

DS/DU/DI PD-AAL 286 6330084/15
 IS N 12888-509-SA-14

CLASSIFICATION
PROJECT EVALUATION SUMMARY (PES) - PART I

Report Symbol U-447

1. PROJECT TITLE ENVIRONMENTAL SANITATION AND PROTECTION PROJECT			2. PROJECT NUMBER 633-0084	3. MISSION/AID/W OFFICE Botswana
			4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY) FY 82-5	
			<input checked="" type="checkbox"/> REGULAR EVALUATION <input type="checkbox"/> SPECIAL EVALUATION	
5. KEY PROJECT IMPLEMENTATION DATES			6. ESTIMATED PROJECT FUNDING	
A. First PRO-AG or Equivalent FY Sept 79	B. Final Obligation Expected FY Sept 79	C. Final Input Delivery FY Sept 83	A. Total \$ 499,000	7. PERIOD COVERED BY EVALUATION From (month/yr.) Jan. 80 To (month/yr.) Dec. 81
			B. U.S. \$ 499,000	Date of Evaluation Review

8. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues; cite the items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., airgram, SPAR, PIQ, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
(1) A full-time multi-media technical assistant is no longer required because of the new direction herein recommended.	USAID/GOB	Jan 1, 1982
(2) The materials producer should be appointed project team leader and the senior public health engineer (MLGL) should take an active role as project manager on behalf of GOB.	USAID/GOB	Jan 15, 1982
(3) Funds should be made available to secure the services of a locally-based person for up to six months to assist the dept. of Non-Formal Education in materials testing, revision and production	ESPP/USAID/GOB	Feb 15, 1982
(4) The GOB should send a letter to all parties concerned on ESPP reorganization and the delineation of job responsibilities.	MLG&L	Jan 22, 1982
(5) ESPP should focus on the six pilot villages: expansion to other villages should be considered only if specific testing or investigation is required which cannot be undertaken in the existing project villages.	ESPP	Jan 1982
(6) A detailed work plan for the year ahead should be prepared for discussion with the districts, reference group and participants at the proposed project review seminar.	ESPP	Jan 20, 1982

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS			10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT	
<input type="checkbox"/> Project Paper	<input type="checkbox"/> Implementation Plan e.g., CPI Network	<input type="checkbox"/> Other (Specify)	A. <input checked="" type="checkbox"/> Continue Project Without Change	
<input checked="" type="checkbox"/> Financial Plan	<input type="checkbox"/> PIO/T		B. <input type="checkbox"/> Change Project Design and/or	
<input checked="" type="checkbox"/> Logical Framework	<input type="checkbox"/> PIO/C	<input type="checkbox"/> Other (Specify)	<input type="checkbox"/> Change Implementation Plan	
<input type="checkbox"/> Project Agreement	<input type="checkbox"/> PIO/P		C. <input type="checkbox"/> Discontinue Project	

11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)		12. Mission/AID/W Office Director Approval	
Charles S. Gordon, Program Officer, USAID/B Carolyn Barnes, PhD, Social Scientist, REDSO/EA Geoffrey Read, consultant (Sanitation), Univ. of London Alan Kulakow, consultant (Communications), A.E.D. James Wilson, Sanitary Engineer, MLG&L, GOB		Signature: <i>Louis A. Cohen</i>	
		Typed Name: Louis A. Cohen, Director	
		Date: 28 December 1981	

<p>(7) Each quarter a work schedule, based on the Annual Plan, should be drawn-up of weekly activities for that quarter</p>	<p>ESPP</p>	<p>Jan 20 and each subsequent quarter</p>
<p>(8) A plan should be drawn up on the type of short-term consultants needed, scopes of work written, and timely actions taken to secure their services.</p>	<p>ESPP/USAID</p>	<p>Plan by Feb 1982</p>
<p>(9) Agreement should be reached on the most appropriate training for the Counterpart-District Coordinator, the appropriate site(s) identified and arrangements made.</p>	<p>ESPP/GOB/USAID</p>	<p>March 1982</p>
<p>(10) Alternative, clearly defined intervention strategies should be set out and discussed at all levels of GOB</p>	<p>ESPP</p>	<p>March 1982</p>
<p>(11) A training plan should be developed for the different cadres of people who should be involved in ESPP implementation. These persons should be identified; the nature and extent of their involvement specified and then the requisite training designed and given.</p>	<p>ESPP/GOB</p>	<p>Plan by March 1982</p>
<p>(12) A project review seminar for key district and central government people should be convened.</p>	<p>ESPP/MLGL/NFE</p>	<p>April 1982</p>
<p>(13) GOB should assign District Coordinators for Southern and Kgatleng districts, who are able to devote their time to the ESPP and who are in line-positions which would allow for assuming environmental sanitation responsibilities after project completion. Persons in these posts should not be transferred within a time-frame agreed upon by the GOB.</p>	<p>District Councils/MLGL</p>	<p>April 1982</p>
<p>(14) Progress monitoring, which would include visits to project villages, should be undertaken quarterly by a joint multi-disciplinary USAID and GOB team. The ESPP team should prepare a project status dossier before each monitoring mission and the monitoring team's findings should be presented to the Reference Group.</p>	<p>ESPP/USAID/GOB/MLGL</p>	<p>March, June September & Dec. 1982</p>
<p>(15) ESPP progress reports should be prepared monthly and reviewed at regular meetings with the District Development Committees, District Councils, MLGL and USAID.</p>	<p>ESPP</p>	<p>Last day of each month</p>
<p>(16) Team meetings to review progress and plan future activities should be held at least bi-weekly on a regular basis. Meeting findings and agreed action should be minuted, and sent to GOB and USAID.</p>	<p>ESPP</p>	<p>Jan 15, 1982</p>
<p>(17) The types of documentation and records to meet project needs should be identified, reviewed with GOB, and an agreed documentation schedule prepared setting out the frequency of production.</p>	<p>ESPP</p>	<p>March 1982</p>

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|---|--|
| <p>(18) After a review of undistributed, earmarked funds, a detailed projected budget and cost control system for the remainder of the project should be prepared. Project costs, including GOB contributions from recurrent expenditure, should be monitored on a monthly basis by the Project Team Leader and MLGL.</p> | <p>ESPP/MLGL/USAID Plan by Feb. 1982</p> |
| <p>(19) Site procedures for management, quality control, and equipment and stores should be put onto a formal written basis, and supervision in villages made on a regular basis.</p> | <p>ESPP Feb. 1982 and subsequently</p> |
| <p>(20) Six person months of technical and logistical support should be provided through USAID to assist the counterpart Coordinator and the Sanitary Engineer. The Project Manager together with the project team should prepare detailed scope of work for this additional input.</p> | <p>ESPP/GOB/USAID Feb. 1982</p> |
| <p>(21) Media development should be based on an analysis of project objectives, and different target groups to determine the most appropriate media strategies and materials.</p> | <p>ESPP April 1982</p> |
| <p>(22) Media development should center on the testing, revision and production of those print materials and related audio-visual aids that have been developed. Attention should be given to the appropriateness of the content for, and understanding of, the message by the intended target group.</p> | <p>ESPP June 1982</p> |
| <p>(23) If development of a latrine model for the lands area is determined feasible, prototype designs should be proposed, costed, discussed with GOB and potential beneficiaries, and piloted in two lands areas.</p> | <p>ESPP Proposed by April 1982</p> |
| <p>(24) The demonstration latrines should be properly completed and evaluated after at least two months usage, before household latrines are promoted on a large scale. The evaluation should focus on technical, socio-cultural and financial appropriateness, together with a preliminary assessment of appropriate delivery systems, since few latrines have been built in households selected by a lottery system, so that a representative sample size can be evaluated.</p> | <p>ESPP/GOB Construction b Feb 15, 1982 Evaluation by April 15, 1982</p> |
| <p>(25) Accurate costs of latrines should be compiled and information on costs of materials and on labor required to construct latrines should be made known in full to households in the pilot areas.</p> | <p>ESPP February and continually updated</p> |
| <p>(26) After the actual costs of latrines including transport, technical advice, substructure parts and superstructures have been established, proposals on items recommended for subsidization should be submitted to the Reference Group as a basis for establishing policy.</p> | <p>ESPP April 1982</p> |

Continuation PES, page 3

(27) The Pollution Engineer, (DWA), should be requested in writing to assess water pollution in project villages within the next three months and if then found important, the DWA should be requested to establish a monitoring system.	ESPP/DWA	Feb 1982
(28) Design of latrine seats needs attention	ESPP	March 1982
(29) On prototype latrines all slabs should be replaced and where cover slabs have not been butted carefully together and the joints not properly mortared or sealed, rehabilitation work should be done immediately.	ESPP	Feb 1982
(30) An investigation should be made of alternative forms of pit evacuation, particularly in areas of surface rock, and stabilization methods in different soil conditions together with the consequent technical, logistical and financial implications.	ESPP	April 1982
(31) A comparison should be made between alternative latrine models and guidelines developed for field personnel on pit sizing, configuration and stabilization based on soil/site conditions, structural stability, local expertise and costs.	ESPP	May 1982
(32) No further work should be done on water treatment devices for household use, on improvement of water supplies, and on investigating composting and biogas.	ESPP	Jan 1982
(33) Media messages should be developed and tested to promote (a) usage of refuse pits, the excavation of new pits as required, the filling of full pits and (b) latrine maintenance and use.	ESPP	July 1982
(34) A discussion paper should be prepared by consultants for review by GOB on alternative uses of refuse which are culturally, technically and financially feasible.	ESPP	July 1982
(35) A final project review meeting with representatives from the districts and central government should be held to review the lessons learned from the past two years, to foster further interest and support from those participating, and to prepare recommendations and plans.	ESPP	Nov 1982
(36) The PP Logical Framework Matrix should be revised according to the recommendations contained herein.	USAID	Feb 1982

ENVIRONMENTAL SANITATION AND PROTECTION PROJECT

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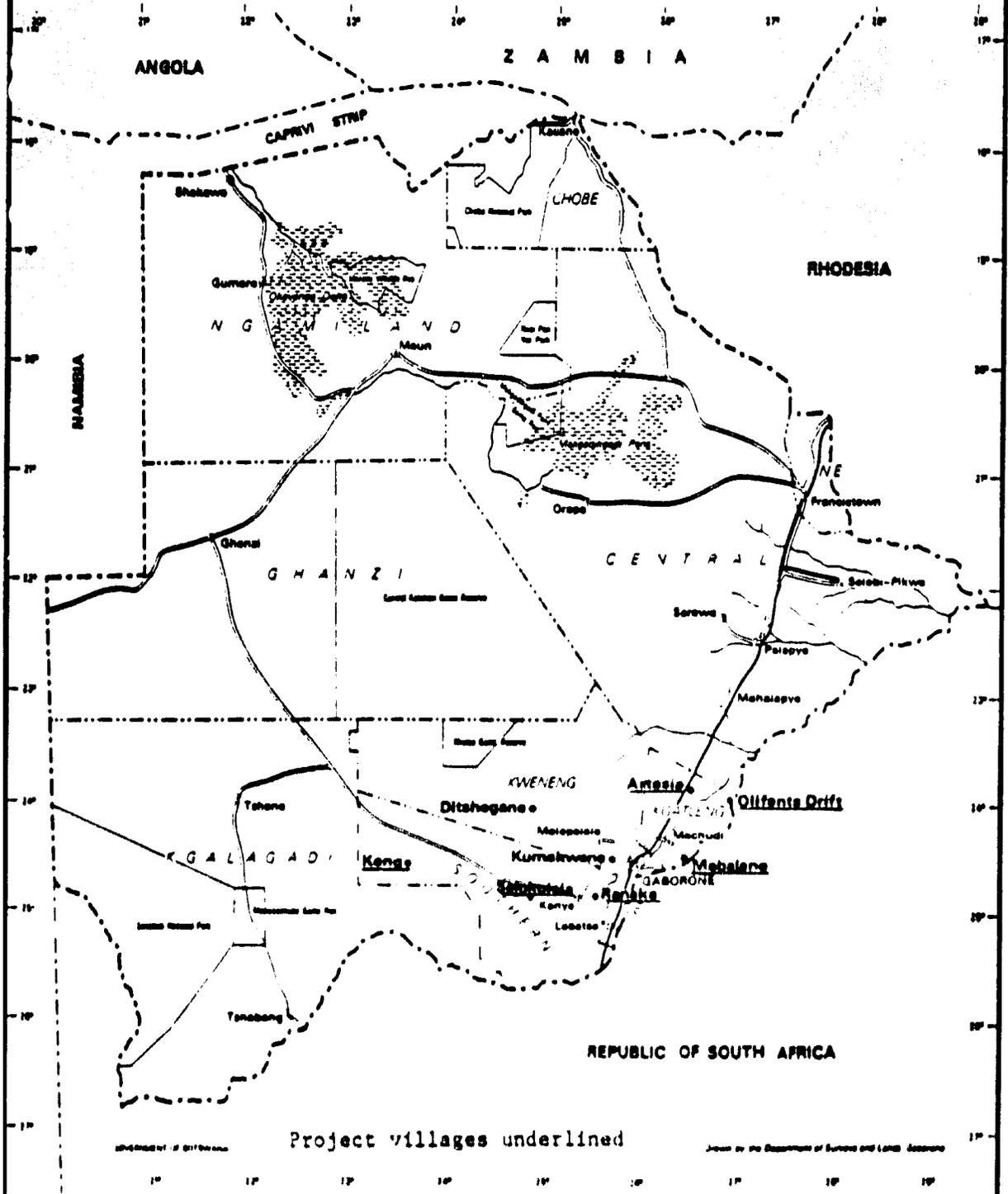
LIST OF DEFINITIONS AND ACRONYMS

ACDO	Assistant Community Development Officer
AID/W	Agency for International Development, Washington, D.C.
AO	Agricultural Officer
Batswana	More than one person of Botswana citizenship
CEO/DNFE	Chief Education Officer, Department of Non-Formal Education, Ministry of Education
ESPP	Environmental Sanitation and Protection Project
FWE	Family Welfare Educator
GOB	Government of Botswana
Kgotla	A local level meeting; also the meeting place
LA	Literary Assistant
MLGL	Ministry of Local Government and Lands, Botswana
Motswana	One person of Botswana citizenship
Non-PSC	Non-Personal Services Contract
OPEX	Operational Expert
PIO/C	Project Implementation Order - Commodities
PIO/T	Project Implementation Order - Technical Services
PVC	Poly Vinyl Chloride
UNDP	United Nations Development Program
USAID/B	United States Agency for International Development, Botswana
SA	Sanitary Assistant
TA	Technical Assistant

REPUBLIC OF BOTSWANA



- Road
- Railway
- District Boundary
- National Park
- River



Project villages underlined

Scale 1:500,000

Drawn by the Department of Survey and Land Administration

SUMMARY

ESPP is an experimental project to test options for improved sanitation practices. The project has not progressed as planned. First, there was considerable delay in securing the services of the two technical assistants. Second, the building of prototype latrines in villages began later than anticipated. Third, the multi-media campaign on latrines began prior to evaluation of the prototype latrines. Fourth, ESPP has suffered from poor management. Fifth, there have been difficulties with construction using non-traditional materials in the villages; the actual cost of latrines has yet to be established; and technical and logistical problems have yet to be resolved. Sixth, the delivery systems need to be institutionalized.

In spite of the problems mentioned above, the Evaluation Team is optimistic about the final results of ESPP if the recommendations herein are implemented in a timely fashion. ESPP has several positive features. It has a dynamic and committed Project Coordinator-Counterpart. And, initial reactions of villagers to the prototype latrines have been favorable and preliminary costings of materials indicate that they will be affordable to a significant proportion of households. Also, it is reasonable to expect that viable media packages will be ready for wide-spread delivery by end-of-project. The ESPP team has involved Botswana leaders in promoting the environmental sanitation and protection program. The refuse disposal campaign was successful in motivating the digging of rubbish pits in five villages and in some clean-up efforts.

EVALUATION METHODOLOGY

This was an interim, formative evaluation undertaken to assess progress to date and improve implementation in an experimental, pilot project. The evaluation was a collaborative effort: the GOB project overseer, USAID project officer and ESPP project team travelled, attended meetings and held review discussions with the core evaluation team. Annex A contains a list of persons contacted and of evaluation team members. During the course of the evaluation, the team made extensive field visits, reviewing the project with district and village level officers and staff, inspecting facilities constructed under the project and interviewing some beneficiaries and village leaders to learn their opinions. The six project villages were visited. Members of the team stayed overnight in two (Keng and Olifants Drift) to gain a better appreciation of village conditions and logistical problems.

A set of some project documents were given to the core team by the Project Coordinator. Also, core evaluation team members reviewed some of the project files and requested written information from the ESPP team.

A draft of the recommendations herein was discussed with ESPP team members, MLGL and USAID, and their suggestions taken into account.

EXTERNAL FACTORS

The Botswana economy is not growing at the pace as was anticipated during the period when the ESPP was designed. The less favorable economic situation is mainly the result of the world-wide recession which has affected diamond sales. The purchase of diamonds has been restricted by DeBeers and the Central Selling Organization in order to maintain prices by imposing a quota on purchases. Botswana is continuing production of diamonds beyond its quota, and stockpiling them. The result is that the government tax revenue is not growing as anticipated since other tax receipts cannot make up for the slack in the mining tax receipts.^{1/}

The economic situation of the country, which is less favorable than in 1979, when ESPP was designed, has resulted in finances not being available to create many new positions within the GOB. This may lead to a heavy work load for those already employed. The ESPP was originally designed to almost exclusively rely upon existing personnel, and in the final months of the project greater attempts will be made to integrate ESPP functions and responsibilities with various categories of GOB personnel. Nevertheless, if the environmental sanitation and protection program is to be continued and expanded even within the two project districts a person should be assigned within each district who can devote his/her time to ESPP and who is in a line-position which would allow for assuming environmental sanitation responsibilities after project completion. Persons appointed to these posts should not be transferred within a time frame agreed upon by the GOB.

INPUTS

AID FUNDED

1. Technical Services: Long-term

- Multi-media specialist/Project Coordinator - 2 years
- Sanitarian - 2 years

The Project Agreement was signed September 21, 1979. The Implementation Plan in the Project Paper (PP) envisaged that the long-term specialists would arrive in January 1980. It was anticipated that the technical assistants (TAs) would be recruited and placed on Personal Services Contracts. After some attempts at recruitment by USAID, the decision was made to recruit the TAs under an OPEX arrangement and a PIO/T was signed in December 1979 requesting TransCentury Corporation to recruit the personnel. In February 1980 a cable was sent to AID/W for transmittal to TransCentury to modify the minimum professional qualifications for the Project Coordinator position to reflect management experience.

The Sanitary Engineer arrived in Botswana in September 1980 and the Multi-media Specialist arrived later the same month. The Sanitary Engineer reports that he was incorrectly informed, by the person recruiting him,

^{1/}N. Cohen, Botswana Macroeconomic Issues: Recent Development Implications, October 1981.

about the nature of the job. Although he was sent the job description he was orally led to believe this was for a national study of water supply and waste disposal. Only in the last hours of his orientation session at TransCentury prior to departure to Botswana was he shown the PP. The contracts of both TAs with TransCentury incorrectly stated where each was to live: the contracts read Gaborone whereas the PIO/T stated Mochudi for the Media Specialist and Kanye for the Sanitary Engineer. Although the Multi-media Specialist was told by TransCentury that he would be based in/resident in Mochudi, he was given the impression that this was negotiable with AID, when in fact it was not. The Sanitary Engineer did not learn that he would be based in Kanye until after his arrival in Botswana. The residence of both positions had been discussed with TransCentury by telephone, telex, and USAID telegram.

Because of the new directions herein recommended, the services of a full-time multi-media technical assistant are no longer required. The Evaluation Team recommends that the Materials Producer serve as Project Team Leader and that the Senior Public Health Engineer in the Ministry of Local Government and Lands (MLGL) take an active role as Project Manager on behalf of the GOB.

2. Short-term Technical Assistance

- Social Scientist - 6 months
- Consultants (unspecified) - 2 months

In November 1979 a PIO/T was issued to secure the services of a social scientist (anthropologist) to perform a base-line study and two evaluations during the lifetime of the project. A non-PSC contract was signed the same month with an anthropologist who had research experience in Botswana and resides in the country. In November the anthropologist and a USAID/B member met with the District Officer-Development (DOD) and Council Secretary in Kgatleng District and the DOD and Deputy Council Secretary in Southern District. They discussed selection of the pilot villages according to criteria established by the anthropologist and a GOB geologist.^{1/} During these meetings six villages were identified and then the respective District Councils were each requested to select three villages for the pilot project.^{2/} The baseline study covering the six pilot villages plus two control villages commenced in late November 1979. The report was printed in February 1980.

Because of delays in project implementation the purpose and methodology of the mid-term evaluation by the social scientist as stated in the PIO/T is inappropriate: "focus on whether the project has achieved its end-of-project status by conducting field surveys". It is recommended that the mid-term evaluation can best be of value to the ESPP by conducting qualitative in-depth interviews, especially in the villages. Later, feedback will have to be obtained on the prototype latrines at least 8 weeks after completion of construction of latrines within households. In September-October 1982, a thorough impact evaluation should be undertaken by the social scientist.

^{1/} The geologist set out criteria on soil conditions.

^{2/} In Kgatleng District, Artesia, Olifants Drift and Mabalane were selected and Southern District, Selokolela, Ranaka and Keng were chosen. See the map on page iii.

No other outside consultants have been used under the ESPP. The evaluation team, however, considers the use of consultants of utmost importance in the remaining months of the project, if ESPP is to achieve its purpose. It is recommended that the services of the following be secured through ESPP funds or AID centrally-funded projects (e.g. Water and Sanitation for Health Project). The rationale for these services is provided in the Outputs Section of this report.

- technical and logistical support for the latrine and refuse component;
- support for development of training programs and modules;
- specialized services in development communications, for the media production component.

3. Training

- Participant Training U.S./Third Country in Media Management, 4-5 months.

The Project Counterpart has not yet been sent for training. The PP states media management would be appropriate, but this reflects the original concept that media is the key to implementing ESPP and any future program. Project implementation has revealed that this emphasis is incorrect. The Evaluation Team recommends that all parties concerned decide on the most appropriate institution and arrangements be made as soon as possible. It is suggested that the training include a visit to the Adult Education Institute in Tanzania, which conducted a successful rural latrine campaign.

4. In-Country Training

- Construction of sanitary and refuse disposal systems.
20 construction workers - 4 weeks.

A two day training course, held at Denman Rural Training Centre in October 1981, taught basic skills in latrine construction to council foremen, sanitary assistants (SAs), assistant community development officers (ACDOs), family welfare educators (FWEs) and village headmen. Some on-the-job training has been provided to the two sanitary foremen and the SAs. During the next phase, a more comprehensive and focused training program should be undertaken. Skills training for the District Council foremen might be provided at the Botswana Polytechnical school. At the village level, skills training should be given to local, small scale builders (men and women) and to the SAs if the latter cadre is to be continued.

Furthermore, it is considered important that those persons who are expected to play a role in the ESPP delivery system should receive the necessary training. For example if FWEs and leaders of existing groups are expected to promote health education not only should supportive media aids be provided them but also they need to have a clear overall understanding of ESPP and training in use of these aids. Some training modules should be developed for key courses to facilitate replication. Short-term consultants will probably be required to assist in developing these modules.

5. Commodities

- Media Equipment and Supplies
- 2 vehicles
- Building Tools
- Construction

The two vehicles and almost all media equipment and supplies required by the project have been purchased. The PP rightfully recognized that most villagers lack access to tools, such as shovels and picks, for digging refuse pits and latrine pits and hence funds were allotted for their purchase. These tools have been issued on loan to villagers. Some construction materials for prototype latrines have been purchased and when need arises more materials will be obtained. The budget for construction provided for labor as well as other costs for prototype latrines. It also provided funds for approximately 450 subsidized latrines within households. Once the actual cost of materials is determined, if subsidies are not to be provided for materials then the funds should be transferred.

6. Other Costs

- In-country Seminars and Conferences
- Local hire of Field Researchers
- Research Funds
- In-country Travel
- Local Support

To date some funds have been spent on field researchers for the Multi-media Specialist, training of SAs and on in-country travel. Because of the GOB providing for furnishings, house maintenance, etc. the local support funds have not been required. Revised budgets have transferred some of the funds in the "other cost" category to other line items.

A seminar and a workshop were held but not financed by AID ESPP funds. The first was a communications and education seminar, November 3-6, 1980, organized by the Academy for Educational Development, under an AID centrally-funded project. The second was a sanitation workshop financed through GOB recurrent expenditure provisions.

PEACE CORPS - TECHNICAL SERVICES

- Materials Producer

The Peace Corps volunteer, Materials Producer position was shared by a husband and wife team. They began their job on January 24, 1980. Because of the delay in the recruitment of the long-term technicians, the Material Producer performed many tasks in addition to those originally anticipated. Due to their efforts, PIO/Cs were issued and commodities procured, meetings held with district officials about the project, discussions held with Ministry of Health staff and District Extension Team members on the possible content area of the materials to be produced, and visits made to pilot villages.

On January 1, 1981 the services of the male Materials Producer were secured through an OPEX arrangement to work in the Department of Non-Formal Education (DNFE), Ministry of Education, on agreement that he would spend 50 per cent of his time on ESPP. In actuality, most of his time has been devoted to the project.

GOB CONTRIBUTIONS

1. Technical Services - Full Time

- Project Coordinator - 2 years
- Economist - 1 month

The Conditions Precedent in the Project Agreement state that before AID disbursement of funds for long-term technical assistance the GOB must name a counterpart. In November 1979 the GOB met all conditions precedent; however, the person slated as project coordinator-counterpart withdrew at a later date and consequently GOB resumed recruitment for the position. On August 3, 1981 a Motswana project coordinator joined ESPP and much of the results to date in the project villages have been due to his efforts.

The services of an economist for one month are anticipated to be forthcoming when needed.

2. Part Time

- | | |
|------------------------------------|--------------|
| - District Coordinators | 2, 1/4 time |
| - District Works Dept. 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 |

The project was designed on the assumption that persons already in positions would be able and willing to undertake responsibilities crucial to ESPP implementation. To date the involvement of GOB personnel on a part-time basis has been less than anticipated. If the project is to succeed more involvement is required. It is necessary that (a) tasks and responsibilities be clearly delineated, as much as possible, which are considered within each cadre's job description and (b) if additional responsibilities are required that directions be forthcoming from that cadre's sectoral officials.

At the same time unanticipated contributions of personnel have been forthcoming from the GOB. Southern District has appointed a District Works Department Foreman to work one-half time and Kgatleng District has appointed such a person full-time for the project. Their supervisory role is crucial in the building of latrines in the villages. Also, a Planning Officer (MLGL) and the Senior Public Health Engineer (MLGL) have each devoted a significant portion of their time to the project. The latter should be taking a more active role in the future as Project Manager on behalf of central government.

3. GOB Commodities

- Vehicles, 3
- Storage Sheds, 6
- Camping Equipment

The vehicles, camping equipment and 3 storage sheds have been purchased.

4. GOB Other Costs

- Vehicle Operation and Maintenance
- Transport for Field Researchers
- Office Space
- Secretarial Services
- Water Quality Testing and Groundwater Monitoring
- Housing and Basic Furnishings

The GOB has provided for the operation of the five vehicles and maintenance of three of them. It has also provided for all other anticipated items, except water quality testing and groundwater monitoring. This latter input is needed. Other contributions not specified in the PP have also been forthcoming. In particular, the GOB has covered the costs of producing the media materials, questionnaires and the baseline report.

FINANCIAL POSITION

1. U.S. Contribution: Status - 10/31/81 (U.S. \$)

Element	PP Budget	Budget	Earmarked	Disbursed	Undisbursed Earmarked	Unearmarked Balance
Technical Asst	211,000	278,974	271,474	100,276	171,198	7,500
Commodities	77,000	82,600	82,600	41,139	41,462	0
Participants	19,000	12,000	10,000	0	10,000	2,000
Other Costs	111,000	44,000	44,000	10,088	33,912	0
Inflation & Contingencies	81,000	81,426	0	0	0	81,426
	<u>499,000</u>	<u>499,000</u>	<u>408,074</u>	<u>151,503</u>	<u>256,572</u>	<u>90,926</u>

Source: USAID/B Accounting Office

Terms: Participants: Means host country nationals sent outside country for training.

Earmarked: Funds subobligated or identified for a specified purpose.

2. GOB Contribution (U.S. \$)

Element	PP Budget	Estimated Expenditure to 10/31/81
Technical Services	91,900	12,978
Commodities	43,200	51,328
Other Costs	95,800	123,513
Inflation & Contingency	46,000	1,369
	<u>277,000</u>	<u>189,188</u>

(a) GOB DOMESTIC DEVELOPMENT FUNDS - LG 51	(P1 = U.S.\$1.146)	
Total Budget	P50,228	U.S.\$57,511
<u>Disbursements</u> ^{1/}		
(a) <u>Commodities</u>		
2 vehicles	35,628	40,794
3 tool sheds	1,200	1,374
Camping equipment	1,000	1,145
(b) <u>Other Costs</u>		
Laborers, sanitary assistants	3,780	4,328
	1,196	1,369
	792	906
	6,632	7,594

Source: Compiled from information from a MLGL Planning Officer.

^{1/}Payment for one vehicle used in Southern District unaccounted for; assume paid from recurrent funds (see next page).

(b) GOB EXPENDITURES ON ESPP FROM RECURRENT FUNDS: ESTIMATES TO
OCTOBER 31, 1981

P1 = 1.145 U.S.\$

	<u>P</u>	<u>U.S.\$</u>
<u>Personnel:</u>		
Full-time	1,134	1,298
Part-time ^{1/}		
Southern and Kgatleng		
Districts	6,300	7,214
Central GOB	3,900	4,466
<u>Commodities:</u>		
1 vehicle ^{2/}	7,000	8,015
<u>Other Expenditures:</u>		
Vehicle operation and maintenance	51,865	59,385
Office space	3,500	4,007
Housing and furnishings, initial accommodation	47,989	54,947
Printing of media materials, questionnaires, and baseline report	489	560
Seminars, workshops	250	286
	<u>117,188</u>	<u>135,326</u>

^{1/}Excluding Sanitary Assistants since the data on payment unavailable to the Evaluation Team.

^{2/}Southern District

OUTPUTS

REVIEW OF OUTPUTS

"Prototype latrines constructed and tested, and household latrines constructed."

Verifiable Indicators: "18 prototype latrine systems constructed (3 in each of the 6 pilot villages) and up to 450 subsidized latrines plus another 450 unsubsidized latrines constructed."

Current Status: Sixteen prototype latrines have been constructed in five villages, but none are as yet completed. Annex B summarizes the location and type. The development and construction of prototype latrines has fallen seriously behind schedule, and not been adequately coordinated with the media component. This has been due mainly to poor project management and a lack of focus on fieldwork. Fieldwork began to progress only after the appointment of the Motswana counterpart Project Coordinator.

The prototypes developed make extensive use of local materials and skills; initial reactions of the communities have been favorable, and preliminary costings indicate that the latrines will be affordable to a significant proportion of rural households. Some technical and logistical problems still need to be solved to facilitate construction of latrines by households. An updated work plan for the year ahead is required; it should reflect the need to complete all demonstration latrines, the outstanding technical issues, improved field management and logistics, and coordination of the hardware and software components.

Though work has started on the construction of non-demonstration household latrines in two villages (Mabalane and Ranaka), it is unlikely that the planned output (up to 900 latrines) will be reached due to the late completion of the prototypes and because there are probably less than 650 households in the pilot villages which do not have latrines. It is recommended that the objectively verifiable indicator be adjusted to read "18 prototype latrine systems constructed (3 in each of the pilot villages) and up to 400 latrines constructed by householders with help from the project. These latrines will be in the project villages in adjacent lands or in villages nearby."

2. "Refuse disposal alternatives developed and tested."

Verifiable Indicator: "Four community and individual alternatives tested: burning, burying, composting and biogas."

Current Status: Some 300 rubbish pits have been excavated in the pilot villages in response to the project campaigns, representing some 40 per cent of the total households (Annex B contains site information on the rubbish pits).

The Evaluation Team inspected a number of these pits, and found that they are being used. The pits are generally 1 m square x 1 m deep. Excavated spoil has been randomly dumped adjacent to the pits. No specific advice has been given on stormwater protection, preventing animals and children from falling into the pits, covering or surrounding pits with thorn

branches, covering dumped refuse on a regular basis and on whether to burn or bury materials. These factors should be considered. Media messages need to be developed which will promote continued use of the pits, the excavation of new pits as required, and the filling of full pits.

Further thought should be given in select and appropriate villages to alternative uses of refuse such as: (a) dumping ash in an area which could be used for gardening, and (b) collecting or utilizing metallic waste (possibly the Mazazulu sect may be able to help in this). The PP calls for the team to investigate composting and biogas; from a preliminary assessment neither technology currently appears attractive at the village level.^{1/} It is recommended that in line with the ESPP team thinking, no further work be done on these two methods.

A discussion paper on refuse use should be prepared for review by the GOB. The MLGL Applied Research Unit and UNDP (through a World Bank executed Solid Waste Reuse Project) should be requested to assist in this. An implementation plan should then be developed to follow-up the review findings.

3. "Newly constructed latrines extensively used in 6 villages."

Verifiable Indicator: "High percentage of household members, especially children, of 450-900 households, regularly using latrines."

Current Status: None of the demonstration latrines are completed and only about 35 per cent of these are in households; the others are in public places. Even when more latrines have been constructed in homesteads, it would be extremely difficult to obtain a quantitative measure of use. The only valid method would be by observation and if a sufficient sample of households were to be included, it would be extremely costly. Moreover, the presence of an "observer" would most likely influence use of the latrine. Therefore, it is suggested that an indicator of this output be a qualitative statement on: (a) who uses the latrine, e.g. are children permitted to use it; (b) personal opinions about latrines, and (c) any problems associated with maintenance. A quantitative measure should be obtained through inspection of latrines to record whether or not they are properly cleaned and maintained. In keeping with the recommendation made for revision of Output 1, the number of households in this indicator should be changed to read "up to 400".

4. "Use of existing latrines in 6 villages increased."

Verifiable Indicator: "High percentage of household members, especially children, with existing latrines using them regularly."

Unstated Assumption: This output is based on the assumption that households with pre-project latrines do not use them regularly, but through health education extended by the project usage will increase.

Current Status: There is no quantitative evidence to support the first part of the assumption: that those who have pre-project latrines do not regularly use them. Inspection of a few pre-project latrines in project

^{1/}Biogas technologies are being developed at the Kanye Rural Industries Innovation Center.

villages revealed that they were well-maintained and discussions with some household members indicated that they were used, although children under the age of three or four were not allowed to use them, for fear of falling in. In some households, members may not use an existing latrine for a good reason, e.g. odour, flies.

The project should investigate possibilities for upgrading existing latrines in the pilot villages. In some cases, only improved vent pipes may be required. However, this is not a priority item under ESPP.

Because the project does not emphasize rehabilitation of existing latrines, there are no quantitative data on use of existing latrines, and reliable data are extremely difficult to collect, the evaluation team recommends that Output 3 be deleted as an indication of project success.

5. "Improved community and personal hygiene messages developed and delivered."

Verifiable Indicators: "Five core messages (health education modules) developed and delivered on latrine use, hygiene, safe water, refuse disposal and safe food preparation and storage."

Unstated Assumption: Educational materials, adequately tested and revised, can be packaged for further use by GOB and others to directly or indirectly affect behaviors related to health and sanitation practices.

Current Status: A status report on preparation of print materials is contained in Annex C. Materials have been drafted for all core areas. Final and tested booklets, flipcharts and posters are available on refuse disposal and personal hygiene. Materials on latrine construction and use, and safe water are undergoing final revision. All print materials are expected to be retested by the end of January, revised and printed by March. Additional materials need to be developed on refuse pits and latrine use and maintenance.

Some materials prepared to date have been targetted for extension workers to use with villagers and others are aimed directly at the villagers. Training modules based on the core messages should be developed, tested and revised prior to project completion, as discussed in the Section on Inputs.

6. "Printed technical and audio-visual material produced and published on latrine building and maintenance."

Verifiable Indicator: "Once looseleaf manual with modules on each type of latrine, plus audio-visual materials and aids in use during the ESPP."

Unstated Assumption: Informational materials will be instrumental in instructing builders and owners of latrines on recommended models, and proper construction techniques.

Current Status: The Department of Non-Formal Education produced two construction booklets which were distributed before they could be tested. Subsequently, the ESPP team has revised these materials and are now completing two manuals, one for each type of latrine, on how to build the sub- and super-structures. These manuals are intended for use by the SAs

and any local builders. Secondly, ESPP plans to develop a catalogue depicting construction alternatives for superstructures; this will be aimed primarily at householders.

The construction booklets may need to be modified after the evaluation of the prototype latrines. The manuals should be used in conjunction with training sessions for supervisors and builders.

7. "Multi-media health education campaign developed and tested."

Verifiable Indicator: "Ten media tested: radio, film, audiocassettes, Polavision, slides, flip charts, booklets, posters, leaflets, folk media."

Current Status: The project has attempted to use all of these media except Polavision, slides, radio and leaflets. Polavision was judged too costly, and its utility could be accomplished by other media. Slides and leaflets have not been used because of the demands on available time for the development of other materials. Radio has not been used because of the geographically limited experimental area, that is, six villages in two districts. Nevertheless, attention may be given to the possible future use of radio, anticipating expansion of the project and the general need for health and sanitation information nationwide. (Another important factor constraining the use of radio in the ESPP is the limited capacity of radio facilities to produce quality programming. Radio Botswana and other development organizations are currently discussing with USAID the possibility of assistance for training more qualified radio producers.) The Evaluation Team supports the decision of ESPP not to focus attention on these media; however, some may be reconsidered in the development of training modules for extension staff and village leaders.

The media used in the project are discussed in detail below. In general the media have been used rather haphazardly and to date there has been no impact evaluation. None of the media developed and used have been exploited in any depth, except for interpersonal communication.

8. "Multi-media network strengthened at central, district and village levels."

Verifiable Indicator: "One central, two district and six village-level systems for integrated multi-media communications strengthened."

Unstated Assumption: To achieve project purpose, organizations at all levels will need to work together to educate and motivate villagers.

Current Status: Although materials have been distributed in the pilot villages which have been involved in the rubbish and latrine campaigns, there does not seem to be any well-developed, systematic plan for the distribution of materials and for the organization of the education/construction process. One meeting was held at Denman Training Center to acquaint local level leaders and extension staff with ESPP; however, only one extension worker from Kgatleng District attended and because of the last minute decision to hold the meeting, there was not enough time to invite extension workers and leaders from Southern District. Further attention must be given to involvement of extension workers and village leaders in planning and implementing activities.

One of the tasks of utmost importance in this last phase of the project must be the development of a systematic network of relevant community, district and central entities as well as individual leaders to receive and organize use of the media materials, to foster community mobilization and to institutionalize the education, mobilization and technical process for the future program. This is discussed further in the section on Purpose.

DISCUSSION OF PROJECT MANAGEMENT PROCEDURES AND IMPLEMENTATION

1. Management and Implementation

The management of the ESPP has been extremely deficient; a team spirit has not been built up and for much of the time the team members have been working independently. This largely accounts for the poor progress to date. Regular meetings and adequate management procedures (including regular reports and agreed forward planning) have not been used to guide and document project implementation.

The field activity related to latrine construction and promotion has been only loosely coordinated. Furthermore, the project has not progressed along the rational sequence as set forth in the PP: identification and demonstration of prototype latrines; evaluation of technical, social and financial aspects of the models, and if necessary modifications made; mobilization strategies pursued in pilot villages; construction of household latrines; education and reinforcement of new behaviors; and then evaluation of the process.

Instead, the latrine campaign was started before prototype latrine models were complete, properly costed and evaluated. Householders were not clearly told how much labor was required for building latrines, and the production, delivery and payment mechanisms have not been fully developed. The payment mechanism has not even been adequately explored. (See Annex D for suggestions on a latrine cost recovery policy.) Moreover, promotional materials set forth a price for the latrines, when the actual cost of materials had not been established. These factors could be damaging to both the pilot project and replication if measures are not undertaken immediately to rectify the situation and to improve management.

The project implementation schedule/work plan needs revision and it should serve as a management and coordination tool. The implementation plan in the PP (Annex V) envisaged completion of prototype latrines some five months after the sanitarian took up his post. Due mainly to personnel problems within the project team and poor project coordination, the demonstration latrines will not be completed before February 1982. This necessitates a rescheduling of proposed activities. The delay also makes it imperative that the project be focused on management, logistics and coordination during the next phase, and short-term consultants be acquired to assist the ESPP team to accomplish its tasks. As a matter of urgency a draft work plan should be prepared for the remainder of the project, discussed with the districts and Reference Group, and modified accordingly. Based on the Annual Work Plan, a quarterly plan broken down into weekly activity schedules should be drawn-up each quarter.

Review of the Annual Work Plan should be part of the proposed project review seminar for key district and central government personnel. The purpose of the seminar will be to review the project and annual

implementation plan, to address major issues and to suggest methods to better integrate the various agencies of local, district and central government, and other organizations in support of ESPP with a view to continuation of activities after project completion. At the seminar the ESPP team should present alternative, clearly defined intervention strategies for discussion. Since this is an experimental, pilot project, various approaches should be tested to identify the most effective relative to cost. The experimental aspects should be consciously pursued; to date the different strategies tried have been mainly by default.

2. Reporting

Although the structures exist for ESPP to be closely integrated into and advised by the GOB, they have not been used adequately. Government set up a high-level inter-ministerial Reference Group through which the project team is to report.

In addition, most team members are district level staff members and are supposed to report through regular district channels. From an assessment of the project records and achievements, and discussions with members of the Reference Group and the project team, it is clear that the agreed reporting mechanisms have not operated satisfactorily. Much of the team activity was undertaken without government knowledge of the substance and methods; and media issues were not presented to government in a coherent fashion. It is essential that during the remainder of the project that all levels of GOB are actively involved in the project; this should be done in a number of ways. In particular, the team should prepare a regular monthly report for review by GOB and USAID. Issues which require detailed review, policy decisions, or assistance should be presented in writing to GOB with soundly developed arguments.

3. Record Keeping

The main purpose of ESPP is to enable GOB to develop and implement appropriate strategies for improved environmental sanitation. It is essential that accurate records of all project activities be kept, including monitoring reports which were emphasized in the PP. Adequate records do not currently exist and the interim Evaluation Team experienced considerable difficulty in establishing project status. Despite considerable efforts by the Evaluation Team still some information gaps exist.

During the remainder of the project, particular attention should be given to ensure adequate recording of all project work. Daily field diaries should be kept, together with a record of the time allocated to different activities and villages. Proper construction records must be kept of all latrines, rubbish pits and other items constructed under the project. These construction records should include location^{1/}, household size, cost, date started, date completed, substructure type and dimensions, superstructure type and dimensions, method of construction, supervision and advice in the construction process, construction problems encountered, ground conditions and so forth. A latrine completion record sheet should indicate some of the essential data.

^{1/}Air photos may be useful for this purpose.

Each team member should be required to prepare a detailed termination report one month before his contract ends. The report should detail all activities with which the member has been involved, the strategies used and the results.

Project records should be prepared and updated on an orderly basis. The types of records required to meet project needs should be reviewed with GOB and USAID, and an agreed schedule established and adhered to.

4. Project Monitoring

In addition to the reports and documents prepared by the ESPP team, monitoring should be undertaken quarterly by a joint, multi-disciplinary USAID and GOB team. The ESPP team should prepare a comprehensive status dossier before each monitoring mission, and the monitoring team's findings and recommendations should be presented to the Reference Group.

This input is considered important to help both USAID and GOB monitor this very important experimental, pilot effort. The team should be comprised of the USAID Project Officer, GOB Project Manager, and others such as a training specialist, and rural sociologist. Field visits will be required by them to assess the status of project activities.

DISCUSSION OF TECHNICAL SYSTEM

1. Technical Assistance

In view of the delays and the need to strongly support and coordinate activities during the remainder of the project, it is recommended that a short-term (four to six person months) logistical support technician be provided. This technical assistant should help the ESPP Sanitarian and Team Leader to implement the recommendations contained herein. USAID should explore the possibility of obtaining the consultant through the centrally funded Water and Sanitation for Health Project, since ESPP funds are limited. Action should be taken immediately to secure the services of this consultant, whose scope of work should be drawn-up by the ESPP team and GOB Project Manager in consultation with USAID.

2. Construction and Procurement Procedures

Construction procedures have to date been casual and haphazard. Field management personnel have not been given clear instructions in writing, and no drawings or written field procedures have been developed. In some cases this has resulted in poor construction. Although this is a pilot effort under which such experience can prove valuable, the situation should not continue. Instructions to the field foremen should be set out in writing. Supervision should be undertaken at least twice weekly and when new ideas are being developed, on a daily basis. Sketches, drawings, templates and other simple aids should be prepared and the foremen regularly updated on project requirements (quarterly reviews with all field personnel are suggested at this stage).

Materials for latrine construction have been procured through normal district council channels in Kgatlang District. In Southern District, some difficulties were initially experienced with procuring through the council and now the majority of procurement is done directly through the

project and reimbursed by USAID. It is not clear whether procurement difficulties caused delays in construction of the prototype latrines; the ESPP team feels this to be the case. In the future, to enable replicability, procurement should be done through normal district council or other channels; private sector channels might be investigated. It may be necessary for USAID to advance funds to allow for build-up of an inventory of materials.

3. Latrine Costs

Accurate latrine costs have not been kept as the project has developed. Now that a range of latrine designs are emerging, accurate costs can be prepared. The total cost including items such as transport, technical advice and supervision need to be established. After this the ESPP team should prepare a policy proposal on subsidies to be discussed with the Reference Group. The role of SAs, and their payment should be included in the policy deliberation. Suggestions on building material subsidies are contained in Annex D.

Information on the total materials and labor required to construct the latrines should be made known in full to householders before they commit themselves to purchasing and constructing a latrine. Latrine costs should be used with caution in promotional campaigns and should always reflect current and not historic costs.

To date the ESPP have stated that the latrine should cost around P30, but no exact cost has been established. This might be detrimental if the costs are found to be much higher. Yet, the Evaluation Team found some households digging pits, but without any idea of the cost in terms of labor and materials. This situation must be rectified immediately.

4. Latrine Construction

The PP calls for up to three latrine types to be investigated; all are a form of Ventilated Improved Pit (VIP) latrine. The ESPP team has, with GOB approval, concentrated on VIP technology, with latrines having single pits. This seems rational. The ROEC latrine with an offset pit and asbestos chute was felt to be too costly for rural householders. A similar design with an offset pit but no chute has been developed. The prototypes being investigated are:

- VIP - circular hessian superstructure, circular pit
- VIP - circular mud-brick superstructure, rectangular offset pit
- VIP - square mud-brick superstructure, rectangular offset pit
- VIP - square hessian superstructure, circular pit.

Some 20 demonstration latrines have been started, of which 16 are largely completed (see Annex B for details). Based on discussions at village-level meetings, the latrines have been constructed in a variety of different places, including in public open space, near the kgotla, at a health post, at a church or school, at the houses of officially designated destitutes and at private houses selected by lottery. None have doors, and all have seats rather than squatting plates. Vent pipes have been of 160 mm diameter PVC piping and the mud wall superstructures have grass (thatch) roofs. The team is investigating sand/cement wash vent pipes which look promising; this should be continued. Rectangular pits have

been covered with pre-cast concrete slabs on small, cast in situ concrete ground beams; the latter are aimed at improving stability.

The mud-brick superstructures have been plastered with traditional (mud and dung) plaster, using existing village skills and materials. In some cases, the planned dimensions have not been adhered to and the superstructures are difficult to enter. When the evaluation is undertaken by the anthropologist, beneficiaries' opinions on all aspects of the prototypes should be obtained.

In some cases, the thatch and roofing timbers of the demonstration latrines are not generally available at village level, or are unnecessarily expensive. This could cause difficulties by raising levels of aspiration above skills or affordability levels. All future demonstration latrines should wherever possible utilize local and typically used materials. For example, "womens" thatch as opposed to "mens" thatch, should be used. In some areas, pit covers could be made in timber. Annex E lists methods and materials which should be investigated and fully costed.

Construction of prototypes has been undertaken by SAs and locally employed people with particular skills (mud plastering, etc.), directed by a district council foreman or artisan. The SAs were appointed by each village (generally 3 in each) and given skills training. They have been paid on a piecework basis for construction of the demonstration latrines; in Southern District, they have also been paid an allowance, for remaining available in the village. In some villages (Ranaka for example) the SAs have now started to assist in household latrine construction by digging pits and constructing ring beams; this has been done on the assumption that they will be paid from project funds for this work.

The role of the SAs and payment of them should be clarified. Consideration should be given to whether they are needed as full-time extension workers, as village resource people, as small scale private sector latrine builders or in some other capacity. The appropriate training requirements should also be identified.

The existing demonstration latrines should be properly completed and evaluated before household latrines are promoted on a large scale. The evaluation should focus on technical, socio-cultural and financial appropriateness, together with an assessment of appropriate delivery models. Since few latrines have been built in households (the majority are in public places, including schools and the kgotla) it will be necessary to construct a few more latrines within households so that a representative sample size can be evaluated.^{1/} The evaluation should be undertaken after two months usage of the latrines.

The team is proposing to develop a lands latrine; if feasible, this should be undertaken on a limited scale, in two areas. Prototype designs should be proposed, costed discussed with GOB and potential beneficiaries, and piloted as appropriate.

^{1/} There seems to be a difference between acceptable models for public places and those for household use.

5. Latrine Seat Design

The demonstration latrines constructed all have seats, based on the assumption that villagers prefer to sit when defecating rather than squat. The shape and configuration of these seats vary considerably (it would seem haphazardly). The seats constructed are generally unsatisfactory, will rapidly become fouled, cannot be easily cleaned and represent a potential focus for disease transmission and a health hazard. Alternative construction materials should be considered, and the shape and configuration made more appropriate and hygienic. This needs to be done as a matter of urgency.

6. Latrine Cover Slabs

The project team considered a variety of materials for constructing cover slabs, including reinforced concrete, timber and fibre glass. The prototypes constructed all have either circular or rectangular reinforced concrete cover slabs. After the initial field trials, it was decided to precast slabs in the villages in Kgatleng District using the SAs and in Southern District to purchase the slabs from the Brigades in Kanye. The slabs cast in Kgatleng are generally of very poor quality inspite of the training given: reinforcing is exposed; the slabs are cast on the ground giving a very poor surface finish, many having cracked; the aggregate and stone used appears to contain clay and organic material; and mix control and curing are completely erratic. The team now proposes to concentrate slab production at the Brigades. The Evaluation Team agrees with this view, but stresses that quality control will be needed continually. In addition, prior to further slab production attention must be given to structural design. The Evaluation Team found that the slabs had insufficient structural strength for the envisaged loading. It is recommended that a structural consultant be appointed by MLGL to advise the districts on the structural design and that the final design be approved by the Ministry of Works and Communications.

ESPP must focus immediately on rehabilitation of prototype latrines. All faulty slabs should be replaced. Also, further work should be done to ensure complete enclosure of the pits. In many cases cover slabs have not been butted carefully together (this is in part due to poor precasting) and the joints have not been mortared or sealed with mud to prevent the ingress of stormwater or the egress of insects.

7. Latrine Pit Configuration and Stability

Latrine pits have been sized assuming 5 people per household and aimed to have a 5-year life. The filling rate of 0.06 m³/capita/year seems reasonable, though data are limited. Pit stability will always require some technical assessment in the field. The project has started to look at this problem; in the year ahead, considerable efforts need to be made to investigate a variety of alternate forms of pit stabilizing methods in different soil conditions, together with the consequent technical, logistical and financial implications.

The project has concentrated on developing shallow trench offset pits as opposed to deep rectangular or circular pits. The trench pit has the advantage of ease of excavation by avoiding excavating soft rock. In addition, by offsetting the pit, the load superimposed by the superstructure is carried on more stable ground. However, this design has the

disadvantage that:

- considerable extra cost is incurred by having to cover the trench with precast concrete slabs;
- the risk of storm water damage to the pit increases as the number of slabs increase;
- the joints between the slabs need to be properly sealed; the more slabs, the greater the risk of poor workmanship and health hazards (from insect breeding);
- a shallow long trench may be more unstable than a deeper pit.

The only stabilization method developed to date for testing has been a weld mesh ring surrounded by PVC sheeting inserted into the pit. This model was completed in late October. The buckling strength of a ring of open weld mesh does not appear to be high; time may prove otherwise. Provision should also be made for the pit to leach adequately. The following methods of pit stabilization should be investigated in the field:

- (a) log lining (this is an existing local skill in many areas);
- (b) lining with large diameter oil, bitumen or paint drums;
- (c) open jointed brickwork lining; Kalahari and locally available river sand can be cement stabilized, and the bricks laid close jointed possibly with no mortar;^{1/}
- (d) lining the unstable parts of the pit (e.g. the soil layer above weathered rock) with a weak sand/cement mortar. The mortar lining should have holes made in it to give adequate permeability.

Based on the experience gained from developing these ideas, a comparison should be made between the alternate latrine models and broad guidelines for pit sizing, configuration, and stabilization developed for field personnel based on soil/site conditions, structural stability, local expertise and costs. The team should prepare detailed proposals for investigating these problems, review them with MLGL and then investigate further in the field. Annex E contains a listing of items to be investigated.

To date attention has not been given to how to get rid of spoil excavated from the pits; it could be mounded over the pit cover, spread around the yard, used for brickmaking or disposed of in a variety of other ways. Various methods should be tried in the field, reviewed with the community, and findings and conclusions incorporated into the media component as required.

8. Tools and Equipment

Substantial quantities of tools and equipment have been purchased and issued for use in the villages. The Evaluation Team was not in a position to prepare a detailed inventory. The tools appeared to be in use, and to have been issued in an orderly fashion.

^{1/}The project team is currently investigating an interlocking circular sand/cement brick. This may also be worth considering.

Materials stores have been provided in Kgatleng but not in Southern District. The outstanding sheds should be issued by Southern District Council, the sheds kept locked when not in use and a more rigorous system established for issuing and keeping track of tools. Cement should be bought in small quantities, as required. Cement, steel and tools should be stored off the ground. (This is not the case at the moment.)

9. Soil Conditions in the Project Villages

The soil conditions in the project villages vary considerably (see Annex F). The main technical difficulties facing latrine substructure construction have been found to be shallow rock (with varying degrees of weathering) and Kalahari sands which are fine grained and will probably be unstable over time.

Soft rock has been excavated by pick and in a few cases by hammer and chisel; this latter method has been proving successful though requiring considerable time and effort. It is suggested that the fire and quenching method be tried where both firewood and water are available. When the program expands within the villages it is suggested that in one village a compressor be made available to establish the logistical, technical and financial implications of this method. It may be more cost-effective to excavate pits deeper through soft rock than to construct long trench pits. Cost comparisons should be made. Prototype raised latrines should be constructed in areas where there is surface rock since it is unlikely to be economic to blast pits.

10. Water Treatment Development and Water Supply

The project has started preliminary investigations into suitable village level water treatment devices for household use. Due to a shortage of time left to effectively complete the project, no further work should be done on this topic. All work done and information obtained should be handed over to an appropriate institution to follow-up; possibly the Rural Industries Innovation Centre (Kanye), the Botswana Technical College or the Department of Water Affairs (DWA) may be able to assist.

At the request of the Village Development Committee, the project undertook the capping of a well at Selokolela and installed a hand pump on the well. The pump is now broken and no maintenance facilities exist to repair it. There have been other requests to the project to assist in improving rural water supplies. No further work should be done on the construction of water supplies since this is outside the scope of work of the PP, MLGL is not responsible for developing rural water supplies and the project has fallen considerably behind schedule. Any further involvement in the water sector should concentrate on water usage and handling practices.

11. Groundwater Pollution

Minimal work has been undertaken to establish the possible impact on groundwater quality of changing sanitation practices in the project villages. Where groundwater is abstracted locally (in Selokolela and Olifants Drift, for instance) it is very heavily polluted and it would be difficult to assess any change brought about by latrine construction.

The Pollution Engineer, DWA, should be requested in writing to assess the

position in the project villages within the next three months and if then thought relevant, the DWA should be requested to establish a baseline pollution level against which future changes can be monitored.

DISCUSSION OF MEDIA AND COMMUNITY MOBILIZATION

Content, Message Development and Media Selection

Based on the five core messages stated in the PP, in 1980 the Materials Producer held discussions with the Health Education Unit, Chief Education Officer of the Department of Non-formal Education (CEO/DNFE), staff nurses, family welfare educators and members of the District Education Teams. The discussions led to the development of content areas and the identification of the most appropriate types of media. It was decided that print materials were the most feasible and that sets of these should be developed around a message and its most appropriate extension worker. Some materials were for use by these extension workers with villagers, while others were directly targetted to the villagers. The development of print materials was thus coordinated for each module.

With the arrival of the Project Coordinator, the content areas for material development was revised, based on a delivery system which included courses taught by family welfare educators for two hours each day for a two-week period covering one of the five modules that he had proposed. In March 1981 that delivery system was rejected by the CEO/DNFE and an alternative one was presented in June 1981. The materials produced to date have been based primarily on the objectives expressed in the Project Coordinator's effort and the content identified through the efforts of the Materials Producer.

2. Print Media

Although the most systematic work has been carried out in the development and production of print materials, further refinement and evaluation are required before any packages of materials can be considered as cost-effective. The aim should be to have packages available by the end of the project so that little or no attention is required in this field during project replication and expansion.

In 1980 the Materials Producer conducted an in-depth study of visual perceptions with a sample of 100 villagers. Information drawn from this study and discussions with district and village extension workers helped to guide development of print materials. The results of the visual perceptions study, however, have never been written-up. This should be done so that the information can be used by others.

After the development of a print material, it is checked by the CEO/DNFE, Director of Health Education Unit, Public Health Engineer (MLGL) and relevant senior extension staff. Also, when possible, materials are presented to the Reference Group before printing. However, problems of pretesting and actual procurement for field use have been severe. Annex C records the long delays between submission for field testing by the Project Coordinator, who until recently was responsible for pretesting, and his response; in some cases there has been no response to date.

The pretesting done has almost exclusively been for posters. The method used by the Project Coordinator, with a field assistant from the

university, was to show three to four posters on the same topic but with different graphics and/or wording to ten villagers. The villager was then asked which one he/she liked. The remainder of the questions were centered on the poster liked best. The sample size for each test was ten. No information exists on the selection process. The method of testing leaves much to be desired. The Evaluation Team discovered indications of its weaknesses: the team found a family proudly displaying a poster of Chief Linchwe but did not know the health education message it contained.

Often requests by the Project Coordinator to DNFE for the production of booklets and posters have come only a few days before intended distribution, or without sufficient lead time for adequate testing, revision and/or printing. In particular, the demand to have a latrine booklet led to circulation of one which was not instructional enough and had a price tag attached to the latrine model although actual costs had never been adequately established. The latrine booklet to be used by SAs and those wishing to build their own latrines was premature. The original ESPP plan called for the construction and evaluation of prototype latrines prior to a campaign to encourage households to construct them. This example shows the lack of integration and of a systematic approach. It is advisable that further development of materials on latrines await the results of the evaluation of the prototypes.

It is recommended that all materials developed to date undergo thorough testing for content, message and design. Thereafter, attention should be focused on revision and print of these materials. Then emphasis should be given to development of materials on (a) usage of refuse pits, the excavation of new pits and the filling-in of full pits, and (b) latrine maintenance and use.

3. Other Media

Other media that have been used in the ESPP include audio-cassettes, popular theatre, and socio-dramas. In addition, personal channels of communications, that is face to face meetings, have played an important role so far in delivering messages about latrines and refuse pits. General informational materials about hygiene and personal health have been started but development has been hampered because of limited professional support available and the absence of a well-developed project implementation schedule to coordinate activities.

Cassettes were used to record health and sanitation messages for later playback and to record discussions by members of one village to be played to other villages. In turn the listeners in the subsequent villages were encouraged to record their comments on what the messages meant to them, in an effort to stimulate motivation through peer influence and support. The initial message was developed by literacy assistants and Mabalane teachers based on the objective and story-line provided them by the Project Coordinator. Until recently no transcripts were available, even of the initial message; to date six tapes have been transcribed, four of these translated into English. The cassette tapes that have been prepared should be studied to learn if they should be edited and further developed and/or used.

Popular theatre is a well-known media in Botswana, which has been encouraged by various foreign communication and education experts.

building on traditional cultural interest. The way the ESPP has used popular theatre is only a limited expression of a broader potential for enactment of issues, feelings and new ideas. The ESPP popular theatre is basically a recitation by a group of school children and teachers from Mabalane of animal tales that carry sanitation and refuse disposal messages. The concept is worth pursuing to test its impact. However, the time taken to develop and organize popular theatre must be accorded attention since the aim should be media methods and messages easily extended after project completion.

Film has not been developed with ESPP messages, but films, primarily about wildlife, have been used as a means to attract people to meetings. Films to be used in the villages do not appear worthwhile pursuing during the remainder of the project since equipment maintenance and repair, logistics and so forth make it an unattractive communication strategy. However, slides or films might be feasible in developing teaching modules for extension workers and village leaders.

4. Use of Media and Mobilization

Little attention has been given to integration of media into ESPP. Meetings have been called to exhort villages to attack their rubbish problems and to get ready to build latrines. Posters and booklets have been given to those attending the meetings, but the Evaluation Team found primarily posters of the local chiefs, with ESPP messages in the pilot villages.

Much of the organizational energies of the project have gone into mobilization of groups. The Project Coordinator has been successful in obtaining the support of key authority figures in the project villages. With the support of chiefs, headmen, and teachers, the Project Coordinator, and most recently his counterpart, have been able to organize meetings to rally popular support for ESPP. In these meetings, people are told about the general purpose of ESPP, health and sanitation problems, and improved practices. Groups have been mobilized. For example, groups, often of school children, were recruited to dig rubbish pits.

Considerable energy and time went into the latrine and refuse disposal campaigns. The crucial question in this pilot effort is what is the minimum effort required to achieve the same purpose? What is the minimum amount of media, including inter-personal communication, necessary to motivate people to dig and use refuse disposal pits and to build, use and maintain pit latrines? This should receive priority attention during the final phase of the project. The people may be motivated already to do these things, but lack the material, financial and technical means to do so. On the other hand, construction is only one aspect. Use may require behavioral change which might occur rapidly or may require long-term educational effort.

5. Coordination of Media with Other Project Components

The latrine component involved the highest levels of local power to support the project, used these leaders to encourage the gathering of people, gave villagers some limited new information and then was overtaken by the enthusiastic response in a couple of villages. The mobilization of villagers to build their own latrines was premature since many logistical and technical difficulties have yet to be solved, the costs yet to be established and models yet to be evaluated.

To date the use of media in training cadres of persons involved or who potentially could be involved in village-level extension has not been developed. Over the next few months priority must be given to identifying different target audiences, the informational needs to each and the behaviors that are to be affected and then identifying communication messages required by each and the most appropriate media. The ESPP team should be assisted in this task by short-term technical assistance.

Technical Assistance Required

The Evaluation Team in consultation with GOB and USAID recommends that the Materials Producer be appointed Project Team Leader. Since assumption of new responsibilities will limit his time available to work on materials production and the recommendations regarding media contained herein, the Evaluation Team recommends that (a) a locally based person with experience in materials development, testing and production be hired for up to six months to work with the DNFE, and (b) the services of other specialists be secured to assist when necessary.

PURPOSE

"To undertake a pilot, village-based ESPP with a high level of community involvement, focused on sanitary options and a multi-media health education campaign."

Verifiable Indicators: (1) "Affordable, acceptable and technically appropriate sanitary systems identified for replication in rural Botswana. (2) Multi-media health education and training packages developed and tested. (3) District and village level institutions able to implement sanitation activities in six villages."

Additional Indicator Recommended: (4) Delivery systems tested and optimal systems identified.

Stated Assumptions: (1) Relationship between (ground) water quality and sanitation system will be investigated. (2) Village water supplies maintained and water quality improved. (3) Project design reflect district and village needs. (4) MLGL provides budgetary support of the pilot project.

By the end of the project (December 31, 1982) it is reasonable to expect that the multi-media health education and training packages will have been developed and tested. However, without a substantial increase in inputs, as detailed in the above sections, it is unlikely that other conditions, which are specified as indicators of achievement of project purpose, will be realised. To identify affordable, acceptable and technically appropriate sanitary systems for replication in rural Botswana, greater attention must be given at this stage to technical aspects and costs. Moreover, delivery systems for community mobilization and health education focused on environmental sanitation and protection training, and installation of sanitary facilities need to be more carefully tested and optional systems identified. It is not enough to have district and village level institutions able to implement sanitation activities in only six villages, if the project goal is to be reached. Low cost, effective delivery systems which can be replicated on a larger scale are required.

It is imperative that the ESPP obtain greater involvement of relevant organizations and units at the district level and extension personnel. This should be done by delineating responsibilities which normally fall within the scope of work of each and then identifying those additional functions which need to be undertaken and by whom.

The present project structure is shown in Annex G. The project has made some progress in identifying possible environmental sanitation delivery systems. These need to be developed more clearly in the next phase, and discussed and reviewed at all levels. The following should be given particular attention:

- the type and extent of central, district and local level support required (technical, logistical, financial and administrative);
- the role of existing extension workers;
- construction materials procurement;
- the role of the householder in latrine and rubbish pit construction;
- the need for ensuring technical skills and advice in the villages, possibly through SAs and other private sector village level cadres;
- the consequent training requirements.

Annex H shows some of the ideas which the project has been exploring; these ideas should now be more focused, with special consideration given to replicability. As part of the delivery system, particular attention needs to now be given to making suitable latrine materials available in the rural areas, and to giving guidance on the use of locally available materials where available. Some materials have to be purchased; these could be provided as a kit. Alternative cost recovery policies need to be developed and methods of charging and cost collection given particular attention. Some of the thinking coming from the work to date is shown in Annex D. It is recommended that GOB provide an economist to work with the team on the delivery systems.

An issues paper discussing replication should be prepared by the ESPP team by July 1982 for discussion with GOB and be followed in October with proposals for replication of the program.

GOAL

"Better health standard in rural Botswana through improved sanitation."

To date no progress has been made towards achievement of goal. However, if ESPP focuses more on delivery systems and identification of affordable, socially acceptable and technically appropriate sanitary systems, expansion of the program is likely to occur.

BENEFICIARIES

The ESPP was designed to focus on all members of the six pilot villages - young and old, men and women, rich and poor - since it is important that everybody in the community improve his/her sanitary habits if fecal-related diseases are to be reduced. The project emphasized low-cost latrines in order to have latrines within the resource capability of the majority of households.

The PP states that the ESPP "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" (p. 45). Project funds were budgeted to subsidize the material costs for an estimated 450 latrines for poor households in the pilot villages.

During the November 1980 seminar, without data on the approximate cost of materials for the substructure and superstructure, participants were concerned about subsidizing latrines under the pilot project since this might not be replicable on a larger scale. They suggested that the ESPP proceed without subsidizing latrines for household use but if financial constraints were found to prevent building the situation should be reviewed. The February 3, 1981 meeting of the ESPP Reference Group also discussed the issue of subsidies. It was agreed that "there would be no subsidy element in the superstructure", however, government could probably bear the cost, during any replication of the project, of some materials for the substructures, such as compressors for hardveld areas. The Chairman suggested at a future date a consultant could be asked to make an in-depth study of the subsidy issue. Once the actual cost of latrines in the pilot villages has been established serious attention must be given to the issue, and items identified which should be considered for subsidies. The costs considered should include transport, technical advice (district level personnel and village level advisors, promoters and revenue collectors), and non-traditional materials for substructures.

The project team has been guided by the need to keep material costs at a minimum in order to have prototype latrines within the financial resources of most villagers. Further attention, however, should be given to the feasibility of using logs for the substructure and to lowering the cost of certain parts of the superstructure, i.e. roof and walls.

The PP envisaged that prototype latrines would be constructed in each pilot village at village institutions, e.g. schools, kgotlas, or wherever they would serve both in a functional capacity as public conveniences and as demonstration latrines. During project implementation persons attending kgotla meetings in five villages selected the sites for the demonstration latrines. Approximately one-third of the demonstration latrines are being built for household use; in some villages the homes of registered destitutes were selected, and in other villages the selection was done by lottery. The decision to have destitute families as beneficiaries of demonstration latrines is to be applauded, but to obtain feedback on the prototypes to guide identification of acceptable models it is important to have the views of persons from varying socio-economic groups. Therefore, the lottery system ought to be used for selecting any further households for testing prototype latrines.

After prototype latrine construction has been completed and at least eight weeks elapsed to allow for use, it will be essential to obtain feedback from users and observers in the villages to identify acceptability of different aspects of the latrines. To date, feedback indicates a desire for doors; increased width of passage; larger seats; and more light inside. It must be remembered to consider not only what people want but also what they can afford. The desire for doors to have privacy and to keep out animals will require creative solutions since timber is expensive and scarce.

In the rubbish campaign, in some villages, school children have taken an active role in digging refuse pits and in a village clean-up day. It is unclear, however, if the mobilization of these school children was accompanied by broader health education and promotion of environmental sanitation to relate the reason for use of rubbish pits and the need for clean surroundings with good health. Even though the school children may be taught this relationship at some stage in class, it should be stated prior to their mobilization so they can understand the reason for the campaign, and the need for improved behavioral patterns related to refuse disposal.

UNPLANNED EFFECTS

Poor management has attributed to the slow physical progress. Although the ESPP Reference Group and the persons in USAID and MLGL responsible for overseeing the project tried to rectify the situation by requesting various actions, e.g. weekly team meetings, the requisite actions were often not forthcoming. Poor planning and lack of coordination between ESPP team members, and poor interpersonal relations have been detrimental to the project. Affirmative action should be taken to correct the situation.

LESSONS LEARNED

During the project implementation it has become apparent that a demand for latrines already exists in many rural communities. For example, in Ranaka which has a population of some 210 households, approximately 64 per cent of those without latrines registered for one. It remains to be proven whether or not the majority of households wanting a latrine do in fact have the requisite resources; among most households there are competing demands upon extremely limited financial and labor resources. Nevertheless, the experience to date has shown that efforts to create a demand by rural households for latrines through media and interpersonal communication are less needed than was assumed.

It has also become apparent that greater attention needs to be given to the viability of expecting skills in construction with non-traditional materials to be available in rural communities without a concerted training program combined with frequent supervision to help ensure quality control. When the logistics of procuring requisite materials for construction which are not readily available in the community is compounded with ensuring quality control, it may be more efficient to have the commodities produced outside the community and then transported. The answer, however, may rest on site-specific information, which is difficult to program into broad-scale construction efforts. This will be tested further in the final phase of the project.

PROJECT OUTPUTS

Village	REFUSE				LATRINES			Demonstration Latrines	
	1/ 2/ Approx H.H. Feb. 1980	H.H. with no pit Feb. 1980	Pits dug- ESPP	% of those which had no pit before	H.H. with no latrine Feb. 1980	H.H. that regd. for latrine ESPP	% of those that had no latrine that registered	Under ^{3/} constr- uction	Comp ^{4/} lete
<u>Kgatlang District</u>	No.	No.	No.	%	No.	No.	%	No.	No.
Artesia	160	26	30	115 ^{5/}	122	0	0	S.H. 0 C.H. 0 S.M. 0 C.M. 3	0 0 0 0
Mabalane	120	52	32	62	78	16	21	S.H. 1 C.H. 0 S.M. 0 C.M. 4	0 0 0 0
Olifants Drift	75	14	30	214	61	13	21	S.H. 0 C.H. 0 S.M. 0 C.M. 3	0 0 0 0
<u>Southern District</u>									
Ranaka	210	34	48	141	185	135	64	S.H. 1 C.H. 1 S.M. 2 ^{6/} C.M. 3 ^{7/}	0 0 0 0
Selokolela	166	144	140	97	166	50	30	S.H. 0 C.H. 1 S.M. 1 C.M. 1	0 0 0 0
Keng	60	28	20	71	60	not done	not done	S.H. 0 C.H. 0 S.M. 0 C.M. 0	0 0 0 0
TOTAL	791	298	300	100	672	214	32		21^{7/}

^{1/}H.H. = Households

^{2/}Baseline data taken from "ESPP Report on Baseline Study. Social Survey of Pilot Villages", Pia Kjaer Olsen, February 1980.

^{3/}S.H. - Square Hessian Superstructure, C.H. - Circular Hessian Superstructure

^{4/}S.M. - Square Mud Superstructure, C.M. - Circular Mud Superstructure.

^{5/}Some 16 are almost complete (due for completion early December 1981), 4 more should be complete end December 1981.

^{6/}It appears that some households which had pits before dug a second pit.

^{7/}Three of these are some way off completion.

^{7/}Total S.H. - 2, C.H. - 2, S.M. - 3, C.M. - 14, Total of 21.

ANNEX C. STATUS OF PREPARATION OF MEDIA PRINT MATERIALS AS OF OCTOBER 31, 1981

Topic	Material no.	Type of material	Date finished prod ⁿ	Field testing commenced	Field testing results rec'd	Date printed	Quantity printed	Method of distribution	Village distributed to	Quantity distributed	Material requested by	Comments
rubbish	POR1	poster	03/30	04/22	not rec'd	06/11	1000	kgotla			J. Braun	
rubbish	POR2A	poster	03/30	04/22	not rec'd	not printed	-	-	-	-		J. Braun only requested printing of 1 poster for rubbish - explained that POR1 was one people liked
rubbish	POR2B	poster	03/30	04/22	not rec'd	not printed	-	-	-	-		
rubbish	POR3	poster	03/30	04/22	not rec'd	not printed	-	-	-	-		
rubbish	POR4	poster	03/30	04/22	not rec'd	not printed	-	-	-	-		
rubbish Chief L	POG3	poster	04/09	not tested	-	05/21	500	kgotla			J. Braun	
rubbish Chief S	POG2	poster	05/08	05/13	10/07	not printed	-	-	-	-	J. Braun	found unsuitable
rubbish	POG5	poster	06/15	N/A	-	06/28	100	kgotla	Ranaka	100	J. Braun	will not be used again - specific to Ranaka
rubbish	ES3	booklet	06/19	June		07/01	500 500	kgotla	Selokolela Mabalane Artesia	100 50 100	J. Braun	rec'd uncollated questionnaires on 06/29
rubbish		flip-chart	07/01	N/A	-	07/01	6				J. Braun	on 07/07 given to volunteer group leaders - never used
latrine Chief L	POG1A	poster	04/09	Apr.	09/03	not printed	-	-	-	-		
latrine Chief L	POG1B	poster	04/09	Apr.	09/03	05/21	500	kgotla	Kgatleng District		J. Braun	
latrine	POL1	poster	04/21		10/07	07/27	100	kgotla			J. Braun	
latrine	POL2	poster	04/21		10/07	not printed	-	-	-	-	J. Braun	
latrine	POL3	poster	09/29	not tested	-	09/30	100	kgotla			J. Braun	produced as result of POL2
latrine Chief S	POG4	poster		not tested	-	09/30	100	kgotla			J. Braun	produced as result of test of POG2

Topic	Material no.	Type of material	Date finished prod ⁿ	Field testing commenced	Field testing results rec'd	Date printed	Quantity printed	Method of distribution	Village distributed to	Quantity distributed	Material requested by	Comments
latrine	ES5	booklet	08/07	not tested	-	08/07	250	unknown			J. Braun	designed to be support for SA
latrine (round)	ES6	booklet	11/02	not tested	-	11/02	200	no dist.	-		J. Braun	designed to be support for SA
personal hygiene	POPH1	poster	May	05/13	10/07	10/13	100	no dist.			J. Braun	campaign not started
personal hygiene	POPH2	poster	May	05/13	10/07	not printed	-	-			J. Braun	
personal hygiene	POPH3	poster	May	05/13	10/07	not printed	-	-			J. Braun	
personal hygiene	ES7	booklet	10/28	not tested	-	10/28	200	no dist.			J. Braun	due to lack of time, not tested, campaign has not begun
personal hygiene	-	flip-chart	10/13	not tested	-	10/13	6	no dist.	-	-	J. Braun	
personal hygiene	POPH4	poster	10/26	not tested	-	10/26	100	no dist.	-	-	J. Braun	produced as result of problems with POPH3
food cover	POFS1A	poster	05/06	May	10/07	not printed	-	-	-	-	J. Braun	
food cover	POFS1B	poster	05/06		10/07	not printed	-	-	-	-	J. Braun	
food cover	POFS1C	poster	05/06	May	10/07	not printed	-	-	-	-	J. Braun	
food cover	POFS1D	poster	05/20	not tested	-	not printed	-	-	-	-	J. Braun	produced as result of problems with POFS1A
food cover	POFS2	poster	05/06	May	10/07	not printed	-	-	-	-	J. Braun	
general motivation	ES1	booklet	05/80	May 80	May 80	not printed	-	-	-	-	R. Waller	

Topic	Material no.	Type of material	Date finished prod ⁿ	Field testing commenced	Field testing results rec'd	Date printed	Quantity printed	Method of distribution	Village distributed to	Quantity distributed	Material requested by	Comments
rehydration	ES2	booklet	Feb.	not tested	-	not printed	-	-	-	-	C. Collins	produced but Project Coordinator felt not relevant to ESPP
general motivation		flip-chart	06/80	08/80	08/80	not printed	-	-	-	-	R. Waller	not printed since not requested to do so
water		booklet flip-chart									J. Braun	developed - within 1 week of completion
news-letter						Sept.	500				ESPP Nov. workshop	Medical officers, Dist. officers, seminar participants
Masimo banner		news-letter		not tested		04/23	2000				J. Braun	do not know to whom distribut.
latrine		display board				06/26					J. Braun	displayed at Mochudi Agric. Show encouraging building
ESPP		display board				07/27					CEO/DNFE	general information on DNFE activities - displayed at Gaborone Trade Fair.

ANNEX C. STATUS OF PREPARATION OF MEDIA PRINT MATERIALS AS OF OCTOBER 31, 1981

Topic	Mat- erial no.	Type of mat- erial	Date finished prod ⁿ	Field testing commenced	Field testing results rec'd	Date printed	Quantity printed	Method of dist- ribution	Village distrib- uted to	Quantity distrib- uted	Material requested by
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ANNEX C. STATUS OF PREPARATION OF MEDIA PRINT MATERIALS AS OF OCTOBER 31, 1981

Topic	Material no.	Type of material	Date finished print ^a	Field testing commenced	Field testing results rec'd	Date printed	Quantity printed	Method of distribution	Village distributed to	Quantity distributed	Material requested by	Comments
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ANNEX D. LATRINE COST RECOVERY POLICY - SOME THINKING EMERGING FROM ESPP

Possible Policy: Beneficiary pays for basic building materials.

1. District Council standard approved latrine kit issued; prefabricated where possible.
2. Destitutes get free latrines.
3. Households owning no cattle and not holding Government employment get a subsidy on materials (amount to be explored).
4. Basic Materials:
 - slabs
 - vent pipe and screen
 - nails and wire for roof
 - pit lining materials (may be necessary)
 - seat and chute
5. Costs may or may not include:
 - district support and promotion costs
 - transport of materials to villages.
6. A discount (say 10%) may be given to householders who pay whole amount at once.
7. No materials issued until complete kit has been paid in full; a maximum of 6 months is allowed, if paying in installments.
8. The purchase of a District Council latrine entitles householder to visits (at least one) from the Council technician.

**ANNEX E. ALTERNATIVE CONSTRUCTION MATERIALS AND METHODS REQUIRING EVALUATION
RURAL LATRINES IN KALAHARI SAND AREAS AND AREAS OF INSTABILITY**

- a. Substructure (with or without stabilized rim)
 1. Log lined pits
 2. Sand^{1/}/Cement brick or block lined pits^{2/}
 3. Mortar lined pits
 4. Used paint, oil or bitumen drum pit lining

- b. Pit Cover (particular attention paid to rim stability and sealing covers)
 1. Concrete cover slabs (precast concrete appears most practical)
 2. Log cover slab
 3. Seat vs. squat plate (particular attention paid to seat design, geometrics and hygiene and cover design and fixing)
 4. Fiber glass concrete
 5. Resin bonded fiber glass.

- c. Ventilation
 1. PVC pipe/AC pipe
 2. Mesh/Cement wash pipe (hessian or mesh)
 3. Reed/Cement wall pipe
 4. Sand/Cement brick pipe
 5. Mud brick pipe

- d. Superstructure
 1. Logs^{3/} and brush
 2. Mud bricks and plastered (different plaster types to be investigated)
 3. Sand/Cement bricks and plastered
 4. Cement/Hessian on Mesh Frame
 5. Door requirements
 6. Seat
 7. Alternative roofing materials ("mens" thatch, "womens" thatch, galvanized sheet iron)

^{1/} Kalahari sand to be used rather than imported sand. Different sand types and cement contents should be investigated.

^{2/} conventional sand/cement brick (using Kalahari sand if proved adequate) could be investigated with or without mortar in the joints. Alternatively an interlocking block could be investigated.

^{3/} Different species of timber may be needed for the pit or for the superstructure/roof.

ANNEX F. SOIL CONDITIONS IN PROJECT VILLAGES

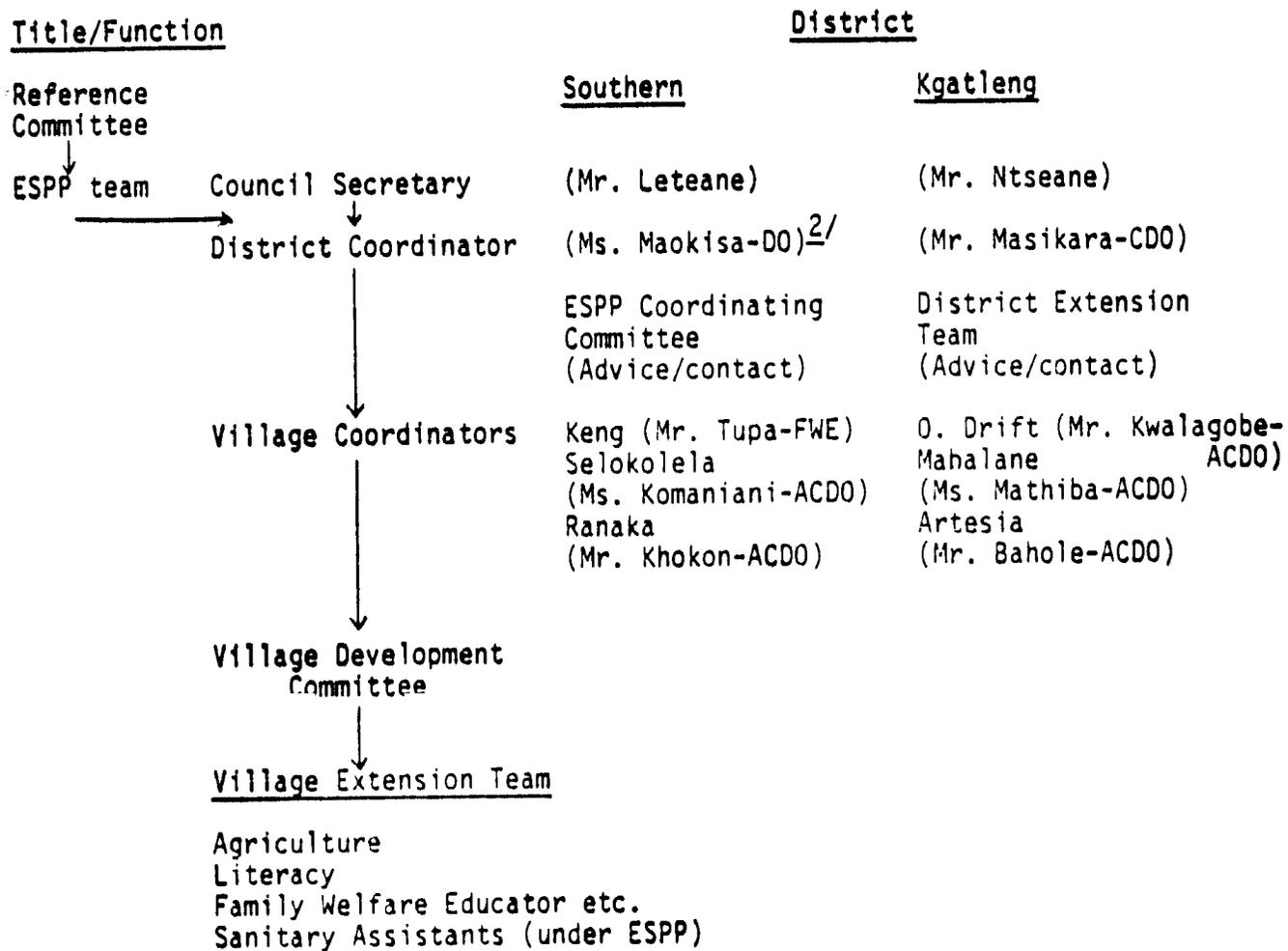
Southern District

- Selokolela** - sample at kgotla (15 cm deep)
 dark brown silty clayey soil Class: A-2-4-(0)
 sample at football field (15 cm deep)
 reddish brown silty soil Class: A3(0)
 In Selokolela valley - ground water at 3 meters - water
 washed stones and cobbles at 2 meters.
- Ranaka** - sample at Ward toilet 2.5 m deep
 dark reddish brown silty soil with non-plastic silt
 content Class: A-2-4(0)
- Keng** - Kalahari sand deficient in coarse material and soil binder
 fine desert-blown sand without silt or clay fines or with
 very small amount of non-plastic silt.
- All susceptible to collapse in wet weather (council does
 not line latrine pits in Ranaka or Selokolela).

Kgatleng District

- Mabalane** - dark brown fine soil underlain with rock at 1.5 to 3 meters
 depth - cohesive, used as local material for housing
- Artesia** - dark sand with high per cent of fines underlain with calcrete
 at 1 meter depth - calcrete was dynamited for council latrines
- Olifants
 Drift** lighter sandy soil with fewer fines - underlain with rock
 at 0.5 meters in north-west to 2.5 meters near river -
 council latrine put in using dynamite.

Notes: Data provided by project team. Not checked in the field;
 however, the data coincides with observations made during
 field visits.

ANNEX G. PROJECT ORGANIZATION^{1/}ESPP Project Team

E. Dipate (Motswana Counterpart Project Coordinator)
 J. Braun (Project Coordinator - media specialist)
 R. Parker (Sanitarian)
 R. Waller (Materials Producer)

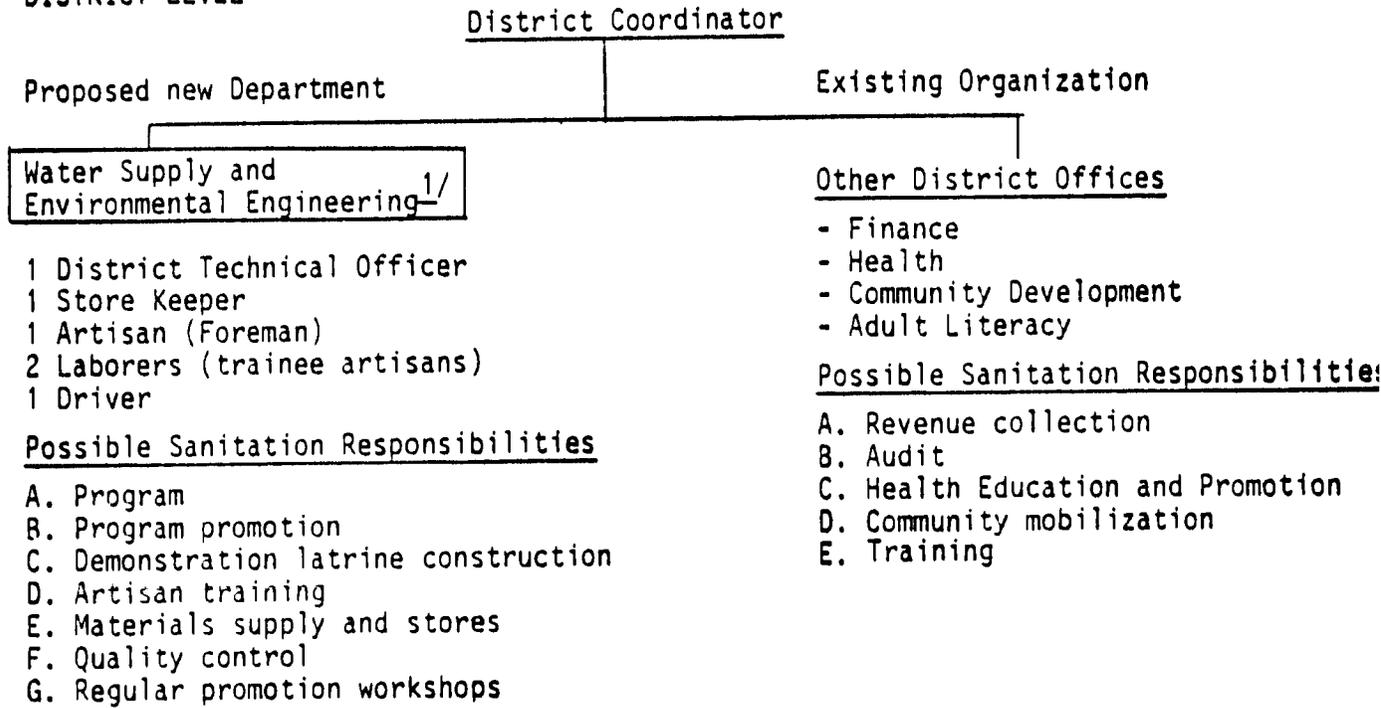
^{1/} Organization as of November 1981

^{2/} Abbreviations:

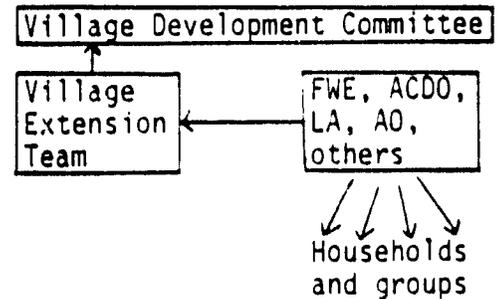
DO District Officer
 CDO Community Development Officer
 ACDO Assistant Community Development Officer
 FWE Family Welfare Educator

ANNEX H. PRELIMINARY THINKING ON POSSIBLE DELIVERY SYSTEMS: SHOWING EXISTING ORGANIZATION WITH NEW STAFF AND NEW RESPONSIBILITIES

DISTRICT LEVEL



VILLAGE LEVEL



Possible Sanitation Responsibilities

- FWE**
 - A. Latrine promotion
 - B. Demo latrine M/T
- ACDO**
 - A. Materials issue
 - B. Construction Record
 - C. Promotion and Management
 - D. Lock Materials Store
- Local Artisans, including SAs**
 - A. Construction
 - B. Maintenance
 - C. Reconstruction
- LA**
 - A. Using printed health and sanitation education materials
- AO**
 - A. Promotion of latrines

Existing Sanitation Responsibilities

- FWE** Health education
- ACDO** Community mobilization
- SA** Construction

^{1/}MLGL is considering forming this unit which will in the long-term take over district responsibilities for water supply; sanitation would be a logical extension of responsibilities.