PROJECT PAPER

ENVIRONMENTAL SANITATION AND PROTECTION PROJECT

(633-0084)

USAID/BOTSWANA

MINISTRY OF LOCAL GOVERNMENT AND LANDS

September 1979

I. INTRODUCTION
A. Face Sheet Data

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT PAPER FACESHEET

1. TRANSACTION CODE: [A] A = ADD, C = CHANGE, D = DELETE — PP

2. DOCUMENT CODE: 3

COUNTRY ENTITY: Botswana

4. DOCUMENT REVISION NUMBER: Original

5. PROJECT NUMBER (7 digits): 633-0094

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7. PROJECT TITLE (Maximum 40 characters): Environmental Sanitation - Phase I

8. ESTIMATED FY OF PROJECT COMPLETION: FY 81

9. ESTIMATED DATE OF OBLIGATION: A. INITIAL FY 79; B. QUARTER 4 (Enter 1, 2, 3 or 4); C. FINAL FY 79

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	235	264	499	235	264	499
GRANT	235	264	499	235	264	499
LOANS	-	-	-	-	-	-
OTHER U.S. 1. Peace Corps	6	6	12	6	6	12
OTHER U.S. 2.						
HOST COUNTRY	41	236	277	41	236	277
OTHER DONOR(S)						
TOTALS	282	506	788	282	506	788

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 79 F. GRANT	E. 1ST FY 79 G. LOAN	H. 2ND FY — I. GRANT	H. 2ND FY — J. LOAN	K. 3RD FY — L. GRANT	K. 3RD FY — M. LOAN
(1)	8510	541	-	499	-				
(2)									
(3)									
(4)									
TOTALS				499	-				

A. APPROPRIATION	N. 4TH FY — O. GRANT	N. 4TH FY — P. LOAN	Q. 5TH FY — R. GRANT	Q. 5TH FY — S. LOAN	LIFE OF PROJECT T. GRANT	LIFE OF PROJECT U. LOAN
(1)					499	-
(2)						
(3)						
(4)						
TOTALS					499	-

12. IN-DEPTH EVALUATION SCHEDULED: MM 07 YY 81

13. DATA CHANGE INDICATOR. WERE CHANGES MADE IN THE PID FACESHEET DATA BLOCKS 12, 13, 14, OR 15 OR IN PRP FACESHEET DATA, BLOCK 21? IF YES, ATTACH CHANGED PID FACESHEET

[1] 1 = NO, 2 = YES

14. ORIGINATING OFFICE CLEARANCE

SIGNATURE: Louis A. Cohen

TITLE: Director, USAID Botswana

DATE SIGNED: MM 09 DD 19 YY 79

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

AID 1330-4 (3-78)

ACTION MEMORANDUM FOR THE DIRECTOR, USAID/BOTSWANA

THRU: Assistant Director, John Pielemeier DATE: 19 September 1979

FROM: Charles S. Gordon, Program Officer

SUBJ: Project No.633-0084, Environmental Sanitation and Protection Project

Problem: Your approval is required of the Project Paper for above-cited project prior to executing a grant agreement with the Government of Botswana in the amount of $499,000. The grant agreement is for the life-of-project, and includes provision for 48 person-months of U.S. technical services, procurement of vehicles (2), mass media equipment, and local costs for construction of demonstration latrines, and off-shelve procurement of some commodities.

Discussion: The project has been designed in very close collaboration with a GOB Reference Group and has benefited from refinements provided during review of several earlier drafts. There are no major issues outstanding and the proposed Conditions Precedent and Covenants have been thoroughly discussed with the GOB and we anticipate no problems in negotiating a grant agreement. The project requires five vehicles: 2, 5-ton trucks, one for each district, to transport building materials; 2 pick-ups, one each for the US experts, and one media vehicle for transportation of audio-visual equipment.

The GOB, as part of its contribution, is committed to procurement of the 2, 5-ton trucks, and one pick-up. AID will provide the pick-up and one media vehicle. A Code 935 vehicle waiver is included in the PP (Annex O) for $24,000.

Section E of Delegation of Authority 140, Project Approval and Host Country Assurances, authorizes you as Mission Director to approve projects provided that the firm total cost of the project to A.I.D. does not exceed $500,000.

Subsection of Section D of Delegation of Authority, Procurement Waivers, permits you to sign waivers for project vehicles if total cost does not exceed $25,000.

USAID/Botswana has received the allotment for this project; the GOB has informed us that a letter is being addressed to USAID approving the project and indicating the GOB is prepared to sign the grant agreements.

Recommendation

Based on the foregoing, and your knowledge of the content of the project, we recommend that you sign the attached as follows:

(1) Procurement source and Origin Waiver (Annex O of PP, page 107);

(2) PP face sheet;

(3) PAF "Project Authorization and Request for Allotment of Funds".

APPROVED

DISAPPROVED _____

DATE _____

DRAFT:CSGordon

CLEARANCES:Asst. Dir:JPielemeier

Controller:JCStanford

BOTSWANA ENVIRONMENTAL SANITATION

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

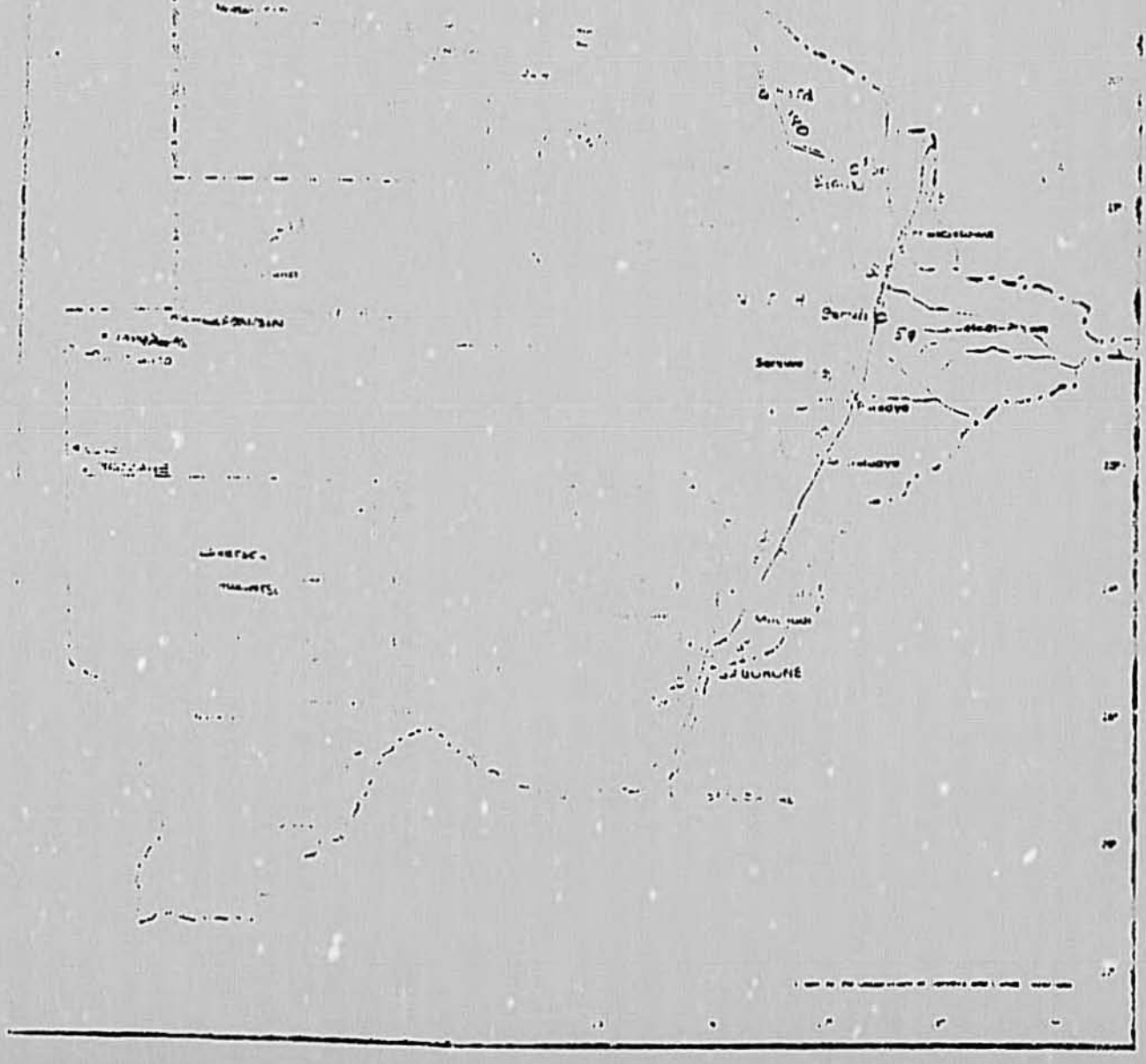
VI. ANNEXES

I. ABBREVIATIONS

[illegible]	[illegible]
[illegible]	[illegible]
FP	Family Planning
[illegible]	[illegible]
H	Health Educat[illegible]
IBRD	International [illegible] Reconstruction [illegible] Development (World Bank)
[illegible]	[illegible]
[illegible]	[illegible]
MFL	Ministry [illegible]
MOH	Ministry of Health
NDP	National Development Plan
PID	Project Identification [illegible]
PP	Project Paper
REC	[illegible]
RLDS	Rural [illegible]
RTTC	Rural [illegible]
ROSC	Relief Overseas Tarm Clothing
UNAVTC	U.N. Audio-Visual Information [illegible]
VIP	Ventilated Improved Pit Latrine
VDA	Village Development Assistant
VDC	Village Development Committee
Other	

Motswana - A citizen (male or female) of Botswana
Batswana - plural of Motswana

$1.00 = P.82
P1 = $1.22



D. Project Design Team

Felix Awantang, Sanitarian, Westinghouse Health Systems

Lucas Chideya Chihota, Multi-Media Communications Specialist, Westinghouse Health Systems - Team Leader

N. W. Danforth, Evaluation Specialist, Westinghouse Health Systems

Pia Kjaer-Olsen, Anthropologist, NPSC

Helen O'Brien, Health Educator, Westinghouse Health Systems

Geffrey Read, Sanitarian, Technical Advisory Group for IBRD/UNDP global project "Low Cost Water and Sanitation Techniques - Development of Demonstration Projects," on loan

AID

Dianne Blane, Project Officer, REDSO/EA, Nairobi

Constance Collins, Regional Health Development Officer, Mbabane

Philip Buechler, General Development Officer, USAID/Gaborone

E. Summary Description of the Project

Substandard personal and community sanitary practices, principally the lack of adequate disposal of human excreta, the presence of animal waste around village water sources and the lack of refuse disposal, are prime vehicles of disease transmission and health problems related to contaminated water. Government and district-level concern for this situation has been increasing since November 1976 when the National Conference of District Development Committees of Botswana resolved that a nationwide coordinated effort was necessary to improve sanitation. Prior to undertaking a nationwide "Environmental Sanitation and Protection Program," (ESPP), however, the Government of Botswana (GOB) has requested AID assistance in implementing a pilot, experimental project in two districts, Southern and Kgatleng. The GOB letter of application for assistance is attached as Annex A.

The purpose of the project is to undertake a pilot village-based ESPP, with a high level of community involvement and focussed on sanitary options and a multi-media health education campaign. The project will be implemented over a period of two years. Activities will be undertaken in six villages, three in each of the two districts. Over the two-year period, AID and the GOB on the central, district and village levels, will

-- develop, test, and evaluate various educational techniques, media, and messages related to sanitation and to the building and maintenance of appropriate latrines and refuse disposal systems; and

-- test various types of latrines and refuse disposal systems to determine which ones are technically appropriate, socially acceptable, and affordable to rural households.

Functional elements of the project include (a) a multi-media health education campaign, (b) construction of latrines and refuse disposal systems in each village, (c) on-the-job training (OJT) of health personnel and village-based construction teams, (d) continuous evaluation, and (e) experimentation and research on low- and lowest-cost options for improved rural sanitation. Assistance in the production of multi/mass-media materials will be provided by the Peace Corps.

The project will look at how ESPP can be replicated on a district-by-district basis. Recommendations from the pilot should lay the ground work for a package which may be used in any district and which can be implemented at a decentralized level by local authorities in accordance with GOB's emphasis on District Development planning when the districts define the problem as a priority and are willing to commit resources to it.

AID inputs to the project will include the services of Multi-Media Specialist/Project Coordinator and a Sanitarian for two years each, plus the services of a Social Scientist for 6 months. Short-term training in media management will be provided to the Botswana counterpart Project Coordinator in the U.S. and third countries. Funds will also be provided

for the purchase of multi-media educational equipment and supplies; two vehicles, including a vehicle to transport media equipment; construction materials and building tools. Other costs of the project will include the local hire of students to participate in the evaluation element of the project, periodic conferences and seminars and research funds. The GOB will provide the full-time services of a counterpart Project Coordinator and the part-time services of an economist and the cadre of health personnel working on the district and village levels, three trucks, camping equipment, vehicle operation and maintenance, office space and secretarial services. The District Councils will provide housing for the U.S. personnel in Kanye and Mochudi. If the U.S. personnel are assigned to Gaborone, cost of rental for housing may be charged to the project. The Peace Corps will provide the services of a Materials Producer Volunteer for at least one year, including support-related costs. The GOB will also provide housing for the PCV.

The total life-of-project cost is $800,000. The AID contribution will be $499,000 (62 per cent), and the GOB will provide the in-kind equivalent of $289,000 (36 per cent). Project inputs are summarized below:

Component	AID	GOB	Peace Corps	Total
		$000		
Technical Services	211	92	10	313
Participant Training	19	-	-	19
Commodities	77	53	-	130
Other Costs	111	96	-	207
Sub-Total	418	241	10	669
Inflation (10 per cent)	40	24	1	65
Contingency (10 per cent)	41	24	1	66
Grand Total	499	289	12	800

II. PROJECT BACKGROUND

A. General Setting

The Republic of Botswana is a land-locked country in the center of Southern Africa, at an elevation of 1,000m above sea level, with an area of 570,000 square kilometers and a population of about 805,000 people (1978). Some 80 per cent of the population is concentrated in the Eastern part of the country because of availability of comparatively good soil, employment opportunities, communications, markets and supplies of consumer goods. The population is expected to grow at about 3 per cent per annum during the next 15 years. The urban proportion of the population has increased rapidly from 4 per cent of the total in 1964 to 15 per cent in 1978. Botswana has a semi-arid climate, with average annual rainfall of 475mm. The main rainfall season is in the summer months between November and March.

The country has a rather unique rural settlement pattern. A substantial portion of the rural population resides during the dry winter months in sizeable villages, the largest of which serve as centers for the various tribes of the Tswana ethnic group. Most village households also have residences at the "lands," where women cultivate crops, while the men look after cattle at the "cattle posts," which may be up to 100 kilometers from the village. After the harvest, and with the onset of the dry season, the villages regain their normal size and vitality.

In recent years, most villages have been provided with a borehole or other form of water supply. The Ministry of Mineral Resources and Water Affairs estimated in mid-1978 that 90 percent of the urban population has access of safe water. However, it is also estimated that only 28 percent of the rural population (approximately 80 percent of the total population) has access of safe water. Current water consumption levels per household are estimated at a low 20 liters per capita per day (lcd). Current data indicate that service levels of 30-40 lcd on-site are required to protect the consumer from the range of water-related diseases and health problems.

Rural poverty is very real. The GOB Income Distribution Survey of 1974-75 estimated that the median income in both cash and kind is Pula(P) 630 ($750) per household,* or $125 per person per year. The poorest 10 percent of the population has incomes of less than P233 ($270) per year; the richest 10 percent has incomes of more than P2,094 ($2,400) per year. The implications of this income distribution have been considered in the design of this pilot project and will be extremely important if the GOB considers a nationwide ESPP.

B. Health Setting

1. Introduction

Compared to other developing countries, Botswana is a relatively healthy country as indicated by its low mortality rate -- 13.7 per 1,000. This is largely due to low infant mortality, estimated at 103 per 1,000 male and 91 per 1,000 female births. Common tropical diseases, such as malaria, are confined to the Northern part of the country.

Many of the health problems are associated with poor sanitary practices: the unhygienic disposal of human and animal wastes, and a lack of refuse disposal facilities. In 1976, 23 percent of outpatients diagnosed at health facilities throughout the country suffered from gastroenteritis, eye infections and skin infections -- some of the principal health problems related to water and sanitation. Preventive measures directed

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*The average household size is approximately 6 persons.

toward environmental factors coupled with health education could eliminate or control many of these conditions. This would considerably ease the burden now on both in-patient and out-patient facilities represented by high incidences of sanitation/water-related illnesses. Also, time spent by health staff treating these patients could well be directed toward other preventive and curative activities -- easing somewhat the problem of shortage of medical personnel. (See Annex C for information and statistics on sanitation/water-related diseases and other diseases which present problems in Botswana). In addition, there is evidence of increased incidence of both malaria and schistosomiasis in scattered parts of the country, both of which are related to water and sanitation.

2. Health Problems Related to Sanitation

The GOB estimates that less than 25 percent of the rural population uses sanitary facilities. Most villagers still traditionally use "the bush" for disposal of bodily wastes. Human excreta is the principal vehicle for the transmission and spread of a wide range of diseases via the fecal-oral route, that is, from the feces of a patient or carrier to the mouth of another person by the ingestion of contaminated food and/or water or by unwashed hands. Several of these diarrheal diseases are important causes of morbidity and mortality, especially among infants and children. The enteric diseases of concern in Botswana are diarrhea, amoebic and bacillary dysentery, salmonellosis, typhoid fever, paratyphoid fever and infectious hepatitis.

Animal wastes around boreholes is another vehicle for the transmission of pathogens. There have been increasing reports of heavy bacteriological pollution of many boreholes in Botswana by both human and animal wastes.

Many species of parasitic worms, or helminths, are also spread by excreta through the contamination of soil and water. A number appear to cause few symptoms, but some can give rise to a range of serious illnesses. Those present in Botswana include round worms (Ascaruasis), beef tapeworm, bilharzasis (schistosomiasis), and hookworm (mainly around boreholes).

Excreta and refuse also relate to human disease when their disposal encourages the breeding of insects. Any insect which breeds in excreta or which feeds on excreta may carry particles of feces from place to place. This may be done either on the legs or other parts of the external body surface or if the insect vomits or deposits pathogenic organisms, previously ingested, into the environment. These insects

may be a nuisance in themselves (flies, cockroaches, mosquitoes); they may mechanically transmit excreted pathogens either in their bodies or in their intestinal tracts (flies, cockroaches); or they may be vectors for pathogens which circulate in the blood (mosquitoes). The vector-borne diseases in Botswana include eye and skin diseases, malaria and schistosomiasis.

In sum, human excreta, animal wastes and refuse are creating a significant health problem in Botswana. Low-cost solutions to the collection, transportation, treatment and disposal of excreta and refuse in rural Botswana are of utmost importance to protect the health of the population.

In addition, health education that provides the population with accurate information concerning sources of infection, modes of transmission, and ways of preventing diseases and illnesses related to poor sanitation could motivate them to make the necessary changes in their way of life and to take preventive action in their community. (See Annex D, Symptoms of Diseases and Modes of Transmission).

3. Importance of Proper Disposal of Children's Excreta

Any improvement in health conditions in general, and household sanitation specifically, must focus attention on children. Children are not only primary sufferers of sanitation/water-related diseases, but also the primary sources of infection. In all societies, children below the age of 3 will defecate whenever and wherever they feel the need. Generally, the stools of these children are regarded as relatively inoffensive. Since many diseases are primarily infections of childhood, or affect children as well as adults, a large proportion of children under 3 are excreting substantial quantities of pathogens. The stools can play a significant role in transmitting infection to other children and adults. Health education of mothers should encourage the belief that the stools of young children are dangerous and should be disposed of in a hygienic manner.

Children over the age of 3 years frequently do not use latrines even if they are available because:

a. They find it inconvenient and are not encouraged in their use by their adults.

b. They cannot because the latrines are not designed for use by children.

c. They are afraid of falling down the hole.

d. They are prevented by adults who do not want the children soiling the toilet.

As with very young children, the stools of some of the children in the 3-12 age group will also be rich in pathogens and should be disposed of hygienically. Children over 3 years of age are capable of using a toilet if one of suitable design is available and if mothers are educated to provide a toilet and compel them to use it.

Education for school children in the need for, and the proper use of, latrines could be very effective, but it is vitally important that all schools have well-maintained latrines so that the children may learn from positive experiences.

4. Relationship Between Sanitation, Water and Health

The relationship between sanitation, water and health cannot be overlooked. Water is related to sanitation and health in two ways -- contaminated water or insufficient amounts of water for personal hygiene can be a direct cause of disease, and the disposal of sullage theoretically can serve as a means of transmission for some types of diseases.

Water should be sufficiently safe to provide protection against the range of water-related diseases and also plentiful enough for personal hygiene, which (based on health education) will lead to less diarrheal disease, skin and eye infections and fewer skin parasites. (For the latter group, access to water is more important than its microbiological or chemical quality.)

According to a 1978 analysis undertaken by the Ministry of Finance and Development planning, clean water is the first priority of the expressed needs by the population. Under the present National Development Plan (NDP IV) (1975-81), by 1985 all villages with more than 500 people and the majority of smaller settlements in Botswana will be supplied with safe water. No one will need to walk more than 400 meters to a standpipe. But even the provision of adequate safe water and sanitation facilities may not contribute to an appreciable reduction in water-borne diseases unless certain other behavior factors are modified. For example, clean water can be readily contaminated if buckets and dishes are not kept clean or hands which handle food and water are dirty. To change the customs and habits of any people requires systematic efforts and simultaneous attention to a number of variables -- political, administrative, economic, psychological and social. The cooperation of the public must be sought; individuals and groups must be stimulated to assume responsibility for maintaining personal and community health.

C. Relationship to the AID Botswana Health Services Development Project (633-0078)

The Health Education component of the Botswana Health Services Development Project (to be funded by AID from FY 1978-81) was designed in part to supplement and complement the Health Education output of the USAID/HCH/FP project. Expected outputs of the health education component of the project are:*

-- national health education plan developed and in the process of being implemented

-- GOB capability developed to provide training in health education

-- In-country training program developed for health educators

-- Health education positions in the MOD Health Education Unit filled by Batswana

-- A new facility for MOH, the Health Education Unit, built and in use.

Because of the difficulty of securing places for health education trainees in other African institutions as well as the importance of appropriate training, the MOH prefers to train additional regional health educators through in-service training. In order to staff all regions with persons trained in health education with the next five years, beginning with those districts or regions where the need is greatest (such as the Southern and Kgatleng District, areas for this pilot project), the long-term services of a Health Educator will be provided to develop the curriculum for an in-country health education training program and to assist in teaching.

The MOH Health Education Unit is currently preparing a curriculum for training these Regional Health Educators, who will probably be recruited from the pool of Health Assistants. As this will be a 2-year program, graduates will have little opportunity to contribute to this pilot project. However, the fact that they will eventually be in the field ensures the continuity of the health education component of this pilot project.

It is possible that the AID-provided technician Health Educator can serve as a resource person for the ESPP, structuring the health education curriculum to the needs of the six pilot villages and using these villages for field training experiences.

*Other components are nursing education, health planning and administration and nutrition research.

A U.S. Peace Corps Volunteer Graphic Artist will also be recruited to serve in the Health Education Unit for two years. The volunteer will provide training in graphics and health education materials preparation until a Botswana counterpart returns from training.

III. THE PROJECT

A. Description of the Project

1. Rationale and Scope of the Project

In November 1976, the National Conference of District Development Committees of Botswana resolved that a coordinated national effort was necessary to improve sanitation. As seen then, improvement of sanitation included (1) construction of toilet facilities, and (2) the disposal of refuse. Considerable efforts have been made by GOB health officers, in particular the Health Inspectors, Family Welfare Educators, nurses and Community Development Officers, to promote sanitation. However, success has been limited to date because the majority of families do not have the technical ability or the financial means to construct sanitation facilities, even though in many instances they wish to do so. Opportunities for educating the public also have been limited.

The ESPP was proposed by and agreed on by the Ministries of Local Government and Lands, Health, Finance and Development Planning, and Mineral Resources and Water Affairs. AID was requested to provide technical assistance for a pilot project to test options for improved sanitation prior to a GOB decision on whether or not a nationwide environmental sanitation program is appropriate.

Two districts, Southern and Kgatleng, in their Development Plans for 1977-82, identified poor sanitation as being a priority problem. Since a full commitment by the District Council is essential to the success of the ESPP, it was agreed that this pilot project would be implemented in these two districts. Representatives of the two districts have been fully involved in the design of this project.

This pilot project will seek (a) to develop community understanding and use of various technologies and systems to dispose of human excreta and refuse (beer cans, plastics, paper and household refuse) and to control animal waste around boreholes; (b) to develop and test various approaches to motivate Batswana to improve their ability to protect water sources, and to improve and increase the quality of water; and finally, (c) to develop and test the above through processes which are easily replicable throughout Botswana. As a result of (a) and (b), if continued by substantial portions of the village population over 5-10 years, health conditions will be considerably improved in the pilot villages.

For the project to be successful, methods must be found which are not only effective but also acceptable to people through technologies which they can adopt and at costs which they can reasonably afford. No new technologies are sought; no complicated construction is contemplated; no complex systems are advocated. Experiments will be conducted to find which are most applicable to the different regions of Botswana. The project will extend the knowledge gained from previous studies, such as the low-cost sanitation study which was financed by the International Development Research Centre (IDRC) and completed in July 1978.

As previously mentioned, the project activities will be undertaken in three villages of various sizes (small, medium and large) in each of the two districts. Criteria for selection of the pilot villages have been prepared and will be used by the District Councils in consultation with the Ministry of Local Government and Lands (MLGL). The social criteria are attached as Annex E.

Upon completion of the project after two years, the following conditions will be indicative of achievement of the project purpose:

-- affordable, acceptable and technically appropriate sanitation systems identified for replication in rural Botswana;

-- multi-media health education and training packages developed and tested; and

-- district and village institutions able to implement sanitation activities in six villages.

During the two-year life of the project, it will not be feasible to test adequately all the critical aspects of low-cost sanitation systems. However, organizational and resource requirements, as well as performance and acceptability of individual units, will be usefully measured and evaluated. It may also not be possible within a two-year timeframe to observe adequately the seasonal performance of alternative systems. If delays are encountered in implementation of the project, it is possible that some systems will not be observed during either the dry season or the rainy season. If this should occur, it is recommended strongly that the period of the project be extended sufficiently to include at least one dry season and one rainy season, the minimal seasonal requirements for pilot testing of sanitation systems.

2. AID Functional Elements

a. Multi-Media Health Education Campaig.

As discussed above, one of the conditions which will have been achieved by the end of the project is the development and testing of various educational techniques, media and messages. Various media, both mass media (radio and films) and small-group media (flip charts, booklets, audio-cassettes, posters, folk media, etc.) will be used in health education and for training.

The content of inputs in each media will be based on a need to know by individuals and specific target groups in the pilot villages. The content will include:

(1) General information -- an awareness campaign on good health and hygiene, water supply systems, sanitation, and the use and maintenance of latrines and refuse disposal systems in Botswana and other countries.

(2) Specific health education modules for use by the Village Coordinators, Village Health Committees, an Health Assistants (Sanitation).

(3) Specific technical knowhow, construction techniques and appropriate technology.

The content of the media packages will be selected taking into account the educational levels and the socio-cultural perceptions of the people in the pilot villages. Health education materials will cover important points concerning each of the sanitation/water-related diseases and the most common health problems. The materials will be tested and disseminated via radio, films, audio-slide presentations, flip charts, audio-cassettes, posters, folk media (story-telling, drama and role-playing), exhibitions and Polavision (a basic home-movie system). A plan of action for the use of each of these media is attached as Annex F.

Modules on five core health education subjects will be produced. The recommended core subjects are:

-- sanitary disposal of excreta
-- practice of good hygiene
-- provision of safe water
-- safe disposal of refuse
-- safe preparation and storage of food.

The objectives of each module and suggestions for content are included in Annex G.

An equipped media van will periodically visit the pilot villages during the campaign to show films, Polavision and slide presentations and to conduct other educational and training activities. This will serve to reinforce the work of the Village Coordinators. Simultaneously, the Village Coordinators will be provided with small-group media to use in his/her routine health education activities.

Both men and women will be involved in the campaign. Men must understand the need for better sanitation and should learn how to finance, construct, maintain, and move latrines and refuse pits. However, it is likely women will be the major participants in the sanitation education activities of the campaign.

b. Construction of Latrines and Refuse Disposal Systems

(1) Latrines

One approach to improving rural sanitation will be to encourage and supervise the construction of latrines which have been found most likely to be economically affordable, socially acceptable and technologically appropriate for Botswana. These new latrines and existing older latrines will be monitored in the six villages to determine whether three basic designs, described below, are appropriate in different situations for construction in all rural areas of Botswana. In the past, poorly designed latrines have often been constructed, resulting in a complete waste of money and effort. In some of the villages they have polluted the groundwater. The ESPP will directly benefit those people who want latrines by providing recommendations and advise in building self-help systems that are suitable to both the local environment and the household, family, or institution using them.

Before the multi-media health education campaign begins, three prototypes will be constructed in each village at some of the village institutions, e.g., schools, health pc[illegible]otlas, or wherever they will serve both in a functional capacity as public conveniences and as demonstration latrines to help people decide if they would like a latrine and the model which they would prefer to build for themselves.

A pilot project should normally allow for a choice of a wide range of options to be experimented with. In rural Botswana, this freedom of choice is restricted by a variety of economic, cultural, climatic and hydrogeological factors. The net result is that only three basic sanitation systems will be tested at the individual and community level.

The waterless latrines rated as most popular (with lowest "nuisance" levels) and least costly in the IRDC project are described in the Technical Analysis section. They include the three to be tested in the pilot villages: the Ventilated Improved Pit Latrine (VIP), with its partially offset slab and superstructure over a straight chute; the Reid's Odourless Earth Closet (ROEC), with a fully offset slab and superstructure over a curved chute; and the modified ROEC or Revised Earth Closet (REC), with a fully offset superstructure, like the ROEC, over a double pit. (For diagrams, see Annex H.)

These three pit latrines are essentially alike, except that the REC can be used with a shallower pit (because its double width pit is so wide), which may be required where the surface rock prevents digging deeper than 1.5m. The REC is also easier to empty, if that is desired, than the VIP or ROEC, both of which require the superstructure to be moved when the pit is filled.

Assuming interest by householders in having their own latrines, project funds are budgeted to subsidize the material costs for an estimated 450 latrines for poor households in the pilot villages. Procedures will be established for determining who can qualify for the subsidy and the amount of the subsidy. These procedures will be determined jointly by the project team and the GOB.

All those wanting to build latrines will be responsible for:

-- Excavating the pit and helping make slabs under technical guidance of construction team

-- Provision of materials for superstructure

-- Erection of superstructure

-- Maintaining, clearing, and moving (when full) the latrine.

In addition, the more wealthy households will be required to purchase building materials for the latrine sub-structure without the aid of a subsidy.

At least 225 subsidized latrines will be constructed in each district:

100 in the larger village (with a population of about 5-10,000)

80 in the medium-sized village (with a population of about 5,000)

45 in the smaller village (with a population of about 1,000)

or in roughly 15 percent of the village households. It is anticipated that an equal number of non-subsidized latrines will be constructed in each pilot village for an estimated total of 900 latrines. This assumes that no upper-income households have latrines, which is, of course, inaccurate. These household or family latrines will be built in individual yards and in clusters of yards. As discussed below, the ESPP educators (Family Welfare Educators, Village Development Assistants, etc.) will visit these households regularly to see how these latrines function in the family group: whether people use them, clean and maintain them; and whether the designs are socially acceptable or require modifications.

(2) Refuse Disposal

The following methods of refuse disposal will be considered depending on the size of the village:

-- on-site disposal at each household

-- on-site storage with occasional community collection

-- on-site burning

-- communal collection for burning or composting

-- recycling of aluminum cans and plastics (see Annex J)

-- the use of refuse for energy, such as using organic animal wastes in biogas plants.

At this time, refuse disposal in an individual or communal pit for burning or burying appears to be the most appropriate method. Ash pits in the major villages, where space is scarce, can be installed if a collection system is arranged.

As in the case with latrine construction, householders will be expected to contribute labor for the construction of refuse pits. Supervision will be provided by village construction teams trained during the project.

(3) Animal Waste

In order to protect water sources from contamination by animal waste, villagers in the pilot villages will be encouraged with guidance to fence boreholes with thorn bush. The Department of Water Affairs of the Ministry of Mineral Resources and Water Affairs will also be requested to build water troughs for livestock. As previously mentioned, a health education module will be prepared on the provision of safe water, including guidelines on protection of sources of drinking water.

b. On-the-job Training of Health Personnel and Village-Based Construction Teams

Strong emphasis will be placed in the project on the full participation of all residents in the pilot villages in order to maximize self-help solutions to the problems of sanitation. On-the-job training of district- and village-based personnel will be provided to upgrade their skills and knowledge since they will be the key people responsible for both health education and construction activities.

Three seminars on health education will be sponsored by the ESPP project team with assistance from the MOH Health Education Unit. The Village Coordinators, members of the Village Development and Health Committees, as well as staff of the District Development Committees will attend. Special seminars and conferences will also be sponsored periodically to provide leadership training, refresher training and group project review.

The Rural Brigade Centers in Mochudi and Kanye will be contracted to carry out a two-week training course in the construction and maintenance of (a) each of the three latrine systems, and (b) refuse pits. Two individuals will be selected from each pilot village for this training. Four Health Assistants

(Sanitation) from each district will also attend. Trainees will develop skills in brick-making, basic carpentry and concrete-mixing. They will also learn how to build seats for latrines from bricks or wood. These village-based trainees will become the backbone of the village construction effort, assisting village householders in a self-help effort to construct personal latrines and refuse pits. The Health Assistants (Sanitation) will serve as a resource for general supervision, guidance and problem-solving.

Finally, the Project Coordinator will provide continuous OJT to the Botswana counterpart who, by completion of the project, will be capable of functioning as Project Coordinator for a nationwide ESPP.

d. Continuous Evaluation

Careful monitoring of the ESPP during the life of the project and a comparison of sanitation attitudes and practices before and after the campaign, are both essential. Accurate conclusions, based on valid, reliable research, are vital if the lessons learned in the six pilot villages are to be applied throughout rural Botswana.

There are five main purposes of evaluation in this project:

-- To provide the baseline data necessary to plan the campaign (e.g., to design educational messages and materials, to select appropriate villages) and to compare with data collected during and after the campaign;

-- To monitor regularly the effects of the ESPP campaign and provide continuous feedback to the ESPP staff which will help them to improve the campaign while it is in progress;

-- To ensure that data collected by local ESPP staff in the six pilot villages are valid and reliable;

-- To compare sanitation and health knowledge, attitudes, and practices in the six pilot villages and two control villages in order to measure the total effect;

-- To make specific recommendations to the GOB for future action.

The ESPP evaluation will focus on whether the project has achieved its end-of-project status -- to develop both (a) technically appropriate, acceptable and affordable sanitation systems, and (b) an effective multi-media health education campaign on the use of those systems and better health habits.

The various kinds of data to be collected before, during and after the campaign can be grouped under six main headings, all of which overlap to some extent:

(1) Technical (are the sanitation systems "technically" appropriate?)

(2) Socio-cultural (are the systems "acceptable?")

(3) Communications (are attitudes and behaviour related to sanitation changing?)

(4) Economic (are the systems "affordable?")

(5) Administration (is improved sanitation being administered effectively by village, district, and central institutions and individuals?)

(6) Training (are sanitation, education, construction and administrative skills being learned and used effectively?)

Evaluation will involve three separate but coordinated activities each of which will result in written documentation to be collected, tabulated, and analyzed regularly throughout the project by the ESPP project team. Each activity will provide continuous feedback to project staff at all levels so that remedial action can be taken when necessary. The three evaluation activities are (a) three social surveys conducted by field researchers, perhaps students, (b) monthly monitoring reports by ESPP village staff, and (c) message/media testing reports by the ESPP project team. The content and methodology of each are discussed in Annex K.

This regular analysis and reporting is very important in such an experimental, pilot project because it helps to guarantee that problems and weaknesses in the project can be identified and that new approaches, materials, or personnel can be tested in time to compare results. Most importantly, it guarantees regular feedback from Gaborone, from the other district, and from the other villages to every staff member involved in ESPP in the six villages.

e. Experimentation and Research

A final functional element of the project will be experimentation and research on low- and lowest-cost options for sanitary systems and on the reuse and recycling of waste materials. New appropriate technologies for the construction of latrines at minimal costs are being tested in Botswana and other countries today. In order to assist the GOB in deciding if a nationwide ESPP can be implemented on the basis of affordability, some attention will be given in the project to testing alternative models and construction techniques for latrines. In addition, an effort will be made to experiment with biogas, composting latrines and recycling.

Reuse of human and animal waste materials is increasingly being tested for the production of biogas and fertilizer. Although most Batswana are unwilling to experiment with the use of human excreta for fertilizer, the Rural Industries Innovation Center (RIIC) at Kanye has been successfully operating biogas units for cooking, the only ones in Botswana. The experimental units use exclusively cow manure and have been in operation for more than one year. The units cost an estimated P300 ($365) to build. RIIC has agreed to undertake the construction of a similar biogas unit and to train people to operate and maintain it during this project in the Kgatleng District.

Also in one district (probably Kgatleng, where distances are shorter), a recycling experiment will be performed to determine if recycling can become cost-effective in rural as well as urban areas. Although recycling is currently profitable in Gaborone, no attempt has been made to collect recyclable materials outside Gaborone. In ESPP, three pilot villages will be mobilized to volunteer to collect cans and plastics which will be transported by trucks returning empty from the villages (after transporting ESPP building materials). The trucks will then take the materials to a railroad depot (e.g., Pilane) for sorting, baling, weighing and shipping by rail to Johannesburg where they can be sold to commercial recyclers to recover costs. See Annex J for a solid waste disposal plan which outlines details for the recycling experiment.

3. Peace Corps Functional Element

In designing the project jointly with the GOB, it was recognized that much of the success of the project, and more specifically of the multi-media health education campaign, will depend on the production and quality of instructional materials and teaching aids.

Requesting limited technical assistance in this area, the GOB would like Peace Corps to participate in the materials production functional element of the project. A PCV Materials Producer will work closely with the MOH Health Education Unit, the MLGL Sanitation Engineer and the Ministry of Works in producing multi-media materials on health education and technical manuals on construction techniques and appropriate technology. Effective performance requires previous experience in Botswana and a sensitivity in the selection and screening of media content to insure that the materials are culturally acceptable to the Batswana audiences in the pilot villages. The Materials Producer will function as a full-time member of the ESPP project team and will participate actively in the other functional elements of the project.

The logical framework on the goal, purpose and output levels is now presented. The complete logical framework is attached as Annex L. This is followed by a detailed discussion of the AID, GOB and Peace Corps inputs to the projects.

B. AID Inputs to the Project

In collaboration with the GOB, the following AID inputs have been identified as necessary to achieve the project outputs and purpose.

1. Technical Services

Multi-Media Specialist/Project Coordinator: The services of a Multi-Media Specialist will be provided for two years. This advisor will also serve as the Project Coordinator. As the principal member of the ESPP project team, he/she will be responsible for (a) preparing and directing the health education campaign, using a variety of media, (b) directing the evaluation and research activities of the project, (c) preparing periodic reports on the project, and (d) training the Motswana counterpart in project management and administration and in media management. He/she will reside in Mochudi but will spend a large part of the time directing the implementation of the project in the six pilot villages. A complete position description is attached in Annex M.

Sanitarian: The services of a Sanitarian will be provided for two years. During this period the advisor will (a) insure that technical criteria are met for the construction of latrines and refuse disposal pits in the pilot villages, (b) assist the village construction teams and district support personnel to acquire skills in the construction of sanitation systems, (c) identify the environmental sanitation requirements of each of the pilot villages, and (d) compile records on latrine and refuse disposal systems, costs, sanitation indicators, water quality and other relevant data. Although resident in Kanye, the advisor will visit the pilot villages periodically to guide and/or supervise the technical implementation of the project. A complete position description is also attached in Annex M.

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	ASSUMPTIONS
GOAL Better health standards in rural Botswana through improved sanitation.		[illegible] better health.
PURPOSE To undertake a pilot, village based [illegible], with a high level of community [illegible] [illegible] education [illegible].	END OF PROJECT STATUS (1985) - Affordable, acceptable and technically appropriate sanitary systems identified for replication in rural Botswana. - Multi-media health education and training [illegible] developed and tested. - District and [illegible] able to implement sanitation activities in six villages.	Relationship between [illegible] water quality, [illegible] [illegible] [illegible] the pilot project.
OUTPUTS 1. Prototype [illegible] constructed and tested. 2. [illegible] disposal alternatives developed and tested. 3. [illegible] developed and [illegible]. 4. Newly constructed latrines extensively used in six villages. 5. Use of existing latrines in six villages increased.	MAGNITUDE OF OUTPUTS 1. Up to 450 [illegible] constructed [illegible] 450 [illegible] [illegible]. 2. [illegible] community and [illegible] tested [illegible] [illegible]. 3. [illegible] latrine [illegible] hygiene [illegible] disposal and safe [illegible]. 4. High percentage of [illegible], especially children, of 450-[illegible] households regularly using latrines. 5. High percentage of [illegible], especially children, [illegible] using them increasingly.	

6. Printed technical and audio-visual materials produced and published on latrine building and maintenance	6. 6 [illegible] of each type of latrine, plus audio-visual materials and aids in use during the ESPP.
7. Multi-media health education campaign developed and tested.	7. 10 media tested: radio, film, audio-cassettes, Polavision, slides, flip charts, booklets, posters, leaflets, folk media.
8. Multi-media network strengthened at central, district and village levels.	8. 1 central, 2 district and 6 village-level systems for integrated, multi-media communications strengthened.
9. Batswana trained in project management and administration and in media management.	9. Motswana counterpart trained as Project Coordinator for a nationwide ESPP and in media management, plus Batswana field personnel provided with OJT in local administration of ESPP-type campaigns.
10. Recommendations presented on replication of ESPP in other districts.	10. Reports submitted to GOB.
11. Procedures developed for administration of subsidies (selection, amounts, etc.)	11. Reports submitted to GOB.

Social Scientist: Over the two-year period of the project, the Social Scientist will work for an estimated six months. Primary responsibilities will be to (a) refine the monitoring and evaluation plan of the ESPP, (b) train ESPP village staff in report writing and train the leaders of voluntary associations to keep basic records on the implementation of ESPP, (c) interview village leaders and others on their attitudes towards ESPP and their solutions (if any) to the problems of sanitation in the home and village, and (d) prepare a social/anthropological evaluation of the effects of ESPP on the villages and the implications of expanding the ESPP on a nationwide basis in Botswana. The evaluation will be based on the analyses of three social surveys carried out by field researchers under the supervision of the Social Scientist. It is expected that this advisor will be hired locally and will have several years of previous work experience in Botswana to ensure a sound knowledge of the cultural and social background of Botswana. A complete position description is also attached in Annex M.

Miscellaneous Consultants: Funds have been budgeted to provide for additional short-term consultant services as they may be required during implementation of the project. Specialized services may be helpful for problem-solving in sanitary engineering and evaluation, for example.

2. Participant Training: Two types of training will be provided under the project -- U.S. and/or third country and in-country. The Botswana Project Coordinator will be offered short-term training for one month in media management at the Audio-Visual Institute in Tanzania (Dar es Salaam) to study the operations of the Rural Information Unit. He will also visit ujamaa villages to learn how sanitation programs are being implemented in rural Tanzania, assessing the success of, or problems associated with, using media. Familiarization visits will be made to the University of Dar es Salaam and the Kivukoni Adult Education Center. A second month will be spent in Kenya to attend a specially arranged media management training program at the All-African Council of Churches (AACC) Communications Training Center and at the U.N. Audio-Visual Information Center (Habitat)(UNAVIC) in Nairobi. In the course of training, he will screen films on environmental sanitation, protection of water sources, health education, community development and self-help activities. The trainer will also be able to place standing orders for films, which can be shipped to Botswana regularly, for screening in the pilot villages. Housing will be provided at the AACC Center. The Center has well equipped radio studios, 16mm film production and editing equipment and an extensive communications library. The Center has tentatively agreed to coordinate the training program in Kenya and will arrange for other site visits such as to the Voice of Kenya, the Kenya Institute of Mass Communications

and INADES (which specializes in publishing non-formal education materials).

A second, three-month orientation/training program will be arranged for the Motswana counterpart in the later stage of the project. Visits will be arranged to (a) Canada at the UNAVIC headquarters (Vancouver) to screen a wider range of Habitat films and films produced by the Film Board of Canada, (b) to the U.S. for training at a university school of communications, and (c) to an English-speaking country in West Africa (Liberia, Ghana, The Gambia or Nigeria) for exposure to other national multi-media communications programs. Details on the content of the training programs and the preferred timing will be jointly agreed upon by the GOB and the ESPP project team.

In-country training will be provided for 2-member construction teams from each of the pilot villages and for two Health Assistants (Sanitation) from each district. Funds have been budgeted to contract with the Rural Brigade Centers in Mochudi and Kanye to provide this training. Prototypes of each of the three latrines (VIP, ROEC and REC) will be constructed during the training. The ESPP Sanitarian will explore alternative means of providing this construction training at the most reasonable cost. A construction training plan is attached as Annex N.

3. Commodities

Media equipment and supplies will be purchased to support the multi-media health education campaign. Major items will be procured in the U.S., supplemented with limited off-shelf procurement in Botswana. An illustrative equipment list is attached (Annex X). A media van and one pick-up will also be purchased with project funds. The media van will actually be a covered pick-up, customized to hold the media equipment securely and protect it from dust. The pick-up truck will be used to transport construction materials and project personnel, especially the Multi-Media Specialist/Project Coordinator, between the districts and villages. The vehicles will be registered either by the districts or by the Central government (CTO). A procurement source and origin waiver is attached as Annex O. Off-shelf procurement will also be used to purchase the necessary building tools, such as wheelbarrows, picks and shovels, and construction materials for an estimated 450 latrines, and 18 prototypes. Materials include sand, cement, steel mesh, vent pipes, fly mesh and timber for pegs. Total off-shelf procurement will not exceed 10 percent of local costs of the project. See Annex X for detailed information on the types and costs of construction materials and building tools.

4. Other Costs

Funds will be provided for (a) periodic in-country seminars and conferences for leadership and refresher training and group project reviews, (b) the local hire of field researchers for evaluation, (c) experimentation and research activities which may develop during implementation of the project (such as biogas and recycling), (d) unforeseen in-country travel expenses for the ESPP project team and (e) local transport for the Multi-Media Communications Specialist/Project Coordinator and Sanitarian

C. Peace Corps Inputs to the Project

Peace Corps will provide the services of a Materials Producer for at least one year. A qualified PCV is now completing two years in Botswana and will extend for a third year to work on the project as a member of the ESPP project team. Ideally this volunteer or a replacement would remain in Botswana for the second year of the project to assist in the reproduction/editing of materials found most useful during the initial campaign. The advisor will work in the Non-Formal Education Unit of the Ministry of Education. Peace Corps will provide the standard support costs for PCV's in Botswana and the GOB will provide housing.

D. Government of Botswana Inputs to the Project

1. Technical Services

Full-time: A Botswana counterpart Project Coordinator will be assigned to work on the ESPP project team for the entire two-year period of the project. The candidate has been identified; he formerly worked for Radio Botswana and is now assigned to the Kgatleng District Headquarters staff. The GOB will provide the services of an economist from a participating District Council or the Ministry of Finance and Development Planning for one month near the end of the project. This economist will work with the project team on analyzing data required to determine the affordability and replicability of ESPP on a nationwide basis.

Part-time: The following Botswana government personnel will assist in project implementation on the district and village levels: 2 District Coordinators (from the District Extension Teams, one in each district, 1/4-time); 2 District Works Department Supervisors (one in each district, 1/4-time); 4 Health Assistants (Sanitation) (2 in each district, 1/3-time); 2 Adult Educators (on District Extension Teams, 1 in each district, 1/4-time); 2 drivers (1 in each district, 1/2-time); 6 Village Coordinators (VHE or VDA, 1 in each pilot village, 1/2-time) and 12

construction team workers (2 in each pilot village, 1/2-time. Successful implementation of the project will depend in large part on the involvement of this personnel, especially to generate village-level community and individual interest in the project.

2. Commodities

The GOB will procure, through the Central Transport Office or District Councils, an additional three vehicles for the project -- 2 5-ton trucks and one F-250 Limited Slip Differential (LSD) truck. The 5-ton trucks will transport building tools and construction materials to the pilot villages and will be consigned to the District Works Departments. The F-250 LSD truck will be used primarily by the Sanitation and Health Assistants (Sanitation) to supervise latrine and refuse disposal construction. Six storage sheds will also be provided by the Ministry of Local Government and Lands or districts for the safekeeping, under dry cover, of the stock of tools and construction materials in each of the pilot villages. Camping equipment will be provided to the ESPP project team for extended site visits to the more remote pilot villages.

3. Other Costs

The additional support which the GOB will provide to the project includes (a) vehicle operation and maintenance for all the project vehicles, (b) transportation for the field researchers to and from the pilot villages, (c) office space and secretarial services for ESPP project team (both at the District Headquarters and at the Ministry of Local Government and Lands in Gaborone), if necessary, (d) the part-time services of sanitary engineers and water supply technicians for periodic water quality testing and groundwater monitoring at pilot village borehole and standpipe points, and (e) salaries for the construction team workers. Office space and materials for the PCV Materials Producer will be provided at the Ministry of Education's Non-Formal Education Unit. Housing and basic furnishings will be provided by the District Councils for the Multi-Media Specialist/Project Coordinator and the Sanitarian. Lastly, based on the GOB-Peace Corps agreement, the GOB will provide housing in Gaborone for the PCV Materials Producer.

IV. RESULTS OF SPECIFIC PROJECT ANALYSES

A. Financial Analysis

The purpose of this analysis will be to estimate, albeit roughly, the cost to the GOB of replicating the pilot ESPP on a nationwide basis in the rural areas. Since the ESPP will be village-based, it is assumed that assistance in latrine construction and refuse disposal for the urban centers will be provided and financed from other sources, either GOB or other donors. This analysis is also focused on the costs of providing latrines to the rural population. It is assumed that the costs of providing refuse disposal systems are minimal since they rely most heavily on the household and community self-help measures.

Two preliminary calculations must be made with regard to the target population:

1. Rural households who need latrines (do not presently have latrines)

Total population of Botswana	805,000
Less part-time non-residents	-50,000
Adjusted total population	755,000
Less 20 percent urban	-151,000
Adjusted population (80% rural)	604,000
Less 20 percent who already have latrines*	-121,000
Rural population lacking latrines	483,000
Number of households (443,000÷6)**	80,500

*It is estimated that less than 25 percent of the rural population uses sanitary facilities. For this calculation, a figure of 20 percent is used.

**The average household size is approximately 6 persons.

2. Number of rural households in the poorest 10 percent of the rural population.

Adjusted population (80% rural)	604,000
Poorest 10%	60,400
Number of households (60,400÷6)	10,066
Rounded to:	10,000

In considering replication on a nationwide basis, some cost estimates are now at hand using the GOB and AID budgets for implementing the pilot ESPP. Two options for replication will be considered: (a) recurrent cost with no subsidy for materials and building tools to construct latrines, and (b) recurrent cost with a subsidy for construction materials and building tools.

In calculating the recurrent cost of option (a), the GOB is providing the following inputs to the ESPP project:

	Option (a) - No Subsidy* for Rural Households as Lacking Latrines
Inputs	Estimated Cost Based on ESPP Financial Plan
Project Coordinator	$12,000
Other personnel**	65,000
Construction teams	15,000
Vehicle operation and maintenance	12,000
Storage sheds	1,000
Water quality testing and groundwater monitoring	5,000
Other support	18,000
TOTAL	$128,000

*Any GOB allocation of resources (the inputs) is actually a subsidy, but for the purpose of this analysis, subsidy is defined as the cost of construction materials and building tools.

**Other personnel includes the district and village level personnel who will be participating in the ESPP: a District Coordinator, a District Works Department Supervisor, Health Assistants (Sanitation), Adult Educators, drivers and Village Coordinators (FEW or VDA).

***Other support includes cost of administrative support (office space, secretarial services, materials for media campaign, etc.).

It is also assumed that the GOB will seek the most cost-effective approach for replicating ESPP on a nationwide basis, which may be without reliance on media. On the other hand, if media equipment is judged essential based on its effectiveness during the pilot ESPP, it must be added to the inputs listed above. This capital input will probably be provided by donors. Any additional technical assistance required would also probably be funded by donors and is not included in the above costs.

The figure of $128,000, then, is the recurrent cost burden to the GOB of supporting the ESPP in six pilot villages (over a period of two years). It is estimated that the total population of the six villages is 26,000 (8,000 in a large village, 4,000 in a medium village, and 1,000 in a small village x 2 = 26,000), or approximately 4,300 households. If there are a total of 80,500 rural households who need latrines (per 1 above), this means that the ESPP would have to be replicated about 19 times to reach that total. From this, the total cost of replicating ESPP on a nationwide basis with no subsidy can be extrapolated:

$$19 \times \$128,000 = \$2,432,000$$

The recurrent cost of replication with a subsidy for construction materials and tools to build latrines can also be estimated. In this case, the cost of the materials and tools (financed by AID under this pilot ESPP) must be added to the GOB inputs listed in option (b) below. For the construction materials and building tools for 450 latrines, AID will provide $29,050, rounded to $29,000, for households with less than the mean rural income. The cost per latrine, then is $65.00. The average cost for a mix of VIP, ROEC, and REC latrines is approximately $100.00. Again, if there are 80,500 rural households who need latrines, the total cost of replicating ESPP on a nationwide basis, subsidizing all these households, can be extrapolated:

	Option (b) - With Subsidy for All Rural Households Lacking Latrines
Inputs	Estimated Cost Based on ESPP Financial Plan
Total for option (a)	$2,432,000
Construction materials & building tools - ($100.00 x 80,500)	8,050,000
Total	$10,482,000

If the GOB decides that this option is too expensive, any number of modifications are possible. For example, subsidies could be limited to the lower 50 percent of rural households, or to the poorest 10 percent of the rural population, the latter assumes that the remaining 90 percent of the rural population can afford to contribute some share of their income for the purchase of construction materials and building tools. If there are 10,000 rural households in the poorest 10 percent of the population (per 2. above, the cost for this modified option (b) is:

Modified Option (b) - With Subsidy for Poorest 10 Percent of Rural Population

Inputs	Estimated Cost Based on ESPP Financial Plan
Total for option (a)	$2,432,000
Construction materials and building tools - ($100.00 x 10,000)	1,000,000
Total	$3,432,000

It can be seen that the cost of replicating ESPP on a nationwide basis with a subsidy for all rural households is roughly three times more than for the poorest 10 percent. And there are basically unlimited variations within these two extremes. One of the outputs of the pilot ESPP will be to develop procedures for administering subsidies based on more refined sociological and cost data which will be collected and analyzed during the project. On the basis of a more detailed and exact financial analysis, the GOB and the Districts will then be able to decide (a) if they can afford to replicate ESPP on a nationwide or a district by-district basis (with a reasonably firm cost estimate) and (b) how ESPP should be replicated with regard to the provision of subsidies.

B. Technical Analysis

1. Health Education

The principal objective of health education is to help people to attain a higher lever of health through their own actions and efforts. Health education begins then with the realization of the community that existing conditions are detrimental to good health and that the potential for changing existing conditions rests with the individual in the community.

The development of community responsibility is a key factor in environmental sanitation programs because the attitudes, practices and habits of each individual can contribute positively or negatively to a healthy safe environment. External factors such as government assistance in providing water, refuse and excreta disposal systems can provide the basic tools for a cleaner environment but they will not be effective unless the community participates in care and maintenance of the facilities.

The health education (HE) components to be tested in the ESPP will be designed to improve the effectiveness of existing health and other community development personnel working at the village level and to mobilize the community to participate in environmental sanitation programs. Various media and messages will be compared to see which are most effective in delivering public health information and education, and in training both community workers and residents in sanitation.

Health and environmental sanitation messages to be tested will be communicated through both traditional and modern educational techniques and media which may be appropriate to the target audience groups selected in the pilot villages. The selection and experimentation with information, education, and media approaches will be based on data obtained from social surveys conducted by field research assistants trained and supervised by a social scientist familiar with the culture of Botswana. Both media and messages will be compared in order to demonstrate to the GOB (which is planning a nationwide sanitation campaign) which ones are more effective -- and at what cost.

To determine which media and messages are most cost-effective, four months of pretesting and planning will be followed by an intensive education and construction campaign to be conducted during the winter months (June-October) of 1980, when most of the population is residing in the village. This campaign will be monitored and evaluated constantly while in progress and, in addition, a second (mid-campaign) social survey will be done in July and August. By January 1981, the ESPP team will prepare the first year report of

the campaign. By the end of August 1981, the ESPP team will complete a final report, incorporating the findings of the third social survey to be undertaken in June and July. It will contain recommendations to the GOB for nationwide replication of the project. These recommendations are expected to be utilized by the GOB in planning a national environmental sanitation campaign in the next decade. These recommendations will also be used to strengthen on-going health education programs and as references for the national health education plan being developed under the AID-funded Botswana Health Services Development Project.

The ESPP provides a Multi-Media Specialist/Project Coordinator who will work with a Motswana counterpart in developing and planning the pilot campaign. The Motswana counterpart is expected to develop the nationwide sanitation campaign for Botswana. Six months of participant training in media management, development and use will be provided for this technician.

Other training provided under this component includes multi-media seminars for villagers to stimulate project activities. Provisions are also included for in-service on-site training for health and community workers in sanitation education and construction methods. In addition, 8 Health Assistants (Sanitation) and 2 residents of each pilot village will receive training in latrine construction.

The general objective of the health education experimentation in the ESPP is to design, test, and compare the costs and benefits of different strategies, which the GOB will be able to replicate in a nationwide campaign:

-- to educate the people in safe environmental health practices

-- to develop and secure acceptance by the public of community measures for the improvement of environmental health

-- to encourage financial and/or labor participation from people for the construction and maintenance of acceptable, appropriate, and affordable pit latrines, refuse disposal pits, and recycling systems

-- to secure active participation of people in planning and implementing environmental health programs and maintenance of facilities

-- to develop among school children sanitation knowledge, attitudes and behaviors and to provide facilities to practice those behaviors.

The content and selection of media and messages will be based on detailed educational diagnosis of sanitation attitudes and behaviors before the campaign in the pilot villages by means of both social surveys and continuous testing and revision. The content will be divided into:

(a) health education, and

(b) appropriate technology for the construction of sanitary facilities.

Based on the people's social-cultural perceptions, and on the realities of their environment (e.g., lack of water, money, and tools), health and sanitation messages will be tested and disseminated via a variety of media -- films, audio/slide presentations, flip charts, audio-cassettes, posters, folk media, etc.

Simple health education materials will be designed to show people what they can do, despite severely limited resources, to prevent or minimize the common diseases related to poor sanitation in Botswana. Information will be limited to the essentials that villagers need to know about the causes, symptoms, modes or transmission, and presentation or control measures for these diseases. (See Annex D for list of diseases.)

Modules on five core health education subjects will also be produced. The following core subjects are suggested:

(a) Sanitary Disposal of Excreta

(b) Practice of Good Personal Hygiene

(c) Provision of Safe Water

(d) Safe Disposal of Refuse

(e) Safe Preparation and Storage of Foods (See Annex G for module descriptions.)

Media presentations will also be used for training specific target audiences in the pilot villages to be acquainted with, and to acquire, construction skills for building toilet systems and refuse pits. This specific target group will initially include:

-- Selected District Works Department personnel

-- District Health Assistants (Sanitary Technicians)

-- Two highly motivated individuals from each of the pilot villages

-- Other villagers as may be necessary.

Training in construction skills and maintenance of toilet systems will include how to make concrete substructures, how to fit vent pipes, etc., for the VIP, ROEC and REC toilet systems which have been tentatively identified as appropriate systems for rural Botswana given the problems of water contamination from ordinary pit latrines.

In as far as is possible, all media will be used to promote and emphasize necessity for high individual and community participation. Media will be used to reinforce messages, e.g., technical words used in audio-cassettes and radio will be visualized in flip charts, slide presentations and Polavision.

The training component anticipated under the ESPP is being designed for easy replicability in a future national campaign by the GOB. Media will be used for training purposes in as much as the objectives of self-help projects can be strengthened through training which sharpens the skills of the participating target groups in the pilot villages.

In furthering the objectives of the ESPP in the pilot villages, a media network tied to organized groups will be developed. (See Annex Q for discussion of village institutions and Annex Y for discussion of Botswana's Rural Health Delivery System.) These groups are as follows:

a. Village Development Committees (VDC)

Under Botswana's National Rural Development Plan, VDC's are being formed to promote village-level leadership in development. These committees are expected to serve as support organizations for village ESPP activities.

The ESPP Village Coordinator will work closely with this Committee and will distribute materials to individuals and groups such as the Botswana Council of Women, the Young Women's Christian Association, Red Cross Family Welfare Groups, Parent/Teacher Associations, Cooperatives, Radio Learning Groups, 4B Groups, Boy Scouts and Girl Guides. The ESPP Village Coordinator will also encourage cooperation between extension staff of different departments in working with the same groups at village levels and below.

b. Village Health Committees (VHC)

The MOH in Botswana is presently encouraging VDC's to include village health committees to promote community participation for solving health problems. Members of the VHC's are, with the help of health workers, expected to: (a) identify the health problems in their community; and (b) involve the community in the solution of health problems. In villages with VHC's, the ESPP will work with the members to assist with health priorities related to sanitation and to encourage recognition of health problems related to sanitation.

c. Health Services

The ESPP activities in the pilot villages will be coordinated with existing health services. Personnel such as Nurse Midwives or Family Welfare Educators (FWE) who have contact with mothers and children will be given materials and assistance to intensify and integrate health education related to the control and prevention of common diseases associated with poor sanitation. In some villages, the FWE may serve as village coordinator for the ESPP. District Health INspectors and Health Assistants (HA's) will assist to motivate villagers and village leaders toward full-scale participation in ESPP activities. In addition, 8 HA's from the two pilot districts will receive training in latrine construction.

d. Village Schools

Teachers in village schools are expected to participate in ESPP activities through school health education programs that encourage the use of latrines, hand washing, general hygiene and environmental sanitation by their students. To reinforce and support this education, the ESPP provides for prototype latrines to be constructed for schools that lack facilities and the community will be urged to install sinks or taps for hand washing.

e. Traditional Healers

Although not part of the modern health care system, the traditional healer (Ngaka) performs a significant role in Botswana, especially in rural areas. Research findings indicate that 42.9 percent of surveyed families have consulted a traditional healer at some time. According to a study done in 1974, "parents usually seek traditional healers for traditional problems of children such as gasterenteriris accompanied by dehydration." MOH policy is to evaluate the contribution of traditional healers to the health care system and possibly then to seek ways and means of closer cooperation and consultation.

If some means could be found of enlisting their cooperation in the sanitation project, they could be a powerful tool for creating changes in people's habits. They will be given materials and encouraged to participate. For additional information on traditional medicine, see Annex R.

For people to participate in health programs, they must be properly informed. But individuals vary so widely in their socio-economic conditions, traditions, attitudes, beliefs, and level of knowledge

that a uniform educational approach may not be suitable even if the objectives to be attained are the same. There are a variety of methods that can be used to transmit health information systems. The continuous good will, motivation, and support of individuals can best be obtained by the effective use of various media. Selection of media and methods of use will be guided by the educational objectives to be achieved and will vary according to the audience and the facilities available.

Among the media which will be used in furthering the objectives of the ESPP are: radio; audio-cassettes; flip charts; audio-slide presentations; films; polavision; popular theatre (story-telling/ role playing); and exhibitions. (See Annex F for media descriptions.)

In summary, the health education component of the ESPP is designed to produce the following outputs:

a. A set of health education materials, designed for various types of media on hygiene and environmental sanitation appropriate socially and culturally to rural Botswana.

b. Research which identifies the most cost-effective media methods and educational techniques for rural sanitation programs.

c. Recommendations for organizing sanitation campaigns in villages of various sizes with different environmental conditions to be integrated into a national campaign for Botswana.

2. Sanitary Systems

A basic assumption in undertaking a pilot study in low-cost sanitation systems is that the systems to be pilot tested are superior to existing systems in their potential for improving health and hygiene. However, no system or systems can simultaneously meet completely the demands of the following choice criteria:

-- minimal groundwater contamination

-- minimal surface water contamination

-- minimal contamination of surface soil

-- minimal contact by humans with waste in system

-- minimal access to the waste materials for insects or animals

-- minimal offensive odors

-- privacy

-- simplicity and affordability to construct, use and maintain.

More important for the ESPP pilot project is the fact that all project elements (project personnel, infrastructure, material inputs and actual technologies) be replicable with minimal subsidization.

Additional constraints in the rural Botswana environment include the need for toilet systems that are useable by all age groups (with the exception of babies). This is particularly important for communicable disease control.

Ideally, sanitation systems using water, particularly the aqua privy and the pour-flush latrine, should also be tested in rural areas (just as they were tested by the IRDC in towns). However, because of the extreme shortages of water and long distances to fetch water, particularly during the dry season, these latrines will not be practical in most rural villages for several years and will not be tested in this project. For further details, see Annex

It is also ideal to coordinate the location of boreholes with the location of latrines. However, because many boreholes are already installed and are often costly to upgrade or fence adequately to prevent underground or surface pollution, and are always very costly to move, the ESPP latrines will have to be located with caution, sometimes after water-testing by the GOB Ministry of Mineral Resources and Water Affairs and/or ESPP project staff, in order to avoid polluting boreholes. Two Milipor water-testing kits will be purchased with project funds for the purpose.

Finally, borehole and standpipe points should be tested regularly before and after new latrines are installed to check pollution levels. The GOB will be responsible to periodic groundwater quality testing where latrines are installed near boreholes. It is recognized that any replication of this pilot project should take into account the importance of both coordinating borehole and latrine installation and testing groundwater after installation.

Cultural aversion to handling excreta in any form speaks against the introduction of toilet systems which require the handling for their proper operation and maintenance. The PP design team believes, however, that it is worth trying the double-pit REC, which allows desludging for reuse (see below). The sludge to be handled will be a dry, friable humus which has been allowed to decompose naturally for about one year. This decomposition period will ensure that the humus is pathogen-free, odorless and, it is hoped, less noxious to handle. In addition, composting latrines will be tested on an experimental basis where acceptable to the local population.

From information compiled by the World Bank, the following kinds of latrines have been used in different parts of the world and found to be relatively successful for rural application:

a. Ventilated Improved Pit Latrine (VIP)

b. Reid's Odorless Earth Closet (ROEC)

c. Chinese 3-stage septic tank

d. Pour Flush of water seal squatting plates (PF)

e. Septic tanks (for use in institutions such as schools, dispensaries, etc.)

f. Communal latrines.

Communal latrines for extended families have been added to the list of 5 because of special conditions in densily populated parts of some villages. Given the problems of water pollution and the need to erect sanitation systems which minimize the "nuisance" factor, the following types of latrines will be constructed and tested in the ESPF pilot:

-- VIP (Ventilated Improved Pit)

-- ROEC (Reids Odourless Earth Closet)

-- REC (Revised Earth Closet)

Communal versions of the above types, modified as necessary, also will be tested.

A detailed description of each type follows:

Ventilated Improved Pit Latrine (VIP)(See Annex H): The VIP represents the simplest of improved sanitary technologies and is designed to solve the problems of proper excreta disposal, flies and odor control when properly constructed and maintained. It consists of 3 components: a hole in the ground which retains excreta that is slowly digested and eventually made harmless; a squatting plate or seat; and the superstructure.

The pit is generally one meter square and about 2 meters deep. Soil conditions should allow slow seepage of liquid into the soil. Impermeable soils such as clays, or soils too permeable such as course gravel or fissued rock, are unsuitable; the first will

retain liquids, resulting in a shortened life for the latrine. Soils too permeable may result in groundwater pollution. Bacterial and nitrate pollution are problems frequently associated with soils that are too permeable.

The pits are usually designed to last from 4 to 10 years, depending on use. A ring beam is essential at the perimeter of the pit to support both the floor slabs and the superstructure. In some instances, it may be necessary to line the top of the pit with oil drums or interlaced cement blocks to prevent the walls from caving in. It is essential that the superstructure be relatively light to prevent caving in from too much weight.

The major advantage of the VIP over the conventional pit latrines is that there is an offset between the pit and the superstructure which permits the insertion of a ventilation pipe over the pit. The ventilation pipe is capped with a fly screen at the top and is painted black. The pipe is placed on the sunny side of the latrine so that it absorbs the maximum amount of heat and generates an updraught for odor control. A lid over the squatting hole or seat is essential for proper maintenance.

Reids Odorless Earth Closet (ROEC)(See Annex H): The ROEC represents a further modification of the traditional pit latrine. In the ROEC, the superstructure is completely displaced from the pit. A ventilation pipe is installed, as in the VIP, but the squatting plate and the pit are connected by a curved chute. Because the superstructure is completely displaced from the pit, it is possible to make the pit very large (1 x 2 x 3m deep) and thereby, increase the effective life of the latrine.

The ROEC has an additional advantage over the VIP. Because of the completely displaced pit, there is less danger of children falling into the pit than may be the case in the VIP. Thus, this latrine can be used by almost all age groups, a fact which increases its health improvement potential in parasitic disease control. Properly maintained, the VIP and ROEC latrines can be located as little as three meters from the home without odor or fly problems.

Without cleaning, unimproved pit latrines are unsanitary. The VIP and ROEC incorporate modifications which minimize fouling odors and fly breeding. In both systems, the use of a tight lid and the introduction of the vent pipe with a screen, greatly reduces the breeding of flies and also allows the escape of noxious odors. These latrines are not, however, maintenance free.

Revised Earth Closet (REC) or the Double Pit Latrine

The REC is recommended for construction in this project because it may be the only system useable in areas where bedrock prevents digging a deep pit. The REC is currently being built in the Self-Help Housing Agency project at Naledi, a Gaborone suburb. Instead of a deep pit, the length and width of the pit are increased. A cement block wall divides the earthen pit into two equal pits. Two squatting holes or seats are installed on the slabs and connected to the pit by a chute. The superstructure is offset from the pit as in the ROEC. When one pit is about 3/4 full, the contents can be covered with ash and allowed to decompose naturally while the other pit is in use. (After about 9 months or 1 year of natural digestion, the dry friable humus from the used pit can be manually removed and the pit used again, if the owner prefers to do so, instead of moving the superstructure when the second pit is full).

Communal Latrines

Communal latrines can be any of the above types adapted for use by several households. Essential features to be modified in each system are (a) an increase in the volume of the pit to ensure a longer life, (b) the installation of additional seats or squatting, and (c) a wall separating each seat or squatting plate to allow for privacy -- a very important factor among the Batswana.

3. Refuse Disposal

Initial observations in the two ESPP districts indicate that haphazard dumping on unowned or unused land appears to be the main refuse disposal method in most rural villages. Tin cans and plastic bags litter many villages. In some cases, the wind blows them into the streets and pathways from the open dumps and refuse pits. But for the most part, careless disposal is the main problem. The volume of refuse in rural areas is low; however, improper disposal of noncombustible and nonbiodegradable wastes (plastics and metal cans, especially coke and beer cans) is of growing concern.

Plastic is a health hazard to animals; it is widely recognized that livestock will die, sometimes within hours, after swallowing plastic bags. Yet plastic is often discarded or blown into areas where livestock pass. Cans also are a health problem to people and animals because they collect water and breed insects. Pop tops are also a threat to even the toughest feet, paws and hooves.

Refuse disposal in an individual or communal pit for burning or burying appears to be the only appropriate method at this time. Ash pits in the more urban villages, where space is scarce, can be installed if a collection system is arranged. At Molepolole in Kweneng District, for example, pits are being constructed on contract on a Kgotla basis at a cost of P100 each. The District Council is paying for the construction, and a collection system is being organized. Ash pits built with cement blocks should be considered in pilot villages, only if land is scarce and the population density is high. Otherwise, an earthern pit dug by villages for burying or burning refuse should be sufficient. In any case, pit construction will have to be coupled with motivation for their voluntary use and/or establishment of procedures for refuse collection and deposit in the pit. Recycling of plastic and aluminum will be researched during the project.

C. Economic Analysis

An IBRD study has indicated that rural households cannot generally afford to spend more than 5-7 percent of their annual income on latrine construction. The ESPP seeks, however, to maximize self-help inputs in keeping with the GOB's objectives for the project to be replicable at the national level of implementation. With maximum self-help input, the cost of building materials for the VIP substructure component is as follows:

	Quantity	Unit	Rate (P)	Amount
Sand	0.5	M^3	5.0	2.50
Stones	0.5	M^3	14.0	7.00
Cement	3.5	Bags	2.25	7.88
Steel mesh (2.5 x 1.5)m	3.75	M^2	2.4	8.92
Vent pipe	3.0	M	3.85	11.55
Fly Mesh				.50
Construction timber, pegs				2.50
				P40.85

Or approximately $49.00

The above estimates exclude material costs for the superstructure, seat and excavation labor. It is hoped that villagers will maximize the use of locally available materials in building superstructures. These may include reeds, thatch, stone, wood, etc. Recurrent costs are minimal. They include maintenance of latrines, sanitary inspection, and possibly emptying some pits. In five or more years, labor will be required to move the latrine slab and superstructure to a new pit, but no new materials are likely to be required.

Again, according to the IBRD study, the P41 cash output per latrine substructure is only affordable to households with an annual income of P650 ($790).

The median household income in rural Botswana is reported to be approximately P630. Therefore, only half the rural households can afford to construct a latrine without financial support or subsidy. Health considerations assume that, if approximately half the people of a village have and use latrines and employ their improved sanitation practices (washing of hands, utensils, dishes, proper storage of food and utensils, etc.), a marginal improvement in health conditions in the village will be realized over the long run. If, however, financial support or a subsidy is offered to the lower half of the rural population to finance the costs of building materials for the latrine substructure, and these households undertake to build the superstructure, families with incomes as low as P340 could afford a latrine. This is approximately 80 percent of the households in an average village in Botswana. As a result of the widest possible use of sanitary facilities, health standards could be improved to a greater degree and in a shorter period of time.

The question of a subsidy, therefore, will be extremely important in determining if the GOB can or cannot afford to replicate the ESPP on a nationwide basis. Discussion of this issue has continued during the PP design effort, but resolution may have to be based on the experience and the financial and economic data gathered during the project. The GOB may decide to experiment during the project by having a subsidy of the building materials for the substructure in one district and not in the other. Various approaches to the subsidy issue will be tested during the pilot project and will provide more concrete and reliable data for use in planning future, wider-scale programs by the Districts. The MLGL and MOH have proposed that the ESPP attempt to maximize health benefits to the population, thus favoring a subsidy. The final decision on an approach for this pilot ESPP will have to be made by the GOB prior to or concurrent with initiation of the project. A detailed financial analysis of latrine construction is attached (Annex P).

D. Social Soundness Analysis

1. Social Feasibility of ESPP

The strength of the ESPP lies in its response to an already perceived need and its basis on a high degree of local participation.

For several years, the GOB has been involved in a process of decentralization, whereby district authorities increasingly plan and administer their own development projects. Both Southern and Kgatleng Districts identified poor sanitation as a major problem in their Development Plans for 1977-1982. The ESPP is not, therefore, an alien idea operating in a socio-cultural vacuum. Its basis originates from the districts, and it will operate through their administrative structure -- the District Councils, the District Development Committees, the District Extension Teams, etc. (See Annex Q.) They are to be responsible for the implications of their decisions and to act in accordance with them. Even though past experience has shown that development projects may be hampered by ineffective structures which lack organizational capabilities, it has been recognized that the development of the rural areas can only occur through local participation and a strengthening of capabilities. It is, therefore, essential that the ESPP project team work with the existing structure. This insures, in addition, the commitment of the districts to the pilot project. It will also provide them with the necessary administrative skills and experience to replicate the project (or parts of it) in the future.

At the village level, maximum participation will be required. Again, local institutions and structures will provide the framework for the project and reinforce the commitment of the community to the project. Particular care will be taken to consult both traditional and modern institutions, gaining their consensus and cooperation.

Self-help is the theme that runs throughout the project implementation plan. At the lowest level, the direct beneficiaries will be required to make a commitment of resources in the form of labor, personal funds or materials, as well as their time, for the construction of latrine superstructures. With active community involvement and local participation, there is every likelihood that the ESPP can be successfully implemented.

The project has been planned in consultation with a reference group including representatives of both local and central government -- members of the two District Councils and representatives from the Ministries of Local Government and Lands, Health, Education, Agriculture and Finance and Development Planning. This group has guided the PP design team so that the project is sound and reflects the interest of both the GOB and the people in the districts.

The ESPP is an attempt to help overcome the problems of poor sanitary practices in rural Botswana through a 2-pronged approach to the subject: (a) technological and (b) educative. The direct beneficiaries of the first are initially perhaps fewer than those of the second.

The technological approach to improving rural sanitation will be to construct latrine prototypes which should be economically affordable, socially acceptable and technically sound. These prototypes will serve as demonstration models to the community as recommended by the IDRC 2nd Interim Report of June 1977, which showed that in areas where "text book" models of latrines existed they were copied and even improved upon. In other areas, there were no suitable demonstration models, people continued to construct latrines of poor design. Through technical advice and models available in the village, it is anticipated that the negative experiences which people previously had with badly constructed latrines, wasting both money and effort, may be avoided.

The ESPP will directly help those people who want latrines by providing recommendations for systems that are suitable to both them and the environment. The demand for latrines in the rural areas varies greatly but may be directly related to village size density and the disappearance of convenient bush. Most of the self-built pit latrines in the rural areas are furnished with some sort of seating arrangement -- either "box" or "pedestral" -- and have neatly constructed, private superstructures.

Possession of a latrine is a very definite status symbol, especially in the less densely populated areas. They are an indication of sophistication, as well as an obvious indication of wealth. While restricted to the upper eschelon, most villages have at least one latrine which has been seen by villages, if not used. The larger and less remote villages generally have several latrines at such places as the health post, bottle store and schools where people are likely to have come into contact with them. Latrines are, therefore, not foreign to most rural Batswana; their acquisition, however, appears to be restricted by economic factors and lack of "know-how."

It has been suggested that prototypes be constructed at some of the institutions in the six villages, such as schools and health posts, where they may serve both in their functional capacity as public conveniences and as models. Communal latrines in the urban areas of Botswana are extremely unpopular since they are generally badly maintained and soiled. It seems that unless somebody undertakes the responsibility of maintaining such latrines, they inevitably end up in an unhygienic state. It is, therefore, suggested that before any communal latrines are built, the villages decide who will be responsible for cleaning them. It is also suggested that the health education campaign already at this stage be directed towards this problem. If this problem is overcome through education, these prototypes can serve the village communities in a very positive manner.

After the prototypes have been constructed, latrines will be built in yards or in clusters of homesteads. It is important for the pilot project to see how the latrines function in the family group; whether people can afford them and are capable of maintaining them; and whether the designs are socially acceptable or require modifications. Such questions can only be answered once they are part of the homestead.

It is clear that the construction of these latrines will contribute directly to improving the quality of life of the individual households, even though noticeable improvements in health will only occur once the whole community improves their manner of disposing of human wastes. It is, therefore, important that the ESPP provide a solution to the problem which is both affordable and acceptable to all community members.

At a latter stage, however, it is believed that this project will benefit a far wider population since latrine types that have been thoroughly tested may be recommended with confidence, thus avoiding the bad experiences that have occurred to date. It will be interesting to notice whether the messages of the ESPP will spread to neighboring villages. There is a large amount of visiting between villages, particularly during the winter months when this project is at its peak. It is, therefore, quite likely that neighboring villagers may copy the latrines which they have seen in the pilot villages. In this way, it is thought that a far larger population stands to benefit from the ESPP than just those participating in the project. Field researchers will visit neighboring villages to assess the degree and success of their "copying."

Along with the technological approach to improve environmental sanitation will be a health education campaign aimed at the whole community. The importance of this element of the project cannot be over-emphasized. Without appropriate education, the project cannot seek to improve the sanitary practices of the people.

Since many of the fecal-related diseases can be minimized through improved personal hygiene, dish washing, proper preparation of food, etc.. the campaign will tend to focus on women, who are the main initiators of such habits in the household. The message itself is not new. Family Welfare Educators, Health Assistants, and other health personnel have been teaching these subjects for some time. Their effectiveness has, however, been limited by lack of staff and a sheer over-burden of work. There are also a range of other reasons which have inhibited the practice of better personal health care, such as poor exposure, confused messages and misunderstanding, lack of socially acceptable rationale, conflict with traditional practice and, most importantly, an unrealistic overburdening of household resources in terms of extra work, cash, and time. The ESPP will attempt to come to terms with these problems, insuring that the people do actually benefit from what they learn.

The campaign will build on techniques of non-formal education which have been tried in Botswana, in addition to some innovative methods in an attempt to find better methods of communication. In using techniques of the modern mass media, it must be remembered that many of the rural people have hardly become accustomed to the radio, let alone films and polavision. Transitor radios are a much sought-after acquisition, often being purchased with the first pay check. They are fairly widespread but, of course, more concentrated among the wealthier people. In the past, Botswana has conducted several intensive education campaigns through this media. Most notable was the Tribal Grazing Land Policy Radio Listening campaign. which was designed to inform and discuss with the people a then-proposed new system of land tenure. Radio listening groups with trained leaders were organized throughout the country, and initially the campaign was believed to be an enormous success. It is thought that a follow-up program would have, however, considerably strengthened the campaign and helped to overcome some of the later confusion which occurred. Films too, have been used to a limited degree to educate people on problems pertaining to health and agriculture. They are an enormously popular event in the villages but, again, the message is frequently completely missed -- particularly where the language and the actors are foreign!

Because of the limited exposure that most rural Batswana have had to modern media, the ESPP will carefully select its media, taking into consideration the various specific target groups and gradually, on the basis of experience, the health education campaign will evolve. Throughout the campaign, the methods will be continually monitored and evaluated so that the media do not simply become a public entertainment, resulting in the content being lost through the amusement of the experience.

2. Social Beneficiary Analysis

Problems in Reaching the Poorest Villagers

It is important to note that although this project is aimed at the rural population as a whole, there are certain factors which may restrict the benefits of this project from reaching the poorest of the rural population. To a certain extent, this problem is avoided since a large part of this group does not reside in the villages. They tend to lead a migratory, peripheral existence, prefering to stay where there is game or at the cattle posts, lands or urban areas where they may beg or earn their daily subsistence. Lack of cash resources and rural poverty which, as indicated by the Rural Income Distribution Survey (RIDS) of 1974, is widespread, makes it difficult to expect such households to prioritize latrines unless they are to some degree subsidized. As indicated above, it is important that everybody in the community improve his/her sanitary habits if the fecal-related diseases are to be reduced. The ESPP, therefore, intends not only to provide a subsidy in the form of technical advice and assistance, but also to subsidize the building materials of the substructure for those households that cannot afford them. It is realized that establishing criteria for subsidy is extremely difficult, since economic status is concealed, particularly to outsiders. The ESPP project team, together with local officers and the GOB, will nevertheless, establish and refine the necessary selection procedures.

In addition, the project technicians will carry out research during the pilot project into the lowest-cost sanitary systems, which it is anticipated will make latrines available to even the poorest rural households.

Children as a Target Group

Perhaps the greatest challenge to this project is for the campaign to reach the youngest members of the community. It is quite clear that it is they who suffer most from fecal-related diseases and who transmit the largest percentage of pathogens in their excreta. A solution will, therefore, have to found to the fear that adults have of their children falling into the latrine. It is possible that a solution might be to teach those who take care of the children or the children themselves to collect the excreta and deposit it in the latrine. Perhaps during the health educations, mothers could express their fears or biases and possible work out solutions themselves once they fully understand the problems involved.

Small children are also the target beneficiaries of other parts of the health education campaign: improved daily hygiene with better food preparation, more conscienscious body-washing, clothes washing, etc., can only result in healthier and happier children.

Role of Women

It is expected that women will be the major participants in the education campaign. This is partly because more than 40 percent of the rural households are female-headed (and the construction of latrines will require the consent and support of the household heads). More importantly, as mothers and grandmothers, they play a major role in changing sanitary habits and socializing children to practice basic hygiene. The education campaign will try to use women as much as possible to actually implement the program by working through such groups as women's associations and health committees. While initially the ESPP might appear to be adding even more to their already overburdened workload, most women will accept this if they understand the degree to which their family stands to benefit. For a further discussion of women, see Annex R. It can also be argued that there is more work (and worry) involved in nursing a sick child than in supervising daily hygiene practices.

Studies have shown that female-headed households tend to be among the poorest households. The implications of this for the ESPP must be considered. It is suggested that priority for subsidy be given to female-headed households, with at least 4 dependents and below the median rural income. Another problem arises, however. Batswana women are unlikely to be willing to dig the pits themselves -- an important element of self-help in this project which is intended to overcome the negative effects of hand-outs and ensure the commitment of the participants. Some female-headed households may be able to overcome the problem of lack of male labor through holding "building parties." (See Annex R.) In other cases where more assistance is required, they might "earn" the assistance through active project participation.

The Wider Target of the ESPP

The ESPP is directed at all members of the community -- young and old, men and women, rich and poor. It will be through the experiences gained by the ESPP team in overcoming the various socio-economic and technological problems that the GOB will be able to design and implement a successful nationwide sanitation project.

(For further discussion on social constraints to ESPP, see Annex R.)

E. Environmental Analysis

An Initial Environmental Examination (IEE) was approved by the USAID Mission Director on May 31, 1979. The Recommended Environmental Action states:

> This pilot project will, if successful, have positive impacts on water quality and health in the six target villages. Given past experience in Botswana, cultural impact will be negligible. Even if the pilot is not successful, no negative environmental impacts are foreseen. Thus, a Negative Determination is recommended.

The IEE is attached as Annex S.

F. Administrative Analysis

Although village-based, the project will be implemented by personnel at the central and district, as well as village levels. The capacity of the personnel to implement the ESPP is judged adequate by the ESPP Reference Group (see below), but will be tested and evaluated during the project.

Because establishment positions could not be created at the MLGL for the Multi-Media Specialist/Project Coordinator and the Sanitarian, positions are being established for them in the districts. The Multi-Media Specialist/Project Coordinator will be assigned to Kgatleng District, where the Botswana Project Coordinator/Counterpart is presently working. The Sanitarian will be assigned to Southern District.

Central (National) Level

The ESPP project team will be responsible to the MLGL Permanent Secretary and will coordinate implementation of the project with the Planning Officer, the Senior Engineer and the Public Health Engineer. The position of Public Health Engineer has been recently created; this

officer will be responsible for the coordination of all sanitation and water-related programs in Botswana. The project team will also be supported by the specially-created ESPP Reference Group, whose members include representatives from the Ministry of Finance and Development Planning, Ministry of Health, Ministry of Education, Ministry of Mineral Resources and Water Affairs, Ministry of Local Government and Lands, and Kgatleng and Southern Districts. The ESPP Reference Group will meet periodically with the ESPP project team to discuss progress, problems and issues which may arise. The Secretary of the Reference Group is posted in the MLGL and will serve as a liaison between the ESPP project team and the Reference Group members.

District Level

The District Commissioners and the Council Secretaries of the Kgatleng and Southern districts will oversee implementation of the project from the district to the village level. They will be advised on any project-related decisions or recommendations to the central level by staff of the District Development Committee (DDC). The DDC, in turn, directs the activities of the District Extension Team, from whose members will be appointed the ESPP District Coordinator. The District Coordinator may be a Community Development Officer, an Adult Education Officer, or a Health Inspector. The other two key personnel are:

1. The District Works Department Supervisor, who will

   a. provide transport of materials to the pilot villages

   b. ensure that the village construction teams (or any other support builders) are performing their jobs without hindrance

   c. maintain all ESPP trucks and tools

   d. supervise the collection and transportation of recyclable solid wastes (primarily aluminum cans and plastics) from village collection points to district capitals or to Gaborone, using ESPP trucks.

2. Health Assistant (Sanitarian), who will work with the District Works Department, under the supervision of the ESPP Sanitarian, to:

   a. coordinate the training and the work of the village construction teams

   b. regularly inspect all three pilot villages to check sanitary conditions and keep records accordingly

   c. submit monthly sanitation records from the villages to the ESPP Sanitarian.

Village Level

At this "action level" of the project, implementation will be directed by the Village Coordinator, who will already be functioning within the community as either a Family Welfare Educator (FWE) or a Village Development Assistant (VDA). He/she will be responsible to the Village Decelopment Committee (VDC) and will receive guidance and supportive supervision from the Village Health Committee (a subcommittee of the VDC). The performance of the FWE in three pilot villages and the VDA in three other pilot villages will be evaluated and compared. Given their different training and functions, it is anticipated that the FWE will be more effective in health education. The VDA may be more effective in advising on construction of latrines and refuse disposal systems. The actual construction of sanitary and refuse disposal systems by householders will be supervised by the village construction teams, who will be trained with project funds and then salaried by the districts with funds provided by the MLGL (½-time). Moral support for the ESPP will be sought from the Kgotla, the grouping of traditional tribal leaders and elders.

Other

Support for implementation of the project will also be sought from nurses and midwives, traditional healers, teachers and leaders of such organizations as the YWCA, Parent-Teacher Association, Boy Scouts, Girl Guides, Radio Learning Groups, and 4B Groups, which may be active on the district and village levels.

An ESPP Organization Chart (Annex J) illustrates the relationships of the extended ESPP staff at the central, district and village levels to each other and to other important institutions.

V. SPECIFIC PROJECT PLANS

A. Financial Plan

1. Summary Financial Plan

The following table summarizes AID, GOB and Peace Corps contributions to the project. Of the total AID contribution of $499,000, an estimated $235,000 or 47 percent, represents foreign exchange costs, and $264,000 or 53 percent, represents local costs.

Source	Foreign Exchange	Local Currency	Total	% of Total
AID	$235,000	$264,000	$499,000	62
GOB	41,000	248,000	289,000	36
Peace Corps	6,000	6,000	12,000	2
TOTAL	$282,000	$518,000	$800,000	100

2. Summary Cost Estimate

The table below illustrates contribution to the project by source and component:

Component	AID	GOB	Peace Corps	Total	% of Total
Technical Services	211	92	10	313	39
Participant Trng.	19	-	-	19	3
Commodities	77	53	-	130	16
Other costs	111	96	-	207	26
SUB-TOTAL	418	241	10	669	84
Inflation (10%)	40	24	1	65	8
Contingency (10%)	41	24	1	66	8
GRAND TOTAL	499	289	12	800	100

3. AID Obligations

Life-of-project funding of $499,000 will be obligated in FY 1979. A table of projected expenditures over three years (FY 1980-FY 1982) and a cost analysis are attached as Annex U. Also included in this Annex is the budget table and cost analysis for the GOR inputs to the project.

AID Obligations by Component
($000)

Component	Amount	
Technical Services		
Long-Term		
Multi-Media Specialist/Project Coordinator (2 years)	89	
Sanitarian (2 years)	89	
Short-Term		
Social Scientist (6 months)	13	
Miscellaneous Consultants (2 months)	20	
SUB-TOTAL		211
Participant Training		
US/Third Country		
Media Management	12	
In-Country		
Construction of sanitary and refuse disposal systems	7	
SUB-TOTAL		19
Commodities		
Media equipment and supplies		
Vehicles (2)	12	
Building tools	7	
Construction: - prototypes (18) - materials (450)	34	
SUB-TOTAL		77

Other Costs		
In-country seminars and conferences (3)	2	
Local hire of field researchers	6	
Research funds	4	
In-country travel	3	
Local support	96	
SUB-TOTAL		111
TOTAL		418
Inflation (10%)		40
Contingency (10%)		41
GRAND TOTAL		$499

B. Administrative Plan

The USAID/Botswana Program Officer will be designated project manager for implementation of the project. Backstopping assistance will be provided by the Regional Health Development Officer (Mbabane) and REDSO/EA staff (Nairobi). The USAID General Services Officer for Project Support will assist the Multi-Media Specialist/Project Coordinator and the Sanitarian in housing rental and other logistic arrangements.

Following approval of the project by the USAID Mission Director, a Project Agreement (Limited Scope) will be signed with the Ministry of Finance and Development Planning. The GOB implementing agency will be the MLGL. The first Project Implementation Letter will be sent to the GOB as soon as possible after the Project Agreement has been signed and will outline procedures for fulfillment of the conditions precedent and other actions to initiate implementation.

C. Procurement Plan

The Multi-Media Specialist and the Sanitarian will be contracted either by USAID/Gaborone under Personal Services Contracts (if present restrictions on use of PSC's are lifted in FY 1980, or by the GOB if restrictions are not lifted).

In the latter case, the GOB will be reimbursed for local salary cost by USAID, and USAID, will "top off" the technicians' salaries by payments made directly to them. This procedure is discussed in a memo from REDSO/EA Assistant RLA to USAID/Botswana, "Field Approval Projects," dated August 10, 1979. A PIO/T for both positions will be prepared and issued by USAID. AID will assist the GOB in recruitment of qualified candidates for these positions, possibly via an OPEX-type institution which would be paid a "finder's fee." The Social Scientist will be hired by USAID through a Non-Personal Services Contract.

A PIO/C will be issued for the procurement of media equipment and supplies in the U.S. and vehicles procured in the R.S.A. Off-shelf procurement in Botswana of other media items, the building tools and construction materials will be made by Purchase Order. Such expenditures will not exceed $26,400, which is 10 percent of estimated local costs.

D. Implementation Plan

The project will be implemented over a period of two years, from September 1979 to August 1981. It is essential that the Multi-Media Specialist and the Sanitarian arrive in Botswana no later than January 1980 so that the multi-media campaign can be launched on schedule in June 1980 and continue through the winter months. It is likewise essential that the Social Scientist work with the Project Coordinator/ Counterpart prior to that time to initiate baseline data collection for evaluation. A complete Implementation Plan is attached as Annex V.

E. Evaluation Plan

Options for a nationwide sanitation education and construction campaign are currently being considered by the GOB for the 1980's. The ESPP is, therefore, not an end in itself; it is an experiment designed to develop, test and compare various education and sanitation techniques. Careful planning of the ESPP pilot tests -- and valid, reliable research and evaluation throughout the period of the project -- are vital (Annex K). ESPP will be worthwhile only if it results in specific recommendations to the GOB explaining which sanitary systems and health education messages were most cost-effective. The ESPP has been designed to demonstrate as clearly as possible the benefits from each pula spent during the campaign in improving sanitation.

F. Special Conditions and Covenants

Conditions Precedent

Prior to the disbursement of funds for the procurement of long-term technical services and unless AID otherwise agrees in writing, the grantee will provide written evidence that establishment positions have been created for the Mass-media Specialist/Project Coordinator, the Sanitarian and the Materials Producer, and that a counterpart for the Mass-Media Specialist/Project Coordinator has been named. If the above conditions are not met within 60 (sixty) days from the date of this agreement or such later date as AID may agree to in writing, AID, at its option, may terminate this Agreement by written notice to the Grantee.

Covenant

Use of Project-Financed Vehicles

The Grantee covenants that all project-financed vehicles (financed by either AID or the Grantee) will be used primarily and in the first instance for implementation of the project until the completion of the project and thereafter will be used so as to further the objectives sought in carrying out the project.

Support for AID and Peace Corps-Provided Personnel

The Grantee covenants to provide housing for AID (houses) and Peace Corps (2-bedroom flat) -- provided personnel, as well as standard hard furnishings in accordance with standards established by the Grantee for other employees of comparable status. In the event that permanent housing is not available for occupancy for these personnel and their families upon arrival in Botswana, the Grantee will provide suitable furnished temporary accommodation at no cost to the project technicians or AID until permanent housing is available.

Office Space and Secretarial Support

The Grantee covenants to provide adequate office facilities and secretarial support for AID and Peace Corps-financed technicians.

ATTACHMENTS TO
PROJECT PAPER

PROJECT NO. 633-0084

ENVIRONMENTAL SANITATION AND PROTECTION

PERMANENT SECRETARY: 5273
ENQUIRIES: 3185
TELEGRAMS: FINANCE
REFERENCE: FDP 95/2/11

REPUBLIC OF BOTSWANA

MINISTRY OF FINANCE & DEVELOPMENT PLANNING
PRIVATE BAG 008
GABORONE
BOTSWANA

17th September, 1979

Mr. C. Gordon,
U AID.,
P.O. Box 90,
GABORONE.

Dear Mr. Gordon,

ENVIRONMENTAL SANITATION AID PROTECTION PROGRAMME
PROJECT PAPER

Basically this Project Paper has been approved within Government, and we wish to go ahead with the project. However there are several points which appear in the Project Paper which, whilst not affecting the Project Agreement, we do not totally accept.

1. Section IVA, para 24, Financial Analysis

This section anticipates the results of the pilot programme, and, therefore rather defeats the purpose of a 'pilot', since

(a) even if we assume that the pilot will be successful, we do not intend to implement it on a national scale, but on a district by district basis as each district is ready. Each district might choose to adopt a slightly different method of carrying it out.

(b) we have not yet ascertained whether a subsidy will be required at all, and if so, what form it will take - a flat rate, a graduated subsidy depending on income.....

(c) we may find that what emerges from the pilot is that to replicate it on national scale, it needs to take a completely different form from that conceived for the pilot.

Even assuming that the pilot were to be successful and the project were to be carried out in an identical fashion, on a national scale, I believe that the calculations are very misleading. These Project Papers are often quite widely read and the conclusions of this section may be picked up and quoted. The following details should be noted:

(a) The population figure used is the 1978 figure. By 1982, which is the date when a national scheme might start, the population will be nearer 900,000,

(b) If the 1978 figure for population was being used, then the rural/urban percentages for that year should be used also, namely 15% urban, 85% rural. By 1982 it would be nearer to what has been used here - 18% urban 82% rural.

(c) Under option (a), even if there were to be no subsidy of building materials, the Government would still have to provide a certain amount of capital for the purchase of vehicles, storage sheds, media materials, tools. Thus there should be an allowance included for capital costs.

(d) In the calculation for the poorest 10% of the population, and therefore in the estimates of the costs for subsidising this group, no account is taken of the fact that 20% of the population allegedly have latrines already. This figure is then compared with the cost of carrying out the project with a subsidy, but using the population figure adjusted for those 20% who have latrines already.

(e) Since the two districts in which the pilot programme is being carried out are both easily accesible, the costs of operating a similar scheme in some of the larger and more remote Districts would be far higher and no allowance is made for this.

(f) There is no discussion of the recurrent and associated costs arising out of this project. If the project were to be replicated on a national scale, then these things would have to be carefully thought out e.g. Could the Central District afford to buy and maintain enough pit-emptying machines to serve the whole District?

(g) Finally, given our current state of knowledge of the sanitation units to be used and to the conditions under which they will work efficiently, if a full subsidy were to be given, I would expect the amount to be a good deal higher than P54 even if the maximum amount of selfhelp is used.

2. It should be clear that the Government is not at this stage prepared to commit itself to subsidies on a national scale. The pilot project will test the need for subsidy and if needed, the level required for different income groups.

Having clarified these points, I think we may go ahead with the signing of the Project Agreement - subject, of course, to the Districts confirming that they can fulfil their part and to CTC agreeing to maintain the one vehicle.

Yours sincerely,

Isobel Appiah
for/Permanent Secretary

c.c. P.S. MLGL
P.S. Ministry of Education
P.S. Ministry of Health
Council Secretary, Kgatleng District Council
Council Secretary, Southern District Council

DEPARTMENT OF STATE

TELEGRAM

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p 52
Annex B

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TAGS:

SUBJECT: PID REVIEW - BOTSWANA ENVIRONMENTAL SANITATION (PHASE II) 633-0064

1. REVIEW OF SUBJECT PID WAS CONDUCTED ON MAY 10. THE PID WAS CONDITIONALLY APPROVED, PENDING AID/W RECEIPT OF A REVISED IEE AND CONCURRENCE WITH A NEGATIVE DETERMINATION (SEE PART B, D). MISSION MAY PROCEED WITH THE PREPARATION OF THE PP, GIVING SPECIAL ATTENTION TO THOSE ISSUES AND QUESTIONS DESCRIBED BELOW.

2. ISSUES:

A. PROJECT SIZE: RECENT DISCUSSIONS IN WASHINGTON HAVE LEVELED CRITICISM AT THE PROLIFERATION OF SMALL, FRAGMENTED PROJECTS IN SOUTHERN AFRICA. ARE THERE ANY OVERRIDING REASONS AS TO WHY THIS PILOT PROJECT COULD NOT BE INTEGRATED WITH THE BOTSWANA HEALTH PROJECT? SUCH INTEGRATION WOULD POTENTIALLY REDUCE MISSION MANAGEMENT WORKLOAD. IF INTEGRATION IS NOT WORKABLE, PP SHOULD DEMONSTRATE HOW THIS PROJECT WILL RELATE TO THE BOTSWANA HEALTH PROJECT, PARTICULARLY AS REGARDS ASPECTS OF HYGIENE EDUCATION.

B. PROJECT COMPOSITION: THE POSITIVE INTERACTION BETWEEN SANITATION PROGRAMS AND PUBLIC HEALTH EDUCATION HAS BEEN FIRMLY ESTABLISHED. PID COMMITTEE WAS OF THE OPINION THAT THE EDUCATIONAL ELEMENT OF THIS PROJECT SHOULD, THEREFORE, BE ENHANCED. IT WAS RECOGNIZED THAT AN EXPANSION OF THE EDUCATION EFFORT WOULD REQUIRE MORE TIME THAN THE PROJECTED TWO YEAR PROJECT DURATION. IN A SIMILAR VEIN, BECAUSE OF THE PILOT NATURE OF THE PROJECT, IT WAS FELT THAT THE EVALUATION COMPONENT SHOULD BE PARTICULARLY STRONG. PP SHOULD SPECIFY WHAT WILL BE MEASURED AT THE END OF THE PROJECT AND WHICH HYPOTHESES WILL BE TESTED. IT IS RECOMMENDED THAT THE PP TEAM INCLUDE A PERSON SPECIALIZED IN EVALUATION.

C. PROJECT FINANCING: SIXTY-FIVE THOUSAND DOLLARS PER MAN YEAR IS MUCH LESS THAN LONG-TERM TECHNICIANS NORMALLY COST. [illegible], THE PRESENT PROJECT BUDGET APPEARS TO BE [illegible].

Classification

UNCLASSIFIED

p 5?
Annex B

D. TECHNICAL ASSISTANCE: OVER HALF THE PROJECT BUDGET IS ALLOCATED TO THE FUNDING OF FOREIGN TECHNICIANS. WHY IS AN AMERICAN COORDINATOR REQUIRED? DOES THE GOB HAVE A PERSON WHO CAN FILL THIS ROLE NOW AND BEYOND THE LIFE OF THE PROJECT? COULD PEACE CORPS VOLUNTEERS BE USED TO PROVIDE SOME OF THE TECHNICAL ASSISTANCE?

E. SUBSIDIES: THE NEED FOR SUBSIDIES IN THE PILOT LATRINE PROGRAM WOULD SEEM TO PREJUDICE THAT PROGRAM'S REPLICABILITY. ONE OPTION THAT WAS SUGGESTED DURING THE REVIEW WAS THE PROVISION OF CREDIT FOR LATRINE CONSTRUCTION.

F. WAIVERS: RECOGNIZE THAT NEED FOR PURCHASE WAIVERS IS FREQUENTLY OF CONCERN IN BOTSWANA PROJECTS. UNIQUE CIRCUMSTANCES WERE HIGHLIGHTED IN RECENT COSSSUPPLEMENT. WHILE THE CONVENIENCE OF PROCUREMENT IN SOUTH AFRICA IS UNDERSTOOD, A WAIVER REPRESENTS AN EXTRAORDINARYPROCEDURE. WHEN THE EXTRAORDINARY BECOMES ORDINARY, IT IS TIME TO REVIEW THE SITUATION TO SEE WHAT ALL THE ALTERNATIVES ARE TO AVOID CHRONIC WAIVERS. THIS QUESTIONSHOULDBEREVIEWED WITH COHEN DURING TDY. MISSION IS REQUESTED TO RECONSIDER CAREFULLY ANY AND ALL FUTURE WAIVER REQUESTS.

G. VEHICLE PURCHASE: WHY ARE FIVE NEW VEHICLES NECESSARY FOR THIS PROJECT? IF GOB IS COMMITTED TO THE PROGRAM, PERHAPS THEY COULD FURNISH VEHICLES TO AVOID ISSUE OF WAIVER.

H. COORDINATION WITHIN GOB. PP SHOULD DESCRIBE HOW THIS PROJECT WILL BE MANAGED BY THE VARIOUS GOB ENTITIES AND HOW THESE ENTITIES INTERRELATE.

I. ENVIRONMENTAL CONSIDERATIONS. REVIEW COMMITTEE FOUND IT IMPLAUSABLE THAT AN ENVIRONMENTAL SANITATION PROJECT COULD QUOTE CLEARLY HAVE NO SIGNIFICANT IMPACT ON THE NATURAL AND PHYSICAL ENVIRONMENT UNQUOTE. NOT TO HAVE AN IMPACT WOULD APPEAR TO SIGNIFY FAILURE OF THE PROJECT. EVEN IF IT IS ONLY CONSIDERED TO BE A PILOT ACTIVITY, THIS PROJECT IS CLEARLY DIRECTED AT IMPROVING THE ENVIRONMENT. IT IS ESSENTIAL THAT THE MISSION REWORK THE IEE IN MORE LOGICAL TERMS BEFORE A NEGATIVE DETERMINATION CAN BE CONSIDERED. VANCE

ANNEX C

NUMBER OF PATIENTS TREATED FOR DIAGNOSED
SANITATION/WATER RELATED DISEASES
IN BOTSWANA - 1977

Diagnosis	Out-Patients	In-Patients	Total	Deaths
1. Enteritis and other Diarrheal Diseases	66,893	2,205	69,098	103
2. Digestive (?)	48,485	447	48,932	31
3. Skin Infections	77,744	1,323	79,067	1
4. Scabies	11,800		11,300	
5. Eye Infections	40,447	296	40,743	
6. Infective and Parasitic Diseases	4,797	171	4,968	
7. Malaria	4,105	194	4,299	7
8. Schistosomiasis	1,031	37	1,068	
9. Infectious Hepatitis	286	100	386	6
10. Bacillary and Amebic Dysentery	-	253	253	11
11. Typhoid Fever	-	6	6	2
12. Paratyphoid Fever and other Salmonella Infections	-	2	2	

SOURCE: Medical Statistics, 1977, Government Printers, Gaborone

ANNEX D

DISEASES IN BOTSWANA
THAT ARE SANITATION/WATER RELATED

Disease	Symptoms	Mode of Transmission
ENTERIC DISEASES		
1. Diarrhea	loose stool, often fever. Infants most susceptible.	fecal contamination of food, water or fomites
2. Bacillary Dysentery	extremely variable; mild to severe, abdominal cramps, diarrhea, watery stools (sometimes with blood, mucus or pus), fever, chills, headache, lassitude, prostration, dehydration	feces of infected person - fecal-oral route, can also be water/food/fly-borne
3. Amoebic Dysentery	variable; abdominal discomfort, diarrhea, blood/mucus in stools, constipation, distention, headache, drowsiness, ulcers; may spread to bloodstream, with complications.	mainly by water containing cysts from feces of infected person (fecal/oral route), flies, raw vegetables.
4. Infectious Hepatitis	abrupt onset: fever, malaise, anorexia, nausea, abdominal discomfort, jaundice; varies from mild to severe	person to person contact, fecal-oral route in majority of cases
5. Salmonellosis	sudden onset of abdominal pain, diarrhea, nausea and vomiting, chills and fever. Dehydration, especially among infants, may be severe	ingestion of organism in food contaminated by feces of infected man or animals.
6. Typhoid Fever	headache, high continued fever, cough, anorexia, nausea, vomiting, constipation, slow pulse rate, tender and distended abdomen, enlarged spleen, rose spots on chest and trunk, delirium, mental dullness bleeding from bowel; 1-8 weeks convalescence. Relapse can occur.	food or water contaminated by feces or urine of a patient or carrier (some are long-term carriers), flies.

Disease	Symptoms	Mode of Transmission
7. Paratyphoid Fever	same as typhoid fever but milder and shorter duration (1-3 weeks)	direct or indirect contact with feces or urine of patient or carrier. Food, flies.
HELMINTHS		
1. Round Worm (Ascariasis)	about 85% of infections symptomless, but even a few worms potentially dangerous. Symptoms variable; often vague or absent, live worms passed in a stool or vomited frequently first sign of infection. Ascariasis pneumonitis important in children, Heavy parasitic burdens may cause digestive and nutritional disturbances, abdominal pain, vomiting, restlessness, and disturbed sleep. Serious complications among children include bowel obstruction and sometimes death due to migration of adult worms into liver, gallbladder, peritoneal cavity or appendix. Pre-school and early-school age children more often and more heavily infected than older children and adults.	ingestion of infective eggs from soil contaminated with human feces containing eggs, (contaminated soil may be carried long distances on feet or footwear), contaminated salads and other raw foods.
2. Beef Tapeworm	variable: nervousness, insomnia, anorexia, loss of weight, abdominal pain, digestive disorders. Many infections with no symptoms.	ingestion of raw or inadequately cooked beef containing the infective larva. (Eggs are released into the environment as long as man harbors worms in intestine, sometimes 30-40 years.

Disease	Symptoms	Mode of Transmission
3. Bilharziasis (Schislosomiasis)	Related to location of parasite in human host. Schistosoma haematobium, in Botswana, gives rise primarily to urinary manifestations.	from water containing larval forms which have developed into snails. Eggs hatch in water, larvae enter snail host, after emergence penetrate human skin (while person working, swimming or wading in water).
VECTOR-BORNE DISEASES		
1. Malaria (Falciparum)	varied clinical picture including fever, chills and sweating, headache, icterus, nausea, vomiting, watery diarrhea, various syndromes resulting from psysiological and pathological involvement of organs, including brain, liver or kidneys. Children chief sufferers. Rare in very young infants, but after 6 months of age and early childhood attacks are usually very severe and often fatal.	transmitted by an infective female Anopheles mosquito. In order to transmit infection, an Anopheles mosquito must bite man on 2 separate occasions: (1) to acquire the infection from an individual who has it, and (2) to pass that infection to another person.
2. Eye Diseases		
a. Conjunctivitis	eyes red, sore, discharge, sometimes with pus. (Discharge contains germs of the infection).	by dirt and flies (flies can also carry infection from nasal discharges to eyes of children), by contact with hands, clothing or other contaminated objects.
b. Trachoma	virus infection of eyelids. Starts with sore eyes, watery with follicles on inner surface of upper eyelids. These form scars which pull eyelashes inwards until they rub on the conjunctiva, - the constant scratching causes blindness.	

Disease	Symptons	Mode of Transmission
3. Skin Diseases		
a. Ringworm of Scalp	small papule spreads peripherally, leaving scaly patches of baldness	direct or indirect contact, articles contaminated with hair from man or infected animals, direct or indirect contact with skin and scalp lesions of infected persons, lesions of animals.
b. Ringworm of body	flat, spreading ring-shaped lesions, periphery usually reddish, vesicular or pustular, may be dry and scaly or moist and crusted	
c. Scabies	papules or vesicles, or tiny linear burrows containing mites and their eggs. Intense itching especially at night, lesions may become secondarily infected from scratching	penetration of mite into the skin - by direct contact, but also from contaminated articles.

ANNEX E

Some Sociological Criteria for the Selection of Three Pilot Villages in Each District

Since the ESPP is to be implemented with the maximum amount of local participation, it is appropriate that each district council select the pilot villages in their district. This they should do in conjunction with the project technicians who will advise them on a variety of technical, geological, hydrogeological and topographical criteria. It is, however, essential that these villages represent a cross-section of Botswana's villages so that the problems that arise may resemble those of other parts of the country. The following, therefore, are some sociological criteria which the district councils should consider in making their selection:

1. The villages should endorse the project, its goals and methods. This should be expressed at Kgotla. No village that is opposed to the project should be included, not even for experimental purposes.

2. The villages should represent different sizes and population densities.

3. They should represent different economic levels and should include different rural occupations such as animal husbandry, mixed subsistence farming and possible one with specialized activities and rural industries.

4. The villages should vary in distance from the district administration centers and the railway line. They should include at least one remote village that suffers from lack of communication.

5. The presence of village development structures and health facilities should vary.

The problems and experiences gained from such a cross-section of villages should help the future implementation of similar rural sanitation programs.

There has been some discussion as to whether the former tribal capitals -- Mochudi in Kgatleng with its population of c. 20,000, and Kanye in Southern District with its population of c. 15,000 -- should be considered villages or towns. Their population size and density require that the solution to their sanitation problems be of a more sophisticated type resembling that of urban areas. It is, therefore, necessary that such traditional towns be excluded from the sample.

ANNEX F

Multi-Media for the ESPP

Radio

Radio broadcasts will be of at least three types:

a. Programs of general content on sanitation issues which will be broadcase to a national audience. These broadcasts may not even refer to the on-going pilot project, but will be intended to sensitize the national audience, including those in the pilot villages, to some of the major problems and solutions to sanitation issues.

b. Broadcasts intended specifically for school children. The specificity of these programs will be determined after consultations with the Ministry of Education's Curriculum Department.

c. Programs which may be developed for the general public in consultation with the Ministry of Health to be broadcast during periods set aside for health campaigns.

Audio-Cassettes

Health programs will be produced in modules and will be played to appropriate target audiences and school children in schools in the pilot villages. Some of these audio-cassettes may be mass-produced and distributed for wider use to other groups, e.g., women's organizations, PTA's, etc.

Some audio-cassettes will also be produced on construction of toilet systems and refuse pits.

Flip-Charts

These will be produced, also in modules, on each health education topic and on construction techniques for each toilet system and on construction and maintenance of rubbish pits. Flip-charts will be used in small group settings and with students in the classrooms.

Audio/Slide Presentations

The project staff will be provided with 35mm cameras to take slide photographs on the various activities of the project. These slides will be packaged into audio/slide presentations which will be shown to audiences in the pilot villages and for specific training or health education purposes.

Films

A media van will be equipped with a generator and a 16mm motion picture projector for showing films in the pilot villages. The films will be obtained from Habitat and other U.N. agencies and will cover specific

topics on hygiene, sanitation, protection of water sources and environmental issues in general. These films will be pre-screened by an audience including the project staff and UBS students who may be involved in the social survey, agricultural information, broadcasting and information and adult education. This group will decide whether or not a particular film will require a Setswana sound track which can be recorded on an audio-cassette. The films will be shown in the pilot villages, including schools in these villages.

Polavision

Polavision is a home movie system consisting of a camera (weighing about one pound) and a player (weighing twenty pounds). The camera is battery operated, but the player needs electric current. Film cassettes for Polavision run for 2½ minutes and cost $10.00 each. Viewing can be done by six people in a darkened room. Polavision equipment is very rugged.

Polavision is excellent with small groups and is very effective in giving an overview impression of complex subject matter. Cassettes on people constructing toilet and refuse disposal pits, for example, will be produced and shown in the pilot villages.

Posters

Posters will be displayed at different locations in each village. They will be changed frequently.

Printed Materials

Pamphlets, folders and leaflets will be prepared for specific groups and used selectively, e.g., by distributing them after a group discussion in order to recall the main points. At the start of the campaign, leaflets will be handed out freely to familiarize a large number of people with the ESPP. Small booklets will be developed and given to school children.

Story-Telling, Drama, Role-Playing

Botswana has long-established social and cultural methods of communicating ideas, experiences and information through singing, story-telling and drama. The talents of people will be utilized in promoting desired actions on environmental sanitation improvement.

Exhibitions

Exhibitions can be of value as a communication media when they are prepared with care and foresight. The village coordinator will be available to explain the exhibits. Volunteers in the community will participate in arranging the exhibition and also in explaining the exhibits. During an exhibition on sanitation, persons interested in putting up latrines will be asked to sign request forms. This will be followed by home visits by the village coordinator and other ESPP personnel.

ANNEX G

Health Education Modules

1. Sanitary Disposal of Excreta

Objectives:

-- to inform the public regarding the dangers inherent in the indiscriminate disposal of human wastes;

-- to motivate individuals to follow excreta disposal practices which will not contaminate soil or water

a. By constructing an appropriate latrine which will be used by all members of the family, including children.

b. By insuring that the latrine is kept clean and protected from flies and other insects.

c. By defecating in a hole, if a latrine is not available, covering it with soil and teaching children to do so. (There is little danger of disease if people defecate in the fields provided that they do it more than 20 meters away from a house, a spring, a river or a well and far from a path or track.)

2. Practice of Good Personal Hygiene

Objectives:

-- to inform the public regarding the mode of transmission of diarrheal, parasitic and vector-borne diseases;

-- to motivate individuals to adopt good personal and household hygiene practices such as

a. Always washing hands after defecation and before eating and preparing foods, and teaching children to do so.

b. Keeping the body clean by frequent soap and water baths and wearing clean clothing.

c. Washing dishes very carefully with water and soap.

d. Keeping the house and surroundings clean.

3. Provision of Safe Water

Objectives:

-- to inform the public about water-related diseases

-- to motivate individuals to protect their sources of drinking water from pollution by human or animal wastes or by refuse

-- to work with the authorities for the provision of a safe water supply system

-- to be sure individuals use only safe water for drinking by

   a. using water only from a protected source, or

   b. by boiling water, especially water given to and used for babies and infants.

-- to motivate individuals to take the measures necessary to eliminate or control Bilharzia. (The National Bilharzia Control Program has produced pamphlets, posters, flip charts, and other materials which are available on request for educational purposes.) The National Bilharzia Control Program will be coordinated with the ESPP in the 6 pilot villages, encouraging people to:

   a. Avoid infested waters for drinking, bathing and washing.

   b. Seek treatment of infected persons so that the cycle of transmission is interrupted.

   c. Reduce snail population by clearing vegetation along riverbeds and in stock and irrigation damps and by draining or filling in small heavily infested water sites such as barrow pits, etc.

   d. Practice good personal hygiene and sanitary excreta and refuse disposal methods.

4. Safe Disposal of Refuse

Objectives:

-- to inform the public regarding illnesses and diseases caused by insects

-- to motivate individuals to control flies and other insects, including their breeding, by burying or burning refuse and by eliminating open garbage dumps so that insects cannot feed or breed.

5. Safe Preparation and Storage of Foods

Objectives:

-- to inform the public of the importance of keeping food and dishes clean and protected from flies and other insects

-- to inform the public of the need to cook meat, especially beef, thoroughly to prevent tapeworm

-- to encourage the proper preparation and storage of good.

Each core subject may be covered, in part by using audio-cassettes, flip charts, sound/slide presentations, booklets and supporting posters. The modules should also include discussions of the following diseases:

-- diarrhea

-- bacillary dysentery

-- amoebic dysentery

-- infectious hepatitis

-- salmonellosis

-- typhoid fever

-- paratyphoid fever

-- ascariasis (round worm)

-- taenia (beef tapeworm)

-- malaria (Falciparum)

-- conjuctivitis (eye disease)

-- trachoma (eye disease)

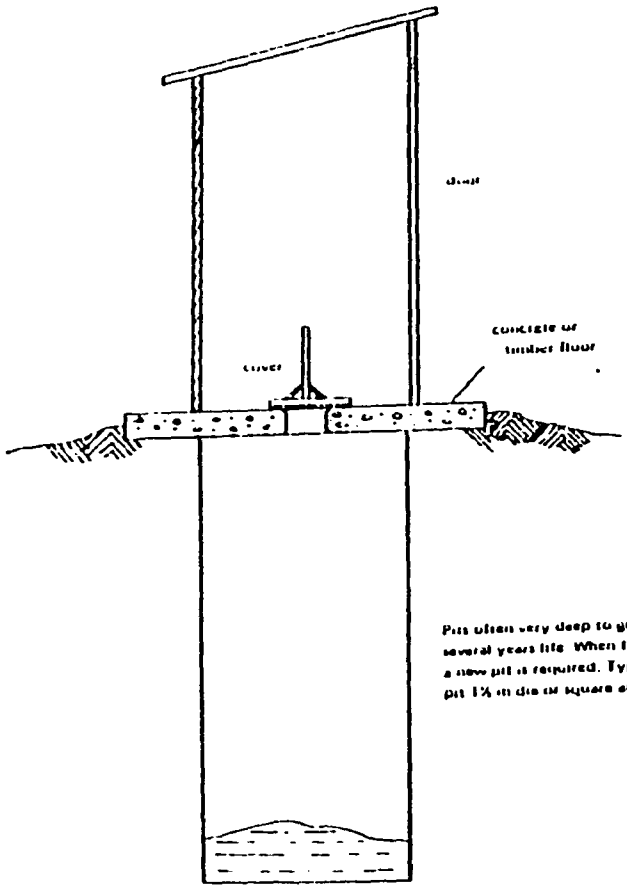


Figure 1 Conventional Pit Privy

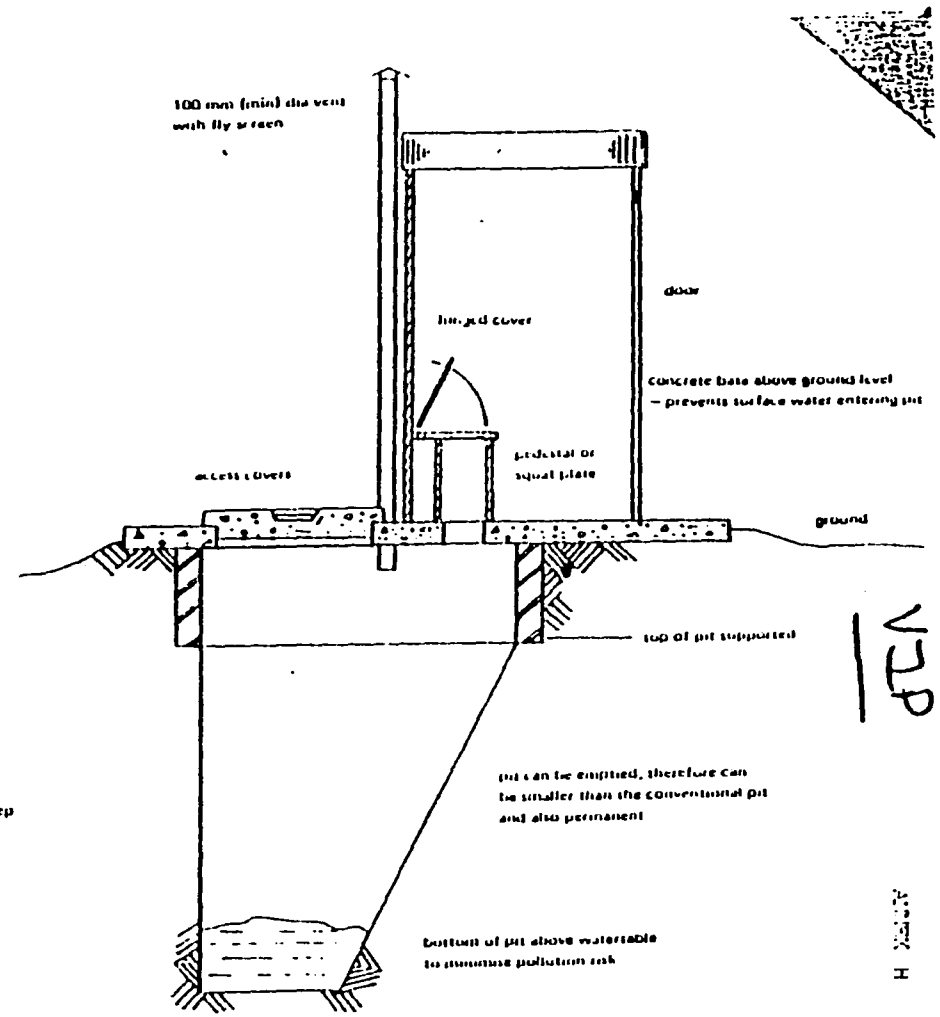


Figure 2 Improved Pit Privy (with [illegible])

[illegible]

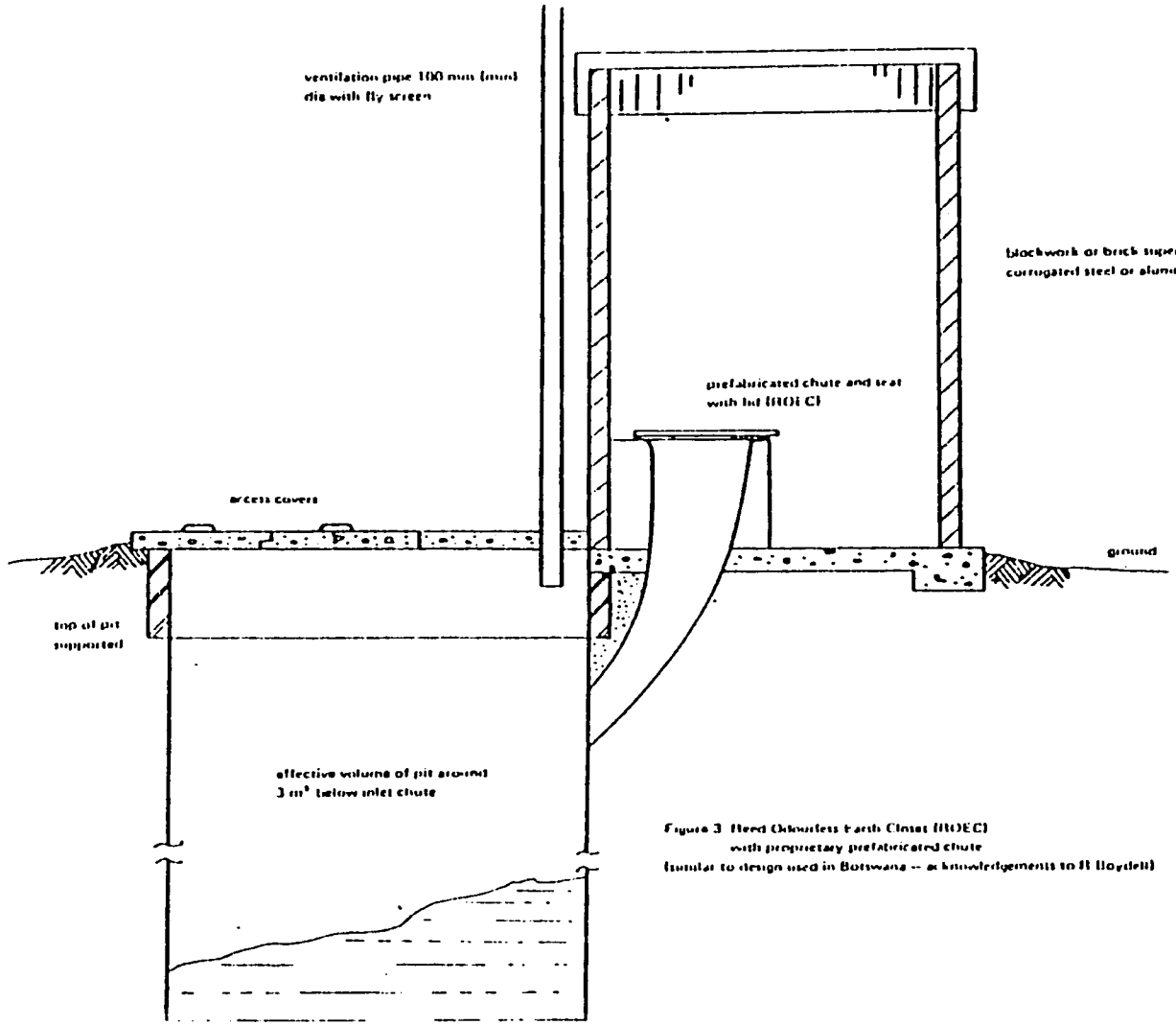
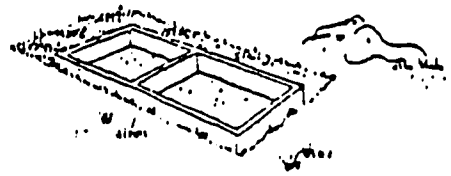


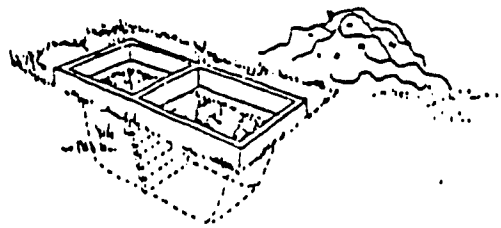
Figure 3 Reed Odourless Earth Closet (ROEC) with proprietary prefabricated chute (similar to design used in Botswana -- acknowledgements to R Blaydell)

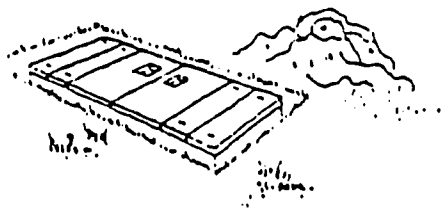
ROEC

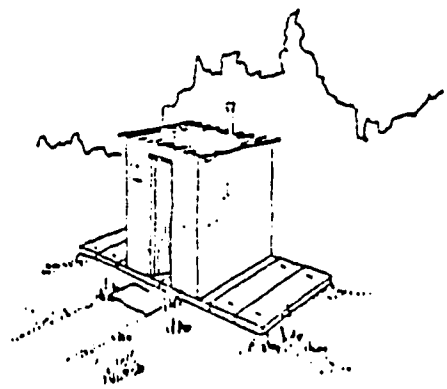
REC

PIP
latrines









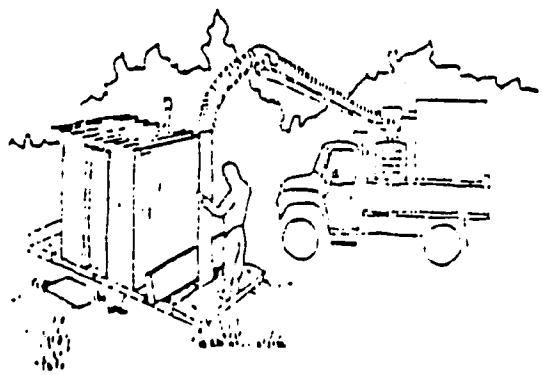


Figure 1.

BUILDING RESEARCH ESTABLISHMENT

ARTICLE I

THIS ARTICLE IS REPRODUCED FROM HEALTH NEWS and VIEWS (Vol 3 No. 3 July 1979) Ministry of Health, Republic of Botswana

Simplified sanitation for rural areas: using locally available materials and skills

By L.T. Leseteli

One of the major constraints against the provision of sanitary facilities, particularly toilets, in rural areas of Botswana is lack of adequate funds to put up these facilities. In this article I will attempt to explain how latrines can be privided, using locally available materials as well as skills. I will confine myself to the pit latrine as it is the commonest type in Botswana and may be the cheapest.

Latrine Pit - It is preferable to dig a round pit as opposed to a square or rectangular one as its sides have less chances of falling in. The pit should have a diameter of 90 - 120 cm (3 - 4 ft) and its depth should be about 4.5 metres, depending on the nature of the ground. Any

able bodied man can dig the pit himself, which means that the problem of hiring paid labour for the pit should not exist in more than 50% of our households. There are of course special circumstances e.g. widows, old spinsters, old couples etc. where it becomes imperative to employ paid labour to dig a latrine pit, but even then such labour, in our rural areas is so cheap and readily available that, other than in destitute homes, it can be paid for from subsistence incomes. I must emphasize that the latrine pit together with the floor are the most important parts of the pit latrine and therefore having mentioned how it can be done with relative ease, the major part of our problem is solved.

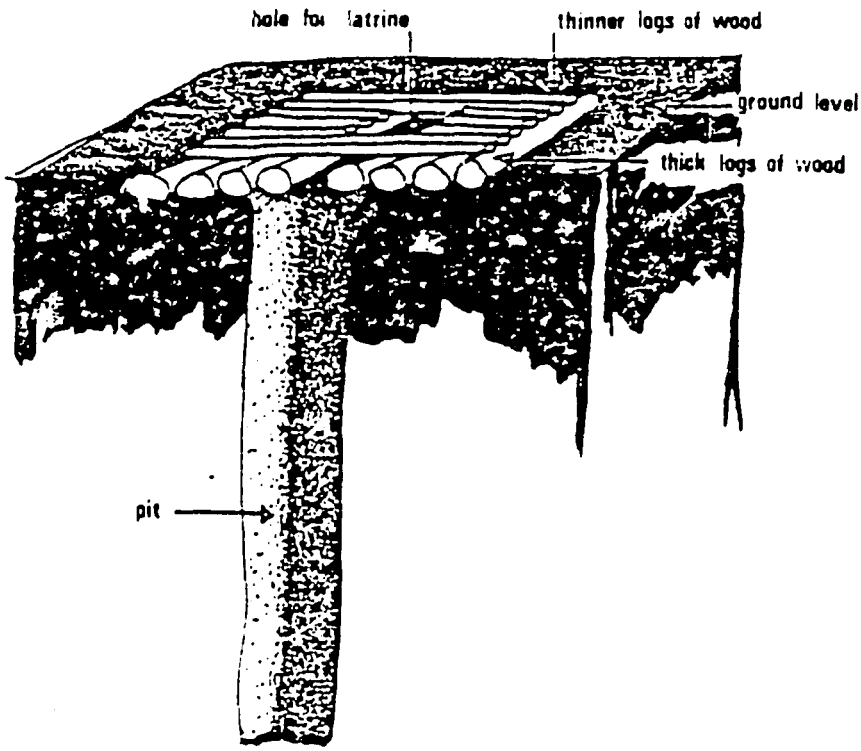


Fig. 1 ARRANGEMENT OF POLES OR LOGS TO MAKE A LATRINE FLOOR

Latrine Floor - Here, safety is the prime factor. A latrine whose floor suddenly collapses can grossly jeopardise further construction and use of pit latrines. Ideally, concrete is the best material and this should be encouraged as much as possible. However, having already

indicated financial constraints against the provision of latrines, I have to suggest floors constructed of cheaper, locally available materials, using village level technology.

Thick poles or logs of wood from a tree locally reputed for its strength (e.g. Mokoba, Mophane, Motswere etc.) can be used to make the main base of latrine floors. They should of course be treated with insecticides to prevent damage by termites, ants etc. How to acquire the poles again is just the same as the digging of latrine pits. In other words any able bodied man can cut the poles from the nearby bush etc. The arrangement of the poles over the pit is shown in Fig.1. Once the poles have been arranged (and this can be done by anybody) a mud floor can be made over the poles to facilitate sweeping. Where possible, mixing mud with a small amount of cement will strengthen the rendering and facilitate the washing of such a floor.

Latrine Superstructure or House - This is the least important part of the latrine, its main purpose is to accord privacy, unfortunately it is also a status symbol. Our people will struggle to use bricks, cement and galvanised iron irrespective of the available resources. Where funds are not available to build such a superstructure, people will fold arms and admit that their poverty is such that they can not afford a latrine. Once again, locally available materials and skills can be used e.g.

(a) Grass or Reeds - For a latrine which will be required for a relatively short time, grass walls and roofing can be used as shown in Fig.2. River reeds can also be used and this should be particularly easy in places like the North West District where even permanent dwellings are made from reeds. No special skill is required to

construct both grass and reed superstructure and therefore any family can provide one for themselves.

(b) Mud, poles and grass thatch - Fig.3 shows how a latrine superstructure can be made of mud, poles and grass in a manner very similar to the one used in the construction of traditional dwelling houses. Since most of our people construct traditional houses for themselves, such latrine superstructures can also be made without paid labour.

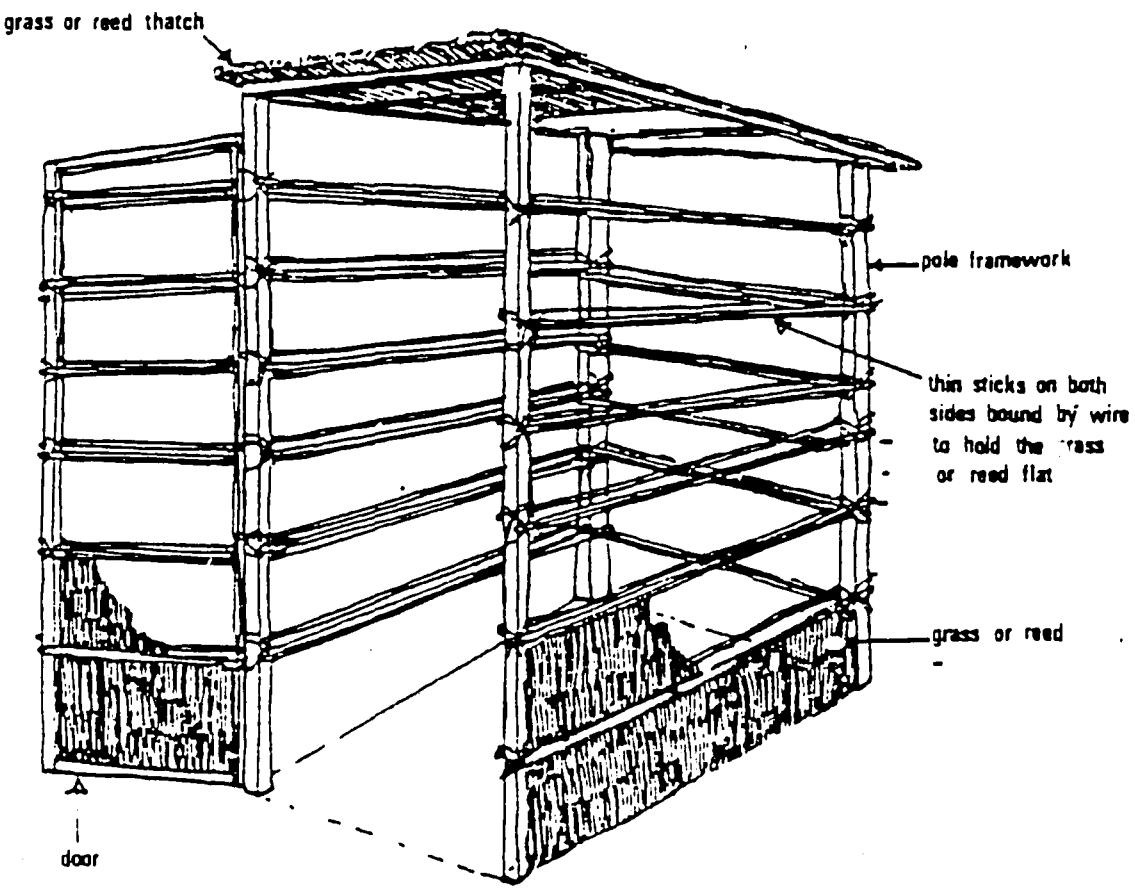


Fig. 2 GRASS OR RIVER REED SUPERSTRUCTURE

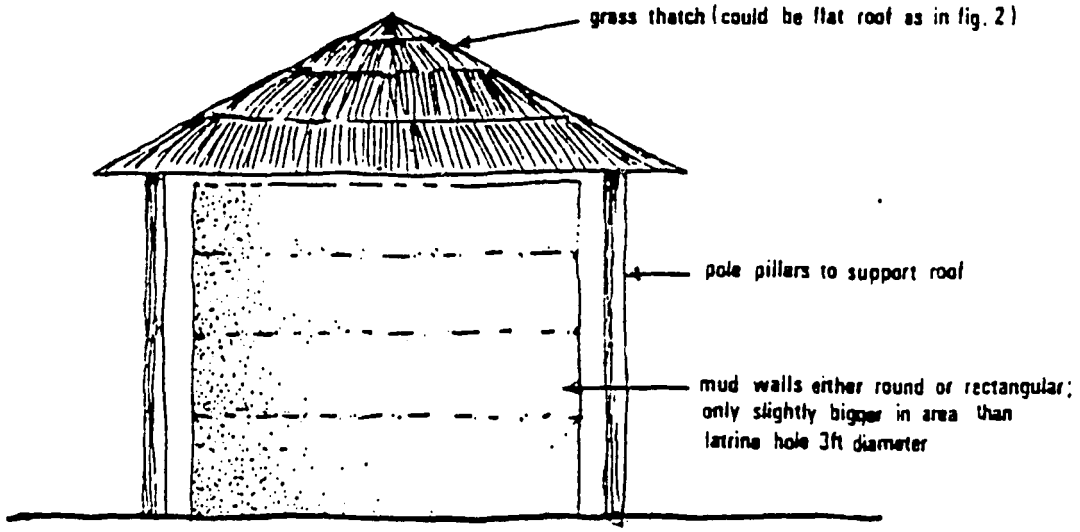


Fig.3 MUD. POLE AND GRASS THATCH SUPERSTRUCTURE

There are of course a number of variations to the above suggestions and with more research it should be possible to come up with other types.

Readers might think that I am advocating for primitive facilities, but as the title of the article implies, these are suggestions meant to assist those who for financial reasons are unable to provide latrines. The affluent can of course continue to provide for themselves the best possible types of toilets.

ANNEX J

ESPP Solid Waste Disposal Plan

The rubbish or solid waste disposal effort in the ESPP will consist of (a) construction of rubbish pits in one district's three pilot villages, (b) recycling of cans, paper and plastic from the same district and Gaborone, (c) education in that district only to encourage people to collect these materials. While not as major a sanitation problem as disposal of excreta, solid waste disposal also presents health problems and requires experimentation to find solutions suitable for the rural village.

A. Rubbish Pit Construction

The ESPP construction teams will advise villagers who wish to build rubbish disposal pits about their siting, specifications, and maintenance. Pits will be used to contain broken glass and other dangerous wastes, and to burn combustible trash and other rubbish (paper, kitchen wastes, garbage, and any other household wastes not wanted for kindling or other home use). Only cans, paper, and plastic will be separated out from rubbish burned in the pits (to be recycled as described below).

The pits should be located near enough the house or compound to be convenient and accessible but far enough from any structure so that the fire poses no risk and so that smoke and odors are not bothersome. According to the Senior Health Inspector in Molepolole, the best pit is a walled trench one meter (or less) deep and about four meters long by two meters wide. (If the household is unable to dig a pit, the pit can be on the surface of the ground, but it may fill up faster.)

The mud or concrete wall should be at least one meter high; its function is to hold the rubbish and ashes inside, even in wind and rain, and to keep children and animals out.

Pits can be built with an opening in the wall to facilitate dumping rubbish or removing the ashes. Since mud and wattle walls are usually strong enough (and harden after burning), they will be recommended over concrete blocks or bricks. However, this decision is up to the builder (who will probably wish to use the same materials and colors in the pit walls to match those in the home and/or the latrine superstructure.) The ESPP education campaign will remind people to throw all appropriate solid wastes (except aluminum and plastic) into the pit daily, burn it up often, and use the ashes on the garden (or in a composting latrine), if desired.

B. Recycling Aluminum and Plastic

Each year Kgalagadi Breweries of Botswana sells to Botswana 35 million cans (made of aluminum tops and tin sides by Metal Box, Inc. of Johannesburg). Half stay in the Gaborone area. Most end up as non-degradable waste which litters Botswana towns and roads.

An experimental recycling scheme, in which cans, paper and plastic is collected and shipped in bulk to Johannesburg for reprocessing, should be tested in at least one of the districts, probably Kgatleng, as follows. At the kgotla meeting place, the market, schools, or other central gathering places, collection points should be established where papers and empty cans and plastics can be deposited in separate containers. If possible, empty oil drums or other strong containers should be left there, marked with the symbols and Setswana words for "paper only," "cans only" and "plastic only." Otherwise, rubbish pits so marked may be used.

People will then be encouraged by the ESPP campaign to burn all other trash in pits but to collect paper, cans and their tops (especially coke and beer cans) and all plastic (especially plastic bags) for recycling by (1) pouring out all contents, (2) crushing cans as flat as possible, and (3) bringing them often to the collection points. The reasons why people should do so are many, including:

-- the importance of cleaning up rubbish and keeping the village looking clean

-- to keep empty cans from breeding flies and mosquitoes which spread disease

-- to lessen the risk of stepping on cans and can tops which cut bare feet, paws, and hooves

-- to lessen the risk of animals swallowing plastic while trying to get at the foods inside

-- to lessen the risk of children suffocating while playing with empty plastic bags

-- to lessen rubbish clogging drains, toilets, etc.

Eventually, but not initially, it is also hoped that recycling could be encouraged by village institutions as a way of raising some money for the benefit of the village. If enough recyclable waste can be collected, a small return to the village may be a slim possibility -- even after transportation and other costs have been deducted (see Financial Analysis). However, hope of any income to any rural village is unlikely and should not even be mentioned to the public so that people are not misled and disappointed. The major reason for collection of cans and plastics should be for the aesthetic and health reasons mentioned above, not for money.

Different ways of organizing village rubbish pick-ups should be tried during the ESPP campaign. For example, in Lobatse all schools organized one week day when all school children spent half the day cleaning rubbish off all streets, schools, and other public areas.

In ESPP such clean-up days would be an occasion for children to get involved in recycling by collecting cans and plastic separately from trash in pits. They might even be issued with large trash bags for collecting. Prizes could be given to boys and girls collecting the most cans or plastics. Planning collections will be a duty of the ESPP Village Coordinator or the Health Assistant (Sanitarian).

The materials will be collected regularly from the recycling collection points by ESPP trucks which will be going to the villages to deliver ESPP staff, material, and tools for latrine building and the education campaign. (Without the recyclable materials, the trucks will often be returning empty.) Picking up these materials will be part of the routine work required of the ESPP drivers (who will not be permitted to pick up hitchikers insteas). Such transport will be the responsibility of the District Council.

Recycling is already underway on a small scale with paper and plastic only, under the supervision of Mr. O. Ramapanta in Gaborone. Therefore, the most suitable depot to collect the materials for packaging and shipping to the Johannesburg areas appears to be Gaborone, where the materials from ESPP districts can be combined with those already being bailed and by the existing recycling operation from Gaborone. Therefore, the only two other depots outside Gaborone where ESPP trucks might drop the materials (also pick up more latrine building materials) are at railheads near Mochudi (Pilane) in Kgatleng District and in Lobatse in Southern District. These depots should be considered for ESPP in addition to Gaborone. Plots near freight yeards in these towns will be considered by the ESPP staff in planning the projects. (In Kgatleng distances to ESPP villages will probably be shorter, thus it may be the best of the two districts for the experiment.)

The aluminum cans will be trucked to and baled at the railhead depot; cans will be compressed into 20 kg blocks with a manually operated "press baling machine."

When operated by two people at full capacity, with unlimited supplies of cans (and without breakdowns), this machine is reported by one user in Gaborone to be capable of producing one bale every two minutes, thus totalling about 30 bales per hour or 250 per work day, and 5000 bales (or 100 tons) per work month. The minimum economic freightcar loan required is 20 tons, or one-fifth the monthly capacity of the baler. The current price of a new press baling machine in Johannesburg is R10,000, but the Kgalagadi Breweries Production Manager believes that Metal Box, Inc., of Johannesburg, which produces the 35 million cans which decorate Botswana annually, may contribute a baler to the Botswana Government.

The plastic will be baled by hand with 200 kg test wire which can be picked up by one person. (Eventually, if the volume of plastic merits more rapid baling or if ESPP decides to recycle paper as well, an automatic or paper baler using wire or plastic bands can be obtained for about P10,000.) A 200-kg hanging scale will also be needed to weigh bags received and bales produced, and bags for collecting cans and plastic might also be purchased for distribution to volunteers collecting rubbish in villages. (For detailed recycling costs, see below.)

C. Administration

The entire recycling operation should be planned and managed by the ESPP Project Coordinator/Counterpart with assistance from the Production Manager at Kgalagadi Breweries, and Mr. Ostrich Ramabanta, an experienced recycling expert based in Gaborone. The educational materials will incorporate the appropriate recycling messages in the materials distributed to the pilot villages involved in recycling. Trucks carrying materials will be the responsibility of the District Council.

D. Financial Analysis (Recycling)

The following costs in US dollars are estimated here to indicate potential cost recovery in ESPP pilot testing of recycling cans, paper and plastic collected in one district (e.g., Kgatleng), and Gaborone for sale to ISCOR for reprocessing in Johannesburg. A short-term loan to cover monthly costs shown here (costs not included in the ESPP budget) will have to be borrowed until the project begins to recover its costs, estimated within 6 months of first shipment.

Labor	Expenses	Monthly Estimate
Project Supervisor[1]	@ $20/week	$ 80
Driver (½)[2]	Included in ESPP budget	-
Loader (Lorry boy) to load and unload trucks		60
Boiler Operators (2)	@ $15/week	120
Boiler[3]		100
Shipment by rail from Gaborone to Johannesburg ($8.75/ton)		140
Miscellaneous (collection bins and bags, rental of baler and depot space, interest on loan, etc.)		350
		$850

	Income[4]	
4 tons cans	@ $44/ton (1000 kg)	$176
4 tons paper	@ $50/ton	200
4 tons plastic	@ $125/ton	500
		$876

---

[1] Candidate suggested for this position Mr. Ostrich Ramabanta, Gaborone.

[2] Costs of driver and truck to transport materials to depot are included in ESPP.

[3] Operating costs only; this assumes that the $12,500 baler will be contributed by Metal Box, Inc., of Johannesburg.

[4] Assuming minimum average output of 12 tons a month (at 1000 kg per ton) or 3 tons per week, or 600 kg a day.

"Our country

82

Mr Ramantsho (standing on truck left) directly commands the collection of waste materials at garbage dumps

ANNEX K

Evaluation Plan

Why Evaluate?

Careful monitoring of the ESPP campaign during the entire project and a comparison of sanitation attitudes and practices before and after the dampaign are both essential components of the ESPP project. Accurate conclusions, based on valid, reliable research, are vital if the lessons learned in the six pilot villages are to be applied throughout rural Botswana.

There are four main purposes of evaluation in this project:

1. To provide the baseline data necessary to plan the campaign (e.g., to design educational messages and materials, to select appropriate villages) and to compare with date collected during and after the campaign.

2. To monitor regularly the effects of the ESPP campaign and provide continuous feedback to the ESPP staff which will help them to improve the campaign while it is in progress.

3. To ensure that data collected by local ESPP staff in the six pilot villages are valid and reliable.

4. To compare sanitation and health knowledge, attitudes, and practices in the six pilot villages and one control village in order to measure the total effect of the ESPP campaign and make specific recommendations to the GOB for future action.

Evaluate What?

The ESPP evaluation will focus on whether the campaign has achieved its main purposes: to develop both (a) technically appropriate, acceptable and affordable sanitation systems, and (b) an effective multimedia educational campaign on the use of those systems and better health habits.

The various kinds of data to be collected before, during and after the campaign can be grouped under six main headings, all of which overlap to some extent:

1. Technical Data (are the systems "technically appropriate?")

   -- types of existing and new latrines and refuse systems; costs of these systems

   -- quality of water supply; types of water systems

   -- availability of building materials and tools.

2. Socio-cultural (are the systems "acceptable?")

   -- home and family life (related to sanitation)

   -- work patterns; self-help; volunteer/paid labor

   -- health and hygiene knowledge, attitudes, beliefs, practices

   -- water usage (related to sanitation, hygiene, water quality)

   -- human and animal waste disposal

3. Economic (are the systems "affordable?")

   -- family income, expenses, taxes, savings

   -- labor opportunity costs

   -- water supply costs

   -- costs of materials, tools, labor to build latrines, refuse systems

   -- cost and availability of health care

Additional types of information will be necessary to evaluate the effectiveness of the multimedia campaign and the training components of ESPP:

4. Communications

   -- literacy; use and availability of printer media

   -- non-formal education techniques, programs, institutions

   -- mass media

5. Administration/Institutions

   -- central, district, local administration of village development

   -- traditional local authorities

   -- central, district, local institutions and individuals involved in ESPP

   -- village development/extension activities

6. Training

   -- training of ESPP central staff (supervision, monitoring, date collection, audiovisual, and other skills)

-- training of ESPP village staff (education, monitoring, team work, etc.)

-- training of ESPP construction teams by Brigades and of village builders by ESPP construction teams in building methods

-- training methods and materials, personnel, time, and costs

Each of these six topics will be investigated by surveys and other data collections designed in collaboration with the consulting sociologist (especially numbers 2, 3, 5); the consulting sanitarian (especially numbers 1, 3, 5, 6); and the consulting media specialist (numbers 1, 2, 4, 5, 6).

Evaluate How?

The ESPP project evaluation will include three different but coordinated activities: social surveys by UBS sociology students; monitoring reports by ESPP staff; and message testing by ESPP staff.

1. Social Surveys

Socio-cultural surveys, using interviews and observations of health and sanitation facilities, knowledge, attitudes, beliefs, and practices will be undertaken four times during the 24-month pilot project period (January and July 1980; January 1981; and January 1982). These will be sample surveys, taken before, during, and after the full-fledged ESPP building and education campaign (which will run from June 1980 to December 1981). They will help the central ESPP staff (a) to plan the campaign at the beginning; (b) to check the progress of the campaign while in process (and, where necessary, to take corrective actions); and (c) to analyze its overall effects.

At the same time, the social surveys will test the validity and reliability of the monitoring undertaken during the campaign by central and village ESPP staff (because the UBS staff, as outside observers, are likely to be more objective when measuring change than the ESPP staff, who may be biased toward indicating project success).

The four surveys, probably using a stratified random sampling approach, will be designed and planned with assistance from the Central Statistics Office of the GOB and the District Development Committees of Southern and Kgatleng Districts.

The UBS sociology students will be selected and supervised in Gaborone by the UBS Sociology Department and by the Consulting Sociologist, who will also train the students in Gaborone (early December 1979) and supervise their work in both Districts.

Fourteen students will be selected and trained. Twelve of them will be assigned to work in pairs in each of the six pilot villages, and two in the control village. In selecting and assigning the students (October and November 1979), first preference will be given to sociology or anthropology students who come from the six villages; second preference will be given to sociology or anthropology students from the same district as the pilot villages; final preference will be given to students from the six villages or two districts studying subjects related to rural development (e.g., economics, agriculture, health, education). It is hoped that several students will be able to stay at home or with relatives during the surveys so that (a) they will not need to be reimbursed for loding, (b) transport costs will be lowered (because students will be returning home during vacations), and (c) so that the students will be familiar with local institutions and individuals.

Training of students will take about three days or one weekend at UBS in November 1979. Each pilot village survey will take an average of three weeks, but schedules will vary according to the sizes of the samples, the length of university vacations, and other factors. Total work time for the twelve pilot village students is twelve weeks of six work days each.

Pairs of students will interview the heads of households in selected households, with interviews averaging one hour each. Approximately six interviews will be held per workday, or 35 per work week, totaling about 100 interviews in each of the four pilot village surveys per pair of students.

The two remaining students will undertake interviews in the control village, located in a different district (some distance from either Southern or Kgatleng), at the beginning and end of the project but not in between. They will also be on stand-by to fill in for any of the other twelve students who might drop out of the project during the two years.

The interviews will include scheduled questions (some multiple-choice scored, some open-ended) about home and family life, health, sanitation, and hygiene and, when permitted, personal observations by the students of sanitary facilities and other visual indicators of sanitation practices, rubbish disposal patterns, etc.

2. Monitoring Reports

One of the regular duties of ESPP staff involved at the village level (e.g., Village Development Assistant, Family Welfare Educators, or Health Assistant (Sanitarian)(s) will be to fill out a simple checklist of information about the sanitary situation at the prototypes being built in early 1980 and in each household they visit during their regular course of duty. These reports will be collected and delivered weekly to the ESPP Sanitarian (or to the District ESPP Coordinator) and collated every three months by the Sanitarian into a quarterly report to begin in March 1980.

In the first quarter, most of the households visited will have poor or no sanitary facilities; but the number of latrines built under direct ESPP supervision, and those built as an indirect result of the ESPP campaign without ESPP supervision, will grow during each quarter. Thus the village ESPP staff will visit all households with either existing or new latrines and rubbish pits at least once a quarter to report on their condition.

To validate or double-check the reports from village ESPP staff, they will be cross-checked against the surveys by the UBS students. The Sanitarian will also spot-check these reports during both scheduled and unscheduled visits to the pilot villages and households. (Similarly, the surveys by the students, the reports of the Sanitarian, and the reports of the Project Coordinator, will all be used to cross-check the message testing reports by the ESPP multimedia staff described below.)

3. Media/Message Testing

Important data on the effectiveness of both the media and the messages used in the full ESPP campaign will be recorded by the central ESPP staff responsible for media beginning in June 1980. To supplement and validate the students' social surveys and the village staff's monitoring reports, the media staff will test the audio-visual aspects of the campaign in group and individual discussions.

Specifically, the ESPP materials producer, the ESPP film projectionists, Kgotla speakers or animators, radio broadcasters, or any other persons using one or more messages or mass media related to the ESPP campaign will submit monthly reports to the Project Coordinator/Media Specialist about the role and effect of each component. For example, these staff will report monthly (and the Project Coordinator will analyze such reports quarterly) on such indicators of media/message effectiveness as

-- number of invitations to address Kgotlas, show films, etc.

-- attendance as ESPP Kgotlas, film shows, other public events

-- number of printed materials distributed

-- attitudes and reactions of audiences and individuals

-- logistic, technical, and financial problems and costs.

4. Data Collection, Analysis, Reporting and Feedback

The social surveys, monitoring reports, and media/message testing records will be collected, collated, analyzed, and summarized by the central ESPP staff -- the Sanitarian and Project Coordinator. The conclusions from the data, and problems arising in its collection and analysis, will be discussed at quarterly meetings of the ESPP staff (including all full-time central, some district level, and some part-time village-level personnel). A draft quarterly report will be distributed to staff before this meeting, revised and approved at the meeting, and distributed to all staff, GOB, and AID after the meeting.

This regular analysis and reporting is very important in such an experimental pilot project because it helps guarantee that problems and weaknesses in the project can be nipped in the bud, and that new approaches, materials, or personnel can be tested in time to compare results. Most important, it guaranees regular feedback from Gaborone, from the other district, and from the other villages to every staff member involved in ESPP in the six villages.

[illegible]

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

(INSTRUCTION: THIS IS AN OPTIONAL FORM WHICH CAN BE USED AS AN AID TO ORGANIZING DATA FOR THE PAR REPORT. IT NEED NOT BE RETAINED OR SUBMITTED.)

Life of Project:
From FY [illegible] to FY [illegible]
Total U.S. Funding [illegible]
Date Prepared: [illegible]

Project Title & Number: [illegible]

PAGE

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Program or Sector Goal: The broader objective to which this project contributes: [illegible]	Measures of Goal Achievement:		Assumptions for achieving goal targets: [illegible] [illegible]

69

[illegible]

[illegible] SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY ________ to FY ________
Total U.S. Funding ________
Date Prepared: ________

Project Title & Number ________

PAGE 4

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Project Purpose:	Conditions that will indicate purpose has been achieved: End of project status.		Assumptions for achieving purpose:
[illegible]	- [illegible] technically [illegible] sanitary systems [illegible] and [illegible]. - [illegible] and [illegible] and tested. - District and village level institutions able to implement sanitation activities in six villages.	[illegible] of the evaluation which is [illegible] internal, functional element of the project.	1. Relationship between groundwater quality and sanitation systems will be investigated. 2. Village water supplies will be maintained and water quality improved. 3. Project design reflects district and village needs. 4. GOB fiscal policy is supportive of the pilot project.

AID 1020-23 (7-71)
SUPPLEMENT I

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY _____ to
Total U. S. Funding__
Date Prepared: _____

Project Title & Number: _____

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSU
Inputs:	Implementation Target (Type and Quantity)		Assumptions for providing in
A.I.D.		Review of AID and PCV records, Project Agreements, PIOs and contracts.	Candidates can be id and recruited in ti
Technical Services			
In-Country			
Multi-Media Spec. Project Coordinator	1 Multi-Media Spec. Proj. Coord - 2	py	PCV provides Trainee
1 Sanitarian	- 2	py	Coordinator counterp
Participant			
1 Social Scientist	1 Social Scientist - 6	mo	PCV provides Counter
1-2 Consultants	1-2 Consultants - 2	mo	furnishing for 2 AID and PCV.
Participant Training			
U.S./Third Country			
Media Management	Media Management - 4-5 months		Positions established AID advisors in Kwath Southern Districts.
In-Country			
Construction of sanitary and refuse disposal system	20 construction workers - 4 weeks (2 groups of 10 for 2 weeks each)		
Commodities			
Media equipment & supplies	Media equipment & supplies - $12,000		
Vehicles	2 vehicles - $24,000		
Building tools	Building tools - $ 7,000		
Construction	Construction - $34,000		
Other Costs			
In-country seminars & conferences	3 in-country seminars - $ 2,000		
Local hire of field researchers	Field researchers - $ 6,000		
Research funds	Research funds - $ 3,000		
In-country travel	In-country travel - $ 3,000		
Local support	Local support - $96,000		
PEACE CORPS			
Technical Services			
Materials Producer	1 CV Materials Producer - 1	py	

AID 1020-28 (7-71)
SUPPLEMENT 1

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY ________ to FY ____
Total U.S. Funding ________
Date Prepared: ________

Project Title & Number ____________________

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Project Purpose:	Conditions that will indicate purpose has been achieved: End of project status.		Assumptions for achieving purpose:
[illegible], village [illegible] [illegible], [illegible] level of community involvement, [illegible] [illegible] [illegible] health [illegible] results.	- Affordable, acceptable and technically appropriate sanitary systems identified for replication in rural [illegible]. - [illegible] and [illegible] and tested. - District and village level institutions able to implement sanitation activities in six villages.	Results of the evaluation which is an integral, functional element of the project.	1. Relationship between water quality and sanitation [illegible] will be investigated. 2. Village water supplies maintained and water [illegible] improved. 3. Project design reflects [illegible] and village needs. 4. GOB fiscal policy is [illegible] of the pilot project.

92

A.I.D. 1025-24 (2-79)
SUPPLEMENT B

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

From FY _____ to F
Total U.S. Funding_____
Date Prepared:_____

Project Title & Number:_____

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUM
Outputs:	**Magnitude of Outputs:**		**Assumptions for achieving ou**
1. Prototype latrine systems con-structed and tested, and household latrine systems constructed.	1. Fifteen prototype latrine systems constructed (1 in each of the 6 pilot villages), and up to 450 subsidized latrines constructed in 6 villages, plus another 450 un-subsidized latrines constructed.	1. Contractor's periodic reports. 2. AID annual PES (1 at mid-term ir project implementation. 3. Site visits to pilot villages.	
2. Refuse disposal alternatives developed and tested.	2. Four community and individual refuse alternatives tested: burning, burying, composting, recycling and biogas.		
3. Improved community and personal hygiene messages developed and delivered.	3. Five core messages (health education modules) developed and delivered on latrine use, hygiene, safe water, refuse disposal and safe food preparation and storage.		
4. Newly constructed latrines extensively used in 6 villages.	4. High percentage of household members, esp. children, of 450-900 households regularly using latrines.		
5. Use of existing latrines in 6 villages increased.	5. High percentage of household members, esp. children, with existing latrines using them regularly.		
6. Printed technical and audio-visual materials produced and published on latrine building and maintenance.	6. One looseleaf manual with modules on each type of latrine, plus a-v materials and aids in use during the FSPP.		
7. Multi-media health education campaign developed and tested.	7. Ten media tested: radio, film, audio-cassettes, Polaviision, slides, flip charts, booklets, posters, leaflets, folk media.		
8. Multi-media network strengthened at central, district and village levels.	8. One central, 2 district and 6 village-level systems for integrated multi-media communications strengthened.		

GOVERNMENT OF BOTSWANA

Technical Services:		
Full-Time:		
Project Coordinator	2, 1/4-time	
Economist	1, 1 month	
Part-Time:		
District Coordinators	2, 1/4-time	
District Works Department Supervisors	2, 1/4-time	
Health Assistants (Sanitation)	8, 1/3-time	
Adult Educators	2, 1/4-time	
Drivers	2, 1/2-time	
Village Coordinators	6, 1/2-time	
Construction Workers	12, 1/2-time	
Commodities:		
Vehicles	3 vehicles	$41,000
Storage sheds	6 storage sheds	1,200
Camping equipment	camping equipment	1,000
Other Costs:		
Vehicle operation & maintenance	Vehicle o & m	12,000
Transport for field researchers	Transport	2,000
Office space	Office space	5,000
Secretarial services	Secretarial services	2,800
Water quality testing & groundwater monitoring	Testing & monitoring	5,000
Housing and basic furnishings	Housing & furnishings	69,000

ANNEX H

POSITION DESCRIPTION: MULTI-MEDIA SPECIALIST

Minimum Professional Qualifications

B.A. in Media Management and a minimum of 10 years experience working in developing countries, including Africa.

Desirable

Ph.D. in Instructional Technonology and experience in developing countries, especially in Africa.

Skills

1. Experience in Management and production of media systems including films, audio/slide presentations, videotape, photography, radio;
2. Experience in rural media projects, especially health and sanitation and preferably in Africa
3. Experience in designing questionnaires;
4. Experience in evaluating and interpretting project research;
5. Ability to work harmoniously in training of Counterpart Project Coordinator/Media Management Trainee and other project personnel at the Central, district and village level;
6. Ability to write reports on the project which will enable the Government of Botswana and USAID to assess the project for replicability and organizational refinements; and
7. Ability to write scrips (desirable but not essential).

Scope of Work

Over a period of two years, the advisor will be expected to:

- be responsible to the Permanent Secretary of the Ministry of Local Government and Lands as the Project Coordinator of all pilot ESPP activities;
- design and implement the multi-media health education campaign;
- establish schedules of ESPP personnel and project activities, including use of the media van;
- supervise the collection of research data and its analysis and interpretation;
- train a counterpart in media management and the maintenance and operation of audio-visual equipment;
- train Village Coordinators in the proper use and maintenance of audio-visual equipment in their custody;
- conduct seminars and training courses on health education and sanitation for ESPP staff and selected village audiences, as may be necessary;
- work closely with the Materials Producer in developing and testing ESPP health education materials and materials on construction techniques and appropriate technology;
- report periodically to the ESPP Reference Group on progress and problems in implementing the ESPP project;
- upon request, prepare written and oral reports on the research and action activities of the ESPP project;
- visit each pilot village at least once every two months and attend kgotla meetings regularly;
- work closely with the Village Coordinators, District Coordinators and District Councils in promoting the activities of the ESPP project;
- attend meetings of the District Extension Team and the District Development Committee to explain progress and problems in implementing the ESPP project;
- report to the Program Officer, USAID/Gaborone concerning implementation of the project.

Position Description: Sanitarian

Minimum Professional Qualifications essential.

B.S. Environmental Health or a biological science,
M.P.H. Public Health.

Desirable

Ph.D Environmental Health.

Skills

1. Rural sanitation expertise preferably in Botswana, Southern Africa, Africa or the Third World. Preferences in that order;
2. "State-of-the art" knowledge of low cost sanitation systems;
3. Ability to design questionnaires to evaluate different low cost sanitation systems;
4. Statistical training to collect analysis and interpret data from different low cost sanitation technologies;
5. Experience in performing and interpreting simple water and quality tests;
6. Strong administrative and management experience to implement and supervise project;
7. Training in communicable and parasitic disease control;
8. Work experience of at least 5 years desirable; and
9. Construction work experience (desirable but not essential).

Scope of Work

The Sanitarian, with assistance from the project co-ordinator and the Sanitation Co-ordinator (Sanitary Engineer) in the MLGL, will be responsible for implementing the sanitation component of the project. Over a period of two years the Sanitarian will be expected to:

- establish work schedules, procure supplies and organize the personnel to emplement the sanitation component of the project;
- set up a monitoring system for all latrines constructed in the project;
- set up central files for valid data collection on latrines and boreholes;
- set up cost and water monitoring (boreholes) files;
- set up a statistically sound monitoring schedule;
- in the initial phase of the project, ensure the statistical appropriateness of the villages and households selected for project implementation;
- keep abreast with all other low-cost sanitation projects in Botswana and ensure that new findings are appropriately used for project implementation; and
- at the end of the project, collect, analyse and interprete project findings in the final project document.

Position Description: Social Scientist

Minimum Professional Qualifications

M.A. in Social Anthropology or Sociology with fieldwork experience in Botswana.

Desirable

Ph.D in Social Anthropology or Sociology with knowledge of low-cost sanitation.

Skills

1) a sound knowledge of the cultural background of the Batswana

2) experience in sociological evaluation of development projects and report writing

3) ability to design questionares to evaluate the sociological effects of ESPP on pilot villages

4) ability to select and train ennumerators in interviewing techniques

5) willing to undertake fieldtrips as required

Scope of Work

It is estimate that six months of work-efort will be required to:

1) refine the on-going monitoring and evaluation plan for the ESPP

2) assess the capabilities of students and other

persons who could assist in the collection of field social anthropological field data

3) provide sound training to the above fieldwork methodologies

4) train ESPP village staff in report-writing and train the leaders of voluntary associations to keep basic records on meetings pertaining to ESPP

5) visit pilot villages

- to assess whether sociological criteria set out in P.P. were taken into account by the District Councils in the selection of villages
- to carry-out (4)
- to identify institutions and voluntary associations involved in ESPP, their present make-up and performance and future capabilities
- to carry out long interviews with village leaders and others to establish attitudes towards ESPP and present solutions (if any) to the problems

6) write a report with social anthropological information gathered during (5) which will benefit the project leaders in implementing the ESPP and also serve as groundwork for eventual evaluation at conclusion of project.

7) on the basis of (5), refine questionare

8) write a final social anthropological evaluation of the effects of ESPP on the villages, the importance of the on-going sociological monitoring

and the implications of expanding the project to a nationwide campain in Botswana

Position Description: Materials Producer

Education: Bachelors degree in Environmental Science

Desirable: M.Sc. degree in Public Health

Skills: Knowledge of Setswana
Experience in writing manuals and in audio-visual equipment usage and maintenance

Scope of Work: Over a period of one year this advisor will be expected :

(a) Produce the learning and training materials on health education and construction techniques (flip-charts, slide presentations, manuals, posters etc.)

(b) Write scripts and supervising the production of tapes for schools, adult groups and for radio broadcasts ;

(c) Order films and other materials for use in the media van and other ESPP activities

(d) Liaise with the Health Education Unit and the Ministry of Works in checking content health education materials and technical specifications of construction manuals

(e) Maintain ESPP equipment, especially audio-visual equipment and media van.

(f) Pretest ESPP educational materials and be responsible for evaluating effectiveness of each package.

(g) Train the counterpart coordinator in materials production and maintenance of equipment as may be necessary.

Annex N

CONSTRUCTION TRAINING PLAN

Self-help and cost considerations require that no construction contractors (except for prototypes) be used for the project except for very special toilet units, such as seats, if these cannot be made from concrete using cement moulds. The following plan of operation is suggested to make maximum use of local labor and impart some skills to village personnel:

(1) Two highly motivated individuals will be chosen from each pilot village through the chief or headman. A total of 12 such individuals will participate in the project.

(2) The participating districts now have 4 MOH Health Assistants trained in sanitation work. Most of these individuals are currently lacking practical construction skills, and the MOH has agreed in principle to have these Health Assistants, plus any Council-employed Health Assistants, participate in the project. There will be a total of at least 4 of these agents in the two districts.

Both the selected village workers and the Health Assistants (Sanitation) will be trained in the elements of brick laying, concrete mixing, slab making, etc. The Rural Brigade Center at Kanye is willing to provide such training. It is suggested that, for each district, this group receive a joint training course lasting about 1-2 weeks. Arrangements for using the Brigade at Mochudi for such training will be investigated.

The ESPP Sanitarian, in collaboration with the brigade

staff and one professional bricklayer or builder to be hired or seconded to the project, will determine the content of the training and also supervise it. This training should be organized early in the project after the pilot villages have been identified. This early training will ensure that, at the implementation stage in the village, the village construction workers will be available to organize identified families in constructing the latrines. The following step-by-step implementation schedule is suggested at the village level:

(1) Sanitarian pays courtesy visit to each pilot village with the ESPP District Coordinator. Project is explained to the chief, and his central role is emphasized. His needs, if any, should be discussed and satisfied.

(2) Two village construction workers are identified through chief, and training is arranged.

(3) Sanitarian and District Coordinator inspect the pilot villages, using criteria in Annex . to identify potential participating households, kgotlas and institutions, such as schools and dispensaries.

(4) Sanitarian and District Coordinators meet again with the two trained village construction workers to make definitive decisions on households, kgotlas and institutions which will participate.

(5) A meeting chaired by the chief is called for and heads of all households or institutions are chosen. Sanitarian and District Coordinator to be present. Purpose of project is discussed and terms of participation made clear. Schedule of activities is agreed upon.

(6) Excavation tools (spades, picks, concrete moulds) are subsequently delivered to the chief for custody. These will remain village property.

The Sanitarian will be required to keep records to monitor costs and each individual latrine performance, as well as latrine performance in general by type and by village.

OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA FPMR (41 CFR) 101-11.6

UNITED STATES GOVERNMENT

ANNEX O

Memorandum

TO : Mr. Louis A. Cohen, Director, USAID/Botswana DATE: 29 August 1979

FROM : Project Committee

SUBJECT: Procurement Source and Origin Waiver

A. Summary Waiver Information

Cooperating Country	:	Botswana
Authorizing Document	:	PAF II
Project Title	:	Environmental Sanitation I
Nature of Funding	:	Grant
Description	:	2 pick-up trucks (one open and one enclosed) or equal
Approximate Value	:	$24,000
Probable Source	:	Republic of South Africa

B. Discussion

This project requests approval to purchase vehicles of local source but of Code 935 origin. The vehicles are two pick-up trucks, one open and one with an enclosed rear area behind the driver's cabin. The open pick-up truck will be used to transport construction materials and project personnel, especially the AID-financed Multi-Media Specialist/Project Coordinator, between Southern and Kgatleng Districts and to and from the six pilot villages in these districts. The enclosed pick-up truck will be used to transport media equipment and supplies to, from and between the Non-Formal Education Department of the Ministry of Education in Gaborone, the two districts and the six pilot villages. The pick-up will be customized to hold the media equipment securely and to protect it from dust. A waiver is requested for the procurement of the vehicles from the Republic of South Africa (Code 935) based on:

(1) the lack of repair capability (both in parts availability and in mechanical skills) for U.S. vehicles; and

(2) safety hazards for the AID-financed technical advisors resulting from driving left-hand drive vehicles.

USAID/Botswana has encountered several problems with U.S. manufactured vehicles procured under other on-going projects in Botswana. The Central Transport Office of the Government of Botswana, which has vehicle maintenance responsibility, has serious problems in securing repair parts for U.S. manufactured vehicles.

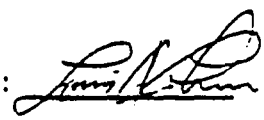
The office also has no mechanics who understand or have experience in any component area of the U.S. vehicles, i.e. engine, running gear, transmission, axles, transfer case or body. The result is that these vehicles have remained "dead lined" for extensive periods of time and when released, repairs often promptly prove inadequate.

As a further problem, it is clear that improper driving position (i.e. left hand drive) of the U.S. vehicles in all Southern Africa locations is a genuine hazard. This problem has been discussed with representatives of U.S. manufacturers who state that production costs would be substantially increased for such small lot orders.

In addition to a procurement source waiver under AID Handbook 15, this action request requires a waiver under Section 636 (i) of the Foreign Assistance Act. Section 636 (i) limits AID financing to U.S. manufactured vehicles, but permits a waiver of this limitation "where special circumstances exist". According to the appropriate Conference Report, "special circumstances" are deemed to exist in "emergency or special situations such as a need for right hand drive or other types of vehicles not produced in the United States".

C. Recommendation

Based on the foregoing, we believe that "special circumstances" within the meaning of the legislative history do exist in this case and that a waiver to the U.S. vehicle requirement of Section 636 (i) is justified.

APPROVED: 

DISAPPROVED: _____

DATE: _____

ANNEX P

$1.=P1.22

Detailed Financial Analysis of Latrine Construction

A complete VIP latrine constructed by the Brigade at Kanye currently costs P400 ($488.00). Labor, superstructure and substructure costs are included in the Brigade's contracting price. Below are current market price estimates for complete toilets, based on figures obtained from the Kanye Brigade and the Self-Help Housing Agency (SHHA) in Gaborone:

VIP	P400	($488.00)
ROEC	P450	($549.00)
REC	P500	($610.00)

At present in rural areas, cash wages on freehold farms average approximately P30 per month and on tribal land cash income can be as low as P10. Rural income thus ranges from about P120-P360 (1974-1975). It is evident from the above quoted market prices of these "low-cost toilet systems that few rural Batswana can afford these toilets without great financial sacrifice. The market price for the VIP, the least costly low-cost toilet recommended for the ESPP, is well above the annual income of most villagers. A visit to the ESPP districts revealed that an increasing number of Batswana are investing in latrines. Few rural inhabitants, however, use contractors for their construction.

Because self-help and replicability are essential to this project, material subsidies, where provided, will be restricted to certain component parts of the latrines. The project will provide materials for the substructure and the vent pipe. Superstructure materials, the seat and labor costs will be borne by participating families. It is essential that this is explained to participating families and that an agreement is reached. (An exception to the level of material support should be considered for schools and dispensaries which may participate in the project.)

1. Materials Cost Estimate for One VIP (From a Gaborone contractor in July 1979)

	Quality	Unit	Rate (P)	Amount
Sand	0.5	M^3	5.0	2.50
Stones	0.5	M^3	14.0	7.00
Cement	3.5	Bags	2.2	7.70
Steel mesh (2.5 x 1.5)m	3.75	M^2	2.4	9.00
Vent Pipe	3.0	M	3.85	11.25
Fly mesh				.50
Construction timber, pegs				2.50
		Sub-Total		40.45(≠49.32)
Seat				25.00
				65.45(≠79.81)

This Estimate excludes the cost of materials superstructure and excavation labor.

Estimates for various toilets based on the rounded VIP estimate (P65 each):

Increase in the base price of materials for the ROEC and the REC reflect the greater number of slabs required for the larger pits in these toilets. The REC also requires additional materials for the wall which separates the pits.

and for the curved slab (ROEC).

3. Through self-help, it is estimated that ≠22,000 will be required to purchase base materials to construct 450 latrines, excluding prototypes. In addition, tools are required for self-help construction: (≠49.00 x 450 = ≠22,000)

1 shovel x P5 per 2 latrines regardless of type: $\frac{1 \times 5 \times 400}{2}$ = P1,125

1 pick x P7 per 2 latrines: 1x7x400	= P 1,575
Total cost of picks and shovels	= P 2,700
	($3,100)

Other required construction tools and materials:

2 wheel barrows x 6 villages x P50	= P600
1 batching box x 6 villages x P30	= 180
2 hammers x 6 villages x P10	= 120
Nails	= 100
1 spirit level x 6 villages x P10	= 60
1 tap x 6 villages x P5	= 30
1 steel cutter x 6 villages x P50	= 300
1 casting form x 6 villages x P40	240
1 timber for concrete leveling x 6 villages x P4	= 24
	P1,654
	($2,000)

4. Estimate for prototypes and cost of prototype plans.
Prototypes are estimated at market prices:

VIP, P400 x 6 (1 per village)	= P2,400
ROEC, P450 6	= 2,700
REC, P500 x 6	= 3,000
	P8,100
PROTOTYPE PLANS	1,500
	9,600
	($11,700)

5. Training costs and per diem for 2 village construction workers x 6 villages plus 4 Health Assistants x 2 districts = 20 persons.

Training at Kanye Brigade	= P3,000 ($1,650)
Training at Mochudi Brigade	= 3,000 ($1,650)
	6,000 ($3,300)

Lower Costs of Shared or Communal Latrines

The cost estimates presented above are per latrine and per user unit. If two adjacent households construct and use one VIP, the actual cost of the VIP per households would be cheaper. The VIPis, therefore, more expensive per one household than it is per two households. If each latrine system were to be shared by 3 adjacent families, the following cost reduction per household could be realized:

	Average materials cost per family
VIP = P 65.54÷ 3	21.83
ROEC = P75.00÷3	25.00
REC = P100.00÷3	33.33

Materials required for the superstructure and excavation labor would also be reduced by a factor of three.

During the PP design, however, clear sentiments were expressed against public latrines . This was especially directed at latrines which would require District Council maintenance. The extended family latrines suggested above would be appropriate for the more rural villages, where the extended family structure is still relatively intact. Although sentiments against district-maintained public latrines were expressed in the two ESPP districts, it should be noted that the Kweneng District is going ahead on its own initiative to install public ROECs which the district will maintain.

Experience in Molepolole (Kweneng District) has indicated that, while some rural Batswana households would prefer to have their own latrine, extended family Kgotlas can and will share a latrine if it is properly planned and discussed by the ultimate users.

This experience would support the idea of getting extended families to share the more expensive latrines (ROEC and REC), which can easily be adapted for communal use. It should be emphasized that latrine cost per household is a more important indicator in determining whether this project will be economically replicable than the market cost of a singular latrine. All the latrine types recommended for this project can be easily adapted for communal use.

Limits of Project Replicability

The above figures assume that participating households can be persuaded to erect the superstructure for the toilets once the substructure and vent pipe have been provided. The participants would be expected to provide an enclosure so that the vent pipe can be secured tightly. The extent to which villagers complete building theirlatrine can be considred an index of project replicability with the level of subsidy provided in this pilot.

From the foregoing calculations, the following conclusions can be made from the conservative price estimates:

1. A project of this nature is unlikely to be replicable without some form of assistance to participants. On a self-help basis, a low-income rural household which earns about P250 per year may not be able to pay for the essential parts for the latrines to be tested in constructed, conventional pit latrine is not affordable by some low-income households. It would appear that 85 percent of the rural population has no proper sanitation facilities because of two major reasons:

-- current costs to build even the inadequate conventional pit latrine are high, and

-- there is low appreciation of the dangers of improper excreta disposal.

The purpose of this pilot project is, however, to find the answers to these problems. The above speculations are based on computations using a theoretical average income. A visit to the ESPP districts indicated that many rural Batswana are increasing their efforts to build their own latrines, albeit with technical problems. It is unlikely that all rural Batswana in all the income groups in the rural income continum will be able to afford the sanitary facilities which will be tested in this project. The project should not be predicated on such a condition, as it is impossible to design a project to achieve this purpose. If the systems which are pilot-tested here are found to be affordable by about 70% percent of the rural population with self-help ~~is the opinion of the PP team that~~ this will be an important finding and achievement.

Recurrent Costs

Recurrent costs in this project are expected to be minimal and will be associated with the following elements of the project:

Unit Maintenance	Responsible Agent
1. Sanitation	
a. Superstructure and substructure	Householder, extended family, school or dispensary
b. Emptying of pits, ensuring sanitary standards are observed	Participating household or institution and the District Council (Health Sanitation) Assistant
c. Treating human	Household and District Council Extension Team

2. Refuse

a. Pit construction	Householder or institution
b. Refuse collection	Householders in small villages with low population density; District Council in more urban villages.
c. Refuse disposal and treatment	Householders, institutions, District Council

The latrine systems recommended for trial in the ESPP have few recurrent costs associated with them. If properly designed, built and maintained, the systems will have a useful life of more than 5 years, depending on the pit volume and household size. Each system can be used several times. In the VIP, for example, consideration should be given in high population density areas to having families excavate two entirely separate pits. The cover slabs will be provided with handles and can be moved to one pit while the contents of a full pit are covered and allowed to decompose into compost. This system requires only additional labor and little extra cash expenditure (ring beam required over new pit).

Efforts have been made in the PP design to keep recurrent costs associated with village and district-level institution-building to a minimum for the following reasons:

1. The GOB has indicated that during the pilot project, recurrent costs and subsidization should be kept to a minimum while emphasis is placed on self-help.

2. Only a few households or institutions in each village may be participating directly in the project. The PP design team believes that, since the benefits of the pilot are restricted, it would not be politically safe to generate recurrent costs which would have to be borne by the entire village.

Cost-Recovery

The only direct recoverable costs of the project are the costs of construction materials provided to villagers. Since no project funds will go directly for pit maintenance, humus treatment, refuse collection and refuse treatment and disposal, these costs should not be considered recoverable. The PP team has considered a cost recovery plan for this project and believes that such a plan is likely to be beset with broader social problems, which would divert attention from the purpose of the 2-year pilot ESPP.

Socio-economic conditions in villages are such that it would not be possible within two years to establish a system for cost-recovery. The following essential cost-recovery criteria are lacking:

(a) villages should be economically efficient, so that all long-and short-term cost elements of sanitation, including the cost of collecting the payment, are recovered

(b) the cost-recovery levy should be equitable and acceptable by the community and assurably reflect the level of service, which the beneficiaries are getting individually and by the society at large;

(c) the plan should be simple to administer without absorbing scarce resources and causing too many disputes; and

(d) the plan should be enforceable and allow for censor or penalty for non-payment.

Rural males in the two ESPP districts currently pay an annual P2.00 district tax as a purely nominal contribution to local government finances. The Rural Income Distribution Survey by the Ministry of Finance and Development Planning found that some 45 percent of rural household incomes were below the poverty datum line. The cost-of-living index in Botswana has risen at a rate of approximately 10 percent per annum since 1976, and there is no evidence of this changing. The World Bank has also estimated that the per capita growth rate for 1976-1981 will be 5.9 per annum. Based on this, and on NDP IV projections, household incomes from 1978-79 cannot be expected to increase at a rate of more than 4-5 percent per annum.

Under such economic conditions, it is doubtful that this project can, within two years, establish a successful, direct cost-recovery plan. This conclusion is supported by a recent event in Mochudi, the capital of Kgatleng District. In May 1979, the District Council abandoned a plan to collect a P2.00 annual water fee from the town's residents. Mochudi has 4 boreholes and about 40 public standpipes. One of the reasons cited for abandoning the plan was that the District Council was losing money. Resources spent to collect the water fees were higher than the revenue collected.

A cost recovery plan for a VIP would look as follows:
A P65.00 loan at 1 percent interest for 3 loan terms of 1 year, 3 years, and 25 years:

Option	1	2	3
Repayment period	1	3	25 years
Payment:			
Monthly	P 5.96	2.07	0.23
Annually	P71.50	27.75	2.86
Percent of P300 household income	23.8%	12.58%	0.95%

Village and District Institutions that may be involved in ESPP

If the ESPP is to be village based involving a high degree of community participation it will be necessary to identify and understand some of the local institutions. It is hoped that this appendix will help the project designers and implementers understand a little of the complex structures which will be involved.

Prior to independence local government was carried out by the tribal authorities. The District Commissioner was the only representative of Central Government in the district. Villages were ruled by their chiefs or headmen who were more or less powerful depending to a certain degree on their personality. They made laws and administered justice. They allocated land, held courts, raised revenue, hired teachers and maintained their wards. All this was done in consultation with the tribal council at the village or tribal kgotla.

In the past, as it still is now, the [illegible] which were considered necessary to rule around the chief's ward, the centre of village activity and usually closest to the main (or original) source of water. Those wards closest to that of the chief were those clans genealogically closest to the royalty while those furthest away were often unrelated tribesmen who had been conquered and/or dominated in the past. They were also in some cases the poorest in the society. The core of each ward is a patrilineal kinship group, the most senior male beingtraditionally recognized as their headman. In some cases, however, the chief would appoint a headman over a ward for political or administrative reasons. The headman of each ward is an important member at the village kgotla. He advises the chief and represents his ward in matters that may affect them. He is responsible for keeping them informed and seeing to it that the kgotla decisions are carried out. Smaller kgotla's are held in each ward where local, domestic disputes are discussed and settled.

The smallest recognized social unit is the household made up of a man, his wife and unmarried children. Symbol of this unit is the yard or lolwapa. Traditionally several yards were built next to each other expressing the extended patrilineal kinship group. This cluster recognized the authority of the eldest male in the group. Under him were his younger brothers, their wives and children, his own sons and their families as well as unmarried sisters and daughters. In the past his position was strengthened by the tradition that the family herd should remain undivided, the eldest male holding it in trust for the generations to come. In modern Botswana the large, extended family is in the process of breaking down. The family herd is most often divided when the senior male dies thus reducing the old system of gerontocracy. Nevertheless, it is still common to find old men with authority over their adult, married sons and their children.

In 1966 District Councils took over many of the local government functions of the chiefs who became paid civil servants under the District Commissioner. They are,however, still responsible for the maintenance of law and order in their areas. Eventhough their power has decreased - especially since independence - they are generally still the most powerful figure in the village commanding both respect and obedience. Often they are members of the District Council, the Land Board and other important bodies. They use their kgotlas to maintain justice and introduce new ideas to their villagers. It is at kgotla that matters are discussed, debated, accepted or rejected. It is a traditional institution which every villager understands and respects.

There are 9 District Councils which are elected every 5 years. Their statutory responsibility is to ensure good government in their areas. They are responsible for primary education, public health, sanitation, public water supplies and the construction and maintenance of rural roads. They establish committees for whatever they need to have done e.g. health, welfare, community development, etc. Each district council must employ a council secretary who is its chief officer and a treasurer.

With the emphasis on rural development in the Second National Development Plan it was realized by Central Government that an effective planning and implementation structure was needed. In 1974 District Development Committees were therefore established under the chairmanship of the District Commissioner and with the District Officer of Development functioning as full time secretaries. Membership is made up of the various district heads of the central government departments such as health, agriculture, education, etc., as well as representatives from council, tribal administration and landboard. The functions of these District Development Committees are to plan, co-ordinate and administer the development of the districts. They make recommendations to the councils who have the final decision.

In most of the larger and some smaller villages a modern structure - the Village Development Committee - has been developed to help plan and co-ordinate the development of the village especially through self-help programmes. These projects have to be discussed and approved by the village kgotla before they can be implemented. Should they require financial assistance from council the project must also be approved by the council. Typical projects are building pupil houses, kgotla shelters, school teachers quarters, garbage collection. Community Development Officers are trained to offer guidance and support to the VDC's.

Unfortunately the majority of VDC's are inactive. Often this is because the traditional village leaders see them as a threat to their own authority and position in the village. If this is the case the VDC cannot accomplish anything since all their projects must have the approval of kgotla. In many cases the Community Development Officers do not give them sufficient guidance. They lack financial resources and the skill involved in running a committee. The VDC's tend to consist of the more educated elite (often with the Head Teacher as Secretary) which can alienate them from the more conservative villagers.

Besides the VDC there are other voluntary associations and figures who are or could be involved in the development of their villages. Most

notable are the Parents/Teachers Associations, the Head Teacher and the school, the clinic, the women's organizations, the Red Cross, various churches, 4H and other youth clubs as well as the Family Welfare Educator, the Community Development Officer, the Agricultural Demonstrator, Veterinary Officers and even the Village Pumper.

Botswana has perhaps the largest proportion of extension workers in relation to population size in Africa. These extension workers are directly responsible to their various departments in central Government. A District Extension Team generally consisting of the Community Development Officer, Health Administrator, District Agricultural Officer, Education Secretary, Non-Formal Educator, and the District Officer of Development was set up under both the local authority represented by the Council Secretary and Central Government represented by the D.C. They serve mainly to co-ordinate their field staff.

Many of these structures and institutions are either weak or not functioning at all. If a project such as the RSPP is to be replicable in other areas it must be channelled through the existing structure. It is therefore important that the project implementers understand those structures and their weaknesses. It isalso important that the project remains flexible enough to allow the implementers to work through whatever institutions are functioning and sympathetic with the project.

Social constraints to the acceptance of improved waste disposal and refuse collection systems

RUral Botswana is undergoing rapid transition with the infiltration of many new ideas, values, institutions and technologies. Yet traditional customs hold strong. Attitudes and values are therefore sometimes ambiguous and difficult to define. New and old ideas sometimes clash causing real problems such as the break down of gerontocracy. Particularly pertinant is the ambiguity of traditional authority both in the village and the family. Ideally modern institutions such as the District Council and the Village Development Committee function best when they operate together with traditional institutions such as the Kgotla but unfortunately jealousies and personality clashes often result in competition instead of co-operation. The ESPP will take care to operate through whatever village institutions exist without becoming involved in village politics.

Apart from the productive division of labour between sexes with males taking care of the cattle and women cultivating the lands there is also a customary division of labour which takes care of the daily household chores. By far the largest part of this lies with the females, They take care of everything to do with the preparation of food; they fetch water, collect firewood, stamp corn, cook and wash the dishes. They sweep the yard, clean the huts, smearing them with fresh cow dung and mud whenever they appear unclean or in disrepair. In the building of huts men make the timber structure, women build the mud walls and thatch the roofs. Usually 'building parties' are held with friends and neighbours participating, the hostess providing her home-brewed beer to quench their thirsts and encourage satisfactory results. Such parties are widely held whenever one

wishes to attract help. The beer and food should not be seen as payment per se as there is a fair amount of reciprocity involved with the more labour intensive tasks. It is likely that similar arrangements will be made by households in order to obtain labour for the digging of pits and the construction of the superstructure. Small children are looked after by whoever is not involved in other tasks. Thus it is that one sees little girls with babies on their backs. With the young women being kept busy in producing crops and other activities it is common for grandmothers to take care of their grandchildren. They have the time to provide the youngest generation with affection and attention. The socialization of children, therefore, falls to a large degree as the elders. This is particularly the case where parents become migrant labourers.

Subsistance farming in Botswana is precarous and highly dependent on climatic conditions, grought being a common experience. Whilst Batswana regard themselves as cattle keeping people and the national herd is counted by the millions ownership is very skewed with almost half the rural population unable to participate in the growing cattle economy. These people are particularly dependant upon their crops. Drought and other economic pressures force the young men to seek employment which is found mainly on the South African mines. The result is that many rural households will not have the necessary labour needed to participate in the ESPP unless alternatives can be found (such as through 'building parties') or assistance given by the project.

Even with a subsidy it is unlikely that the lowest income groups will prioritise the construction of a latrine in their yard. It <u>might</u> be feasable for such families to join together to construct communal latrines. This,

however, involves a whole range of problems which have been studied in the urban areas. Should they be introduced into the pilot villages they must be carefully observed so as to avoid some of the fiasco's already experienced in Botswana.

With easier access to shops and manufactured foodstuffs non-biodegradable refuse is becoming a problem in the larger villages. This is not as bad a problem in the yard as in the communal village areas - the areas outside the yards, the paths, the roads, near the shops and (worst of all) the bottle stores. As this type of refuse is a product of the modern way of life there is no traditional, institutionalised means of dealing with the problem. In the past such tasks that had to be undertaken for the benefit of the community were often carried out by the local 'mapato' (age regiment). The chief could order them to build roads, dams and perform other labour intensive tasks without receiving payment. It is likely that the mapato would have been designated the duty of cleaning up the village. The institution was not, however, very popular and was abolished at independence. Its social value is at present being reconsidered and the Kgatleng is already taking steps to re-introduce it in their district.

It might be possible to get youth organisations such as 4B and Scouts to undertake an environmental clean-up campaign. This is not, however, a long term solution. People will have to be taught and forced to dispose of their refuse in a sanitary and socially acceptable manner. Bottle stores and shops should be held responsible for the debris around their premises.

Cleanliness is not something new to the Batswana. Women are expected to keep their yards and huts meticulously clean. Water shortage does, however, limit the

amount of body and clothes washing. It is a precious commodity which has to be fetched by women who already have a heavy daily workload. The custom of washing hands before eating is completely internalised amongst Batswana.

It is worth noting that in many of the smaller rural villages soap is difficult to obtain and can hardly be afforded by the poorer members of the population. The question then arises as to how people will maintain the latrines especially if they require sophisticated cleaning materials such as brushes, soaps, etc. There does not seem to be a real understanding of the link between human excreta and faecal related diseases. Sickness and death are usually explained in traditional magico-religious terms. They are seen to be the result of the bad feeling of relatives or neighbours. Jealousy, anger and hatred are the emotions that make people employ powerful doctors to 'poison' their enemies and even more often, their children. So when somebody is seriously ill the relatives will consult the most powerful traditional doctor that they know. This is an expensive affair usually involving the payment of a beast or a number of goats. Through the 'ditaola' (bones) the doctor communicates with the ancestors and finds out <u>who</u> (not what) is causing the illness. He then tries to break their hold over his patient through his own powers. Many doctors make small lesions on their patient from which they suck the 'poison' spitting such things as bones, stones, rotten meat and lizards onto the floor.

The physical side of sickness is treated mainly through herbs. As modern medicine is penetrating the rural areas people are beginning to perceive it as beneficial but with the more serious diseases they will usually consult both the traditional and the modern doctor, thus taking care of both aspects of disease.

With a sympathetic understanding of traditional attitudes and values the ESPP should be able to attain its goals in the pilot villa . and overcome whatever constraints there are to the acceptance of improved waste disposal.

ANNEX S

Initial Environmental Examination (Revised)

PROJECT LOCATION:	Botswana
PROJECT TITLE:	Environmental Sanitation and Protection
PROJECT NUMBER:	633-0084
FUNDING:	FY 1979
PERIOD OF PROJECT:	Two Years
IEE PREPARED BY:	John Pielemeier, Project Design Officer, USAID/Botswana
ENVIRONMENTAL ACTION RECOMMENDED:	Negative determination

CONCURRENCE: _____

Louis A. Cohen
Director
USAID/Gaborone

31 May 1979
Date

ASSISTANT ADMINISTRATOR'S DIVISION:

APPROVED _____

DISAPPROVED _____

DATE: _____

Initial Environmental examination environmental sanitation and protection programme

I. Project description

The goal of the project is to improve the health of the rural population in Botswana and to reverse the degradation of the land caused by refuse and human excreta. The specific outputs of the proposed project are:

a) to develop and distribute information and education messages and materials emphasizing the relationships between good health and hygiene on one hand and the environmental sanitation issues - refuse disposal, latrine construction, location and maintenance on the other hand;
b) to construct and promote the use of prototype household latrines and refuse pits that could be used in future projects; and
c) to test various approaches to programme management which can be replicated in other districts, including technical criteria useful in future projects.

This is a pilot project that will promote better health through the dissemination of health education methods in conjunction with proper construction, location and maintenance of private household latrines and refuse pits and should provide techniques that can be used in future proposed projects in Botswana.

II. AID Inputs

1. Technical

Two long-term technicians (2 years each) will be provided. One will be a sanitarian to work with the local officials in determining the best methods of waste disposal and to determine proper locations for latrines and refuse sites to prevent further contamination and pollution. The other, a media specialist/health educator, will promote health education campaigns in co-operation with the Government of Botswana.

2. Training

Up to 6 months in U.S. or Code 941 countries for short-term training in sanitation, health campaigns, and media techniques.

3. Equipment/Commodities

AID will provide funds for the purchase of the following: trucks and land rovers, media equipment and picks, shovels, building materials for prototypes.

4. Construction

Construction will consist only of private latrines and refuse pits which are properly located with designs that will assure that there will be no pollution of the existing water supplies.

III. Examination of Nature, Scope and Magnitude of Environmental Impact:

Summary

This small pilot project will, if successful, have some positive environmental impact on the six villages where it will be focused. Its positive impact will be in relation to improved water quality and health. Potential negative impact on local cultural practices will be minimal. These areas of impact are discussed more fully below.

a) Water Quality

The project will encourage the construction and utilization of environmentally-sound toilet facilities and the promotion of refuse collection systems in six villages in rural Botswana. Disposal of human excreta in most Botswana villages is still accomplished in traditional unsanitary ways. The Government of Botswana estimates that less than 25% of the rural population use sanitary facilities. Under these circumstances fecal coliform bacteria are often washed into surface water sources by periodic heavy rains and human drinking water becomes contaminated. Through a health education campaign using mass media and the construction

of prototype household latrines, villages will be encouraged to build and use toilet facilities rather than defecate in the bush. As a result the fecal pollution of surface water near these villages should decrease markedly and water quality should improve.

Improper selection of types of toilet facilities and poor siting of these facilities and/or village boreholes can lead to pollution of groundwater sources. Since this project will concentrate on only 6 villages, technical personnel will be able to easily determine which toilet facilities are most appropriate for the local soil conditions and will choose prototype units accordingly. The project will encourage improved coordination between government bodies which are responsible for village water supplies and village sanitation. The sanitarian provided under the project will, inter alia, act as GOB Water and Sanitation Coordinator for Water and Sanitation Decade activities in Botswana and will have considerable authority within the GOB structure to strengthen linkages in water supply and sanitation planning.

b) Health

As noted in the PID, water-borne and water-washed diseases such as gastroenteritis, eye infection, skin infections, cholera, and hepatitis represent over 23% of outpatient diseases diagnosed in 1976 at health facilities throughout Botswana.

Refuse laying in increasing amounts in or near villages is proving to be a significant health and safety hazard. Traditional practices of burning and burying are no longer practicable in villages with growing populations and as rural areas are invaded by western-type non-biodegradable materials such as tins, cans, bottles, etc. This refuse often attracts small children and results in cuts and other injuries which become easily infected. Dirty refuse is also a source of bacteria which can be readily transmitted by flies and other insects to cooking utensils in nearby compounds.

Clearly, the project if successful will have a beneficial effect on the health conditions of these 6 pilot villages by improving basic environmental sanitation practices.

c) Cultural

It is not anticipated that the project will have a significant impact on cultural traditions in Botswana. Traditional defication patterns in rural Botswana have no religious overtones. The successful promotion and use of more modern sanitary facilities in several areas of rural Botswana in the past suggests that the adoption of modern practices has no negative social or cultural overtones in village society. Quite the contrary, to some degree the presence of a household latrine provides its owner with a certain degree of prestige within the village.

There are no cultural patterns which would be negatively affected by improved refuse collection in Botswana villages.

The use of mass media techniques in the project should not cause cultural stress in the pilot villages. Mass media has been utilized extensively in Botswana to inform citizens about major government programs such as the Tribal Grazing Lands Program. It is the very success of these earlier uses of mass media that has led the GOB to suggest using similar techniques to promote improved rural environmental sanitation.

IV Recommended Environmental Action

This pilot project will, if successful, have positive impacts on water quality and health in the 6 target villages. Given past experience in Botswana cultural impact will be negligible. Even if the pilot is <u>not</u> successful, no negative environmental impacts are foreseen. Thus, a Negative Determination is recommended.

IMPACT IDENTIFICATION AND EVALUATION FORM

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

1/ See Explanatory Notes for this form.

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

IMPACT IDENTIFICATION AND EVALUATION FORM

C. ATMOSPHERIC

1. Air additives ——— N
2. Air pollution ——— N
3. Noise pollution ——— N
4. Other factors

D. NATURAL RESOURCES

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

E. CULTURAL

1. Altering physical symbols ——— N
2. Dilution of cultural traditions ——— L
3. Other factors

F. SOCIOECONOMIC

1. Changes in economic/employment patterns ——— N
2. Changes in population ——— N
3. Changes in cultural patterns ——— L
4. Other factors

IMPACT IDENTIFICATION AND EVALUATION FORM

G. HEALTH

1. Changing a natural environment	L
2. Eliminating an ecosystem element	L
3. Other factors	
Improving health status	M

H. GENERAL

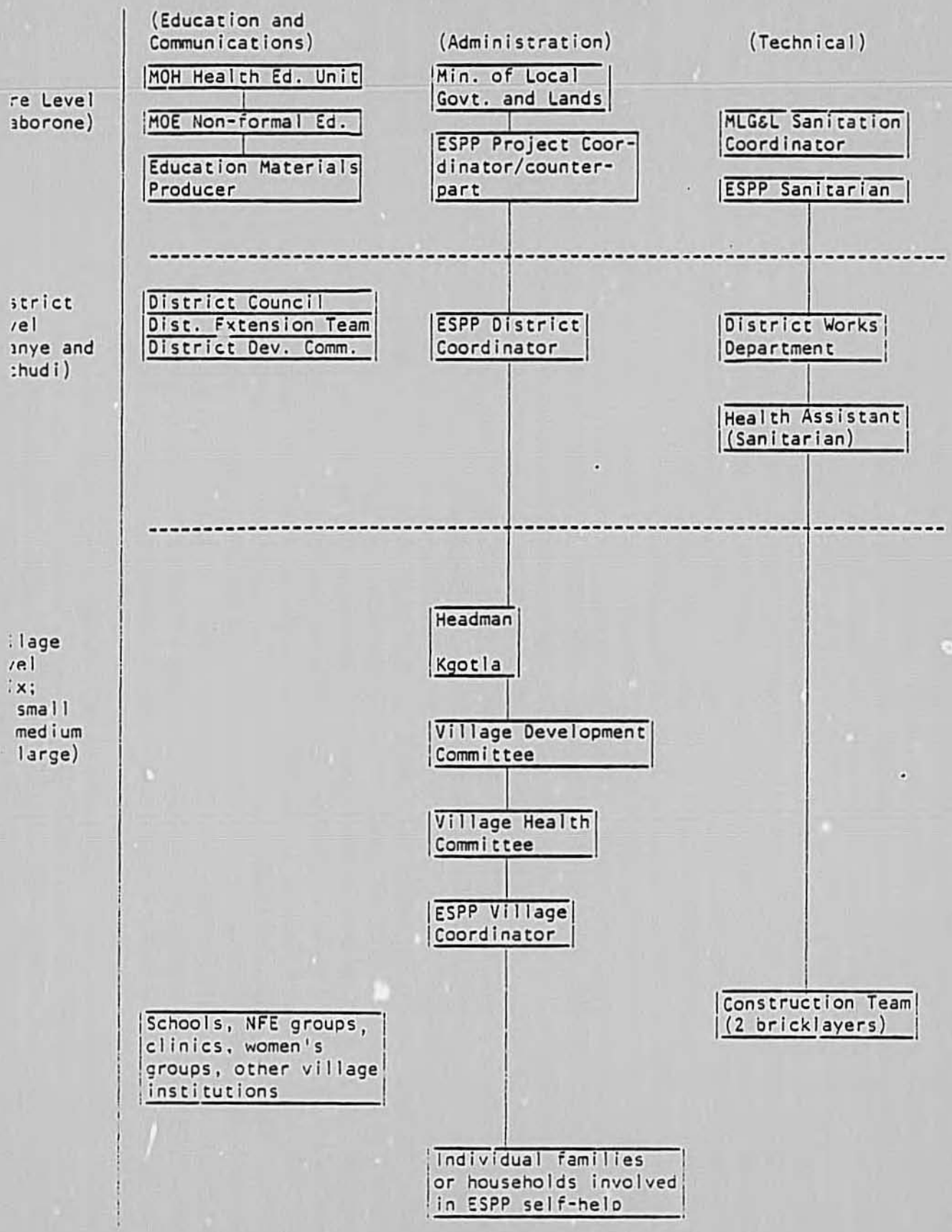
1. International impacts	N
2. Controversial impacts	N
3. Larger program impacts	N
4. Other factors	

I. OTHER POSSIBLE IMPACTS (not listed above)

See attached Discussion of Impacts.

ANNEX T

ESPP ORGANIZATION CHART



Annex U

ESTIMATED AID EXPENDITURES
($000)

Component	FY 1980	FY 1981	FY 1982	Total
Technical Services				
Long-Term				
Multi-Media Spec./ Project Coordinator	50	32	7	89
Sanitarian	50	32	7	89
Short-Term				
Social Scientist	4	5	4	13
Misc. Consultants	10	10	-	20
Sub-Total	114	79	18	211
Participant Training				
U.S./Third Country				
Media	8	4	-	12
In-Country				
Construction of sanitary and refuse disposal systems	7	-	-	7
Sub-Total	15	4	-	19
Commodities				
Media equipment & supplies	10	1	1	12
Vehicles (2)	24	-	-	24
Building Tools	6	1	-	7
Construction	30	4	1	34
Sub-Total	70	6	1	77
Other Costs				
In-country seminars & conferences (3)	1	1	-	2
Local hire of field researchers	3	3	-	6
Research funds	2	2	-	4
In-country travel	2	1	-	3
Local support	40	40	16	96
Sub-Total	48	47	16	111
Total	247	136	35	418
Inflation (10%)	24	13	3	40
Contingency (10%)	24	14	3	41
GRAND TOTAL	295	163	41	499

COST ANALYSIS OF AID CONTRIBUTION

Technical Services

1. Long Term

First year:	Base salary	$34,000
	FICA & insurance	2,000
	Travel to post (family of 3) Shipment of air freight & HHE Per diem during international travel	21,000
	Sub-total	57,000
Second year:		32,000
	Total for 2 years	$89,000

2. Short-Term

(a) Social Scientist locally hired for 6 months (6-day workweek):

6 months x 4 weeks = 24 weeks x 6 days = 144 workdays

Salary: $85.00 per day	$12,240
"Bush" per diem	760
Total	$13,000

(b) Consultant services from U.S.: $10,000 per month, including salary, round-trip international travel, per diem, predeparture expenses and overhead.

Participant Training

1. U.S./Third Country

(a) U.S. (or Canada):	$2,600 per month x 2 months (per AID/W OIT cost guidelines)		$5,200
	Round-trip transportation		2,5[illegible]
		Sub-total	7,70[illegible]
(b) Africa:	Training		2,00[illegible]
	Travel		2,300
		Total	$12,000

COST ANALYSIS OF AID CONTRIBUTION

Technical Services

1. Long-Term

First year:	Base salary	$34,000
	FICA & insurance	2,000
	Travel to post (family of 3) Shipment of air freight & HHE Per diem during international travel	21,000
	Sub-total	57,000
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Participant Training

1. U.S./Third Country

(a) U.S. (or Canada):	$2,600 per month x 2 months = $5,200 (per AID/W OIT cost guidelines)	
	Round-trip transportation	= 2,500
	Sub-total	7,700
(b) Africa:	Training	2,000
	Travel	2,300
	Total	$12,000

2. In-Country

Participants: 12 village construction workers (2/village x 6)

$\frac{6}{20}$ Health Assistants (Sanitation) (4/district x 2

Training provided by Mochudi Rural - P3,000 = ₱3,650
Brigade Center

Trainint provided by Kanye Rural - P3,000 = 3,650
Brigade Center

Total ₱7,300

Cost of training includes lodging, meals, other support

Commodities

1. Vehicles:

1 van	₱13,000
1 pick-up	7,000
Spare parts & delivery (20%)	4,000
Total	₱24,000

2. Building Costs:

Off-shelf - P4,354 = ₱5,309
(rounded to ₱5,500

Miscellaneous tools 1,500
Total ₱7,000

3. Construction materials:

(a) prototypes constructed at market cost

VIP, P400 x 6 (1/village)		P2,400
RCEC, P450 x 6		2,700
REC, P500 x 6		3,000
	Sub-total	8,100
Prototype plans		1,500
	Total	P9,600 = ₱11,700

(b) For 450 subsidized latrines

P40.45 = ₱49.00 x 450 latrines = ₱22,050

Other Costs

1. Local hire of field researchers:

Basic cost, P5 per day x 12 researchers = P60/day = ₱73.00
rounded to ₱75.00
per

Estimated 80 days x $75.00 = $6,000

2. Local support of 2 advisors:

Average of $24,000 per year (based on recent USAID/Botswana experience), including renovation and supplemental furnishings for house, R & R, return travel and shipments, maintenance, education allowance or travel, allowance for medical travel and guard services.

$24,000 x 2 advisors x 2 project years = $96,000

GOVERNMENT OF BOTSWANA CONTRIBUTION TO THE PROJECT

COMPONENT	AMOUNT (P)	
TECHNICAL SERVICES		
Full-Time		
Project Coordinator (2 years)	12,000	
Economist (1 month)	800	
Part-Time		
District Level		
District Coordinators (2, 1/4-time)	6,700	
District Works Dept. Supervisors (2, 1/4-time)	6,000	
Health Assistants (Sanitation) (8, 1/3-time)	13,000	
Adult Educators (2, 1/4-time)	6,700	
Drivers (2, 1/2-time)	6,700	
Village Level		
Village Coordinators (6, 1/2-time)	20,200	
Construction workers (12, 1/2-time)	14,300	
Sub-Total		91,900
COMMODITIES		
Vehicles (3)	41,000	
Storage Sheds (6)	1,200	
Camping Equipment	1,000	
Sub-Total		43,200
OTHER COSTS		
Vehicle operation & maintenance	12,000	
Transport for field researchers	2,000	
Office space	5,000	
Secretarial services	2,300	
Water quality testing & groundwater monitoring	5,000	
Housing and basic furnishings (2 in districts, 1 BHC in Gaborone	69,000	
Sub-Total		95,300
Total	231,000	(230,900)
Inflation (10%)	23,000	
Contingency (10%)	23,000	
GRAND TOTAL	P277,000	

Technical Service

Estimated salary scale of GOB personnel who will participate in the project at the central district and village levels:

Position	Salary Scale	Pula Amount	¥ Equivalent	% of Work-Time	Total 1 year	x 2 Project Years
Project Coordinator	GA.3	4,908	5,985	1	5,985	11,970
MFDP Economist	PR.3	7,392	9,014	1/12	751/month	
District Coordinator	PR.4	5,472	6,673	1/4	1,668	3,336
LWD Supervisor	GA.3	4,908	5,985	1/4	1,496	2,992
Health Assistant (Sanitation)	T.5	2,796	3,365	1/3	1,121	2,243
Adult Educator	PR.4	5,472	6,673	1/4	1,668	3,336
Driver	T.5	2,760	3,365	1/2	1,682	3,365
Village Developmt. Asst.	T.5	2,760	3,365	1/2	1,682	3,365
Construction worker	P2.80/day x 360	1,008	1,229	1/2	614	1,229

Source: GOB Establishment Register, 1979-80

Commodities

1. Vehicles. 5-ton truck P14,000 = ¥17,000 x 2 ¥34,000
   F-250 LSD ¥ 7,000 x 1 7,000
   ¥41,000 Total
2. Storage sheds. Estimated at ¥200.00 each. May be either prefab or constructed with wood and mud brick
3. Camping equipment. Estimated value of ¥1,000. MLGL may have equipment in stock.

Other Costs

1. Vehicle operation and maintenance. To be provided for all project vehicles (5). Given the inaccuracy of estimating mileage to be put on each vehicle during the project, a figure of ₱100.00 per vehicle per month is used.

   ₱100.00 x 24 months = ₱2,400 x 5 vehicles = ₱12,000 Total

2. Housing and basic furnishings. Housing in the districts to be provided for the Multi-Media Specialist/Project Coordinator and Sanitarian for 2 years each. Housing in Gaborone to be provided to the PCV Materials Producer (PMC) for one year.

   Housing and utilities: ₱1,000 per month

   Basic furnishings, inc. stove: ₱3,000

For Multi-Media Specialist/Project Coord.:	₱27,000
For Sanitarian:	27,000
For PCV Materials Producer:	15,000
	₱69,000 Total

IMPLEMENTATION PLAN

1979

August
- Design and preparation of PP.

September
- Approval of PP by AID/Botswana and Government of Botswana. Preparation of grant agreement with GOB. Obligation of FY 79 funds.
- meeting of Conditions Precedent by Government of Botswana, including finalization of rectruitment of Project Coordinator/Counterpart and Peace Corps (PC)
- Materials Producer assigned to ESPP project.
- AID initiates procurement of vehicles, building materials, and audiovisual equipment.
- AID initiates recruitment of Project Coordinator (media specialist) and Sanitarian
- AID recruits consulting social scientist
- Begin review of technical and other criteria for selection of pilot (and control) villages by Southern and Kgatleng District Councils/ Development Committees.
- Project Coordinator/Counterpart and PC Materials Producer reviews media and materials available for ESPP campaign in Botswana.

October - District Councils/Development Committees select 6 possible pilot villages in each district according to criteria. These are visited by a technical advisor from the Ministry of Water Affairs to assess the hydrogeophysical features of the villages. Accompanied by social scientist who checks social criteria.
- Project Coordinator/Counterpart begins two months short term media training in Kenya and Tanzania.

November - PCV Materials Producer recruited by Government of Botswana; begins review of health and sanitation media and materials available in Botswana and from other countries, and reviews educational resources, institutions, and personnel in Botswana.

- consulting social scientist does field research in pilot villages (3 weeks)
- selection of 14 field researchers (from the six pilot villages or two districts or UBS) to be done in consultation with consulting social scientist.

- Project Coordinator/Counterpart returns from short term training

December- Project Coordinator/Counterpart prepares detailed plan for 1980, reviews criteria for selection of ESPP staff at district and village level. Counterpart and consulting sociologist train 14 field researchers
- South ... and Kgatleng District Councils/ Development Committees, assisted by the Project Coordinator/Counterpart, select and approve ESPP District Coordinators, to ... ESPP campaign at District level, and ESPP ... Teams, ... Village

- Health Committees, to coordinate ESPP campaign at village level in six pilot villages.

- ESPP village teams review availability of village health and extension workers, decide which of them will be responsible for ESPP in each pilot village.

1980

January

- AID Project Coordinator Sanitarian arrives

- ESPP central staff (Project Coordinator and Counterpart, Sanitarian, and Educational Materials Producer) and District ESPP Coordinator meet with Kgotla in each of the six pilot villages to explain ESPP, discuss village leadership and resources, agree on village ESPP staff and responsibilities select two construction workers and prepare for first social survey.

- Six pairs of field researchers undertake first social survey (pre-campaign) in each pilot village, interviewing a random stratified sample (of about 100 heads of households) about health, sanitation, human and animal wastes, and household refuse. One other pair of researchers undertakes same survey in the control village in a third district.

- Southern and Kgatleng Brigades train ESPP village Construction Teams

- ESPP Sanitarian visits pilot villages accompanied by the District Coordinator and/or appropriate village ESPP staff to assess environmental and technical criteria for building prototype latrines and refuse pits.

- Project Coordinator and Sanitarian plan in detail procurement of building materials and tools and procures materials and tools for building prototypes.

- Materials Producer initiates production of educational materials

February

- Consulting sociologist submits baseline report. Further meetings of ESPP staff (central, district, and village level) with Kgotlas to plan locations and type of prototypes (e.g. at schools, clinics, kgotlas, community centres).

- Seminars led by central ESPP staff to train district and village ESPP staff.

- Building of prototypes in each village using mostly contract labor (plus some self-help if possible) begins.

March

- Village ESPP staff begin small-scale education program in pilot villages at Kgotlas, schools, women's groups, etc., related to building of demonstration prototypes, and pre-tests prototype educational materials. Weekly reports submitted.

- Continuing short in-service seminars for village organisations and extension staff in health and sanitation by ESPP staff.

- Training some villagers in latrine/ refuse pit construction by ESPP construction team.
- social scientist - counterpart pretest and design questinaire for later surveys and monitoring of project

- Draft of first interim report completed by Project Coordinator; ESPP staff meeting; completion of the Report by end of April

April and May

- Completion of all prototypes and procurement of materials and tools for full-scale campaign

- Coordinate plans for fullscale campaign with all media; ESPP staff; central district, and village authorities

- Ongoing message testing by audiovisual staff

- Final preparation of revised educational materials for full campaign by Educational Materials Producer.

June to October

- Lunch full-scale ESPP campaign, including;

- continuous training of village builders by ESPP Construction Team to build household latrines and rubbish pits under supervision.

- continuing individual/group education by village ESPP staff and, multimedia campaign, including various audio-visual techniques

- continuous monitoring of individual households with existing and/or new latrines and refuse systems

- continuous message testing during campaign

- selection and training of 12 field researchers

July and August

- 2nd Social Survey by field researchers

- Review and analysis of 2nd Social Survey and monitoring data by central staff; draft 2nd interim report; meeting of all fulltime and some part-time ESPP staff; approval and distribution of final report by end of September

October to

- Completion of all construction (if possible) and winding down of building and education campaign. (When winter ends, many villagers leave home, less labour for building and small audiences for education, are available)

- Project Coordinator/Counterpart leaves for 3 months (October-December) short term media training in the US, Canada, and an Anglophone West African country.

1981

January

- ESPP staff meets for analysis and summary of first year's experience, preparation and approval of First Year Report based on monitoring reports, and message testing.

February - Meeting of ESPP central staff with AID and GCB to present and discuss First Year Report.

- ESPP Sanitarian is now available for other national sanitation project work

- Project Coordinator/Counterpart takes over primary responsibility for project. USAID Project Coordinator becomes advisor to ESPP.

March and April - inservice training in Gaborone for Village and district ESPP staff in sanitation and education.

- Continuous education and monitoring in pilot villages.

May and - Windup of ESPP campaign; final submission of all monitoring reports on households and villages and message testing data to coordinator by end of June.

June and July - Selection and training of 14 field researchers

- Final social survey (post-campaign) by field researchers.

- Analysis and summary of final social survey, all monitoring reports, and message testing data by Project Coordinator and Consulting Sociologist

- Submission of Final Report to AID and Government of Botswana including recommendations for further research or replication.

August - Possible preparation of Project Paper (if GOB and AID approve national project or further pilot projects.)

ANNEX W

Suggested Implementation Plan: A Controlled Experiment

The main goal of this pilot is to test and compare the different costs and effectiveness of different types and combinations of education and construction. The simplest, least costly, most valid, and most reliable way to analyse these differences is to plan a controlled experiment, using different ESPP approaches in the six pilot villages. The ESPP team will then be able to compare these approaches, both during and after the campaign, to find out which ones worked best at least cost. Such a comparison will be necessary if the ESPP team is to be able to recommend to the GOB specific steps to take in planning and budgeting the national sanitation campaign planned in the 1980s.

This option does not mean adding more activities, costs, or complications to the project. Instead, it does just the opposite: it requires that some of the project components be omitted from one or more of the pilot villages. This will lead to more reliable and useful evaluation research, at less cost to the project.

Therefore, it is recommended that for research purposes, in the earliest stages of planning the project, the ESPP team should identify certain major project components (interventions) which:

(a) are clearly separable or discreet from the others;
(b) need to be carefully tested to know their cost-effectiveness;
(c) can realistically be considered possible options which the GOB can either undertake or omit in planning its national sanitation campaign, and which may not be essential to the campaign;
(d) can safely be omitted from some of the pilot villages but undertaken in others without causing serious political repercussions.

Figure A: Examples of Possible ESPP Interventions

Some of the discreet components which may fit all four criteria are shown in Figure A. Each of them have been discussed and debated at length during the planning of the ESPP. The ESPP team must try to answer for the GOB some of the questions which have already been raised about these components: how expensive are they? How effective are they? Are they replicable? Are they essential, or can they be omited or cut back in nationwide campaign?

Figure A is merely suggestive; it is provided here only to illustrate some of the types of components which the ESPP team may decide to control when they plan the campaign in early 1980. Figure A also shows some of the reasons why these components may be less effective, or more costly than others - and therefore need to be tested and compared in a controlled experiment before they can be replicated in the national campaign.

Figure A: Examples of Possible ESPP Interventions

Intervention	Description	Reasons why intervention may not be necessary or cost-effective
1. Village-based health and sanitation education	Primarily interpersonal education by people who remain in the village permanently (VDAs, FWEs). Teaching aids do not require electricity (except possibly battery powered radios or tape recorders), e.g. posters, booklets, flipcharts, and all folk media.	• people already want latrines, and many even know how to build good ones; what they need is money (or tools and materials and technical supervision) not health and sanitation education. • people already know good hygiene; what they need to practice it is more water, not more learning. • village health workers, especially FWEs, already teach sanitation; they do not need any ESPP retraining or materials.
	Omission means no in-service training or ESPP materials will be provided.	• the Health Education Unit of GOB already does what ESPP proposes by visiting villages; more education not needed.
2. Media van	Mobile multimedia van visiting the village periodically to show films, slides, Polavision, etc. requiring electricity, public address, etc.	• media vans used in Botswana and elsewhere have proven very expensive to purchase and maintain. • mass media presentations require well-trained staff to lead discussions, translate soundtrack, etc., but staff may be unskilled, unavailable, or too expensive. • media equipment and van often break down; repairs difficult and slow. • mass media used in many countries have been quite effective in attracting attention and entertaining, but ineffective in changing behaviors. • mass media have been particularly ineffective in changing personal, private health behaviors, e.g. excreta disposal or family planning.

Intervention	Description	Reasons why intervention may not be necessary or cost-effective
3. Construction Team Supervision	Volunteer bricklayers or builders trained by the Brigades will provide villages with technical supervision in constructing sound, low-cost latrines and rubbish pits.	• Many villagers already have well-built latrines, and experienced builders are already available; only health education, money, and/or materials are needed, not construction supervision. • Brigade training for construction teams in each village is very costly (P3000 per three villages), would cost P5 million to replicate nationwide. • If, as is likely, the District Council trucks do not bring ESPP construction materials on schedule, there will be nothing for construction teams to do. • If people see how the prototypes are built, they do not need further supervision during construction.
4. Latrine Prototypes	Demonstration units of at least three types of ventilated improved latrine (also possibly one or two rubbish pits) built by mostly paid trained labor at key places in village (e.g. schools, clinics, Kgotla, chief's household).	• Most rural villages already have at least a few ventilated improved latrines, especially at clinics and schools, and therefore do not need more demonstration units. • Without sure plans for cleaning and maintaining these latrines are likely to get dirty (as happened in many school latrines in 1979). Then the prototypes would set a bad example, and the ESPP could backfire. Better not take that risk. • Without self-help or volunteer labor (at least for digging pits and mixing cement) the prototypes will be very costly and not replicable nationwide.

Intervention	Description	Reasons why intervention may not be necessary or cost-effective
		• Completed prototypes of the three ESPP latrine types look and function similarly, thus people won't learn much from seeing or using them.
5. Degree of Subsidy	Low medium, or high subsidy provided only to poorer households in the form of tools and materials for latrine substructures only (slab, vent pipe, etc.) not money or labor (self-help labor required for all households).	• A subsidy is too costly to replicate nationwide. • A fair, equitable system for selecting the poorer families who need a subsidy is political and culturally difficult to set up in one village, thus almost impossible to replicate nationwide. • omitting or lowering a subsidy in one village but not in another will cause political trouble when people hear about such "discrimination". • Subsidies are not really needed because the poor can build sound latrines anyway with cheap local materials (see "Simplified Sanitation for Rural Areas: Using Locally Available Materials and Skills" by L.T. Lesetedi Health News and Views, July, 1979, Gaborone) provided they are motivated by health education and/or supervised by construction teams.
6. Recycling	School children and other volunteers in village collect aluminium cans and plastics which will be trucked to rail depot by District Works trucks for baling and shipment by rail to Johannesburg for sale to recover transport and labor costs. The system is already profitable in Gaborone and should be tested in villages too.	• recycling can only be profitable in urban areas where refuse is concentrated (at refuse dumps, shebeens, hotels, etc.) not in rural areas where refuse is limited. • District trucks returning to District capital from villages after delivering ESPP materials will have other things (or people) to deliver on return trip. • even with education on recyclings in ESPP campaign, people will not voluntarily collect materials in village because their aesthetic concerns and health hazards are minimal. People must be paid for collecting cans and plastics. • even if successful in areas near the rail line, recycling will not be cost-effective, profitable, or replicable by GOB in other remote areas where trucking to a rail depot is costly and difficult.

Figure B: Examples of A Possible ESPP Controlled Pilot Project

In early 1980, after the ESPP planners have identified the discreet interventions which satisfy the four criteria listed above and which they wish to control in ESPP, they will have to work closely with GOB and District officials in deciding which interventions should be included or omitted in which villages. An example of some possible combinations of interventions and controls are shown below in Figure B, a hypothetical design for ESPP implementation. This type of controlled plan is highly recommended to the ESPP team because it will demonstrate much more clearly than an uncontrolled experiment the relative cost-effectiveness of each component. (Following Figure B are notes explaining some of the reaons for each combination).

Figure 5: Example of Possible ESPP Controlled Pilot Project:
(X = intervention: 0 = no intervention)[1]

Discreet Interventions[2] / Villages[3] and population sizes	Villaged-based health education[6]	Multi-media van[7]	Construction Team Supervision	Latrine Prototypes 8	Degree of Subsidy 9	Recycling[10]
Southern District						
(1) Small	X (VDA)[5]	0	0	X	Low	0
(2) Medium	0	0	X	X	Medium	0
(3) Large	X (VDA)	0	X	0	High	0
Kgatleng District						
(4) Small	0	X	X	0	Low	X
(5) Medium	X (FWE)	X	X	X	Medium	X
(6) Large	X (FWE)	X	0	X	High	X
Control District[4]						
(7) ?	0	0	0	0	0	0
(8) ?	0	0	0	0	0	0

Explanatory Notes to Figure B

1. X means that the ESPP intervention is included in this village; O means that the ESPP intervention is omitted.

2. These six interventions are those described in detail in Figure A.

3. The six pilot villages will be selected according to demographic and other criteria by both the two District Councils, and the ESPP staff working in collaboration.

4. The two control villages will be in a district some distance away from Southern and Kgatleng (to avoid research "contamination"). They will have the first and third social surveys only, but no other evaluation research.

5. According to the PID, Southern District has suggested it use Village Development Assistants (VDAs) only in its pilot villages; Kgatleng to use only Family Welfare Educators (FWEs).

6. One village in each district has no health education, another village in each district has no construction supervision; the reason for this is that the PP team found substantive disagreement about whether interventions were both essential. There is a definite possibility that one or the other will be sufficient.

7. One district has the media van, the other does not, because the times and distances travelled in one district are shorter than in both, and because contamination will be minimized. There have been many criticisms of the cost-effectiveness of media vans, which merit careful testing.

8. Prototypes are not omitted where construction supervision is also omitted because of the high probability that at least one of these two interventions is necessary to ensure sound latrine construction.

9. Some subsidy levels(transport of materials, training of construction teams, supervision by construction teams) are automatically built into ESPP. However, additional levels may be tested (and will be established in planning the ESPP).

10. Recycling is planned for Kgatleng District because distances for trucking to the rail depot in Pilane may be shorter than trucking to that in Lobatsi.

Conclusion

Without planning some type of controlled experiment, the only way that the ESPP team can analyse and compare the cost-effectiveness of different interventions is to use all of them in all six pilot villages, then afterwards find out what each one costs and how effective each one was in changing people's behavior. This evaluation research method depends entirely on the ability of the village people, the field researchers doing the social surveys and the ESPP team filling out and analysing hundreds of reports on latrines and message testing, to distinguish between, and compare, the effects of different interventions some time after they occur. This method is extremely difficult to analyze.

For example, imagine heads of households with a new ESPP-supervised latrine responding to the questions of a field researcher or other member of the ESPP team a month or more after the latrine was completed. How can the respondents be expected to remember what was more or less important in convincing them to build that latrine? After months of hearing and seeing the ESPP campaign, how can they say or even remember whether it was the village's Family Welfare Educator trained in ESPP, or the films shown by the visiting ESPP media van, or the assistance of the ESPP construction team, or the demonstration of the ESPP prototypes, or the provision of some ESPP construction materials which convinced them to build a latrine? Would households without ESPP latrines be able to tell which ESPP interventions had been less educational than others? Few respondents can be counted on to make such distinctions, particularly during a lengthy campaign. Most will answer that <u>all</u> the ESPP interventions were "more or less" important.

The ESPP team will then be unable to report to the GOB which interventions were most cost-effective, because although the costs of each intervention might be compared, the effectiveness of each cannot.

Many people are rightfully critical of evaluations and skeptical of "pilot projects" which are a waste of time and money because they cannot be replicated elsewhere. The main reason for this frequent failure is that research variables have not been controlled in project planning.

Without differentiating between campaign approaches, it is highly probable that the evaluation research undertaken in the ESPP will also be unreliable or inconclusive, and therefore not useful. A half million dollars will then have been largely wasted on sanitation in only six of several thousand Botswana villages. It is essential for the success of this project that the ESPP staff undertand that evaluation research is project's most important output. The health and sanitation of the entire nation is more important than that of these six rural villages. Therefore, successful evaluation research undertaken during the ESPP is more important than a successful sanitation campaign. In other words, even if the ESPP campaign is a success in the six villages, this project could be a failure - if it is not carefully planned in advance to provide conclusive information for replication throughout Botswana.

ANNEX X

ILLUSTRATIVE EQUIPMENT LIST

ITEM	UNIT COST ($ .00)	QUANTITY	TOTAL COST
Media Equipment and Supplies			
16mm movie projector	1,215	2	2,430
35 mm slide projector	245	10	2,450
35 mm slide trays	5	12	60
35 mm still camera (Canon AE 1)	300	2	600
Radio/audio-cassettes	100	11 1/	1,100
Polavision sets	500	2	1,000
Yamaha generator (P600, from Mustang Motors, Gaborone)	730	1	730
Flip Chart stands	15	10	150
Public address system	500	1	500
Drafting supplies	-	-	230
Paper supplies, misc.	-	-	1,000
		Sub-total	$ 10,250
Shipping and handling			1,750
		Total	$ 12,000
Building Tools	(Pula)		
Shovels	5	105	525
Picks	7	105	735
Wheel barrows	50	12 2/	600
Batching box	30	6	180
Hammers	10	12	120
Nails	-	-	100
Spirit level	10	6	60
Tap	5	6	30
Steel Cutter	50	6	300
Cast ... form	40	6	240
Timber for concrete leveling	4	6	24
Miscellaneous	-	-	446
	Sub-total	P3,360	$4,000
Milipour water-testing kit	$500	2	1,000
		TOTAL	$5,000

1/ One for each of the Village Coordinators, one for each of the District Coordinators and three for the RSPP project team.

2/ Two wheel barrows will be provided to each pilot village. The cure is true for hammers. The other tools will be provided singly to the pilot villages.

Annex Y

Botswana's Rural Health Delivery System

Beginning with the Third National Development Plan (1973-78) Botswana began a radical reorganization of health services - away from the strongly curative orientation to a preventive/curative approach, aimed particularly at the rural areas - with the ultimate goal of providing comprehensive services to all the people throughout the country.

In 1974-75 the country was divided into 8 health regions, with a Regional Medical Team assigned to each Medical Region. Each team is headed by a Regional Medical Officer, and includes also one Public Health Nurse, one Health Inspector and one Medical Social Worker. (Proposed additional members include a health education officer and a nutrition officer). The Regional Medical Officer and his team are responsible for all health services in the Region including primary health care at the clinic and health posts, the hospital services (Government and Mission) and their overall coordination, with special emphasis on preventative and educational aspects.

1. The delivery of health services in the rural areas depends primarily on three core categories:

   (a) Family Welfare Educator (FWE) There are now close to 400 FWEs throughout the country. Their function is to motivate maternal/child care and family planning. They are also able to treat simple cases - referring the more complicated ones to the next level of care, and they

follow up on defaulters. They are selected on the basis of 7 years of primary education and recommendation from the village elders, and receive 11 weeks of basic training. They are supervised by nurses and by members of the Regional Health Team. At present FWEs are the only permanent staff at health posts.

(b) Enrolled Nurses (EN) Candidates must have a Junior Certificate and receive 2 years of training. The Ministry of Health plans to staff all health posts with one Enrolled Nurse within the next five years.

(c) State Registered Nurses (SRN) Registered Nurses receive 3 years training after senior secondary education, and are required to qualify also as midwives - requiring one additional year. SRNMs supervise the auxiliary staff at the health post, clinic, health center, and hospital levels.

2. Health Facilities

(a) Health Post

This is the basic health facility, at the village level, which provides primary health care. Close to 85% of the population are estimated to be now within 15km of a health facility. By June 1978 there were about 180 HPs in Botswana, usually consisting of 2 small rooms, dispensary and consultation room.

(b) Clinics

A clinic has 2 additional rooms to a health post and most of them have a bed or two for emergencies. A maternity room may also be included. There are about 90 clinics in the country, and staffing is usually with at least one staff nurse, one enrolled nurse and one FWE.
Most clinics run mobile clinics to health posts and to some places which do not have a permanent health facility.

(c) Health Centers

These are like small hospitals and have several nurses, and usually also a Medical Officer.

(d) Hospitals

There are at present 14 hospitals - Government, Mission and Mine - in Botswana. The procedure, depending on the seriousness, is for the patient to be referred from the health post to the clinic, from the clinic to to the health center, and from the health center to the nearest hospital.

(e) Supportive Institutions

These are special service units dealing with special health-related issues and centrally placed under separate administrative units and expertise.

3. Ministry of Health Support Units

(a) Maternal/Child Health and Family Planning (MCH/FP) Unit

In addition to the planning, organization and evaluation

of MCH/FP services, the unit is also in charge of training Family Welfare Educators.

(b) Nutrition Unit

In Botswana malnutrition is not so much a direct cause of death, but a cause contributing to illness through distortion of normal bodily functions and responses, this make the body, especially the child's, more susceptible to all infectious diseases, including enteric and diarrheal diseases. Enteric diseases, in turn, contribute to malnutrition by inhibiting the absorption of nutrients in the intestinal tract and, as with fever, increase the nutritional requirements of the individual.

(c) Tuberculosis Unit

A National Tuberculosis Campaign was launched in 1975. The unit is responsible for planning and promoting preventive measures, as well as curative strategies.

(d) The Health Education Unit (HEU)

The Health Education Unit was established in 1973 with assistance under the AID MCH/FP Project. The staff presently consists of 7 people, including one WHO Health Educator and a UN Volunteer graphics artist.

There is no existing National Plan for health education and the Unit currently operates on an ad hoc basis - responding to requests and needs of the various health

programs. Some of the services provided by the Unit include:

- curriculum and teaching input into training programs for the various health cadres,
- development of audio-visual materials,
- assistance in running health campaigns and village seminars.

Environmental sanitation - along with the need for latrines and improved hygienic practices - has been a major focus of their educational efforts, and they have launched several programs with varying degrees of success. For example, about 24 latrines were constructed in Bokaa following a sanitation program instituted by the Regional Health Inspector and implemented with village seminars and teaching materials provided by the HEU. They have produced a number of leaflets, posters, and flip charts relating to environmental health. The HEU staff identified appropriate films on environmental health as their greatest need.

At several meeting with the HEU staff, all expressed their interest and enthusiasm for the ESPP project, and their full cooperation in the training personnel in pilot villages, through seminars and in-service training sessions, as required, can be expected.

A weekly 15-minute radio message - which is broadcast twice - is also prepared by the HEU staff.

	in collaboration with ESPP Project Coordinator, Sanitarian, Materials Producer, GOB Dept of Information etc.
Apr. - May	Sociologist and Counterpart monitor testing of two report forms and revise them before full campaign starts (1 week)
June	S. and C. train some additional Field Researchers if necessary
July - Aug.	2nd Social Survey by Field Researchers in 6 pilot villages only (not in control villages). Supervised by S. and C.
Sept.	Analysis and reporting of 2nd survey data by S. and C. to ESPP team
1981	
May	S. and C. train additional Field Researchers for 3rd social survey
June and July	3rd and final Social Survey in all eight villages (including 2 controls)
August	Analysis of data and final Survey Report to GOB on progress of ESPP campaign, including data on all evaluation components (three social surveys, sanitation inspection reports, media/message testing reports).

ANNEX Z

STATUTORY CHECKLIST

6C(2) - PROJECT CHECKLIST.

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

A. [illegible] PROJECT.

1. [illegible].

(a) Has the Committee on Appropriations of Senate and House been or will be notified concerning the project;	(a) An Advice of Program Change has been submitted to the Congress, and the 15-day waiting period has expired.
(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. FAA Sec. 611(a) (1). Prior to obligation in excess of $100,000, will there be (a) engineering, financial and other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?

(a) Yes.

(b) Yes.

3. FAA Sec. 611 (a) (2). If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance?	No legislative action is required.
4. FAA Sec. 611(b); App. Sec. 101. If for water or water-related land resource construction, has project met the standards and criteria as per Memorandum of the President dated Sept. 9, 1973 (replaces Memorandum of May 15, 1962; see Fed. Register, Vol 38, No. 174, Part III, Sept. 10, 1973)?	The IEE has determined that the project will have a positive, rather than negative, impact on the quality of water in the 6 pilot villages.
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 not a capital assistance project.
6. FAA Sec. 209, 619. Is project susceptible of execution as part of regional or multilateral project? If so why is project not so executed? Information and conclusion whether assistance will encourage regional development programs. If assistance is for newly independent country, is it furnished through multilateral organizations or plans to the maximum extent appropriate?	No.

7. FAA Sec. 601(a); (and Sec. 201(f) for development loans Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition, (c) encourage development and use of cooperatives, credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.	The project will foster private and community initiative in improving sanitary conditions in the home and village (in 6 villages).
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 limited U.S. source technical assistance and media equipment.
9. FAA Sec. 611(b); Sec. 636(h). Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized to meet the cost of contractual and other services.	The GOB will contribute approximately 35% of the total cost of the project.
10. FAA Sec. 612(d). Does the U.S. own excess foreign currency and, if so, what arrangements have been made for its release?	No.

11. FAA Sec. 601(e). Will the project utilize competitive selection procedures for the awarding of contracts, except where applicable procurement rules allow otherwise?	Yes; contracts will be awarded on the basis of individual competition.
12. FAA 79 App. Act Sec. 608. If assistance is for the production of any commodity for export, is the commodity likely to be in surplus on world markets at the time the resulting productive capacity becomes operative, and is such assistance likely to cause substantial injury to U.S. producers of the same, similar or competing commodity?	Not applicable.

B. FUNDING CRITERIA FOR PROJECT

1. Development Assistance Project Criteria	Not applicable.
2. Development Assistance Project Criteria (Loans Only)	Not applicable.
3. Project Criteria Solely for Economic Support Fund	
a. FAA Sec. 531(a). Will this assistance support, promote economic or political stability? To the extent possible, does it reflect the policy directions of section 102?	This project supports the GOB rural development program which is designed to raise economic standards in rural areas, thus strengthening the internal security of Botswana.
b. FAA Sec. 533. Will assistance under this chapter be used for military, or paramilitary activities?	No.