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UNITED STATES GOVERNMENT

Memorandum

TO : J. Paul Guedet, AFR/DR/SAP

DATE: January 25, 1978

FROM : Jack LeNair, DS/ENGR

SUBJECT: Lesotho Farming Systems Research (632-0065)

I suggest that the following contents be included in the cable that will be sent to Maseru summarizing the January 26 PP Review by the Project Committee.

1. Final plans for Office/Laboratory/Library complex not essential for sec. 611(a) determination. Rough sketch plans and building plans of similar facilities on file at MOW could satisfy technical requirements of sec. 611(a), provided REDSO Engineer reviewed these plans and did not find sketches unacceptable. However, sites must be selected.

2. Cost estimating method used is acceptable; however, certain corrections in actual figures necessary. Previous cost of Mark IV houses given in PP as $27,600. Fifteen (15) per cent for inflation over two years brings cost to $31,740 (not $28,000). For contingencies, we recommend at least ten (10) per cent rather than five (5) or seven (7) per cent. Therefore, $209,400 should be included in the budget for construction of six (6) Caledon Mark IV houses. Section covering cost estimate break down for construction of Offices/Laboratory/Library with 5040 square feet of gross floor space, needs revision. PP alludes to similar construction proposed under the Thaba Bosiu project calling for 3600 square feet of gross floor space and suggests the combining of both projects into one complex. According to the PP (p. 34) the cost estimate for the Thaba Bosiu section of $50,000 is supposed to be still valid. However, cost computations for the T.B. building based on estimates developed for the newly proposed complex add up to an amount of $80,357, using only 7% for contingencies. If combining the two complexes is considered, the T.B. part should be scaled down to 2250 squre feet unless an extra $30,000 could be allocated for this complex from the T.B. authorization. If these two solutions are not possible reference to the T.B., project should be removed from this PP leaving this problem for consideration elsewhere. Cost estimate of portion of complex pertaining to this project appears satisfactory, even though raising contingency fund to 10 per cent instead of 7 per cent would be desirable.

PROJECT AUTHORIZATION AND REQUEST FOR ALLOTMENT OF FUNDS

PAF II

Name of Country: Lesotho

Name of Project: Lesotho Farming Systems Research Project

Number of Project: 690-0065

Pursuant to Part II, Chapter 4, Section 531 of the Foreign Assistance Act of 1961, as amended, I hereby authorize a Grant to Lesotho (the "Cooperating Country") of not to exceed five hundred thirty six thousand United States Dollars ($536,000.00) (the "Authorized Amount"), to help in financing certain foreign exchange and local currency costs of goods and services required for the project as described in the following paragraph.

The Project will consist of assisting Lesotho to develop more productive rural enterprises mixes which are acceptable to the Mosotho farmer and appropriate to Lesotho resources, as well as being protective of Lesotho's land resource base. A.I.D. will provide assistance towards the institutionalization of a rural enterprise development process and development of area-specific farming systems through support of a farming systems research unit within Lesotho's Ministry of Agriculture.

I approve the total level of A.I.D. appropriated funding planned for this project of not to exceed Eight Million Two Hundred Seventy-Eight Thousand United States Dollars ($8,278,000,000) (the "Grant").

I approve further increments during the remaining period of Grant funding, FY 1979 through FY 1984 of up to Seven Million, Seven Hundred Forty-Two Thousand United States Dollars ($7,742,000), subject to the availability of funds in accordance with A.I.D. allotment procedures.

I hereby authorize the initiation of negotiations and execution of the Project Agreement by the officer to whom such authority has been delegated in accordance with A.I.D. regulations and Delegations of Authority subject to the following essential terms and covenants and major conditions:

(a) Source and Origin of Goods and Services

Except for ocean shipping, goods and services financed by A.I.D. under the project shall have their source and origin in the Cooperating Country or in countries included in A.I.D. Geographic Code 941, except as A.I.D. may otherwise agree in writing. Ocean shipping financed under the Grant shall be procured in any eligible source country except the Cooperating Country.

(b) Prior to the date of execution of the Project Agreement, the Grantee shall furnish in form and substance satisfactory to A.I.D. adequate plans and specifications for the office/laboratory/library facility.

(c) Conditions Precedent to Initial Disbursement

Prior to any disbursement, or the issuance of any commitment documents under the Project Agreement, the Grantee shall furnish in form and substance satisfactory to A.I.D.:

(1) Written evidence that adequate land is available, and that such land has been allocated, for construction of senior technician housing and the office/library/laboratory extension facility.

(2) Evidence that a farming system research section within the Ministry of Agriculture has been established and that all necessary positions within the research section have been properly established and gazetted.

(d) Conditions Precedent to Disbursement for Construction

Prior to any disbursement, or the issuance of any commitment documents under the Project Agreement, to finance construction, the Grantee shall furnish in form and substance satisfactory to A.I.D., in the case of senior technician housing and the office/library extension facility, final plans and specifications for the construction; and, in the case of field staff housing and other field construction, the Grantee shall furnish written evidence that adequate sites have been allocated, in addition to submitting final plans and specifications for such construction. The conditions precedent for each unit of construction may be satisfied separately.

(e) The Grantee shall covenant that:

Participants trained under this project will be assigned, upon completion of their training, and except as may be otherwise agreed to by A.I.D., to positions within the Research Division of the Ministry of Agriculture, commensurate with the nature and level of their training. The Grantee's normal bonding requirements will be applicable.

(f) Based upon the justification set forth in Annex VI of the Project Paper, the following waivers to A.I.D. regulations are hereby approved:

(1) The policy set forth in Handbook II limiting procurement of services under grant-financed projects to U.S. and local firms is waived to permit procurement of construction services (approximately $427,000 and equipment repair and maintenance services (minimal amount) from Free World firms in equal preference to U.S. and local firms, and/or joint venture of such firms.

(2) The policy set forth in Handbook II limiting employment of Third-country nationals for AID-financed construction projects to 20 percent of the non-local work force is waived.

(3) The requirement under Handbook 15 that commodities procured with grant funds have their source and origin in the U.S. (A.I.D. Geographic Code 000) is waived to permit procurement of approximately $320,000 of construction materials which have their source and origin in countries included in A.I.D. Geographic Code 935 (Special Free World). Exclusion of procurement of these construction materials from Code 935 countries would seriously impede attainment of U.S. foreign policy objectives and the objectives of the foreign assistance program.

(4) The requirement under Handbook 15 that commodities procured with grant funds have their source and origin in the U.S. (A.I.D. Geographic Code 000) is waived to permit the procurement of twelve project vehicles and two tractors and related implements at an approximate cost of $139,000, which have as their source and origin countries included in A.I.D. Geographic Code 935 (Special Free World). Exclusion of procurement of the project vehicles from countries included in Code 935 would seriously impede attainment of U.S. foreign policy objectives and the objectives of the foreign assistance program. Special circumstances exist which justify waiver of the requirement of Section 636(i) of the Act.

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT PAPER FACESHEET

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

PP

1. DOCUMENT CODE: 3

2. COUNTRY/ENTITY: LESOTHO

4. DOCUMENT REVISION NUMBER:

5. PROJECT NUMBER (7 digits): 690-0075

6. BUREAU/OFFICE: A. SYMBOL: AFR; B. CODE: 1

7. PROJECT TITLE (Maximum 40 characters): FARMING SYSTEMS RESEARCH

8. ESTIMATED FY OF PROJECT COMPLETION: FY 84

9. ESTIMATED DATE OF OBLIGATION: A. INITIAL FY 78; B. QUARTER 2; C. FINAL FY 84 (Enter 1, 2, 3, or 4)

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						8,277.3
GRANT(S)	237.9	298	535.9	6841.9	1435.4	8277.3
LOAN(S)						
OTHER U.S. 1.						
OTHER U.S. 2.						
HOST COUNTRY	-	112.2	112.2	-	724.0	724.0
OTHER DONOR(S)						
TOTALS	237.9	410.2	648.1	6841.9	2159.4	9001.3

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	250	083		535.9		1500.1		1582.0	
2.									
3.									
4.									
TOTALS									

A. APPROPRIATION	N. 4TH FY 81 O. GRANT	N. 4TH FY 81 P. LOAN	Q. 5TH FY 82 R. GRANT	Q. 5TH FY 82 S. LOAN	LIFE OF PROJECT T. GRANT	LIFE OF PROJECT U. LOAN
1. FN	1500.7		1577.3		8277.3	
2.						
3.						
4.						
TOTALS						

12. IN-DEPTH EVALUATION SCHEDULED: MM 01 YY 82

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

2 (1 = NO, 2 = YES)

ORIGINATING OFFICE CLEARANCE

SIGNATURE: [signature]

TITLE: Regional Development Officer

DATE SIGNED: MM 12 DD 01 YY 77

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

AID 1330-4 (3-76)

LESOTHO FARMING SYSTEMS RESEARCH PROJECT

NO. 690-0065

P R O J E C T P A P E R

OCTOBER 1977

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No. 6900065

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PROJECT PAPER

Lesotho Farming Systems Research

I. Project Recommendations and Summary

A. Recommendations

Authorization of a grant of $8,277,30 for the Project subject to the following waivers and approvals: 1/

1. Procurement source and origin waiver from AID Geographic Code 000 (U.S. only) to Code 935 (Special Free World) for procurement of construction materials;

2. Approval to deviate from the policy expressed in AID Handbook 11, Chapter 2, which limits employment of third country nationals for AID-financed construction to 20% of the U.S. and Code 941 work force;

3. Waiver of policy set forth in AID Handbook 11 to permit procurement of construction services and equipment maintenance and repair services from Free World firms in equal preference to U.S. and local firms, and/or joint ventures of such firms;

4. Waiver of the source and origin requirements under Handbook 15 and a special determination under FAA, Section 636 (i) to allow the purchase of twelve project vehicles and two tractors plus equipment from AID Geographic Code 935.

B. Project Description

The proposed Farming Systems Research (FSR) Project is directed towards the goal of improving the quality of rural life in Lesotho through increasing the rural incomes of Basotho farmers. To contribute to these objectives, the project has set as its purpose and primary focus the creation of farming systems as "rural enterprise mixes" that will significantly improve the farmers' productivity. Although largely oriented towards adaptive research and institution-building, emphasis will be on finding the most appropriate means of transferring knowledge and gaining farmers acceptance of recommended technology. This requires that the project be "farmer-oriented' and that rural enterprise mixes be developed which are acceptable to farmers, sensitive to their management capability, appropriate to their resources, and protective of the country's seriously eroded land base.

The project will build on a substantial and rather surprising amount of research that has been undertaken by the Ministry of Agriculture (MOA) and other donor project activities over the past several years. The FSR project will collect and further analyze their findings as well as undertake its own research to adapt results to the real world of the Basotho farmers.

Because enterprise mixes will obviously change over time as technology, prices and institutions change, a major output of the project will be the institutionalization of a farming systems research unit within the MOA Research Division. This unit will continue development and nation-wide replication of farming systems technology after the project ends. Other

1/ See Annex VI for justification.

project outputs will include a farming systems program to develop alternative technologies and management practices in three test areas of varying physical environments; the development of alternate strategies for reaching farmers to insure that effective means are found to communicate with farmers and encourage their acceptance of recommended practices; trained Basotho personnel to establish an ongoing research capability within the MOA; a research and information data base from which currently available and future research results can be drawn; and an agricultural research library to support research efforts. Project inputs will include technical assistance, training, commodities, budgetary support, and other costs as described in Section IIB. At the end of the project, appropriate farming systems and related rural enterprises developed by the research effort are expected to be tested and in use by at least five percent of the farm households in the pilot areas.

The project will be implemented within the MOA Research Division under the direction of a project team leader who will serve as chief of the Division's Farm Management section. As section chief, the team leader will report directly to the Division's Chief Research Officer. Activities will be closely coordinated with those of the Lesotho Agricultural Sector Analysis project (LASA), the proposed Produce Marketing Corporation project (PMC), and other relevant MOA organizations and donor activities including the Basis Agricultural Service Program (BASP).

C. Summary Findings

The analyses undertaken in this paper found the design to be technically, economically, socially and financially feasible, and concluded that the project is ready for implementation, upon the satisfaction of conditions identified in the engineering analysis. Farmer-focused and farming systems-oriented to applied research are almost completely lacking in Lesotho, and it is felt that the FSR project will fill this major gap and meet a critical need to improve the productivity of Basotho farmers.

Because it is largely a research and institution-building effort aimed at a specific purpose, the direct environmental impact of the project will be small although if the results are extended, there are a number of, largely positive, possible impacts. A negative determination on the environmental impact of the project was approved 12/20/76.

While no precise measurement is possible, it seems very probable, based on experience elsewhere and the current low production levels in Lesotho, that the economic returns will be significant and go primarily to small farmers. The inclusion of a Social Analyst in the project will assure that socio-cultural factors, which are varied and complex, are addressed during project research and testing activities. The project should pose no serious financial difficulties for the MOA over the long run since the amounts involved are relatively small and in many cases do not represent added expenditures. The project is cost-effective when compared to alternative designs.

The GOL is strongly committed to the project. The design team and OSARAC feel the GOL will fully support the project in terms of both personnel and budgetary support. No implementation problems are foreseen.

The design team recognizes that this project is a high risk undertaking. However, it strongly feels that it is essential to utilize techniques as identified in this activity, to tackle the nearly intractable problem of increasing incentives and income to farmers under the major constraints

they face. These constraints are rooted in their small farm sizes, poor resources base, an (as yet) ineffective institutional support capability, and in traditional attitudes regarding land, its use and the role of livestock in the farm unit. Previous donor and GOL experiences have been planned and implemented on the basis of how the donor and GOL staff felt area or theme "development' should proceed. This FSR activity by providing a substantial lead time for field study and analysis is expected to reflect more accurately the real desire of the farmer and work to develop his concepts and preceptions so as to effectively utilize the available technology and services.

II. Project Background and Detailed Description

A. Background

1. General

The mountainous Kingdom of Lesotho, surrounded by the Republic of South Africa (RSA) or its satellites, is about 30 350 square kilometers in area or a little larger than the American state of Maryland. Its estimated per capita income was approximately $100 in 1973/74. It is listed by the U.N. as one of the world's 25 least developed countries due in part to a comparatively late start in commencing serious development efforts - just eleven years ago when Lesotho became independent. Agriculture is the country's most important sector in terms of addition to GDP and employment. According to World Bank estimates, 48.4 percent of Lesotho's 1973/74 GDP of R773.6 million (R1 = $1.15) was derived from agriculture, largely mohair.

The population of Lesotho is estimated at approximately 1.2 million. However, with about 200 000 members of its labor force employed in the RSA, the de facto population is about one million. About five percent of the domestic population live in small urban centers with the remaining people living in villages in the lowlands and mountainous regions. In the latter areas, villages are remote and isolated.

A nation-wide census taken in 1966 indicated that the population is growing at an annual rate of 2.2 percent. Although this rate appears moderate, it is high when one recognizes that the country's arable land (900 000 acres) comprises only 13 percent of the land area or less than one acre per capita. The arable land occurs in the lowlands along the western and southern borders and in isolated mountain valleys. The foothills and mountains, representing about 17 percent and 70 percent of the total land area respectively, are generally best suited for grazing.

Elevation in the lowlands ranges between 1 400 and 2 100 meters and rises to about 3 500 meters in the mountainous areas. Precipitation varies considerably being affected markedly by elevations. Periods of drought occur, on average, once in every five years. Severe rains are also common and contribute to serious soil erosion. Snow occurs regularly at the higher elevations and occasionally in the lowlands. Hail is common in many areas and is one cause of crop loss. Untimely frosts also contribute to crop losses in some years and locations.

A closer look into the structure of the country's labor force provides revealing insights into the nature of its economy and socio-cultural environment. A 1973 survey characterized it as follows:

Employment	Men	Women	Total	Percent
Republic of South Africa	175 000	25 000	200 000	44%
Wage Labor/Lesotho	16 000	5 000	21 000	5%
Agriculture/Lesotho	99 000	130 000	229 000	51%
Total	290 000	160 000	450 000	100%
Percent	64%	36%	100%	

The figures show that only 56 percent of the labor force was employed in Lesotho, and of this domestic labor force, 92 percent were employed in agriculture. Moreover, 57 percent of the domestic labor force engaged in agriculture were women. The table illustrates three major characteristics of the country which impact strongly on its course of development; namely, the dependence of the economy on the RSA, the predominance of agriculture in the domestic economy, and the role of women in the agriculture sector. The significance of these factors becomes more evident as one examines the country's agricultural sector and its problems and constraints.

2. Agricultural Sector

(a) Brief Description

As already noted, Lesotho's agricultural sector is the country's major contributor to GDP. It also provides an important source of income for 85 percent of the population. The sector is comprised of approximately 137 000 households with an average size holding of about 5 acres. Agriculture is typified by subsistence farming based on food grains and livestock. Although most farming is done on an individual farm unit basis, it is estimated that about 25 percent of cultivation is under some share cropping arrangement. Principle crops include maize, sorghum and wheat. Beans, peas and some wheat are grown as cash crops. Livestock consists primarily of cattle, sheep and goats.

Production is mainly for on-farm consumption (about 70 percent) with the balance for the market. Live animals and animal products (wool and mahair) make up about 70 percent of the country's exports while foodstuffs (mostly wheat) contribute about 6 percent. The production of foodstuffs accounts for about one-half of the country's domestic consumption with the remainder made up by imports and donations.

A unique feature of Lesotho's rural population is its equality of income and wealth. Because Lesotho's land tenure system is communal, there is little variation in household farm size and the small variation that does exist is correlated with family size. According to the 1970 agricultural census, 83 percent of farm households operated 7.9 acres or less, and only 3 percent held 15 acres or more. The lowest 20 percent of rural household's own 14 percent of the cattle and controlled 8 percent of the land compared to the upper 20 percent which holds 26 percent of the cattle and 37 percent of the land. Because members of poorer families are more likely to go to South Africa to seek employment and to invest their savings in cattle, the distribution of cattle ownership and income are more equitable than the distribution of land.

As reported in 1975/76 - 1979/80 Development Plan, the lowest 20 percent of the rural population receive 16 percent of the total income and the upper 20 percent earn 26 percent. Essentially these income distribution estimates indicate that the rural agricultural population is uniformly poor. The estimated total rural household income in Lesotho is $215, $100 from agriculture and $115 from off-farm employment. Among the four regions of the country, rural household income varies between $135 and $229. Assuming a conservative rural household size of 4.5 persons, rural per capita income is $48. Quite clearly, any activity designed to increase agricultural incomes in Lesotho will be directly responsive to AID's congressional mandate to utilize its resources to assist the poor majority.

(b) Problems and Constraints

The problems and constraints facing Lesotho's agricultural sector are many and varied. Among these are natural constraints such as the limited availability of arable land, severe soil erosion, and unfavourable weather conditions; technical constraints such as traditional farming practices and the shortage of draft power; and socio-economic constraints such as the values placed on working in the mines of the RSA and the importance attached to cattle as symbols of prestige and wealth. Still others include the constraints related to a communal land tenure system, the increasing pressures of population growth on the land, and the inadequacy of marketing, institutional, and physical infrastructure to service the sector.

Over the past two decades, available data (which may be inexact) indicates that these constraints have produced a sharp decline in grain yields and farm productivity. According to the data provided from agricultural census taken in 1950 and 1970*, grain yields in 1970 were only 43 to 75 percent of their 1950 levels, and grain production is estimated to have declined 40 percent from 313 000 metric tons to 191 000 metric tons. Another report has also found that the productivity of the nation's cattle herd has declined as well due to uncontrolled breeding and a shortage of feed. Those factors most directly contributing to these declines are hypothesized to be the migration of the male agricultural labor force to the RSA, increased population pressures on the land, the loss of the land base through erosion, and poor traditional farming practices.

(1) Migration

About 175 000 Basotho men are employed in the RSA working in the mines. Their absence leaves the women, young boys, and old men in their families to farm their lands. Estimates indicate that about 51 percent of Lesotho's farm units are without a male head of household. It is likely that the absence of these males adversely impacts on the level of technology used and on decision-making, in general, and affects the timeliness of decisions made by those actually farming. As a result, crops are frequently not maintained, and families may plant crops simply to maintain their tenure over the land while the male head of household is away. Alternative technologies are obviously needed which are more suited to this atypical farm management environment and which can offer more farm income should the male labor force return voluntarily or involuntarily.

(2) Population Pressures

Since 1936 Lesotho's population has grown from 0.664 million to 1.200 million and continues to grow at about 2.2 percent a year. As a result, the arable land base has been reduced from 1.4 acreas per person to 0.76 acres per person. Increased cultivation of marginal lands, particularly hillsides, and more intensive grazing of mountain pastures has contributed significantly to the reduction in yields and severe soil erosion. Moreover, the agricultural census indicates that between 1950 and 1970, the fallow period appears to have declined from once in four years to once in ten years. (Again, though, the reliability of these statistics are questionable, and some knowledgeable observers report that up to 20 percent of the agricultural land is left fallow each year). In order to reduce the cultivation of marginal land and provide for a needed fallow period spacing for land, research is required to determine the feasibility of (1) improving the productivity of current grain crops, (2) introducing

* The 1950 census is considered to be highly inaccurate by the GOL.

intensive cash crops which could substitute for the grains and provide an equivalent income from a smaller land area, and (3) determine opportunities for multiple cropping.

(3) Erosion

Crop yields are also thought to be falling as a result of severe erosion, a major problem which has been recognized in Lesotho since the 1930s. About half the cultivated areas and a large but unknown proportion of mountain pastures have been affected. Principle causes are the rainfall pattern (intensive and torrential rains during the summer followed by long dry periods), faulty and careless cropping practices, and overgrazing. The GOL has initiated a major effort to stabilize the land resource base. However, little research has been carried out to determine economically feasible conservation methods. Nor has much been done to identify alternative organizations of agriculture which are conservation-oriented and are compatible with the social and economic structure of rural Lesotho.

(4) Traditional Farming Practices

Directly contributing to Lesotho's soil erosion problem and declining yields are a number of traditional cropping and livestock practices including monocropping, the negligible use of fertilizers, and overgrazing. Monocropping is inherent in the land tenure system under which a farmer is given from one to three parcels of land. Each parcel is designated for the cultivation of a particular crop, usually maize, sorghum, or wheat. Although each parcel is, in varying degrees, suited for the crop recommended there are numerous cases in which a farmer has only one parcel to grow all three crops. Depletion of soil fertility is the result and acceptable ways of introducing alternative systems under which intercropping and crop rotations are employed are badly needed.

The negligible use of fertilizer appears to be another constraint. The 1970 agricultural census revealed that 84 percent of the farmers never used natural or chemical fertilizers. Investigations are needed to determine whether use of fertilizers are economically practicable at today's prices and with the technologies available.

Perhaps the most harmful practices affecting the decline in yields and deterioration of the land base are the overstocking of livestock and overgrazing. Livestock, particularly cattle, remain the central focus of Basotho agriculture. Cattle are not just economic goods, but a source of prestige, influence, and a means of saving. As a result, cattle are held rather than sold, resulting in overgrazing and erosion. It has also been found that the productivity of the national herd for draft and dairy purposes has declined because of uncontrolled breeding and shortage of feed. Therefore, there is a need to assess alternative livestock management practices and means for commercializing livestock production within existing social and political constraints.

In order to effectively respond to the constraints discussed above, the GOL/MOA feels that adaptive research employing modern farm technology and concepts is required. However, as it becomes quite clear in the following paragraphs, the current status of agricultural research in Lesotho is such that major donor assistance is badly needed.

3. Current Status and Need for Farming Systems Research

(a) Current Status of Research

The PP design team found that numerous efforts are being undertaken by the GOL and donor agencies to develop solutions to the problems outlined above. Unfortunately, as will be explained later, these efforts lack coordination, and maximum effectiveness is thus impaired. Research activities are undertaken through the GOL's Experimental Research Station in Maseru, its satellite sub-stations, and through donor-supported area rural development schemes. In accordance with MOA policy, these activities are limited in scope and applicability to the needs of farmers, and are oriented towards adaptive and practical rather than basic research. Current activities are described below.

Research work on agronomic and horticultural crops is conducted by the Agricultural Experiment Station of the Crop Production Division of the MOA and by several donor-operated projects. This work concentrates primarily on currently grown crops and covers: (1) variety trails; (2) effect on crops of soil types, seedbed preparation, fertilizer levels and types, planting dates, methods of cultivation, and methods of disease and insect control; and (3) work on crop rotations, harvesting, storage and marketing.

Although livestock is a major agricultural enterprise, it receives few research imputs. Most of the research on livestock (cattle, sheep, goats and poultry) is devoted to disease and parasite control, and somewhat less to breeding and livestock improvement. Little research is now performed on range/pasture management. Some work has recently been started on feed-lot trials, fodder production, marketing of cattle, wool, and mohair and on fish production.

Some research is being done in agricultural economics and rural sociology, both by the GOL and donor projects, but it is limited in scope.

Agricultural research is also currently being performed in cooperation with or funded by specific project activities. Following is a brief summary of such activities:

PROJECT	TYPES OF RESEARCH
Thaba Bosiu (IBRD, USAID)	Agronomic (variety screening, fertilizer, crop/conservation interrelationships). Principal work on field crops with limited program on forages. Social: Baseline and rural motivation studies including both sociological and communication research. Economic: Household surveys.
Senqu (UN/FAO)	Agronomic (as above); Social including group motivation/problems. Irrigation tests and trials with small-scale cattle in feedlots.

PROJECT	TYPES OF RESEARCH
Khomokhoana (UNDP/Sweden)	Similar to above with some work in conservation.
Thaba Tseka (Canada)	Field demonstrations/research with cereals and specialty crops; mechanization demonstration; social studies; and studies on produce and livestock marketing.
UK Irrigation Research/Production (Now being closed out)	Variety screening; production and cost for irrigation agriculture, both on research plots and in farmer demonstration areas.

Within the MOA most of its divisions carry on sporadic and often very specific studies or tests and demonstrations. Examples are found in the Planning Office where economic studies and social studies are performed, usually for a specific project. Similarly, the Conservation Division, through its work in land use planning activities in effect operates field demonstration plots. The Livestock Division operates range management and livestock management demonstrations where valuable data is available. In the social area, Senqu, Khomokhoana, Thaba Tseka, Thaba Bosiu and UK Irrigation work, as well as the MOA Crops Division, are all concurrently involved in testing various schemes of either land consolidation, group farming or group management.

A substantial and surprising amount of information and data has been accumulated through the activities outlined above. However, a critical problem that exists within the MOA today is the lack of coordination of research activities and the resulting loss in maximum utilization of results produced. This problem can be attributed to the absence of a strong centralized research institution and the lack of resources to create one. This is particularly true regarding the availability of well-qualified research personnel. As examples of this situation, the officer in charge of research holds an agricultural diploma (three years post-secondary school). Another staff member holds only a certificate, (two years post-Cambridge Pass). A few other staff members hold academic degrees but have been employed for only a few years.

During both the PRP and PP design stages, attempts were made to identify the exact size and qualifications of the research staff. Since the MOA now uses the Crop Division as the institutional base for research, this proved very difficult as the staff involved are not uniquely full time charged to research but are also used on crop production activities. It is believed that the total Basotho staff are less than ten full-time workers. Only three of these have academic qualifications at the BS level.

Other problems and deficiencies of the Research Division include (1) inadequate office and laboratory space; (2) the lack of scientific equipment; (3) insufficient operating supplies; (4) the lack of an approved firm budget at the beginning of the fiscal year; (5) the lack of opportunity for the officer in charge to defend their budget needs before the appropriate administrative officers in the Ministry of Agriculture; and (6) the already noted serious lack of coordination of research and activities among donor agencies and between donor agencies and the MOA.

(b) Need for Farming Systems Research

The development of alternative, more productive farming systems has been identified by the MOA and AID as a promising method to address the Basotho farmers lack of knowledge of modern farming practices and to potentially increase their rural income. While efforts have been made in this area as described above, activities to date have, again, been fragmented and have received little centralized focus and direction.

The MOA believes, and the Office of Southern Africa Regional Activities Coordination (OSARAC) agrees, that it is now in a position to undertake an intensive and centralized effort to develop the farming systems required to make agriculture an economically viable activity. This project proposal is in response to this need and the GOL's specific request. (See Annex III).

4. Project Development

The approach which will be used to achieve the project purpose evolved through discussions with the GOL and other donors involved in this sector. Based on experience to date, it is considered to be the approach most suitable to conditions in Lesotho.

The Farming Systems Research activity will build on on-going projects and current MOA activities in a number of fields and, if successful, will have important implications for the manner in which GOL agricultural programs are implemented. Generally, the project is a logical outgrowth of the work done in the donor-supported area development projects (Leribe, Khomokhoana, Senqu, Thaba Tseka and Thaba Bosiu), and is directly complementary to other activities either planned or just getting underway. Those with which this project will have the most direct relationships will include Thaba Bosiu, the AID-funded Lesotho Agricultural Sector Analysis (LASA) project, and the multi-donor project activities coordinated under the Basic Agricultural Services Program (BASP). Proposals now under consideration for a Produce Marketing Corporation (PMC) project and a Dry-land Research project will also be of particular relevance.

(a) Thaba Bosiu (IBRD/AID).

This proposed project is a follow-on activity to the IBRD/AID-funded Thaba Bosiu Rural Development project begun in 1973. As originally conceived, the Thaba Bosiu project was to consist of two major programs: a Basic Crop Input Program and an Integrated Farming (on farming systems) Program. Due to the much simpler nature of the basic input components, the project devoted most of its efforts to this activity at the expense of the integrated farming component. Recognizing this, AID approved an amended project paper (PP) in 1976 to initiate within Thaba Bosiu and expanded research program for conservation-oriented farming systems appropriate and specific to the project area. Although the Thaba Bosiu project terminates in late FY 1977, the amended PP provides that the AID-funded technicians be transferred to appropriate MOA division to continue their work until June 1979, the end of AID's Thaba Bosiu project funding.

These Thaba Bosiu-funded technicians will provide some of the preliminary investigation work required prior to the field tests proposed by the FSR project. In addition the Thaba Bosiu and other area project activities will provide much of the basic agricultural information to be employed in this proposed project.

It should be explained that the purpose of the FSR Project is to produce replicable farming systems for all the regions of Lesotho and to institutionalize such ongoing skills in the Lesotho Ministry of Agriculture. If this project was simply made an extension of the Thaba Bosiu Project it would be geographically circumscribed and the replicability would also be limited to an area where substantial investment in terracing and construction of grassed waterways has been made. This strategy may prove to be too expensive to adopt on a national basis. The FSR Project therefore has a nation-wide orientation.

(b) Lesotho Agricultural Sector Analysis (LASA) Project (ITA)

The Lesotho Agricultural Sector Analysis project (LASA) is also complementary to the Lesotho Farming Systems Research project and overlaps in the areas of farm management and marketing (micro-economics) research. Therefore, these activities must be closely coordinated to avoid duplication of effort and close liaison must be established to assure that the data collection systems employed are compatible.

The purpose of LASA is to rationalize agricultural development policy formation and project design and evaluation while the purpose of the FSR Project is to develop more productive agricultural enterprise mixes for the Basotho farmers. The FSR Project will also aim to coordinate and intergrate the piecemeal approach to agriculture research and extension that presently exists thereby enabling the MOA and the various regional development schemes to achieve their maximum impact and avoid duplication.

While the LASA and FSR Project overlap in many ways, they have significant differences in others. LASA includes specific micro-economic and social analysis not a part of FSR as well as national income analysis and public finance and monetary policy analysis. The LASA project will be institutionalized in the Central Planning and Development Office (CPDO) of the Ministry of Finance (MOF) and the planning unit of the Ministry of Agriculture (MOA). The FSR Project will be institutionalized in the Research Division of MOA. The expatriates and local staff input for the LASA Project will be almost exclusively social scientists (economists and sociologists) while in the FSR Project social scientists will constitute perhaps 20 percent of the staff. Despite their differences, the two activities remain closely related, and coordination will be required to maximize their effectiveness.

(c) Basic Agricultural Services Program (Multi-Donor)

The Basic Agricultural Services Program (BASP) involves development of physical infrastructure, i.e. road and stores, provision of inputs, credit, extension and output marketing facilities in administrative units described as "blocks" throughout the country. The five-year program will focus on increasing the productivity of the country's five major food crops: maize, sorghum, wheat, beans and peas.

The program is conceived of not as a project per se, but rather as an umbrella which numerous donor projects are coordinated. The World Bank (IBRD) in consultation with other donors initially developed and promoted the program. It is now receiving advisory assistance from the UNDP and is supported by a number of bilateral donors. Commitments have already been received for four areas and negotiations are continuing for additional commitments.

The BASP activities will be significant to this project in a number of ways. First, selection of the FSR project areas will likely be from areas served by the BASP activities to insure that inputs and services are available to cooperating farmers. Second, the FSR project will coordinate with BASP activities in terms of sharing research results and recommendations. However, this project will not be considered a supporting part of the BASP activities except to the extent that project findings may be useful for other donor application to areas similar to those in the FSR prototype areas. Lastly, it is envisioned in the longer run that as the BASP activities and the FSR project becomes institutionalized and more nationally oriented among the relevant MOA organizations will be strengthened accordingly. This will be of particular significance as it affects the Research Division and BASP efforts to strengthen the MOA's extension arm. The MOA's capability to sustain replication of area-specific farming systems will depend strongly on the effectiveness of BASP and other MOA efforts to strengthen the quality and extent of its outreach capability.

The GOL views the FSR Project as being the forerunner of BASP II or a more sophisticated follow-on agricultural development program of the future. This future program will incorporate the FSR proven results into expanded programs not uniquely focused on the present traditional crops and practices as is BASP.

(d) Produce Marketing Corporation

The Produce Marketing Corporation project (PMC) will address a critical need in Lesotho to build a nation-wide marketing infrastructure for supplying inputs and marketing farmer outputs. The PMC is essential to a successful BASP. AID is now giving consideration to supporting the development of the PMC as a project, seperate from BASP but supporting the input/marketing needs of the BASP and BASP donor projects. The FSR Project will work with prototype areas which are serviced by the PMC as well as BASP activities to take maximum advantage of their services. Implementation of the project will likely to be in late 1978 or early 1979.

(e) UNDP/FAO Dryland Research Project

At present, the UNDP/FAO and GOL are considering a dryland research project which will again focus on Lesotho's five basic crops: maize, sorghum, wheat, beans, and peas. The PP design team consulted with UNDP/FAO representatives to determine whether there might be a duplication of effort between their proposed project and the FSR project. It was determined that there was none and that the two would complement each other. Whereas the FSR project will have a broader emphasis on the creation and replicability of rural enterprise mixes, the FAO activity will concentrate specifically on improving the productivity of Lesotho's dryland crops. In terms of organization, the FAO project personnel would be assigned to the Plant Sciences Section of the Research Division whereas the FSR project will staff the Farm Management Section.

3. Detailed Description of Project

1. National Goal

The GOL multi-sector goal to which this project will contribute is "to improve the quality of rural life." Progress towards achievement of this overall goal will be measured by the following indicators: higher nutritional levels (as incomes rise and food consumption patterns change), more rural children in school (integrating crop and livestock production may reduce the need for herdboys), and rural aspirations being achieved (higher incomes may allow material wants to be more fully satisfied).

It is expected that changes in these indicators can be determined through GOL and project surveys undertaken during the early and late years of the project. A series of nutritional surveys is planned over the next several years in Lesotho, and, if possible, inclusion of the projects prototype areas in these surveys should be sought upon project team arrival. Measurement of school attendance and rural aspirations can be done as part of the baseline and attitudinal surveys provided in this project.

2. Sector Goal

The means by which this project is expected to contribute to the improvement in rural life is through increasing rural income from agriculture. Increased farm incomes are in turn expected to result from achievement of the project's purpose to create environments in which more productive farm enterprise mixes are supported.

Recognizing that the project will focus on traditional farming areas where the natural resources base is such that very large income increases are unlikely to occur, the sector goal target set for this project is to increase the farm income of cooperating farmers 10 percent by the end of the project. In cases where land has been left fallow or planted mainly to retain the land rights, multi-fold increases are indeed possible. It is also recognized that single enterprises may offer significantly higher incomes. However, when such enterprises are integrated into an enterprise mix which recognizes risk, the effect on total farm income is reduced. Therefore, considering the limited natural resources and risks facing the traditional Basotho farmer, a 10 percent increase on average appears to be a practical and achievable goal.

As rural incomes are expected to rise as a result of this project, it is useful at this point to consider whether such increases may appreciably affect the flow of labor to off-farm employment in the Republic of South Africa. Even accounting for the "psychic income" derived from being able to earn a living at home among one's family (estimated at being worth anywhere from 25-50 percent of the RSA labor rate), it is felt unlikely that the earnings gap between employment in the Republic and farming in Lesotho can be reduced enough to significantly affect labor movements.

However, there is a possibility in the next few years of a reduction in South African mining contracts which may force many Basotho to return to their land to earn a living. Should this occur, this project will provide for a more productive and rewarding means of earning a living from farming than that which exists today.

Regarding the measurement of rural income, it is noteworthy that there have been several socio-economic surveys conducted by existing projects in Lesotho.* These various projects anticipate continuing and refining information on the income of farm residents. The AID-supported Lesotho Agricultural Sector Analysis (LASA) Project has specific responsibility to develop and implement procedures for measuring performance of the agricultural sector. These efforts will provide national and selected regional farm income measures. The FSR Project will conduct independent baseline and subsequent surveys specific to the prototype areas of this project.

3. Purpose

The purpose and principle focus of this project is to create more productive agricultural enterprise mixes which are acceptable to farmers, sensitive to farmers' management ability, appropriate to the resources available, and protective of the land base. It is through farmer adoption of the area-specific farming systems recommended by this project that the objective to increase rural incomes from agriculture will be met. At the end of the project, it is expected that at least five percent of the farmers in the project's prototype areas will be using the systems developed.

This five percent target may at first seem to be a modest one, but given the experimental nature and time span of the project, it is felt to be a realistic one. Expressed in absolute terms, say 50-250 farm households out of each prototype-area population of perhaps 1000-5000, the target group will be impressive in comparison with the experience of other area project activities to date in Lesotho. The PP design team felt that the major weakness of the other donor schemes has been their tendency to provide too many project inputs and services to the farmer rather than working within the narrow resource base of Lesotho. The projects also failed to take into consideration the various cultural and physical constraints to increasing agricultural production including the farmers' perception of risks.

* Jensen, K.A. "Report on Household, Herd Use, Crop Production and Incomes" - Economic Survey No. 1. - Thaba Tseka Mountain Development Project

* Jenness, Jonathan and Hlatho Lucal Khethisa. "Social Survey Informal Working Papers Nos. 1,2,3 - Area Inventory, Landholder Survey, and Tractor Owner Interviews" - FAO Pilot Agricultural Scheme in the Leribe Area. 1972

* Gay, John "Rural Sociology Technical Report - Senqu River Agricultural Extension Project" - FAO Project LES/72/003. April 1977

* Thaba Bosiu Rural Development Project. "Baseline Survey of Mantsebo and Ha Gideone" - Planning and Evaluation Unit unnumbered Report. June 1977

* Bechman, D.S. and Jensen, K.A. "Costs and Benefits of Four Methods of Range Land Improvement". Thaba Tseka Mountain Development Project. May 1977

* Thaba Bosiu Rural Development Project. "Women in Agriculture." - Planning and Evaluation Unit, Unnumbered Report, September 1977

This project will therefore attempt to be more farmer-oriented as described in the primary purpose statement above. In so doing, though, it is felt that five years can only provide time enough to develop a feel for appropriate systems and achieve limited spread effect. Though this project is nationally-oriented, replication of appropriate farming systems on a nation-wide scale will require more time and is beyond the scope of this project.

The size of the target group also reflects the rate of adoption typically encountered in the developed as well as the developing world when trying to gain acceptance of new technology. As elsewhere, it is likely that there will be a very small minority of early adopters who, in turn, will be followed by others as the recommended systems are "proven" and gain acceptance. As discussed in the Social Analysis, though, the ultimate target group of this project will be the greater mass of traditional farmers rather than the more "progressive" farmers who will likely be among the project's early adopters and, as such, initial beneficiaries.

It should finally be noted that although this is a research project, the PP design team felt that given the availability of data and information which exists in Lesotho, the project should lean heavily towards farming demonstrations and testing and adoption of farming systems rather than research per se. In other words, applied research will be undertaken to initially suggest the appropriate enterprise mixes of a given area, and continued as required to overcome problems in adapting and gaining farmer acceptance of such mixes. It is hoped that this "thrust" of the project might lead to a faster rate of farmer adoption during the life of the project. Still, the nature and time frame of the project suggests that five percent of the farm households in the prototype areas represents a realistic and unpadded target.

4. Outputs

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

a. Farming Systems Research Unit

Recognizing the limited spread effect which can likely be expected within the time span of this project and the importance accorded institutionalization of the research effort in the PRP, a major output of this project will be the institutionalization of a farming systems research section within the MOA Research Division. This output will add further assurance that the project will end with an on-going capability to continue replication of appropriate farming systems and thereby increase rural incomes. Performance criteria to indicate that this output has been produced will be the following:

1. Farming systems research priorities are being determined through the use of both social and economic benefit-cost techniques by 12/79. Application of these techniques will help assure that research undertaken is cognizant of and sensitive to the most significant constraints and most urgent needs of the farming sector.

2. Farming systems research results are being published and disseminated to all relevant groups by 12/79. A critical weakness in the MOA today is the piece-meal fashion in which research is pursued. The farming systems research section will serve as an example and a catalyst to demonstrate

the advantages of closer coordination and sharing information.

3. Farming systems research section is benefiting from improved professional relationships with world-wide research institutions by 12/79. Such relationships are now practically non-existent. The project will provide for short-term consultations with such major centers as CIMMYT, ICRISAT, CIAT, IITA, ILRAD and CIP to establish ties and strengthen relationships that now exist.

4. Last but perhaps most important, by 12/83, the farming systems section will be pursuing or considering a program for replicating farming systems after the project ends. It is further anticipated that such an on-going program will have been accepted by the GOL or, again, will be under serious consideration. Assuming that the project has deomstrated positive returns from farming systems research and adoption by the end of the project, this appears to be a reasonable expectation.

b. Farming Systems Program

Farming systems will be developed and tested by the end of the second crop year in each of three prototype areas. Research results will then be used to further refine the enterprise mixes throughout the entire project. These systems will employ alternative technologies and farm management practices to determine the proper enterprise mixes for selected areas within the prototype areas. To the extent possible, systems will be tested in areas of varying physical environments; e.g., lowlands and foothills, and areas of varying soil types to orient adaption on a nation-wide basis.

c. Strategies for Reaching Farmers

As the thrust of this project is on adaptive research, demonstration testing, and adoption of recommended systems, the need to develop effective means to reach farmers and gain their understanding and acceptance of the practices recommended is crucial. Therefore, a major output of the project will be the development of alternative strategies for MOA-farmer communication and education. Alternative strategies for securing farmer adoption of appropriate enterprise mixes will be tested concurrently with the initial recommended enterprises. Evaluation of the effectiveness of alternative extension methods will be continuing, but with a thorough final assessment of effectiveness as of the fourth year crop. It will be important that the project team pursue their research and investigation activities to the maximum extent possible in the field where they can become more sensitive to farmer needs and views. The project's rural sociologist and the Basotho farming systems extension advisors will play a major role in this regard. Nevertheless, a sensitivity and appreciation of the attitudes of rural people in African developing countries should be expected of all team members.

d. Trained Basotho Personnel

By the end of the project, 16 long-term trainees and 10 short-term trainees will have been assigned to positions in the farming systems research section and complementary position elsewhere in the MOA. Long-term trainees will be trained and assigned as counterparts in the FSR unit immediately upon receipt of their degree. If M.S. candidates are available at the onset of the project, they will be assigned to the FSR unit by the end of the third year of the project. Depending upon entry status of undergraduates, at least three should be assigned to the unit by the end of the third year.

Those requiring four years of study abroad are to be in position by the end of the Project. At least one-half of the short-term extension-trained Basotho are to be in field supervised positions by the end of the second project year.

e. Research and Information Data Base

In order to establish a research and information data base, several activities related to processing existing and future research findings will occur over the period of the project. The major findings of existing research will be collected and analyzed by December 1979. This process will result in the formal system of reporting and documenting research within the FSR unit. Baseline studies of farming practices, incomes and social attitudes will be conducted in year 1. Similar studies will be conducted in year 5 to provide a time comparison. A continuous series of technical, social and economic surveys will be conducted throughout the project.

f. Agricultural Research Library

An adequate library for the Farming Systems Section will be established and coordinated with the Agricultural Planning Library by July 1981. It is anticipated that a DOL program for retaining an effective current Agricultural Research Library will be operative at the end of the project.

5. Inputs

The inputs required and felt sufficient to produce the outputs described above are indicated in the following discussion and table.

		('000 US$)
a. U.S. AID	Total	$8,277.3
1) Technical Assistance/Field		$4,573.0

The project will provide 50 staff-years of long-term technical expertise, 6 staff-years of graduate assistants' research, and 60 staff-months of consultancies as described in Table I. Also provided is funding for a preparatory trip for the Project Team Leader (FSR Unit Chief) during Phase I ($6,000) and for staff trips to international conferences and research institutions during the course of the project ($40,000). Job descriptions of the long-term technicians and graduate assistants are included in Annex II.

Table 1. Scheduling of Technical Assistance Personnel

Personnel	1979	1980	1981	1982	1983	1984	Years
Chief Research Officer	Jan ←	→	→	→	→	Mar →	5.25
Farm Management Economist	Apr ←	→	→	→	→	Mar →	5.0
Social Analyst	Apr ←	→	→	→	→	Mar →	5.0
Agronomist	Apr ←	→	→	→	→	Mar →	5.0
Communications/ Info/Extension Specialist	July ←	→	→	→	→	Mar →	4.75
Animal Management Specialist	Apr ←	→	→	→	→	Mar →	5.0
Marketing Specialist	July ←	→	→	→	June →		4.0
Conservation Engineer	Apr ←	→	→	→	→	Mar →	5.0
Administrative Officer	Jan ←	→ Dec					2.0
Basotho Extension Advisors (2)	July ←	→	→	→	→ Dec		9.0
Research Assistants (6 @ ½ time)		Jan ←	→	→	→ Dec		6.0
Consultants	(12 mos)	(12 mos)	(9 mos)	(12 mos)	(12 mos)	(3 mos)	5.0
Total Staff Years	8.8	13.5	12.2	12.5	12.0	2.0	61.0

Consultancies will be provided in the following areas (and possibly others as felt required): Agricultural Chemistry, Horticulture, Animal Science, Plant Protection, Nutrition, Range Management, Library Science, Agricultural Engineering, etc.

2) Technical Assistance Backstop $1,105.0

As the project will likely award an institutional contract, backstop support will include the services of a campus coordinator, a financial and administrative assistant, and a secretary. Staff trips and provision for administrative overhead are also included.

3) Training $ 422.6

Training will include 47.5 study years of long-term participants at the B.S. or advanced degree level, 5 in Africa and 10 in the U.S.; 10 study-years of short-term training for 10 participants for up to one year's training in the U.S.; and ten in-country courses (two per year).

The proposed participant training schedule is shown in Table 2. These participants will be in a wide range of areas covering the specialities being provided by the technical assistance personnel. Most of the long-term training should be at the Master Degree level, although if no degree personnel are available for advance work in a certain field, it will be necessary to provide first degrees. The project training schedule is front-loaded to the maximum extent judged possible, within Lesotho's manpower availabilities, to maximize the participants' on-the-job exposure to U.S. funded technical assistance staff.

Third country long-term training in Africa is provided in recognition of 1) the suitability of institutions and facilities with curriculum tailored to the problems of African agriculture; 2) the eligibility of Basotho candidates to enroll in such institutions; and 3) the availability of local currencies to finance the participants' training. Trainees may be sent to qualified institutions such as the following:

(1) University of Ibadan (with IITA), Nigeria
(2) Ahmadu Bello University, Nigeria
(3) Nsukka University, Nigeria
(4) University of Ghana (Legon)
(5) University of Liberia
(6) University of Nairobi
(7) University of Ife, Nigeria
(8) University of Sierra Leone, Njala

The short-term overseas training will emphasize vocational agricultural courses followed by specialized training and experience in specific disciplines through working with appropriate Extension specialists and country Extension Agents. Special training will be provided in Extension educational methods.

Short-term in country courses will be given to provide appropriate training to resident Basotho staff. Extension and research staff will be the primary participants.

Table 2: Training Scheduling

New Starts	FY 1978	FY 1979	FY 1980	FY 1981	FY 1982	Total Trainees
Long-term - U.S.	4	4	2	-	-	10
Long-term - Africa	-	2	2	2	-	6
Short-term External	2	4	4	-	-	10
Short-term Lesotho (Courses)	2	2	2	2	2	Courses 10

4. Construction

The construction component totals $ 427.0 and consists of the following:

- Senior Technicial Housing (6)	$ 180.0
- Field Staff Housing (6)	$ 102.0
- Office/Library Extension	$ 118.0
- Field Sheds (3)	$ 27.0

5. Commodities $ 381.5

Commodities will include vehicles, field research and laboratory equipment, office and training equipment and supplies, and library books and periodical subscriptions. Annex V provides a breakdown and individual cost estimates of these items.

6. Other Costs $ 947.9

Included are budgetary support for the farming systems program* gurantees for cooperating farmers, vehicle operation and maintenance, computor services, and secretaries.

b. GOL TOTAL $ 724.0

1. Training Support $ 113.0

In accordance with standard procedures, the GOL will provide training support to participants equivalent to 60 percent or 100 percent of their base salaries depending upon marital status and length of training.

2. Farming Systems Research Support* $ 286.0

Support includes salaries and wages for returning trainees, technical assistants, maintenance personnel, temporary wages, and building site maintenance.

* Budgetary support for the FSR program in the project areas totals $378.0 with USAID and the GOL each funding half. Programming of funds is such that USAID's share will progressively decline over the life of the project while the GOL's share increases. This will facilitate the GOL's capability to fund the program 100% by the end of the project.

3) Farming Systems Program Support $ 189.0

Includes salaries and benefits for extension personnel, temporary wage labor, field shed and site maintenance, office supplies and equipment for field sheds, and an operations fund for which the DOL will pick up a growing proportion as the project progresses.

4) Land $ 100.00

Land will be provided for the office/lab/library extension at the Research Station, for the senior and field staff housing, and for the field sheds and research plots in the prototype areas.

5) Furnishings $ 31.00

Senior/Junior Staff Housing

6. Important Assumptions

Important assumptions related to the achievement of prototype objectives are indicated in the Logical Framework Matrix, Annex I. Among these external factors over which management has little or no control, the following are cited as being particularly important to project success:

a. Interdepartmental Coordination and Cooperation

During the course of the PP design teams' stay in Lesotho, it was struck by the amount of research and studies that had already been prepared by the GOL and other donor project activities. Yet, it was obvious that little of this information is being shared among the relevant groups concerned with promoting agricultural development in Lesotho. To maximize the impact and effectiveness of this project's farming systems research efforts, it is felt that improved coordination within the Ministry and with other donor project activities must be achieved.

b. Availability of Adequate Marketing Infrastructure and Farm Inputs

In order to provide the necessary incentives for traditional farmers to adopt new farming practices, it is felt that: (1) there must exits an adequate marketing infrastructure to market increased production; and (2) farm inputs must be available when needed to encourage the farmer to accept the added risks which may be associated with using more productive farming systems. To add assurance that these conditions prevail, the design team recommends that the project's prototype areas be selected from areas that will be serviced by the proposed Basic Agricultural Services Program (BASP) as well as the Produce Marketing Board (PMC) and the Livestock Marketing Board (LMC). The areas or "blocks" to be serviced by the BASP activities are now being considered for donor financing as is the PMC. The LMC is also currently undergoing major changes in management and organization to upgrade its effectiveness. By the time the project team arrives in early 1979, the specific areas to be serviced by these activities will be much better defined.

c. Social Constraints Not Insurmountable

The PP design team feels that socio-cultural constraints in Lesotho are perhaps more significant than may be encountered in other developing countries (see Social Analysis), and that they must be given special emphasis and consideration in this project. The inclusion of a rural sociologist on the project's technical staff and the specific output to develop alternative strategies for reaching farmers are incorporated into the project in recognition of these constraints and the need to address them. These inputs are provided under the assumption that socio-cultural constraints are not insurmountable and that it is possible to work within such constraints if they cannot be erased.

7. Project Phasing

a. General Comments

The following analysis is based on reasonable expectations for pre-project activities which will be supported by the Thaba Bosiu staff, Southern Africa Development Personnel and Training (SADPT) staff, and the LASA staff. At this time is not realistic to assume that the specific times noted below will be precisely followed. It is intended that the activities will proceed

at a pace consistent with the teams' ability to meet output requirements.

b. Pre-Project Activities

This project, phased in five discrete and identifiable segments, is preceded by the continuing data collection and analysis under way by the Thaba Bosiu Agronomist, Rural Sociologist, Conservation Extension/Information Officer and other supporting staff. Similarly, this project will benefit from the SADPT Project through the assignment of a Farm Management Research Specialist to the Research Station. By the time the initial technical staff funded under this project arrive, a substantial farming systems investigational program and analysis will have been carried out in the three areas where the Thaba Bosiu Project has intensive conservation activities scheduled. Some "on-the-ground" testing of innovative combinations of crops/livestock, together with experiences in the process of reaching and motivating rural people, will be available and the lessons learned will be applicable to this project. The LASA staff is expected to have social and economic data, and analysis thereof, available for project staff on arrival.

The Thaba Bosiu and SADPT staff phasing, if this activity is on the schedule as proposed herein, will be such that momentum will be lost as the phase-out/phase-in process occurs. It will be essential to this orderly process that CSARAC, AID/W and the cooperating institution adhere to this schedule. Additionally, project phasing is tied to growing seasons in Lesotho which means that a short delay (two months) could actually result in a set-back of one year in project implementation.

c. Phase I (April 1978 - December 1978)

This phase will be the period of time between the signing of the initial Project Agreement and the arrival of the first elements of the Cooperator's field team. Activities during this phase will be primarily those of the GOL, including:

- Initiation of construction of technician housing, office space, laboratories, and library;
- Establishment of recurrent budget;
- Final identification of Basotho staff members;
- Selection and departure of initial U.S. trainees;
- Acquisition of office furnishing;
- Approval of Cooperator field staff.

The following actions, in addition to providing funds for the construction mentioned above, will be acoplished by AID and the Cooperator:

- Final negotiations with Cooperator (in conjunction with the GOL);
- Initial acquisition of commodities designated for local procurement (vehicles, equipment, office machines);
- Processing of initial U.S. trainees;
- Project preparation visit by Cooperator for familiarization and preparation of work plan for Phase II.

4. Phase II (January 1979 - July 1979)

This is considered to be the "start-up" phase. The Team Leader and Administrative Officer will arrive initially to plan and make preparations for the other team members' arrival. About three months later the Farm Management Economist, Social Analyst, Agronomist, Animal Management Specialist, and Conservation Engineer will arrive. These technicians will consult with the Thaba Bosiu and SADPT-funded technicians (Sociologist, Agronomy Research Officer and Farm Management Research Specialist) to insure continuity and smooth transition of these functions. The selection of the two Basotho extension advisors and the arrival of the Communication/Information/Extension Training Specialist and the Marketing Specialist in July will complete the project staffing of AID-funded personnel. During this phase, and in the Phase II activities following, project staff will be required to focus clearly on determining the views of farmers and a better understanding of how they perceive their environment and opportunities. As noted several times in this proposal, the systems and changes to be utilized by rural people must be developed in close concert with them. Staff must be very sensitive to this point and "imposed" systems must be avoided. The GOL has advised the PP design team that they strongly feel this concept of tempering hard technology to most effectively and successfully fit the needs and desires of local people, as they seem them, is essential to success.

Based on past and current experiences, it seems obvious that activities which focus principally on increasing production of subsistance crops may not be successful given the constraints of farm size. This is particularly true since Lesotho subsistance crops on Lesotho soils are apt to be only modestly capable, at this time, of marked (100-200%) increases in yield. The FSR staff will be expected, together with LASA inputs, to come to hard grips with the sort of issues as noted above during this initial period. Phased cropping, multiple cropping, between rows, in staggered rows with non-subsistance cash crops or other subsistance crops will need to be examined as well as mixes of crops and livestock. The GOL, DSARAC and the PP team strongly feel that factors critical to project success are: (1) correct and accurate identification of the problem as seen by the Lesotho farmer; (2) carefully considered low risk and wise selections by researchers and farmers, of enterprise mixes to be tested; and (3) the development of communication processes between the GOL and farms which is effective and structured on common regard and trust between the MOA field staff and the farmer.

In addition to routine administrative and logistic matters relative to project start-up, the Cooperator's team and their counterparts will be engaged in the follwong activities:

- Assililation of the Farming Systems Investigative Program of the Thaba Bosiu Project (including familiarization, analysis and continuity);
- Final selection of the project areas;
- Initiation of contacts with village leaders in project areas;
- Initiation of coordination and familiarization with MOA divisions and MOA projects;
- Collection of existing data and initiation of analysis;
- Identification and procurement of project commodities;

- Initiation of library development;
- Initiation of contacts with international research centers;
- Preparation of Work Plan for Phase III.

While the specific project activities described above are carried out, the following activities will be started:

- Initiation of conservation activities in project areas (land use plans, soil surveys, communication with farmers, etc.);
- Establishment of role and responsibilities of other MOA divisions in project areas.

e. Phase III (August 1979 - July 1980)

During this phase the technical staff will address the basic problems of securing additional information through research tests, group surveys and analysis of existing data. The research team will prepare specific recommendations for implementation on the prototype areas and, when needed, perform small-scale tests to ascertain responses under field conditions to the technical inputs and to test social acceptability of the practices/changes considered desirable. By the end of Phase III, detailed plans for prototype implementation in three areas will be developed and approved and intial contacts and linkages with rural people and their local groups will have been made. Activities by the GOL, AID and the Cooperator will include:

- Continued review and evaluation of existing information;
- Formal system of documentation and reporting of research results established;
- Social and economic baseline data collected and analyzed;
- Baseline survey and analysis of rural attitudes and aspirations completed;
- Rural people/groups prepared for prototype operation;
- Field tests;
- MOA field staff in prototype areas intensively trained;
- Farmer guarantee policy cleared by GOL and agreed with participating groups/individuals;
- Engineering analysis of most effective tillage/cultivation practices/techniques made (consultants).

Routine AID-Cooperator actions will continue such as:

- Internal GOL Coordination;
- Initiate construction of field staff facilities;
- Preparation and approval of work plan and budgets;
- Participant training actions;
- Purchases of local cost support items.

An evaluation is scheduled for January 1980 to review the status of the prototype operation proposals.

f. Phase IV (August 1980 - July 1981)

This period will be one of intensive field work for the technical staff. The major task will be to communicate to the rural people/groups in the prototype areas and to interact with them to assure their familiarity with and receptiveness to the farming systems which are to be introduced. Simultaneously, research testing in the areas, on farmers' lands, will proceed to further refine the technological packages to be used. Conservation infrastructure will be completed and any needed rural organizations, associations or groupings necessary will be organized and trained. Plans will be drawn up, approved by the GOL and reviewed/approved by rural groups regarding procedures/policies for the use of guarantees for participants in the prototype areas. Negotiations with the GOL and other donors, i.e. Peace Corps, will have assured field staff support at prototype sites.

Among the tasks to be accomplished will be:

- Establishment and operations of required field tests on agronomic, livestock and sociological issues needing clarification;
- Development and GOL approval of specific recommendations for prototype operations based on analysis of data, test results and joint judgments of GOL/AID and Cooperator staff;
- Contacts with rural people and group organization in the areas selected for prototype operation;
- Continued development of conservation-related infrastructure in prototype areas as required.

In addition, AID and the Cooperator will perform routine implementation functions such as:

- Preparation and approval of work plan and budgets;
- Processing of participants;
- Purchase of supplies and equipment from project operations;
- Consultants used as needed with emphasis on staff from international research organization.

A second major external evaluation is scheduled for January 1981.

g. Phase V (August 1981 - March 1984 - End of Project)

The final phase of this project will be the period when prototype testing of the farming systems concepts agreed to will be under way. Remaining staff will continue heavy day-to-day field involvement. Research data, both technical and social, will be collected to assure appraisals of impact on both income and the life style of the participants. Project staff and GOL officials will keep close observations on the progress and will be prepared to make alterations/modifications as experience and feedback from farmers indicates. As this is a multi-year phase, the Phase V work plan will be reviewed annually to insure relevancy and adherence to objectives.

During the last six months of Phase V, an intensive effort will be mounted to prepare a program for continued development of farming systems beyond the life of the project. The program, drawing on the project's experience, will spell out the procedures and methodologies for adapting

project results for other areas of the country and for replication of the activities and will identify additional research requirements required prior to or concurrently with adaption and replication of the project. This task will be the responsibility of the Basotho counterparts on the project assisted by the resident Cooperator staff, short-term consultants from the cooperating institution and international research centers as required.

A final project evaluation with the Cooperator's staff and AID is scheduled for the end of the project, or in early 1984. In addition, and since this project is a somewhat unusual type of activity, a post-project evaluation will be held about two years after the end of the project, or not prior to March 1986.

b. Summary Project Phasing Schedule

PHASE	DESCRIPTION ACTIONS	APPROX. TIME
Pre-Project	GOL, Thaba Bosiu, SADPT, LASA staff investigations, AID/W review of PP	to 4/78
I	Research administration, cooperator negotiations, procurement, construction, cooperator visit	4/78 to 12/78
II	Start-up phase, cooperator staff arrival, prototype area selection, conservation planning	1/79 to 7/79
III	Research testing/analysis/surveys, extension training, detailed implementation plans, field construction.	8/79 to 7/80
IV	Field testing, prototype implementation recommendations, village contacts, conservation, major evaluation.	8/80 to 7/81
V	Prototype testing, review and modifying systems, establishing capability for continuation/replication of farming systems, final evaluation. End of Project.	8/81 to 4/84

III Project Analysis

A. Technical Analysis

1. Appropriateness of Technology

It is generally believed in the Western world that improvements in the level of agricultural technology may be achieved through research, education and extension. But even in this more sophisticated environment the relationships between these variables and the level of technology to be used are not clear. Opportunities have been assumed to exist for large increases in output in the developing world by transferring modern agricultural technology to low income areas. As evidence has accumulated over time, it is beginning to appear that the scope for direct transfer of technology via these traditional Western-oriented activities without more consideration being given to socio/cultural/political constraints is more limited than previously believed.

Several projects have been initiated in Lesotho to provide information related to specific aspects of Lesotho agriculture, (Khomokhoana, Senqu, Thaba Tseka, and Thaba Bosiu). A reasonable base of knowledge has been laid concerning both production relationships and the relevant socio/economic characteristics found in Lesotho agriculture. The potential for high payoff is in the conversion of this information base into relevant farming systems which will be acceptable to farmers.

In Lesotho, the combination of crops and livestock within the individual farmer's present management and farm enterprise system is, in general, now based on the long-time tradition and trial and error experience of the rural sector and often includes off-farm labor. Some critics feel that these combinations of enterprises used by the subsistence farmer are sub-optimal, inefficient or irrational. While this may be economically true, it often turns out that these critics did not appreciate or understand the aspirations of the farmer, the constraints imposed on him that are beyond his control, or both the cost of obtaining information and his ability to understand and use new technology, prices of inputs, or value of outputs.

The Lesotho farmer is faced with the task of allocating the inputs at his disposal among the different enterprises in a way that will maximize his income and/or help achieve other aspiration that are important to him. Therefore, it is clear that the farmer, even at the subsistence level is a farm manager. He must efficiently allocate the source resources at his disposal among different enterprises in view of (1) the available technology; (2) the prices of inputs; and (3) the prices or values to the family of the outputs. The availability of inputs to the farmer, the level of the existing technology, and access to markets are major constraints on his ability to meet his desires. Other constraints the farmer must deal with include the inadequacies in the existing marketing system (both for crops and livestock/livestock products), management problems within the existing land tenure system, and the possible demands on resources caused by the traditional extended family system. If changes are made in these systems the farmer may more easily achieve some of his desires, although it is also possible such changes might make it more difficult to achieve others. Such changes are beyond the control of a single farmer or family and must be made within the tribal system itself or by the government.

This project proposes to offer assistance to directly help the farmer more fully and rationally realize his desire by (1) making improved technology available to him through applied research and screening and by adaption to

available technologies and resource management practices; (2) by the use of prototype systems, determine improvements in the dissemination and extension of information to the farmer, in terms understandable and acceptable to him, on the new technologies and his economic opportunities; (3) by careful examination and analysis of both the economic and social impact of alternative systems of land amalgamation to determine possible methods of achieving economic advantages over the present system of farm management on an individual holder basis; (4) in conjunction with the LASA project, to document alternative strategies for agricultural development while noting policy issues inherent in adoption of such strategies, and (5) assist him in strengthening his links with the input/marketing systems available at his level.

It is important to emphasize that the output of this project is not to develop a single enterprise mix for a farmer or farmers that is appropriate for all time and circumstances. Rather, the expected output is an on-going capability in the GOL to identify and communicate opportunities which permit the farmer to adjust enterprise mixes over time as technologies and input and product values change.

If this is to be achieved, the farmer himself must be able to shift resources from one enterprise to another to take advantage of shifting price/value relationships. He must also be serviced with more efficient and cost-effective information systems which are tailored to the real world of the farmer and are considered reliable and trustworthy by the farmer.

The technicians on this project must have a high level of commitment to not only the development of applicable technology, but also to its adoption within an integrated farming system. This will require a considerable extension orientation among staff and also a commitment to the concept of an integrated farming system. The staffing mix and proposed training components of this project are premised upon the applied technology approach. At the same time it is recognized that implementation of this project will identify new research needs. Thus, the Farming Systems approach will be highly complementary to other research sections of the MOA.

2. Research Needs and Recommendations

(a) Economic Component

The research needs for the farm management component of the project center on three major areas:

(1) The development of detailed enterprise budget data; (2) an inventory of typical resource situations faced by relevant groups of farmers; and (3) the existence of information on input and product prices which will be faced by farmers.

Initial enterprises budget information is being prepared by the MOA's Farm Management Officer (AID funded). This inventory of budget will form the base for preparation of a complete set of enterprise budgets. The FSR project Farm Management Officer will need to complete this work and particularize it to specific regions in the country. A standard buiget format will be developed in cooperation with the LASA group and other sections of the Research Division.

Rural Sociologists and Farm Management Economists have produced a number of reports on the economic and social base of farmers within specific regions. The Farm Management workers will need to standardize and refine this information, along with conducting additional surveys, in order to establish resource constraints for either traditional budgeting or linear programming techniques. Past optimal programming may prove useful for establishing shadow prices for important resources.

The availability of reasonable estimates of input and product prices may well be a constraint on effective development of the project at the onset. The LASA project should be well underway before the second year of budgeting is performed. The efforts of LASA should provide reasonable market intelligence in the later phases of their project. The Marketing Specialist with the Farming Systems Project will provide additional support for the estimation of prices of both crops and livestock. A more fundamental research need in the marketing area is an understanding of the characteristics of the major product markets in Lesotho and internationally. The Marketing Specialist will be fully coordinated with LASA, PMC and LMC by the MOA.

As the project develops the Farm Management Specialist will need to give more explicit attention to the element of risk, both physical and market. Much of the production risk information is rather site specific. The initial areas for research should coincide with the prototype areas. It may well be necessary to secure additional recording sites by the appropriate meteorological group. Such risks producers face will then be incorporated to further refine the recommended enterprise mixes.

(b) Livestock Component

Several projects in Lesotho have dealt with research on crops and alternate cropping systems. A few have dealt with range-related research such as potential alternate range species, overseeding and range recovery. Few have dealt with actual changes in efficiencies of cattle (both for breeding and draft purposes) that might result from improved cattle management and nutrition on range areas (e.g. stocking rates, proper nutritional supplementation, improved calving rates) or the use of crop rotation including forages for winter feeding of livestock. Research is required to demonstrate the returns of such alternate practices under the agricultural conditions in Lesotho and within the context of farming systems development. Furthermore, returns should be estimated in substituting sheep or goats for cattle in traditional as well as alternative farming systems. All research dealing with cattle should have the ultimate aim of contributing to reductions in soil erosion and to better intergrate livestock and farming practices to the advantage of the farmers.

As noted in the Social Analysis section of this paper, cattle have a very special place in the culture. This makes short-term technical solutions which key on the premise that livestock are universally viewed as a solely economic resource and assumes grade/price systems of marketing largely irrelevant. The immediate needs are to analyze the already visable trends in Lesotho which are now occurring which will erode, overtime, the traditional values assigned to stock by rural people. As farmers are made aware of alternative opportunities to utilize livestock as more than a "walking bank" or to satisfy traditional needs, it becomes possible to utilize the technological inputs and the market institutions which can be considered. Until, however, the rural person finds his priorities and his sense of risk aversion are met, it is improbable that commercially oriented programs will be successful.

In addition to the needs for a significant understanding of the rural attitudes toward stock which the social analyst will be basically responsible for, there are some basic areas of animal production research and tests which should be done to have information on which to build future programs. All research must be closely linked to the allied cropping practices on the farm.

Studies on improved nutrition and breeding to improve calving rate and draft efficiency should be made. Grazing pressure decreases could be effected since fewer maintenance animal units will be required per half produced. A reduction in battle numbers will reduce the number of herd boys required, thereby permitting a greater percentage of the young male population to attend school. Studies could be initiated on alternative expenditure of miner's pay for improved nutrition and management that will result in greater herd production through improved calving rates and market quality assuming farmers are motivated and markets buy on quality standards.

A number of needs for applied research studies are evident in the marketing area. It is critical that such studies be carefully coordinated with the LMC and with the MOA planning office and its LASA project which, together, have principal policy/implementation responsibility for programs.

As technical facts are determined and as understanding is developed among both the seller, buyers and consumers, demonstrations should be conducted to illustrate how to improve the quality of the marketable product, especially cattle for slaughter. As commercial slaughtering facilities are constructed in Lesotho, under consideration by Danish ADD, alternative sources of required feed inputs to produce an acceptable slaughter quality required for export (to international markets) should be researched. Such studies should determine the practicality and economic feasibility of feeding native cattle for slaughter. Carefully coordinated market studies, as noted above, should be undertaken to determine if cattle carcasses can be sold to advantage over the sale of live cattle or if further processing might in fact increase economic returns.

Likewise market studies are required to estimate potential returns through value adding schemes for wool and mohair over the sale of these raw materials.

Nutrition and management demonstration trials can show how animals of low productivity could be systematically culled. A data base can be provided on potential improvements that can result from such effective culling of stock. Once these nutrition-management-culling trials have demonstrated the genetic potential of the native animals, improved genetic stock may be considered to the extent practical for livestock produced under improved feeding and management schemes in Lesotho.

(c) Crops Component

Considerable crops research has been conducted in Lesotho in recent years and continues today through several donor projects and on a smaller scale by GOL agriculturalists. A body of research data is available and should be refined and utilized by this project before any significant amount of additional crops research is initiated by FSRP personnel. One of the main problems will be the identification and evaluation of available data which are to be obtained from the various branches of government and donor projects. Notwithstanding the difficulty of this initial task, it is the position of the PP design team that it is more appropriate to begin development and research structured field testing of enterprise mixes with

the present state of knowledge than to initiate entirely new crop production plot research. Additional production research will be needed but should come as project identified and in part from complementary donor and GOL research projects and programs. The FSR initial efforts should strongly link the existing data base to the attitudes of the farmers and how they perceive their opportunities. For this reason it is imperitive that close working relationships at the administrative and subordinate levels be established with all other appropriate organizations prior to formal initiation of the FSRP.

During the life of the project there will be a need for FSRP personnel to conduct some applied, small-scale plot research to address problems encountered on grower-cooperator fields. Land and equipment will be established in each of the prototype areas to do so. It is not, however, an objective of the FSRP to establish a series of small experiment stations in the prototype areas which would remain at the end of the project.

Information obtained by the FP design team indicates that any farming systems (enterprise mixes) should take into consideration the sources of off-farm income and the relationship of these enterprises to on-farm enterprise mixes. As has been noted in the development and evaluation of on-farm enterprise mixes the appropriateness of the mix to the personal objectives of the farmer must be considered. The major research effort of the FSRP will be to develop enterprise mixes which will be acceptable to groups of farmers and to the individuals' objectives. Testing of designed mixes will be done almost exclusively on grower-cooperators' land. While the major initial thrust of crop research and enterprise mixes will be directed at the primary food crops of maize, sorghum, wheat, beans, and peas, specialty crops will be considered in the mixes where high potential for successful inclusion exists. Irrigated crop production will not be excluded from consideration, but will not receive the same emphasis placed on dryland enterprise mixes.

Cropping practices to be considered and tested if appropriate include various forms of multiple cropping: intercropping (e.g. maize and tomatoes), double-cropping, and sattoon cropping. Various special crops will be tested to determine their potential in a farm enterprise in combination with the traditional grain crops of Lesotho. The addition of a special crop to a farming system will be dictated by the presence of a market outlet, their effect on soil fertility and subsequent crops, as well as agronomic adaptation. Special crops in this context refers to those which have a relatively high cash value and include feed, fibre, oil seed and vegetable crops. Specifically a need has been recognized for a winter crop suitable for canning in order for the Asparagus Cannery (constructed under the Thaba Bosiu Project) to operate in the off-season.

3. Implications of Technology

(a) Employment Effects

The Farming Systems Project recognizes that the existing land tenure arrangements of Lesotho preclude large scale mechanization of the agriculture. Contrary to the typical development process which involves displacement of agricultural labor as a result of mechanization, this project may offer increased employment opportunities within agriculture. Sizeable acreages of arable land remain fallow (35% in 1976/77)* in Lesotho. If farming can

* Thaba Bosiu Rural Development Project "Fallow Fields in the Project Area" Planning and Evaluation Unit, unnumbered report August 1977.

be made both more intensive and more profitable, it will provide increased inducement for individuals to work on farms.

Traditional farming offers a poor income alternative to employment in the Republic of South Africa for able bodied young men. There is evidence that fewer employment opportunities will be available in the Republic for Basotho laborers. Development of improved farming systems will soften the impact of reduced employment opportunities in the Republic.

An increase in agricultural production will require a parallel development of an infrastructure for both provision of inputs and marketing of products. Employment opportunities will develop both with the growing requirement for non-farm inputs and the need for an improved and enlarged product marketing system. As an example, the introduction of a system of small farmer cattle feeding appropriate to the Lesotho Environment would lead to production of fodder within a crop rotation. An enlarged cattle feeding industry would compliment the proposed construction of an abattoir in Lesotho. The more that is done to intensify and commercialize agriculture, without major mechanization, the greater will be the associated employment opportunities. This project is designed to foster this type of increased productivity from the farming sector.

(b) Suitability for Use and Replication

The proposed research design is based on observations from cooperating farmers who are using recommended farming systems. Therefore, the success of the project depends upon development of both technologies and extension procedures which will lead to adoption. It is envisaged that all research from this project will produce results directly applicable to Lesotho farming conditions.

The major output of this project is to institutionalize within the Agricultural Research Division of the MOA a Farming Systems Section. The establishment of the Farming Systems Section coupled with the training components of the project will assure the capability of replicating the work throughout the country. A necessary condition for this replication in other areas is provision of an adequate input supply and product marketing system. The concurrent expansion of BASP throughout the low-lands of Lesotho and the building of PMC capability will assure this infrastructure for the major portion of the country.

(c) Host Country Capability for Operation and Maintenance

The GOL has stated its intention to develop a Farming Systems section within the Research Division of the MOA. A limiting constraint at this time is qualified Basotho personnel to staff such a section. A major component of this project involves both long and short-term training of staff. The cadre of people trained under this project, and possibly some from other activities (LASA, BASP, etc.), will provide an adequate nucleus for continuation of the section upon project termination. The only condition under which this will not hold - if there is not an adequate number of Basotho receiving graduate training. At the minimum, there should be at least four masters level Basotho staff in the Farming Systems section at the end of the project. One of these must hold an advanced degree in Farm Management (agricultural economics).

The parallel development and maintenance of research competencies in the area of crops, livestock, and conservation are required for a viable Farming Systems section. The MOA has indicated its intent to establish a well-rounded Agricultural Research Division.

(a) Environment

As this is largely a research and institution-building effort, the long-term environmental impact of the project will be very positive. As farmers adopt the conservation-oriented farming systems recommended by the project, the impact will be significant and highly beneficial to the environment. (See PRP, Section IIIF). A negative determination on the project's environmental impact was approved 12/20/76.

4. Engineering Analysis

The proposed construction element of the Project includes funding for [redacted], [redacted] and [redacted]. [redacted], however, exact site locations will have to be determined at a later date. Although preliminary plans are presently available for the field sheds, site selection will depend upon the location of the project test/demonstration areas. These locations will be determined by the Project team after their arrival in country. Therefore, cost [redacted].

The [redacted] is expected to be constructed in conjunction with a similar building funded under the Thaba Bosiu project. The actual site for this building has not been determined and [redacted] Therefore, it will be necessary to [redacted].

a. Sr. Technician Housing

The Project will employ nine (9) U.S. Technicians who will require housing in Maseru. As suitable housing is in extremely short supply, funds have been programmed within this project for the construction of six (6) Caledon Mark IV, houses. The remaining three technicians will utilize three houses previously constructed with U.S. funds under the Thaba Bosiu Project.

Recently contracts were negotiated for the construction of three (3) MK IV houses complete with servant quarters for slighly less than $27,600 each. The MOW estimates that inflation is averaging approximately 1.2 percent per month, which would add about 15 percent to today's cost for construction in about one year. This would bring the price of one house to about $28,000. To cover contingencies and other unforseen costs, an additional seven percent is added, making the projected cost of each unit $30,000. Therefore, the proposed $180,000 for the construction of six (6) Caleton MK IV houses appears to be a reasonably sound cost estimate. Complete plans and specifications for the Caledon MK IV house [redacted]. Five (5) units of this model have been constructed with AID funds and are presently occupied by AID technicians. Six (6) are under construction for AID technicians serving under other AID projects in Maseru. These plans have undergone four modifications and will probably undergo further changes. However, any modifications will be reviewed and approved by REDSO Engineering prior to contracting.

The actual sites for the above six [redacted] have not been defined to date. Plots [redacted] with [redacted]. A [redacted] to initial disbursement will be [redacted] submission of [redacted], satisfactory in form and

substance to AID [redacted] Sites selected will be subject to AID approval.

b. Field Staff Housing

Project personnel, in cooperation with U.S. technicians funded under the Thaba Bosiu Project, will select three locations in which to concentrate their activities. Basotho personnel will be posted permanently at these sites and funds are programmed in the FSR project to furnish [redacted] at each site. The houses proposed are standard [redacted]" style. These are two-bedroom houses, which are authorized for Government employees of the proposed grade and rank. Recently constructed units have cost $9,700 to which the inflation costs of $3,100 over a period of two years must be added. This will bring the unit cost to approximately $12,800. Two years inflation (15% p.a.) must be considered for these houses because the sites will not be selected or identified until six to 12 months after the arrival of the U.S. technicians in Lesotho.

The field locations will be in rural areas outside of Maseru, which will add to the cost of construction. The quantity surveyor of the MOW has made a study of the price variation for construction in remote areas vs. Maseru and has suggested that a [redacted] This would make the cost of each unit constructed in a remote area approximately two years hence $16,000 plus approximately six percent for contingencies and other unforeseen costs for a total of $17,000. Therefore the proposed $102,000 for the construction of six (6) "MORIA" style houses for this project appears to be a reasonably sound cost estimate. Complete plans and specifications have been developed and are available at MOW Maseru.

c. Field Shed Warehouses

The FSR project proposes the construction of a low-cost [redacted] at each of three selected work sites. These sites will not be selected until six to twelve months after the U.S. technicians arrive in Lesotho. Sketch plans show a simple building [redacted] containing an [redacted] tool and parts storage area, a [redacted] ft. dry storage are (seeds, etc.) and a [redacted] office space. The balance of the building will be storage space for tractors and farm machinery. Architects and quantity surveyor at MOW Maseru [illegible] estimate that each of these shed-warehouses would cost R. 4500 ($5,200) at today's price. This reduces to approximately $6.50 per square foot which seems reasonable for this simple structure. Inflation for these structures will have to be calculated for two years for the same reason given for the field staff houses, which will increase the cost to $6,877. Adding the same factor of 1.25 for remote locations will make the cost $8,596 and a contingency of approximately 5% will require the programming of $9,000 for each unit. Therefore, the amount of $27,000 for three field shed/warehouses appears to be reasonable.

The [redacted] as well as the actual [redacted] for these shed/warehouses [redacted] the inspection and [redacted]

d. Office/Laboratory/Library

To support FSR technicians an [redacted] complex will be required. Therefore, funds are being programmed in this project for the construction of building containing six offices, three laboratories and a library with approximately 36 x 40 feet for a total of 5040 square feet. In addition, $50,000 was allocated under the Thaba Bosiu project for the construction of an office/laboratory facility with 3600 square feet of gross floor space. This cost estimate is still considered valid. To date construction of this facility has not been initiated. It is therefore proposed that these funds be added to those programmed in this project for similar facilities and a combined office/laboratory/library complex be constructed as one unit with approximately [redacted] of gross floor space.

Only rough sketch plans are available for this complex; however, [redacted] Revision and alteration of these plans to accommodate the desired facilities will be made by architects employed by MOW.

Cost estimates have been prepared using a square foot figure of [redacted], or 170 Rand per meter square as recommended by MOW quantity surveyor. Using the above figures the projected [redacted] (gross floor space) would cost $91,425 at today's prices. An inflation factor of 15% would increase this cost to $105,139 if constructed one year hence. The addition of 7% for contingencies and a fixed sum of $5,500 for special built-in furnishings for laboratories and library will increase this cost to $118,000. Final plans and specifications are yet to be developed, however, the above cost estimates can be considered reasonably firm and neither liberal or restrictive and the actual cost will be very close to the estimates as presented. ≠

The [redacted] to date; therefore, [redacted] prior to initial disbursement, [redacted]. Adequate plans, necessary to satisfy Section 611 (a) will be required prior to signing the Project Agreement.

e. Disbursement Procedure

U.S. Funds programmed in this project for construction will be disbursed as fixed amount reimbursement. Upon the completion and acceptance by USAID funds will be disbursed as follows:

≠ by maintaining the same 5040 square feet limits.

six (6) Sr. Technicians houses $30,000 for each house
six (6) Field Staff houses $17,000 for each house
one (1)-Office/Laboratory/Library building $118,000
three (3) Field Shed/Warehouses $9,000 each

An appropriate advance would be considered upon receipt of formal request by GOL.

f. Household furnishings and office furniture

Standard GOL furnishings will be issued by GOL for the technicians' houses in accordance with MOW established procedures. Such household and office furnishings will be furnished by the GOL as host government contribution to the Project.

g. Satisfaction of Section 611 (a)

The cost estimates presented above, have been determined by utilizing current contract costs and in consultation with architects in the MOW. Such personnel are in daily contact with builders and contractors and are in a position to identify and forecast building costs. The lead time between project documentation and actual construction has been considered and anticipated inflation costs have been added. Funds have also been included to cover unforeseen costs and contingencies. Therefore, construction costs presented herein appear to be reasonably firm.

Building design; plans and specifications for housing construction will be one of the standard designs developed by MOW and authorized for the grade and rank of the intended occupant. These plans have been used for construction financed by AID for other projects in Lesotho and have resulted in acceptable houses. Therefore, housing plans and specifications can be considered available. However, only rough sketch plans are presently available for the office/Laboratory/library building and the field shed/warehouses. Therefore, with regard to the office/laboratory library building and the field sheds, conditions required by Section 611 (a) of the FAA have not been satisfied. Satisfaction of 611 (a) will be contingent upon submission of plans acceptable to AID that will include space and facilities as specified in draft sketch plans. The above in the case of the office facility will be included as a condition precedent to signing the Project Agreement; in the case of the field sheds, as a condition precedent to disbursement therefore, submission of plans and specifications for the Field Shed/Warehouses, and the allocation of land for their construction as well as land on which to construct the six Field Staff houses acceptable to AID shall be included as a condition precedent to disbursement of construction funds for these units (see Implementation Secti

III. B. Financial Analysis and Plan

The purpose of this section is to determine the adequacy and firmness of the financial plan and the overall financial soundness of the project. A summary of total project funding based on detailed cost estimates presented in Annex V is shown below. The sources and uses of these funds are analyzed next (Table 2) followed by an analysis of inputs measured against outputs in terms of costs (Table 3). The section closes with an assessment of the GOL's capability to meet the recurrent costs of the FSR unit after the project ends.

1. Funding Summary

Table 1

Project Funding [1/]

Lesotho Farming Systems Research Project

FY 1978-83

(000 US$)

	Foreign Exchange	Local Currency	Total	Percent of Total
USAID	$6,841.9	$1,435.4	$8,277.3	92%
GOL [2/]	-	724.0	724.0	8%
TOTAL	$6,841.9	$2,159.4	$9,001.3 [3/]	100%
Percent	75%	25%	100%	

2. Host Country Contributions

As this project will be funded under Security Supporting Assistance appropriations, the 25 percent host country contributions requirement does not apply. It is noted that a particularly large portion of total funding is for US technical assistance, which is required in this project to address the multiple and interrelated constraints facing the Basotho farmers. Were this component of assistance more typical of other project activities, the GOL contribution would be proportionately higher. Given the precarious international political climate the GOL is under, its status as one of the UN's "least developed countries", and its limited financial resources, it is felt that the GOL's financial contribution on the project is generous and a reflection of its strong commitment to the project.

1/ Prepared October 1977 by OSARAC, GOL and AID/W staff at Maseru

2/ Excludes allowances for inflation and contingencies in accordance with GOL budgetary procedures.

3/ Includes allowances for price increases of $1,455.4 and contingencies of $182.2.

3. Cost Estimates and Type of Financing

Detailed cost estimates broken down by type of financing are included as Annex V A. Accompanying "Explanatory Notes" show how these were derived. Financing is weighed heavily toward foreign exchange costs of $6.8 million or 76% reflecting mainly the project's heavy technical assistance component.

4. US Obligation and Expenditure Schedule by Fiscal Year

See Annexes V (B) and V (C). Funding is turned to meet the sequence of events programmed in the implementation schedule (Part IV (D)). A GOL Obligation Schedule is also attached as Annex V (D), and includes scheduling of in-kind as well as direct contributions.

5. Sources and Uses of Funds

Table 2 indicates the relative significance of each major assistance component in terms of costs and who will be financing them. Technical assistance accounts for the largest portion (55 percent) reflecting the multi-discipline requirements of the project. Following in order to significance, construction (16 percent), general services (9 percent), training (8 percent) and commodities (4 percent). Allowances for inflation and contingencies are 16 percent and 2 percent respectively.

Table 2

Source and Uses of Funds 1/

Lesotho Farming Systems Research Project

(000 US$)

	US AID		GOL 2/		TOTAL	
	FX	LC	FX	LC	$	%
Use:						
A. Staff and Consultants	$4,596.1	$ 45.0	-	$328.1	$4,969.1	55%
B. General Services	-	657.0	-	159.5	816.5	9%
C. Training	609.5	-	-	118.0	727.5	8%
D. Construction	-	403.3	-	100.0	503.3	6%
E. Commodities	328.8	-	-	18.5	347.3	4%
F. Inflation	1,168.4	287.0	-	-	1,455.4	16%
G. Contingency	139.1	43.1	-	-	182.2	2%
	$6,841.9	$1,435.4	-	$724.1	$9,001.4	100%

1/ Prepared October 1977 by OSARAC, GOL, and AID/W staff in Maseru

2/ Excludes allowances for inflation and contingencies in accordance with GOL budgetary procedures

6. Costing of Project Outputs/Inputs

Table 3 measures project outputs against inputs in terms of costs. Although there are six project outputs, these all relate basically to the first two - the Farming Systems Research Unit and the Farming Systems Program. Therefore, the outputs are aggregated as such in Table 3 in order to make the analysis more meaningful. The breakdown shows an appropriate project emphasis in terms of costs with 65 percent of the funds directed to creating more productive farming systems through the FS Program and 35 percent directly largely to building an on-going MOA research capability after the project ends.

Table 3

Costing of Project Outputs/Inputs[1/]

Lesotho Farming Systems Research Project

FY 1978-83

(000 US$)

PROJECT INPUTS	PROJECT OUTPUTS	
	Farming Systems Program	Farming Systems Research Unit
U.S.	$5,696.1	$2,581.2
Technical Assistance	3,683.6	957.5
Training	-	609.5
Construction	269.1	134.2
Commodities	104.1	224.7
Local Costs	411.0	246.0
Inflation	1,091.6	363.6
Contingency	136.7	45.5
GOL[2/]	$ 264.0	$ 460.0
Training	-	118.0
Unit Support	-	317.0
Program Support	189.0	-
Land	75.0	25.0
TOTAL	$5,960.1	$3,041.2
Percent	66%	34%

1/ Prepared October 1977 by OSARAC, GOL, and AID/W staff in Maseru

2/ Excludes allowances for inflation and contingencies in accordance with GOL budgetary procedures.

7. GOL Recurrent Budget Analysis

The 1969/77 budget estimates for the MOA total a little over $4.1 million compared to $3.5 million in 1975/76. This amounts to roughly 13 percent of the total GOL estimated recurrent expenditure. Within the MOA total, the largest share (38 percent) is for the Crops and Pasture Division under which fall all crop research activities. The total allocation for crop research activities is roughly 13 percent, or about $200,000 (no estimate of expenditures on livestock research is possible although, given the minimal research being conducted, it would be very small). This is a very low level of investment and reflects the lack of priority which has been placed on research compared to production activities.

Because local cost support is provided, the Farming Systems Research activity would add very little to the MOA recurrent budget in early years, primarily for staff salaries. However, by project end it is estimated that the increased demands on the MOA budget above current levels would be in excess of $150,000, or roughly 75 percent higher than the current research budget. It is estimated that $200,000 from the overall MOA research budget will be required to continue project-related activities in FY 1983. While in percentage terms there is a substantial increase, as a proportion of the total MOA budget, the amount is still small. However, the MOA will make the necessary research funds available. The strategy of providing decreasing amounts of local financing will help the MOA assume the responsibility without difficulty.

In addition to direct expenditure on research, as project-developed farming systems are replicated, substantial expenditures on implementation will also be necessary. A good share of these funds will be simply a reallocation of existing funds as the systems are blended into MOA programs. Nevertheless, additional funds may be required. No estimates of the amounts are possible. The willingness and capability of the MOA/GOL to provide the funding for systems replication will undoubtedly depend on the benefits GOL officials perceive as coming from the systems. Since the project is predicated on the belief and expectation that more productive systems can and will be developed, it is reasonable to believe that funding for the extension of better systems (benefit-producing systems would be forthcoming, i.e. money will be made available to a successful operation.

III. C. Social Analysis

While a research and institution development effort, the activities to be carried out under this project are designed to result in change. As change implies a socio-cultural effort, this analysis will be concerned with describing those people to be affected by the changes proposed by this project, the receptivity of Lesotho rural society to change, and the socio-cultural constraints and considerations that the project team must appreciate and further analyze to insure that changes proposed are acceptable to the real world of the Basotho farmer.

1. Beneficiaries

The beneficiaries of this project are the farmers of Lesotho. These farmers, in most cases, raise a few head of livestock and grow mainly subsistence crops. Ox (sometimes tractor) power is used for cultivation, and family labor is employed for weeding and harvesting. Farming practices are generally primitive and yields are low. The average size farm unit is 5 acres.

The initial target group are those individuals or groups of individuals who indicate, during in-village research, a desire and willingness to try improved farming techniques with the associated risks. These farmers will include those adopting technologies as village-level resources permit, and still others willing to accept higher risks where appropriate technology and resources are available to them.

The ultimate target group are those farmers or farmer groups who indicate a reluctance to improve traditional agriculture due to a lack of resources, financial or physical, or knowledge that change is possible. It is essential that the project's efforts be directed strongly towards this group as these farmers represent the mass of Lesotho's rural poor.

Care must be taken that those benefiting are not solely those whom are relatively better off. There is generally a high-positive correlation between the early adopters or "progressive farmers" in rural society and their level of well-being. Moreover, experience with introducing social change suggests, as already indicated above, that these early adopters will likely be the project's initial beneficiaries.

The PP design team recognize these facts, and accepts them. Nevertheless, it is the ultimate intent of this project to find means of reaching the more "inaccessible" farmers, and therein lies the project's real challenge. As recognized elsewhere in this paper, though, the capability to reach these more inaccessible farmers dictates that an adequate marketing and inputs infrastructure exists to provide the necessary incentives. Otherwise, success is practically precluded.

2. Benefits and Spread Effect

The benefits of this project will accrue to those farmers who are able to increase their rural income through adoption of more productive farm enterprise mixes. Benefits can be expected to flow during Phase V of the project and afterwards assuming appropriate and acceptable technologies have been developed and GOL commitment to the replication of farming systems technology continues. Alternative communication strategies will be examined in this project to insure that the most effective method(s) are recommended and employed to facilitate and maximize the long run spread effect.

3. Beneficiary and Project Team Participation

The project will work through existing village structures to ensure participation of both target groups. Village leaders will be identified as those key persons who, together with government personnel and project staff will develop guidelines for project activity in the prototype areas. This process and its guidelines should then be documented for duplication to other areas outside the project area.

Any outside stimuli provided by the project in terms of new concepts, staff, structures or equipment will certainly affect existing institutions and the population in the project's area. It will also affect those areas immediately outlying the project area. To assure minimum difficulty and optimum success, it is imperative that close contact be maintained with village leaders, village institutions, village target groups, and those government officials directly involved in the project activity from the beginning of the project. In this instance close contact is defined as having daily contact with those institutions and populations that will be affected. Project technicians and government officers involved in social analysis, farm economic analysis, communication and information, and livestock management should be prepared to spend considerable time in the project area. Other project staff members including the Team Leader, Agronomist, Marketing Expert, Soil Conservation Engineer, and Administrative Consultants would work daily with other staff members and government officials in the field. This close contact with the rural population should help in building confidence and trust in the project and government for not only the duration of the project but in the duplication of Farming Systems by Government at the end of project life.

To be successful the project team will have to be aware of and develop appreciation for the socio-cultural characteristics outlined below along with some possible effects of project-generated information. A concluding section provides a brief discussion of factors which the implementing team will need to examine in carrying out the farming systems research.

4. Socio-Cultural Characteristics

(a) Cultural Homogeneity

Under the direction of Moshoeshoe I (1786-1870) the Basotho Nation became a reality, uniting a number of clans and tribal groups. These were dominated by a group known as Bakoena, which, till the leadership of Moshoeshoe I, tried to influence the nation as a whole to adopt its laws, and customs. As recorded in Poulter, "It can be said that, on the whole, regional difference among the population of Lesotho can no longer be explained primarily through differences in historical, social or political characteristics. As a result of the foregoing of Lesotho's heterogeneous population groups into one Basotho Nation, Lesotho is now already for more than a century one relatively homogeneous area, with its people sharing basically the same historical and political events, undergoing fundamentally the same social and cultural influences and transformations."*

(b) Population

A preliminary report from the 1976 Population Census (Bureau of Statistics) shows the total population in 1966 and 1976 (including those present in the country and those absent) to be as follows:

* Poulter, Sebastian, Family Law and Litigation, Oxford, 1976

	Males	Females	Total
1966	465,784	503,850	969,634
1976	586,870	627,090	1,213,960

The total figures for these two dates imply a rate of population growth of about 2 percent per annum. This is generally consistent with information reported by Monyake for 1967-68 and 1971-73 that gave crude birth rates of about 36 (1967-68) and 37.8 and crude death rates of 17 and 15.9 in the same two periods respectively.* The age specific birth rates in 1967-68 imply that the number of live births to a woman who had completed her reproductive life is around 5.65. The proportion of dependents in the 1966 census was 45 percent while in a 1968-69 survey it was 47 percent.

(c) Education

In 1975 Lesotho had roughly 222,000 primary, 15,800 secondary and 350 university students. Girls generally outnumber boys in the system, particularly at the primary level where they comprise nearly 60 percent of the students. Educational attainment is correlated with leadership although a study by Maes indicated that, in spite of being generally less well educated, men tended to dominate village leadership positions.** In active villages (defined according to motivation, organization and production in self-help projects) 75 percent of the leaders were men. This pattern fits in well with the tradition amongst the Basotho that men are given all the powers of decision-making and responsibility. Women, traditionally, are not allowed to participate in village business discussions.

(d) Labor Supplies

Economic opportunity has attracted over half of the male labor force to off-farm employment in Lesotho or in the RSA. The 1969 male labor force figures show:

	Numbers	Percentage
Employment in Lesotho in Agriculture	135,000	50%
Paid employment in Lesotho	15,000	6%
Paid employment in RSA	120,000	44%
Total	290,000	

* A.M. Monyake, Report on the Demographic Component of the Rural Household Consumption and Expenditure Survey, 1967-1968, Part 2, Lesotho: Bureau of Statistics, May 1973

** Maes, Yvonne, Formal Education and Its Relevance to Self-Help Community Development Work at Upper Qesse, Lesotho. A sample of 40 households revealed only 12 male heads of household were at home at time of the study (30 percent). Yet of 40 leaders, 60 percent were men.

As Poulter has observed, "there is a pattern of periodic visits to South Africa by migrant labourers." It will be noted that the percentage of migrants starts to rise around the age of eighteen. This is the age at which a man first becomes liable to pay taxes and it is also the minimum age for employment in South African mines. Of the men aged between 20 and 39 those absent exceeded those present in Lesotho (see table below).

Table 3: Comparative Analysis of Basotho Males Present in Lesotho and Absent in South Africa on the day of the 1966 census, by age:

Age	Present	Absent	Total	Absentees as Percentage of Total
0-16	205,922	5,260	211,182	2.5
17-19	19,584	5,871	24,455	23.
20-39	59,555	69,845	121,400	51.
40-49	30,704	14,966	45,660	33.
50-64	31,936	6,233	38,169	16.
65 and over	19,015	908	19,923	4.5
not stated	1,371	1,267	2,638	-

Poulter assumes a working life of 47 years, or from 17 to 64, and calculates that about 38.5 percent of the male labor force is absent from Lesotho at any one moment of time. However, he states this underestimates the percentage of people for whom migrant labor is an essential feature of their way of life. This isdue to the fact that the visits to South Africa for work are made at periodic intervals according to a relatively stable pattern.

Bearing in mind the periodic nature of most employment in South Africa and the seasonal variations, it seems probable that the number of workers abroad at any one time represents between two-thirds and three-quarters of those who migrate at some time every year. This would suggest that about 55 percent of the male labor force are 'professional' migrant workers and even this figure may be conservative.

Why do these men continue to go back year after year? In the references quoted it is pointed out: at the end of a man's career as a migrant he puts a great effort into his farming to try to make enough to remain at home, but he probably will have a bad season within the first few years, and since he is not quite old enough not to work he returns once more to his work place in the Republic. This may happen several times until he is too old to continue migrating. But many men return sick and find it impossible to give much energy to the task of domestic reconstruction.

(e) Power Structure

The Principal Chief patrilineally inherits a certain area of the country of Lesotho over which he has jurisdiction. In turn, he may divide his area and appoint Ward Chiefs over newly formed sections. The Ward Chiefs would most probably be brothers or close male relatives. To a certain degree the Ward Chiefs function independently of the Principal Chief.

The Principal Chiefs and Ward Chiefs have jurisdiction over the Gazetted and Local Chiefs. A Gazetted chief is a recent idea introduced to tax purposes. If the population under a local chief reaches a certain number, this chief is Gazetted and, like a civil servant, is paid by the government. If he doesn't have the number of persons needed he is termed a local chief. These chiefs are, by tradition, related to the principal chief and are appointed by him.

Under the local or gazetted chiefs are the sub-chiefs who function as advisors to the chief or his wife (chieftainess) in his absence. The sub-chiefs are appointed by the gazetted or local chiefs.

Small communities have built up outside of many villages because of the population expansion. These are governed by headmen who are appointed by the chief or the people of the village.

The local chiefs, whether gazetted or not, and headmen may allocate and reallocate land with the advice of the local Land Allocation Committee. A principal chief may control areas in the mountains for grazing of livestock belonging to people under his jurisdiction.

A recent modification of the historical system described above is by appointment, by government, of a 'principal citizen' who usually is on, or chairs, the Land Allocation Committee which advises the chief on crop and range land allocations. Actual land and range allocation procedures are discussed in detail below.

(1) Land Allocation

Traditionally, the Mosotho was given three fields, one for himself and two for his wife and children, each field measuring two-three acres. If he had more than one wife he would receive two extra fields for each wife. Although provided land, the wife does not bear the responsibility for it. The man bears the entire responsibility over the household.

With the population growth, however, every man cannot expect to have fields of his own. The waiting time for the allocation of land is long and he may not receive three fields. This is shown in the statistics below:

	1949-50	1960
Number of landless households	11 700	14 780
Percentage of landless households	7.2%	8.5%
Average acreage per household of those with lands	5.75	5.4
Percentage of landholders who had less than four acres	35.7%	44.3%

The average size of the majority of the holdings is too small to supply the basic requirements of families. The Thaba Bosiu Planning and Evaluation Unit found land holdings had dropped in the Thaba Bosiu project area from 5.4 acres in 1960 to 2.2 at the present time. (Nation-wide the average size holding is still short 5 acres).

While an individual down not "own" or "lease" land in the sense known in the Western world of "freehold" farmers, rights of the person to the tribally allocated land are not easily violated. The tribal traditions are very strong and unwarranted in irregular practices with regard to land and its ownership/utilization are probably less troublesome in this system than in the systems of the West. A further point must be noted that under the tribal allocation system it is difficult or virtually impossible for unethical or highly sophisticated non-farm individuals to collect large holdings to the basic disadvantage of the average rural person as has occurred in varying degrees in parts of the developing world as freehold systems were introduced and adopted.

It is clear that the FSR project will need to study and analyze the land allocation system carefully and assume that proposed management or technical concepts are basically consistant with the constraints or benefits inherent in the system.

It is clear such studies must note the modifications and adaptations that are already being made to the traditions affecting land use. For example, traditionally all farm land was released to open grazing at the end of the crop season. Increasingly individuals are fencing all or part of their cropland and by so doing, restricting grazing to their own stock. Similarly the traditions of land use did not include concepts of forage production. Again, this practice is initiated in many areas.

(2) Grazing Zones

The principal chief over a certain area in the lowlands may have a designated area in the mountains where his people's stock are allowed to graze freely. When a person wants to graze his animals in the mountains he simply asks permission of his principal chief and moves up during the summer months. If his principal chief doesn't have a designated area he can gain permission from another principal chief through his local chief to graze his stock in a mountain area.

The principal chiefs acted as grazing controllers and in recent years have been assisted by GOL grazing supervisors. With the population expansion in the lowlands and the inconvenience of migrating between the lowlands and mountains many people have settled in the mountains. These people now claim the grazing area is their own under the jurisdiction of their principal chief. This is limiting the grazing areas available to the lowland people who wish to migrate to the mountains in the summer to graze their stock.

5. Receptivity of Rural Society to Change

Change involves more than self-motivation on the part of the individual. One must also look at the motivation of a village community, i.e. group dynamics, leadership, effect of education on farming management, methods and production, and at such factors as labor/risk aversion.

The Basotho rural people have indicated a willingness to change in a number of cases, such as in the various area development projects throughout the country. Some of these innovations, such as land reallocation as seen in the village of Ratau (Thaba Bosiu Rural Development Project), appear to possibly be successful. After the villagers observed conservation works on part of their village, they requested that terracing be done on all the village lands and their land be reallocated on the terraces. Another

example of successful change is the Village Distribution Point--Supplies and Marketing System, where inputs such as seed and fertilizer were made available at various stores throughout the Thaba Bosiu Project area. The stores are managed by an elected agent with a committee to back him up. This system has worked well, has now been adopted by the Thaba Tseka Mountains Project and forms the background for the Basic Agricultural Services Project (discussed elsewhere).

Asparagus growing, though a relatively new idea in specialty crop production and confined to a small section of the Thaba Bosiu Project area, has offered profits to those farmers who were willing to grow it as a demonstration on their land. This development is based on a canning factory for asparagus and an export market in Europe, besides the domestic market. for the fresh produce.

A credit system for loans on equipment, supplies and tractor plowing has reached only a small number of farmers, but will probably spread as the concept of the system and knowledge of how it works becomes more familiar to farmers through the BASP program. Banking is a recent discovery for urbanites in Lesotho and the rural farmer will need time before he learns to trust the system and feel secure in participating in credit and banking.

These are just a few examples of changes that have or could work for and benefit the farmer. The Basotho have remained quite open-minded and patient with all the various schemes or projects that have been tried in their country. This is remarkable considering the number of unsuccessful schemes they have watched come and go.

One must also be careful when trying to retain traditional systems with "slight" alterations. The case of food aid programs is a good example. These were based on the system of 'matsema' where a chief would give gifts of food to those people who worked on village development. The traditional system has now been replaced with food aid programs which provide payment for work, where as before food was given as a gift.

6. Possible Socio-Cultural Effects and Considerations of the Project

(a) Family and the Role of Women

Under the existing system the resources that are complementary to farm labor (land, technology, etc.) are not adequate to provide a return to the farm household head that is competitive with off-farm opportunities. This provides an incentive for the male head of household to migrate. On the other hand, in order to maintain his rights to the land and the security it provides, his family must remain on the land, although the resources (labor and management) available to the family are not adequate to farm five acres. As a consequence, the land is under-utilized and the male labor force does not become fully skilled in farming by "learning by doing". When the young men normally would be learning to farm, their father (teacher) is away a portion of the time. When the men retire it is not easy for them to learn good farming practices and their health may be impaired.

In addition to its economic and agronomic research studies, this project will examine the social implications of alternative ways of managing the land (sharecropping, cooperative farming, contract plowing, etc.) that may provide returns to some of the male labor force in rural areas more competitive with off-farm employment opportunities. These alternatives, if successful, would also result in increased returns and more efficient use of land and perhaps an opportunity for on-the-job training for rural youth.

The project will also examine the social implications of different mechanization strategies associated with the alternative types of managing farm units. The implications of mechanization on the level of farm employment and the return to farm labour are important variables in this case. If the project expanded rural employment for males, it could also help to strengthen the family which is now placed under extreme stress by the extended absence of the father.

Also, as was stated earlier, because husbands are often working off-the-farm, women currently have a major responsibility in farming activities. De facto family decision-making rests with the wife when the husband is away and shifts from wife to husband on his return. Nevertheless, the wife is constrained where major decisions are concerned when her husband is away with possible detrimental effects on the management of the farm. For example, timely field operations are critical yet the decision to hire a tractor to plow will probably be delayed several weeks as communications flow back and forth. When the husband is home, usually for two or three months at a time, he could assist in working the land; however, many times the husband is sick from the difficult working conditions in the mines. In this case, manpower for farm labor would still be lacking where the wife must carry out the necessary steps in working the family fields.

It would be a fair assumption that with the husband being gone during part of the year, the wife having to tend to houshold duties, children and the land, and the children being occupied with school or family arrivals, good farm management is not practiced.

Unless the project can design one or several systems that will allow a man from the land to raise living standards for himself and his family to a level he views as socially and economically competitive with off-farm employment, the man will continue to seek such employment.

It should be noted that if a system is not designed to work using a family unit, separation of the family may be further encouraged. An example of this is seen as some projects are designed in a manner whereby a man will give up his right to the land and machinery will replace manpower, i.e. the men become free to seek off-farm employment

It is clear this project must study possible new roles for women, including the question of women being farm managers capable of making decisions while the husband is away. A sensitive issue will be whether the wife would control farm income as her husband does with the money he earns off the farm.

Recognizing the importance and influence of women, it is suggested that the GOL and project team give serious consideration to including women among the MOA field staff employed to implement the project. Development of appropriate enterprise mixes should also give due consideration to the fact that a large number of the farm units involved in project tests and replication efforts will be managed by women at least part if not all of the time. A study entitled "Women in Agriculture" prepared by the Planning and Evaluation Unit of the Thaba Bosiu Rural Development Project is included as Annex VII to further explain the role of women in Lesotho's agricultural development.

(b) Village

With a new farming system a variety of changes in the role and status of the Chief and other local leaders such as the government-appointed "principal citizen" are possible. Since the power and status of the chief are closely associated with the overall well being of the village, a system which leads to improvements in the village could enhance the chief's position. Conversely, a system which fosters greater individual decision-making could lessen the chief's power. Also, if a group of prosperous farmers were to emerge, this could alter the village power structure. It will be very important for the project to analyze group dynamics at the village level and also to develop systems which do not unnecessarily undermine traditional structure. In most cases this will require a close working relationship with the chief to facilitate the introduction of new ideas, to gain cooperation, and to prevent negative attitudes which could prevent successful implementation.

(c) Socio-Cultural Considerations for the Project Team

It is important to take the culture, the power structure, the characteristics of the population, labor and other things into consideration in considering alternative enterprise mixes. Project-supported activities will be successful only if farmers are motivated to participate. The activities must provide significant benefits to the farmer to engage his participation and he must perceive that he will benefit, which automatically infers that he considers the risk involved to be acceptable. A clear understanding of the culture, leadership and power structure on the part of project personnel is required for project success. Biological physical, or mechanical developments could prove economically advantageous in one socio-institutional environment and not in another, even though the natural physical environments were identical. For example, the land tenure system in Lesotho may make many strategies that are advantageous in other countries to improve range management unacceptable or unworkable in Lesotho.

Specifically, the team must consider such things as:

(1) Capabilities of the Participants

- Motivation: How restricted are the rural people by government, tradition and economics? Is self-motivation restricted?
- Skills: What is the technical level of the average farmer in farm methods, mechanics and vocational skills? How adept is he/she at learning new skills?

Leadership: Who would guide the farmer and boost his morale to promote agricultural productivity?

(2) Diffusion

Will the project touch all farmers in prototype areas or build on a "chosen few" as contractors and progressive farmers leaving the rest to communal farming and/or off-farm labor? All people will be affected, but to what degree?

(3) Benefit Incidence

Is improved rural income being equitably distributed within the project's target population?

Conclusion

As pointed out, the direct socio-cultural effects of the project are difficult to predict and, because of the limited geographic spread, will be small in terms of people affected. However, for the farming systems to be replicable they must be in tune with the society. It is for this reason that a full time sociologist is a part of the farming systems research team. Through this specialist, in cooperation with other project staff, the socio-cultural acceptability and desirability of any proposed changes can be measured and monitored, thus preventing detrimental socio-cultural effects.

III. D. Economic Analysis

A significant amount of research on the returns to agricultural research has been done. The path-breaking research was by Zvi Griliches * which showed handsome returns (35-40 percent) to investment in research on hybrid corn in the United States. Later studies by a number of researchers on a number of crops reported similar high returns to research investment (21-93 percent).** In yet another study Griliches used an aggregate agricultural production function for the United States to measure the contribution of various agricultural inputs to the increase in agricultural production. One of these inputs was expenditure for agricultural research and extension. Again the social returns for the research and extension inputs were a multiple of the social costs. Finally, Evenson's and Kislev's work on maize and wheat research shows an average return in 36 countries of more than $220,000 from an investment of $40,000 in Latin America and Asia to $125,000 in North America and Northern European countries to an excess of $200,000 in some African countries. These findings suggest that the returns to research vary significantly from country to country, but are generally always positive. These studies are complicated by the fact that the research (largely supported by the government) is a public good and the returns from the research cannot be captured directly, i.e. the research produces no revenue. The returns from such research are not generally private returns but rather largely social returns. Thus, while the magnitude of the returns to agricultural research (and extension) are generally high, they are sensitive to the assumptions made when measuring returns and costs and the particular country involved.

Also it is obvious that although agricultural research is generally a good investment, proper design is critical. If an inappropriate enterprise combination or a crop variety that was susceptible to blight or rust were pushed by the extension system, this could result in crop failure and negative returns to the farmer. Similarly, an applied research project that does not have an adequate background of basic research to provide the necessary guidance, will not be productive. An appropriate mix of non-applied and applied research, education and extension is necessary to reap the rewards of investment in agriculture research.

Since all studies of returns on investment in agricultural research have been done ex post or after the fact, it is not possible to compute a social rate of return to Lesotho from the farming systems research project. However, any country that expects to improve the level of living, especially among the rural poor, must increase the productivity of its agriculture. This project represents the most cost-effective means of carrying out farming systems research in Lesotho.

The purpose of this project is to increase rural productivity. The emphasis is upon development of appropriate enterprise mixes for selected

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* Griliches, Zvi: Hybrid Corn: An Explanation in the Economics of Technological Change" Econometrica 25: 501-22, October, 1957.

** Evenson, Robert E. and Joan Kislev: "Agricultural Research and Productivity", Yale University Press, 1975, p.12

prototype areas. However, the procedure and institutional development aspects assure that the farming systems approach can be replicated for the remaining agricultural areas of Lesotho. Other donor projects have generally involved area specific development schemes which have limited capability for extension beyond the rather limited project area. Another alternative would be to develop a crop specific program, e.g., maize production; again persuasive arguments could be made to justify this type of approach.

This Farming System project, while perhaps not as immediately dramatic and headline catching as the above mentioned alternatives, it is more cost-effective. It proposes to address not only the issue of longer term and rationalized, improved rural enterprises mixes involving higher value, more labor intensive practices, and crops but will simultaneously build institutional capability and maturity as well as Basotho analytical skills. This will help assure that the GOL need not be at the mercy of or dependent upon short-term experts' allegations and opinions of what a proper project or course of action should be for the Lesotho rural sector.

It is the judgment of the Design Team that the greatest economic return to the Lesotho farmer will come from securing adoption of known production technology rather than from an emphasis upon further refinement of production information. A necessary condition for adoption of this technology is that [illegible] be packaged in a total system which is applicable to local conditions. Applicability is defined as income increasing enterprise mixes which are: acceptable to farmers, cognizant of the managerial ability of farmers, appropriate to the resource base of Lesotho farmers, and which afford protection of the land base. Continuing research will be forthcoming from the other divisions within the MOA which will be used to refine the enterprise mixes recommended by the Farming Systems section, Development of the Farming Systems section is imperative to integrate the entire MOA research program and focus it upon recommendations which consider the entire farm and farm family situation

The training component of this project recognizes the current capacity of trained Basotho personnel. It would be both operationally and economically inefficient to conduct this project without providing sufficient training to assure the capacity for the activities to continue upon completion on the project. A combination of training programs is recommended as most cost-effective. The long-term degree training will provide staffing for continuation of the Farming Systems section. This represents an investment in training which will have a long-term payoff. The shorter term training is necessary for immediate prosecution of the project and focuses upon training village level extension workers. There will be an early pay off from this training and those individuals will provide a trained corps available to extend the farming systems approach beyond the prototype areas. The mix of training programs should reduce the manpower drain upon an already limited Basotho staff as well as being the most cost effective for this type of project.

This project envisages a very limited investment in facilities, structure, equipment and operations budgets for expatriate research other than that conducted on Basotho farms with Basotho farmers. The central focus is upon applying research findings on the farm and developing an institutional capacity to continue this thrust of applied research. This will help assure the capability of the country to continue the program with their own resources upon completion of the project and is clearly cost-effective.

The Design team contends that the strategy chosen is more cost effective than any of the alternatives because it provides a needed mix of training of Basotho to intermediate levels (in-service, short-term, B.S. and M.S. both in Lesotho and abroad, some expatriate assistance and some provision of equipment and supplies). Together this supplements and coordinates current activity and builds on the judgement that a body of research knowledge exists for Lesotho and for ecological and climatic areas similar to Lesotho. Thus there is only a limited need to undertake more basic research in order to benefit from this body of knowledge and in general, the project proposes to draw upon the world-wide resources of superior, internationally recognized institutions for these needs. This project recognizes the need to coordinate and supplement the available information with modest amounts of additional resources to provide the maximum impact from such information.

In summary, a review of Lesotho agriculture reveals two major issues: (a) farm incomes are extremely low and (b) considerable known profitable technology is not being used by Lesotho farmers. This project proposes to concentrate on developing a scheme which will enhance farmer adoption of technology through an increased recognition of the total farm and family context in which farming is conducted. This should substantively enhance the payoff from past research. The institutionalization of the system within the MOA should insure its perpetuation. Therefore, it is concluded that the project is economically cost-effective within the constraints assumed to exist.

IV. IMPLEMENTATION ARRANGEMENTS

A. RECIPIENT PROJECT ADMINISTRATION

1. Key Administrative Units

(a) Ministry of Agriculture

At present, the organizational structure of the Ministry of Agriculture (MOA) is divided into two broad sub-divisions, one for administration, the other for technical services (see Chart 1). In addition, there are two major autonomous government agencies: the Livestock Marketing Corporation and the Produce Marketing Corporation. The divisions falling under the Ministry's administrative and technical "arms" are shown in Charts 2 and 3 respectively. The proposed Research Division within which the FSR Project would function has been sketched in Chart 3 as shown. Final decisions concerning creation of the Research Division are to be made by the GOL in the immediate future.

The present administrative structure of the MOA includes the Minister of Agriculture (MA) as the top administrative officer. Primary responsibilities are at this overall policy level taking into consideration political and financial constraints. The MA is supported by a Permanent Secretary (PS), a Deputy Permanent Secretary (DPS) for technical activities, a DPS for administration, and the managing directors of the autonomous marketing corporations. The primary responsibilities of the PS are at the policy and coordination level with administrative counterparts within the GOL. The DPS of the MOA's technical arm shares assigned responsibilities with the PS but in addition is responsible for the coordination and supervision of the Ministry's technical agricultural activities.

(b) Ministry of Agriculture Research Division

At this time, the MOA is moving to formalize the Research Division of the MOA. It will be headed by a Director with the assistance of a Deputy Director. These two principle administrative officers in the Research Division will supervise and direct the activities of up to seven sections among which will be the Farming Systems or Farm Management Section, the exact name of which is not settled. Within each of the sections will be a grouping of personnel with supporting subject matter disciplines. Each section will be administered by a Chief of Section who will be responsible to the Director of Research through the Deputy Director. Personnel within each section will be responsible for the effectiveness of their program to the appropriate Chief of Section. The major duties of the Chief will be the coordination of activities within the section and with other sections.

(c) Farming Systems Research Section

The FSR Project section will include the positions identified in the project paper. In addition, the section will likely encompass the activities of Basotho staff working in the areas of extension, rural sociology, agricultural economics, human nutrition and home economics.

The FSR Project team will be headed by a Chief who will serve as Chief of Section until such time as the GOL has personnel to assume this role. The Chief of Section will report to senior MOA management through the Director of Agricultural Research, who, in turn, will report directly to the Permanent Secretary.

(d) Coordination

It will be extremely important to the successful operation of the project to have coordination not only within the Research Division but with the other MOA Divisions. Responsibility for such coordination lies primarily with the respective directors. Additionally, cooperation and coordination among staff in the various divisions is exceedingly important and will be fostered in every way possible. The project will of necessity have to cooperate and coordinate with the other divisions in as much as they must rely on the other divisions for technical support and information in various subject matter areas.

2. Management Capabilities

(a) Existing Personnel Resources

At the present time it is readily apparent that the MOA lacks adequate personnel in either sufficient numbers or level of training. The PRP team attempted to identify precisely the number of MOA personnel, level of expertise and job assignments without success. The PP team has encountered the same problems. Part of the reason apparently is that final decisions concerning the organization of the Research Division have not as yet been made. Another factor involved is the number of Basotho in training abroad through the several donor projects. Still another factor is the changing roles of MOA personnel as needed to cope with the demands and personnel needs of the several donor projects. It is apparent that a number of individuals have multiple duties. It is the understanding of the PP design team through conversation with the PS that the final decisions concerning the formation and organization of the Research Division of the MOA will be made within the next few months. At that time the situation should be clarified.

(b) Project Personnel Needs

The technical positions to be supplied by the contractor are identified elsewhere in this document. It is paramount that counterpart Basotho personnel be identified and assigned to each technical position. If qualified Basotho personnel exist at present they should be assigned upon implementation of the project. It seems apparent, however, that this is not likely and that individuals will need to be trained. This will, of course, delay the counterpart technical expert working experience until such a time as they return from training. Phasing in the project recognizes this and provides for counterpart working relationships at the earliest possible time depending on the length of training required for each counterpart position.

In order to most effectively overcome the constraint to adoption of better agricultural practices it will be necessary to have constant contact with the rural people and influential groups and individuals in the prototype area. This can probably best be accomplished by the employment of two qualified Basotho nationals to live and work in the prototype areas. In as much as several strategies will be evaluated in the three prototype areas, it will be necessary that such staff be hired for only one prototype area. In another area existing extension agents will be utilized. In the third area one or more returning "short term" trainees will be assigned.

(c) Physical Facilities

The present physical facilities are inadequate. Contained within the budget portion of this document are funds to build the required physical facilities. It is the understanding of the PP design team that the GOL has plans to construct an office-laboratory building under funding provided by the Thaba Bosiu Project which would become available to the FSR Project with the phasing-out of the Thaba Bosiu Project. An additional five (5) offices and three (3) laboratories will be added to the proposed structure to house the FSR Project team and to provide the required laboratory space.

The FSR project provides for the construction of additional library space and field sheds in the prototype areas. The present library is inadequate both in facility and in content. Field sheds will be required in each of the three prototype areas to provide security and maintenance for equipment and a place for project personnel to work for short periods while in the field. Proposed plans for the above facilities are available.

B. AID PROJECT ADMINISTRATION

AID management responsibilities will be discharged through the preparation of a life of project work plans for each phase of the project, an annual Project Appraisal Report (PAR), and three external evaluations. Work plans will be developed jointly by the MOA, contractor, and AID staff. The Regional Development Officer, OSARAC, or his designee will have AID management responsibility. Day-to-day monitoring will be by the AID Operations Officer in Lesotho or an appointed project manager. Technical backstopping will be provided by the Maseru Agricultural Officer and Regional OSARAC staff.

The AID Operations Officer or an appointed project manager will serve as the primary contact point for the contract Chief of Party and will be responsible for identifying problems and obtaining necessary decisions from regional staff on contract and project matters. It is expected that OSARAC administrative and technical staff will continue their present close liaison with the GOL and its MOA which involve frequent working meetings with the Permanent Secretary, Deputy Permanent Secretary, and division chiefs.

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

AID will disburse funds for local costs on a reimbursable basis following procedures to be defined in project agreements. Criteria for the release of funds under the farmer guarantee program will be determined during Phase II of the project. Funds for the construction will be disbursed on a fixed amount reimbursement basis. If advances are necessary, procedures will be spelled out in the Project Agreement.

C. CONTRACTOR

The implementing agency will have basic day-to-day responsibility for operations. Among these responsibilities will be the provision of all technical services, including consultancies, identification and placing of trainees, procurement of locally secured and U.S.-ordered commodities,

preparation of plans of work and budgets for approval by OSARAC, and GOL approval and preparation of annual or regular reports as required. It is also expected that the implementation agency's field staff and home staff may, if appropriate and requested, participate in project reviews/evaluations.

D. IMPLEMENTATION PLAN

1. IMPLEMENTATION SCHEDULE

(Also see Section II. B. 6 "Project Phasing")

DATE	ACTION	RESPONSIBLE ORGANIZATION
November 77	PP completed and submitted	OSARAC
January 78	PP approved	AID/W
APRIL-DECEMBER 78	PHASE I	ORGANIZATION SI PRIMARILY RESPON
April 78	Prodg, PIO's signed	OSARAC/GOL
July 78	Construction starts; First participants depart	GOL/OSARAC
August 78	Technical assistance contract signed	AID/W, Contractor
October 78	Project preparation visit by team leader and preparation of work plan for Phase II	Contractor
JANUARY-JULY 79	PHASE II	ORGANIZATION S PRIMARILY RESPON
January 79	Team Leader and Administrative Officer arrive	Contractor
April 79	Farm Management Economist, Social Analyst, Agronomist Animal Management Specialist, and Conservation Engineer arrive	Contractor
July 79	Communication, Information, Extension Training Specialist and Marketing Specialist arrive	Contractor
	Work plan completed for Phase III Village contacts initiated in prototype areas	Contractor/GOL/AID

AUGUST 79 - JULY 80	PHASE III	ORGANIZATION(S) PRIMARILY RESPON
December 79	Baseline social and economic data collected and analyzed	Contractor
	Formal system of documentation and reporting of research results established	Contractor
	Professional relationships with world-wide research institutions established	Contractor/GOL
	Research library established	Contractor/GOL
January 80	First evaluation, PP reviewed	Contractor/AID/ GOL
April 80	Baseline survey and analysis of rural attitudes and aspirations completed	Contractor
June 80	Revised procedures for innovation phase of testing formulated: work plan completed for Phase IV	Contractor
AUGUST 80 - JULY 81	**PHASE IV**	
August 80	Intensive field work with innovation level of cooperators	Contractor
January 81	External evaluation, PP reviewed	AID/W
May 81	Final design and work plan completed for Phase V	Contractor
AUGUST 81 - MARCH 84	**PHASE V**	
August 81 - March 84	Refinement and application of farming systems to: a. early and late adopters b. different risk situations c. similar physio-graphic regions outside of prototype areas	Contractor/GOL
December 83	Program and plans for replication of farming systems program developed and accepted or under consideration by GOL	Contractor/GOL

PHASE V - continued

AUGUST 81 - MARCH 84	PHASE V	ORGANIZATION(S) PRIMARY RESPON
January 84	End of project survey and analysis of rural attitudes and aspirations completed	Contractor
March 84	Final technical assistance staff departs	Contractor
	POST PROJECT	
June 86	Post project evaluation	AID/W, Contractor, GOI, OSARAC

D. CONTRACTS

Technical Assistance:

AID/W will let one institutional contract to cover salaries and other generally provided costs and overhead for the technical field and backstop support provided in this project.

Construction:

A local contract will be let in Maseru to build the physical facilities provided in this project.

E. EVALUATION ARRANGEMENTS

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

1. Internal Evaluations

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

2. Annual Evaluations

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

3. External Evaluations

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

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

F. CONDITIONS, COVENANTS AND MISCELLANEOUS STATUS

This project includes the following conditions and covenants.

Prior to signing the project agreement the GOL must submit adequate plans and specifications for the office/laboratory/library facility sufficient to satisfy the requirements therefor contained as part of FAA Section 611(a).

Prior to the initial disbursement of the Grant, the GOL must submit:

1. Evidence that adequate land is available and has been allocated for construction of senior technician housing and the office/library extension facility;

2. Evidence that a farming systems research section within the MOA, has been established and that all necessary positions within the section have been properly established and gazetted.

Prior to any disbursement for construction the GOL must submit:

1. In the case of senior technician housing and the office/library extension facility, final plans and specifications;

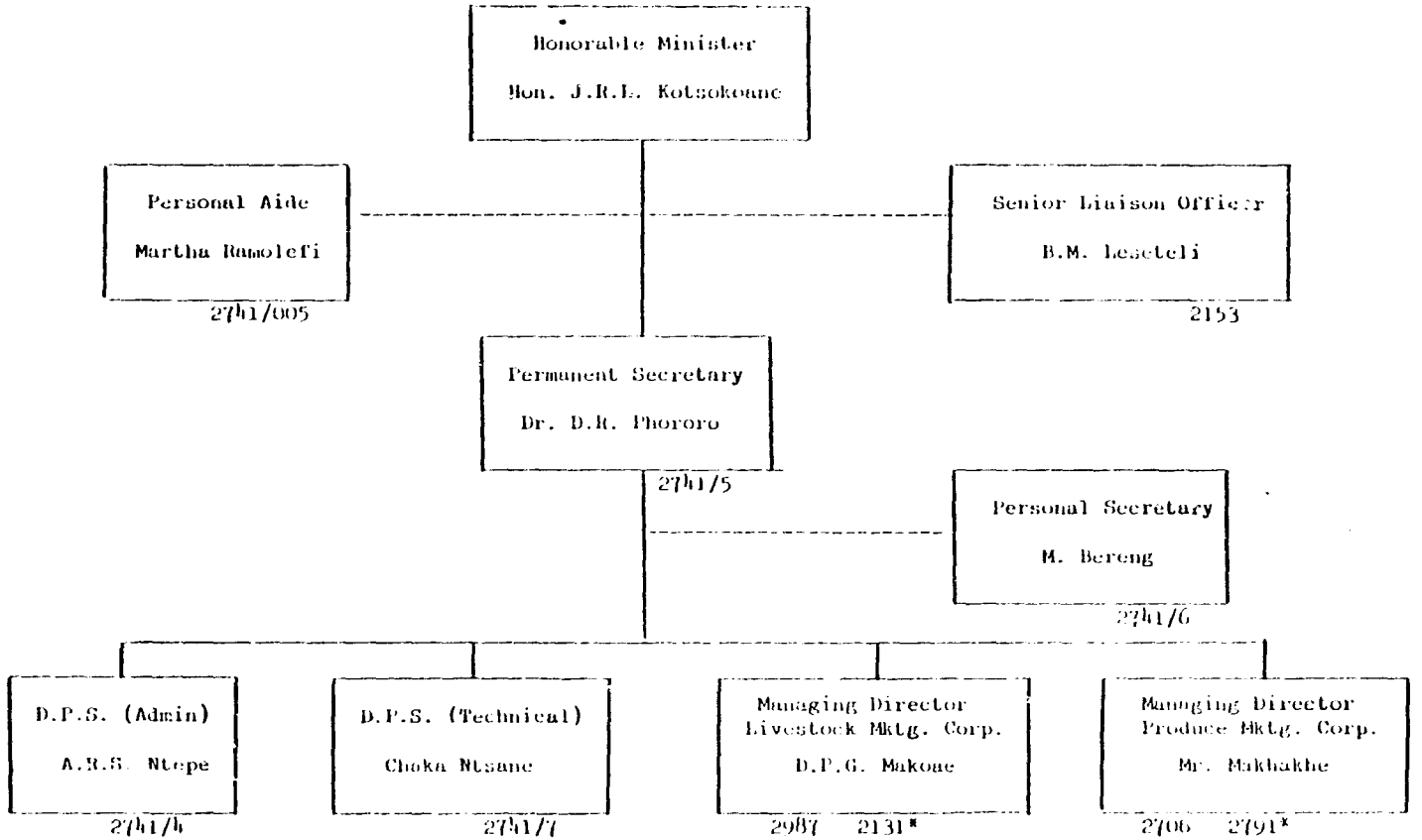
2. In the case of the field staff housing and field sheds, evidence that land has been made available and allocated to the project, and final plans and specifications for the construction.

The conditions precedent for each unit of construction (i.e., the senior technician housing, extension facility, and individual field staff housing and field sheds) may be satisfied separately.

The GOL will covenant that personnel trained by the project will be placed within the Research Division and other technical divisions of the MOA in jobs commensurate with the level of their training.

The GOL has reviewed this paper and is in accord with its purposes, method of implementation and the obligations imposed on the GOL that it entails.

Chart



* Switchboard number

Chart 2

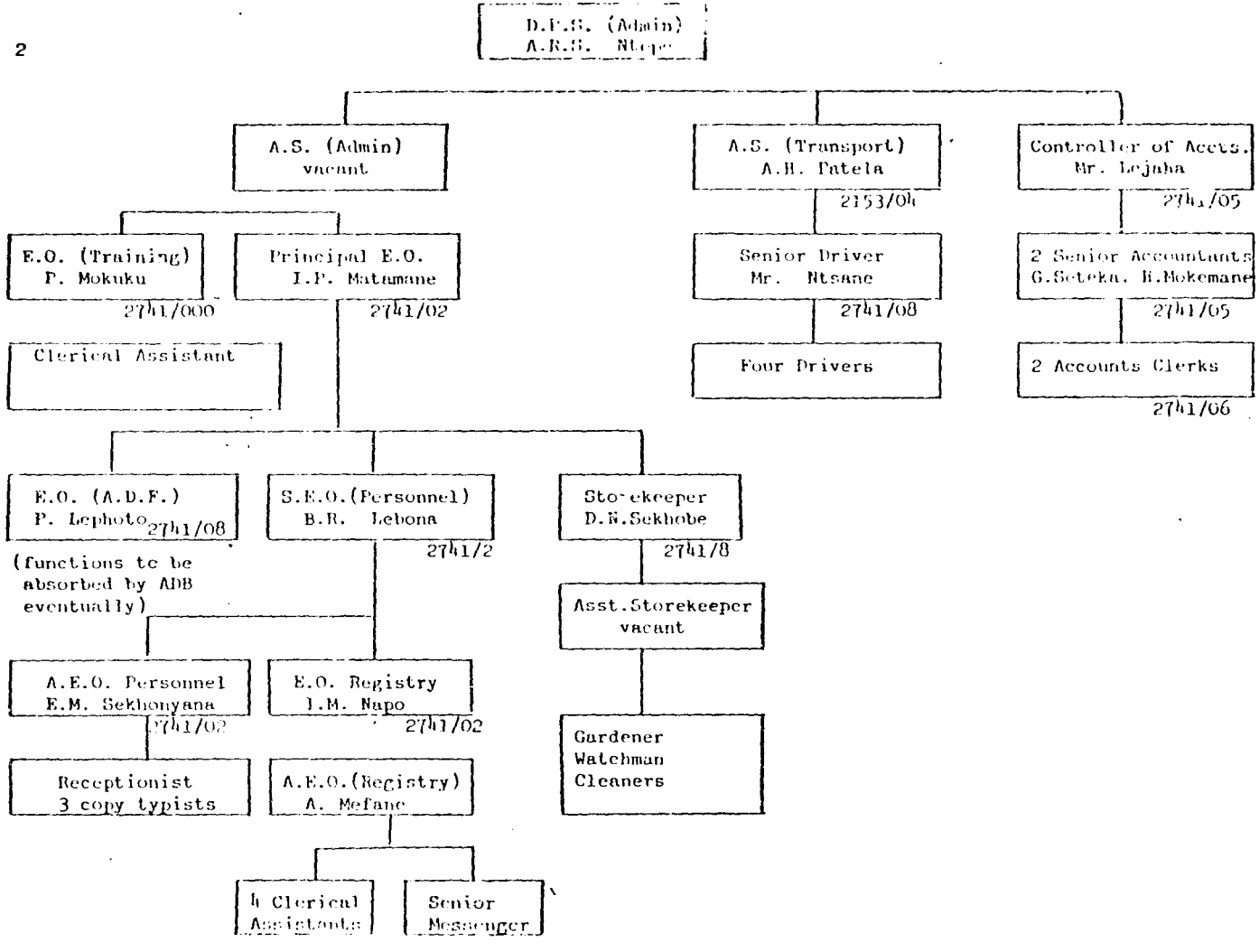
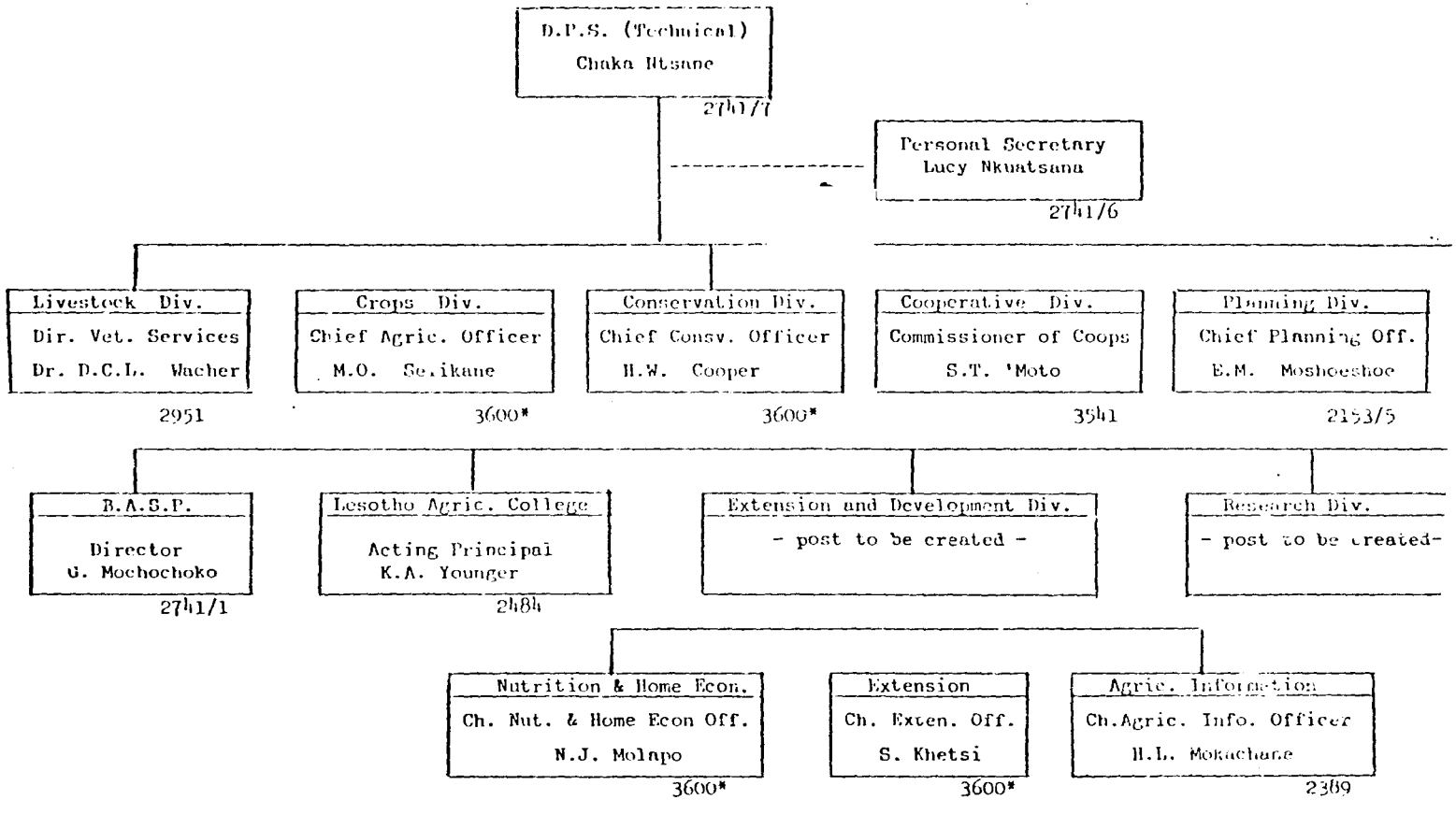

D.P.S. (Admin)
A.R.S. Ntsane
A.S. (Admin)
vacant
A.S. (Transport)
A.H. Patela
2153/04
Controller of Accts.
Mr. Lejaha
2741/05
E.O. (Training)
P. Mokuku
2741/000
Principal E.O.
I.P. Matumane
2741/02
Senior Driver
Mr. Ntsane
2741/08
2 Senior Accountants
G.Seteka, H.Mokemane
2741/05
Clerical Assistant
Four Drivers
2 Accounts Clerks
2741/06
E.O. (A.D.F.)
P. Lephoto 2741/08
(functions to be absorbed by ADB eventually)
S.E.O.(Personnel)
B.R. Lebona
2741/2
Storekeeper
D.N.Sekhobe
2741/8
Asst.Storekeeper
vacant
A.E.O. Personnel
E.M. Sekhonyana
2741/02
E.O. Registry
I.M. Napo
2741/02
Receptionist
3 copy typists
A.E.O.(Registry)
A. Mefane
Gardener
Watchman
Cleaners
4 Clerical Assistants
Senior Messenger

Chart 3


D.P.S. (Technical)
Chaka Ntsane
2741/7
Personal Secretary
Lucy Nkuatsana
2741/6
Livestock Div.
Dir. Vet. Services
Dr. D.C.L. Wacher
2951
Crops Div.
Chief Agric. Officer
M.O. Seikane
3600*
Conservation Div.
Chief Consv. Officer
H.W. Cooper
3600*
Cooperative Div.
Commissioner of Coops
S.T. 'Moto
3541
Planning Div.
Chief Planning Off.
E.M. Moshoeshoe
2153/5
B.A.S.P.
Director
G. Mochochoko
2741/1
Lesotho Agric. College
Acting Principal
K.A. Younger
2484
Extension and Development Div.
- post to be created -
Research Div.
- post to be created-
Nutrition & Home Econ.
Ch. Nut. & Home Econ Off.
N.J. Molapo
3600*
Extension
Ch. Exten. Off.
S. Khetsi
3600*
Agric. Information
Ch.Agric. Info. Officer
H.L. Mokachane
2389

ANNEX I

UNCLASSIFIED

OUTGOING TELEGRAM

Department of State

4671

PAGE 01 STATE 061208
ORIGIN AID-33

INFO OCT-01 AF-08 EB-08 IGA-02 /052 R

DRAFTED BY AFR/ESAF: (MCDANIEL) ELJ
APPROVED BY AFR/DR: JWITHERS
AFR/DR/ESAF: SWCOLE
AFR/DR/ARD: PWARREN (INFO) ltr cc
AFR/ESA: LPOMPA (PHONE)
AFR/DR: SKLEIN
CM/RCD/AFR: MKENYON (PHONE)

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INFO AMEMBASSY MBABANE PRIORITY

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TAGS:

SUBJECT: LESOTHO FARMING SYSTEM REASEARCH - 690-0065

REFS: (A) NAIROBI 3155 (B) STATE 050423

1. AFRICAN BUREAU ECPR MET AND APPROVED PROJECT REVIEW PAPER ON DECEMBER 21, 1976 AND COMMENDED MISSION FOR EXTREMELY WELL WRITTEN PAPER.

2. ALTHOUGH AID/W SURFACED NO SPECIFIC ISSUES THAT NEED ADDITIONAL CLARIFICATION PRIOR TO FURTHER DESIGN WORK ON PROJECT PAPER, SEVERAL POINTS WERE RAISED THAT WILL REQUIRE ELABORATION.

--A. WAIVERS: ANNEX VII MEETS REQUIREMENTS.

--B. HANDBOOK 10, CHAPTER 7, SECTION 7E SETS FORTH CRITERIA UNDER WHICH TCT IS CONSIDERED. REQUEST INCLUSION IN PP PARTICIPANT TRAINING APPROVAL LANGUAGE USING "CRITERIA" UNDER SECTION 7E. ABOVE REQUIREMENT NOT VIEWED AS A WAIVER, BUT AS A NECESSARY COMPONENT OF PROJECT PAPER TO SHOW THAT SUGGESTED ACTION HAS BEEN THOUGHT OUT AND IN ACCORDANCE WITH AID POLICY CONTAINED IN HANDBOOK.

3. THE ECPR DISCUSSED AT SOME LENGTH THE PROPOSED COMPOSITION OF THE TECHNICAL ASSISTANCE TEAM. ALTHOUGH NOT CITED AS ISSUE REQUIRING MISSION RESPONSE, THE COMMITTEE DID FEEL THAT AID WAS OFFERING A HIGH DEGREE OF SOPHISTICATION THAT MIGHT BE TOO ADVANCED FOR LESOTHO EXPECIALLY AT THIS TIME. THE DESIGN TEAM DID ADDRESS THIS IN THE PRP PREPARATION AND ADEQUATELY PRESENTED A RATIONALE FOR THE TA PACKAGE. THE COMMITTEE HAS SUGGESTED THAT WITHIN THE PRE-IMPLEMENTATION PP DESIGN OF THE PROJECT PAPER, THIS MATTER AGAIN BE ADDRESSED TO DETERMINE THE CONTINUING NEED OF TEAM SIZE.

4. THE MANNER THAT HAS BEEN SUGGESTED FOR IMPLEMENTATION OF THIS PROJECT UNDER THE "COLLABORATIVE APPROACH METHOD" HAS BEEN ENDORSED BY THE AFRICAN BUREAU. REFTEL (B) HAS INDICATED PROBLEMS BEING ENCOUNTERED UNDER THIS METHOD.

5. AID/W APOLOGIZE FOR OVERSIGHT IN ECPR CABLE.
VANCE

UNCLASSIFIED

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
National Goal: To improve the quality of rural life	Higher nutritional levels; More rural children in school; Rural aspirations being achieved.	Updated nutrition surveys; Project surveys, school records; Project surveys	Rural families will make rational decisions on income utilization. Sufficient schools available. Rural people wish to continue to live in rural communities.
Sector Goal: To increase rural income from agriculture	Net income from agricultural and agriculturally related enterprises increases 33% for cooperating farmers by the end of the project.	GOL and project surveys.	Improvement in productivity and increased production result in increased net income.
Project Purpose: To create some productive agricultural enterprise mixes which are: Acceptable to farmers; sensitive to farmers' management ability; appropriate to resources available; protective of the land base.	Appropriate farming systems and related rural enterprises are in use by 5% of farm households in areas of project implementation.	Project records, surveys, and evaluations.	GOL maintains commitment to project; GOL willing to accept policy/legislative action identified by project; Social and political constraints are not insurmountable; Farmers terms of trade.
Outputs: Farming Systems Research Unit	Research priorities are being determined through the use of both social and economic benefit/cost techniques by 12/79	GOL and project records, project evaluation, and professional judgments.	Inter-departmental coordination and cooperation exists among MOA divisions and sections in the Research Division.

BEST DOCUMENT AVAILABLE

Continued

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
	Farming Systems Research Section results are being published and disseminated to all relevant GOL divisions and other donor project activities by 12/79. FSRS is benefiting from improved professional relationships with world-wide research institutions by 12/79. FSRL/GOL is pursuing or considering a program for replicating systems by 12/83.		
Farming Systems Program	Three systems incorporating alternative technologies and farm management practices developed and tested in three varying physical environments by 8/80	GOL/project records and project evaluations.	
Strategies for Reaching Farmers	Alternative strategies for MOA farmer communication and education developed and tested by 8/80		
Trained Basotho Personnel	Basotho personnel trained and assigned to 26 positions in farming systems research sections and complementary sections of Research Division by 3/84		Trainees assigned to positions for trained.

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Research and Information Data Base	Existing research data collected and analyzed by 12/79. Formal system of documentation and reporting of research results established by 12/79. Survey and analysis of rural attitudes and aspirations performed in years 2 and 5. Tech/Socio/Economic research activities structured and on-going during life of project. Post-project research requirements identified by 12/83.		
Agricultural Research Library	Adequate library to support farming systems research in place and coordination with the agricultural planning library by 12/79.		GOL establishes adequate recurrent budget for library
Inputs: USAID Technical Assistance/Field Team leader, farm management economist, social analyst, agronomist, comm/info/ext. specialist, animal mgt. specialist, marketing specialist, conservation engineer, administrative officer, Basotho extension advisors (2), research assistants. Preparatory visit of team leader during Phase 1 ($60.0) and 1/6 project staff trips to international research centers and conferences.	$8,277.3 50 staff years; $3,3161.1	AID, GOL and Project Records	AID, GOL, contractors and supplies provides goods and services on time as required.

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Outputs - continued			
Other costs: Budgetary support for farming system programs, vehicle operation & maintenance; computer services, secretaries, and guarantees for cooperating farmers.	$657.0		
Inflation Allowance	$1,455.4		
Contingencies	$ 182.2		
GOL	$ 724.0		
Training Support for participants	$ 118.0		
Farming Systems Research Support: Counterparts salaries and benefits; technical assistants; temporary wages - building and site maintenance.	$ 286.0		
Farming Systems Program: MOA field staff salaries and benefits; tractor operators (2); temporary wages, field shed and site maintenance; field shed office equipment and supplies; operating fund.	$ 189.0		
Land for office/lab/library extension, senior and field staff housing; and field sheds and research plots in prototype areas.	$ 100.0		BOPS: Basotho farmers lacl knowledge of modern farming practices required to increase productivity and rural incomes.
Furnishings for Sr/Jr staff housing	$ 31.0		

ANNEX II

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Outputs - continued			
Consultants: Biochemistry, Horticulture, Animal Sci., Plant Protection, Nutrition, Range Mgt., Library Sci., Agr. Engineering, etc.	60 staff months; $420.0		
Technical Assistance/Backstop: Chapit coordinator, admin/fin.asst., secretary, and staff trips (5) Administrative overhead	$905.0		
Training for Research Related Disciplines	$609.5		
Participants	57.5 study years; $579.5		
In-country courses	10 courses; $30.0		
Construction: Sr. Technicians Housing (6), field staff housing (6); office/lab/library extension; and field sheds(5)	$405.3		
Commodities: Vehicles, field research and laboratory equipment and supplies; office and training equipment and supplies; library books and periodical subscriptions	$328.8		

ANNEX IV

POSITION DESCRIPTIONS [1]

A. GOL Position: Chief Farming System Research Officer (CRO)

Location : Maseru, Lesotho

Reports to : Chief Research Officer, MOA

Qualifications:

A. Academic

Ph.D in Agriculture required. Degree in Agricultural Economics or Farm Management preferred but not essential.

B. Experience

Administrative/Management experience in Agricultural Research and Extension in Land Grant University system or equivalent experience with the USDA or AID required. Overseas experience with major responsibility in agricultural research administration or equivalent experience within U.S. environment is required.

C. Personal

Must have demonstrated inter-personal and personnel management skills. Must have demonstrated leadership ability. Must have demonstrated mature judgement in setting priorities. Must be oriented toward "problem solving". Must be willing to travel under difficult conditions. Must be able to work with and train host country counterparts, in an understanding and patient manner.

D. Expected Duties

1. Will serve as GOL Senior Officer for a 9-man research unit.
2. Will provide required contact/coordination with AID/OSARAC on all related matters.
3. Will provide inter-division coordination of Farming System Research programs/results recommendations within the MOA and with the MOA and other GOL or private agencies as required.
4. Will provide professional and technical leadership for the Farming Systems Research staff.
5. Will be responsible to establish, systematize and train GOL staff to operate technical research library.
6. Will initiate required program documentation for AID, in areas of commodity procurement, participants, etc.
7. Will secure GOL/OSARAC approvals for project staff and consultants.
8. Will prepare work plans and budgets for GOL/OSARAC approvals.
9. Will serve as advisor to the DPS and PS of Agriculture on research related issues as requested.
10. Will perform other duties as requested by the GOL and OSARAC, as agreeable to all parties.

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[1] In addition to the specific duties listed for each position, all technical staff will have the responsibility for training of counterparts in their special area of expertise as well as assisting in providing in-country training programs.

B. UCI Position: Farm Management Economist (FME)

Location: Maseru, Lesotho

Reports to : Chief Farming Systems Research Officer.

Qualifications:

A. Academic

Ph.D Agricultural Economics with a strong interest and qualifications in Farm Management Economics including microeconomics, production economics, economic statistics, and institutional economics requested. A MS degree in Agricultural Economics with extensive experience in the subject field would be acceptable.

B. Experience

A total of four (4) years experience as a research or extension specialist is required. One year of experience in less developed countries or in an equivalent U.S. environment is essential. Experience in survey/statistical research is essential.

C. Personal

Must have demonstrated inter-personal skills and the ability to work effectively as a team member. Must be able to work with and train host country counterparts in a patient and understanding manner. Must be able to work and travel under difficult conditions.

D. Expected Duties

1. To evaluate and help determine priority areas for technical agricultural research and to assist in the identification of candidate farming systems that seem worthy of study.

2. Cooperatively with the social analyst will identify socio/economic constraints to farming systems and farm enterprise mixes and analyze the economic feasibility of technically appropriate strategies designed to increase productivity.

3. In concert with the social analyst to analyze the impact of institutional changes in size of farm unit, mix of enterprises; type of management, access to inputs and market, etc. of the individual farm family.

4. Will work with the communication information specialist to insure that extension field staff are kept up to date on economic information relevant farm management.

5. Will perform requested analysis of input delivery, marketing, transport and other costs associated with rural enterprises to be considered in farming systems. Note: Marketing studies will be done in concert with the Marketing Officers in both the Livestock Marketing Corporation and in the Produce Marketing Cooperative.

6. Consult and coordinate with economists of the Lesotho Agriculture Section Analysis Project concerning related studies and activities in the area of input delivery and marketing economics.

C. GOL Position: Social Analyst (SA)

Location : Maseru Lesotho

Reports to : Chief Farming Systems Research Officer

Qualifications:

A. Academic

MA in rural sociology or sociology required.

B. Experience

A total of 5 years job experience, of which at least 2 years is sociologically oriented field research that was related to agriculture development issues overseas, preferably in Africa.

C. Personal

Must have exceptional skills in interpersonal relationships and be able to work effectively with other project staff, government officials and local farmers. Must have an empathy for and an understanding of the constraints to acceptance of new technology by rural people in developing countries due to social/cultural problems and traditional use of land and land tenure problems. Language skills not essential but must be willing to learn local language.

D. Duties

1. Analyze available social research results and programs underway for the purpose of assuring such resources are available to and contribute to project purposes.

2. Designs, conducts and analyzes necessary social surveys (socio/economic with economist, socio/technical with agronomist, etc.) to assist in formulating courses of action, training programs and methods of bringing about rural acceptance of technically and economically viable changes in rural enterprise mixes.

3. Advises and counsels project staff on social constraints, alternatives, etc. impinging on acceptance of changes proposed.

4. Consults and coordinates survey research with other social analysts involved in similar activities for other projects and institutions.

D. GOL Position: Agronomist (AG)

Location : Maseru, Lesotho

Reports to : Chief Farming Systems Research Officer

Qualifications

A. Academic

Ph.D with major in Agronomic Science highly desired. M.D. degree coupled with extensive and successful research/extension experience may be considered.

A. Qualifications

Minimum of at least two years of overseas experience with major responsibility in agronomy research and extension, preferably in a region having similar climate to Lesotho.

B. Personal

Must have exceptional skills in interpersonal relationships and be able to work effectively with other project staff, government officials and local farmers. Must have an empathy for and an understanding of the constraints to acceptance of new technology by rural people in developing countries due to social/cultural problems and traditional use of land and land tenure problems. Language skills not essential but must be willing to learn local language.

D. Duties

1. To evaluate available experimental data, extension programs and existing farming practices for the production of the traditional field crops in Lesotho and the introduction of adapted special crops (food, feed, fibre, vegetable and oil crops).

2. Demonstrate, through on-farm trials alternate and innovative cropping systems including improved varieties of traditional crops and special crop species and modified management practices designed to increase production and economic returns.

3. Train GOL staff in intensive one-to-one consultation with cooperative farmers concerning crop production management techniques.

4. Consult and coordinate with scientists from other projects and institutions involved in agronomic research to maximize benefits of research efforts and avoid duplication.

5. Consult social anaylst and Farm Marketing Economist concerning the socio/economic feasibility of recommended production practices and introduced special crops.

6. Collect and document results attained through on-farm trials and demonstrations.

7. Conduct as required small scale research on sub-stations to solve practical production problems encountered in on-farm trials and demonstrations. It is preferred that this type of research be conducted by researchers within the or other research department.

E. GOL Position: Animal Management Specialist (AMS)

Location : Maseru Lesotho

Reports to : Chief Farming Systems Research Officer.

Qualifications:

A. Academic

Ph.D with major in animal production, Management or Nutrition highly desired. MS degree in above areas coupled with extensive experience would be considered.

Experience

One overseas tour of duty carrying animal management responsibility and preferably in a region having small farms and a climatic region similar to Lesotho or similar/related U.S. experience is needed.

Personal

Must have demonstrated inter-personal skills and the ability to work effectively as a team member. Must be able to work with and train host country counterparts in a patient and understanding manner. Must be able to work and travel under difficult conditions.

Duties

1. Conduct surveys, review all sources of information on animal production, and become familier with the role of animals in the economy of Lesotho.

2. To study the methods in use of animal production and devise methods and procedures to improve production on the farm.

3. To provide needed expertise to team efforts to test various mixes, combination of livestock and livestock practices which may be adapted to Lesotho farm conditions and used in conjuction with the farms cropping systems.

4. To evaluate alternative approaches to the utilization of livestock as a source of farm income vs. investment for security.

5. Work with other team members to develop viable animal production strategies utilizing available resources and maximizing end use/benefit of animal products.

F. GOL Position: Communications/Extension Training Specialists
The responsibilities of the Communications Specialist encompasses two rather diverse areas and may necessitate the services of two different officers. The project requires an initial tour of two (2 years for an Information/Reporting Specialist to facilitate the exchange of research findings in a comprehensible manner among team members and other concerned agricultural research staff and to provide training in extension methods for local staff. A two year

(or more) tour is then needed to cooperate with the GOL extension staff on preparation of appropriate extension publication and mass media materials for use by technical and local staff in the field, and to continue the extension training program in prototype areas.

F-1 Position Title: Information/Reporting Specialist (CIS)

Location : Maseru, Lesotho

Reports to : Chief Farming Systems Research Officer.

Qualifications:

A. Academic

BA or MA in journalism with a major in agricultural communications.

B. Experience

Five years experience in editorial work in agriculture extension/experiment station position or an equivalent USDA position. One tour of duty overseas if possible or service as a campus coordinator for an overseas team.

C. Personal

Must have demonstrated inter-personal skills and the ability to work effectively as a team member. Must be able to work with and train host country counterparts in a patient and understanding manner. Must be able to work and travel under difficult conditions.

Duties

1. To assist in the collection of information on the agriculture of Lesotho, MOA publications and information from Donor Projects.

2. To assemble all available information in usable form for technical personnel of the farming system project.

3. To be responsible for the establishment of an efficient editorial capability to serve the project team.

4. To work effectively with a counterpart to demonstrate the proper scale and effectiveness of this position as an information and demonstration facility.

5. To develop an effective reporting vehicle to improve communications concerning project research activities to regional and international agricultural research institutions.

6. To train field staff who are in contact with farmers in prototype areas in extension education techniques.

F-2 Position Title: Extension Information Specialist (EI)

Location : Maseru, Lesotho

Reports to : Chief Farming Systems Research Officer

Qualifications:

A. Academic

BS or MS in agricultural journalism with a minor in agricultural extension is highly desirable.

B. Experience

Five years experience in program development/evaluation, and related field work or agriculture extension/experiment station experience or in a closely related activity. One tour of duty overseas working in rural programs or work under comparable U.S. environments is required.

C. Personal

Must have demonstrated inter-personal skills and the ability to work effectively as a team member. Must be able to work with and train host country counterparts in a patient and understanding manner. Must be able to work and travel under difficult conditions.

D. Duties

1. In concert with the social analyst and field extension staff develop a system of communications between project staff and participant farmers to: (a) inform and instruct farmers in the principle and techniques of sound farm management as identified by research activities, and (b) to obtain feed-back from farmers concerning attitudes and experience with new farming systems; (c) to analyze alternate methods of communications between project staff and farmers.

2. In concert with the social analyst to translate technical aspects of reseach activities and findings into language and ideas appropriate for communications to the rural farmers with their particular cultural perceptions and literacy levels.

3. To coordinate the delivery of information/instructions provided by the varied technical specialists to the rural families through the extension staff and act as a focal point for two-way communications between project staff and participant farmers.

4. To advise field extension workers in methods of instruction/demonstration and presentation of project-provided information.

G. GOL Position: Marketing Specialist (MS)

Location : Maseru, Lesotho

Reports to : Chief Farming Systems Research Officer

Qualifications:

A. Academic

Minimum M.S. but preferably Ph.D with undergraduate major in Animal Husbandry and graduate degree in Agricultural economics with a major in Marketing.

B. Experience

At least three years experience in marketing research or in extension marketing and one tour of duty overseas having responsibility in livestock or crop production and marketing or equivalent U.S. experience is required.

C. Personal

Must have demonstrated inter-personal skills and the ability to work effectively as a team member. Must be able to work with and train host country counterparts in a patient and understanding manner. Must be able to work and travel under difficult conditions.

Duties

1. Explore the traditions in livestock and crop production and how these affect the quality and production of all classes of livestock and crops.

2. In close cooperation with the Livestock Marketing Cooperation (LMC) and the Produce Marketing Cooperation (PMC) will study methods and systems for marketing agricultural products.

3. Conduct research on the feasibility of developing new and alternative marketing systems and procedures which would provide incentives for improving the income from livestock and crops.

4. In conjunction with the team leader, consult and coordinate with the market economists of the Lesotho Agriculture Sector Analysis Project PMC and LMC concerning related studies and activities affecting livestock marketing.

H. GOL Position: Soil Conservation Engineer (SCE)

Location : Maseru, Lesotho

Reports to : Chief Farming Systems Research Officer

Qualification:

A. Academic

M.S. in soil science or agricultural engineering - farm machinery with emphasis on conservation/land utilization.

Experience

One overseas assignment in subject field preferably in a country having a type of agriculture similar to Lesotho.

Personal

Must have demonstrated inter-personal skills and the ability to work effectively as a team member. Must be able to work with and train host country counterpart in a patient and understanding manner. Must be able to work and travel under difficult conditions.

II. Duties

1. In concert with production specialists identify potential soil management/conservation problems which may result from various enterprise mixes being considered or used in the prototype demonstration areas.

2. Identify alternative low-cost solutions to be incorporated within the several farming systems appropriate to the soil-type.

3. To study the design and condition of animal power farm implements and explore low-cost ways to improve their performance and utilization.

4. To study the percent tillage techniques of animal power farm implements in relation to soil characteristics, and soil erosiveness and to advise production specialists on alternative tillage techniques which support increased production and soil conservation goals.

5. To consult with appropriate members of other donor project teams concerning utilization of their research results in relation to soil conservation/soil management/tillage practices within the Farming Systems Research Project.

I. GOL Position: Farming Systems Extension Advisor (FEA)

There is uniform agreement among the Design Team members and donor project officials that there is a considerable weakness in the village level Extension Delivery System. This deficiency is manifested in at least two conditions:
a. an inadequate number of village agents and
b. low levels of skills and maturation among agents.
The effectiveness of FSRP will be greatly enhanced by employing well-trained and motivated Basotho Farming System Extension Advisors at the village level. As a part of the Extension methodology research, two diploma or bachelor level Basotho Agriculturists are to work in a prototype area. These Basotho agents will live in the area villages. They will work closely with the Production Specialists on the team. More importantly, they will provide a necessary very close personal contact between the FSRP and Basotho farmers. This will provide in a timely fashion any social or cultural issues which may either hinder or aid project success.

Location: Villages in prototype farming areas - Lesotho

Reports to : Chief Farming Systems Research Officer

Duration Two years

Qualifications:

A. Academic

B.S. in agriculture, animal husbandry or crop science. Diploma level considered if individual has minimum of 3 years professional experience.

B. Experience

Must have rural village farm background. Agricultural Extension or Research experience highly desirable.

C. Personal

Must be a Mosotho. Must have necessary inter-personal skills and motivation to live among, educate, and work with village farm people. Must also be able to work effectively with FSRP technicians in both carrying out project objectives and providing village level information to FSRP technicians.

Duties

1. To assist in the enlisting of farmer cooperators in the FSRP.

2. To develop and carry out village level education programs on farming systems and related subjects.

3. To ascertain and provide FSRP technicians with information concerning village conditions which will influence either success or failure of the Project.

4. To provide counsel to FSRP technicians involved in surveying villagers in their prototype area.

J. TOL Position: Graduate Research Assistant

The expatriate technicians will be concerned with the integration of their discipline into an applied farming systems research and application effort. Their professional efforts will be directed to continued re-evaluation and refinement of appropriate enterprise mixes Various research themes, peculiar to farming systems in the Lesotho setting, will arise which will profit from in-depth research not possible by the technician within the time frame of this project. For example, the estimation of the probability distributions for various weather phenomena is critical to development of enterprise mixes which adequately reflect risk. Funds are provided for up to six graduate research assistants (FTE) to conduct such specialized research projects as are agreed to by the MOA, Permanent Secretary of Agriculture and concurred in by USAID/LAC. Where possible, Basotho graduate students trained under this project will conduct their thesis research in this manner. Up to a maximum of three American graduate students may be from U.S. universities.

Location: Maseru, Lesotho.

Reports to: Chief Farming System Research Officer through the supervising technician

Qualifications:

A. Academic

B.S. in agriculture. Satisfactory progress on graduate degree with major portion of course work completed.

B. Experience

International agricultural development work desirable.

C. Personal

Must be able to work and travel under difficult conditions. Must be able to work effectively with host country technicians and farmers in many cases.

Duties

1. To conduct research under supervision of the FSR staff appropriate.

GOL Position: Administrative Officer (AO)

Location: Maseru, Lesotho

Reports to : Chief Farming Systems Research Officer

Qualifications:

A. Academic

BA or MA degree in Business Administration

B. Experience

Senior level administrative Management experience in a land grant university or in a private business or firm, prefereatly a farm related enterprise. Competency particularly required in fields of office administration, personnel menangement, budget preparation and analysis and accounting. Experience in staff development highly desirable. Overseas experience is not required but is desirable for work and living satisfaction.

Expected Duties

The responsibilities of the AO are broadly divided into two areas:

1. Field administrative services for the Cooperating Institution.

2. Development of Basotho capacity to provide the above services.

Detailed Description

1. The AO will be the administrative link between the Cooperating Institution and its field team, and will be responsible for all institutional administrative activities that cannot be performed at the institution. He will also conduct all administrative and logistic activities required for the project and, through his counterpart, serve as the administrative link between the project and the regular MOA administrative structure.

He will manage all Contractor responsible aspects of commodity procurement and accounting. He will be responsible for the administative requirements for the participant training program. He will be responsible for the physical preparation and dissemination of reports.

2. He will be responsible for training a counterpart Administative Officer so that by the end of his two year tour the Basotho AO is prepared to assume all his responsibilities. The Basotho Administrative Officer will, at the end of the two year training period, serve as the administrative link between the MDA and the Cooperating Institution for as long as the Cooperative relationship exists.

I. Position Title: Consulting Services

Qualifications:

A. Academic experience

It is assumed that consultants will be needed in the specialized fields of agricultural engineering soils, agricultural chemist, plant protection, human nutrition, range management, library science, etc., to assist the project in the beginning and periodically as the program advances.

The home institute of the team may be able to provide some consultative services but it would be advisable to draw upon the expertise from sources so as to increase ranges of talent. For example, regional institutions such as ITTA or CIMMYT would be expected to provide consultants in specialized fields.

Duties

Consultants will provide the needed expertise to the project team in areas where the team does not have full time personnel and will supplement OSARAC and individual team members needs for evaluation services.

II. Position Title: Institutional Coordinator (IC) one-half time

Location : Contractor Institution

Report to : Administration Officer of Contracting Institution with responsibility for FRSP

Qualifications:

A. Academic

At least five years of administrative/management experience with the contracting institution or a similar institution. Familiarity with budget, personnel and accounting procedures relevant to management of a major international project such as proposed under the FSRP is essential.

Expected Duties

Conduct all regular administrative and logistic activities required required to be conducted at the contracting institution in support of the PSRP

Act as the domestic liaison between the PSRP staff, relevant administrative officers of the contracting institution, USAID officials and other institutions where necessary.

Annex V

Explanatory Notes

Cost Estimates

Lesotho Farming Systems Research Project
FY 1978 - FY 1982

1. Estimates: Prepared October 1977 by Project Design Team, GOL, AID/W, and REDSO/EA staff.

2. Conversion Rate: US$1 = SA Rand .87

3. AID Fiscal Year (FY): October to September following year.
   GOL FY: April to March following year.

4. Technical Assistance

   a. U.S. Technicians:

      Estimates include salaries, fringe benefits, and other allowances including travel to and from post for technicians and dependents, U.S. storage, HHE and car shipment, R & R travel education allowance, etc. Based on recent USAID experience.

   b. Basotho Extension Advisor:

      Based on GOL salary range Grade 8 = R3,840 - 4,440 for "Senior Technical Officer"; R4,300 x 1.15 exchange rate = $4,945.

   c. Backstop:

      For technical, supervisory, and managerial support provided by the institution awarded the project contract; administrative overhead calculated as follows:

      Field: $35K average salary + 17% fringe benefit allowance ($6K) = $41K x .30 overhead fee = $12.3K x 61 s/y's = $750.

      Campus: Total salaries = $90K x .52 fee = $46.8K.

      Total: $750.3 + $46.8 = $797.10 = $800.0

5. Participants

a. Long-Term/Short-Term, U.S. - Calculated at $11,000 per year; based on current costs.

b. Long-Term, Africa - Calculated at $6,000 per year; based on current costs.

c. In-Country - Estimates of $3,000 per course for two courses each year; represents costs of bringing in outside experts, housing, and per diem for participants; based on current costs.

6. Construction: See Section III.A.4. "Engineering Analysis".

7. Vehicles:

All prices are CIF Lesotho for U.S. procured vehicles; estimates provided by REDSO/EA Procurement Specialist.

a. Pickups, ½ ton

3 units, 4 x 4, @ $7,600 each	=	$22,800
2 units, 4 x 2, @ $6,000 each	=	12,000

b. Pickups, ½ ton

2 units, 4 x 4, @ $8,000 each	=	16,000

c. Utility Vehicles

2 units, 4 x 4, @ $7,800 each	=	15,600

d. Truck, 3-ton tilt-bed (1) 15,000

e. Motorbikes, 200cc

2 units @ $1,700 each	=	3,400

8. Light/Medium Tractor with Implements

Tractor (2)	15,000
Plough, 3 furrow 14" (2)	1,400
Disc Harrow, 5'3" Offsett (2)	2,800
Maize Planter (2)	7,200
Seed Drill (1)	5,200
Cultivator - 9 Tine (2)	2,700

Mower (1)	$ 1,150
Finger S delivery Rake (1)	1,050
Forage Harvester (1)	5,500
3-Ton 4-Wheel Wagon including Forage Sides for Wagon	1,500
	$43,700
Replacement Parts	+ 6,300
	$50,000
Tools, Hammer Mill, and other Small Equipment	4,000
	$54,000

Field Research and Lab Equipment: As follows: prices are CIF Lesotho:

Item	No. Units	Est. Unit Cost	Total
		(U.S. Dollars)	
Sterilizer	1	2,000	2,000
Mettler Balance	1	2,150	2,150
Analytical Balance	1	1,000	1,000
Incubators	3	160	480
Spectrophotometer	1	450	450
Refrigerators	3	1,100	3,300
Muffle Furnace	1	400	400
Ovens - drying	3	210	630
Microscopes (compound)	3	1,450	4,350
Microscopes (dissecting)	3	950	2,850
Magnetic Stirrers	3	200	600
Calculators, electronic	5	100	500
Deep Freezers	2	2,265	4,530
Atomic Absorption Spectrophotometer	1	6,200	6,200
Kjeldahl apparatus (12 units)	1	6,000	6,000
Crude Fiber Analyzer	1	1,375	1,375
Laminar Air Flow Transfer Chamber	1	5,000	5,000
Other Lab and Field Equipment (seed threshers, cleaners, moisture meters, etc.)			35,000
Lab Chemicals/Supplies			14,695
			$91,500

10. Office Equipment and Supplies: Includes office furniture (desks, chairs, conference table, file cabinets), photocopier, typewriters, calculators, mimeograph machine, and daily office supplies.

11. Training Supplies and Equipment: Includes (3) mobile generators, (1) movie projector, (3) 35 mm slide projectors, (4) screens, darkroom equipment, film, paper, paints, inks, etc.

12. Library Books and Periodicals: Estimate to establish basic collection of references in agricultural and related sciences and subscriptions to leading technical periodicals most appropriate to Lesotho's needs. Books would cost about $20 each, CIF basis delivered to Maseru; estimate based on recent Lesotho LASA project experience.

13. Budgetary Support, Financing Systems Program: To fund research, investigation, testing, and demonstration operations in each of the three prototype areas; includes technical and general support services, local day labor, and offshelf supplies and materials procured locally in support of these activities. AID will initially pick up about 80 per cent of these costs. In succeeding years, the GOL will gradually support a greater proportion of these costs until the end of the project at which time it will bear the full costs. This method makes it easier for the GOL to forward plan to budget these costs over the long-run. Total costs are estimated at about $70,000 per prototype area per year. Also see Annex VA, Section III for general breakdown.

14. Vehicle Maintenance and Operation: Based on recent experience in Lesotho:

a. Pickups: $4,000 per vehicle (7) per year for five years.

b. Truck: $8,000 per year for 5 years.

c. Utility Vehicles: $4,000 per vehicle (2) per year for 5 years.

d. Tractors: $2,500 per vehicle (2) per year for 4 years.

e. Motorbikes: $1,400 per vehicle (2) per year for 5 years.

15. Secretaries: Based on GOL salary for "Senior Personal Secretary , salary range - R3,180 - 3,720; calculated at R3,500 x 1.15 exchange rate = $4,025 p.a.

16. Guarantees: The funding for guarantees for cooperating farmers amounts to $12,500 per prototype area per year (two years).

17. Inflation Factors: Based on recent trends, U.S. and GOL rates calculated at 7% and 10% compound rates as follows:

	FY 79	FY 80	FY 81	FY 82	FY 83
U.S. Procured	7.0%	14.5%	22.5%	31.1%	40.2%
GOL Procured	10.0%	21.0%	33.1%	46.4%	61.1%

Explanatory Notes

GOL Contributions

1. Training Support - GOL policy is to support out-of-country trainees according to the following guidelines:

	Percent of Salary	
	Married	Single
One Year or Less	100%	100%
Over One Year	60%	40%

The GOL salary structure for technical/professional personnel is as follows:

Grade	Salary Range	
3	R1,272 - 1,632)	Technical Assistant
4	1,704 - 2,064)	
5	2,148 - 2,568)	Senior Technical Assistant/ Technical Officer
6	2,652 - 3,072)	
7	3,180 - 3,720)	Senior Technical Officer
8	3,840 - 4,440)	
9	4,572 - 5,232	Principal Technical Officer (B.S. level)
10	5,400 - 6,240	Chief Technical Officer (M.A. level)

It is assumed that the average salary of long-term and short-term participants will be R3,000 and R1,700 respectively. GOL support during training is calculated as follows:

Long-Term, U.S.: 10 participants: R3,000 average salary x .60 (all assumed married) x (5 for 4.0 years, 5 for 2.5 years) x 1.15 x R = $67,275.

Long-Term, Africa: 6 participants x R3,000 average salary x .60 (all assumed married) x 2.5 years x 1.15 = R31,050.

Short-Term, U.S.: 10 participants x R1,700 average salary x 1.15 x R = R19,550.

2. Operations Fund: To support research, demonstration; and testing activities in prototype areas. Due to the experimentation nature of these activities, a detailed breakdown of these costs is not possible. Examples might include transport of farmers to demonstration areas, distribution of information materials, radio broadcasts, pre- and post-harvest surveys, etc. This rough estimate is based in part on Thaba Bosiu project experience.

ANNEX VA

Cost Estimate

Lesotho Farming Systems Research Project

FY 1978 - FY 1983

(000 US$)

	Foreign Exchange	Local Currency	Total
I. GRAND TOTAL	$6,841.9	$2,159.4	$9,001.3
A. USAID	6,841.9	1,435.4	8,277.3
B. GOL	-	724.0	724.0
II. USAID	$6,841.9	$1,435.4	$8,[illegible]
A. Technical Assistance/Field	$4,512.5	$ 60.5	$4,573.0
1. Chief FSR Officer (Team Leader) (5½ S/Y's @ 75.0)	393.8	-	393.8
2. Farm Management Economist (5 S/Y's @ 75.0)	375.0	-	375.0
3. Social Analysts (5 S/Y's @ 75.0)	375.0	-	375.0
4. Agronomist (5 S/Y's @ 75.0)	375.0	-	375.0
5. Communications/Information Specialist (4.75 S/Y's @ 75.0)	356.3	-	356.3
6. Animal Management Specialist (5 S/Y's @ 75.0)	375.0	-	375.0
7. Marketing Specialist (4 S/Y's @ 75.0)	300.0	-	300.0
8. Conservation Engineer (5 S/Y's @ 75.0)	375.0	-	375.0
9. Administrative Officer (2 S/Y's @ 75.0)	150.0	-	150.0
10. Basotho Extension Advisors (2) (9 S/Y's @ 5.0)	-	45.0	45.0

BEST DOCUMENT AVAILABLE

Annex VA - continued

11. Graduate Assistants (6) (6 S/Y's @ ½ time @ 50.0)	$ 150.00	$ -	$ 150.0
12. Consultants (60 S/Y's @ 7.0)	420.0	-	420.0
13. Staff Trips to International Research Centers and Conferences (16 @ 2.5 each)	40.0	-	40.0
14. Trip, Team Leader, Phase II	6.0	-	6.0
15. Inflation Factor (IF): FY 79-82, 7.0% p.a. U.S.; 10% p.a., Lesotho	821.4	15.5	836.9
B. Technical Assistance/Backstop	$1,125.3	-	$1,125.3
1. Campus Coordinator (5.25 S/Y ¼ time @ $35.0)	46.0	-	46.0
2. Administrative/Financial Asst. (5.5 S/Y ¼ time @ $20.0)	27.5	-	27.5
3. Secretary (5.5 S/Y ¼ time @ $12.0)	16.5	-	16.5
4. Staff Trips (5 @ 3.0)	15.0	-	15.0
5. Administrative Overhead	800.0	-	800.0
6. I.F.: FY 79-82, 7.0% p.a.	220.3	-	220.3
C. Training	$ 822.6	$ -	$ 822.6
1. Participant Training			
a. Eight for 4 years, U.S.	352.0	-	352.0
b. Two for 2.5 years, U.S.	55.0	-	55.0
c. [illegible] for 1 year, U.S.	110.0	-	110.0
d. Six for 2.5 years, U.S.	62.5	-	62.5
2. In-Country Training (Two Courses per year @ $3,000 each)	30.0	-	30.0
3. I.F.: FY 79-82, 7.0% p.a.	105.7	-	105.7
4. Contingency: Item 1 = 15%	107.4	-	107.4

BEST DOCUMENT AVAILABLE

Annex VA - continued

[redacted]	$	$ [redacted]	$ [redacted]
a. [redacted]			
b. [redacted]			
[redacted]	-	[redacted]	[redacted]
[redacted]	-	[redacted]	[redacted]
[redacted]	-	[redacted]	[redacted]
E. Commodities	$ 381.5	$ -	$ [redacted]
1. Vehicles	138.8	-	138.8
a. ½ Ton Pickups (5)	34.8	-	34.8
b. ½ Ton Pickups (2)	16.0	-	16.0
c. Utility Vehicles (2)	15.6	-	15.6
d. 3-Ton Truck (1)	15.0	-	15.0
e. Motorcycles (2)	3.4	-	3.4
f. Tractors w/Range of Implements (2)	54.0	-	54.0
2. Field Research and Laboratory Equipment and Supplies	105.0	-	105.0
3. Office Equipment and Supplies	25.0	-	25.0
4. Training Equipment and Supplies	25.0	-	25.0
5. Library Books and Periodical Subscriptions	35.0	-	35.0
6. IF: FY 79-83 = 7% p.a.	21.0	-	21.0
7. Contingency: Items 2-6 = 15%	31.7	-	31.7
F. Other Costs	$ -	$ 947.9	$ 947.9
1. Budget Support, Farming Systems Program	-	189.0	189.0
2. Vehicle Maintenance and Operation	-	268.0	268.0
a. Pickups (7)	-	140.0	140.0
b. Truck (1)	-	40.0	40.0

BEST DOCUMENT AVAILABLE

Annex VA - continued

c. Utility Vehicles (2)	$ -	$ 40.0	$ [illegible]
d. Tractors (2)	-	20.0	[illegible]
e. Motor bikes (2)	-	28.0	[illegible]
3. Computer Services including Clerical ($8,000 p.a., 5 years)	-	40.0	[illegible]
4. Secretaries (3 for 5 years each @ [illegible].0 p.a.)	-	60.0	60.[illegible]
5. Guarantees for Cooperating Farmers	-	100.0	100.[illegible]
6. IF: FY 79-82 = 10% p.a.	-	247.8	[illegible]
7. Contingency: Items 1-6 = 15%	-	[illegible]3.1	[illegible]
	DIRECT	IN-KIND	TOTAL
III. GOL (All local currency)	$ 533.0	$ 191.0	$ [illegible]
A. Training Support	118.0	-	[illegible]
1. Long term, U.S.	67.3	-	
2. Long term, Africa	31.1	-	[illegible]
3. Short term, U.S.	19.6	-	[illegible]
B. Farming Systems Research Support (Research Station(s))	234.2	51.8	[illegible]
1. Salaries and Wages	(211.1)	(51.8)	([illegible]
a. Long term Graduates, U.S. (R5,000 x 5 for 1 year + 5 for 2.5 years x 1.15 x R)	60.4	-	[illegible]
b. Long term Graduates, Africa (6 x R5,000 x 1.15 x 2.5 years)	23.1	-	[illegible]
c. Short term Graduates, U.S. (10 x R8,700 x 1.15 x R x - years)	94.5	-	[illegible]
d. Technical Assistants (6 x R1,500 x 1.15 x R x 5 years)	-	51.8	[illegible]
e. Cleaning Person (1 x R1,200 x 1.15 x R x 5.0 years)	6.9	-	[illegible]

BEST DOCUMENT AVAILABLE

Annex VA - continued

f. Allowances for Pensions/ Other Benefits (5%)	$ 11.8	$ -	$ 11.[illegible]
g. Temporary Wages (R2,500 p.a. x 1.15 x R x 5 years)	14.4	-	14.[illegible]
2. Buildings and Site Maintenance	(23.1)	(-)	(23.1)
a. Utilities (R3,000 p.a. x 1.15 x R x 5 years)	17.3	-	17.3
b. Repair, Cleaning Materials, etc. (R1,000 p.a. x 1.15 x R x 5 years)	5.8	-	5.8
C. Farming Systems Program Support (Field), One-half total program costs	$ 159.8	$ 29.2	$ 189.0
Total	(319.7)	(58.3)	(378.0)
1. Salaries and Wages	72.2	58.3	130.5
a. Extension Workers (8 @ R1,500 x 1.15 x R x 4 years + 5% for Benefits)	-	58.3	58.3
b. Tractor Operators (2 @ R1,400 x 1.15 x R x ¾ time x 4 years)	3.2	-	3.[illegible]
c. Temporary Wages (R5,000 p.a. x 3 areas x 1.15 x R x 4 years)	69.0	-	69.0
2. Field Shed and Site Maintenance (R250 p.a. x 3 areas x 1.15 x R x 4 years	3.5	-	
3. Office Equipment and Supplies (R750 x 3 sheds x 1.15 x R)	2.5	-	2.[illegible]
4. Operations Fund (R15,000 x 3 areas x 1.15 x R x 4)	207.0	-	207.[illegible]
5. Research Materials (Seed, Fertilizers, etc.)	34.5	-	34.[illegible]

BEST DOCUMENT AVAILABLE

Annex VA - continued

D. Land for Technicians and Field Staff Housing, Office/Lab/ Library Extension, Field Sheds and Small Test Plots in Prototype Areas	$	$ 100.0	$ 100.0
E. Furnishings for U.S. Technicians' Housing	$ 21.0	$ 10.0	$ 31.0
1. Senior Technicians' Housing (10 @ $2.5)	15.0	10.0	25.0
2. Field Staff Housing (6 @ 1.0)	6.0	-	6.0

BEST DOCUMENT AVAILABLE

ORIGINAL BUDGET PERIOD

LESOTHO FARMING SYSTEMS RESEARCH PROJECT

FY 1978 - FY 1983

(000 US$)

Inflation

	79	80	81	82	83
US	7.0	14.5	27.5	31.1	40.2
GOL	10.0	21.0	33.1	46.4	61.1

	FY 78	FY 79	FY 80	FY 81	FY 82	FY 83	TOTAL
TOTAL	$535.9	$1,500.1	$1,582.0	$1,533.7	$1,577.2	$1,548.0	$8,277.3
A. Technical Assistance/Field	6.0	$ 837.0	$ 921.7	$ 885.4	$ 965.6	$ 957.3	$4,573.0
1. Chief FSR Officer	-	95.0	73.8	75.0	75.0	75.0	393.8
2. Farm Management Economist	-	75.0	75.0	75.0	75.0	75.0	375.0
3. Social Analyst	-	75.0	75.0	75.0	75.0	75.0	375.0
4. Agronomist	-	75.0	75.0	75.0	75.0	75.0	375.0
5. Comm/Info/Ext. Specialist	-	56.3	75.0	75.0	75.0	75.0	356.3
6. Animal Management Specialist	-	75.0	75.0	75.0	75.0	75.0	375.0
7. Marketing Specialist	-	40.0	75.0	75.0	75.0	35.0	300.0
8. Conservation Engineer	-	75.0	75.0	75.0	75.0	75.0	375.0
9. Administrative Officer	-	85.0	65.0	-	-	-	150.0
10. Basotho Extension Advisors	-	9.0	9.0	9.0	9.0	9.0	45.0
11. Research Assistants	-	35.0	40.0	40.0	35.0	-	150.0
12. Consultants	-	84.0	84.0	63.0	84.0	105.0	420.0
13. Project staff trips, International Research Centers and Conferences	-	7.5	7.5	10.0	7.5	7.5	40.0
14. Preparatory Trip, Team Leaders, Phase I	6.0	-	-	-	-	-	6.0
15. Inflation: FY 79-83; US = 7.5% p.a.; GOL = 10.0% p.a.	-	50.2	117.4	163.4	230.1	275.8	836.9

Annex VIB - Continued

	FY 78	FY 79	FY 80	FY 81	FY 82	FY 83	TOTAL
B. Technical Assistance/Backstop	$	$ 144.2	$ 223.0	$ 220.3	$ 242.3	$ 295.5	$1,125.3
1. Campus Coordinator	$ -	$ 8.8	$ 8.8	$ 8.8	$ 8.8	$ 10.8	$ 46.0
2. Admin/Fin. Assistant	-	5.0	5.0	5.0	5.0	7.5	27.5
3. Secretary	-	3.0	3.0	3.0	3.0	4.5	16.5
4. Staff Trips	-	3.0	3.0	3.0	3.0	3.0	15.0
5. Administrative Overhead	-	115.0	175.0	160.0	165.0	185.0	800.0
6. Inflation: FY 79-83 = 7.0% p.a.	-	9.4	28.2	40.5	57.5	84.7	220.3
C. Training	$ 75.9	$ 157.6	$ 198.9	$ 190.2	$ 127.4	$ 72.6	$ 822.6
1. Participant Training	66.0	122.0	145.0	129.0	78.5	59.0	579.5
2. In-Country Courses	-	6.0	6.0	6.0	6.0	6.0	30.0
3. Inflation: FY 79-83 = 7% p.a.	-	9.0	21.9	30.4	26.3	18.1	105.7
4. Contingency: Item 1 = 15%	9.9	20.6	26.0	24.8	16.6	9.5	107.4
D. Construction	$ 298.0	$ 129.0	$ -	$ -	$ -	$ -	$ 427.0
1. Senior Staff Housing	180.0	-	-	-	-	-	180.0
2. Field Staff Housing	-	83.4	-	-	-	-	83.4
3. Office/Lab/Library Extension	118.0	-	-	-	-	-	118.0
4. Field Sheds	-	21.9	-	-	-	-	21.9
5. Inflation: FY 79 = 20%	-	23.7	-	-	-	-	23.7

Annex VII - continued

	FY 78	FY 79	FY 80	FY 81	FY 82	FY 83	TOTAL
E. Commodities	$ 156.0	$ 161.2	$ 14.4	$ 15.6	$ 16.6	$ 17.7	$ 381.5
1. Vehicles	138.8	-	-	-	-	-	138.8
2. Field Research and Laboratory Equipment and Supplies	-	95.0	2.5	2.5	2.5	2.5	105.0
3. Office Equipment and Supplies	15.0	2.0	2.0	2.0	2.0	2.0	25.0
4. Training Equipment and Supplies	-	19.0	1.5	1.5	1.5	1.5	25.0
5. Library Books and Periodical Subscriptions	-	15.0	5.0	5.0	5.0	5.0	35.0
6. Inflation: FY 79-83 = 7.0% p.a.	-	9.2	1.5	2.5	3.4	4.4	21.0
7. Contingency: Items 2 and 6 = 15%	2.2	21.0	1.9	2.1	2.2	2.3	31.7
F. Other Costs	$ -	$ 71.5	$ 224.0	$ 222.2	$ 225.3	$ 204.9	$ 947.9
1. Budgetary Support, Farming Systems Program	-	-	94.0	63.0	32.0	-	189.0
2. Vehicle Operation and Maintenance	-	45.0	45.0	55.0	65.0	58.0	268.0
3. Computer Services	-	8.0	8.0	8.0	8.0	8.0	40.0
4. Secretaries (3)	-	12.0	12.0	12.0	12.0	12.0	60.0
5. Guarantees for Cooperating Farmers	-	-	25.0	25.0	25.0	25.0	100.0
6. Inflation: FY 79-83 = 10% p.a.	-	6.5	29.0	48.5	72.6	91.2	247.8
7. Contingency: Items 1 and 5 = 15%	-	-	11.0	10.7	10.7	10.7	43.1

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* Prepared October 1977 by OSARAC, GOL, AID/W, and REDSO/EA staff.

EXPENDITURE SCHEDULE, USAID

LESOTHO FARMING SYSTEMS RESEARCH PROJECT

FY 1978 - 1983

(000 US$)

	FY 78	FY 79	FY 80	FY 81	FY 82	FY 83	FY 84	TOTAL
TOTAL	$62.2	$1,369.3	$1,614.9	$1,490.2	$1,530.5	$1,535.9	$ 674.3	$8,277.3
A. Technical Assistance/Field	6.0	463.0	904.1	877.9	936.0	966.5	419.5	$4,573.0
1. Chief FSR Officer	-	68.8	75.0	75.0	75.0	75.0	25.0	393.8
2. Farm Management Economist	-	37.5	75.0	75.0	75.0	75.0	37.5	375.0
3. Social Analyst	-	37.5	75.0	75.0	75.0	75.0	37.5	375.0
4. Agronomist	-	37.5	75.0	75.0	75.0	75.0	37.5	375.0
5. Comm/Info/Ext Officer	-	31.3	75.0	75.0	75.0	75.0	25.0	356.0
6. Animal Management Specialist	-	37.5	75.0	75.0	75.0	75.0	37.5	375.0
7. Marketing Specialist	-	20.0	75.0	75.0	75.0	55.0	-	300.0
8. Conservation Engineer	-	37.5	75.0	75.0	75.0	75.0	37.5	375.0
9. Administrative Officer	-	56.5	75.0	18.5	-	-	-	150.0
10. Basotho Extension Advisors	-	2.5	10.0	10.0	10.0	10.0	2.5	45.0
11. Research Assistants	-	-	28.0	37.5	37.5	37.5	9.5	150.0
12. Consultants	-	63.0	84.0	63.0	84.0	84.0	42.0	420.0
13. Project Staff Trips, International Research Centers and Conferences	-	7.5	7.5	7.5	7.5	7.5	2.5	40.0
14. Preparatory Trip, Team Leader, Phase 1	6.0	-	-	-	-	-	-	6.0
15. Inflation Allowance	-	25.9	99.6	141.4	197.0	247.5	125.5	836.9

Annex VG - Continued

	FY 78	FY 79	FY 80	FY 81	FY 82	FY 83	FY 84	TOTAL
B. Technical Assistance/Backstop	$ -	$ 135.9	$ 240.5	$ 220.6	$ 221.6	$ 215.7	$ 91.0	$1,125.3
1. Campus Coordinator	-	6.6	8.8	8.8	8.8	8.8	4.2	46.0
2. Admin/Fin Assistant	-	3.8	5.0	5.0	5.0	5.0	3.7	27.5
3. Secretary	-	2.3	3.0	3.0	3.0	3.0	2.2	16.5
4. Staff Trips	-	3.0	3.0	3.0	3.0	3.0	-	15.0
5. Administrative Overhead	-	93.6	173.6	157.6	158.4	153.6	63.2	800.0
6. Inflation Allowance	-	26.6	47.1	43.2	43.4	42.3	17.7	220.3
C. Training	$ 39.0	$ 131.0	$ 189.8	$ 194.5	$ 149.5	$ 114.9	$ 3.9	$ 822.6
1. Participant Training	33.0	94.0	133.5	137.0	103.7	78.3	-	579.5
2. In-Country Courses	-	3.0	6.0	6.0	6.0	6.0	3.0	30.0
3. Inflation Allowance	-	16.9	25.7	26.3	20.5	15.8	0.5	105.7
4. Contingency	6.0	17.1	24.6	25.2	19.3	14.8	0.4	107.4
D. Construction	$ -	$ 298.0	$ 129.0	$ -	$ -	$ -	$ -	$ 427.0
1. Senior Staff Housing	-	180.0	-	-	-	-	-	180.0
2. Field Staff Housing	-	-	83.4	-	-	-	-	83.4
3. Office/Lab/Library Extension	-	118.0	-	-	-	-	-	118.0
4. Field Sheds	-	-	21.9	-	-	-	-	21.9
5. Inflation	-	-	23.7	-	-	-	-	23.7

Annex VC - continued

	FY 78	FY 79	FY 80	FY 81	FY 82	FY 83	FY 84	TOTAL
E. Commodities	$ 17.2	$ 291.7	$ 14.6	$ 14.4	$ 15.5	$ 15.9	$ 12.2	$ 381.5
1. Vehicles	-	138.8	-	-	-	-	-	138.8
2. Field Research and Laboratory Equipment and Supplies	-	95.0	2.3	2.2	2.3	2.2	1.0	105.0
3. Office Equipment and Supplies	15.0	2.0	2.0	1.8	1.7	1.7	0.8	25.0
4. Training Equipment and Supplies	-	19.0	1.4	1.3	1.4	1.3	0.6	25.0
5. Library Books and Periodical Subscriptions	-	10.0	5.0	5.0	5.0	5.0	5.0	35.0
6. Inflation	-	7.7	2.0	2.0	2.9	3.4	3.0	21.0
7. Contingency	2.2	19.2	1.9	2.1	2.2	2.3	1.8	31.7
F. Other Costs	$ -	$ 49.7	$ 136.9	$ 182.8	$ 207.9	$ 222.9	$ 147.7	$ 947.9
1. Budgetary Support, Farming Systems Program	-	-	29.0	40.0	40.0	40.0	40.0	189.0
2. Vehicle Operation and Maintenance	-	30.0	45.0	50.0	55.0	55.0	33.0	268.0
3. Computer Services	-	5.0	7.5	7.5	7.5	7.5	5.0	40.0
4. Secretaries	-	6.0	12.0	12.0	12.0	12.0	6.0	60.0
5. Guarantees for Cooperating Farmers	-	-	10.0	25.0	25.0	20.0	20.0	100.0
6. Inflation	-	7.4	28.4	41.4	58.2	75.2	37.2	247.8
7. Contingency	-	1.3	5.0	6.9	10.2	13.2	6.5	43.1

[a] Prepared October 1977 by OSARAC, GOL, AID/W, and REDSO/EA staff.

GOL OBLIGATION SCHEME

LESOTHO FARMING SYSTEMS RESEARCH PROJECT

FY 1978 - 1983

(000 US$)

	FY 78	FY 79	FY 80	FY 81	FY 82	FY 83	TOTAL
TOTAL	$ 112.2	$ 50.7	$ 94.7	$ 106.7	$ 151.1	$ 208.6	$ 724.0
A. Training	$ 12.2	$ 24.6	$ 30.8	$ 28.8	$ 17.4	$ 4.2	$ 118.0
1. Long Term Training, U.S.	8.3	16.6	18.6	14.5	7.2	2.1	67.3
2. Long Term Trainees, Africa	-	4.1	8.3	10.4	6.2	2.1	31.1
3. Short Term Trainees, U.S.	3.9	3.9	3.9	3.9	4.0	-	19.6
B. Farming Systems Research Support	$ -	$ 26.1	$ 32.9	$ 45.9	$ 70.7	$ 110.4	$ 286.0
1. Salaries and Wages	(-)	(21.8)	(28.4)	(41.2)	(66.0)	(105.7)	(262.9)
a. LT Graduates, U.S.	-	-	-	5.8	17.3	32.3	55.4
b. LT Graduates, Africa	-	-	-	-	5.8	17.3	23.1
c. ST Graduates, U.S.	-	6.3	12.6	18.9	25.2	31.5	94.5
d. Technical Assistants	-	10.3	10.3	10.4	10.4	10.4	51.8
e. Cleaning Person	-	1.3	1.4	1.4	1.4	1.4	6.9
f. Benefits/Pension Allowance	-	0.9	1.2	1.8	3.0	4.9	11.8
g. Temporary Wages	-	2.8	2.9	2.9	2.9	2.9	14.4
2. Building and Site Maintenance	(-)	(4.5)	(4.5)	(4.7)	(4.7)	(4.7)	(23.1)
a. Utilities	-	3.4	3.4	3.5	3.5	3.5	17.3
b. Repair, Cleaning, Materials, etc.	-	1.1	1.1	1.2	1.2	1.2	5.8

BEST DOCUMENT AVAILABLE

Annex VII - Section 1

	FY 78	FY 79	FY 80	FY 81	FY 82	FY 83	TOTAL
C. Farming Systems Program Support	$ -	$ -	$ -	$ 32.0	$ 63.0	$ 94.0	$ 189.0
1. Salaries and Wages	-	-	-	10.8	21.7	32.7	65.2
2. Field Shed and Site Maintenance				0.3	0.6	0.9	1.8
3. Office Equipment and Supplies	-	-	-	0.9	0.2	0.2	1.3
4. Operations Fund	-	-	-	17.2	34.3	52.0	103.5
5. Research Materials				2.8	6.2	8.2	17.2
D. Land	$ 75.0	$ -	$ 25.0	$ -	$ -	$ -	$ 100.0
E. Furnishings, Senior Staff Housing (10)	$ 25.0	$ -	$ 6.0	$ -	$	$ -	$ 31.0

Annex II

Waivers and Approvals

I. Waivers and Approvals Required

A. Procurement source and origin waiver and AID Geographic Code 000 (U.S. only to Code 935 for procurement of construction materials;

B. Approval to deviate from policy expressed in AID Handbook 11, Chapter 2, which limits employment of third country nationals for AID-financed construction on 20% of the U.S. and Code 941 work force;

C. Waiver of policy set forth in AID Handbook 11 to permit procurement of construction services and equipment maintenance and repair services from Free World firms in equal preference to U.S. and local firms, and/or joint ventures of such firms;

D. Waiver of the source and origin requirements under AID Handbook 15 and special determination under FAA Section 636(i) to allow the purchase of 12 project vehicles and two tractors plus equipment from AID Geographic Code 935;

II. Justification for Source Waiver for Construction Materials

Construction materials will be used in building or extending an office/laboratory/library facility, three field sheds, six houses for the AID-financed technicians in Maseru and six lower standard houses in field locations. The cost of construction materials is estimated at $348,225 i.e., 75% of the total cost of construction. Although it is not expected that all materials will be procured from South Africa, a waiver is requested for the full estimated cost. This is necessary because the fixed amount reimbursement method will be used, making the distinction between procurement sources difficult, if not impossible.

Materials such as cement, steel sheets, roofing, window frames, plumbing fixtures, etc. are normally imported from South Africa or the United Kingdom. For the most part, these are manufactured to standards (size, threads, units of measures, etc.) different from and incompatible with U.S. specifications. Similarly electrical materials and supplies are 220 volt, 50 cycle, contrary to standard 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 Lesotho.

It would not be practical to purchase U.S. items in the small quantities needed when private dealers in Lesotho are equipped only to service and repair equipment made in South Africa and the U.K. Moreover, considering shipping costs and small quantitites involved, U.S. delivered prices would substantially exceed prices for comparable items procured in South Africa. The long lead time required to procure from the U.S. could also delay project implementation if construction housing for AID-financed technicians was delayed. The severe shortage of housing in Lesotho makes it imperative that construction begin at the earliest possible date.

III. Justification for Deviation from Policy in AID Handbook Regarding Employment of Third Country Nationals (TCN's)

Contractors constructing and/or renovating the houses, warehouses, and field shed facilities may require technical and supervi ry services of TCNs to handle electrical, plumbing, and other design and installation since local expertise may not be available. As the total cost of construction/renovation will be only $464,300 U.S. firms and personnel will not likely be interested in this work. Therefore, deviation from the employment policy in AID Handbook II to permit hiring of TCNs is considered necessary.

IV. Justification for Waiver of Policy Set Forth in AID Handbook II to Permit Procurement of Services from Free World Firms

The need for this waiver is based on the following:

A. Since the amount of construction will be small, U.S. construction firms are not expected to be interested in this work.

B. A sufficient number of qualified firms operating in Lesotho are available to perform the required construction and permit competitive procurement. Possibly a number of firms may be qualified as "local firms" under Section 2(d) of Handbook II, Chapter 2, on the grounds that they are integral parts of the local economy. However, since some of the firms operating locally may not be incorporated in or may not have their primary place of business in Lesotho, this waiver is considered necessary to assure adequate competition and availability of services.

C. In addition, it is anticipated that some maintenance and repair services will have to be provided by local firms, many of which may also be owned by South African or other Free World interests.

D. No U.S. firms providing the required services are known to exist in Lesotho.

V. Justification for Waiver of Source and Origin Requirements for Vehicle and Tractor Procurement

A. Vehicles

The need for the vehicle waiver is based on: a) the lack of spare parts in Lesotho for U.S. manufactured vehicles with resultant long down-times as parts are obtained; b) the lack of mechanics with an understanding or experience in maintaining U.S. manufactured vehicles which results in improper and inadequate repair; and c) the safety hazard to U.S. staff presented by lefthand drive vehicles on narrow, twisting mountain roads and as other vehicles are met or passed.

Virtually the only vehicles of U.S. [illegible]facture in Lesotho are those which AID has provided under other projects. While these vehicles have provided good services there have been problems in securing spare parts. The need for spares, based on recent OSARAC experience, is accentuated by the normal, heavy use of the vehicles, amounting to over 20,000 kilometers per year, 80- percent of which is on dirt and low standard roads. As the vehicles grow older and require more frequent and extensive repairs, the problems become more serious.

The problem of spare parts is compounded by the lack of mechanics who understand the componentry of U.S. vehicles. Consequently, even when spare parts are available, they are often improperly utilized resulting in a prompt need for additional repairs and additional down-time. For the AID-financed staff these vehicle breakdowns seriously hinder the performance of duties. The lack of service and spare parts for U.S. manufactured vehicles also presents a risk to the health and lives of the persons required to operate the vehicles.

Perhaps more importantly, the lefthand drive of U.S. vehicles is a genuine safety hazard accentuated by the large and clumsy configuration of these vehicles designed for wide and well-maintained roads. In Lesotho the narrow, extremely dusty and rough mountain roads with sharp curves and steep grades demand visibility not possible with a left-hand drive vehicle. Passing other vehicles is particularly hazardous.

In this situation of left-hand drive U.S. vehicles not being readily and reliably repairable when they break down and constituting a safety risk when on the road, it is suggested that vehicles manufactured in the Republic of South Africa are an appropriate substitute. For these vehicles produced by U.S. subsidiaries (Chevrolet, Ford, and International Harvester), spare parts are readily available and local mechanics are familiar with the vehicles and able to properly carry out repairs.

B. Tractor and Equipment

The need for a waiver to allow the purchase of two tractors plus equipment is based on: a) availability of dealer servicing and spares; and b) familiarity of Basotho tractor operators with the equipment.

There are no tractors of U.S. origin in Lesotho and, while very similar, U.S.A. produced tractors and equipment are not identical to the U.S. manufactured items. Consequently, there may be problems in providing necessary servicing as the mechanics will be unfamiliar with the equipment. Also, for only two tractors, no dealer could be expected to stock the spares unique to U.S. tractors. Special ordering each time a particular part is needed will be both burdensome and time consuming. Thus it is very conceivable that uninformed servicing and a lack of spares could result in substantial down-time.

To increase tractor life it is also important that the Basotho tractor drivers be familiar with the equipment. They are well acquainted with the RSA manufactured machinery and able to operate them effectively. U.S. produced equipment would be less familiar and subject to a greater probability of ill-use and improper handling.

Summary

Therefore a waiver permitting the procurement of the indicated small number of vehicles and tractors plus equipment from a Code 935 country is considered justified and necessary.

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Thaba Basiu Rural Development Project

Women in Agriculture

Planning and Evaluation Unit

September 1977

Women in Agriculture

The production of Lesotho's traditional crops and the keeping of livestock provide, in general, an unsatisfactory living for the average farming household. Consequently most households send at least one man to the Republic of South Africa to earn a regular income. In order to maintain his rights to the land and the security it provides, the migrant's family must remain on the land, although the labour and management resources available to the family are not always adequate to farm five acres. As a consequence the land is under-utilized and the male labor force does not become fully skilled in farming through "learning by doing". When the young men normally would be learning to farm, their fathers (teacher) are away for a portion of the time. When the men cease to be migrants it is not easy for them to learn good farming practices and their health may be impaired. At present when we speak of farmers in Lesotho, for the most part we are speaking of young boys, older men and women of all ages, who are left behind while husbands are in the mines, older women whose husbands no longer go to the mines but are unable to work or those women who are widowed.

To understand the role of women in agriculture better one must look briefly at migrant labor.

A preliminary report from the 1976 Population Census (Bureau of Statistics) shows the total population in 1966 and 1976, including absentees, to be as follows:

	Males	Females	Total
1966	465,704	503,850	969,634
1976	586,870	627,090	1,213,960

Economic opportunity has attracted over half of the male labor force to off-farm employment in Lesotho or the Republic of South Africa. The 1969 male labor force figures show:

	Numbers	Percent
Employment in Lesotho in Agriculture	135,000	50%
Paid employment in Lesotho	15,000	6%
Paid employment in RSA	120,000	44%
Total	290,000	

According to Van de Wiel [1] the real average length of the working life of a migrant worker outside Lesotho is 16 years.

Married women for the most part receive the remittances of their husbands and mothers receive remittances from their single sons. In the case of husband and wife the husband can request that distribution of funds be made to other household members, for instance to the wife's parents for bohali payment, or to his parents etc. Van de Wiel's findings on the expenditure pattern (where more than half of the miners send back at least 40% of total wages earned) of remittances by miners are summarised in the following table.

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1) Earning and Expenditure Pattern of Mine Migrant Workers; ACA Van de Wiel, FAO Rural Sociologist, May 1977.

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Expenditure Pattern of [illegible] Farm Household

Item	Value	Percentage	Percentage of Finance
Food and clothing	R250	55	100
Building	R 32	7	38
Furniture	R 27	6	34
Agriculture	R 23	5	59
Livestock	R 50	11	35
Bohali (brideprice)	R 36	8	26
Savings	R 23	5	20
Others	R 13	3	30
	R454	100	

Source: derived from Van de Wiel op. cit.

These expenditures in agriculture include rent for a tractor or the team of oxen for plowing and the purchase of fertilizer and seeds. The relatively large sum invested in livestock, particularly in cattle, is the result of the superior facilities for storing and investing wealth that cattle provide and the inadequate alternative investment opportunities.

In addition, Van de Wiel states that in Lesotho, there is a clear labor division between both sexes. Males migrate to the Republic of South Africa to supply the household with the necessary cash income and women remain at home to supervise the domestic routine, including the cultivation of the fields and the allocation of the cash earnings. Most rural households therefore require an absent wage earner and a resident manager. Whereas 37% of the heads of households are female, 69% of the households are managed by women[1]. The discrepancy between the latter two figures is explained by the fact that husbands who are absent migrants continue to be recognized as household heads but the effective responsibility for domestic affairs is vested in their wives.

Studies by the Thabo Qosiu Rural Development Project's Planning and Evaluation Unit also indicate a high percentage of women as farm household heads (FHHH) and others are decision making managers.

For the Thabo Qosiu Project the average age of farm household heads and the percentages of male and female FHHH are shown below:

	Average age (Years)	Sex of FHHH as percentage of Total	
		Male	Female
Lowlands	52	72	28
Foothills	51	75	25
Project Area 1974	52	73	27
Project Area 1979		70	30
Lesotho		62	38

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Marital Status of FHHH

	All FHHH	Males	Females
		Percent of Total	
Married	72	96	7
Widowed	26	3	89
Deserted, divorced, separated	1	1	-
Never married	1	-	4
	100	100	100

As seen from the table most of the female FHHH are widows.

Decision Making on Absentee Fieldholders' Fields

Field Holders (percent of total)

	Make no decisions	make some decisions	make all decisions	Tot
Lowlands	58	35[1]	7	
Foothills	63	23	14	
Project Area	60	29	11	

Source: Characteristics of Farm Households, April 1976.

The women are required as 'Resident Managers' to organize and affect the household, make timely decisions about farming and livestock and allocate cash earnings to household and other requirements. The majority of women in the rural sector are educated to at least a primary school level and many have achieved secondary levels. Few women, however, have a working knowledge of subsistence farming techniques.

Women in Lesotho today are serving as professional officers, as planners, administrators, extension agents in Home Economics, Nutrition, Vegetable, Poultry and Fruit Production, Livestock assistants, accountants, supervisors as well as field personnel in aid funded projects and government institutions at village, district, regional and national levels. These women advise not only on production, but also marketing and home use of the and products.

At present there are 63 women working in Nutrition and Home Economics officers in the Head Office of the Ministry of Agriculture and 51 field staff including regional supervisors, district supervisors and field agents. These staff members serve Lesotho nationwide. At the village level women in the Thaba Tseku Rural Development Project area comprise over half the total number of Village Distribution Point agents who sell inputs directly to the farmers in village stores as well as advising the farmers on the use of the inputs.

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1) The higher incidence of nuanny (in Lesotho) off-farm employment in the lowlands zone is probably responsible for the higher percentage of absentee landholders who 'make some decisions' concerning the field in this zone. However, some 60% of absentee field holders do not make the decisions concerning their fields. Since 40% of field holders are absent (project area figures) it would appear that 23%, one quarter of all field holders, make no decisions concerning their fields.

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[illegible]

[illegible] Ministry of Agriculture [illegible] field agents [illegible] on fertilizer application, [illegible] veterinary, dairy [illegible], etc. Crops emphasized are maize, sorghum, beans, peas, wheat, [illegible] and fruit production, with emphasis on fodder production. [illegible] farming techniques are discussed by the agent with the farmers, [illegible] mostly women [illegible] for the [illegible] in village [illegible] (meetings). Training centers are used for training women and men in improved techniques. There are [illegible] village level courses which provide instruction in basic agricultural techniques.

There is a trend at present toward more women becoming trained [illegible] agents or advisors in cropping systems, dairy cow operations, [illegible] and conservation. There are 165 students at the Lesotho Agricultural College. For the spring 1977 term 51 women were enrolled in first and second year Rural Domestic Economics classes and 56 were enrolled in General Agriculture Degree first and second year classes. Diploma level courses will also be offered this Spring, 1977. It is not [illegible] at present whether women candidates will be chosen. The Ministry of Agriculture realized the need to expand its agricultural staff and has looked toward women to fill this gap. The shortage of staff is related directly to the shortage of manpower in the country. Should migration patterns change the MoA could possibly re-evaluate its role for women, however, one LAC source explained that if women continue at the high performance rate they have established so far, drastic changes should [illegible] be expected.

At the primary and secondary school levels limited study [illegible] are offered to men and women in agriculture. Some village schools [illegible] vegetable gardens but lack funds for their development. Soil Conservation education has been under discussion for the primary school levels, but whether a program will be developed is unknown at the present time. The 4-H or Young Farmers Club offers informal education opportunities for youth in agriculture. There are 83 clubs in the lowlands and foothills districts of Lesotho. Due to staff shortages they have yet to extend into the mountains. For each club there are 5 adults on the Advisory Committee and 3 adults advising on what is termed Individual Projects. Emphasis is placed on individual and communal projects. Main programs include vegetable production, with irrigation where feasible, tree planting, soil conservation, poultry and rabbit breeding, field crop production and use of fertilizer, cooking and food preparation, handicrafts, homesite beautification and school feeding program. There is no sex preference in these programs and again due to the out-migration of men, women seem to outnumber the men in the clubs.

The expansion of such programs in the future lies in national recognition of their importance, especially where no formal agricultural education exists for Youths.

A more comprehensive analysis needs to be made of what the villagers can do themselves, with existing services here in Lesotho. Small agricultural industry, while, not a favorite topic of most aid funded projects, might be one way to boost the cash economy of Lesotho's farmers. Women do have interests in vegetables, pigs, chickens, milk production and rabbits. However, these women for the most part are working on these types of self-developed projects without much technical advice or readily available commodities to build these small industries. The main concentration on small industry has been for the most part in handicrafts. While this is good it certainly limits the scope of the potential for small industry in the rural sector of Lesotho.

[illegible][1] has been teaching women for the past year [illegible] village [illegible] of Mohale's Hoek. In her opinion women need the [illegible] to improve their cash in-flow capabilities and seem to work best when these opportunities center around the home.

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1) [illegible]

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small agric. industries could fulfill this need if more emphasis can be given to them.

Lesotho Distance Teaching Center is experimenting with pamphlets that explain in easily understandable language, how to go about developing small village industries in homecraft and vegetable gardening. So far results have been favourable and it is expected they will publish in other areas of small economic development.

As more women are trained, in general agricultural studies, opportunities for continuing education should not only be made available but a concerted effort be made to inform women of the opportunities available to them. Lesotho is one country where the need for qualified women in agriculture is being realized more and more. Due to male emigration the traditional role of women is changing. However, simply because there is this change women should not be expected to automatically realize their full potential. National Women's Organizations could do more research on what changes are taking place in women's roles and how women both rural and urban, can better understand their changing position. This relates directly to youth clubs and extension services as well as general organizations for women.

At governments request, women of other nationalities working as advisors in various fields of agriculture could possibly aid in developing an awareness among women in Lesotho on how best to define the immediate and long range tasks necessary to their role as great number supports of the nations economy.

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ANNEX VIII

STATUTORY CHECKLIST

(611) - Country Checklist

Listed below are, first, statutory criteria applicable generally to FAA funds, and then criteria applicable to individual fund sources: Development Assistance and Security Supporting Assistance funds.

A. General Criteria for Country

1.	FAA Sec. 116. Can it be demonstrated that contemplated assistance will directly benefit the needy? If not, has the Department of State determined that this government has engaged in a consistent pattern of gross violations of internationally recognized human rights?	a) The project is designed to help rural poor improving the agricultural productivity of Lesotho farmers. b) No such determination has been made.
2.	FAA Sec. 481. Has it been determined that the government of the 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	No such determination has been made

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	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?	
3.	FAA Sec. 620(a). Does recipient country furnish assistance to Cuba or fail to take appropriate steps to prevent ships or aircraft under its flag from carrying cargoes to or from Cuba?	No.
4.	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.
5.	FAA Sec. 620(c). If assistance is to a 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?	No.

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6.	FAA Sec. 620(e)(1). If assistance is to a government, has it (including government agencies or subdivisions) taken any action which has the effect of nationalizing, expropriating, or otherwise seizing ownership or control of property of U.S. citizens or entities beneficially owned by them without taking steps to discharge its obligations towards such citizens or entities?	No.
7.	FAA Sec. 620(f); App. Sec. 108. Is recipient country a Communist country? Will assistance be provided to the Democratic Republic of Vietnam (North Vietnam), South Vietnam, Cambodia or Laos?	No.
8.	FAA Sec. 620(i). Is recipient country in any way involved in (a) subversion of, or military aggression against, the United State or any country receiving	No.

	U.S. assistance or (b) the planning of such subversion or aggression?	
9.	FAA Sec. 620(j). Has the country permitted, or failed to take adequate measures to prevent, the damage or destruction, by mob action, of U.S. property?	Security and protection measures appear to be adequate and reasonable.
10.	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 such denial has been considered.
11.	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	

	U.S. assistance or (b) the planning of such subversion or aggression?	
9.	FAA Sec. 620(j). Has the country permitted, or failed to take adequate measures to prevent, the damage or destruction, by mob action, of U.S. property?	Security and protection measures appear to be adequate and reasonable.
10.	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 such denial has been considered.
11.	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?	No such actions
	b. has complete denial of assistance been considered by AID Administrator?	
12.	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?	No
	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.
13.	FAA Sec. 620(s). What percentage of country budget is for military expenditures? How much of foreign exchange resources spent on military equipment?	Until 1977 Lesotho had no army, only a police force. In 1977 a small army was just being organized. For 1977, police and internal security

Annex VII - continued

	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)).	expenditures represented [illegible] of GCL budget expenditures or of GDP. Less than [illegible] foreign exchange resources are spent on military equipment. No money has been spent on sophisticated weapons systems.
14.	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, not applicable.
15.	FAA Sec. 620(u). What is the payment status of the country's U.N. obligations? If the country is in arrears, were such arrearages taken into account by the AID Administrator in determining the current AID Operational Year Budget?	There is no indication of any arrears.

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Annex VIII - continued

16. FAA Sec. 620(A). Has the country granted sanctuary from prosecution to any individual or group which has committed an act of international terrorism?	We have no knowledge of any such action.
17. FAA Sec. 620. 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 the 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.?	We have no knowledge of any such delivery or receipt.
19. FAA Sec. 901. Has the country denied its citizens the right or opportunity to emigrate?	We are not aware of any case.

B. Economic Criteria for Country

2. Security Supporting Assistance Country Criteria.

a. FAA Sec. 502B. Has the country engaged in a consistent	No.

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pattern of gross violations of internationally recognized human rights? Is program in accordance with policy of this Section?	N/A, Yes.
b. FAA Sec. 531. Is the Assistance to be furnished to a friendly country, organization, or body eligible to receive assistance?	Yes.
c. FAA Sec. 609. If commodities are to be granted so that sale proceed will accrue to the recipient country, have Special Account (counterpart) arrangements been made?	No Grant Commodities will be sold and thus no sale proceeds will be generated.

FY 197[illegible] - [illegible] Pilot Checklist

Listed below are, first, statutory criteria applicable generally to projects with FAA funds, and then project criteria applicable to individual fund sources: Development Assistance (with a sub-category for criteria applicable only to loans): and Security Supporting Assistance funds:

A. General Criteria for Projects

1. Appr. Unnumbered; FAA Sec. 653(c)

(a) Describe how Committees on Appropriations of Senate and	(a) This project was included in the FY 197[illegible]

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Annex VIII- continued

	House have been or will be notified concerning the project;	Congressional Presentation on page 183.
	(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) Yes.
2.	[redacted]	(a) Yes. Upon satisfaction of relevant conditions precedent.
	[redacted]	(b) Yes.
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	The GOL Executive Branch will have to gazette a organizational structure and technical positions for the MOA's Research Division and include project funding in the GOL budget.

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Annex VIII - continued

purpose of the assistance?	These are administrative actions which require no specific legislative action.
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)?	This is not a water or water-related land resource construction project.
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?	This is a technical assist. project, not a capital assistance project. Therefore no certification is required.
6. FAA Sec. 611(f). Is project susceptible of execution as part of a regional or multilateral project? If so why is	No.

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project not at 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?

7. FAA Sec. 601(a); (and Sec. 201(f) for development loans).

Information and conclusions whether project will encourage efforts of the country to:	The project is designed to improve the productivity and incomes of Lesotho's rural poor. To the extent export products are included in the enterprise mixes, increased international trade will be the result. Farmers, both individuals and groups, are the project's main beneficiaries and private sector development will be enhanced accordingly. Monopolistic practices will
(a) increase the flow of international trade;	
(b) foster private initiative and competition;	
(c) encourage development and use of cooperatives, credit unions, and savings and loan associations;	
(d) discourage monopolistic practices;	

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	(e) improve technical efficiency of industry agriculture and commerce; and (f) strengthen free labor unions.	be discouraged through the development of farming systems appropriate to the mass of Basotho farmers rather than selective relatively better endowed groups. Improvement in the technical efficiency of agriculture is the very essence of the project. The project has no applicability to labor unions except to the extent cooperatives may be involved and are considered as such.
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).	The project will fund U.S. source technical assistance, U.S. university training and some U.S. commodities.

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Annex VIII- continued

9.	FAA Sec. 612(b); S. [illegible] 20(L). 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.	GOL will contribute approximately [illegible]% of the project costs. This is considered reasonable and generous in view of Lesotho's international political climate, its status on the UN's list of "least developed countries", and its limited financial resources.
10.	FAA Sec. 612(d). Does the U.S. own excess foreign currency and, if so, what arrangements have been made for its release?	Not an excess foreign currency country.

C. Project Criteria Solely for Security Supporting Assistance

FAA Sec. 531. How will this assistance support/promote economic or political stability?	The project will lead to improvements in the productivity and welfare of small-scale farmers and herders. This, in turn, should lead to a more stable and prosperous nation.

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