagikot, north and south of Mbulu, and in semi-arid Dongabesh Division, people plant more maize than sorghum or millet, despite the marginality of the crop due to the unreliability of rainfall. The main wealth in these areas is cattle. In Dongabesh where population densities are below 30 per square mile, herd size is high at perhaps 30 to 40 per family, more than twice the average anywhere else in the District. There are also more ox plows in use in Dongabesh Division than there are in any other part of the District, enabling wealthier farmers to put six to ten acres of land into production rather than the average of three acres for hand hoe cultivators in most of the District.

Agricultural Support System. No agricultural research is being done in the District, little is done to test new agricultural technology on farmers' land, and the extension staff in both livestock and agriculture is both too small and of very uneven quality. Most of the eleven Veterinary Investigation Centers in the District, built to cater to improved dairy and beef stock, are understaffed, unequipped or both. Several of the District's 54 cattle dips functioned only eight months in 1976 due to a shortage of chemicals, water, diesel (to pump water from boreholes) or a combination of the three. There has been an "agricultural revolution" in the wheat-growing portion of the District because of the availability of agricultural credit, not because of the agricultural support system at the District level. If the newly developed, drought-tolerant sorghum variety (serena) is to replace maize in the drought-prone areas, agricultural extension workers will have to be much more effective than they have been in the past. The crop has produced high yields on a farm run by a District-government corporation and should prove to be a very lucrative crop, the "black market" price offered by beer brewers from outside the District being four times the set price of the official Government buyer. Serena (and all sorghums and millets) are regarded as cash crops rather than food crops, but it is widely assumed by district and national level officials that in the absence of maize famine relief, people in southern and central Mbulu would be glad to eat sorghum.

Other Economic Activities. The Iraqw who inhabit most of Mbulu District have one of the highest birth rates in the nation (conservatively estimated at 3.5%). While there remain large tracts of land in the District which presently support only small numbers of people, the best agricultural land is relatively densely settled. Only about

10 percent of the students in the District who completed Standard VII in 1976 were selected for further education in any kind of government institution. The District, then, faces the problem of developing alternative employment opportunities for a relatively well-educated, young rural population that increasingly will not have good agricultural land available to it. The fact is that few non-agricultural economic activities exist in Mbulu. Small efforts have been made in establishing carpentry and blacksmithing projects and shops. In the northern part of the District, many men are working as tractor and combine drivers, mechanics and turnboys. Women in Kainam and Murray make reed mats. The biggest craft industry at the moment in the District is burned-brick making, an industry that caters mostly to self-help public works projects such as village construction of classrooms, dispensaries, and staff housing, rather than to income generation.

Economic Support Infrastructure. Mbulu District's roads are generally in very poor repair, including the main road between Karatu and Mbulu and the vital feeder roads in the wheat-growing area. Tankers have refused to deliver diesel during the rainy (and plowing) season. One lorry last year landed on its side on the Rhotia-Mbulu-mbulu road while filled with bags of wheat. Possibly the worst road in the District is the road going from Mbulu town to the highland pyrethrum area. Any serena development program in Dongabesh Division will require an improved link between Dongabesh and Haydom. A much improved road between Oldeani and Mang'ola will open up an area that has irrigation potential.

Social Support Structure. Mbulu District has met the national goal of one dispensary for every 10,000 people, and the District has three hospitals, including an excellent mission hospital at the end of the Dongabesh to Haydom road. However, the dispensaries are generally short of medicine and equipment, many are poorly staffed, and about half lack a safe and permanent water supply. In addition to these facilities, there are two Rural Health Centers, specializing in preventive medicine, and a USAID-assisted Maternal Child Health project based in Mbulu. Despite this health service coverage, the District is not thought of as being a healthy one. Among the most common illenesses are respiratory diseases, tuberculosis, malnutrition, dysentery, and (in the lower altitude areas) malaria. A massive water supply program is needed if more than half the District's villages are going to have a safe, permanent water supply by the

target year of 1981. On the other hand, nearly 90 percent of the District's children of school age will be enrolled in school by November 1977, the target date for Universal Primary Education. Fifty of the District's 80 primary schools (for 86 villages) have the full component of classrooms. Fifty new classrooms and staff houses are scheduled to be built during 1977/78, with villages contributing labor, money, and materials (such as burned brick) for roughly 80 percent of the value of each new classroom. There are also four two-year technical schools in the District, and two four-year secondary schools.

Socio-Political Systems. Between 1974 and 1976, most of the District's non-nucleated, traditional villages were reorganized, new settlement patterns were devised, and most were registered as corporate, legal entities. In 1976, these registered villages replaced the old cooperatives as "primary cooperative societies". These villages will now be in a position to generate development funds through the cess they levy on the crops that are marketed. Furthermore, it is the jurisdiction of each elected village committee, working in conjunction with the Ward Secretary and Ward-level civil servants, to mobilize local resources (cash contributions, materials, and labor) for development purposes. This organizational structure is used for mobilizing work on district-level (feeder) roads, for contributing labor and money to building projects, and for collecting money for village cooperative shops or (in a very few cases) buying diesel fuel for putting communal land into production. While this political structure is relatively new, it is clear that villages in Mbulu are being given a lot of responsibility for administering their own lives.

Political and Administrative Systems. The Tanzanian Government tends to transfer its civil servants fairly often. All of the six District Planning Officers in Arusha Region were transferred to new stations in the Region in April. There is no guarantee that other key people, such as the Area Commissioner, District Development Director, District Agricultural Development Officer, and District Livestock Development Officer, all of them outstanding people, will not be transferred before a major village development program gets under way in Mbulu District. The present team of people would have the commitment and the capacity to mobilize resources, and the willingness to engage in the kind of dialogue with villagers that is requisite to the successful introduction of new technologies at the village level.

ANNEX: MBULU WARD PROFILES

WARD	NUMBER OF VILLAGES	NUMBER OF HOUSEHOLDS	ECOLOGICAL ZONE	PRESENT SMALL FARM ACTIVITIES	POTENTIAL PROJECT ACTIVITIES
Mbulumbulu	3	1240	High altitude High rainfall field crops	Mechanized wheat minimal dairy & beef cattle	Pyrethrum introduction; crop diversification; Dairy improvement; Soil conservation.
Rhotia	5	1607	High altitude High rainfall field crops	Mechanized wheat minimal dairy & beef cattle	Dairy improvement; Crop diversification.
Oldeani	6	2091	High altitude High rainfall field crops	Mechanized wheat Dairy & Beef cattle	Dairy improvement; Crop diversification.
Endabash	6	2355	Medium altitude Medium rainfall field crops to grassland	Some mechanized wheat minimal dairy & beef cattle	Dairy & Beef improvement.
Karatu	6	2718	High altitude High rainfall field crops	Mechanized wheat Dairy & Beef cattle	Dairy improvement; Crop diversification.

WARD	NUMBER OF VILLAGES	NUMBER OF HOUSEHOLDS	ECOLOGICAL ZONE	PRESENT SMALL FARM ACTIVITIES	POTENTIAL PROJECT ACTIVITIES
Mang'ola	6	1567	Low altitude Low rainfall semi-arid grasslands	Some irrigated maize, beans sorghum scattered herds	Irrigation improvement and expansion Diverse crops under irrigation.
Kansay	4	1390	Medium altitude Medium rainfall field crops & grassland	Maize Beef cattle	Introduction of Serena/ oil seed production and use of ox-plows; land use planning.
Daudi	5	1077	Medium altitude Medium rainfall field crops & grassland	Maize	Introduction of Serena/ oil seed production, dairy and use of ox-plows. land use planning.
Bargish	4	1470	Medium altitude Medium rainfall field crops & grasslands	Maize Beef cattle	Soil conservation, Introduction of Serena/ oil seed production and use of ox-plows. Land use planning.
Gehandu	3	1387	Medium altitude Medium rainfall field crops & grasslands	Maize, Beef cattle	Introduction of Serena/ oil seed production and use of ox-plows; Land use planning.
Hareabi	1	277	High altitude High rainfall field crops	Maize, beans pyrethrum, sweet potatoes, Beef cattle, pigs	Pyrethrum improvement and expansion; Pig improvement Introduction of ox-plows.

WARD	NUMBER OF VILLAGES	NUMBER OF HOUSEHOLDS	ECOLOGICAL ZONE	PRESENT SMALL FARM ACTIVITIES	POTENTIAL PROJECT ACTIVITIES
Murray	4	1218	High altitude High rainfall field crops	Pyrethrum, maize, pigs, beef cattle sweet potatoes	Pyrethrum improvement and expansion Introduction of dairy cattle and ox-plows Pig improvement Soil conservation.
Kainam	2	889	High altitude High rainfall field crops	Pyrethrum, maize, sweet potatoes minimal cattle	Pyrethrum improvement and expansion Pig improvement Introduction of dairy cattle and ox-plows Soil conservation.
Sanu	4	1414	Medium altitude Medium rainfall field crops to grasslands	Maize minimal cattle	Introduction of Serena/oil seed production and use of ox-plows Land use planning.
Tlawi	3	795	Semi-arid grasslands & field crops	Maize, sorghum, pigs, beef cattle	Introduction of Serena/oil seed production and use of ox-plows Land use planning Brick manufacture
Dongabesh	6	2086	Semi-arid grasslands & field crops	Maize, sorghum beef cattle	Introduction of Serena/ oil seed production, pig production and use of ox-plows; Water supply; Land use planning.

WARD	NUMBER OF VILLAGES	NUMBER OF HOUSEHOLDS	ECOLOGICAL ZONE	PRESENT SMALL FARM ACTIVITIES	POTENTIAL PROJECT ACTIVITIES
Tumati	4	1353	High altitude Medium rainfall field crops maize	Beef cattle, pigs, some ox plows,	Introduction of pyrethrum Pig improvement Ox plow expansion
Yaida Chini	4	1083	Semi-arid grasslands & field crops	Maize, sorghum, Beef cattle, some ox plows	Introduction of Serena/oil seed production Land use planning Ox plow expansion
Maghan	5	1795	Semi-arid grasslands & field crops	Maize, sorghum, beef cattle, some ox plows	Introduction of Serena/oil seed production Land use planning Ox plow expansion
Haydom	5	1116	Semi-arid grasslands & field crops	Maize, sorghum, beef cattle some ox plows	Introduction of Serena/oil seed production Ox plow expansion Land use planning

ARUMERU DISTRICT PROFILE 1/

Arumeru District lies in an approximate 20-25 mile radius around Arusha Town encompassing Mt. Meru.

Development History. According to available estimates for crop production 1969-74 maize, vegetable, sweet potato, fruit, onion, and sisal production remained stable; beans, potatoes, gram, pyrethrum, and cassava production rose; and banana, castor, pigeon pea, sunflower, coffee, wheat, cane, millet, sorghum and cow pea production dropped. The fluctuations in production may be due to inaccurate figures, the effects of the 1973/74 drought or the transition from estate to government estates and small-holder agriculture. There are 16 private estates remaining in the District mostly in the coffee banana belt.

The district which at one time was self sufficient in milk production now relies on reconstituted imported powdered milk for 78 percent of its milk consumption. Local milk production is 10,000 litres per day of which 20 percent is provided by small holders. Small holders' dairy cows are generally stall fed.. Beef cattle are range fed and generally of inferior quality.

Income is obtained from tourists to the national parks of the region as well as from the sale of wild animals to zoos. The following small industries have been established under the auspices of SIDO: pottery, carpets, knitting, banana fiber baskets, two lumber yards, hand loomed material, carpentry and soap. There are eight coffee processing factories. Machinery for a sugar factory is on the way and a tomato canning plant has been proposed. Small industries are critical in parts of the district where there is intense land pressure.

Fifty-five villages have been registered as corporate bodies according to the provisions of the 1975 Villages and Ujamaa Villages Act. Incorporated villages may buy, hold, and sell property,obtain loans and are deemed to be multi-purpose cooperative societies. No village in the District has achieved the status of ujamaa village. In 1975 all cooperative societies were ordered to dispose of their assets and liabilities and disband. The buying functions of the Arusha Region Cooperative Union were assumed by the Tanganyika Coffee Board and NMC.

1/ This paper is extracted from a longer background paper on Arumeru District prepared by Louise Fortmann for USAID/Tanzania, "Development Prospects for Arumeru District" May, 1977.

Project Area Environment and Demography. The inhabited areas of the district can be divided into three basic ecological zones. The fourth is the uninhabited mountain peak. The coffee banana belt is a high rainfall area from 4000 to 6000 feet on the eastern side of Mount Meru. The soils are humic ferrisoils of moderate base status and Euthropic Brown soils on volcanic rocks. Fifth percent of the population lives on the 14 percent of the District land included in this area resulting in a population density of 332 persons per square kilometer in some parts. The fieldcrop zone is found on the lower slopes and plains of Mount Meru from 3000 to 4000 feet. The soils are Euthropic Brown soils, brown calcareous soils, and Ferruginous tropical soils. Soils in much of this area are characterized by a manganese daficiency or a magnesium/potassium imbalance. Population in this area is 45 persons per square kilometer. The semi-arid livestock zone is on the plains and high plains surrounding Mount Meru from 3000 to 5000 feet. The soils are brown calcareous soils and red brown soils. Mukulat Division and Ngarenanyuki Ward with a population density of 29 persons per square kilometer must be treated as a special case. This area experienced severe drought during the previous 7-8 years. This combined with overstocking, destruction of the forests, and poor farming practices has resulted in terrible wind and water erosion including 66 miles of deep gullies.

Farming Systems. Coffee, bananas, maize and beans are grown in the coffee/banana belt with traditional irrigation. Insecticide and fungicide are provided by the Coffee Board at the beginning of the season and the cost deducted from the payment at the end of the season. Fertilizer used to be provided by the same "hidden loan" system but was sold at a 50% subsidy this season. As a result fertilizer was purchased by less than ten percent of the farmers. Many farmers in the area maintain coffee shambas on the mountain and maize shambas on the plain which are often cultivated with privately owned tractors. A large number also keep a stall-fed dairy cow for home milk consumption.

In 1974, states accounted for approximately 35 percent of the coffee production.

Sisal, wheat, castor, beans, maize and millet are grown in the field crop zone: traditional irrigation is used in some areas with seepage losses as high as 50 percent. Ox plows are used in the eastern part of the zone where rocky terrain is unsuitable for tractors. Dairy production is found particularly in the central part of this zone. Serena and oil seed crops have been recommended for this zone.

The semi-arid livestock zone has pyrethrum production in the higher areas as well as beef and dairy cattle. Serena and oil seeds have been recommended for these dry areas.

Agricultural Support System. The nearest agricultural research station is 50 miles from Arusha Town at the Lyamungu Coffee Research Institute and Experiment Station. No trials are being conducted in Arumeru District by Lyamungu staff.

There are 21 extension agents (Bwana Shambas) working directly with district farmers. Fifteen have completed Form IV and a two year certificate course, and six have completed Standard VII and are undergoing on-the-job training. The Bwana Shambas are supposed to be responsible for 700 households but are in fact, responsible for an average of 1800. No transport is available for their work.

There are no traditional forms of cash credit. Reciprocal labor sharing does exist. Producer credit is available through the Coffee Board and sometimes the National Maize Project. Villages can procure loans from TRDB. In theory peasant farmers can receive unsecured loans from NBC.

Cash crop authorities and the National Maize Project deliver inputs for specific crops (seed, insecticide, fungicide, fertilizer) to the villages. Other inputs must be obtained by the farmer on his/her own initiative. The three major constraints on the delivery of crop inputs are accessibility to the distributing agent, transport and storage supplies for livestock are difficult to get as much used to be obtained in Kenya.

Cash crops are purchased by the respective crop authorities. National Milling Corporation is responsible for purchasing cereal crops. Fruits and vegetables are sold in local markets, along the road, and in Arusha markets. Cattle are sold in weekly markets attended by TLMC, Tanganyika Packers and private buyers. An unknown amount of produce and livestock is smuggled across the border to Kenya and sold.

An effort is being made to establish community owned and run shops in each village but only a few have been successfully opened.

Commodity prices are set by the Economic Committee of the cabinet on a national basis.

Other Economic Activities. A number of cottage and small scale industries could be undertaken in the District including the picking and packing of bay leaves, sewing, carpentry, manufacture of agricultural implements, paper making, pottery and numerous small craft industries.

Economic Support Infrastructure. There are 14 godowns in the District. Petrol and diesel are readily available on the Moshi and Nairobi roads and in Arusha Town. Villages which have tractors have large storage tanks to which fuel is delivered by the petrol companies. Banking services are available in Arusha Town and Usa River on alternate days.

The district is transversed by two tarmac roads. Bus service is available to most major cities. Air service to Dar is available from Kilimanjaro International Airport. There is direct rail linkage to Dar es Salaam and Tanzania East African Railways which has stations at Usa River and Arusha Town. Except in peak harvest season, rail traffic usually averages one 150 ton freight train in each direction per day.

There is telephone and telegraph linkage between Arusha, Usa River and other parts of Tanzania and Kenya.

Social Support Infrastructure. There are 114 government primary schools, one private boarding school and three secondary schools in the District. No child is more than three kilometers from a primary school. By November, 1977, 90 percent of all Standard I age children are expected to be in school.

Arusha Town is electrified and power is being extended to other areas as rapidly as possible.

There is need for water management and control of wind erosion throughout the District. Plans call for afforestation, stabilization of gullies, destocking, controlled grazing, and planting of grass and sisal.

There are 18 dispensaries (5 private, 13 government) and a mission hospital in the District. Government facilities are free. Missions charge a small fee. The government policy is to maximize the availability of basic medical services rather than to offer highly sophisticated services to a very few.

There are five boreholes in the district, each with a Lister engine. Of the three dams, one leaks; one is silted up; and one is in good repair. A concerted effort has been made to provide piped water to places where there is no easily accessible spring or river.

There are severe problems of mal- and under-nutrition in some areas although consciousness of good nutrition is rising.

Self-help is used in the construction of schools and water systems. Cooperation was found in the old cooperative system and in villages which maintain communal shambas.

Socio-Political Systems. Village land is allocated more or less according to traditional systems by the village council although land is given to non-traditional recipients such as the UWT and the ujamaa shamba

There are 50 branches of the UWT in the District with 2900 members.

Major disparities in the District stem from disparities in natural resources and historical differences. The mountain has been settled much longer than the plains for the simple reason that it is a much better place to live. Mountain people also have the advantage of a lucrative cash crop, coffee. Such discrepancies can be reduced by exploiting coffee potential to its fullest, using the revenues to develop the full potential of other areas.

ANNEX: ARUMERU WARD PROFILE *

WARD	NUMBER OF VILLAGES	NUMBER OF HOUSEHOLDS	ECOLOGICAL ZONE	PRESENT SMALL FARM ACTIVITIES	POTENTIAL PROJECT ACTIVITIES
Ng..rana-nyuki	3	1007	High altitude field crops	Dairy, irrigated maize, vegetables, beans	Dairy improvement Vegetable improvement irrigation system improvement
Leguruki	2	654	Medium altitude field crops	Maize, beans	Maize, bean improvement Ox plow introduction
King'ori	4	1220	Medium altitude field crops	Maize, beans, coffee	Maize, bean improvement ox plow introduction
Kitatiti	3	1268	Medium altitude field crops	Maize, beans, coffee, millet, beef cattle	Introduction of Serena and ox plows Maize, bean improvement
Maji ya Chai	4	1119	Medium altitude field crops	Maize, beans, coffee, dairy cattle	Introduction of Serena and ox plows Maize, bean improvement Dairy improvement
Kikwe	3	957	Medium altitude field crops (estate sugar)	Maize, beans, millet, coffee, dairy	Fruit & vegetable introduction Dairy improvement Irrigation system improvement

* Does not take into account 10 wards in the coffee/banana belt where the project will not be involved.

WARD	NUMBER OF VILLAGES	NUMBER OF HOUSEHOLDS	ECOLOGICAL ZONE	PRESENT SMALL FARM ACTIVITIES	POTENTIAL PROJECT ACTIVITIES
Mbuguni	5	2199	Medium altitude field crops (estate sugar)	Maize, beans, millet, some under irrigation	Irrigation system improvement Introduction of dairy on irrigated pastures and Vegetable production Soil conservation
Majengo	3	1864	Semi-arid grassland	Marginal cattle, Marginal irrigated maize, beans, millet, irrigated Horticultural Project	Pasture improvement Land use planning Serena introduction Soil and water conservation
Oljoro	5	1597	Medium altitude field crops (large estates)	Maize, beans, dairy cattle	Dairy improvement Maize and bean improvement Soil conservation
Kimunyok	3	1250	Semi-arid grassland to Medium altitude field crops	Beef cattle, marginal wheat, marginal pyrethrum, maize, beans root crops	Maize, bean improvement Serena/oil seed introduction Land use planning Soil conservation
Mateves	3	1097	Semi-arid grassland to Medium altitude field crops	Maize, beans, wheat, Beef cattle	Serena/oil seed introduction Land use planning Soil conservation

WARD	NUMBER OF VILLAGES	NUMBER OF HOUSEHOLDS	ECOLOGICAL ZONE	PRESENT SMALL FARM ACTIVITIES	POTENTIAL PROJECT ACTIVITIES
Mara	4	1505	Semi-arid grasslands to Medium altitude field crops	Maize, beans, wheat, Beef cattle	Serena/oil seed introduction Land use planning Soil conservation
Kisongo	4	1176	Semi-arid grassland	Marginal maize, beans, Beef cattle	Serena/oil seed introduction Land use planning Soil conservation
Olkokola	6	2399	Semi-arid grassland (some high altitude)	Marginal pyrethrum, Beef cattle	Serena/oil seed introduction Land use planning Soil conservation (afforestation) Pyrethrum improvement Dairy introduction
Oldonyo Sambu	4	1884	Semi-arid grassland to field crop	Maize, beans, Beef cattle, Some dairy cattle	Serena/oil crop introduction Dairy improvement Land use planning Soil conservation
Mdurumu		2823	Medium altitude grassland to field crops	Maize, beans, Dairy cattle	Dairy improvement Irrigation Introduction of Serena/oil seed production and use of ox plows
Mlangarini	3	1442	Medium altitude grassland to field crops	Maize, beans, Dairy cattle	Maize, bean improvement Irrigation Dairy improvement ox plow introduction

ANNEX B

INFORMATION SYSTEM FOR PLANNING, MONITORING AND EVALUATING PROJECT ACTIVITIES

ANNEX B

INFORMATION SYSTEM FOR PLANNING, MONITORING AND EVALUATING PROJECT ACTIVITIES

THE NEED FOR AN EFFECTIVE INFORMAT SYSTEM

The Arusha Region Village Development Project is designed to develop a process for improving the production, incomes and well-being of rural villages in three districts. Through a continuing dialogue with village councils and rural families, the project will identify and implement development activities that take account of the production potentials and production-related constraints within specific geographic areas. While the project has been able to identify the major requirements for improving production in the three districts and for developing the necessary economic and social infrastructure, the specification of appropriate development activities for each locality (ward) will depend on the collection and analysis of micro-data (farm data) as well as on the plans and ideas of village councils. Generating this information base will be the first step in the implementation of this project. In addition, the collection and analysis of the micro-level data will be essential for developing the small farmer component of the Arusha Regional Plan, to be prepared by the regional administration with technical assistance from USAID.

The data collection and analysis effort during the planning phase for each ward will help identify possible technological innovations and development activities that are appropriate. Still, as the project and village councils begin to implement the innovations and activities, there will be uncertanties --whether the technological innovations will result in increased maize, sorghum, pyrethreum and dairy yields, what are the most effective ways of helping village councils build their technical, organizational and information assessment capabilities; and whether pricing, supply, marketing policies and operations will insure that the benefits from the development activities will become self-sustaining. The regional, district and ward officials, in cooperation with the village councils and farmers, will have to monitor, evaluate and modify these activities to insure that the project objectives are achieved. Modifications in the project design will be necessary as knowledge about the area expands and as the project initiates and carries out the different activities.

The diversity of farming systems in the project area, combined with the need to test alternative technologies for improving production within these systems and the activities for removing the critical constraints on improved production and incomes, justifies the strengthening of the information processing and decision making capabilities at the family, village council, and ward, district and regional levels. Of primary importance will be the ability of all concerned to diagnose and formulate solutions to problems as they arise.

More specifically, the objectives of the project's information system are:

1. To plan development activities that are tailored to the particular potentials and constraints within each locality (ward).

2. To monitor project implementation and the achievement of project objectives in terms of:

   - The provision of financial, equipment, commodity, training and technical assistance inputs to the various wards and villages and to the participating government agencies;

   - The accomplishment of direct action results (or outputs) such as the formulation of village council production plans, the introduction of crop improvement technologies, roads rehabilitated, water systems established, farm centers developed, etc., that are necessary for the achievement of project objectives;

   - The effects of policy or other changes that may imply dangers to successful project implementation and thus a need for modifications in implementation strategy; and

   - The achievement of key project objectives, including the benefits and costs in achieving them.

3. To evaluate project performance and the project implementation experience, with particular attention to the process of involvement, assumption of responsibility, and capability of sustaining the development effort of the village councils and rural families.

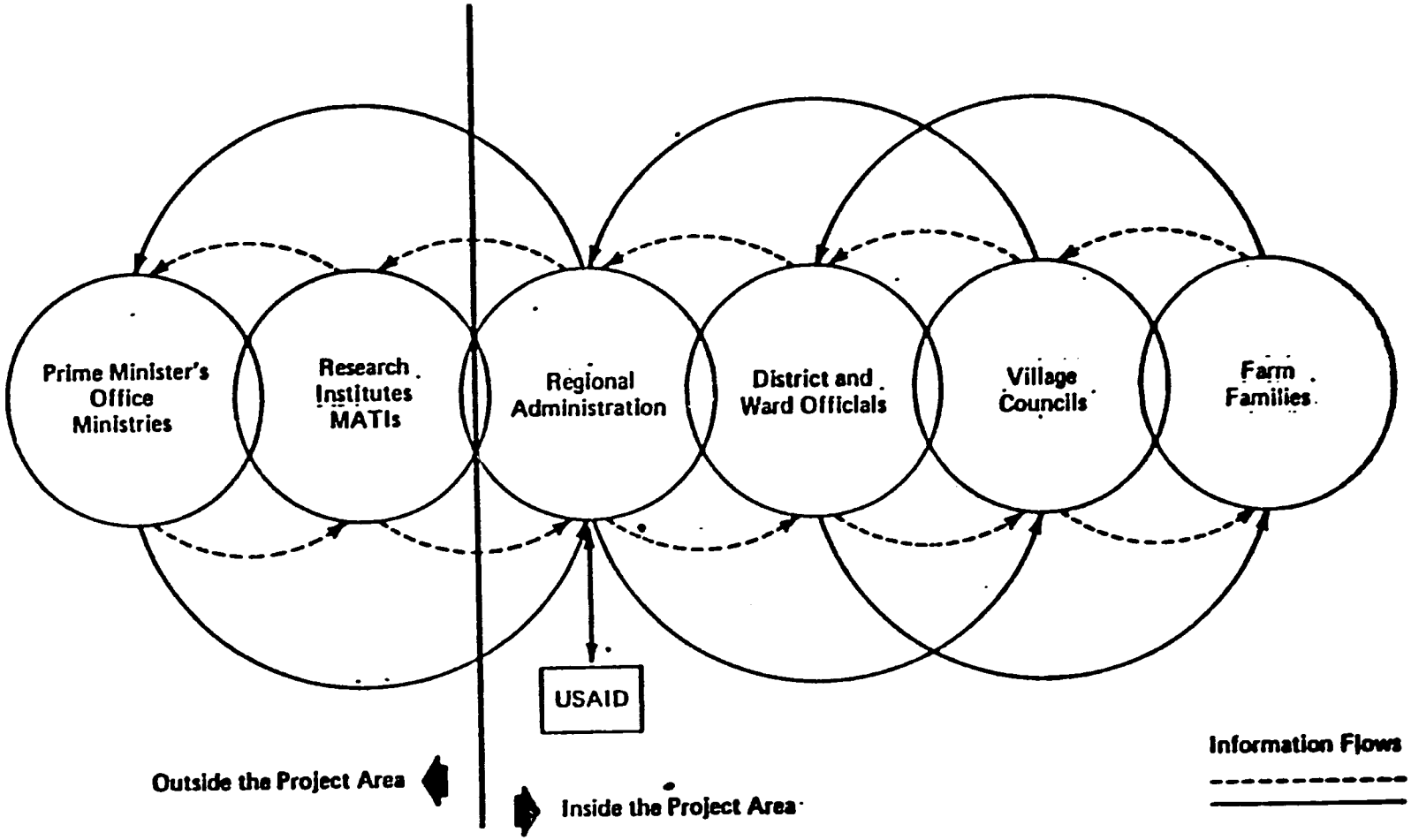
4. To analyze why or why not developmental changes have taken place in different environments, with the development of recommendations for improving project performance.

STRATEGY FOR DEVELOPING AN EFFECTIVE INFORMATION SYSTEM

The project's information system is essential for the successful planning and implementation of all project activities from the initial identification and testing of technological innovations to the determination and establishment of the necessary economic and social infrastructure. It is a mechanism for insuring continued communication among those involved in project planning and implementation. To work effectively, the information provided must meet the requirements of decision makers as well as involving all those participating in the project implementation in the data collection and analysis effort.

An effective information systems builds upon the requirements of decision makers (i.e., farm families, village councils, regional, district and ward officials and foreign donor personnel) and the necessary flow of information among these decision makers. Information requirements will vary a great deal among these groups, with those inside the project area needing the greatest detail. The model which provides the basis for the design of the project's information system follows. (See p. 4 of Annex B.)

VILLAGE DEVELOPMENT PROJECT: ARUSHA REGION
MODEL OF INFORMATION FLOW FOR PROJECT DECISIONMAKERS



Farm Families must have a basis for deciding whether to accept the recommended changes in their farming systems--a decision which entails risk-taking for them. They will want to compare their yields with those of other farmers taking into account such factors as differences in quality of land, access to water, availability of labor, the level of cash inputs, and the tradeoffs in changing the mix of their crops. Moreover, they will be concerned with whether agricultural services are available on a correct and timely basis.

Village Councils will also have to have the above information as well as summarized comparative information from a wider area, so that they can develop the village production plan, recommend reasonable improved production practices to village families, and determine what local infrastructure is needed to support production.

District and Ward officials will need to engage in a dialogue with the village councils and families to help plan appropriate activities for each area, recommend changes, and determine what is working, or is not working, and why.

Regional Administration will need to track the flow of resources into the districts, wards and villages and to monitor the effects of project activities. This will allow the regional administration to adjust policies and operations to improve project performance and to alert national level officials to any necessary changes in government policies and support for insuring project success.

National Research Institutes and the MATIs will need to know the effectiveness of various technological innovations (and the necessity for modifications) as well as how to improve the training of Bwana Shambas.

The Prime Minister's Office and Technical Ministries will wish to monitor the project's development and to have the information necessary to respond to project area needs more effectively, particularly in regard to macro-development policies and the allocation of national budget resources.

To develop an effective information system, the information requirements of each group of decision makers will have to be identified and the appropriate methodologies designed so that they can be met on a timely basis. Also, as described and displayed in the model, there will be a need for a constant flow of information among these groups. The model suggests another important element in the development of the project's information system--there is a need not only for each group to receive information, but also to have the ability to understand the implications of this information for decision making. For example, information pertinent to family or village council decisions should be presented in straight forward ways with adequate background so that family leaders and council members can determine which courses of action to take. Developing decision making skills, especially those of village councils, family leaders and local government officials, will be an important step towards developing an effective information system.

STEPS IN DEVELOPING THE PROJECT'S INFORMATION SYSTEM

Implementing the above strategy requires the project to develop the data collection and analysis capabilities at all levels, with a primary focus of building a system that can be replicated in other regions and districts of Tanzania. Therefore, the system must be low-cost, easily manageable and transferable without intensive technical assistance and training. However, it should be noted that developing such a system is a difficult task, requiring professional guidance.

To illustrate the approach to the development of the project's information system, the main objectives of the system are discussed below with an indication of the methodologies and approaches to be employed.

Planning Project Activities

During the first phase (one year), the project will concentrate its planning and initial implementation of activities in twelve wards (i.e., four per district) which are representative of the various ecological zones in the project area. Intensive data collection and analysis will be done at the ward level to identify appropriate technological innovations to increase production as well as to plan the necessary improvements in social and economic infrastructure. Slowly the data collection and analysis effort and project activities will be extended to other wards. Under the government's policy of decentralization, the ward is the unit where government agricultural and livestock workers are assigned, and for purposes of analysis and planning, provides a natural basis for area frame sampling.

The first step in developing the information system will be the recruitment of data collectors by the district staff (including the rural development specialist provided by the project). The data collectors will be from the wards to which they will be assigned, be literate, and have farming experience. These data collectors will be paid by the project and assigned as the assistant to the bwana shamba for each of the selected wards.

The bwana shambas and data collectors will receive from two to four weeks training in data collection and analysis methods. Also, they will receive training in communications (e.g. the Paulo Freire method) from local-hire specialists in the Arusha Region, along with leaders from the villages in each ward.

In each of the selected wards, district and ward officials, in cooperation with the village councils, will first conduct a reconnaissance survey of the area. They will collect basic data on farm families and their assets, on land utilization and potentials in the ward, and on the available social and economic infrastructure. This information will provide the basis for selecting 20 representative farm families (from the least to most productive) who will participate in the intensive micro-level data collection. It should be noted that this data collection effort will only be initiated with the approval and cooperation of the village council.

The micro-level data collection will be carried out by the locally-recruited data collectors, with the assistance of the bwana shamba and the district's rural development specialist. The technique to be employed in the micro-level data collection will be a farm records or farm journal system. On a regular basis (every few weeks), data will be collected on family's production practices, cash and labor inputs, yields and sources of income. Such a system will provide the necessary hard data on yields and net income within each farming system. Moreover, the collection of this information will help insure a two-way information flow between the agricultural field staff and the farmers. The information collected will be assembled in ways that allow the farmer to compare how he is doing with his neighbors and that help the village councils to formulate production plans. The intensive data collection will be complemented by regular meetings with the village councils for planning and organizing development activities in the area as well as for determining which practices should be introduced in the area.

The data from the twelve wards, summarized and analyzed, will provide a data base for preparing the small farmer development component of the Arusha Regional Plan. This work will be supervised and assisted by the Economist/Planner assigned to the regional level. As will be discussed below, the continued systematic collection of farm level data will provide the basis for helping to measure the impact of project activities and for modifying the Arusha Regional Plan.

Monitoring Project Activities

Monitoring project implementation and the achievement of project objectives requires the use of several methodologies. Project inputs and resource utilization will be monitored and analyzed with standard accounting and management information systems methods. Systematic project records kept at the district and regional levels will serve as a primary source of data. The economist/planner at the regional level, with short-term technical assistance, will be responsible for developing the basic reporting system in collaboration with the participating government agencies. The monitoring system will be established in a way to indicate whether resources are being allocated as planned. If there are delays in the arrival of agricultural supplies or construction equipment in the district, the system must provide a warning signal so that corrective actions may be taken.

Beyond the record keeping of the project at the regional and district levels, there is a need for a cross-check to make sure that resources and services are being channeled into the appropriate wards on a timely basis. To monitor the flow of resources and technical assistance into a ward, a record system will be developed for the farm centers.

The system will also monitor the initial results of project activities (i.e., farm centers established, personnel trained, technologies developed and tested, roads constructed, water systems improved, etc.). This information is easily collected. However, the project must also monitor the less tangible effects such as the involvement of the village councils in the planning process and

their reaction to project activities. A most effective operational method for collecting this information will be regular meetings between the village councils and district officials.

The regular meetings with village councils will uncover some of the problems in project implementation and may lead to the formulation of solutions. In addition, it will be necessary for the project, primarily the district officials, to carry out special studies using rapid survey techniques. For example, farmers may be reluctant to adopt certain agricultural innovations, so the District Agricultural Development Officer and rural development specialist will wish to investigate this problem.

From the farm journals, regular meetings with farmers, and special studies carried out by the district staff, assessments can be made on a periodic basis regarding progress towards the project's objectives.

Evaluating Project Activities

Evaluating the impact of the project on the production, incomes and well-being of the people in the three districts is a complex task. The farm journals (described above) will provide hard data on the changes in yields, net income and the percentages of production consumed, retained and sold. This information will only be available for a small number of families in each ecological zone or ward. To project the spread of these benefits throughout the area, it will be necessary to conduct a survey which indicates the adoption of certain practices by farmers with similar farming systems. These adoption rates established by analyzing the hard data from the farm journals will allow reasonable estimations of how many families benefited from the project and to what extent. Secondary indication of the changes in farmer wealth will be collected and analyzed to assist in this assessment.

In addition to the examining the project's impact on the socio-economic well-being of families in the project area, the project with short-term assistance will create indicators of the area's development. These may be categorized as follows:

1. Economic Indicators: Amounts of crops and livestock sold and exported; relative prices by crop; input availability and sales; transportation availability and costs, etc.; and

2. Social Indicators: Progress towards government social objectives such as improved water systems; increase in the technical and management capabilities of the village councils; increase in village enterprise development; improvements in health and nutrition, etc.

The technical assistance team will work closely with the regional administration and district officials to define these indicators and help collect and update the data as required. These data will indicate the degree of developmental change in each district.

Understanding the Reasons for High or Low Project Success

In addition to measuring developmental changes in the three districts, it is also necessary for the project to understand what the causes, or probable causes, are of successes and failures. Such an understanding is important in the short run for modifying project activities, and in the long run, for helping the government plan other rural development efforts. Both quantitative and qualitative analyses will help delineate the current and potential significance of cause-and-effect linkages.

While the data could be analyzed with computer assistance, the project will rely mainly on simple statistical analytical techniques so that regional, district and ward officials, as well as the village councils, can see and understand basic relationships. Developing the problem solving capabilities at each level is a primary purpose of the project. In addition to the quantitative analysis, much of the information and analysis necessary to determine the reasons for success or failure will come from the communication strategies employed by the project--the meetings with village councils, the daily interaction of ward officials with the villages and families, and the special study teams sent out by the district. As has been emphasized, the success of the project will depend on the ability of government officials to enter into a dialogue with the farmers and village councils to explore how farmer and project resources can be most effectively combined to improve production. Through this dialogue and the proposed training, the ability among the farmers and village councils to identify, analyze and solve local problems should become increasingly effective.

ORGANIZATION AND TECHNICAL SUPPORT

The functions of the information system and the approaches and methodologies for carrying out these functions are described above. Responsibility for the information system will be centralized in the offices of the Regional and District Planning Officers. Technical assistance in developing the system will be provided by the economist/planner at the regional level and the three rural development specialists at the district level; short-term assistance from information system experts will be provided as required. Training in data collection and analysis methods will be provided at each level from the farmers and village councils to the regional level. Also, for district level personnel, short-term training in the United States will be provided in social and economic evaluation.

The eventual aim of the project will be to develop a system that can be replicated by the government in other regions and districts. Creating a system appropriate for Tanzanian rural areas will require experimentation. Over time, however, it should be possible to simplify the requirements so that the system can be replicated with a minimum of outside assistance.

ANNEX B

INFORMATION SYSTEM FOR PLANNING, MONITORING AND EVALUATING PROJECT ACTIVITIES

THE NEED FOR AN EFFECTIVE INFORMATION CENTER

The Arusha Planning and Village Development Project is designed to develop a process for improving the production, income and well-being of rural villages in three districts. Through a continuing dialogue with village councils and rural families, the project will assist in the identification and implementation of development activities that take account of the production potentials and production-related constraints within specific geographic areas. While the project has been able to identify the major requirements for improving production in the three districts and for developing the necessary economic and social infrastructure, the specification of appropriate development activities for each locality (ward) will depend on the collection and analysis of micro-data (farm data) as well as on the plans and ideas of village councils. Generating this information base will be the first step in the implementation of this project. In addition, the collection and analysis of the micro-level data will be essential for developing the small farmer component of the Arusha Regional Plan, to be prepared by the regional administration with technical assistance from USAID.

The data collection and analysis effort during the planning phase for each ward will help identify possible technological innovations and development activities that are appropriate. Still, as the project and village councils begin to implement the innovations and activities, there will be uncertanties —whether the technological innovations will result in increased maize, sorghum, pyrethreum and dairy yields, what are the most effective ways of helping village councils build their technical, organizational and information assessment capabilities; and whether pricing, supply, marketing policies and operations will insure that the benefits from the development activities will become self-sustaining. The regional, district and ward officials, in cooperation with the village councils and farmers, will have to monitor, evaluate and modify these activities to insure that the project objectives are achieved. Modifications in the project design will be necessary as knowledge about the area expands and as the project initiates and carries out the different activities.

The diversity of farming systems in the project area, combined with the need to test alternative technologies for improving production within these systems and the activities for removing the critical constraints on improved production and incomes, justifies the strengthening of the information processing and decision making capabilities at the family, village council, and ward, district and regional levels. Of primary importance will be the ability of all concerned to diagnose and formulate solutions to problems as they arise.

More specifically, the objectives of the project's information system are:

1. To plan development activities that are tailored to the particular potentials and constraints within each locality (ward).

2. To monitor project implementation and the achievement of project objectives in terms of:

   - The provision of financial, equipment, commodity, training and technical assistance inputs to the various wards and villages and to the participating government agencies;

   - The accomplishment of direct action results (or outputs) such as the formulation of village council production plans, the introduction of crop improvement technologies, roads rehabilitated, water systems established, farm centers developed, etc., that are necessary for the achievement of project objectives;

   - The effects of policy or other changes that may imply dangers to successful project implementation and thus a need for modifications in implementation strategy; and

   - The achievement of key project objectives, including the benefits and costs in achieving them.

3. To evaluate project performance and the project implementation experience, with particular attention to the process of involvement, assumption of responsibility, and capability of sustaining the development effort of the village councils and rural families.

4. To analyze why or why not developmental changes have taken place in different environments, with the development of recommendations for improving project performance.

STRATEGY FOR DEVELOPING AN EFFECTIVE INFORMATION SYSTEM

The project's information system is essential for the successful planning and implementation of all project activities from the initial identification and testing of technological innovations to the determination and establishment of the necessary economic and social infrastructure. It is a mechanism for insuring continued communication among those involved in project planning and implementation. To work effectively, the information provided must meet the requirements of decision makers as well as involving all those participating in the project implementation in the data collection and analysis effort.

An effective information systems builds upon the requirements of decision makers (i.e., farm families, village councils, regional, district and ward officials and foreign donor personnel) and the necessary flow of information among these decision makers. Information requirements will vary a great deal among these groups, with those inside the project area needing the greatest detail.. The model which provides the basis for the design of the project's information system follows. (See p. 4 of Annex B.)

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Farm Families must have a basis for deciding whether to accept the recommended changes in their farming systems--a decision which entails risk-taking for them. They will want to compare their yields with those of other farmers taking into account such factors as differences in quality of land, access to water, availability of labor, the level of cash inputs, and the tradeoffs in changing the mix of their crops. Moreover, they will be concerned with whether agricultural services are available on a correct and timely basis.

Village Councils will also have to have the above information as well as summarized comparative information from a wider area, so that they can develop the village production plan, recommend reasonable improved production practices to village families, and determine what local infrastructure is needed to support production.

District and Ward officials will need to engage in a dialogue with the village councils and families to help plan appropriate activities for each area, recommend changes, and determine what is working, or is not working, and why.

Regional Administration will need to track the flow of resources into the districts, wards and villages and to monitor the effects of project activities. This will allow the regional administration to adjust policies and operations to improve project performance and to alert national level officials to any necessary changes in government policies and support for insuring project success.

National Research Institutes and the MATIs will need to know the effectiveness of various technological innovations (and the necessity for modifications) as well as how to improve the training of Bwana Shambas.

The Prime Minister's Office and Technical Ministries will wish to monitor the project's development and to have the information necessary to respond to project area needs more effectively, particularly in regard to macro-development policies and the allocation of national budget resources.

To develop an effective information system, the information requirements of each group of decision makers will have to be identified and the appropriate methodologies designed so that they can be met on a timely basis. Also, as described and displayed in the model, there will be a need for a constant flow of information among these groups. The model suggests another important element in the development of the project's information system--there is a need not only for each group to receive information, but also to have the ability to understand the implications of this information for decision making. For example, information pertinent to family or village council decisions should be presented in straight forward ways with adequate background so that family leaders and council members can determine which courses of action to take. Developing decision making skills, especially those of village councils, family leaders and local government officials, will be an important step towards developing an effective information system.

STEPS IN DEVELOPING THE PROJECT'S INFORMATION SYSTEM

Implementing the above strategy requires the project to develop the data collection and analysis capabilities at all levels, with a primary focus of building a system that can be replicated in other regions and districts of Tanzania. Therefore, the system must be low-cost, easily manageable and transferable without intensive technical assistance and training. However, it should be noted that developing such a system is a difficult task, requiring professional guidance.

To illustrate the approach to the development of the project's information system, the main objectives of the system are discussed below with an indication of the methodologies and approaches to be employed.

Planning Project Activities

During the first year, the project will concentrate its planning and initial implementation of activities in twelve wards (i.e., four per district) which are representative of the various ecological zones in the project area. Intensive data collection and analysis will be done at the ward level to identify appropriate technological innovations to increase production as well as to plan the necessary improvements in social and economic infrastructure. Slowly the data collection and analysis effort and project activities will be extended to other wards. Under the government's policy of decentralization, the ward is the unit where government agricultural and livestock workers are assigned, and for purposes of analysis and planning, provides a natural basis for area frame sampling.

The first step in developing the information system will be the recruitment of data collectors by the district staff (including the rural development specialist provided by the project). The data collectors will be from the wards to which they will be assigned, be literate, and have farming experience. These data collectors will be paid by the project and assigned as the assistant to the bwana shamba for each of the selected wards.

The bwana shambas and data collectors will receive from two to four weeks training in data collection and analysis methods. Also, they will receive training in communications (e.g. the Paulo Freire method) from local-hire specialists in the Arusha Region, along with leaders from the villages in each ward.

In each of the selected wards, district and ward officials, in cooperation with the village councils, will first conduct a reconnaissance survey of the area. They will collect basic data on farm families and their assets, on land utilization and potentials in the ward, and on the available social and economic infrastructure. This information will provide the basis for selecting 20 representative farm families (from the least to most productive) who will participate in the intensive micro-level data collection. It should be noted that this data collection effort will only be initiated with the approval and cooperation of the village council.

The micro-level data collection will be carried out by the locally-recruited data collectors, with the assistance of the bwana shamba and the district's rural development specialist. The technique to be employed in the micro-level data collection will be a farm records or farm journal system. On a regular basis (every few weeks), data will be collected on family's production practices, cash and labor inputs, yields and sources of income. Such a system will provide the necessary hard data on yields and net income within each farming system. Moreover, the collection of this information will help insure a two-way information flow between the agricultural field staff and the farmers. The information collected will be assembled in ways that allow the farmer to compare how he is doing with his neighbors and that help the village councils to formulate production plans. The intensive data collection will be complemented by regular meetings with the village councils for planning and organizing development activities in the area as well as for determining which practices should be introduced in the area.

The data from the twelve wards, summarized and analyzed, will provide a data base for preparing the small farmer development component of the Arusha Regional Plan. This work will be supervised and assisted by the Economist/Planner assigned to the regional level. As will be discussed below, the continued systematic collection of farm level data will provide the basis for helping to measure the impact of project activities and for modifying the Arusha Regional Plan.

Monitoring Project Activities

Monitoring project implementation and the achievement of project objectives requires the use of several methodologies. Project inputs and resource utilization will be monitored and analyzed with standard accounting and management information systems methods. Systematic project records kept at the district and regional levels will serve as a primary source of data. The economist/planner at the regional level, with short-term technical assistance, will be responsible for developing the basic reporting system in collaboration with the participating government agencies. The monitoring system will be established in a way to indicate whether resources are being allocated as planned. If there are delays in the arrival of agricultural supplies or construction equipment in the district, the system must provide a warning signal so that corrective actions may be taken.

Beyond the record keeping of the project at the regional and district levels, there is a need for a cross-check to make sure that resources and services are being channeled into the appropriate wards on a timely basis. To monitor the flow of resources and technical assistance into a ward, a record system will be developed for the farm centers.

The system will also monitor the initial results of project activities (i.e., farm centers established, personnel trained, technologies developed and tested, roads constructed, water systems improved, etc.). This information is easily collected. However, the project must also monitor the less tangible effects such as the involvement of the village councils in the planning process and

their reaction to project activities. A most effective operational method for collecting this information will be regular meetings between the village councils and district officials.

The regular meetings with village councils will uncover some of the problems in project implementation and may lead to the formulation of solutions. In addition, it will be necessary for the project, primarily the district officials, to carry out special studies using rapid survey techniques. For example, farmers may be reluctant to adopt certain agricultural innovations, so the District Agricultural Development Officer and rural development specialist will wish to investigate this problem.

From the farm journals, regular meetings with farmers, and special studies carried out by the district staff, assessments can be made on a periodic basis regarding progress towards the project's objectives.

Evaluating Project Activities

Evaluating the impact of the project on the production, incomes and well-being of the people in the three districts is a complex task. The farm journals (described above) will provide hard data on the changes in yields, net income and the percentages of production consumed, retained and sold. This information will only be available for a small number of families in each ecological zone or ward. To project the spread of these benefits throughout the area, it will be necessary to conduct a survey which indicates the adoption of certain practices by farmers with similar farming systems. These adoption rates established by analyzing the hard data from the farm journals will allow reasonable estimations of how many families benefited from the project and to what extent. Secondary indication of the changes in farmer wealth will be collected and analyzed to assist in this assessment.

In addition to the examining the project's impact on the socio-economic well-being of families in the project area, the project with short-term assistance will create indicators of the area's development. These may be categorized as follows:

1. Economic Indicators: Amounts of crops and livestock sold and exported; relative prices by crop; input availability and sales; transportation availability and costs, etc.; and

2. Social Indicators: Progress towards government social objectives such as improved water systems; increase in the technical and management capabilities of the village councils; increase in village enterprise development; improvements in health and nutrition, etc.

The technical assistance team will work closely with the regional administration and district officials to define these indicators and help collect and update the data as required. These data will indicate the degree of developmental change in each district.

Understanding the Reasons for High or Low Project Success

In addition to measuring developmental changes in the three districts, it is also necessary for the project to understand what the causes, or probable causes, are of successes and failures. Such an understanding is important in the short run for modifying project activities, and in the long run, for helping the government plan other rural development efforts. Both quantitative and qualitative analyses will help delineate the current and potential significance of cause-and-effect linkages.

While the data could be analyzed with computer assistance, the project will rely mainly on simple statistical analytical techniques so that regional, district and ward officials, as well as the village councils, can see and understand basic relationships. Developing the problem solving capabilities at each level is a primary purpose of the project. In addition to the quantitative analysis, much of the information and analysis necessary to determine the reasons for success or failure will come from the communication strategies employed by the project—the meetings with village councils, the daily interaction of ward officials with the villages and families, and the special study teams sent out by the district. As has been emphasized, the success of the project will depend on the ability of government officials to enter into a dialogue with the farmers and village councils to explore how farmer and project resources can be most effectively combined to improve production. Through this dialogue and the proposed training, the ability among the farmers and village councils to identify, analyze and solve local problems should become increasingly effective.

Annual Work Plans

The Annual Work Plan is a document to be prepared by the regional government for use in planning each upcoming year's activities. It will also include a summary of data findings for the information system. The Annual Work Plan will be used for AID monitoring and evaluation of project activities and will supply the USAID/Tanzania Director a complete document on which he can base the decision for the amount of funds to be obligated in the upcoming fical year. (For a fuller description of the Work Plan see "Implementation Section of the PP").

Organization and Technical Support

The functions of the information system and the approaches and methodologies for carrying out these functions are described above. Responsibility for the information system will be centralized in the offices of the Regional and District Planning Officers. Technical assistance in developing the system will be provided by the economist/planner at the regional level and the three rural development specialists at the district level; short-term assistance from information system experts will be provided as required. Training in data collection and analysis methods will be provided at each level from the farmers and village councils to the regional level. Also, for district level personnel, short-term training in the United States will be provided in social and economic evaluation.

The eventual aim of the project will be to develop a system that can be replicated by the government in other regions and districts. Creating a system appropriate for Tanzanian rural areas will require experimentation. Over time, however, it should be possible to simplify the requirements so that the system can be replicated with a minimum of outside assistance.

ANNEX C

TECHNICAL ASSISTANCE ANALYSIS AND JOB DESCRIPTIONS

ANNEX C

TECHNICAL ASSISTANCE ANALYSIS AND JOB DESCRIPTIONS

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ANNEX C

TECHNICAL ASSISTANCE ANALYSIS AND JOB DESCRIPTIONS

I. ARUSHA REGION INTEGRATED RURAL DEVELOPMENT PLAN

A. Introduction

The Tanzanian Government has undertaken the progressive decentralization of planning and implementation responsibilities to the regions, districts and villages. As part of this process, each region is required to prepare a development plan which articulates the present status of development of the region by sector, proposes long-term development strategies that are consistent with the Government's development priorities (i.e., equity, self-reliance and village involvement), and outlines medium-term (five year) investment programs in support of these strategies. In response to requests by the TanGov, USAID will provide the necessary technical assitance for preparing the Arusha Region Integrated Rural Development Plan (hereafter, the Plan) in the belief that the development of the capacity to conduct this planning process is important to regional progress.

The process of preparing a regional plan is directly related to village development efforts and, therefore, this project has two major components--preparation of the Plan and Village Development. In particular, both efforts are concerned with developing the planning capabilities from the village to the district and regional levels. It is clear that a meaningful regional plan must be based on sound micro-level data (e.g., farming systems by ecological zone, village census, hydrological data) as will be generated by the Project. It is equally clear that the proposed program of village development will be profoundly influenced by decisions at the macro-level such as those to be made in the course of the planning exercise. In light of this interdependence between the two efforts, the requirements for preparing the Plan and those of the Village Development activities have been integrated into a single project effort.

B. USAID Assistance in the Preparation of the Plan

The purposes of the technical assistance to be provided by USAID are twofold: First, to develop the capacity of the regional administration to prepare development plans; and second, to produce, in collaboration with the regional administration, the Plan. According to the guidance provided by the Prime Minister's Office, three sectors are to be stressed. In order of importance, these are:

1. Directly productive sectors (agriculture and small rural industries);

2. Economic infrastructure (roads, irrigation, storage, soil and water conservation); and

3. Social infrastructure (water, education and health).

Certain sectors are excluded such as large-scale industry and mining, tourism, and massive capital intensive projects. Further, since it has been determined that the plans of the Tanzanian Government in the areas of health and education are adequate, these areas will receive less emphasis.

Provision of the requested assistance is an integrated complement to USAID-assisted programs in Arusha Region -- the Masai Livestock Project, the Arusha Drought Roads Project, and the activities carried out under several countrywide programs such as the National Food Crops Research Program, the Seed Multiplication Project and the Agriculture and Livestock Marketing Projects. This experience, combined with the recent field research for the Plan, provides an excellent source of background information for the regional planning exercise.

C. Specific outputs of USAID Assistance

The first and most important output of the proposed assistance will be developing the skills of regional and other government officials in preparing development plans, including a knowledge of planning processes and procedures as well as the data collection and analysis requirements for sector and project planning. The second output will be the actual development plan which specifies alternative long-term development strategies and possible medium-term investments based on the resources of the region and its current stage of development.

The TanGov envisions a planning process that starts with incorporating the felt needs of thevillages, districts and regions, but also recognizes the importance of macro-level data for providing guidance to the districts and villages as well as for formulating regional development objectives and plans. The village development component of the project will develop the capabilities of the regional, district and village officials (see Volume 1, Part Two, E. Project Description) to respond to the production potentials and constraints within specific localities, while the regional planning assistance will help develop the skills of regional officials to do sector analyses and to prepare the overall regional development plan.

To clarify the process the relationship with the village development activities, a brief summary of the activities is presented here. Under the village development component, a Rural Development Specialist will be assigned to each of the three districts to help district and ward officials develop a consultative planning process with selected wards and villages. The ideas generated through this dialogue, combined with an intensive micro-level data collection and analysis effort, will result in village production and development plans that will be integrated into district plans (see Section Project Description and Annex B). The micro-level data and information from the dialogues with the villagers will be utilized in the preparation of the regional plan. USAID inputs to the village development activities and to the preparation of the Plan

will be coordinated by a Regional Planner/Economist and the Agriculture Specialist who will be assigned to the Office of the Regional Development Director. The schedule for the coordination of these inputs can be found in Part Four, C. Implementation Plan.

As part of the USAID assistance to strengthen the planning process, the regional staff will be trained in skills needed for sector analysis and for formulation of the Plan. In addition to the existing staff (Regional Planning Officer, three Assistant Planning Officers, and representatives of the functional ministries), the Prime Minister's Office will provide a Plan Coordinator and two additional Assistant Planning Officers to complete the counterpart team.

In the actual preparation of the Regional Plan, three general sectors will be studied as specified by the Prime Minister's Office:

1. Directly productive sectors (agriculture and rural small industry).

In the agricultural sector, the focus will be on the production of both cash and food crops, as well as livestock development. Arusha Region contains several distinctly different ecological zones, each having its own potentials and problems for agricultural development. In the semi-arid areas, the emphasis will be upon livestock development and the production of drought tolerant crops. In the main cropping zones, livestock (including dairy) as well as wheat, maize, vegetables, bananas, coffee and in some areas pyrethrum, will be the primary focus.

Planning for development of the rural industrial sector will center on those activities for which there is the greatest potential demand in the area: the development and production of appropriate technology which proves suitable for the area, the development of consumer goods and services for which there is present and projected excess demand.

2. Economic Infrastructure (roads, irrigation, storage, etc.)

In Arusha Region, sections of the non-tarmac road system linking major points within the region need upgrading. Project emphasis will be to design an integrated regional road system incorporating secondary and primary roads.

There are a number of water sources in the region which provide the potential for the development of irrigation systems. In the planning exercise the focus will be on a water resources survey with specific recommendations for irrigation systems development.

3. Social Infrastructure (water, education and health)

The Government has set national targets with regard to potable water development, supply in all villages; by the end of 1977, universal primary education; and a dispensary for every 10,000 within five years. Because the Government's current planning in education and health are adequate and the programs are on target, they will not be emphasized.

For each sector, the planning team and short-term technical specialists will examine the existing resources in the region, their current stage of development (including an assessment of past development efforts), strategies for further development, and possible investments in support of these strategies. In formulating the overall regional plan, it will be important to do a cross-sector analysis to develop strategies insuring that appropriate development approaches and resources are planned so that the benefits of the development efforts reach poorer elements of society -- a primary goal of the Tanzanian Government.

The output of the planning will be a two volume report: Volume I will consist of a baseline analysis of the current development status within the three sectors; Volume II will propose regional and sector strategies, actions and investment proposals. The specific contents of the study will include:

Volume I

A. Review of the present level of development in each of the directly productive rural development subsectors including:

   1. Agriculture (crops, livestock, forestry);

   2. Agricultural support systems with emphasis on input supply and marketing;

   3. Agro-business and small-scale industry; and

   4. Non-agriculture employment.

B. Review of the present level of development of economic infrastructure including:

   1. Communications (road, transport, telecommunications systems);

   2. Storage (village, district and parastatal);

3. Irrigation (rehabilitation and new small-scale schemes); and

4. Soil and water conservation (windbreaks, embankments, contour terraces).

C. Review of the present level of social services development, including:

1. Potable water supplies (wells, springs, boreholes and dams);

2. Education facilities and programs (formal and non-formal); and

3. Health facilities and programs (preventive, curative and nutrition).

Volume II

A. Analysis of alternative long-term development strategies for the region as a whole and for each of the above sectors.

B. Specific investment proposals for each of the three sectors, with priorities ranked by:

1. Effect on the reduction of income disparity;

2. Effect on the rate of income growth;

3. Effect on regional GNP; and

4. Effect on general welfare.

C. Given the situation as described above and the overall development priorities of the Tanzanian Government, the plan will describe the best organizational structure for accomplishing the goals set forth in the plan.

D. USAID and Tanzanian Government Inputs

USAID primary input into the preparation of the Plan will be a technical assistance team consisting of: The Regional Planner/Economist, an Agriculture Specialist, Management/Information Specialist, three Rural Development Specialists, an agricultural Economist, a Hydrologist,

a Transport Economist and other short-term consultants as required.[1/] Further inputs will be made by the short-term experts programmed under the village development activities of the project. More detailed job descriptions are provided below.

The planning team (TanGov officials and the USAID-provided technical experts) will work under the direction of the Regional Development Director (RDD) and the Regional Planning Officer (RPO). Because the RPO has many duties, the Prime Minister's Office (PMO) has agreed to assign a Planning Coordinator and two additional Assistant Planning Officers to work full time with the team. In addition, the government functional managers for agriculture, public works, health, education and water will work closely with the team.

Office space will be provided by the Region and local secretarial help is available and will be hired as needed. Vehicles will be provided under the project. Housing will be provided by the Region for long-term staff stationed in Arusha; short-term staff will be placed in hotels and charged to the project. The project will provide small equipment and local operating costs.

The planning team will assemble in Arusha and will initially review existing studies and reports. Utilizing the existing knowledge base, the team will formulate a [illegible] for preparing the plan, identifying specific technical inputs that need to be provided and scheduling this assistance. Concurrently, the Rural Development Specialist, working in cooperation with district and ward officials, will initiate the intensive data collection and analysis effort that will help shape the small farmer component of the project. Additional research will be carried out in the two Masai Districts by the planning team members and by the sociologist assigned to the Masai Livestock Project. These inputs will be integrated into the final analysis. Further, seminars will be held with regional and district officials to discuss appropriate development strategies and investments to insure that the recommendations reflect the thinking of local government officials.

To provide the necessary technical assistance, the following positions and skills are required:

1/ This allocation of staff during year 1 provides a planning team consisting of: Regional Planner/Economist, Agriculture Specialist, Rural Development Specialists (3), Management/Information System Specialist, Agricultural Economist, Environmental Specialist, Technology Specialist, Industry Specialist, Transport Economist, Ag Processing Specialist, Water Systems Engineer, Water Chemist, Hydrologist, Irrigation Specialist, and other short-term experts as needed. This is an adequate team when compared to the planning guidelines of the Prime Minister's Office.

Long-Term

Regional Planner/Economist: Will be Chief of Party of the technical assistance team for both the preparation of the Plan and the village development assistance as well as assist in the training of government officials in the planning process. This person must hold a graduate degree in a discipline relevant to rural development planning and have several years experience.

Agricultural Specialist: Will be deputy Chief of Party and will coordinate the agricultural assistance activities. He/she will provide basic technical expertise for the agriculture sections of the Plan. This person should have extensive experience in tropical agriculture, management of extension programs and coordination of agriculture inputs/marketing in area development programs.

Agricultural Economist: Will be responsible for assisting in the macro-level research on the agricultural and rural industry components of the Plan as well as drawing and analyzing the micro-data from the village surveys for purposes of the Plan. This person must hold a graduate degree in agricultural economics and have experience in agricultural economic planning/program implementation in developing countries.

Rural Development Specialists (3): Will be responsible for provision of technical assistance required by the village development component in the three project districts, including the implementation of the micro-level data collection and analysis that will be utilized in the regional plan.

Appropriate Technology Specialist and
Rural Industries Specialist: Each will provide assistance by assessing the Region's potential for increasing local incomes through provision of improved technology and marketing assistance.

Short-Term

A variety of technical specialists will be provided as is determined necessary and requested by the planning team. A rough breakout of the specialties and of the estimated time for each specialty is given below:

Hydrologist: 2 person months
Land Use Planner/Soil and Water Conservation Specialists: 3 person months
Transport Economist: 6 person months
Management/Information Systems Specialist: 5 person months
Water Systems Engineer: 2 person months
Water Chemist: 1 person month
Irrigation Specialist: 1 person month
Other (Crops and Livestock Specialists, Crop Storage Specialist, Animal and Plant Scientists): short-term, totalling 30 person months.

All of these specialists should hold advance degrees and have experience in developing countries, preferably in Africa.

II. JOB DESCRIPTIONS/QUALIFICATIONS

Planning, Implementation and Evaluation

1. Regional Planner/Economist (48 person months)

The Regional Planner/Economist will be the Chief of Party of the American technical assistance team for implementing the Project. He/she will be assigned to the Office of the Regional Development Director, and will perform the following responsibilities:

1. Coordinate USAID assistance to the Region in the preparation of the Arusha Region Integrated Rural Development Plan.

2. Coordinate USAID inputs with regional resources allocated to the three districts involved in the Project.

3. Assist in the development of the information system for project planning, monitoring and evaluation; and integrate the information from the intensive data collection and analysis effort into the preparation of the Plan.

4. Develop, with regional officials, improved development planning and management methods and procedures as well as provide the necessary training for officials at all levels.

The Regional Planner must hold a graduate degree in regional planning or economics, and have substantial experience in providing development planning and management assistance in developing countries. He/she must be thoroughly knowledgeable about Tanzania's history, culture and current development philosophy and priorities. Extensive management experience and a background in information systems for development decision making are requisites for this position.

2. Agricultural Specialist (48 person months as part of Agricultural Production activity)

The Agricultural Specialist will be the deputy Chief of Party of the American technical assistance team and, like the Regional Planner/Economist, will be assigned to the Office of the Regional Development Director. He/she will have the following responsibilities:

1. Coordinate, with the assistance of the Tanzanian Technical Agricultural Development Officers in the three districts, work being done through a number of national programs (a number of which are AID assisted), e.g., agricultural research, seed multiplication, marketing, credit, and manpower development, with the needs in the three project districts.

2. Assist in the development of the agricultural aspects of the information system for project planning, management and evaluation.

3. Assist in integrating both macro and micro level agricultural data into the preparation of the Plan.

4. Provide technical backstopping to the Rural Development Specialists in the development and implementation of the village agricultural production plans.

The Agricultural Specialist must have a graduate degree in farm management, crop/animal science, or related fields, and must have a minimum of four years work experience in agricultural/rural development programs, preferably in Africa.

3. Rural Development Specialists (3 persons, 48 person months each)

The three Rural Development Specialists will be assigned to the offices of the District Development Director in Arumeru, Hanang and Mbulu Districts. He/she will have the following responsibilities:

1. Organize the data collection and analysis effort for planning and implementing project activities in selected wards and villages, including direct involvement in developing effective two-way communication between project staff and the villagers.

2. Assist in tha collection and analysis of micro-level data needed for the preparation of the Plan.

3. Develop, with district government and party officials, improved methods and procedures for planning, managing and evaluating village development activities.

4. Organize and coordinate training of selected district and ward government and party officials and villagers to develop planning, management and technical skills.

5. Plan and coordinate USAID assistance for promoting village production activities and the social and economic infrastructure supporting these activities.

The Rural Development Specialist should hold an advanced degree in a discipline relevant to rural development planning and implementation (rural sociology, applied anthropology, agricultural economics, development economics). In addition, this person should have at least education and/or experience equivalent of a B.S. in agriculture and two years experience in agriculture or rural development programs, preferably in East Africa, and must have a good to excellent knowledge of Swahili.

In addition to the basic qualifications described above, the Rural Development Specialists must be able to adapt to an ever-changing situation and rough living conditions. The village development activities of the project have built into them considerable flexibility so that the government, with project inputs, can respond effectively to village initiatives in different ecological zones. The job requires that the Rural Development Specialist become very familiar with th project area, develop close working relationships with government and party officials, and communication with Village Councils, village committees and farmers. The person should have sufficient background in the areas of agriculture and livestock to be able to ask the right questions, to have major input into the development of the data collection and analysis effort, and to assess the necessary structure and content of technical training programs and assistance. Moreover, the person must be the type of individual who can deal with (even thrive in) unstructured situations and who can allow the job description to expand and define itself as work progresses.

4. Management/Information System Specialist (24 person months)

The Management/Information Systems Expert will provide technical assistance in the development of the information system for the Village Development component as well as assist with the development of village and Annual Work Plans; working closely with the Regional Planner/Economist, the three Rural Development Specialists, and regional and district officials. More specifically, the person will assist in the sample selection of farm families who will participate in the intensive micro-level data collection effort, in the development of the farm records system, in the determination of information requirements for decision making at the district and regional levels and in the selection of methodologies to be employed in the information system to insure timely information to meet these requirements.

The Management/Information Systems Expert must hold an advance degree in economics and statistics, have considerable field experience in developing ongoing information systems for rural development projects, and have three or more years of management/implementation responsibilities in agricultural/rural development projects in developing countries, preferably in Africa.

Agricultural Production

5. Agricultural Economist (12 person months)

The Agricultural economist will be assigned to the Plan team and will be responsible for doing the macro-level analysis for the agricultural and rural industry sectors. In addition, he/she will assist in the analysis of the micro-level data generated by the intensive data collection effort under the village development component for developing the Plan. Finally, the person will assist in the economic and financial analyses of the alternative investments identified by the planning team.

The Agricultural Economist must hold an advanced degree in agricultural economics and have at least three years experience in agricultural economic planning/program implementation in developing countries.

6. Transport Economist (6 person months)

The Transport Economist will assist in the preparation of the Plan. He/she will be responsible for conducting economic and financial analysis of existing communications systems (road systems, transport and telecommunications) and of alternatives for long-term development. In addition, this person will conduct the economic and financial analyses of the medium-term investment projects in support of these strategies.

The Transport Economist must hold an advanced degree and have three or more years experience in conducting the above types of analysis in developing countries.

7. Agricultural Specialists (30 person months, including Animal and Plant Scientists)

Crops

Short-term technical assistance will be required from a variety of crop specialists -- maize, sorghum, millet, legumes, coffee, pyrethrum. For the preparation of the Plan, the crop-specific specialists will assess technologies currently in use within the region and the applicability of the results of the National Research Institutes and of the international agricultural research centers for improving production. In village development, these specialists will provide technical assistance to district and regional agricultural officers, identifying improved practices from existing farming systems that should be tested on the farmers own lands.

The Agricultural Specialists should hold advance degrees in plant science, have crop specific expertise as well as an understanding of African farming systems, and have at least three years field experience in tropical agriculture.

Livestock

Short-term assistance will be required from livestock specialists with a variety of technical capabilities: Design and implementation of animal health care system, veterinary medicine, cattle (including dairy) breeding and production practices, small animal production, and pasture development. For the preparation of the Plan, the livestock specialists will conduct an analysis of current production practices and develop recommendations for improving production, taking account of small farmer constraints. For village development, the livestock specialists

will provide technical assistance to the regional and district livestock offices in the development of small farmer production programs.

The livestock specialists must hold advance degrees in animal science and have at least three years field experience in livestock production in African countries.

Crop Storage

Short-term assistance will be required from crop storage specialists. For the preparation of the Plan, the crop specialist will assess storage facilities and arrangements of villages, districts and parastatals; determine the adequacy and quality of the various storage facilities, and recommend measures for future development. Primary assistance in the village development effort will be helping regional and district officials construct village level facilities.

The crop storage specialists must hold degrees in agricultural engineering or a related field and have field experience in Africa in the design of village storage and of larger facilities.

8. Range Management Specialist (7 person months)

The Range Management Specialist will be responsible for providing technical assistance to the District Livestock Development Office in identifying and introducing improved management techniques suitable for the various ecological zones and farming systems in the project area.

The Range Management Specialist must hold an advance degree in range management or equivalent professional experience and have previous East African experience.

9. Land Use Planner/Soil & Water Conservation Specialists (14 person months

Short-term assistance is required from land use planners and soil and water conservation specialists. For the preparation of the Plan, the soil and water conservation specialists will be expected to assess the current problems of erosion and the measures being taken by the regional and district Natural Resources Offices. In cooperation with Natural Resources officials, they will identify possible strategies and investments for controlling this problem. In village development, the land use planners/soil and water specialists will assist the District Natural Resources Offices to develop village land use plans and soil and water conservation programs, including the identification of appropriate practices.

The land use planners/soil and water conservation specialists must hold advance degrees and have field experience in Africa, particularly in developing village level programs.

10. Environmental Specialist (8 person months)

Short-term assistance is required during the preparation of the Plan as well as during the preparation of Annual Work Plans to satisfy Reg. 16 for those requirements not readily identified.

The specialist should have experience with AID/USGovt. regulations and the preparation of Environmental Assessments/Impact Statements.

Other Economic Activities

11. Appropriate Technology Specialist (36 person months)

The Appropriate Technology Specialist will assist in the preparation of the Plan and be in charge of the Appropriate Technology Center and the development of its activities. During his/her initial time, act as an advisor to the team on types of technologies and methods of promotion which should be specifically included in the Plan. Thereafter, supervise the physical development of the center and assist in the training of its staff. Develop a system which links the center's resources to the districts, villages and the farm centers. Develop linkages and work sharing agreements with the Tanzanian Agriculture Machinery Testing Unit and the Small Industries Development Organization.

The specialist should have an advance degree or extensive experience in fields related to technology or the management of technology transfer. An engineering background would be preferable but experience in such programs in less developed countries is more important.

12. Rural Industries Specialist (36 person months)

The Rural Industries Specialist will assist in the preparation of the Plan. In collaboration with the regional and district Commerce and Industries Departments, he/she will examine current small-scale industries in the Region, identify areas where there is a potential for village enterprises to be established; outline alternative long-term development strategies including medium-term investments in support of these strategies.

Following the completion of the Plan, the specialist will be attached to the Appropriate Technology Center. The Center will identify and test technologies and the specialist will promote the production of these and other industries in rural areas. He/she must develop strong linkages with SIDO, TRDB, TIB and the other agencies which are designed to supply technical assistance or financing for small-scale industries.

The Rural Industry Specialist should have a degree in engineering and about three years experience in the establishment of small industries in developing countries.

13. Management/Village Accounting Systems Specialist (3 person months)

The Management/Village Accounting Systems Specialist will provide assistance to village enterprises in developing their financial management systems, including the design of training programs for villagers. This specialist should have experience at the local level in developing countries in providing the assistance described above.

14. Agricultural Processing Technical Experts (5 person months)

To help design suitable technological innovations, short-term assistance will be required of experts in various types of agricultural processing -- milling, coffee processing, vegetable and fruit preservation, dairy processing. Specific requirements will be identified during the feasibility study and through village experimentation.

Socio-Economic Infrastructure

Road Systems Development

Long-term technical assistance will be provided under this contract for assisting the regional and District Works Department to implement the road rehabilitation component of this project and to develop the management and technical capabilities of District Works Departments. The assistance will begin during the second year of the project, at which time engineers from the Arusha Drought Roads Project could be available.

15. Road Operations Manager (36 person months)

The Road Operations Manager will have overall responsibility for implementing the road construction/maintenance component. He will be based in the Regional ComWorks Office and provide technical assistance in developing the planning and management systems for carrying out the construction and maintenance of district roads. He will assist in developing a backstopping system in the Regional ComWorks Office to support the districts.

This person should have skills in all aspects of road construction and have experience in a country with conditions similar to Tanzania. Minimum 15 years experience.

16. Equipment Maintenance Specialist (36 person months)

This technician will provide assistance in developing the regional and district ComWorks shop to establish the capability to maintain project-supplied/other equipment. The specialist should have at least 10 years experience under conditions similar to Tanzania.

All three technicians under this project activity will be required to undertake frequent travel. Two trailers will be located in Mbulu and Babati to accommodate overnite stays in these areas.

17. Construction Engineer (36 person months)

The Construction Engineer will be based in the Regional Office and will be responsible for providing technical assistance to the district staff constructing the project roads. He will help with the road alignment of village roads, organize construction crews, material supplies and report on problems in construction. He will provide on-the-job training to the district engineers, road superintendents and other members of the district.

This technician should have a minimum of 10 years experience under similar conditions. Kiswahili would be advantageous.

Water Systems Development

18. Water Systems Construction Specialist (24 person months)

A Water System Construction Specialist will be required for two years. The staff member will be assigned to the Regional MAJI Office and be responsible for backstopping the district water systems construction teams. These teams will receive basic skills training by MAJI prior to the technician's arrival. He will be responsible for assisting the districts to construct the identified systems, plan the systems for additional villages, develop spare parts and maintenance schedules and a trining program for village water system operators as needed.

The Specialist should have an engineering background but, more importantly, have experience in the management of the construction of low cost water systems for rural areas. The technician must speak or learn to speak Kiswahili in order to be most effective in the job. The job will require frequent travel to rural areas.

19. Hydrologist (6 person months)

The hydrologist will be required to assist with the preparation of the Plan and to locate water sources for the villages in the later years of the project.

He/she should hold an advanced degree and have had long experience -- preferably some in East Africa.

20. Water Chemist (1 person month)

The Water Chemist will be required to help identify low-fluoride sources of water for Arumeru District or suggest methods to treat existing sources with high-fluoride.

21. Water Systems Engineer (6 person months)

The Water Systems Engineer will assist in the preparation of the Plan and help assess the adequacy of the designs for systems in newly identified villages. He will prepare and review the investments needed to meet the plan targets and evaluate the quality of the systems being constructed under the project.

He/she should have an engineering degree and experience in the design and construction of low cost water systems.

22. Irrigation Specialist (6 person months)

The Specialist should prepare irrigation plans and investments for the Plan. In addition, he will advise the Project on improvements to traditional systems and produce data needed to meet FAA 611(a)(1) requirements for Mission approval.

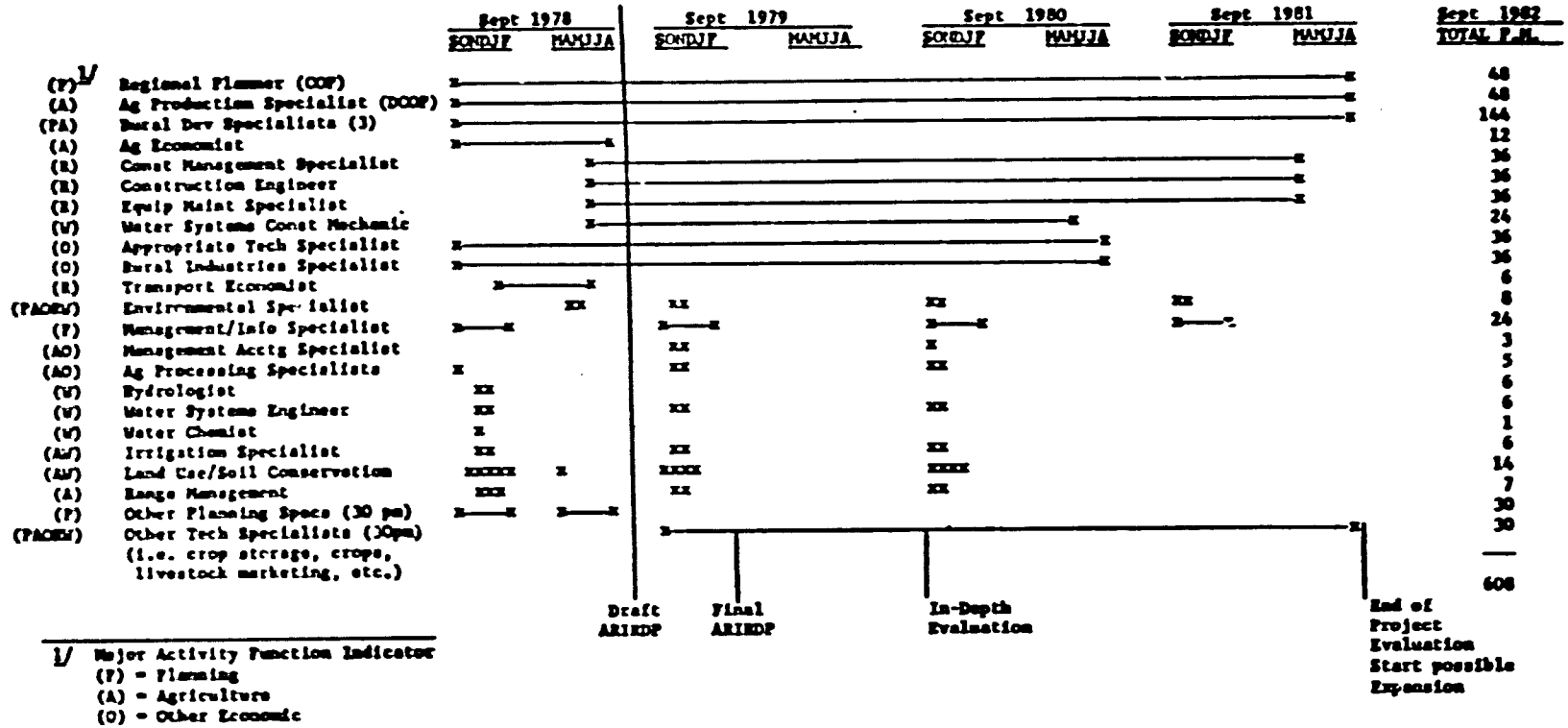
He/she should be trained and experienced with irrigation systems -- particularly in Africa.

Conservation

- Due to their dual roles, the job descriptions in the Range Management, Land Use Planner, Soil and Water Conservation, and Environmental Specialists appear in the Agricultural Production Section.

ARUSHA PLANNING/VI MENT PROJECT

Approximate Timing of Personnel Inputs (dependent on approval date)



1/ Major Activity Function Indicator
(P) = Planning
(A) = Agriculture
(O) = Other Economic
(R) = Road Systems
(W) = Water Systems

ANNEX D

TECHNICAL ANALYSIS - ROADS

ANNEX D

ROAD SYSTEMS REHABILITATION AND CONSTRUCTION

TECHNICAL ANALYSIS

I. INTRODUCTION

As discussed above, the approach to road rehabilitation and maintenance is to assist in improving the capability of the region and district to construct and maintain low cost roads. The functional government department responsible for road infrastructure is ComWorks. Its organization is similar to all functional departments in the decentralized government system in Tanzania. The TanGov attempts to push planning and implementation to the lowest decision-making levels and, hence, make it more responsive to local needs. In the case of road work, the responsibility falls to the district with technical support from the region. The decisions on priorities and the allocation of scarce resources are made at that level.

In the past, ComWorks has faced a number of constraints to effectively carry out road rehabilitation and maintenance: Inadequate funds for equipment and maintenance, inadequate staff, particularly at the district level and deficiencies in management capabilities to implement the road program and train the needed construction workers. The technical analysis below addresses these issues, including:

- the roads selected for rehabilitation under the project;
- the design standards for road rehabilitation and their adequacy;
- ComWorks organization and staffing, road and equipment maintenance and staff training;
- cost estimates; and
- implementation plan.

II. ROADS SELECTED FOR REHABILITATION

The PP design team, in collaboration with a series of regional and district officials -- including the Regional Development Director, the Regional Planning Officer, Area Commissioners, District Development Directors, District Planning Officers and personnel from ComWorks as well as the Ministry of Agriculture -- identified 276 miles of secondary roads for rehabilitation. Their choice, as noted, was based upon the following criteria:

- the economic potential of the area and the condition of the roads in relation to that potential;

- the potential of the villages in the area to participate in other project activities; and

- the relationship of the roads to the larger road network.

The roads selected are essential to the existence of a minimum road system capable of supporting increased local production activities and is within the capability of the Government to maintain. Those chosen are divided into first and second priority categories based on discussions with area officials and are as follows:

First Priority

Mbulu District

Mbulu-Kainam-Murray-Mbulu	45 miles
Dongabesh-Haydom	29 miles

Hanang District

Gallapo-Bonga	10 miles
Mon[illegible]nga-Bashanet	15 miles

Arumeru District

Mduruma-Kikwe	9 miles
Makiba-Kikatiti	10 miles
TOTAL FIRST PRIORITY	118 miles

Second Priority

Mbulu District

Mong'ala-Oldeani	30 miles
Rhotia-Kamb ya Simba-Kitete	22 miles

Hanang District

Gitting-Endasaki	25 miles
Riroda-Babati	15 miles
Bassutu-Ufana	25 miles
Gidos-Bary	12 miles
Sirop-Endasaki	25 miles

Arumeru District

Makiba-Majengo	4 miles
TOTAL SECOND PRIORITY	158 miles

During October and November, 1977, REDSO/EA engineers inspected approximately 150 miles of this secondary road system. From a combination of the data collected during this inspection, topographic maps and discussions with regional and district engineers, the conditions of the above roads and a breakdown of needed rehabilitation work were determined. The road conditions, by district, are as follows:

MBULU DISTRICT

The Kainam-Murray-Mbulu road is approximately 45 miles long. The road has not been maintained properly. Most of the road passes through hilly terrain with approximately ten small stream crossings. Most of the stream crossings were bridged by handmade drifts or timber span bridges. These need to be replaced with properly sized culverts. Most of the road passes through deep yellow-brown soils with sandy loam to loam topsoils in the higher country where rainfall is high. Some sections pass through black sandy soil. The road can be made passable throughout the year except during the periods of heavy rain by topping off with select materials and constructing side drainage ditches.

The Mong'ala-Oldeani road is approximately 30 miles long. The first five miles of the road passes through hilly terrain. Installation of drainage structures is required at some stream crossings. Base soil is a red, lateritic type with about 6" of fine powder for a top layer. Gravel is readily available. The first five miles of the road will require topping off with select material. About seven miles of the road after Mong'ola Juu may require realignment of the route as the present route is impassable and rocky. The remainder of the road is on flat terrain. Grading and topping off with select material will make the road passable.

The Rhotia-Kambi ya Simba-Kitete road passes through rolling terrain. The soil is a red lateritic type. Due to heavy runoff of water from the surrounding hills and absence of any drainage structures, the road is heavily rutted. With adequate side drainage ditches, regrading of the road profile and topping off of some sections with select materials, the road can be made passable.

The Dongobesh-Haydom road is approximately 29 miles long. The first 12 miles of the track runs through fairly hilly country with predominately red lateritic soils. Due to a lack of proper drainage, the track becomes badly damaged during the rainy season. Gravel materials are readily available in the nearby Mara Hills. A rehabilitated road will most likely be realigned to avoid steep gradients and to reduce drainage problems. Except for the last half mile, the road from the Mara Hills to Haydom runs more parallel to the elevation contours. Soils vary from red sand and silt to black cotton on flat sections near the Maghang River and the Rading Center. Suitable road construction materials are available on higher ground near the road. There are two existing bridge structures, one new and one requiring repair of its abutments. A drift at Bissienda requires replacement.

Hanang District

Most of the district project areas have rolling terrain with stable red lateritic soils. Gravel is readily available and hard rock incidence is minimal. Runoff of water near mountains and the Rift Valley wall make culverts and some fords necessary on roads in those areas. Areas south of Katesh and around Magugu are flat with soils similar to the grey, volcanic glassy soils found in the Arusha Drought Roads areas. Roads in all areas will require some topping off with select materials in order to be passable in the rainy season. Roads in the flat, plains areas will require select materials to be passable any time of the year.

Arumeru District

The Nduruma-Kilwe and Makibu-Kikatiti roads were inspected. These roads are in the same general area as the Arusha Drought Project's south road and the terrain encountered is similar. Portions of the road near the Arusha-Moshi road are through a red, stable lateritic soil that contains some gravel. The southern loop of the road is in flat plains with the grey, volcanic glass soil that becomes unstable under traffic loads.

Rehabilitation of these roads will require shaping of the existing road in the red soil areas with only occasional addition of select materials. Sections in the flat plains areas will require select materials throughout. Installation of culverts and construction of drainage ditches is also required over the entire length of the roads.

No major water crossing should be necessary as the existing large box culverts and concrete fords are in good repair.

The needed rehabilitation work, by type of materials and construction operation, is summarized below:

Mbulu District - Total Roads: 126 Miles

Realignment and New Construction	20 miles
Gravelling	75 miles
Reshaping	106 miles
Fords	8
Culverts	126

Hanang District - Total Roads: 127 Miles

Realignment and New Construction	19 miles
Gravelling	76 miles
Reshaping	108 miles
Fords	13
Culverts	127

Arumeru District - Total Roads: 23 miles

Realignment and New Construction	2 miles
Gravelling	18 miles
Reshaping	21 miles
Culverts	23

In addition to the roads identified for rehabilitation, it is estimated that up to 200 miles of feeder roads will be required. The selection of these roads will be done as the project progresses and villages begin the process of identifying production activities to pursue and constraints to implementing these activites; this process is explained in detail in Part One of the Project Paper. These roads will be earth roads with the minimum gravel and drainage required. Traffic on village roads is sporadic but rarely exceeds ten vehicles per day. These roads are usually 2-5 miles long and rarely exceed ten miles. The roads generally connect to the secondary road system and are designed to provide access during the entire year but may be closed during excessively heavy rains. It is estimated that approximately 50 project villages will require improved access and an average distance of four miles of road is assumed.

III. DESIGN STANDARDS AND THEIR ADEQUACY

A. Design Standards

The standards proposed for both the rehabilitated secondary and feeder roads are those of the TanGov's ComWorks for district and rural roads (with minor alterations noted in Section B below). The ComWorks standards are as follows:

Formation Width: 20 feet (6 meters), reduced to 18 feet (5.5 meters) in rock cuts.

Surface Width: 12 feet (3.65 meters).

Surface Material: (a) for district roads: 4 inches (10 cm) gravel over the base course. Base course to be of compacted in-situ material except where unstable soil conditions exist. In these areas 10-12 inches (25-30 cm) of existing soil is to be dug up and replaced by suitable select material. (b) for feeder roads: In-situ material except in cases where unstable conditions prevail.

Longitudinal drainage: Ditches parallel to road with 1:4 slope from edge of formation, shaped to a minimum depth of 20 inches (50 cm), and minimum 3 feet (1 meter) width at bottom, except in side hills, deep fills or rock cuts where 1:1-1/2 slope and 2 feet (60 cm) width is permitted.

Cross Drainage: Normally steel pipe culverts 24-42 inches in diameter. Concrete culverts for larger flow requirements.

Stream Crossings: Fords, except for two existing bridges on the Dongabesh-Haydom road in Mbulu District. One bridge is new, the second will require repair of the abutments.

Gradient: 7% maximum.

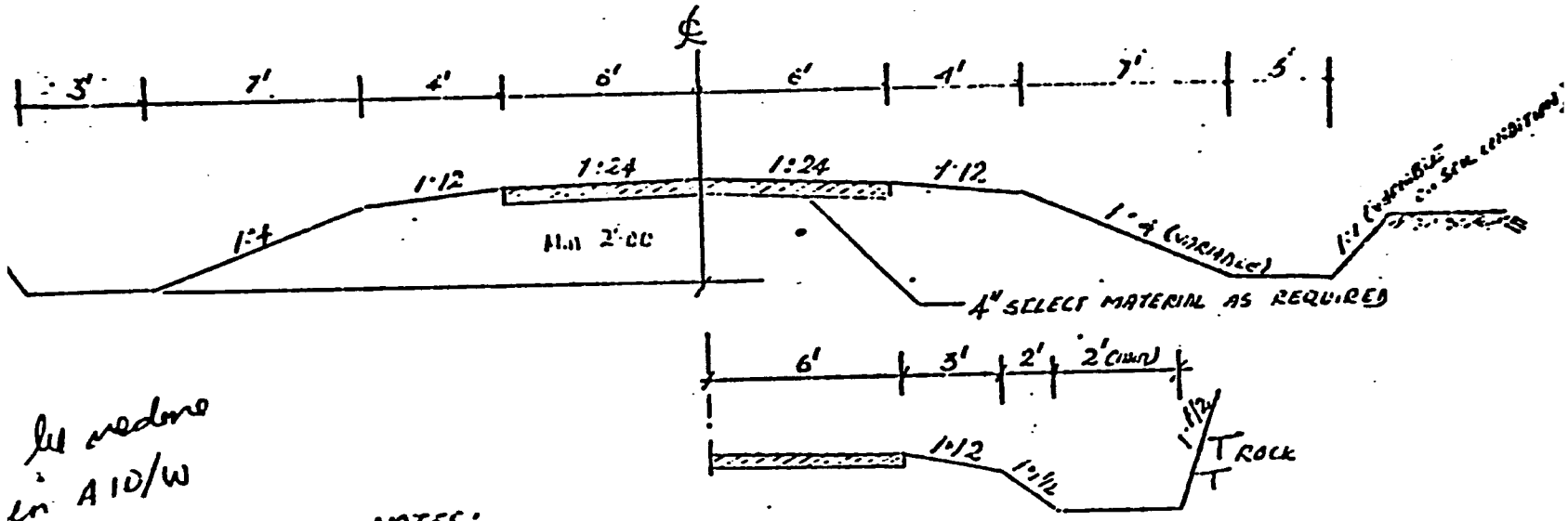
Curve Radius: 1,000 feet (300 meters) minimum.

Horizontal and Vertical Alignment: to provide minimum vehicle stopping sight distance of 275 feet (85 meters).

Design speed: 40 MPH (65 PKH)

A typical section for these roads is presented below.

TYPICAL SECTION – ~~FEEDER ROADS~~ ~~TANZANIA~~ DISTRICT AND FEEDER ROADS



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NOTES:

1. WIDEN DRAINS IF ADDITIONAL FILL REQUIRED
2. DITCH SECTION MINIMUM 18" DEEP
3. ON BLACK COTTON SOILS, SELECT MATERIALS SHALL BE IMPORTED OVER THE SHOULDER WIDTH OTHERWISE IN-SITU MATERIAL
4. SIDE SLOPES IN ROCK 1:1½ FOR ROCK VARIE TO WEATHERING
5. OUTFALL DRAINS TO BE PROVIDED AT ALL CULVERTS AND AT INTERMEDIATE POINTS WHERE NECESSARY
6. FOR SUPER ELEVATION REVERSE CROWN

B. Adequacy of Design Standards

The roads considered for rehabilitation generally connect medium size towns or large villages with roads leading to district capitals or other centers of commerce. The usual traffic loads, when the roads are well maintained, are estimated between less than ten per day for the more remote areas to up to 75 in the most productive areas. On average, the traffic mix consits of 30% 5-7 ton trucks, 40% light trucks and landrovers, and 30% buses and private cars.

With few exceptions, the roads, as originally designed, meet the design standards of the TanGov and were adequate for the vehicle traffic at that time and level of projected future traffic. The exceptions include several sections where the alignment was not correct; these sections have been identified and will be relocated. The only alterations to the TanGov design standards, recommended by the REDSO engineers, are as follows:

- a relaxation of the gradient standard from 7% to 11% minimum, and
- a reduction of the minimum curve radius from 1,000 feet (300 meters) to 700 feet (215 meters).

With these modifications, the proposed standards compare with those normally acceptable in other AID projects in East Africa with minor differences to take account of local terrain, weather and soil conditions.

IV. COMWORKS ORGANIZATION AND STAFFING, ROAD AND EQUIPMENT MAINTENANCE, AND STAFF TRAINING

In order to effectively implement the proposed road activity, the capabilities of ComWorks need to be upgraded. At present, there are a number of staff positions which are either not filled or are occupied by personnel not qualified to carry out the work. There is the need for improved management procedures, both at the ComWorks workshops and for road construction and maintenance activity. Finally, there is the need for additional tools for equipment repair.

A. ComWorks Organization and Staffing

The types and levels of the positions presently included in the staffing patterns for the regional and district ComWorks, if filled with qualified personnel, would be adequate for the projected future road rehabilitation and maintenance work. The following positions are provided for at the regional level, all of which are presently filled:

Regional Engineer	1
Roads Inspector	1
Building Inspector	1

Electrical Inspector	1
Mechanical Inspector	1
Mechanical Engineer	1
Foreman, Inspectors and Sub-Inspectors	7
Laborers	as needed

At the district level, the principal positions provided in the staffing pattern include the following:

District Engineer	1
Asst. Roads Inspector	1
Asst. Building Inspector	1
Asst. Mechanical Engineer	1

In addition, foremen, mechanics, equipment operators and laborers are supplied depending upon the level of activity at a given time during the year.

At present, in order to meet these staffing levels, a number of positions in the three districts need filling and others need upgrading. The following positions must be provided for:

Mbulu District

District Engineer

Hanang District

District Engineer
Asst. Building Inspector
Asst. Mechanical Engineer

Arumeru District

District Engineer
Asst. Roads Inspector
Asst. Mechanical Engineer.

The TanGov has agreed to fill these posts and budget allocations have been made for them. This level of staffing will be required as a covenant of the Project Agreement.

With these personnel, effective project implementation will be possible to the extent that management procedures are well defined and efficiently carried out, an area in which particularly the district ComWorks is presently weak. REDSO engineers identified three areas where upgrading is needed and recommended that technical assistance be provided for that purpose:

- overall operations management, including systems of accounting for and allocating equipment, accounting for funds, and personnel management;

- equipment maintenance; and

- road construction procedures and supervision.

The project, in accordance with REDSO recommendations, will supply a ;ee-person team to assist in overcoming the constraints cited above. ı specialists will include a Road Operations Manager, an Equipment .ntenance Specialist and a Construction Engineer. These staff will located in the Regional ComWorks Office and will serve the districts needed. Such an organizational arrangement is judged feasible in ıt (a) the extent of assistance needed in all three districts can be ıquately handled by technicians centrally working out of Arusha Town l (b) the distances between Arusha and both the district headquarters l the proposed road construction sites are relatively short and can managed from the Regional Office. The technicians will be responsible : the following (see the job descriptions presented in Annex C for ıater detail):

Road Operations Manager - to assist in overall operations management at the regional as well as the district levels, including the development of systems for the allocation of equipment and the assessment of its condition, systems for the organization of maintenance work, procedures to insure an adequate supply of spare parts, and personnel hiring and training procedures.

Equipment Maintenance Specialist - to assist the district ComWorks offices in all issues related to equipment maintenance, including the development of equipment maintenance procedures, procedures for obtaining spare parts, procedures for insuring an adequate flow of petrol and lubricants, and the organization of staff training.

Construction Engineer - to assist the district ComWorks staff in matters related to road construction and rehabilitation. The work will include assisting in developing construction procedures, organizing both skilled and unskilled labor for construction work and assisting with construction supervision.

B. Road and Equipment Maintenance

The recurrent budget for the maintenance of roads in the region dropped from 1.8 million shillings in 1974/75 to 100,000 Shillings in 1976/77. As a result, the condition of roads maintained by the region and the district deteriorated considerably. For example, in Arumeru District, bus service is no longer available to the villages of Mbuguni

or Makiba. In the case of Mbuguni, the last five miles of road are badly washed and a bridge approach has been so badly cut away that it is negotiable only in a high clearance vehicle. The Makiba road, which has suffered from flash flooding, has been eaten away so much on either side that in two places vehicles must leave the road entirely in order to proceed. The condition of these roads is not particularly exceptional. According to a 1974/75 survey of Arumeru District roads, 47 kilometers of road were impassable during the rains, 6.4 kilometers were poor at all times, 112.3 kilometers were difficult or passable only with 4-wheel drive during the rains, and only 79.9 kilometers were considered to be all weather roads. Conditions in the other districts are also poor; for example, the eight mile road into the high potential wheat and maize producing area of Mbulu is impassable except with a 4-wheel drive vehicle or tractor during the rainy season when seed wheat and diesel must be delivered.

In presenting the 1977/78 budget, the TanGov announced that considerably greater emphasis would be placed on maintaining existing infrastructure and a smaller proportion would go into new infrastructure investment. As a result, the present budget channels considerably greater resources into road maintenance and rehabilitation. From the 100,000 Shilling level cited above, the current budget provides for 9,986,000 Shillings, a one-hundred-fold increase. Recent discussions with both regional and national officials indicate that this emphasis will be maintained and that resources for infrastructure maintenance will continue to increase. REDSO engineers estimate that the 1977/78 level is sufficient, with proper management, to maintain the primary and secondary road system of the region at a minimum level.

As noted earlier, it is clear that the problem of road maintenance in the past has been caused by both a lack of funds and poor organization. With the new emphasis of the TanGov on road maintenance, the project will focus on assisting with organizational improvement through the provision of long-term technical assistance.

The maintenance of village roads has been and continues to be the responsibility of the villages, with no support from government resources. There has been a concern in the past that no regular mechanisms existed to raise local revenue for this purpose. The result has been that the level of maintenance of village roads has varied considerably across villages. Because of the seriousness of this issue, and because the Government foresees no effective incentives for adequate maintenance under the present situation, it is taking the legal steps necessary to allow local authorities to generate resources for this purpose.

The project will assist the districts to upgrade their equipment maintenance capability through the technical support provided as well as tools and equipment for district workshops. These items are reflected in the equipment breakdown given in the section on cost estimates below.

C. Staff Training

The project will not provide any U.S. or third country training under this project activity. The primary need exists for training of personnel in management skills, particularly at the district level, and skilled and semi-skilled road construction workers. This will be done through on-the-job training. Experience in the Drought Road Project demonstrates that such training can be effectively carried out. A primary task of the technical assistance team will be to help organize and supervise this activity.

V. COST ESTIMATES

Although costs for individual road segments may vary, sufficient planning has been undertaken to assure the reasonably firm per mile cost estimate for 476 miles of road to be constructed under this project. The estimates have been checked against recent experience in the Arusha Drought Road Project. The cost estimates are based on the following items:

a) mobilization and equipment operating/maintenance costs based on experience in the Arusha Drought Road Project;

b) estimated equipment and spares as determined by REDSO/EA;

c) technical assistance costs based on average USAID/T costs;

d) materials for drainage structures estimated by REDSO/EA; and

e) direct labor costs.

The calculations which result in the proposed budget are presented below:

1. Mobilization and Equipment Operating Costs

The mobilization of equipment for the Arusha Drought Road Project including ordering and shipment took approximately one year at a cost of $168,720 exclusive of equipment purchase costs. The REDSO engineers estimate that, based upon (a) the additional equipment needed for this project above that required in the Drought project and (b) increased shipment charges, the total will be $200,000, approximately 20% above the Arusha Drought Roads cost.

The equipment operating costs are estimated as follows: Monthly costs of the Drought Project have averaged $6,711 and with an average of 13.8 miles constructed per month the per mile expenditure has been $485. Given the additional equipment to be used in the village development effort, the REDSO engineers estimate the per mile cost to be 20% higher than the $485 figure, or $582.

This estimate is applicable to the 276 miles of secondary roads to be rehabilitated. Since the 200 miles of feeder roads will be constructed under labor intensive construction techniques and with smaller amounts of heavy equipment, REDSO engineers have determined that the cost per mile will be 20% of the cost for the capital intensive construction (20% of $582) or $116 per mile. The operating costs for the total 476 miles are as follows:

Secondary Roads - 276 miles @ $582	=	$160,632
Feeder Roads - 200 miles @ $116	=	23,200
Total		$183,832

Total mobilization and equipment operating costs plus contingency factor are thus estimated as follows:

Mobilization	$200,000
Equipment Operating Costs	183,832
Sub-Total	$383,832
20% Contingency	76,766
TOTAL	$460,598

2. Equipment and Spare Parts

Equipment and spare parts requirements and distribution for this activity as projected by the REDSO engineers, are summarized below:

Equipment Type	Arumeru	Hanang	Mbulu	Regional	Total
1. Dozer D-7		1	1		2
2. Grader Cat-130	1	2	2		5
3. Loader Cat-930		1	1		2
4. Dump Truck 5-7 T	2	4	4		10
5. Fuel Tanker				1	1
6. Farm Tractor 75hP	2	4	4		10
7. Tipper Trailer	3	6	6		15
8. Landrover/pickup	1	2	2	3	8
9. Towed Ser.Trlr		1	1		2
10. Shop Van				1	1
11. Towed Low Bed				1	1
12. Towed Roller	1	1	1		3
13. Water Trailer	1	2	2		5
14. Fuel Tank	1	2	2		5
15. Mechanic Tools	1	2	2		5
16. District Workshop Tools		1	1		2
17. Rregional Workshop Tools				1	1

From this list the following equipment will be available from the Arusha Drought Roads Project and will be provided through the regional ComWorks:

Equipment Type	Quantity
1. Grader Cat-130	2
2. Loader Cat-930	1
3. Dump Truck	2
4. Fuel Tanker	1
5. Shop Van	1

The balance of equipment needed will be funded by the project and will include:

	Description	No.	Unit Cost	Total Cost
1.	Dozer D-7	2	105,000	210,000
2.	Grader Cat-130	3	69,000	207,000
3.	Loader Cat-930	1	58,000	58,000
4.	Dump Truck 5-7 yd.	8	31,000	248,000
5.	Farm Tractor 75 HP	10	15,000	150,000
6.	Tipping Trailer	15	4,500	67,500
7.	Landrover/Pickup	6	12,000	72,000
8.	Towed Service Trailer	2	25,000	50,000
9.	Towed Low Boy	1	20,000	20,000
10.	Towed Roller	3	5,000	15,000
11.	Water Trailer 750 g	5	5,000	25,000
12.	Fuel Tank 750 g	5	5,000	25,000
13.	Mechanic Tools	5	500	2,500
14.	District Workshop Tools	2	12,500	25,000
15.	Regional Workshop Tools	1	25,000	25,000
16.	Water Pump 60 gpm	2	1,500	3,000

Sub-total equipment	$1,203,000
Escalation @ 1.5% per month x 6 months = 9%	108,270
Total Equipment	$1,311,270
Spares @ 45% (3-year supply including escalation)	590,072
Total Equipment and Spares	$1,901,342
Contingency @ 10%	190,134
TOTAL	$2,091,476

The above prices of equipment and spares have been cross-checked with similar project proposals for East Africa and are comparable.

3. Technical Assistance

Technical assistance costs are based on the provision of the three-person team spelled out in section IV above for a three-year period. Per year costs per technician are $87,500, for a total of $787,500.

4. Drainage Structures

The costs of the fords and culverts summarized by district in section II above are as follows:

Item	Quantity	Unit Cost ($)	Total Cost ($)
Fords	21	800	$ 16,800
Culverts	276	500	138,000
		TOTAL	$ 154,800

Fords are estimated to have an average length of 32 feet and a width of 15 feet and cost $25 per linear foot. Culverts are of corrugated steel, 24 inches in diameter and 30 feet long.

5. Supervisory Personnel and Direct Labor

As noted above, the TanGov will provide and fund all supervisory personnel through the normal staffing of regional and district positions. REDSO engineers estimate that for the secondary road rehabilitation one crew of 25 laborers will be needed per district, or a total of three crews. Costs are estimated at T.Shs. 400 per month per laborer for a total of $135,000 for the three year period.

It is expected that villagers will provide the bulk of the labor for the feeder road construction with the TanGov supplying the equipment operators and supervisory staff. An additional $40,000 is included to cover costs in instances where skilled labor may be required, thus the total labor costs are $175,000.

A summary of total project provided costs is as follows:

Mobilization and Operating/Maintenance	$ 460,598
Equipment and Spare Parts	2,091,476
Technical Assistance	787,500
Drainage Structures	154,800
Direct Labor	175,000
TOTAL	$3,669,400

VI. IMPLEMENTATION PLAN

As detailed above, the rehabilitation and construction will be undertaken by the district Comworks under the supervision of the Regional Engineer and the AID project staff. During the first year of the project, equipment will be ordered and technical staff recruited to coincide with the arrival of the equipment. A rehabilitation and construction schedule will be developed to complete the operations phase in three years.

The equipment, technical assistance and operating costs are designed to provide each of the three districts with the capacity to rehabilitate or construct roads at a rate of between 3 to 6 miles per month, depending on conditions. Further, the input mix is allocated to allow it to be divided into a capital intensive rehabilitation unit, a labor intensive feeder road unit, or operate as a single mixed unit depending on local needs.

The District Development Directors, with the assistance of the Rural Development Specialists, will prepare an operations schedule during the first year of the project (before the arrival of the equipment and road staff). The schedule will identify the proposed feeder road locations and the required surveys and environmental reviews. Upon the arrival of the road component staff, the operation schedule will be subjected to technical analysis. The three project technicians will organize the regional backstop support, train district staff in shop organization, construction techniques, logistic support and supplement the existing engineering capacity. The job descriptions provide a more detailed outline of the technicians' duties.

It is concluded that all statutory requirements and AID regulations have been satisfied with regard to the road rehabilitation and construction component of the project, and that all funds authorized for this component may be obligated immediately. With regard to the 270 kms. of road to be rehabilitated, the requirements of FAA 611(a)(1) are considered satisfied since: (1) road lengths have been specifically identified, (2) design and construction standards have been planned, (3) the organizational and administrative capabilities of the Government to implement this project component have been reviewed and, as a result, technical assistance has been provided to remove perceived constraints to project implementation, (4) equipment and maintenance requirements have been identified and a reasonably firm cost estimate has been computed.

An environmental examination, as part of the work plan, will be performed for each road. A road which has a significant adverse environmental impact will either be the subject of an environmental assessment or will not be financed by A.I.D. There exist sufficient alternate roads which meet A.I.D. criteria to preclude the possibility that funds obligated for this purpose will remain unexpended.

The PP's technical analysis is sufficient to satisfy the requirements of FAA 611(a)(1) for construction of approximately 200 km. of feeder roads. Although actual sites of these roads have not been identified, the project has identified their general location and a reasonably good idea of the terrain in which the roads will be built. Furthermore, selection of sites will be made in accordance with the procedures and criteria set out in Appendix G. Additionally, the technical analysis has defined the design and construction standards for the feeder roads, equipment and maintenance requirements have been identified, and reasonably firm cost estimates have been computed. Prior to undertaking work on the feeder roads an environmental examination will be made. If it appears that a particular road will pose considerable environmental problems necessitating an environmental assessment, an EA will either be done or the road proposal rejected. Similarly, if the proposed road offers unique and difficult technical problems it may be rejected.

In all instances of road rehabilitation or construction it is important to note that there is little or no chance that funds obligated will not be spent. There exist many more potential road locations than have been designated in the PP so that it would not be difficult should it be decided not to finance work at a particular site to choose an alternate site which satisfactorily meets Appendix G criteria.

ANNEX E

TECHNICAL ANALYSIS - WATER AND IRRIGATION SYSTEMS

ANNEX E

REHABILITATION AND EXTENSION

of

VILLAGE WATER AND IRRIGATION SYSTEMS

TECHNICAL ANALYSIS

I. INTRODUCTION

The TanGov, as discussed previously, has set a goal of providing drinking water to all villages throughout the country by 1991. This effort is being carried out by the Ministry of Water, Energy and Minerals (MAJI), with the regional offices providing logistic and management support to the districts where the construction work is implemented. External funds are being provided by Swedish aid for this work.

An integral part of the village development component is to examine water potential and needs in the context of village production activity. If, in the context of the development needs of a village, water availability is identified as a constraint, the project will provide resources needed to address the problem. Since the national program is apparently 4-5 years behind schedule and will not be able to meet the requirements in the project districts during the course of project implementation, the project will provide construction equipment and materials, technical assistance and training as needed. In addition, the project will supply construction materials plus short-term technical assistance for the rehabilitation of selected village irrigation systems.

The technical analysis in this section addresses the following issues raised in STATE 011808 (see Volume I, Appendix F) concerning FAA 611(a)(1); the requirements of which are considered met for authorization of the village water systems:

- -- the initial villages selected for improvement/rehabilitation of their water systems;
- -- sites and criteria for selection of additional villages for development of water and irrigation systems;
- -- organizational structure for the development and maintenance of water and irrigation systems;
- -- cost estimates for drilling and other operations;
- -- kinds and amounts of equipment; and
- -- implementation plan.

II. VILLAGES SELECTED FOR INITIAL IMPROVEMENT

MAJI categorizes water supply requirements for villages in three orders of priority. First priority is given to villages without systems and without identified sources of supply. Second priority is for villages with a water source but no developed distribution system, and third priority is given to villages with existing systems that require expansion or rehabilitation.

In discussions with regional and district development and water officials as well as through the initial survey done by the PP team, in which village leaders were interviewed, it was determined that systems for the first category of villages (14 total) were most critical for expanded economic activity. Upon the basis of this judgment--a judgment which preempts decisions by village councils concerning water needs, but a judgment based upon substantial evidence of village needs -- the TanGov officials have included these villages in a preliminary list of villages to receive initial support.[1/] REDSO engineers surveyed these 14 villages and developed the cost estimates given below for water systems construction. A brief description of these villages, by district, follows:[2/]

Arumeru District - Olkokola Ward

Two villages in this ward, Ilkurot and Olwingoni, were surveyed. The ward is on the western slopes of Mt. Meru, north of Arusha Town.

The village of Ilkurot, to the east of the Arusha/Nairobi road, is not well defined; clusters of houses are scattered on either side of a valley over a distance of several kilometers. Water is currently supplied to two water points by a spring above the village. The spring is not capable of supplying all the water requirements during the dry season.

The village of Olwingoni is also scattered over a large area, but is west of the Arusha/Nairobi road. Water requirements are now met by neighboring villages.

Boreholes located near these two villages indicate that groundwater is available at 100 meter depths in low-lying areas. Fluoride content of the water in these wells is high (about 7 ppm), but within the Tanzanian Government's standards of a maximum 8 ppm. The water table is too low for hand-dug wells.

1/ This list is preliminary in that the villages must also meet the additional criteria for selection as project villages; these criteria are listed in Part II of the Project Paper. The criteria are not concerned with FAA 611(a)(1) but with general development concerns of AID.

2/ A general description of the water availability in the three districts, prepared by Mr. Stanley Remington, TDY Water Engineer from AID, is included in Volume II, Annex F-4.

Mbulu District - Daudi Ward

In contrast to Arumeru District, villages in this ward are well defined; houses are concentrated in single areas, usually on the crests of ridges between shallow valleys.

Daudi village has an existing shallow well dug in one of these valleys. The well is approximately 12 feet deep with a depth to water of eight feet. The well is lined with 1.2 meter diameter concrete culvert sections but has been improperly constructed; the culverts are solid with no holes to allow water seepage from the sides into the well. The hand pump on the well is broken. The well does not yield sufficient water during the dry season. The villages of Barghish and Gunyoda are situated in similar areas. Water requirements for these villages and Daudi can be met with additional properly constructed and deeper hand-dug wells.

Masieda village is located approximately 18 kms west of the Mbulu/Karatu road in a somewhat drier area. However, the village is smaller than the other villages in this ward and water requirements may be met by shallow wells dug near the river about a kilometer west of the village. If shallow wells prove to be inadequate, a borehole will be necessary. ?

Mbulu District - Dongobesh Ward

Officials in Mbulu are most concerned about a water source for only one village, Arri, in Dongobesh Ward. Arri is about 12 kms east of Dongobesh. There are two springs in the area that can be capped and fed by gravity to the village.

Mbulu District - Maghang Ward

The village of Maretadu was surveyed in Maghang Ward. This village has an existing shallow well, but like the well in Daudi, it has been improperly constructed. It is also poorly located in that it is in the middle of a cultivated field. The hand pump on the well is inoperable. Properly constructed hand-dug wells in accessible locations could supply the village water requirements.

Hanang District - Galappo Ward

This ward is on an alluvial plain to the south and southwest of Mt. Kwaraha, near the district capital of Babati. The nature of the alluvium provides excellent prospects for shallow hand-dug wells. The villages of Majengo "A", Majengo "B", Giydamar and Hayamango can all be supplied with shallow wells. The villages of Hala "A" and Hala "B" have springs close to them that will provide for gravity-fed water systems.

III. SELECTION OF ADDITIONAL VILLAGES

Of the villages surveyed by the PP team, approximately 70% were in need of improvement/development of their water systems. While the identification of which additional villages will ultimately receive this assistance will be based upon the preparation by village councils of village production plans, the 70% estimate is reasonable as the percentage of villages that will likely identify water improvement as a primary need.3/ The cost figures generated below are based upon the cost estimates used for the initial 14 villages. Since these are repetitive activities, it is believed these cost estimates are reasonable. Since the number of potential villages requiring water development greatly exceeds the possible number of project villages, there is assurance that all authorized and obligated funds can be spent. Since the criteria for selection are established, there is also assurance that the funds would not be spent on improperly designed systems.

The discussion of this project activity in Part II of the PP identifies approximately 2,800 acres of land which is either already under irrigation or is suitable for cultivation for which a sufficient water source for irrigation exists. This estimate is based upon extensive discussions with Ministry of Agriculture personnel (the Ministry in charge of irrigation development) and on-site visits when the PP background papers were prepared. The type of systems identified and being considered for assistance are low cost, consisting of hand-dug unlined ditches which bring water from the hills into the lower plains. Again, as in the case of the bulk of the activities to be carried out in this project, identification of the systems to be improved or developed will be done as village production plans are generated. Given current data, the 2,800 acre figure represents a reasonable upper limit and it is on the basis of this figure that aggregate costs are based. Engineering estimates indicate that for the type of repair/rehabilitation work needed on the systems in the area an average of $100 per acre is a reasonable estimate.4/

IV. ORGANIZATIONAL STRUCTURE FOR DEVELOPMENT AND MAINTENANCE

A. Water Systems

MAJI offices are fully staffed with qualified personnel. To a large extent, this is due to the importance placed by the TanGov on village water development. With the experience that has been gained from this effort, MAJI staff are fully familiar with water system construction and maintenance.

Because of the commitment of personnel to the nationwide program,

3/ The REDSO engineers and the AID/W hydrologist visited 14 villages designated as being in greatest need of water development. In the course of visiting these sites they traveled through nearly every other area of possible project activities. They found no areas which were markedly different from the villages surveyed and there are no major obstacles to developing the water systems described.

4/ These estimates were made by the Regional Irrigation Office of the Ministry of Agriculture.

MAJI field staff will not be available to implement this project activity. However, MAJI has agreed to field and train additional crews for this work. Field construction crews are composed of two Pipefitters, one Mason, one Site Clerk, one Watchman, one Water Technician and one Senior Water Technician. AID engineers estimate that one additional crew member will be required per district; the costs of which will be covered by the project.

In addition to the above, the investigation of REDSO and AID engineers into MAJI performance indicated shortcomings in follow-on maintenance and certain skilled manpower. To some extent this is due to lack of budgetary support but much is due to insufficiently trained personnel. The project will address these deficiencies in the following ways:

-- Training

Six months of instruction will be carried out by MAJI for mechanics in the operation, maintenance and repair of hand and power driven pumps, pipelines and engines. The project provides additional training in well construction techniques. This training will be carried out at the MAJI Regional Office in Arusha.

-- Technical Assistance

Water Systems Construction Specialist - 24 person months will be provided to assist with the construction and rehabilitation work and to conduct the mechanic training component outlined above. In addition, this person will assist MAJI personnel to prepare inventories and order adequate spare parts to stock the Arusha warehouse and the smaller warehouses in Mbulu and Babati.

Hydrologist - 6 person months will be provided to assist in the preparation of the Regional Plan and backstop the water systems construction.

Water Quality Chemist - One person month will be provided to determine the best and most economical method of treating the high fluoride waters of Arumeru District.

Water Systems Engineer - 6 person months will be provided to assist in the design and development of the water system.

-- Transport

Funds are provided for the purchase, operation and maintenance of two pickups and two flatbed trucks to each MAJI District Office.

-- Spare parts are supplied for the rehabilitation of present MAJI equipment in the Arusha warehouse and to adequately stock Arusha, Mbulu and Babati.

B. Irrigation Systems

Development and repair of irrigation systems identified by villages as important for increasing the level of production will be implemented through the Farm Centers discussed in the agricultural component of this project. As in the case of agricultural production, the Centers will provide technical assistance through Bwana Shambas and, in the case of this activity, irrigation specialists requested through the Ministry's Irrigation Department. The work will be labor intensive, with villages providing all inputs other than selected hand tools and needed supplies, primarily hand tools and cement which will be furnished by the project and supplied through the Centers. In addition, the project will provide short-term technical assistance of an Irrigation Systems Specialist.

V. COST ESTIMATES

In lieu of the complicated cost/benefit analysis conducted for large-scale water projects (as per FAA 611(b)), it was agreed to undertake a simplified least cost analysis (as per para 2, STATE 269621/77; see Part I, Appendix F). The objective is to supply reasonable quality drinking water at the least cost. In the project area, there are three possible sources of water -- existing springs, shallow wells and medium-depth boreholes. In almost every case, the cost of developing a water system is cheapest for springs and most expensive for boreholes with shallow wells intermediate in cost (see cost estimates for water systems).

The AID/W supplied Hydrologist surveyed the villages with the purpose of identifying the least cost sources and only recommended boreholes where no alternative existed. Hence, a large number of spring and shallow well sources are to be utilized. REDSO engineers reviewed the MAJI procedures for preparing cost estimates and found that they are effective and provide for source selection through the method of least cost analysis. For example, with shallow wells, no distribution system is required, where if such wells cannot be used the more costly borehole may require an additional expense for pipelines from the source to the village. Given the analysis conducted, we are reasonably sure the least cost solution has been adopted by MAJI in each case. In Appendix G, the criteria for selecting/planning new systems includes the requirement to carry out a least cost analysis.

The data for the following cost estimates were provided principally by AID and REDSO engineers.

A. Water Systems: Construction

With a water source identified, costs for developing the sources and distributing the water can be estimated. The unit costs that follow are based on MAJI estimates for borehole and shallow well construction, MAJI price lists for pipe, and USAID experience with construction of reservoirs and other masonry structures in Tanzania.

Where boreholes or springs have been proposed sources, reservoirs for storage and pipeline distribution to water poi within the village are planned. The small yield expected from individual hand-dug wells makes motor driven pumps and pipeline distribution unfeasible for shallow wells. Hand pumps are planned with wells to be sited near the populations they will serve.

Yield from shallow wells is estimated at 1,000 gallons per day. With average daily per capita consumption of four gallons per day, each well can supply water to 250 people. The number of wells planned for each village is based on this yield divided into the population figures available from MAJI and USAID/Tanzania reports.

The cost estimates for borehole pumps are based on the Mono type pump and Lombardi diesel engine that MAJI has standardized throughout Tanzania. Capacity is approximately 1,500 to 2,500 gph at 120 m head.

1. Water systems for the initial 14 villages.

   Construction costs for the 14 priority villages identified are as follows:

Village	Proposal	Qty.	Unit Cost	Total ($)
Ilkurot	Pipe 3"	1000m		(13,000)
	Pipe 2"	3000m		(24,000)
	Reservoirs 10,000 ltrs	3	4,000	(12,000)
	Pump 2000 gph @ 120m head	1	4,000	(4,000)
	Distribution Points	4	500	(2,000)
	Borehole 100 to 120m 2/6" casing			(20,000)
		Sub-total		75,000
Oswingoni	(same details as Ilkurot)			75,000
Masieda	Shallow well and hand pump	4	2,000	8,000
Barghish	"	5	2,000	10,000
Daudi	"	6	2,000	12,000
Gunyoda	"	5	2,000	10,000
Maretadu	"	6	2,000	12,000

Glydamar	Shallow well and hand pump	6	2,000	12,000
Majengo "A"	"	2	2,000	4,000
Majengo "B"	"	3	2,000	6,000
Hayamango	"	7	2,000	14,000
Arri	Spring catchment	2	4,000	(8,000)
	Pipe 2"	4000m		(36,000)
	Reservoir 10,000 ltrs	2	4,000	(8,000)
	Distribution points	4	500	(2,000)
		Sub-Total		54,000
Hala "A"	Spring catchment	1	4,000	(4,000)
	Pipe 2"	2000m		(18,000)
	Reservoir 10,000 ltrs	1	4,000	(4,000)
	Distribution points	2	500	(1,000)
		Sub-Total		27,000
Hala "B"	(same details as Hala "A")			27,000
		Sub-total		346,000
		Contingency @ 15%		51,900
		TOTAL		397,900

The elevations, distances and distribution point locations used for these estimates are approximations based upon the survey of the engineers; they are considered sufficiently accurate for reasonably firm cost estimates.

2. Water Systems for Additional Villages.

It is estimated that of the total 75 villages which will ultimately be involved in the project, approximately 70% (52 villages) will need assistance with their water systems. Subtracting the 14 villages costed above, we estimate that 38 villages additional will request this assistance.

The engineering surveys indicate that approximately half of the villages in the project area can obtain sufficient potable water from shallow-hand-dug wells with hand pumps, 30% from boreholes, and 20% from such other sources as springs. The costs presented below are based upon this breakdown. (See Hydrologist's Report Vol. II, Annex F-4).

No. of Villages	Type of Construction	Average Cost per Village	Total Cost
19	Shallow wells with hand pumps	$10,000	$190,000
12	Boreholes	75,000	900,000
7	Spring Catchment	50,000	350,000
	Sub-total		$1,440,000[5/]
	Contingency @ 15%		216,000
	TOTAL		$1,656,000

Some of the villages for which the above funds have been budgeted have water systems that are in need of repair or improvement other than complete replacement. Cost savings resulting from use of existing systems will be used to finance further water systems that meet the criteria set forth in Appendix G of Volume I.

B. Water Systems, Technical Assistance

The project will provide the following technical assistance:

Position	Person Months	Total Cost
Water Systems Construction Specialist	24	$175,000
Hydrologist	6	75,000
Water Quality Chemist	1	12,500
Water Systems Engineer	6	75,000
	TOTAL	$337,500

5/ In the case of each type of system, the actual costs will vary but the total cost will not exceed the above. Again, [illegible] the total number of villages exceeds the number to which AID can c[illegible]eivably provide water systems (75 in project; 400 in Region), no system which greatly exceeds the average cost for the system selected will be undertaken. For example, the AID engineers determined that $2,000 per hand-dug well is a reasonable average cost. Therefore wells costing in the range of $1,000-$3,000 each can be undertaken while wells costing $3,500-5,000 each would not be undertaken.

C. Transport

Costs for the purchase, operation and maintenance of vehicles are as follows:

Purchase Cost

Vehicle	No. Purchased	Unit Cost	Total
Pick-up	6	$12,000	$ 72,000
7-ton Trucks	6	16,000	96,000
		Sub-total	$168,000

Operating/Maintenance costs

Vehicle	Cost Per Year Per Unit	Total
6 Pick-ups (4-yr. life)	$4,000	$ 96,000
6 7-ton trucks (4-yr. life)	6,000	144,000
	Sub-total	$240,000
Purchase and Operating/Maintenance TOTAL		$408,000

In addition, $8,000 will be included for in-country travel for project personnel.

D. Spare Parts

The AID engineers estimate that needed spare parts for equipment at the regional and district MAJI workshops will cost $50,000. This is mainly for repair of existing drilling rigs.

E. Training

The TanGov has agreed to provide six months of training to three work crews for this activity, therefore a minimum amount of $2,000 per year is budgeted for materials and supplies needed for the training of MAJI personnel. The total for four years will be $8,000. This training will be provided as problem areas are identified and will specifically relate to those problems.

F. Salaries of MAJI Water Systems Development Crews

The project will fund three crews, one per district, consisting

of the personnel detailed in Section IV above. The cost for each crew per year will be $9,100 totalling $109,200 for four years.

G. Irrigation System: Technical Assistance and Supplies

Assistance for irrigation systems development to be carried out through the Farm Centers is as follows:

Irrigation Systems Specialist - 6 months	$ 75,000
Supplies, equipment and labor (hand tools, cement pumps, etc.)	280,000
TOTAL	$355,000

Total costs for this project component are summarized below:

Water Systems Development	
Water System Construction	$2,053,900
Technical Assistance	337,500
Transport	416,000
Spare Parts	50,000
Training	8,000
Salaries - MAJI Crew	109,200
TOTAL	$2,974,600
Irrigation Systems Development	
Technical Assistance	$ 75,000
Supplies and Equipment	280,000
TOTAL	$ 355,000
TOTAL WATER AND IRRIGATION SYSTEMS	$3,329,600

"Based on the above analysis it is concluded that all statutory requirements and A.I.D. regulations have been satisfied with regard to the water systems component of the project, and that all funds authorized for this component may be obligated immediately.

In the case of the initial 18 villages which have already been identified as participating in this component of the project, the requirements of FAA 611(a)(1) are considered satisfied: (1) villages have been identified, (2) the type of water system improvement has been identified, (3) cost estimates have been computed, (4) necessary equipment has been identified, (5) the organizational and administrative capabilities of the Government to implement this component of the project have been reviewed and, as a result, technical assistance has been provided to remove perceived constraints.

While additional villages have not been specifically identified, reasonable estimates are contained in this annex as to the number of villages which will request this kind of assistance and the nature of water system improvements which will be undertaken. Criteria (see appendix G) have been compiled to guide site selection. Reasonable cost estimates have been computed, equipment identified, and organizational/administrative capacity of the Government reviewed and remedial action taken. It should be noted that there is little or no possibility that funds, once obligated for this purpose, will not be expended since the number of potential villages requiring water development greatly exceeds the estimated number of project villages.

An environmental examination will be made for each water system prior to initiation of the work. If it appears that the construction of a water system will pose considerable environmental problems necessitating an environmental assessment, the EA will either be done prior to beginning of the work or the proposed water system activity will be rejected."

VI. IMPLEMENTATION PLAN

A. Water Systems

During the first three quarters of year one, the primary effort will be in training the three district water development crews by the MAJI office. Construction/rehabilitation of the water systems will commence in the last quarter of the first year and continue throughout the life of the project.

Technical assistance will be spaced as follows: The Water Systems Construction Specialist will arrive in the second half of the first year to begin working with the construction crews and MAJI staff. The Hydrologist and Water Quality Chemist will be provided during the first year, the former in the second half to assist with preparation of the Arusha Regional Integrated Rural Development Plan and water systems construction and the latter prior to commencement of the construction work in order to make a determination of the best method of treating the high fluoride waters. Finally, the Water Systems Engineer will split his time with three months in the first year to assist with the Plan and three months in the second year to help with problems related to water systems development.

It is anticipated that the first 14 water systems will be completed by the end of the second year of the project with the additional 38 projected to be identified in the second year and construction in years three and four. While FAA 611(a)(1) requirements have been met for obligation of funds for the water systems activities, the project will in practice be incrementally funded. Therefore, on-site analyses will be performed as described in Appendix G of Volume I for each of the remaining 38 villages.

Identification of additional village water systems requiring assistance will be part of the annual work plan preparation. (See Implementation Plan for a description of Work Plan - Part Four.)

Near the middle of the second year, the District Development Directors of the three districts, in collaboration with the Rural Development Specialists and the project-provided Water Systems Construction Specialist, will prepare an operations schedule for the third year of the project. It will be subjected to technical analysis by the technical assistance personnel provided. Obligation of funds for the remaining 38 villages will be considered at this time.

Job descriptions for the technical assistance are given in Volume II, Annex C, along with a detailed description of their duties.

B. Irrigation Systems

The Irrigation Systems Specialist is scheduled for two trips, one for three months during the first year and an additional three months during the second year as irrigation development progresses. Monies will be obligated for this work as adequate planning is completed and certified by the Mission Director.

ANNEX F

SUPPORTING DATA AND REPORTS FOR ANNEXES D AND E

ANNEX F-1

Trip Report, Arusha, Tanzania
October 17-21, October 31-November
4, November 15-17, 1977 (Baker and
Brahmbhatt Memorandum dated November
29, 1977)

UNITED STATES GOVERNMENT

memorandum

DATE: November 29, 1977

FROM: Stafford Baker and Pushkar Brahmbhatt

SUBJECT: Trip Report, Arusha, Tanzania, October 17-21, October 31-November 4, November 15-17.

TO: Mr. Louis A. Cohen, Director, REDSO/EA

THRU: Mr. Albert A. Karian, Chief Engineer, REDSO/EA-EDID

I. PURPOSE OF TRIP

AID/W review of the Tanzania Village Development Project raised questions concerning the Section 611 requirements for the road and water system components of the project. These trips to Tanzania were made to investigate the Tanzanian Government's ability to implement the project construction activities and the accuracy of the cost estimates given in the project paper, factors affecting Section 611 certification. Information was gathered from Com Works and Maji personnel at District and Regional offices in the Arusha region.

II. COM WORKS

A. Persons Contacted

Jim K.N. Milay	Assistant Regional Planning Officer
Jacques Manuel	Acting Regional Engineer
Solomon Lazirenga	Acting District Engineer, Hanang
Hatibu Mohammed	Acting District Engineer, Arumeru
O.J. Abdullah	Building Inspector, Mbulu

B. Construction

1. Design Standards

Com Works design standards for feeder roads to be constructed and district roads to be rehabilitated under the project are as follows:

Surfacing width	- 12 feet (4 meters)
Surfacing material	- 4 inches (10 cm) of select material wherever required for district roads in-situ material for feeder roads

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

OPTIONAL FORM NO. 10 (REV. 7-70)

Shoulder width	- 4 feet (1.25 meters) on both sides
Ditches	- Shaped at minimum depth of 20 inches (0.5 meters) paralleling the road (except side hills and deep fills, see Annex A - Typical Section)
Drainage	- Cross drainage in the form of either concrete or corrugated metal culverts, depending on availability. Minimum size of 24 inches, maximum 42 inches.
Design speed	- 40 mph
Gradient	- 1 in 15 maximum (7%)
Radius	- 1000 feet minimum
Horizontal and vertical alignment	- Adjustments to provide minimum vehicle stopping sight distance of 275 feet (25m)

2. Activities

With the budget for the latest fiscal year devoted entirely to maintenance of existing infrastructure, Com Works currently undertakes no construction activities in the Arusha region.

3. Costs

Com Works has estimated new construction costs for other donors interested in future financing of road construction in the Arusha region.

For new construction of a 30 feet wide road with a 22 feet road bed (excluding only cost of bridge structures longer than 20 feet span), Com Works estimates 120,000 shillings ($14,500) per mile.

For construction of 15 feet wide bridges with load capacity of approximately 40 tons and span lengths not exceeding 20 feet, Com Works estimates 2,500 shillings ($300) per running foot.

C. Maintenance

1. Standards

Comworks maintenance procedures for feeder roads and district roads are:

a. Grading twice a year (once after the rainy season, when moisture content is optimal).

b. Regravelling once every three years for district roads.

I. Activities

a. Road maintenance

Road maintenance in the Districts is performed with equipment loaned to the districts by the regional office.

In Mbulu District, the trunk road from Manyoni to Oldeani and Karatu to Mbulu was being maintained with a tractor towed grader. Workcamps for maintenance of trunk roads were noted at Oldeani, Karatu and Endabash. No maintenance of district level roads was observed.

In Hanang District, all the maintenance equipment loaned to the district (one towed grader and two motor graders) were deadlined for repair. Maintenance of the trunk road near Magugu was being performed by a private contractor hired by the regional office. Workcamps for maintenance of the trunk roads are located at Katesh, Dareda, Benga, and Magugu. District level roads were being maintained by hand labor. The road around Mt. Kwaraha (where maintenance by hand labor was observed) was in better condition than the main trunk roads in the district.

Arumeru District roads are also maintained with equipment loaned by the regional Com Works office. However, no maintenance by equipment or hand labor was noted when travelling over the roads proposed for rehabilitation in the Project Paper (Ndurama to Kikwe and Makibu to Kikatiti).

b. Equipment Maintenance

There is a six-bay workshop for the Hanang District at Babati. The workshop has tools, but no special repair equipment of any kind. The spare parts store consists of oil ls, gaskets, tires, tubes, bearings, etc. and is well organized. Any major repair work for the Dis-

trict (e.g. engine overhaul, gearbox repair) is referred to the Arusha Regional workshop.

There is a similar workshop for Mbulu District at Mbulu. Once again, no special equipment is available. Furthermore, fewer spare parts and tools appear to be available.

The Regional Workshop is in Arusha. It takes in between 800 and 1000 vehicles per year, mainly trucks and landrovers. The shop is equipped to handle many major repairs but lacks mechanic expertise and funds to purchase spare parts. Many components of heavy road equipment that need repair are sent to the larger, better equipped and staffed, Morogoro workshop. Spare parts are not stocked, but rather are purchased (when funds are available) from local dealers.

Com Works has plans to construct a large workshop at Moshi modelled after the Morogoro workshop. Utilization of this shop instead of the Morogoro workshop will shorten the time for major heavy equipment repairs.

3. Costs

a. Road Maintenance

Com Works has estimated that the cost of their contract for regravelling of the existing 30 feet wide road with a 22 feet road bed near Magugu in Manang District will be 1,300,000 shillings for 32 kilometers, or 40,265/- ($5,000) per kilometer.

The private contractor on the job is being paid 30/- per cubic meter for spreading, grading and placing gravel on the road bed, and 2/25 per cubic meter per kilometer for hauling the gravel.

b. Equipment Maintenance

Com Works repairs and maintains vehicles belonging to all Tanzanian Government ministries. The ministries must pay for the spare parts required for their own vehicles.

D. Resources

1. Equipment

a. Hanang District

Type	Number	Remarks
Dump truck	4	2 operational
Lorry	1	Not operational
Landrover	1	Operational
Farm tractor	1	Operational
Towed Grader	1	Not operational
Motor Grader	2	Not operational

The newest of the motor graders is a five year old CAT 12F. It has been deadlined for approximately five months with a fuel injector problem. The other motor grader is an Aveling Barford MG 1270 with 4810 hours. It has been deadlined for two months with a gear box problem. The fuel injector and gear box have been taken by the Regional office which has in turn given the injector to the Caterpillar dealer in Dar es Salaam and the gear box to the Morogoro workshop for repair.

b. Mbulu District

Type	Number	Remarks
Dozer	1	Operational
Motor Grader	1	Operational
Dump truck	2	Operational
Landrover	1	Operational

All these equipments are old and require frequent maintenance and repair.

c. Arusha Region (as of October 13, 1977)

Type	Number	Remarks
Avelling Austin Grader	CW74	
Avelling Barford Grader	CW1346	under repair, assigned to Hanang

Type	Number	Remarks
Cat Grader	CW1519	under repair, assigned to Hanang
Austin Grader	CW1542	assigned to Mbulu
1209 Grader	CW2756	
Tractor Shovel TS200	CW1543	
Cat D4	CW260	under repair
Cat D4	CW214	under repair
Cat D4	CW1548	assigned to Mbulu
Chinese Dozer	CW1670	
Ford Tractor	CW1321	assigned to Hanang
Ford Tractor	CW1391	
Ford Tractor	CW1253	
Ford Tractor	CW1414	
Ford Tractor	CW1430	
Ford Tractor	CW1580	
Tow Grader	CW108	
Tow Grader	CW89	not operational, assigned to Hanang
Tow Grader	CW1133	
Tow Grader	CW1140	
Mower	CW1493	under repair
Bitumen Heater	CW2243	
7 ton Roller	CW39	under repair
Hyster Roller	CW1565	
Towed Scraper	CW24	
Winget Dumper	CW2825	
Winget Dumper	CW2824	
Roller	CW2822	

2. Manpower

a. MCI standard staffing patterns

Districts

District Engineer	1
Assistant Roads Inspector	1
Assistant Building Inspector	1
Assistant Mechanical Engineer	1

Regional Office

Regional Engineer	1
Roads Inspector	1

Building Inspector	1
Electrical Inspector	1
Mechanical Inspector	1

Regional Workshop

Mechanical Engineer	1
Inspector	1
Assistant Inspector	1
Sub-Inspector	1
Foreman	4

b. Available Staff

Hanang District

Assistant Roads Inspector	1 (Actg. District Engineer)
Sub-Inspector	1 (Actg. Mechanical Eng.)
Carpenter	1 (Actg. Asst. Bldg. Inspector)
Foreman	4
Mechanic	10 (9 grade 3, 1 grade 2)
Equipment operator	10
Temporary laborers as needed	

Mbulu District

Assistant Roads Inspector	1 (Actg. District Eng.)
Assistant Mechanical Engineer	1
Assistant Building Inspector	1
Mechanic	1
Accountant	1
Heavy Equipment Operator	2
Temporary laborers as needed	

Arumeru District

Sub-Inspector, Building	1 (Actg. District Eng.)
Road Foreman	4
Building Foreman	1

Regional Office

Roads Inspector	1(Actg. Regional Eng.)
Building Inspector	1
Electrical Inspector	1
Mechanical Inspector	1

Regional Workshop

Foreman	5 (1 is Actg. Inspector)
Workers (mechanics, welders, etc.)	80

3. Budget

Com Works in Arusha has the following funds available for maintenance of secondary and trunk roads during the 77-78 fiscal year:

Secondary Roads

total mileage	1,242 km
funds budgeted	2,720,00/- ($340,000 or $274 per km)

Trunk Roads Gravel

total mileage	200 km
maintenance funds	579,600/- ($72,450 or $362 per km)

Trunk Roads Bitumen

total mileage	275 km
maintenance funds	947,200/- ($118,400 or $432 per km)

Improvement of Gravel and Bitumen Trunk Roads

total mileage	474 km
funds budgeted	5,740,000/- ($717,500 or $1345 per km)

III. MAJI - (MINISTRY OF WATER ENERGY AND MINERALS)

A. Persons Contacted

Mr. J.G. Hassanali, Regional Engineer
Robert Booth, Executive Engineer (water) Masai Project
Robert Vorhis, Hydro-Geologist, Masai Project

B. Construction

1. Regional and District Structure

The Regional Maji (Ministry of Water Energy & Minerals) office in Arusha is responsible for logistic support of district offices in the Arusha Region (e.g. materials, transportation design and technical services). District

Maji offices do actual construction of water projects in their respective districts. Projects at national levels are entirely carried out by Regional Maji Office.

The Government of Tanzania has set a goal of providing potable water supply within a reasonable walking distance to all villages by year 1980. The program is funded by the Government of Sweden. Due to lack of trained manpower, equipment supply, delay in maintenance of equipment, etc., the program is far behind schedule, and only 30% of the villages in Arusha region now have potable water supply. At the present rate of progress, the 1980 target will not be accomplished. All personnel of Maji Regional and District Offices are committed for this program and will be throughout the life of the proposed Arusha Village Development Project.

2. Drilling

One schram drilling rig has been assigned to Arusha region. The second schram drilling rig in Arusha region belongs to the Masai Project (financed by AID). The Dodoma Region (the central drilling organization for Tanzania), has 20 schram rigs. They are made available to other regions, as needed.

3. Pipeline system

In some areas in Arusha region, where perennial streams are existing, gravity fed pipelines with small reservoirs are planned (under the Swedish AID program). All plumbing equipment and pipes are locally available from the Government stores.

4. Costs

No cost data are available on the expansion or rehabilitation of the pipeline system as most of them are labor-intensive. Cost of various size of pipe are controlled by Government and are published in Government gazettes.

Present cost of bore holes (up to 6" diameter) runs in the range of $150 to $165 per meter depth, which includes casing, but not the cost of pump (which depends upon the size of boreholes, depth of boreholes and yield in g.p.m.).

All size of pumps are locally available but shortages are occasionally experienced.

C. Maintenance (Drilling Rig, Water Systems)

The Regional Office has a maintenance team composed of one mechanic inspector and two mechanic helpers. Each District Office has one mechanic assigned to maintenance.

Local operators perform routine maintenance such as oil changes, etc. District offices are responsible for operating costs of pumps (operator, fuel, oil, etc.). Repair of the drilling rig is performed by a mechanic provided from the Dodoma and Maji Office.

D. Resources

1. Equipment

Region:

One schram drilling rig, several pickup trucks and landrovers.

District:

One Isuzu truck (7 ton flatbed). One landrover pickup (Hanang district has a tipper truck in lieu of flatbed). All equipment at district level are quite new and operational.

2. Manpower

At Regional Level

Permanent, Pensionable Staff

Regional Engineer	1
Design Engineer	2
One survey unit (consisting of four experienced surveyors with supporting staff	
One construction unit	(3 construction inspectors)
One Workshop unit (2 mechanical inspectors, one mechanical foreman)	
One experienced hydrologist	
One drawing section	(4 draftsmen)

At District Level

One senior water technician (acting as foreman)
*One construction team (2 pipefitters, 1 mason, siteclerk, a watchman, a water technician, and a senior water technician)

3. Budget

Arusha region have Shillings 3.8 million towards recurrent cost for rural water supply.

IV. PROJECT AREA

A. Persons Contacted

W. Shellukindo-Regional Development Officer, Arusha (RDD)
Jim K.N. Milay - Asst. Regional Planning Office, Arusha (ARPO)
S.K. Masawe-District Manpower Management Officer, Arumeru (DMMO)
S.G. Hassanali-Regional Engineer, Maji, Arusha
W.T. Kisanji, District Development Officer, Hanang

B. Villages

See Annex B

C. Terrain

1. General

Mbulu and Hanang districts have rolling and in places rough hilly terrain. Mbulu is bounded on the east by the Rift Valley and on the west by the Yaida Escarpment near Lake Eyasi (see Annex C) successive valleys and hills dominate in the south. Elevation range from 4000 to 7000 feet. Lowlands are bushed grasslands, with low percipitation, while medium elevations are wetter and largely cultivated. High elevations are either wooded or open step grasslands. The terrain of Arumeru district is rolling and median elevations are 6000 to 8000 feet. The high forested and broad-leafed woodlands around Mt. Meru are sharply dissected and largely volcanic terrains.

* In each District except for in Arumeru District, which has two.

2. Proposed Roads Areas

a. Mbulu District

The Kainam-Murray-Mbulu road is approximately 45 miles long. It appears that the road has not been maintained for over a year. Most of the road passes through hilly terrain. Approximately ten small stream crossings were noted. Due to washouts between Murray and Mbulu on the other side of the loop (see map, Annex C-3), that section of the road was not surveyed. Most of the stream crossings were bridged by handmade drifts or timber span bridges. These can be replaced with properly sized culverts. Most of the road passes through deep yellow-brown soils with sandy loam to loam topsoils in the higher country where rainfall is high. Some sections pass through black sandy soil. The road can be made passable throughout the year except during the periods of heavy rain by topping off with select materials and constructing side drainage ditches.

The Oldeani-Magola Juu-Mangola road is approximately 30 miles long. The first five miles of the road passes through hilly terrain. Installation of drainage structures is required at some stream crossings. Base soil is a red, lateritic type with about 6" of find powder for a top layer. Gravel is readily available. The first five miles of the road will require topping off with select material. About seven miles of the road after Mangola Juu may require realignment of the route as the present route is impassable and rocky. The remainder of the road is on flat terrain. Grading and topping off with select material will make the road passable most of the year.

The Orotia-Mbumbulu road passes through rolling terrain. The soil is a red, lateritic type. Due to heavy runoff of water from the surrounding hills and absence of any drainage structures, the road is heavily rutted. With adequate side drainage ditches, regrading of the road profile and topping off of some sections with select materials, the road can be made passable most of the year.

The Dongabesh-Haydom road is approximately 30 miles long. The first 12 miles of the track runs through fairly hilly country with predominately red, lateritic soils. Due to a lack of proper drainage, the track becomes badly damaged during the rainy season. Gravel materials are readily available in the nearby Mara Hills. A rehabilitated road will most likely be realigned to avoid steep gradients and to reduce drainage problems. Except for the last half mile, the road from the Mara Hills to Haydom runs more parallel to the elevation contours. Soils vary from red sand and silt to black cotton on flat sections near the Maghang River and the Trading Center. Suitable road construction materials are available on higher ground near the road. There are two existing bridge structures, one new and one requiring repair of its abutments. A drift at Bissianda requires replacement.

b. Hanang District

Most of the district project areas have rolling terrain with stable red, lateritic soils. Gravel is readily available and hard rock incidence is minimal. Runoff of water near mountains and the rift wall make culverts and some fords necessary on roads in those areas (see map, Annex C-2). Areas south of Katesh and around Magugu are flat with soils similar to the grey, volcanic glassy soils found in the Arusha Drought Roads areas. Roads in all areas would require some topping off with select materials in order to be passable in the rainy season. Roads in the flat, plains areas would require select materials to be passable any time of the year.

c. Arumeru District

The Ndurama-Kikwe and Makibu-Kikatiti roads were inspected. These roads are in the same general area as the Arusha Drought Project's South road and the terrain encountered is similar. Portions of the road near the Arusha-Moshi road are through a red, stable lateritic soil that contains some gravel. The southern loop of the road (see map, Annex C-4) is in flat plains with the grey, volcanic glass soil that becomes unstable under traffic loads.

Rehabilitation of these roads will require shaping of the existing road in the red soil areas with only occasional addition of select materials. Sections in the flat plains areas will require select materials throughout. Installation of culverts and construction of drainage ditches is also required over the entire length of the roads.

No major water crossing should be necessary as the existing large box culverts and concrete fords are in good repair.

d. Rehabilitation and Construction Requirements

Arumeru District

	district roads (23 miles)		feeder roads (40 mil	
realignment	(@10%)	2 miles	(@100%)	40 miles
reshaping	(@90%)	21 miles		
gravelling	(@80%)	18 miles		32 miles
fords		0		3
culverts		23		40

Hanang District

	district roads (127 miles)		feeder roads (80 miles)	
realignment	(@15%)	19 miles	(@100%)	80 miles
reshaping	(@85%)	108 miles		
gravelling	(@60%)	76 miles		48 miles
culverts		127		80
fords		12		5

Mbulu District

	district roads (126 miles)		feeder roads (80 miles)	
realignment	(@15%)	19 miles		80 miles
reshaping	(@85%)	107 miles		
gravelling	(@60%)	75 miles		48 miles
culverts		126		80
fords		8		5

D. Hydrology

The principal aquifers include the complex of ancient crystalline basement rocks; shallow alluvial deposits in the adjacent stream channels; limestones and marls of lakebed deposits; the "Mbuga" limestones of broad shallow depressions; and volcanic rocks. Among these aquifers, the ancient basement rocks and the volcanic rocks are the most extensive, and consequently are the most important source of extractable ground water. The alluvial deposits, although widly distributed throughout Arusha region, tend to be rather thin and discontinuous, and consequently may be unsaturated or seasonally drained of water during dry periods.

The chemical quality of ground water varies widely, both with respect to locality as well as geologic source. In some localities water of excellent quality is obtained from the basement rocks, whereas in other localities the water is high in total dissolved solids or unfit for use.

In general, water from the volcanic rocks may contain undesirably high fluoride concentrations, and water from many boreholes and some springs in volcanic rocks have been found unusable becauseof high fluoride content. (Acceptable fluoride content is 1.5 to 2.0 mgl, however, in some cases it is as high as 300 mgl in the Arusha region).

See Annex D for borehole data in the vicinity of the project area.

V. SECTION 611

A. Requirements

611(a): Requires that technical, financial and any other plans necessary to carry out the planned assistance and to provide a reasonably firm estimate of cost to the U.S. Government be completed prior to obligation of funds.

611(e): Requires that the Mission Director certify that the host country is capable of effectively maintaining and utilizing the project activities.

B. Roads

1. Equipment

The equipment spread proposed in the Project Paper is based on the equipment units used on the Arusha Drought Roads

Project, with projected output of one unit reduced from the ideal 10 miles per month to 7 miles per month. The proposed equipment is considered inadequate and the projected output too optimistic for the following reasons:

a. The large number of short road segments to be constructed or rehabilitated will mean a lot of time spent in transferring equipment and laborers from one site to another.

b. Com Works will have more responsibility for administration of the equipment units and their performance can be expected to be far less efficient than the Arusha Drought team's.

c. On the basis of logistics alone, maintenance of the feeder roads will be difficult for Com Works. Maintenance of feeder roads is better accomplished by local, labor intensive work crews. The types of equipment necessary to support labor intensive activities are not included in the proposed equipment spread.

2. Com Works Maintenance Capabilities

Com Works is expected to maintain all the equipment supplied for the project. They will be unable to do this on a timely basis because:

a. They lack qualified mechanical engineers and inspectors to manage the Regional and District workshops.

b. The workshops are not equipped with the tools and equipment to handle all heavy equipment repairs.

c. The project areas are very remote from the workshops.

3. Com Works Management Capabilities

Com Works is expected to administer the project road activities. An examination of Com Works staffing show that:

a. Regional and District offices and workshops are not fully staffed, especially in critical administrative and skilled positions.

b. Present staff are fully occupied with on-going activities.

4. U.S. Technical Assistance

The two U.S. technicians proposed in the Project Paper are expected to assist Com Works to manage the project nearly as efficiently as the contract team managing the Arusha Drought Roads Project. In addition, they are expected to train their Com Work counterparts to the point where they are capable of managing construction and maintenance activities upon completion of the project. They are unlikely to accomplish all of this because:

a. The project will be spread over three districts with five or more separate activities likely to be ongoing simultaneously.

b. Technical assistance will be required on a nearly full-time basis to two District workshops and a regional workshop as well.

c. Qualified counterparts are not currently available in Com Works Arusha offices.

C. Water Systems

1. Design

In the Project, representatives of each village will be asked to rank the development priorities for their villages. The project designers have anticipated that water systems will be a high priority item in many villages and have set aside funds for their construction. However, no costs for specific water systems have been identified.

The data needed to make cost estimates of the water systems mentioned in the project paper was not available. The number of boreholes projected is not based on any hydrogeological survey of the area, but rather on the opinion of District officers. While some designs of distribution systems apparently exist, they have not been examined by people qualified to determine their suitability or cost.

2. MWI Management Capability

In contrast to Com Works, MWI offices are fully staffed with qualified personnel. This is evidently due to the

importance placed on water development by the Tanzanian Government. Furthermore, with the experience that has been gained from the on-going Swedish AID program, MAJI staff are fully familiar with water system construction and maintenance. No problems with borehole drilling or regional office backstopping for the project are foreseen.

MAJI will have problems supplying construction crews for the project water systems. Their own crews are fully committed to the Swedish AID program. Based on the rough(and possibly inaccurate) estimates in the Project Paper, MAJI believes that an additional two construction crews are needed in each of the three districts to build the AID financed systems.

D. Conclusion

Problems with the road and water systems components of the project have been outlined above. The requirements for satisfying Section 611(a) and (e) cannot be met for these components as they are currently proposed in the Project Paper.

VI. RECOMMENDATIONS

A. Roads

REDSO/EA engineers, assisted by Mr. Samuel Lubin, will re-design the roads component of the project. The equipment list, estimated construction costs and proposed U.S. technical assistance will be revised to reflect the information that has been gathered concerning Ccm Works implementing and maintenance capabilities. A list of personnel that Ccm Works should provide for the project (over and above their existing staff) will be prepared.

Acceptance of the revised roads component by USAID/Tanzania and Ccm Works will allow REDSO/EA engineer to recommend certification of Section 611 for this portion of the project.

B. Water Systems

Before Section 611 requirements can be met for the water systems component of the project, further studies by people with expertise not available in REDSO/EA will be required. Of primary concern is a groundwater hydrologist's or hydro-geologist's deter-

mination of the most economical source of water for each village system. Once a feasible source has been identified (meeting economical and environmental consideration), a water systems engineer or REDSO/EA engineers (with MAJI assistance), can provide a cost estimate for development of the source and construction of the distribution system. When the extent of the construction work involved is known, a determination of extra MAJI manpower requirements can be made.

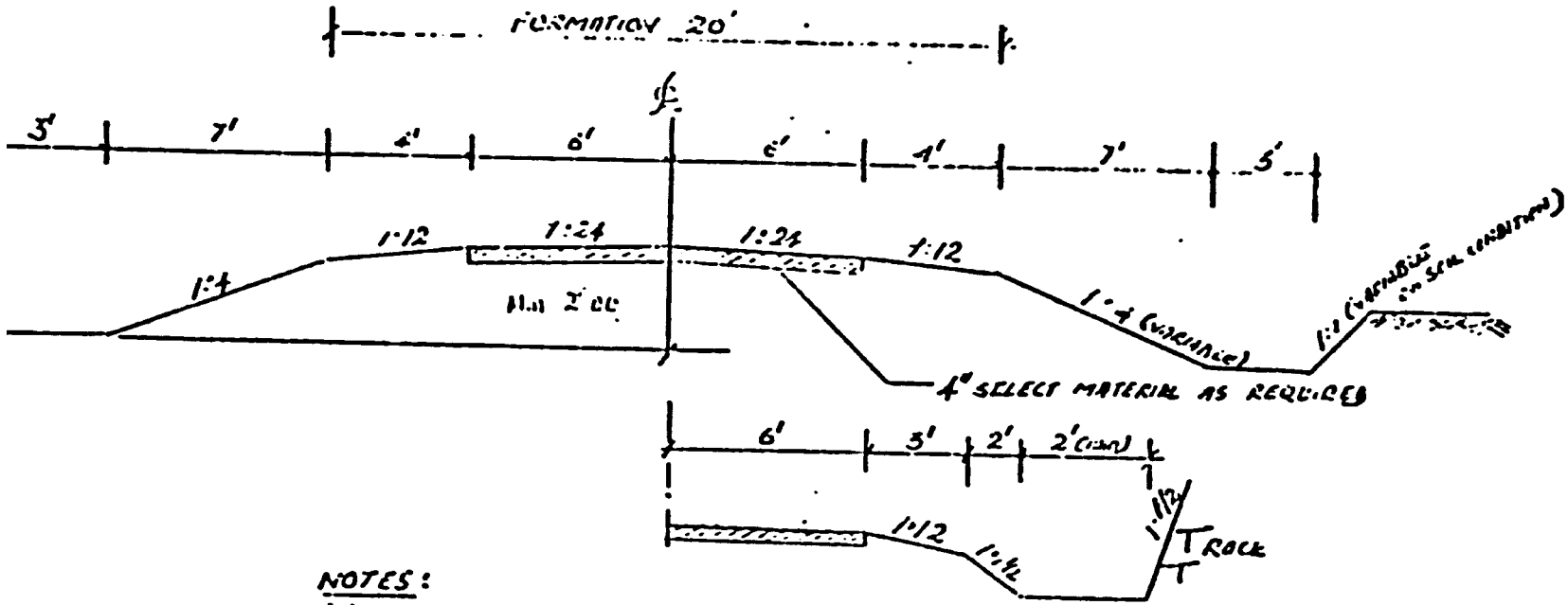
Section 611 requirements will only be met for those villages that are surveyed. The procedures outlined above will have to be repeated when new villages are identified.

VII. DISTRIBUTION:

USAID/Tanzania
A. Powers/Arusha Drought Project
AID/Washington: SER/ENGR
AFR/DR

TYPICAL SECTION – FEEDER ROADS - TANZANIA

TANZANIA STANDARD



NOTES:

1. WIDEN DRAINS IF ADDITIONAL FILL REQUIRED
2. DITCH SECTION MINIMUM 18" DEEP
3. ON BLACK COTTON SOILS, SELECT MATERIALS SHALL BE IMPORTED OVER THE SHOULDER WIDTH OTHERWISE IN-SITU MATERIAL
4. SIDE SLOPES IN ROCK 1:1½ FOR ROCK VIABLE TO WEATHERING
5. OUTFALL DRAINS TO BE PROVIDED AT ALL CULVERTS AND AT INTERMEDIATE POINTS WHERE NECESSARY
6. FOR SUPER ELEVATION REVERSE CROWN

ANNEX A

ANNEX B

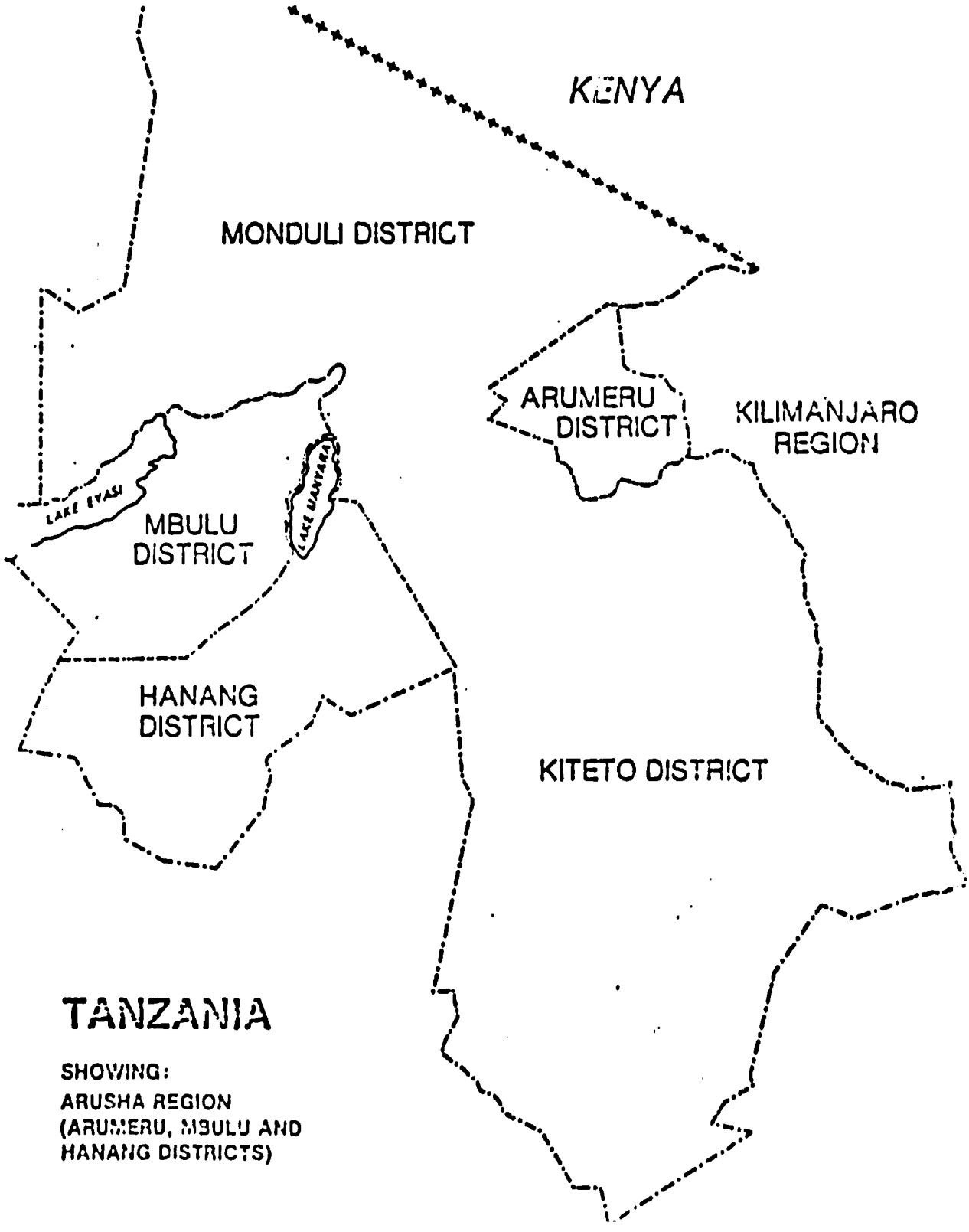
PROJECT VILLAGES

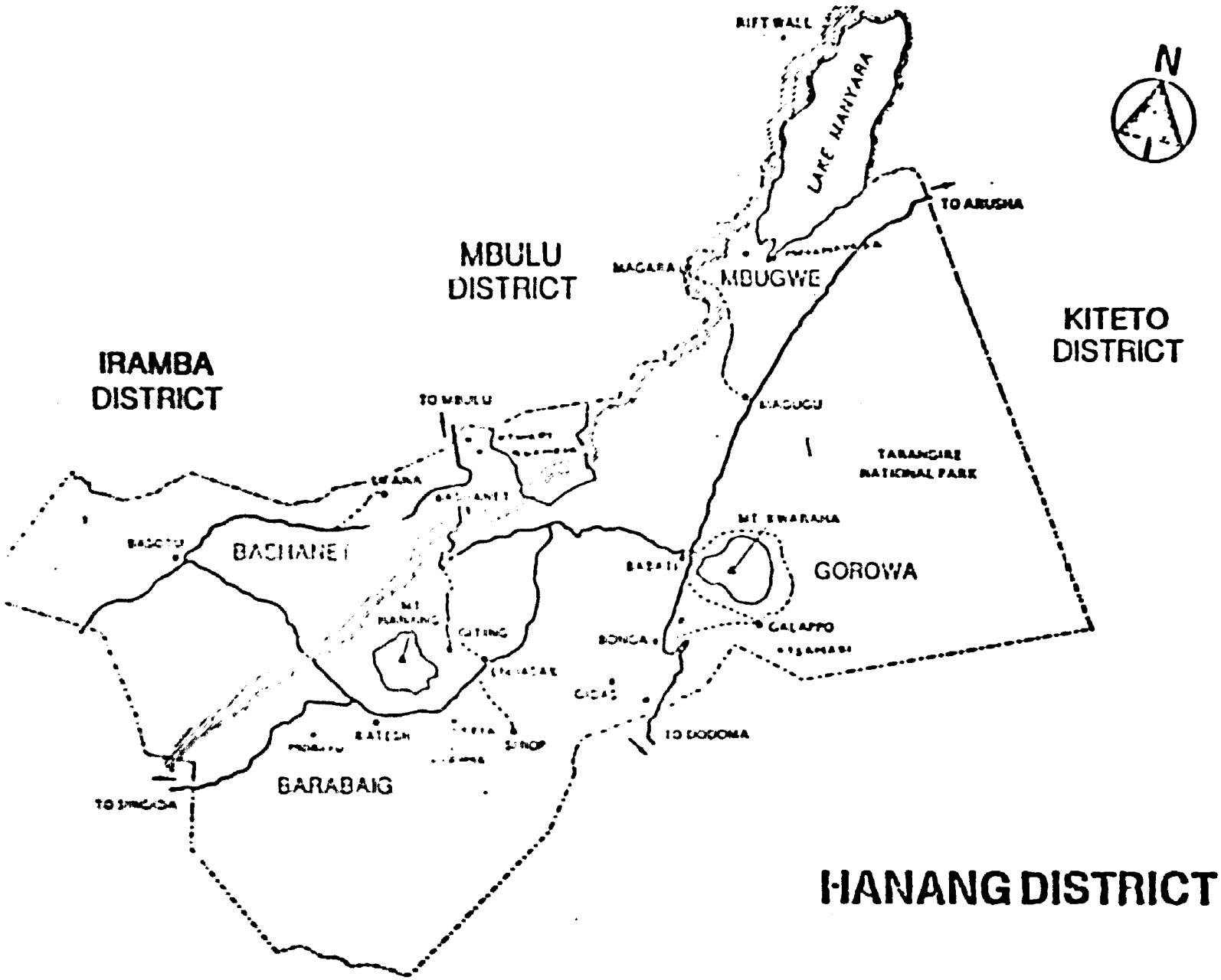
District	Ward	Village	Household Population	Total Popula
Mbulu	Murray	Murray	1218	2,378
		Hayloto		1,834
		Kwermusl		2,472
		Kuta		1,578
	Daudi	Moringa	1077	1,250
		Masieda		1,108
		Gwandamehhi		1,546
		Aicho		547
		Gidamba		436
	Dongabesh	Dongabesh	2086	1,762
		Diyomat		2,437
		Qaloda (Kwalada)		1,185
		Gidihim		1,400
		Ng' Orat		745
		Endmasak (Endasak)		1,933
	Maghang	Magahang	1795	2,183
		Labay		2,274
		Endanachan		1,469
		Maretaduchini		1,997
		Endamilay		1,408
Kumeru	Ngarenanyuki	Okingwado	377	
		Uwire	360	
		Ngabebe	270	
	Kikwe	Kikwe	338	
		Karangau	290	
		Maweni	329	
	Kikatiti	Samaria	250	
		Sakila	550	
		Maroroni	468	
	Olkokola	Olmwingeni	430	
		Okokola Chini	430	
		Ilkurot	578	
		Matim	307	
		Lengijave	307	
		Olkokula	307	
	Magara	Maya Mayuka	495	1,333
		Magara	480	2,350
	Gallapo	Gallapo	600	3,620
		Halla	250	1,500
		Majengo	260	1,032
		Gedamar	260?	1,070
		Qash	413	1,600
		Tsamasi	270	1,030
		Ayamango	348	1,320
	Katesh	Nangwa "A"	355	1,895
		Wateta "B"		2,015

ANNEX B (cont'd)

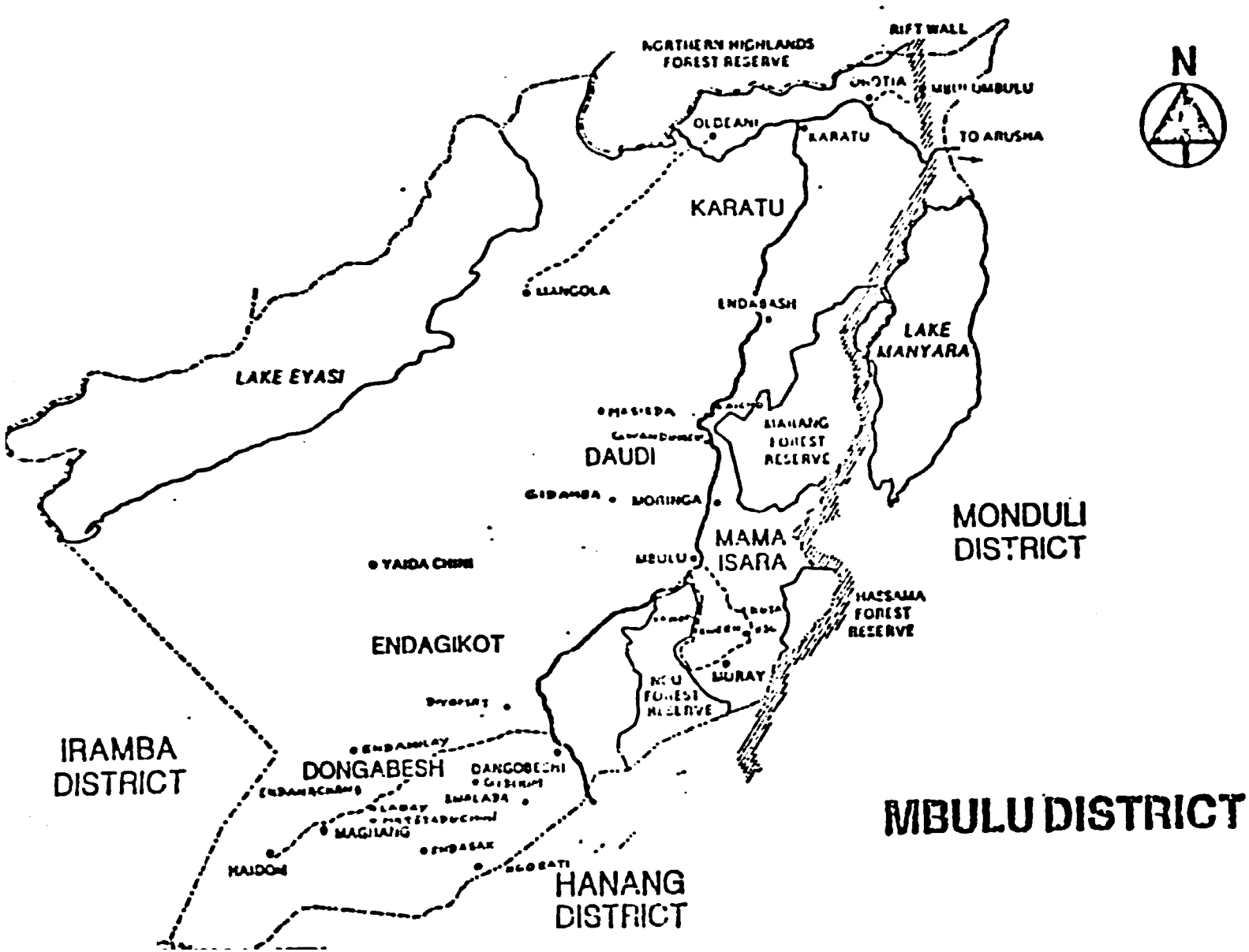
District	Ward	Village	Household Population	Total Popula
	Katesh	Katesh	486	2,546
		Jarodom		2,028
		Nirma	140	700
		Nyasared	170	850
		Mogita	250	1,250
	Madunga	Madunga	450	1,494
		Qameyu	400	2,000
		Utwari	290	1,465

ANNEX C-1


KENYA
MONDULI DISTRICT
ARUMERU DISTRICT
KILIMANJARO REGION
LAKE EYASI
LAKE MANYARA
MBULU DISTRICT
HANANG DISTRICT
KITETO DISTRICT
TANZANIA
SHOWING:
ARUSHA REGION
(ARUMERU, MBULU AND
HANANG DISTRICTS)

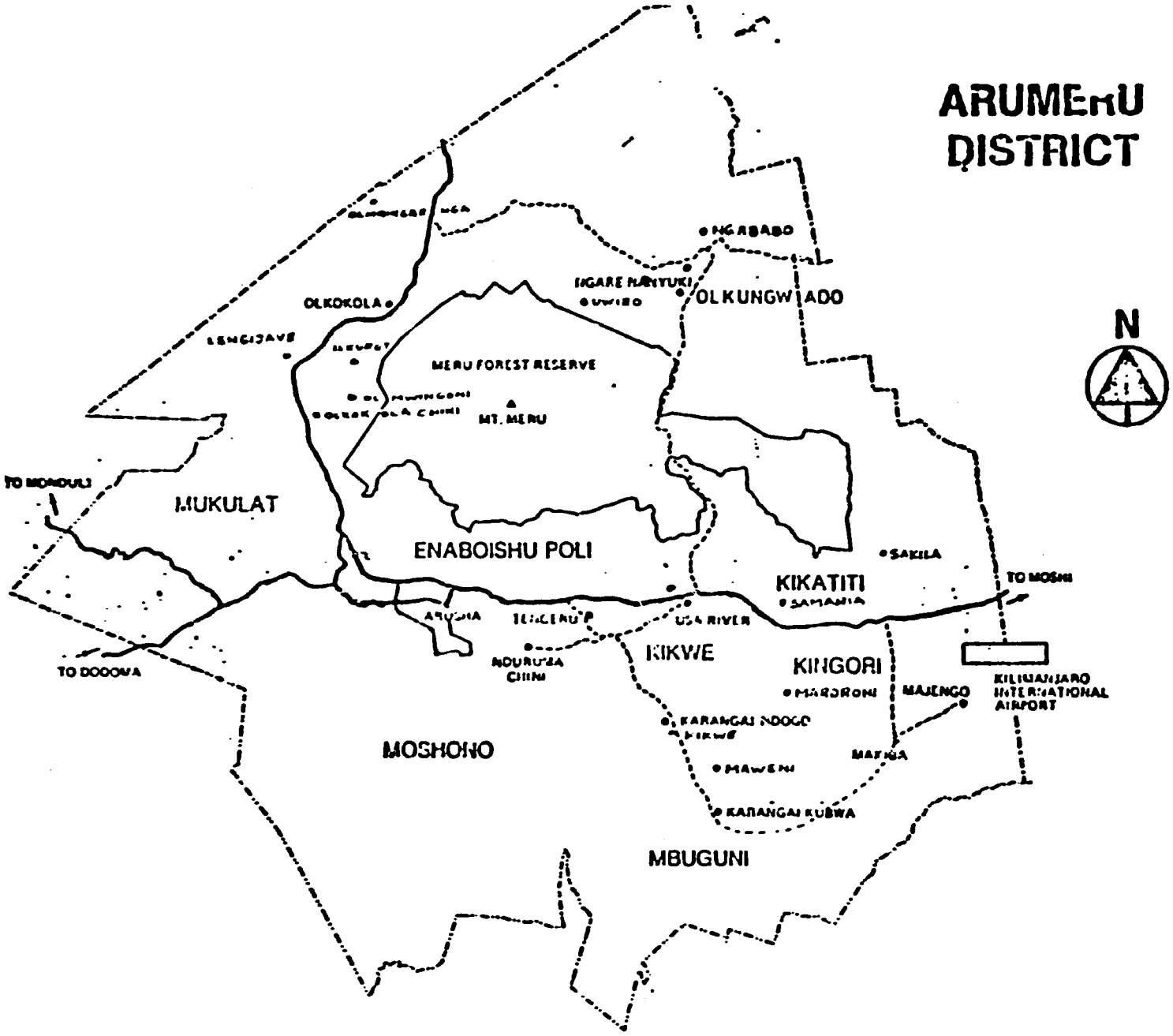

RIFT WALL
LAKE MANYARA
N
TO ARUSHA
MBULU DISTRICT
MAGARA
MBUGWE
KITETO DISTRICT
IRAMBA DISTRICT
TO MBULU
MAGUGU
TARANGIRE NATIONAL PARK
BACHANET
MT EWARANA
GOROWA
BONGA
CALAPPO
TO DODOMA
BARABAIG
TO SINGIDA
HANANG DISTRICT

ANNEX C-2


N
RIFT WALL
NORTHERN HIGHLANDS FOREST RESERVE
OLDEANI
KARATU
TO ARUSHA
KARATU
LAKE EYASI
ENDABASH
LAKE MANYARA
DAUDI
MONDULI DISTRICT
MAMA ISARA
MBULU
ENDAGIKOT
MURAY
IRAMBA DISTRICT
DONGABESH
HANANG DISTRICT
MBULU DISTRICT

ANNEX C-3

ARUMERU DISTRICT



ANNEX C-4

BOREHOLES

Well No.	Area	Diameter	Depth	Water Level	Yield	Remarks
5/51	Kikatiti-Kongori	8"	282'	37'	680 gph	abandoned
15/51	Kikatiti-Kongori	8' to 54'6"	527'	none	none	abandoned
42/69	Dongobesh	8" to 35'6"	302'	24'	576 gph	
51/69	Dongobesh		93m		2621 lph	
65/69	Dongobesh	6"	337'	22'	180 gph	
85/69	Maghan Luth. Hosp.	8" to 58'6"	300'	30'	60 gph	
89/70	Kikatiti-Tengeru	8" to 104'6"	174'	82'	3000 gph	
105/70	Kikatiti-Tengeru	8"	155'	64'	3000 gph	

ANNEX D

ANNEX F-2

Samuel Lubin "Report on Road Rehabilitation and Water Supply Development. Included in The Tanzania Village Development Project," (Experience Inc. Contract No. AID/afr-C-1130 W.O. 79), November 1977.

REPORT ON
ROAD REHABILITATION AND WATER SUPPLY DEVELOPMENT INCLUDED IN THE TANZANIA VILLAGE DEVELOPMENT PROJECT

Prepared By: Samuel Lubin

For: Experience Inc., under Contract No. AID/AFR-C-1130
Work Order No. 79

Dated: November, 1977

ACKNOWLEDGMENT

I wish to acknowledge the valuable assistance of REDSO/EA Engineers Baker and Brahmbhatt in supplying basic data for this report and in reviewing the calculations and correcting arithmetic errors. The comments, conclusions, and recommendations in the report are, however, my own and I accept full responsibility for them.

S. Lubin

I. BACKGROUND

Project Paper 621-0143, dated September 1977 describes the proposed Tanzania Village Development Project to be financed by an AID Grant of $14,660,000 over a four-year period beginning in FY78, of which $5,790,000 is to be in U.S. currency and $8,870,000 is to be in local currency. An additional contribution by the host country in local currency is included, equivalent to $6,472,000. This latter amount is, however, understood to be that part of the host country's normal budget which can be attributed to the project activities and does not represent additional funds available for these activities.

The Project Paper proposes that the first year of the project be devoted to organization and planning with implementation occurring in the second to fourth years. The project is to be implemented in three districts of the Arusha Region, namely, Arumeru, Mbulu, and Hanang Districts.

The project components to be financed are:

1. Strengthening the planning, implementation, and evaluation capabilities of the regional, district and village levels.
2. Improving agricultural production.
3. Identifying and promoting other economic development activities.
4. Improving the social and economic infrastructure directly related to production activities.

The last component includes the rehabilitation of 276 miles of road classed in the Project Paper as "secondary" roads and the construction of 200 miles of unidentified "feeder" roads to connect villages to be selected later with the rehabilitated secondary roads; and the rehabilitation, extension, and construction of village water supplies initially in four wards of each of the three districts. The wards have been identified but the individual villages in each ward are not specified in the Project Paper. It is expected that additional wards may be added as the project proceeds.

Section 611(a)(1) of the Foreign Assistance Act requires, as a precondition to the obligation of project funds in excess of $100,000, that there will 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.

Section 611(e) of the Foreign Assistance Act requires (among other things), if U.S. assistance exceeds $1,000,000, a certification of the country's capability to maintain the project.

REDSO/EA has been requested to provide the material to justify certification that these two sections of the Foreign Assistance Act are met. To assist REDSO/EA in this task, a Work Order was issued to Experience, Inc.

II. OBJECTIVES

Work Order No. 79, effective November 10, 1977 under Contract No. AID/AFR-C-1130 with Experience, Inc. of Washington, D.C. con-

tains two tasks. Only Task One pertains to the Tanzania Village Development Project. The objective of Task One "is to assist REDSO/EA in satisfying Section 611(a) and (e) requirements for the Tanzania Village Development Project. Project activities to be considered are road rehabilitation and water supply development."

III. SUMMARY AND CONCLUSIONS

A review of project and other relevant documentation, discussions with REDSO/EA engineers and with USAID/T personnel in Arusha, Tanzania leads to the conclusion that insufficient information is available at this time to fully meet the requirements of Sections 611(a)(1) and 611(e) of the Foreign Assistance Act for all elements of the road and water components of the project. Since, however, it is expected that the project will be authorized, but the obligation of funds for project elements will be contingent on meeting these requirements it is possible, at this time, to make certain estimates regarding the road components with an indication of the degree of error to be expected in these estimates. A schedule of work can be specified to be carried out in the initial technical assistance and planning period of the project to refine these estimates by filling in the gaps in the required data. With respect to the water supply projects the available information does not permit such an estimate to be made but a similar schedule can be specified to be carried out in the same technical assistance and planning period.

This report includes details of the road cost and time estimates, lists the data needed to refine these estimates and to obtain the

basic data needed for the water supply component and sets forth a plan and schedule for obtaining the required information.

CONCLUSIONS

Based on the available data the AID funded portion of the road construction project would come to an estimated average of $9,361/mile. This would allow for the construction of about 256 miles out of the planned 476 miles of secondary and feeder roads. Although considerable additional data would be needed to arrive at a more accurate figure, a comparison with comparable cost figures for the Kenya Rural Roads Project and the Ethiopia Rural Roads Project give enough confidence to allow the certification that Section 611(a)(1) is met insofar as the road component is concerned. Section VI.C of this report gives details of the cost estimate and discusses the accuracy of the estimate.

Section VII of the report deals with the capability of the host country to maintain the roads and sets out the conditions which will be required from the host country to permit a certification that Section 611(e) has been met.

With respect to the water supply projects the report concludes that with the available data it is not possible to certify that either Section 611(a)(1) or 611(e) has been met. Section V.B. of the report states the reasons for this conclusion and recommends that a feasibility study be funded to obtain the data needed for such certification. A list of the required data is included and an estimate of $500,000 and six months is given to complete the

study.

It is assumed that on the basis of the IEE no further environmental study of the project will be required with the possible exception of the water supply component. If this assumption is incorrect and an Environmental Assessment is required the possible impact on the road component may require a revision of the cost estimate.

IV. SOURCES OF DATA

To carry out the objectives of the Work Order I have reviewed the following documents:

1. Project Paper 621-0143, dated September, 1977
2. Trip Report of REDSO/EA engineers P. Brahmbhatt and S. Baker to the project site, October 17 to 21 and October 31 to November 4, 1977
3. State 269621, November 10, 1977
4. Tanzania Drought Program No. 621-0128, Evaluation, April 1977
5. Quarterly Report No. 8, July 1-September 30, 1977, Tanzania Road Projects No. 621-11-190-128.
6. Ethiopia Rural Roads, Project Paper No. 663-0182, dated July 14, 1977.
7. Kenya Rural Roads System Project Paper.

In addition, discussion were held with REDSO/EA engineers Brahmbhatt and Baker on the available data and with T. Worrick of USAID/Tanzania and Alex Powers, Contract Manager, Arusha Drought Roads Project,

during a visit to Arusha, November 15-17, 1977 in company with Brahmbhatt and Baker.

V. EXISTING INFORMATION

A. Roads

1. Rehabilitation and Construction Requirements

The project paper lists 276 miles of "secondary" roads to be rehabilitated in the three districts. These are divided into First Priority and Second Priority, as follows:

First Priority	
Hanang District	
Gallapo-Bonga	10 miles
Mondunga-Bashanet	15 miles
Mbulu District	
Mbulu-Kainam-Murray-Mbulu	45 miles
Dongabesh-Haydom	29 miles
Arumeru District	
Nduruma-Kikwe	9 miles
Makiba-Kikatiti	10 miles
TOTAL FIRST PRIORITY	118 miles

Second Priority	
Hanang District	
Gitting-Endasaki	25 miles
Riroda-Babati	15 miles

Bassutu-Ufana	25 miles
Gidos-Bary	12 miles
Sirop-Endasaki	25 miles
Mbulu District	
Mong'ala-Oldeani	30 miles
Rhotia-Kambiya Simba-Kitate	22 miles
Arumeru District	
Makiba-Majengo	4 miles
TOTAL SECOND PRIORITY	158 miles

In the course of the reconnaissance survey conducted by the REDSO/EA engineers during the period of October 17-21 and October 31-November 4, 1977, they did a visual inspection of approximately 150 miles of the 276 miles of "secondary" roads. From their conclusions as to the present condition of these 150 miles, the lack of adequate maintenance over the past years, and the known soil conditions and terrain in the three districts they have made a rough estimate of the rehabilitation work needed to bring the roads up to the proposed standard, as follows:

Hanang District - Total roads: 127 miles

Realignment and new construction	19 miles
gravelling	76 miles
reshaping	108 miles
fords	13
culverts	127

Mbulu District - Total roads: 126 miles

Realignment and new construction	20 miles
gravelling	75 miles
reshaping	106 miles
fords	8
culverts	126

Arumeru District - Total roads: 23 miles

Realignment and new construction	2 miles
gravelling	18 miles
reshaping	21 miles
culverts	23

T. Worrick of USAID/T estimates that of the 200 miles of "feeder" roads, 80 miles will be required to be constructed in each of Hanang and Mbulu Districts and 40 miles in Arumeru District. On the basis of terrain and soil conditions MIDCO/NA engineers estimate that approximately 13 fords and 200 culverts will be required for these 200 miles of "feeder" roads.

2. Standards

a. Tanzania Communications Standards

The standards proposed for both the rehabilitated "secondary" and "feeder" roads are those of Tanzania's Com Works for district and rural roads:

Formation Width: 20 feet (6 meters)

reduced to 18 feet (5.5 meters) in rock cuts

Surface Width 12 feet (3.65 meters)

Surface Material: (a) for district roads

4 inches (10 cm) gravel over the base course. Base course to be of compacted in-situ material except where unstable soil conditions exist. In these areas 10-12 inches (25-30 cm) of existing soil is to be dug up and replaced by suitable select material.

(b) for feeder roads:

In-situ material except in cases where unstable soil conditions prevail.

Longitudinal drainage: Ditches parallel to road with 1:4 slope from edge of formation, shaped to a minimum depth of 20 inches (50 cm), and minimum 3 feet (1 meter) width at bottom, except in side hills, deep fills or rock cuts where 1:1-1/2 slope and 2 feet (60 cm) width is permitted.

Cross Drainage: Normally steel pipe culverts 24-42 inches diameter. Concrete culverts for larger flow requirements.

Stream Crossings: Fords, except for two existing bridges on the Dongabesh-Haydom road in Mbulu District. One bridge is new, the second will require repair of the abutments.

Gradient: 7% maximum

Curve Radius: 1000 feet (300 meters) minimum

Horizontal and Vertical Alignment: to provide minimum vehicle stopping sight distance of 275 feet (85 meters).

Design speed: 40 mph (65 kph)

b. Adequacy of Standards

No economic analysis of the roads component has been made. There has been no traffic count or projection of traffic growth. The relative importance of the "first priority" and "second priority" classification of the "secondary" roads is not discussed in the project paper and their relation to economic development is unknown. Under the circumstances there is no data to judge whether the standards proposed for the roads are adequate to meet the project objectives. It is, therefore, assumed that the 276 miles of secondary roads will be brought up to the original condition prior to their deterioration because of inadequate maintenance. Since this standard is also the lowest applicable to the passage of light vehicles throughout the year, except during periods of heavy rainfall when the fords would not allow for crossing of streams, it is believed that the standards are adquate and not excessive. The only deviations recommended here are:

-- a relaxation of the gradient standard from 7% to 11% minimum, and

-- a reduction of the minimum curve radius from 1000 feet (300 meters) to 700 feet (215 meters).

With these modifications the proposed standards compare with the Ethiopian RRIO standard proposed in the Ethiopian Rural Roads Project Project Paper except for minor differences to take account of differences in terrain, weather, and soil conditions.

3 Implementation Plan

The project implementation plan calls for construction to be carried out by force account by the regional and district Com Works organization. Equipment and tools will be financed from FX funds in the project. Local labor, equipment operating costs and locally purchased material will be financed from LC grant funds in the project. The Project Paper provides for financing the services of two U.S. technicians: a construction management specialist and an equipment management specialist. The sums allocated for these activities are:

Equipment procurement	$1,100,000
Road construction (476 miles)	$1,930,000
Technical Assistance	410,000
Total Road Component	$3,440,000

The average cost per mile, based on the above would come to $7,227 for the 476 miles of roads.

In addition to the equipment to be procured the project paper assumes that certain additional equipment will be available from the Arusha Drought Road Project scheduled for completion at the end of April, 1978.

The implementation plan calls for obligating funds for equipment and placing orders in the first year. The equipment would be scheduled to arrive in time for construction to begin in the second year. Technical assistance personnel will be on hand in the second year to assist Com Works to administer the construction and the maintenance of equipment. It is assumed that Com Works has the necessary management, professional, and skilled worker staff to work under the direction of the two U.S. technicians to execute the project. It is further expected that the experience gained through the project will enlarge the capability of Com Works to plan, construct, and maintain the roads in the region and, generally, throughout the country.

The adequacy of the proposed implementation plan will be discussed in detail in Section VI of this report on Cost Estimates, since cost and implementation methods are intimately related.

B. Water Supply Projects

The Project Paper proposes that initially village water supply developments be carried out as follows:

Mbulu District

Murray Ward - Well and spring improvement in four villages

Maghan Ward - Boreholes in four villages

Daudi Ward - One village well improvement. Two deep wells. Two boreholes.

Dongabesh Ward - Four boreholes.

Hanang District

Gallapo Ward - Six village pipeline expansions

Katesh Ward - Two boreholes

Madunga Ward - Two boreholes. Well improvement in one village.

Magara Ward - Pipeline extension for one village. One borehole.

Arumeru District

Ngarenanyuki Ward - Present system adequate

Kikwe Ward - Present system adequate.

Olkokola Ward - Five boreholes

Kikatite Ward - Improved wells in four villages.

As can be seen from the above information extracted from page 55 of the Project Paper, little data is available on the actual location of the water supply systems, the water requirements, and the physical possibility of supplying the needs. The Project Paper states:

> "No hydrological study of the project area is available. The project will initially carry out a feasibility study for the three districts based on a review of existing studies and programs as well as through additional technical support."

The paper further proposes that sites in addition to those mentioned in the preliminary list be identified during the planning phase. A hydrologist and sanitary engineer will be provided to carry out the hydrological feasibility study and a short-term water systems engineer and irrigation systems specialist would provide technical assistance in design and construction.

For these activities the project has allocated the following sums:

Technical Assistance (feasibility study, soil and water conservation, systems engineers)	$147,000
Equipment and Construction	$1,980,000
Operating Costs	$ 24,000
	$2,151,000

It is obvious that at this point there is no way of making any realistic evaluation of the cost of the water supply development component of the project. Before this task can be undertaken a full feasibility study is required which should include:

1. the location of each water supply project,
2. water needs based on population, activity, irrigation needs, where relevant.
3. hydrological survey to determine the probable availability of water sources.
4. Water quality and other environmental factors.
5. Recommended systems for each location.
6. Typical plans and equipment specifications.
7. Economic analyses.

The cost of the feasibility study would require a larger team than envisaged in the Project Paper and would take an estimated six months to complete. Without more details as to the area to be covered and the number of locations a close estimate of the cost of the study is difficult to make but experience from other studies would put the cost at from $300,000 to $500,000 for a six month effort. If further study is planned to refine the road cost estimates and provide an environmental assessment, the two studies can be merged with consequent savings.

VI. COST ESTIMATE-ROADS

A. General Principles

Any cost estimate for road construction is inextricably bound up with the construction method and time schedule and with the accounting procedures used. Costs under a construction contract can be closely estimated if labor and material costs are known with some degree of accuracy, local soil and terrain have been adequately surveyed, future escalation can be predicted and a time schedule for completion given. Costs then will include mobilization, materials, labor, on site management, equipment depreciation and operating costs, home office, overhead, taxes where applicable, and contractor's profit. The amount of equipment and labor will be fully determined by the local conditions and the time schedule.

When construction by force account is considered cost estimating becomes more complex. In the United States, county and state

highway departments are primarily concerned with the maintenance of thousands of miles of roads. Their equipment, management and normal work staffs are based on maintenance needs. Any force account work undertaken is, normally, for relatively minor road construction--minor, that is, in comparison with the mileage of roads in maintenance. The percentage of overhead costs and equipment depreciation chargeable to the force account construction is so small as to be able to be disregarded. Construction cost is then calculated as the operating cost of the equipment borrowed from the organization plant, the direct labor and supervisory staff hired specifically for the project, and materials. The cost shows up as a low figure per mile since no overhead, equipment depreciation or profit are charged to the project. Major construction is contracted out since legal and budget restrictions would not permit the diversion of highway department staff and plant to such construction.

B. Project Paper Cost Estimate

The cost estimate in the Project Paper is based on the principles outlined above for minor force account construction. Cost figures, we are told, are taken from the Arusha Drought Roads Project. Unfortunately, present project conditions differ from minor force account construction. The mileage of roads to be constructed in this project is about 30% of the existing road stem in the region and is not, therefore, a minor use of staff or plant. It far exceeds the present maintenance capability of Com Works which has

demonstrated its inability to maintain the present road network in the region. To undertake the planned reconstruction and new feeder road construction Com Works must, in effect, become its own contractor, build up a management and technical staff for the project and hire skilled and ordinary labor. It must procure the equipment and include in the project cost all the costs chargeable to an outside contract except for contractor's profit. The project paper's estimate of $5,000 a mile for "secondary" roads and $3,000 a mile for feeder roads, excluding equipment costs, cannot be sustained.

C. Revised Cost Estimate

1. General

With the information at hand it is not possible to arrive at an accurate cost estimate for the rehabilitation work or the feeder road construction. It is, however, possible to estimate an average per mile cost for the whole 476 miles of secondary and feeder roads with some degree of confidence. Comparison of the estimated cost arrived at with the estimates in the Ethiopian Rural Roads Project, the Kenya Roads Project, and cost figures obtained from the Tanzania Drought Roads Project will serve as a check on the reasonableness of the estimate.

State 269621 of November 10, 1977 in its summary of ECPR decisions says:

> "In Funding [the project] components level in PP will be treated as ceiling with allowances for 15 percent

flexibility to shift funds from other line items. Therefore, if funds prove insufficient for construction of total road mileage projected in PP effort will be reduced and funding held at ceiling."

The above statement would mean that no more than $3,440,000 budgeted in the PP, plus 15%, or a maximum of $3,956,000 can be spent on the roads component and the constructed mileage will be reduced, if necessary, to keep within this ceiling. To obtain an estimate of the number of miles which can be constructed with the allocated project funds our estimate of the average cost per mile for 476 miles will be based on the following:

a. Mobilization, equipment operating costs and incidentals taken from the Drought Roads Project actual cost figures.

b. Estimated equipment and spare parts cost for the roads component as determined by REDSO/EA and shown in Table I.

c. Cost of technical assistance personnel required for management of the roads component.

d. Labor costs funded from the LC portion of the grant funds.

e. Additions to Com Works salaries to be financed from grant funds.

f. Material costs for drainage structures.

The above will yield a cost/mile estimate of project-funded road costs. The total available project funds divided by estimated cost will determine the mileage which can be constructed with project funds.

To obtain the true estimated cost of construction for comparison with construction costs for equivalent roads in East Africa, a second calculation is required, comprising the following elements:

a. Same as item (a) above.

b. Amortized cost of project-financed equipment over the three year construction period, assumed to be 60% of total cost.

c. Spare parts financed by the project.

d. Items (c) and (d) above.

e. Total Com Works salaries allocated to the project.

f. Same as (f) above.

2. Project-Funded Cost Estimate

The Drought Roads Project mobilization required one year from the date PIO/T's and PIO/C's were signed in August 1975 until mobilization was completed in September 1976. The road mileage in the Drought project approximates the mileage in this project. The mobilization costs would, therefore, be considered equal, since the mobilization periods are essentially equal, except for the fact that the Tanzania project requires the procurement of roughly twice the equipment used on the Drought project. It is estimated that the Drought project mobilization cost must be increased by about 15% to be comparable with the present project.

The Arusha Drought Program Evaluation dated April 1977, gives project costs to August 1, 1976 (the approximate end of mobilization) as $168,720, exclusive of equipment purchase costs. Applying a

15% addition to this we arrive at an estimated mobilization cost of $194,028.

To obtain a comparable operating cost for the equipment we use the monthly POL costs shown in Drought Project Evaluation (Annex C). This report covers a construction period of one year, from August 1, 1976 to August 1, 1977 during which approximately 170 miles of road were constructed.

The monthly POL cost of $6,711x12=$80,532 for 170 miles of road or approximately $485/mile. Since our crews will use somewhat more equipment the estimated POL cost will be about 20% higher or $582/mile for the 276 miles of rehabilitated road. The POL cost for the more labor intensive 200 miles of feeder road is estimated to use only 20% of the above. The total POL cost is, therefore estimated at:

$582x276+0.2x582x200=$160,632+$23,280
=$183,912 for 476 miles

The Project-funded estimated cost for the roads is:

a.	Mobilization and operating costs: $194,028+$183,912	$ 377,940
b.	Equipment and spares (Table I)	$2,045,000
c.	Technical Assistance (Table IIa)	$1,200,000
d.	Direct labor (Note 1)	$ 544,500
e.	Additional Com Works Salaries (Note 2)	$ 23,150
f.	Materials for Drainage Structures (Table V)	$ 265,200
	Total Road Cost to Project	$4,455,790

The average estimated cost/mile of 476 miles of road is, therefore, approximately, $9,361. At first glance it would then appear that the $3,440,000 allocated to the road component would allow construction of 367 miles of secondary and feeder roads and with the addition of 15% shifted from other components the resulting $3,956,000 would allow the building of 423 miles.

The situation is, actually somewhat different. Mobilization and equipment costs are fixed, independent of the number of miles constructed since two construction crews will still be used and Com Works staff maintained at the same strength. The fixed costs are, therefore:

Mobilization	$194,028	
Equipment and spares	$2,045,000	
Additional Com Works Salaries	$ 23,150	
Total fixed cost	$2,262,178	or $4,752/mile out of $9,361/mile

With the available project funds this leaves either $1,177,822 or $1,693,822 for operating costs, technical assistance, direct labor, and materials.

The variable costs per mile being $9,361-$4,752=$4,609, the total mileage which can be built with available funds is either 256 miles or 368 miles depending on the available funds.

Note 1: Direct labor cost is calculated on the basis of two construction crews including 25 laborers/crew working for three years on the rehabilitation of 276 miles, plus five crews of 50 laborers for three years on 200 miles of feeder road. Laborers wages are calculated at the present scale of 380 TSh/mile with an estimated 3%/year escalation for projected wage increases. Since construction is not expected to start until early 1979 the wage scales used are TSh 392 for the first year, TSh 403 for the second year, and TSh 415 for the third year.

Note 2: Additional salaries to be paid from project funds for overtime are calculated on the basis of 25% of salaries for all field staff employed on the project. Salary scales used are shown in Tables II and III and are escalated by the annual increments to assume work started in 1979.

TABLE I

COSTS: EQUIPMENT, SPARES AND ESCALATION

Description	No.	Unit Cost	Total Cost
1. Dozer D-7	2	105,000	210,000
2. Grader Cat-130	3	69,000	207,000
3. Loader Cat-930	1	58,000	58,000
4. Dump Truck 5-7 yd.	8	31,000	248,000
5. Farm Tractor 75 hp.	10	15,000	150,000
6. Tipping Trailer	15	4,500	67,500
7. Landrover/Pickup	5	12,000	60,000
8. Towed Service Trailer	2	25,000	50,000
9. Towed Low Boy	1	20,000	20,000
10. Towed Roller	3	5,000	25,000
11. Water Trailer 750g	5	5,000	25,000
12. Fuel Tank 750g	5	5,000	15,000
13. Mechanic Tools	5	500	2,500
14. District Workshop Tools	2	5,000	10,000
15. Regional Workshop Tools	1	25,000	25,000
16. Water Pump 60gpm	2	1,500	3,000
Sub-total equipment			1,176,000
Escalation @ 1.5% per month x 6 months = 9%			106,000
Total Equipment			1,282,000
Spares @ 45% (3 year supply including escalation)			577,000
Total Equipment and Spares			1,859,000
Contingency @ 10%			186,000
TOTAL			2,045,000

TABLE II

MOW Standard Staffing Patterns

Districts		Monthly Salary (Tsh)	Annual Increment (Tsh
District Engineer	1		
Assistant Roads Inspector	1	1426	45
Assistant Building Inspector	1		
Assistant Mechanical Engineer	1	1426	45
Regional Office			
Regional Engineer	1	2675	90
Roads Inspector	1		
Building Inspector	1		
Electrical Inspector	1		
Mechanical Inspector	1	1865	90
Regional Workshop			
Mechanical Engineer	1		
[illegible]ector	1	1865	90
Assistant Inspector	1		
Sub Inspector	1	900	45
Foreman	4	600	25

Available Staff

Manang District

Assistant Roads Inspector 1 (Acting District Engineer)

TABLE II (cont'd)

Sub Inspector	1	(Acting Mechanical Engineer)
Carpenter	1	(Acting Asst. Building Inspector
Foreman	4	
Mechanic	10	(9 grade 3, 1 grade 2)
Equipment operator	10	
Temporary laborers as needed		

Mbulu District

Assistant Roads Inspector	1	(Acting District Engineer)
Assistant Mechanical Engineer	1	
Assitant Building Inpsector	1	
Mechanic	1	
Accountant	1	
Heavy Equipment Operator	2	
Temporary laborers as needed		

Arumeru District

Sub Inspector, Building	1	(Acting District Engineer)
Road Foreman	4	
Building Foreman	1	

Regional Office

Roads Inspector	1	(Acting Regional Engineer)
Building Inspector	1	
Electrical Inspector	1	
Mechanical Inspector	1	

TABLE II (cont'd)

Regional Workshop		
Foremen	5	(1 is Acting Inspector)
Workers (mechanis, welder etc.)	80	

Source: Arusha Com Works Regional Office

TABLE II A

U.S. Technical Assistance Personnel

Position	Location	Duty Period
Construction Management Specialist	Regional Com Works	3 years
Equipment Maintenance Specialist	Regional Com Works	3 years
Construction/Equipment Supervisor	Hanang District	3 years
Construction/Equipment Supervisor	Mbulu District	3 years

12-man years @ average $100,000/year = $1,200,000

TABLE III

Manpower Required from Com Works for Project

	Monthly Salary (TSh)		
	Year 1	Year 2	Year 3
Arumeru District			
1 - Assistant Roads Inspector	1545	1669	1780
1 - Roads Foreman	656	715	777
Hanang District			
1 - Asst. Roads Inspector	1545	1669	1780
1 - Asst. Mechanical Engineer	1545	1669	1780
2 - Roads Foreman (Construc. Supervisor)	1313	1431	1555
1 - Mechanic (see Note 1, page 22)	392	403	415
Mbulu District			
1 - Asst. Roads Inspector	1545	1669	1780
1 - Asst. Mechanical Engineer	1545	1669	1780
2 - Roads Foremen (Constr. Supervisor)	1313	1431	1555
1 Mechanic			
Regional Office			
1 - Regional Engineer	2903	3143	3395
1 - Mechanical Engineer	2903	3143	3395
1 - Mechanical Inspector	2053	2250	2457
1 - Mechanical Sub-Inspector	992	1089	1238
	19,858	21,547	23,272
	x12	x12	x12
TSh.	238,296	258,564	279,264

Total Com Works Salaries allocated to project:

Year 1: TSh. 238,296

Year 2: TSh. 258,564

Year 3: TSh. 279,264

TSh. 776,124 = $97,016

Source of Wage Scales: Arusha Com Works Regional Office (A 5% annual cost of living increase has been assumed in addition to the standard annual increment).

Table IV

EQUIPMENT REQUIREMENTS AND DISTRIBUTION

Equipment type	Arumeru	Hanang	Mbulu	Regional	Total
1. Dozer D-7		1	1		2
2. Grader Cat-130	1	2	2		5
3. Loader Cat-930		1	1		2
4. Dump Truck 5-7t	2	4	4		10
5. Fuel Tanker				1	1
6. Farm Tractor 75hp	2	4	4		10
7. Tipper Trailer	3	6	6		15
8. Landrover	1	2	2	2	7
9. Towed Service Trailer		1	1		2
10. Shop Van				1	1
11. Towed Low Bed				1	1
12. Towed Roller	1	1	1		3
13. Water Trailer	1	2	2		5
14. Fuel Tank	1	2	2		5
15. Mechanic Tools	1	2	2		5
16. District Workshop Tools		1	1		2
17. Regional Workshop Tools				1	1

TABLE V

EQUIPMENT AVAILABLE FROM ARUSHA DROUGHT ROADS PROJECT

Equipment Type	Quantity
1. Grader Cat-130	2
2. Loader Cat-930	1
3. Dump Truck	2
4. Fuel Tanker	1
5. Pickup	2
6. Shop Van	1

TABLE VI

Material Costs for Drainage Structures

Item	Quantity	Unit Cost ($)	Total Cost ($)
Ford	34	800	27,200
Culvert	476	500	238,000
		Total	$265,200

Note 3: Fords based on average length of 32 feet, width 15 feet cost/linear feet $25

Culverts, corrugated steel, 24 inch diam, 30 feet long.

It is recognized that the actual cost per mile of the rehabilitated roads will be somewhat higher than the average of $9,361 and of the feeder roads somewhat lower because of the difference in the use of heavy equipment and the different needs for select material. The basic data for estimating the road cost is, however, so inaccurate that any effort to refine the above cost estimate to arrive at an average cost for the two types of road would serve no useful purpose.

The Drought Road Project has achieved an average construction rate of 14 miles/month using two crews, or seven miles/month/crew. It is not expected that crews working on the roads in this project will achieve a rate in excess of five miles/crew/month. The reduced rate is expected primarily due to the training features included in the project which are not part of the Drought Roads Project. The essential requirement there was speed of construction. The need for efficiency left no room for training in office and field management and logistics.

On the basis of five miles/month/crew the 276 miles of road rehabilitation could be completed in 30 months. Allowing for inaccuracies in our estimates of the degree of rehabilitation work required, unforeseen delays in equipment deliveries, supply of POL and materials and in Com Works staffing this allows a six month cushion for completion of the work. Feeder road construction will be slower because of the labor intensive character of the work and also because identification of the road locations will

hinge on decisions to be made at the village level. It may not be possible to complete this part of the project in the projected three year implementation period.

3. Estimate of Actual Construction Cost

The actual cost of the road construction in accordance with the schedule in Section C.1., above is calculated for the three cases:

a. Funds available for the full 476 miles.

b. $3,440,000 available for 256 miles.

c. $3,956,000 available for 368 miles.

Case (a):

1.	Mobilization and operating costs	$ 377,940
2.	Amortized cost of equipment = 60% ($1,282,000 + 10% contingency) See Table I	$ 846,120
3.	Spare parts ($577,000 + 10%)	$ 634,700
4.	Technical Assistance	$1,200,000
5.	Direct Labor	$ 544,500
6.	Total Com Works Salaries allocated to the project (Table III)	$ 97,016
7.	Materials	$ 265,200
		$3,965,476

or $8,331 miles for 476 miles

Cases (b) and (c):

The total construction cost for 256 and 368 miles would remain essentially the same as above since the equipment operating costs were calculated on the basis of using the major portion of heavy

equipment only on the 276 miles of secondary roads. The number of laborers would remain constant. The estimated costs then become:

-- for 256 miles: $15,490/mile

-- for 368 miles: $10,775/mile

These costs can be compared with equivalent standard roads in Ethiopia and Kenya. The Ethiopia Rural Roads Project Paper estimates the RRIO standard road at $13,120/km or $20,990/mile. This, however, includes a large component for equipping a basic rural road construction organization with equipment, spare parts, full staff, construction of offices, workshops and construction camps, and training costs. If the elements not applicable to the Tanzania project are deducted the cost reduces to $10,970/mile, consistent with our estimates of $10,775 and $15,490 above.

The Kenya Rural Roads Systems Project estimates the cost of rural access roads at $9,366/mile, again consistent with our cost figures.

4. Accuracy of Cost Estimates

The above cost estimates are based on the following assumptions:

a. The work of rehabilitation has been correctly assessed.

b. Soil and terrain in the locations where feeder roads are to be constructed are the same as in the rehabilitated roads areas.

c. No environmental impact assessment will be required.

d. No unexpected changes will occur over the next four years in POL, material or labor costs to nullify the escalation and contingency allowances.

The last item is, of course, unpredictable. The first two items depend on the amount of preliminary planning done in the project. In this case there has been no section by section survey of the 276 miles of road to be rehabilitated to determine the actual amount of work to be done. Our estimates are based wholly on a visual survey of approximately 150 miles by REDSO/EA engineers. No soil tests were made, borrow pits located, or water sources identified. The amount of equipment, number of crews and laborers and equipment operating costs could increase if more work was needed to rehabilitate the roads. The number of drainage structures was estimated at one culvert/mile and only a rough estimate of fords was made. If more structures are needed or some bridges are required in place of fords, costs will increase proportionately.

It has been assumed that a negative environmental impact decision has been made on the basis of the IEE included in the project paper. If this assumption is incorrect an assessment of environmental impact of the roads component could drastically alter all the cost calculations.

Barring the last circumstance, a much more accurate estimate of the road costs can be made by conducting a detailed survey

including soil tests, location of borrow pits and water sources, and investigating the location and lengths of the proposed feeder roads. Whether or not this refinement is necessary or desirable is a matter of policy decision.

We have assumed that the rate of construction will be five mile/month/crew based on the fact that the Arusha Drought Roads project constructed 170 miles in 12 months with two crews, or a rate of seven miles/month/crew. We assume the slower rate because the training in construction and maintenance management is one of the project's objectives rather than speed of completion as in the Drought Roads project. If more work is required than we have estimated or there are major delays in the availability of staff, labor, materials, or equipment, the rate of progress will drop and costs rise.

VII. MAINTENANCE

Com Works is at present charged with the maintenance of about 1621 miles of roads in the Arusha District, classified as follows:

Paved trunk roads	171 miles
Earth trunk roads	125 miles
Local main roads	357 miles
Regional roads	670 miles
District roads	298 miles
Total	1,621 miles (2,596 km)

This does not include the 276 miles of roads scheduled for rehabilitation in the project.

In the fiscal year 1974/75 the Government allocated TSh. 1.8 million ($222,000) for maintenance of these roads, or $166/mile, a totally inadequate sum, since it included equipment repair and maintenance, operating expenses, and salaries. In 1976/77 this was reduced to a more TSh 100,000 ($12,345), a token amount barely enough to maintain a skeleton regional and district staff. For 1977/78 REDSO/EA engineers have been informed the Government has budgeted TSh 9,986,000 ($1,232,938) for maintenance of roads in Arusha Region, or approximately $771/mile. If this budget is maintained after completion of the 276 miles of secondary road in our project the amount available for maintenance will drop to $650/mile for the 1897 miles of road to be maintained. (The 200 miles of feeder roads are not included in this total since their maintenance would be the responsibility of the villages they serve).

Actually, the average maintenance budget figure of $771/mile is deceptive since the TSh 9,986,000 maintenance budge for 1977/78 is allocated as follows:

-- TSh 7,226,800 for 474 km of trunkroad, or $1,918/km

-- TSh 2,720,000 for 1242 km of "regional secondary" road, or $238/km

No funds remain for 549 miles of existing "district secondary" roads of the type to be rehabilitated under our project.

To assure that the roads rehabilitated in the project are main-

tained the following conditions need to be guaranteed:

- funds will be available beginning in 1978/79 adequate to cover maintenance of all district secondary roads in at least the amount budgeted for regional secondary roads.
- funds budgeted are actually expended for staff, labor, materials and equipment operating costs.
- equipment is available as required in the region and its districts.
- workshops for equipment maintenance and repair are in operation, adequately staffed, and stocked with spare parts,
- a functioning management organization exists in the region to assure that staff, equipment, labor, materials, POL, and equipment are on site when needed and that a routine maintenance schedule is set up and adhered to.
- that funds and staff for maintenance are not diverted to new construction.

Each of the above conditions is of major importance in assuring that the roads constructed under this project will be maintained. Since these are gravel roads of a minimum standard they are subject to severe erosion by the semi-annual rains. Maintenance must begin immediately after construction is completed and patching done after each rainy season.

The existing Com Works staff in the region is not adequate to maintain the present road network. Table II shows the MCW standard staffing pattern for the Regional and District Office professional personnel and, in comparison, the actual staff. Table III also shows the required skilled worker staff for the districts as against the presently available staff.

Assurance must be obtained in some form from the Government that positions in the standard staffing pattern will be filled and that the skilled workers will be hired and adequate budget provided for these positions. Project funds will be used for labor required for construction of the 476 miles of project roads and for any overtime work of Com Works staff employed on the project roads.

Assurance must also be given that equipment supplied for road construction with project funds will be maintained during the construction period and kept in proper condition for its remaining life to be used on road maintenance after the project implementation period. For this purpose the project includes funds for a generous supply of spare parts for the three years of construction, workshop tools for district and regional workshops and additional spare parts to bring the equipment supplied into full working condition before being turned over to Com Works at the end of the project. Approximately $50,000 of these spares are included to put any existing deadlined district equipment which

is repairable into working order. On the Government side they must be ready to provide the technical and supervisory personnel to keep the workshops in operation.

The last listed condition -- that maintenance funds and staff not be diverted to construction -- cannot be sufficiently stressed. One of the objectives of the road project is to improve Com Works capability to plan and construct roads. It is, unfortunately, Government's policy not to encourage the development and growth of private contractors. Therefore, major road construction will be done by Com Works. The equipment supplied with project funds is adequate for the projected road work and future maintenance. The staffing pattern shown in Table III will handle the region maintenance needs but will not provide for construction management and implementation. If any major construction work is planned in the future, it should be carried out either by contracting out or by the hiring of additional staff and labor and the purchase or rental of added equipment. The diversion of maintenance funds, staff, and equipment to construction will result in a recurrence of the present deteriorated condition of existing roads.

If the conditions listed above can be guaranteed, certification of 611(e) will be possible for the roads component.

UNITED STATES GOVERNMENT

memorandum

DATE: February 3, 1978

REPLY TO ATTN OF: Stafford Baker, REDSO/EA

SUBJECT: Trip Report, Arusha, Tanzania, January 16 to 24, 1978

TO: Mr. Robert H. Bell, Acting Director, REDSO/E

THRU: Mr. Albert A. Karian, Chief Engineer, REDSO/EA

TRIP REPORT

Arusha, Tanzania, January 16 to 24, 1978, Village Development Project No. 621-0143, accompanied by Mr. Stanley Remington, USAID/W.

PURPOSE OF TRIP

Trips made by REDSO/EA engineers to the Arusha region on October and November 1977 revealed a general picture of MAJI (Ministry of Water, Energy and Minerals) capabilities to construct and maintain water systems (see trip report, dated November 29, 1977). It was apparent at that time that cost estimates for developing water supply systems for many project villages could not be made without a groundwater hydrologist's determination of least cost methods of developing water sources. Mr. Remington was made available on TDY from AID/W to make these determinations.

PERSONS CONTACTED

Arusha	- Jim K.N. Milay, Assistant Regional Planning Officer - S.J. Hassanali, MAJI Regional Engineer - R. Vorhees, Masai Project Hydro-geologist - T. Worrick, USAID/Tanzania
Arumeru District	- Laurence Joseph, MAJI District Water Technician
Mbulu District	- Mr. Babu, District Development Director - Mr. Marieda, MAJI District Water Technician
Hanang District	- Mr. B. Matemu, MAJI District Water Technician

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

OPTIONAL FORM NO. 10 (REV. 7-70) GSA FPMR (41 CFR) 101-11.6 5010-116

INVESTIGATIONS

A. Introduction

A problem with initial investigations into the water supply component of the project was the lack of any villages singled out for the proposed water systems. The project design had intended that villages be identified during project implementation. It was felt, however, that villages with the most severe water supply problems, i.e. those without water systems and without identified water sources, could be identified by District and Regional officials at this time. Before this visit, USAID/Tanzania assured REDSO/EA that twelve villages had, in fact, been identified. This was not the case. However, on January 17, a report of the water supply status of all the project villages, prepared by MAJI in Arusha, was made available to us. From this report, it was determined that water sources had probably not been identified for twenty-one villages in the three districts. Field trips to the districts on January 18 through 23 revealed that the MAJI information was also incorrect. District officials gave priority to water supply for fourteen villages. These were investigated during the trips. Investigations of villages requiring only pipeline construction or rehabilitation will be performed by project TA during project implementation.

B. Arumeru District - Olkokola Ward

Two villages in this ward were visited on January 18. The ward is on the western slopes of Mt. Meru, north of Arusha.

The village of Ilkurot, to the east of the Arusha - Nairobi road, is not well defined; clusters of houses are scattered on either side of a valley, over a distance of a couple of kilometers. Water is currently supplied to two water points by a spring above the village. The spring is not capable of supplying all the water requirements during the dry season.

The village of Olkingoni is also scattered over a large area, but is west of the Arusha - Nairobi road. Water requirements are now met by neighboring villages.

Boreholes located near these two villages indicate that groundwater is available at 100 meter depths in low-lying areas. Flouride content of the water in these wells is high (about 7 ppm), but within the Tanzanian Government's standards of a maximum 8 ppm. The water table is too low for hand-dug wells.

C. Mbulu District - Daudi Ward

Villages in this ward were visited on January 20. In contrast to Arumeru District, these villages are well defined; houses are concentrated in single areas, usually on the crests of ridges between shallow valleys.

Daudi village has an existing shallow well, dug in one of these valleys. The well is approximately 12 feet deep with a depth to water of eight feet. The well is lined with 1.2 meter diameter concrete culvert sections, but has been improperly constructed; the culverts are solid with no holes to allow water seepage from the sides into the well. A hand pump on the well is broken. The well does not yield sufficient water during the dry season. The villages of Barghish and Gunyeda are situated in similar areas. It is believed that water requirements for these villages and Daudi can be met with additional properly constructed hand-dug wells.

Masieda village is located approximately 18 kms west of the Mbulu - Karatu road, in a somewhat drier area. However, the village is smaller than the other villages in this ward and water requirements might be met by shallow wells dug near the river, about a kilometer west of the village. If shallow wells prove to be inadequate, a borehole will be necessary.

D. Mbulu District - Dongobesh Ward

The District Development Director (DDD) in Mbulu was concerned about a water source for only one village, Arri, in Dongobesh W 1. Arri is about 12 kms east of Dongobesh. There are two springs - the area that can be capped and fed by gravity to the village.

E. Mbulu District - Mashang Ward

The village of Maretadu, about 22 kms southwest of Dongobesh, was visited on January 21. The village has an existing shallow well, but like the well in Daudi, it has been improperly constructed. It is also poorly located, in the middle of a cultivated field. The hand pump on the well is inoperable. Properly constructed hand-dug wells, in accessible locations, could supply the village water requirements.

F. Hanang District - Galappo Ward

This ward is on an alluvial plain to the southand southwest of Mt. Kwaraha, near the district capital of Babati. The nature

of the alluvium provides excellent prospects for shallow hand-dug wells. The villages of Majengo "A", Majengo "B", Olydamar and Hayamango can all be supplied with shallow wells. The villages of Hala "A" and Hala "B" have springs close to them that will provide for gravity fed water systems.

COST ESTIMATES FOR PROPOSED WATER SYSTEMS

A. Introduction

With a water source identified, costs for developing the sources and distributing the water can be estimated. The unit costs that follow are based on MAJI estimates for borehole and shallow well construction, MAJI price lists for pipe, and USAID experience with construction of reservoirs and other masonry structures in Tanzania. Quantities are based on observations made at each village. No precise survey of distances and elevations or plans of pipeline and distribution point locations have been made. However, it is believed that unsophisticated water systems can be constructed for the costs that have been estimated.

Where boreholes or springs have been proposed as sources, reservoirs for storage and pipeline distribution to water points within the village are planned. The small yield expected from individual hand-dug wells makes motor driven pumps and pipeline distribution unfeasible for shallow wells. Hand pumps are planned, with wells to be sited near the populations that they will serve.

Yield from shallow wells is estimated at 1000 gallons per day. With daily per capita consumption of four gallons per day (estimate based on MAJI observations in rural areas of Arusha region), each well can supply water to 250 people. The number of wells planned for each village is based on this yield divided into the population figures available from MAJI and USAID/Tanzania reports.

The cost estimates for borehole pumps are based on the MONO type pump and Lombardi diesel engine that MAJI has standardized on throughout Tanzania. Capacity is approximately 1500 to 2500 gph at 120 m head.

B. Proposals and Costs

Village	Proposal	Qty.	Unit Cost	Total ($)
Ilkurot	Pipe 3"	1000m		(13,000)
	Pipe 2"	3000m		(24,000)
	Reservoirs 10,000 ltrs	3	4,000	(12,000)
	Pump 2000 gph @ 120m head	1	4,000	(4,000)
	Distribution Points	4	500	(2,000)
	Borehole 100 to 120m w/6" casing			(20,000)
	TOTAL			77,000
Ombingoni	(same details as Ilkurot)			77,000
Masieda	Shallow well and hand pump	4	2,000	8,000
Barghish	Shallow well and hand pump	5	2,000	10,000
Daudi	Shallow well and hand pump	6	2,000	12,000
Gumyoda	Shallow well and hand pump	5	2,000	10,000
Maretadu	Shallow well and hand pump	6	2,000	12,000
Giydamar	Shallow well and hand pump	6	2,000	12,000
Majengo "A"	Shallow well and hand pump	2	2,000	4,000
Majengo "B"	Shallow well and hand pump	3	2,000	6,000
Hayamango	Shallow well and hand pump	7	2,000	14,000
Arri	Spring catchment	2	4,000	(8,000)
	Pipe 2"	4000m		(36,000)
	Reservoir 10,000 ltrs	2	4,000	(8,000)
	Distribution points	4	500	(2,000)
	TOTAL			54,000
Hala "A"	Spring catchment	1	4,000	(4,000)
	Pipe 2"	2000m		(18,000)
	Reservoir 10,000 ltrs	1	4,000	(4,000)
	Distribution points	2	500	(1,000)
	TOTAL			27,000
Hala "B"	(same details as Hala "A")			27,000
SUB TOTAL				350,000

Escalation (one year @ 15%)	52,500
Construction & escalation total	402,500
Contingency @ 15%	60,500
TOTAL COSTS FOR 14 VILLAGE WATER SYSTEMS	463,000

C. Water Supply Systems for Other Project Villages

The villages that were visited were those in the project wards with no existing water supply systems and no identified water sources. Other project villages have no systems, but sources identified, or have existing systems in various states of repair.

According to MAJI information, other villages in the Arumeru District wards require pipeline construction or rehabilitation. This is also the case with villages in Kateah and Magara Wards of Hanang District. Villages in Madunga ward of Hanang District do not have water systems, but springs have been located by MAJI officials for development of systems under the project.

Water systems with spring sources are likely to follow the same general design proposed for the villages of Arri, Mala "A" and Mala "B". The length of pipe required for each village is the biggest variable in the design and also the largest cost item. Therefore the cost estimates for other spring fed systems will require an initial survey of each village.

MAJI has had experience with rehabilitation and expansion of existing systems; their cost estimates for this type of work are:

pipes	20,000/-	($2,500)
reservoirs, distribution points	10,000/-	($1,250)
transportation	10,000/-	($1,250)
contingency	5,000/-	($ 625)
Total	45,000/-	($5,625)

These costs cannot be evaluated without an initial survey of each village and the number of villages requiring this type of work is unknown. A total cost for rehabilitation or expansion of water systems for project villages cannot be estimated at this time.

RECOMMENDED IMPLEMENTATION PLAN

A. Project Identification

MAJI has listed water supply requirements for villages in three orders of priority. First priority is given to villages without systems and without identified sources. Villages in the project wards that fall under this category were identified and visited during this trip. Second priority is for villages with a source, but no developed distribution system. Third (and last) priority is given to villages with existing systems that require expansion or rehabilitation. Villages in the latter two categories have not been identified at this time.

The USAID project approaches identification of water systems for construction or rehabilitation from a different angle. Villagers are to be asked to identify constraints to their overall economic development. The project designers have assumed from their investigations that one constraint that will be frequently mentioned is the lack of satisfactory water supply; hence the funds for financing water systems. This assumption would seem to be valid, and villages that put water supply near the top of their lists are likely to be those that MAJI also considers highest priority villages. The community interest and participation that project designers wanted before USAID did any work on water systems is just one of a number of actions that will help to insure proper utilization and maintenance of the completed systems.

B. Project Design

The proposals outlined in the cost estimate section of this report are only preliminary plans. Before any construction, expansion or rehabilitation of water systems is initiated, more detailed plans should be prepared. The MAJI office in Arusha has the expertise available to prepare these detailed plans. The plans could be part of their contribution to the USAID project. Alternatively, the short-term water systems engineer proposed in the PP could prepare these plans. The time required is not excessive. Perhaps a day in the field and a day in the office for the pipeline distribution systems, and half that (or less), for shallow well construction or expansion/rehabilitation activities.

Mr. Remington proposes that actual siting of boreholes and shallow wells be performed by a short-term, project contracted, hydro - geologist (see his report, dated Jan. 26, 1978 for details).

E. Summary

The project implementation plan relies heavily on existing MAJI personnel, equipment and materials support. Investigations into their performance reveal shortcomings in only follow-on maintenance operations and certain skilled manpower required for the project. The maintenance plan that Mr. Remington has proposed and the short-term services of a ground-water hydrologist, a water systems engineer and a water quality chemist are reactions to these deficiencies. Other personnel will be added by MAJI to take care of actual construction of the water systems.

Costs that have been identified during this trip that are not itemized in the PP are:

Construction	
Water systems for 14 villages	$463,000
Technical Assistance	
Mechanic 24 person months @ $7,000/month	$168,000
Hydrologist 2 person months @$10,000/month	$ 20,000
Water Quality Chemist 1 person month at $10,000/month	$ 10,000
Materials	
Spare parts (see Mr. Remington's Report)	$ 50,000
TOTAL	$711,000

CONCLUSION

The villages visited on this trip represent less than a quarter of the villages in the project wards. Other wards will be added to the project as implementation progresses. The $463,000 in construction costs, $198,000 in technical assistance (over and above the TA already in the PP) and $50,000 in spare parts that have been recommended by Mr. Remington leave sufficient funds in the water component of the project to have a significant impact on water supply requirements of the other villages.

It is believed that FAA Section 611(a)and (b) requirements have been met for the 14 villages investigated on this trip, if the project is implemented as proposed in this and Mr. Remington's report.

[illegible]

ON HANDS. [illegible] ARUSHA AND MAJI,
KURASINI DSM ES SALAAM.

Item No.	Diameter Inch.	Diameter mm	Class	Head feet	Head Meter	shillings per length	shillings per Meter	shillings per Ft.	Available from
3203	½"	13	M	567	173	51.00	8.50	2.50	Government Stores Arusha
3204	¾"	19	M	567	173	61.20	10.20	3.11	Govt. S.Arusha
3205	1"	25	M	567	173	108.00	18.00	5.48	"
3207	1½"	38	M	567	173	137.00	22.83	6.96	"
3208	2"	50	M	452	138	190.00	31.66	9.65	"
3209	2½"	65	M	452	138	252.00	42.00	13.80	
3210	3"	80	M	452	138	324.00	54.00	16.50	
3212	4"	100	M	341	104	458.50	76.42	22.93	Kurasini DSM
	6"	150	M H	205 341	87 104	600.00 750.00	100.00 125.00	30.00 37.50	" "
	4"	100	M H	341 452	104 138	450.00 570.00	75.00 95.00	22.50 28.50	" "
	3"	80	M H	452 567	138 173	305.00 408.00	50.85 68.00	15.25 20.40	" "
	2½"	65	M H	452 567	138 173	240.00 300.00	40.00 50.00	12.00 15.00	" "

6m. lengths = 19,584'

Note: 1. Government Stores Arusha stock medium duty G.S. pipes from ½" to 4" diameter.

ACTION REQUIRED

1. The proposals for the water component of the project outlined in this and Mr. Remington's report must be discussed with and agreed to by MAJI officials.

2. The technical analysis section of the PP that deals with water supply systems should be rewritten to reflect the estimated costs and proposed implementation plan.

DISTRIBUTION

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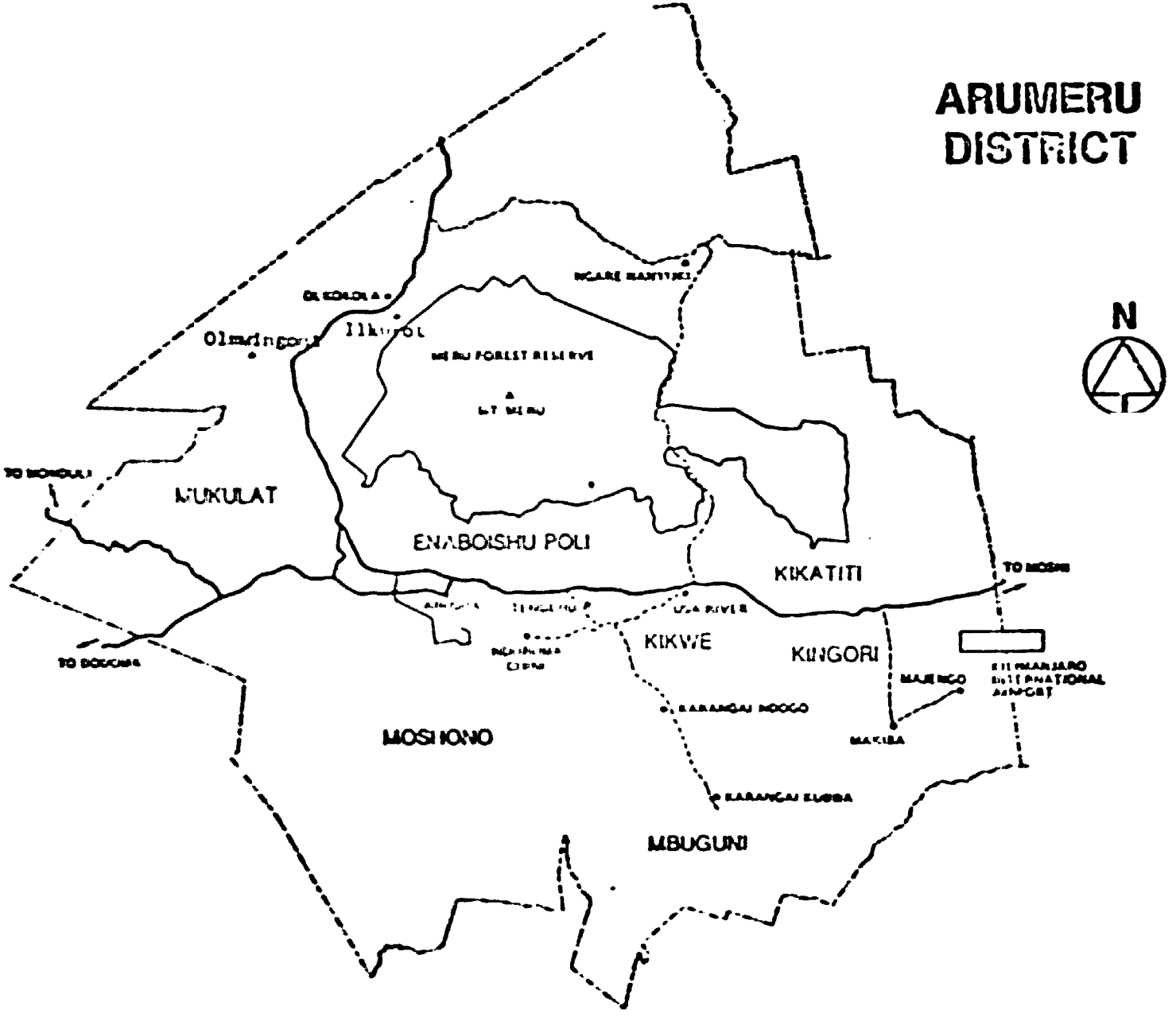
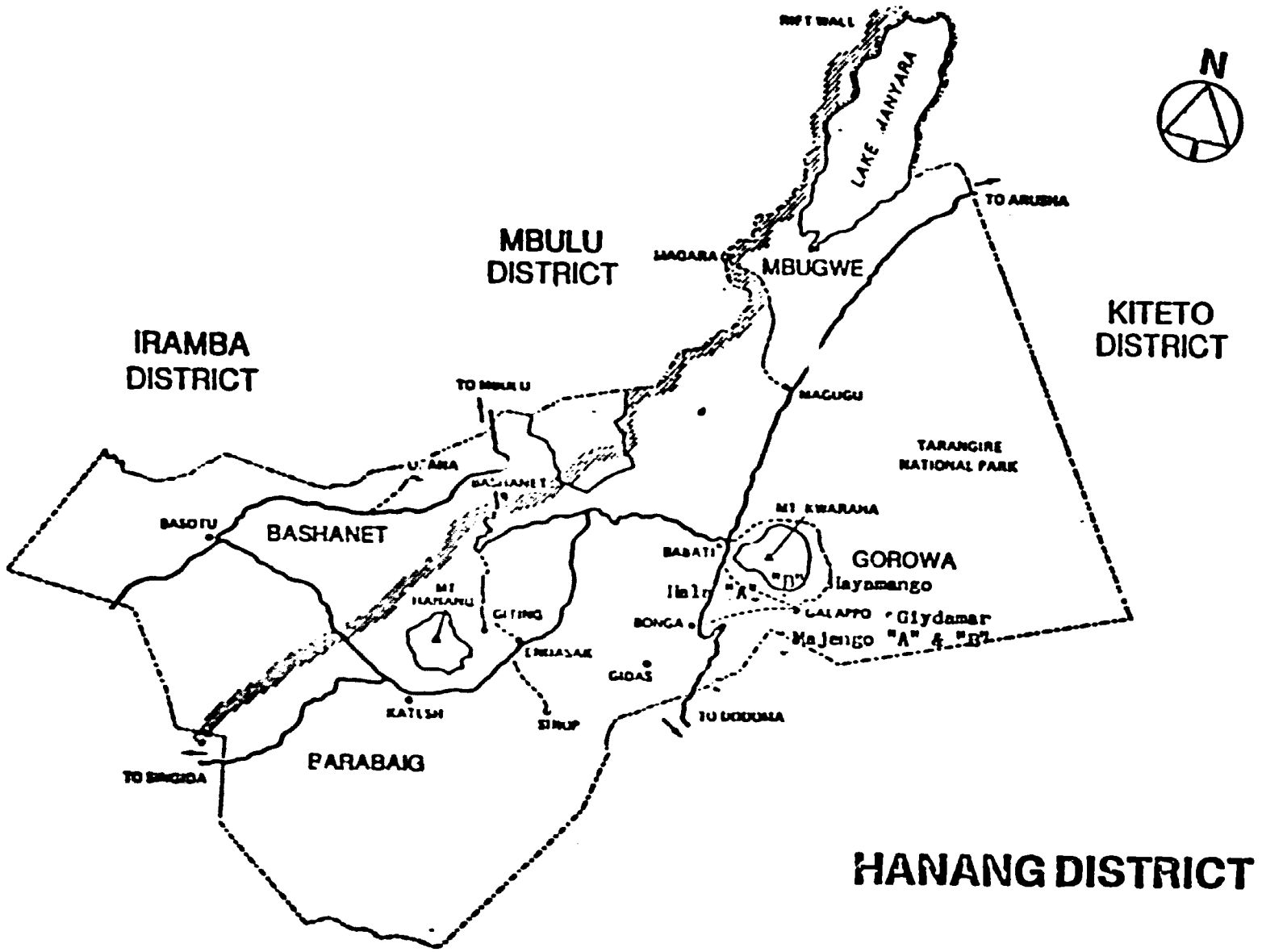
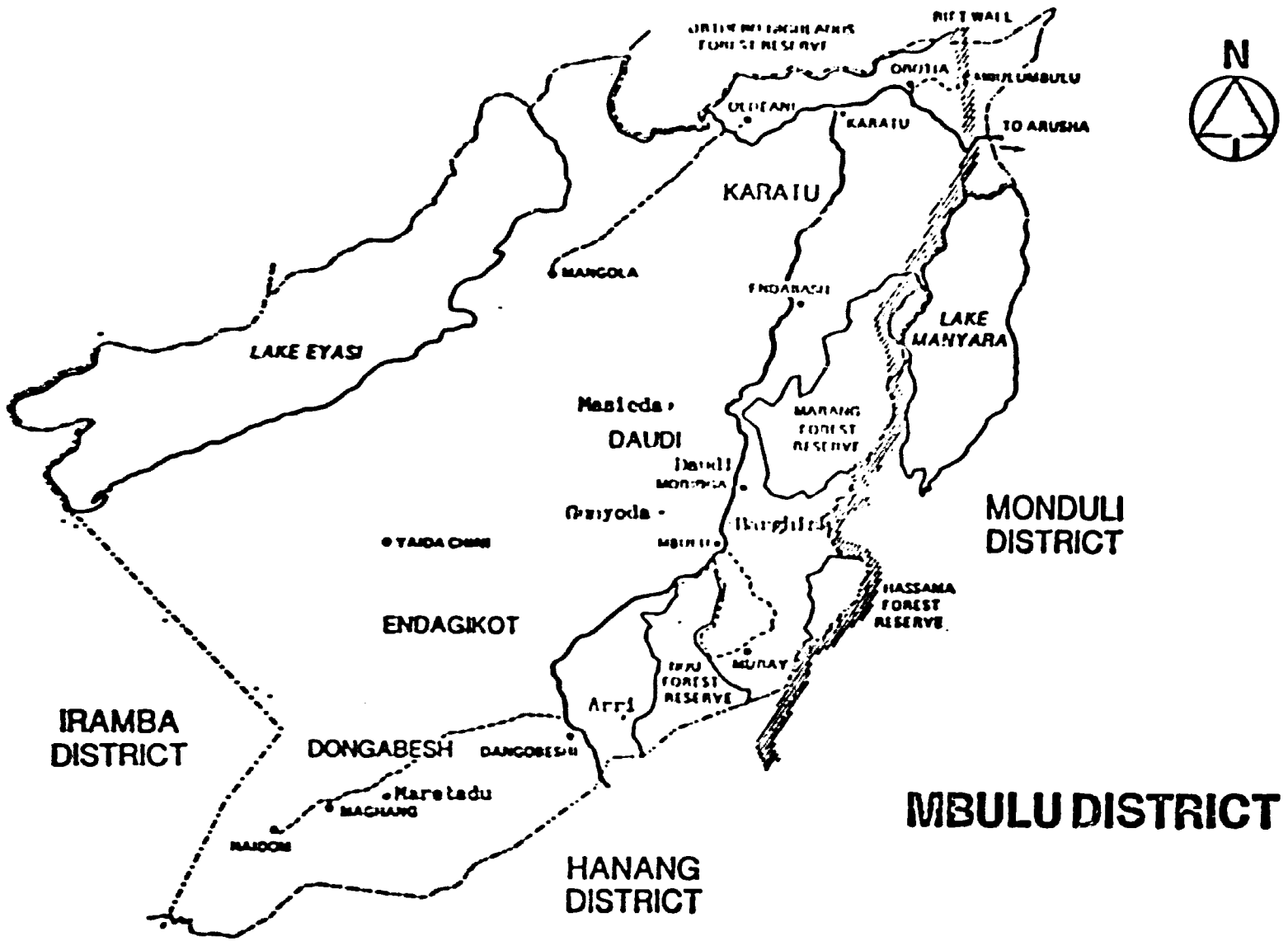
ANNEX I PROJECT VILLAGES

District	Ward	Village	Population
Arumeru	Olkokola	Olmwingoni	2150
		Ilkurot	2880
Hanang	Galappo	Giydamar	1450
		Hala "A" & "B"	850
		Majengo "A" & "B"	1300
		Hayamango	1740
Mbulu	Daudi	Daudi	1500
		Masieda	1000
		Barghish	1250
		Gunyoda	1250
	Dongobesh	Arri	1000
	Maghang	Yaretadu	1500


ARUMERU
DISTRICT
N
MUKULAT
ENABOISHU POLI
KIKATITI
KIKWE
KINGORI
MOSHONO
MBUGUNI
Olmelingoni
Ilkurot
MERU FOREST RESERVE
MT MERU
TO MONDULI
TO DOROMA
TO MOSHI
MAUNGO
MAKIBA
KARANGAI NOOGO
KARANGAI EUBBA
USA RIVER

3657


N
LAKE MANYARA
TO ARUSHA
MBULU DISTRICT
MAGARA
MBUGWE
KITETO DISTRICT
IRAMBA DISTRICT
TO MBULU
MAGUGU
TARANGIRE NATIONAL PARK
BASOTU
BASHANET
MT KWARAHA
BABATI
GOROWA
Mt Hanang
GITING
BONGA
LALAPPO
Glydamar
Majengo "A" & "B"
GIDAS
KATESH
TO DODOMA
PARABAIG
TO SINGIDA
HANANG DISTRICT


N
RIFT WALL
ORMOTIA
MBULUMBULU
TO ARUSHA
KARATU
KARATU
MANGOLA
ENDABASH
LAKE MANYARA
LAKE EYASI
Masieda
DAUDI
MANANG FOREST RESERVE
Daireli
Oniyoda
TAIDA CHINI
MONDULI DISTRICT
HASSAMA FOREST RESERVE
ENDAGIKOT
MURAY
Arri
IRAMBA DISTRICT
DONGABESH
DANGOBESH
Mareladu
MACHANG
NAIDOM
HANANG DISTRICT
MBULU DISTRICT

ANNEX F-4

Stanley Remington, "Trip Report, Kenya-Tanzania," dated January 26, 1978.

January 26, 1978

TRIP REPORT

Stanley M. Remington, Hydrologist

Kenya - Tanzania

I. INTRODUCTION

At the request of REDSO/EA a trip was made to Nairobi and three Districts in Northern Tanzania. An eight-day field trip was made into the Districts of Arumeru, Mbulu and Hanang, and three days were spent in the office in Nairobi. This was done between January 16 and 28, 1978.

II. PURPOSE OF TDY

The purpose of my TDY was to evaluate the water resources of the three Districts, in order to help meet the Sections 611(a) and (b) requirements for a proposed Village Water Supply project in the Arusha Region of Tanzania.

Specifically, information was needed in the following areas:

1. Average drilling costs,
2. Kind and amount of equipment,
3. Institutional structure for implementation,
4. Operating costs for equipment,
5. List of possible sites for wells,
6. Training requirements and how implemented,
7. Maintenance requirements.

The above points will be dealt with below.

III. WATER RESOURCE AVAILABILITY IN ARUMERU, MBULU AND HANANG

Arumeru District

The Arusha area is dominated by Mt. Meru, a large, active volcano. Associated with Mt. Meru are several hundred volcanic cones and lava flows covering several hundred square kilometers in area.

The city of Arusha obtains its water supplies from numerous springs and from deep wells located throughout the immediate area of the city. The springs are contact springs, that is, they occur frequently where aquifers come to the surface and drain themselves.

Ground water occurs mostly in permeable zones of lava flows and volcanic ash beds, and in valley alluvium. In some areas of the District the depth to water is as much as 100 meters. The ground water quality is generally bad because of flourides present in excessive amounts. A well located at the Baptist Seminary, northwest of Arusha, contains 7.7 parts per million flourides, considerably in excess of the maximum allowable 1.5 P.P.M. Other wells in the District contain even higher amounts. Consequently, mottled teeth and other illnesses associated with high flouride intake is evident on many of the residents who were born and raised in the area.

Mbulu

Almost the entire District of Mbulu is made up of Pre-Cambrian crystalline rocks, e.g. granites, gneisses, schists, diorites, etc. except for some recent volcanics in the north.

Ground water of good quality occurs throughout the District. It occurs in shallow alluvial valleys, and in weathered and fractured crystalline rocks. In most areas of the District the depth-to-water ranges from one to ten meters. Consequently, shallow, hand-dug wells can be constructed in many of the villages where there is valley alluvium nearby. Several wells have been drilled into the hard, fractured crystalline rocks to depths up to 125 meters. Every well of this type has produced ground water of good quality with fairly good yields. Two wells of this type are located near the villages of Maghang and Haidom.

In addition to ground water several springs occur throughout the District which could be developed for supplies.

Hanang

Hanang District, like Mbulu is composed mostly of Pre-Cambrian crystalline rocks, some alluvial valleys and recent volcanic cones and flows.

Ground water occurs in the fractured and weathered zones of the crystalline rocks as well as most alluvial areas in the District. There are several villages east of Mt. Kwaraha, which

are located on a large alluvial fan formed near the slopes of the mountain. No wells have ever been constructed on this fan, but ground water should occur in them. Most probably at a shallow level reachable by hand-dug wells.

In conclusion, ground water can be developed in sufficient quantities to supply almost all of the villages in the three Districts visited in the Arusha region. Wherever there is alluvium present, shallow, hand-dug wells can be constructed. In the crystalline and volcanic rocks one down-the-hole rig, such as the Schramm rigs used by the Maji regional office in Arusha would be the best rig for drilling bore holes up to depths of 125 meters.

IV. COSTS

For hand-dug wells the average cost for a 1.2 meter diameter, concrete cased averaging ten meters in depth is 15,000 shillings. This includes a concrete protective cover and hand pump.

The average cost of a deep bore hole drilled with a down-the-hole rig, with six-inch casing is 150,000 shillings. This does not include a pump.

Other costs for pumps and distribution systems will be supplied by the REDSO/EA office in Nairobi.

The decision on what type of well to construct for any one or two villages will depend solely on the availability of the water

resource. Some, perhaps 50% of them, can be supplied with the cheaper hand-dug wells. But where alluvial material is either too shallow or non-existent a deep bore hole will be required. If sufficiently high yields are obtained, a single bore hole may be able to supply more than one village if a distribution system is installed. This may be cheaper than drilling two bore holes.

V. ORGANIZATION OF MAJI

A comprehensive breakdown of the structure of Maji, both for the region and District levels, was outlined in the Trip Report by Stafford Baker and Pushkar Brahmbhatt, dated 11/29/77. Portions pertaining to Maji are attached.

With sufficient training and budgetory support, the present organization should be able to implement the water supply project.

VI. WELL SITES

Well sites were selected by me at the following locations:

District	Village	Type of Well
Arumeru	Ilkurot	Bore hole (volcanic)
Arumeru	Olwingoni	Bore hole (volcanic)
Mbulu	Daudi	Shallow hand-dug (alluvium)
Mbulu	Masieda	Shallow hand-dug (alluvium)
Mbulu	Wamaa Valley	2 Shallow hand-dug (alluvium)
Mbulu	Arri	Spring Diversion
Mbulu	Maretadu	Shallow hand-dug (alluvium)
Mbulu	Maghang-Haidom Area	Bore hole (crystalline)
Hanang	Galappo	Shallow hand-dug (alluvium)
Hanang	Hayamango	Shallow hand-dug (alluvium)

District	Village	Type of Well
Hanang	Giyedamar	Shallow hand-dug (alluvium)
Hanang	Majengo A&B	Shallow hand-dug (alluvium)

VII. TRAINING

It appears that the basic problem with the village water distribution systems observed was a lack of maintenance for the system as a whole. Some of this is due to a lack of budgetory support, but much is due to a lack of trained personnel.

A training program should be incorporated into the project which would train mechanic types in the maintenance and repair of hand and power driven pumps, pipelines, well construction techniques, engine repairs, and other related tasks. This could be done by an American senior mechanic type or "tool pusher" under a two-year contract. He would work with the Maji Regional office in Arusha.

Training in well construction techniques could be provided by TDY Ground Water Hyirologists. This would also be conducted at the Arusha headquarters of Maji.

VIII. MAINTENANCE REQUIREMENTS

In addition to the training in maintenance mentioned above, a well stocked warehouse of parts must be established at the Arusha headquarters of Maji. In addition to the training, the American Senior Mechanic would work with Maji personnel to prepare lists and order adequate spare parts to stock warehouse in Arusha and smaller warehouses in Mbulu and Babati. The Schramm rigs presently

owned by Maji are all in need of repair as are most of the hand pumps observed.

An estimation of the costs to equip a warehouse in Arusha and secondary warehouses in Mbulu and Babati is $50,000.

IX. CONCLUSIONS

1. Ground water of good quality occurs in varying quantities in the alluvium, fractured and weathered crystalling rocks and in fractured volcanic rocks in the Mbulu and Hanang Districts.

2. Ground water occurs in fractured volcanic rocks and inter-flow pyroclastic material in the Arumeru District. However, an abnormally high content of flourides will require treatment of the ground water in order to make the water potable.

3. More than half the villages in the project area can obtain sufficient potable water from shallow hand-dug wells. The remainder can obtain water from bore holes 75-125 meters deep using the available down-the-hole rigs with Maji. Some can obtain their water from spring flows.

4. One of the major problems facing Maji is a lack of proper maintenance for village water distribution systems.

5. An estimated sume of $50,000 will be required to purchase spare parts for rehabilitation of present Maji equipment and to stock adequate spare parts in Arusha, Mbulu and Babati.

6. One chief mechanic, on a two-year contract, is needed to

help train Maji personnel and to help prepare spare parts lists.

7. Two person-months are needed for a ground water hydrologist during the life of the project. The hydrologist will teach well construction techniques and site additional village wells.

8. One person-month is needed for a water quality chemist to determine the best and most economical method of treating the high flouride waters of the Arumeru District.

9. Each District should have one 3/4 ton, four wheel drive pick-up truck to supply equipment to the well construction crews. Also, the Arusha office should have one five-ton flat bed truck to carry heavier supplies, e.g., casing, pipe, cement, to all three Districts.

One Schramm down-the-hole drilling rig completely refurbished should be adequate for drilling the deep bore holes.

ANNEX G

TECHNICAL ANALYSIS FACILITIES CONSTRUCTION

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Under various components of this project facilities will be constructed. These include U.S. technician's housing, extension agent's housing, grain storage structures, Farm Centers, and an appropriate Technology Center. Each of these is discussed below detailing how this will be implemented.

- U.S Technician Housing -- Two 3-bedroom, standard Grade "A" "H" type houses will be constructed to accommodate the Rural Development Specialist in Hanang and Mbulu. These standard design houses have been built under many AID projects in Tanzania. Typical plans and specifications developed by Building Division of Ministry of Works have been examined by FEDSO engineers and meet their approval with minor modifications. The cost figures from latest bids (February 1978) for this type of construction in up-country locations have been studied by FEDSO engineers and adding contingency and inflation, a figure of $40,000-45,000 per house is derived which is considered reasonably firm.

- Extension Agents Housing -- In certain areas (6 Wards) it was determined that lack of housing was a constraint to effective extension programs. The project, therefore, proposes to build six Class B two bedroom houses to meet this requirement. Typical plans and specifications developed by Building Division of Ministry of Works have been examined by FEDSO engineers and meet their approval with minor modifications. The cost figures from latest bids (February 1978) for this type of construction in up-country locations have been studied by FEDSO engineers and adding contingency and inflation, a figure of $15,000 per house is derived, which is considered reasonably firm.

- Storage Facilities -- As discussed elsewhere the shortage of village level storage for inputs and production surplus is a constraint to the area. The project proposes funds to construct up to 50 village grain stores. These are a standard design raised concrete slab with sheet metal walls and roof. They are deemed adequate for the needs and provide the flexibility for various storage requirements. The

plinth area fo. storage houses will vary from 6mx8m to 10mx15 meters depending on the size of the village. These kinds of storage facilities have been built by KILIMO and Tanzania Cotton Authority all over the country. Standard plans and specifications developed by them have been examined by REDSO engineers and meet their approval for these kinds of storage facilities. Present cost estimates received from both organizations have been studied by REDSO engineers and adding contingency and inflation, a cost of T.Shs. 1,200 or U.S.$ 150.00 per sq. meter is considered reasonable for this kind of construction. Prior to construction of each of these storage facilities REDSO engineers will make detail studies and if necessary make modifications to suit the local conditions.

Farm and Livestock Centers/Appropriate Technology Center -- The project proposes to finance the construction of various types of centers to provide technical advice, demonstrations and testing of improved technologies. Details of these facilities are to be developed by project staff, TanGov and concerned villagers. Construction is to be simple and durable to meet local needs. Each center will be specifically designed to meet the local needs. Therefore, authorization of funds for these centers are requested, however, obligation is not requested. REDSO assistance will be requested to review each proposal for such facilities to determine that designs are sound, and costs reasonable, etc., prior to obligation of these funds.

For all the facilities proposed REDSO will be responsible for monitoring construction and ensuring reasonable standards are met. This system has proved effective even for facilities constructed over wide areas of Tanzania such as under the Manpower Training and Maternal Child Health Aides Projects.