

TANZANIA SCHOOL HEALTH PROGRAM
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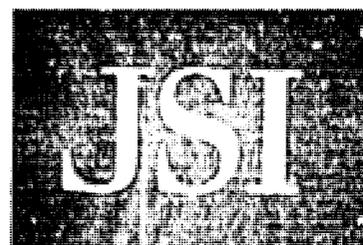
Mid-Term Report

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I. BACKGROUND OF THE TANZANIA SCHOOL HEALTH PROJECT

School health activities in Tanzania date back to colonial times. As early as 1921, medical services were being provided to school children in Dar es Salaam. In 1925, a Medical Officer was appointed to oversee school health services. At that time, mobile teams were used to provide treatment of minor ailments and referral for major ones, vaccination, inspection of the school environment and examination of children regarding personal hygiene. By the 1950's, school health services were provided throughout the country. Unfortunately, these services began to deteriorate by the mid-1960's and, by 1970, they had essentially disappeared.

In 1971, a political party resolution affirmed the vital needs for water, schools, and health for the majority in accordance of the Arusha Declaration of 1967. As a result, health was made a priority in the national development budget. In the health area, as in other sectors of development, the government was committed to applying appropriate technology to the health needs of the majority of the people. This principle was reconfirmed by President Julius Nyerere in 1973:

We must not again be tempted by offers of a big new hospital, with all the high running costs involved -- at least not until every one of our citizens has basic medical services readily available to him.

As the health needs of the population were evaluated, three groups were identified as being at high risk: mothers of childbearing age; children under 5 years of age, and school children age 5-15. This last group was included as one of the government's three priority populations because:

1. School children make up 25% of the nation's population.
2. After 5 years of age, children are no longer eligible for services under the MCH program and are generally lost to follow-up.
3. There is significant morbidity among the school age population, accounting for, among other things, much of the absenteeism in primary schools.
4. School age children are at the appropriate age for cultivating in them habits for healthful living.
5. School children are the parents and citizens of tomorrow. Their health must be safeguarded so that they will be able to function well in that capacity.

Because the program of Universal Primary Education reaches 95% of the eligible school age children, it was believed that the primary school system provided the appropriate infrastructure for the delivery of health services to children 5 to 15. A 1978 survey confirmed that school health services were both needed and feasible.

II. PROJECT SUMMARY

In order to ensure the success of a nationwide school health program, a pilot project, known as the Tanzania School Health Project (Mradi wa Afya Mashuleni) was designed by the Ministry of Health in consort with the Ministry of Education.

The Tanzania School Health Project (TSHP), funded by USAID in cooperation with the Government of Tanzania, is a three year project to be carried out from September 1980 through August 1983. As designed, the project is to be carried out at 80 primary schools in the Dodoma and Singida Regions ten in each of the 8 Districts -- with a control group of 800 schools against which the achievements of TSHP could be measured. Planning activities and coordination among the various Ministries and with USAID was to be directed centrally from Dar es Salaam. The field activities were to be coordinated from the capital city of Dodoma. To assist the Ministry of Health in carrying out the School Health Project, the John Snow Public Health Group, Inc. (JSI) is providing two long-range advisors. JSI's Chief of Party, Dr. Ian Berger, a physician and health educator, works closely with the Director of School Health, Dr. Simon Ngaliwa, at the Ministry of Health. Rick Pollard, a water and sanitary engineer, oversees field operations carried out by the eight School Health Officers.

TSHP focuses on four major components:

1. Health Instruction -- the development of a program of health education for the primary schools as well as a syllabus to be used by the Teacher's Training College to prepare primary school teachers to carry out the program in the schools.
2. Health Services--health screening, first aid, and simple diagnosis and treatment provided by primary school teachers in the schools. Findings and treatment are documented in individual student health records. Students will be taught and encouraged to use basic self-care techniques and child-to-child approaches.
3. Environmental Sanitation -- construction of pit latrines, the improvement in terms of the quantity and quality of the water supply, control of disease vectors and improvement of environmental safety in and around the schools.
4. School Farm Development -- technology transfer of improved farming methods to the students, construction of storage facilities for crops grown, improvement of the nutritional quality of the crops grown, implementation of a school feeding program.

To ensure the successful implementation of the School Health Project, both in the pilot area and later in the national expansion, the project emphasizes the development of management systems and the training of project personnel.

III. ACCOMPLISHMENT OF PROJECT OBJECTIVES

A workplan which details the TSHP goals and objectives as well as the implementation schedule can be found in Appendix I. The time schedule for the Tanzania School Health Project as outlined in both the project proposal and the workplan was known to be ambitious, given the contingencies always attendant in doing development work. The substantial progress made toward achieving project objectives, in spite of obstacles large and small, underscore the strength and vitality of the project and all those working on its behalf.

A. DEVELOPMENT OF EDUCATIONAL MATERIALS

1. School Health Handbook

The original project design called for the development of school health curriculum to be integrated with the existing domestic science curriculum as well as the preparation of a teacher's guide to support the curriculum. On February 2, 1981 at a meeting with Mrs. Kinnabo and Mrs. Mzaba of the Institute for Curriculum Development, it was learned a new health education syllabus had just recently been developed. The syllabus included environmental sanitation, personal hygiene, nutrition, first aid, developmental psychology and the need for utilizing health services. At that time, the revision of the curriculum itself to coincide with the new syllabus was being completed for Standards V- VII and the full curriculum, Standards I-VII, was expected to be completed by May, 1981. Since the curriculum was under control by the Institute for Curriculum Development, which is part of the Ministry of Education and not the Ministry of Health, the needs of the project with regard to development of educational materials were reassessed. It was decided that the project would be best served by the development of a School Health Handbook which would serve as a guidebook for School Health Coordinators in the implementation of the School Health Project.

A Planning Committee was formed in September 1981 to provide direction for the Handbook. The Committee had representation from the Ministry of Health, the Ministry of Education, the Health Education Unit, the Institute for Curriculum Development and, later, from DANIDA (the Danish International Development Agency). The Planning Committee decided that the Handbook would be best developed at a workshop with broad representation.

To assist the Planning Committee in developing the work hop, Susan Klein, a JSI staff associate, spent from October 13 - December 20, 1981 on TDY in Tanzania. A detailed outline of the Handbook was prepared along with an agenda, draft sections and packets of resource material. The workshop was held at Marangu Teachers' Training College from December 1 - 14, 1981. Workshop participants included representatives from the Ministries

of Health, Education, Water and Agriculture, the Institute for Curriculum Development and DANIDA, University of Dar es Salaam Faculty of Medicine as well as School Health Officers and practicing primary school teachers. In all, 27 individuals authored the first draft of the Handbook which was completed at the workshop.

Revisions of the draft proceeded from January through March 1982. A core group consisting of Dr. Ngaliwa, Dr. Berger, Mr. Pollard, Mrs. Mnzava, Mrs. Mzaba, Mrs. Makenya, Mrs. Ngonyani and Ms. Klein expanded, edited and otherwise revised the materials. By the end of March, both English and Swahili versions had been completed.

2. School Health Officers Training Manual

The idea of a SHO Training Manual was conceived at the August 1981 training session held in Singida. It was felt, at that time, that the notes from the Singida seminar and subsequent training sessions would be compiled into a handbook.

As the project proceeded, it has become clear to all associated with TSHP that there are not sufficient manpower resources to create the sufficient category of School Health Officer as permanent function within the Ministry of Health structure. In view of this, the TSHP staff feels that an SHO Training Manual will be of limited value -- current SHO's having already been trained and probability of designating new workers as SHO's in the future is highly unlikely. At this time, the task of developing an SHO Training Manual has been tabled. It is generally felt that the best approach to ensuring on going coordination of the School Health Program is to incorporate SHO functions into the broader training programs of permanent categories of community health workers (egs. District Health Officers, MCH aides, etc.)

3. Portable Flip Charts

Two artists were present at the Marangu workshop to begin developing illustrations for the School Health Handbook. In March, they were sequestered in Kibaha to complete their work. It is expected that, after pre-testing, many of these illustrations will be reproduced in the form of flip charts.

B. PROMOTION OF FIRST AID, HEALTH CARE AND HEALTH EDUCATION

1. Health Care Protocols

A preliminary list of illnesses that will be screened, prevented and/or treated within the context of the School Health Project was compiled at the Marangu workshop. Screening activities will focus on identifying malnutrition, anemia, visual and auditory impairment, and developmental disabilities.

Prevention protocols center on oral hygiene and infectious disease. Diagnostic and treatment protocols will cover both first aid procedures and specific common disease groups such as diarrheal diseases, fever, recurrent fever with headaches indicative of malaria, and parasitic infestations and infections.

The development of the protocols themselves began in February. The first set of protocols -- those for first aid -- were completed in draft form by Berger, Ngaliwa, and Rugemalira in March, 1982.

2. Health Kits

Definition of what was meant by the "School Health Kit" has been a subject of on-going debate. It is agreed that the kit is to be more extensive than a simple first aid kit. Present thinking is that the kit itself goes beyond items which will be kept in a single box. The kit, as currently envisioned, includes all of the commodities -- medications, medical supplies and equipment, health education materials, and tools -- that will be provided to the primary schools as part of the School Health Project, as well as the first aid room in which the medical supplies will be kept.

In June, 1981, the School Health Officers were asked to compile a list of medications which should be included in the kit. In November, 1981, Dr. Rugemalira in conjunction with a committee planning the Health Handbook workshop prepared a list of all the materials that were needed to support the project. At the Marangu workshop, the list was reviewed and modified.

Following the workshop, the TSHP staff revised the list once again, paring it down to items which were both practical and within the TSHP project. The list of items was finally approved in February, 1982.

The idea of constructing first aid rooms arose spontaneously from the community. Because TSHP was to provide the schools with first aid supplies and other medications, the teachers at one school in Singida Urban felt that it would be appropriate to build a first aid room in which these supplies could be kept and students could be treated. Without the aid of TSHP funds, the community built a small first aid room for the school in August, 1981.

The SHO's in Singida picked up on the concept of the first aid room and began promoting it. Many schools and communities became enthusiastic about these projects. In Singida Urban, the SHO has made and distributed plans and the nine remaining schools have made bricks for the first aid rooms. In Iramba, one community donated a building for this purpose which will be renovated with TSHP funds. Other schools are making bricks in preparation

for construction. In Manyoni, 20' x 10' first aid rooms were built at two schools between January and March, 1982 with TSHP funds.

3. Student Health Record System

The need for a student Health Record System was identified by the Health Information Committee (see Health Information System, G.5).

Prior to October, 1981, a committee had been formed to design a student health card that would be kept on file at the primary schools, but little progress had been made. In preparation for the Marangu workshop, Sophie Ngahyoma prepared a draft format which was then presented to the workshop participants for comment. Incorporating the suggestions of the participants, the form was revised and it, along with instructions for completion, were incorporated into the first draft of the School Health Handbook.

At the Marangu workshop, it was decided that, in addition to a student health card that was kept at the school, a take-home health record should also be designed. It was felt that such a card would be educational for the students and provide a means to transmit health information between the health center and the school without risking loss of the permanent record. Several content areas to be included on the take-home card were identified at the workshop but a draft card has not yet been designed.

4. Linkage to BCG Campaign

At the outset of the project, a BCG campaign which included the Dodoma and Singida Region was planned by the Ministry of Health. It was felt that it would be appropriate to coordinate with this effort. The Ministry Program was slow to materialize. Vaccination of Standard I & II students was to have begun in Dodoma Urban TSHP schools in February or March 1982, but the School Health Officers there were occupied with cholera eradication and could not organize the campaign. When cholera was brought under control, the BCG vaccine was not available and the program was postponed. Vaccination did begin in April, 1982 in Manyoni, and Irabwa. By the end of May, it is expected that the campaign will have reached a total of 11 schools in these two Districts as well as Kondoa.

5. Shamba Improvement and Feeding Program

a. Shamba Improvement

As early as November, 1980, the project staff acknowledged that Shamba projects could not be uniform from school to school because ground water conditions, rainfall and topography differ. When the schools were originally surveyed, it was found that all of the schools had shambas (farms/gardens). However, in eighty-two percent of the schools at least

half of the crop is sold or is unavailable for students' consumption. Most of the shambas range in size from four to ten acres, About eleven percent of the schools have shambas less than four acres. and twenty-six percent have shambas which are greater than ten acres. Large shambas suggest that the farm was designed to raise capital for the village and not designed primarily to provide a diet for school children. Of the existant shambas, ninety-six percent were reported to have a crop which is primarily carbohydrate (CHO). Sixty-four percent listed beans, groundnuts, maize or some other food which would indicate a fairly good source of protein. Only eleven percent of the schools were noted to grow fruits (Table 1).

During the first year of the project, emphasis on shamba improvement was secondary to that on latrines and water supply although the School Health Officers did encourage improvement and expansion of the shambas when visiting the schools and provided consultation as appropriate.

Many communities have taken an active interest in the school shamba program. In some cases, the villagers themselves have contributed materials such as fertilizer. In other villages, committees have assessed the needs and requested seeds, fertilizer and farm implements on behalf of the schools.

Production for 1981 is summarized in Table 2.

Progress in the shamba program during late 1981 and early 1982 has been dramatic. During this period when lack of materials and weather hampered completion of school latrines, SHO's who were not engaged in cholera eradication turned their attention towards agriculture. The schools have responded enthusiastically.

During the last quarter of 1981, the emphasis was on increasing the acreage of the school shambas and, in some cases, switching grain crops for ones more suitable to the local conditions. TSHP provided a limited number of hoes and spades together with grain seeds, accompanied by technical advice. In Iramba, most schools tripled their acreage. The program was particularly successful in Manyoni where 9 schools showed remarkably increased yields. In a typical school, the previous harvest yielded only 300 K of maize compared with 10,000 K under TSHP. The cholera epidemic of late 1981 which struck the three southern Districts of Dodoma Region strongly hampered this initiative. Many schools remained closed through the epidemic and the shambas were neglected. After the cholera epidemic died down, the schools in Dodoma Rural resumed their interest in grain plantation. The SHO in this district actively promoted the use of animal manure as fertilizer with spectacular results. Grain yields showed an average of 20-fold increase over the previous on the same acreage.

While cholera continued to divert the energies of the Dodoma schools in early 1982, several of the northern TSHP districts forged ahead with a major agricultural initiative -- planting of fruit tree seedlings provided by the Ministry of Agriculture. 100-200 seedlings -- papaya and guava-- were planted at each school. In April, 50 seedlings, papayas and tamarinds, were planted at each school in Dodoma Rural district. The seedling program has been surprisingly successful. Only a few schools have been

TABLE 1

BASELINE DATA ON SHAMBAS

	With Shamba		<u>SIZES</u>						<u>CROPS*</u>						50%+ crop sold or unavailable for student consumption	
			4 acres		4-10 acres		10+ acres		CHO		Prot.		Fruit			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<u>ODOMA</u>																
odoma rural	10	100%	2	20%	5	50%	3	30%	10	100%	4	40%	1	10%	9	90%
odoma rban	10	100%	1	10%	8	80%	1	10%	9	100%	3	33%	0	0	10	100%
pwapwa	10	100%	0	0	9	90%	1	10%	9	90%	8	80%	2	20%	9	90%
ondoa	10	100%	0	0	5	50%	5	50%	10	100%	7	70%	1	10%	8	88.9%
<u>INGIDA</u>																
ingida rural	10	100%	0	0	6	60%	4	40%	10	100%	9	90%	1	10%	4	40%
ingida rban	10	100%	2	20%	5	50%	3	30%	9	90%	5	50%	2	20%	10	100%
anyoni	10	100%	3	30%	6	60%	1	10%	8	100%	6	75%	1	12.5%	6	60%
ramba	10	100%	1	10%	6	60%	3	30%	9	90%	8	80%	1	10%	9	90%
<u>SUMMARY</u>	80	100.0	9	11.3	50	62.5	21	26.3	74	96.1	50	64.9	9	11.7	65	82.2

Examples of CHO listed: cassava, maize, millet, rice
 Examples of Prot. listed: beans, groundnuts, maize
 Examples of fruits listed: "fruits" bananas, pawpaw

TABLE 2
1981 Production Summary

DISTRICT	BEE HIVE	KUNDE	BEANS	CASSAVA	PEA-NUTS	SERE-NA	MAIZE	ULEZI	LULU	MILLET	UWELE	CHICKEN	PUDDY RICE	GUAVAS TREES	PLAIN TREES	PAWPAW	VINE-YARD	GARDEN
Mpwapwa	-	-	5	-	3	47	37											
Dodoma Rural	-	-	4	-	-	49	15	7	-	10	-	-	3	-	-	-	2	2
Dodoma Urban	-	-	-	-	-	6	12	-	6	-	25	-	-	200	100	-	3	-
Manyoni	They have cultivated unreported numbers of acres and have planted Millet, serena, uwele, beans, cassava and maize. They have also planted 1300 seedlings of pawpaw, and guava trees																	
Singida Rural	11	2	-	7	-	-	35	-	-	13	-	-	-	-	-	-	3	-
Singida Urban	-	7	3	13	-	10	14	6	-	48	2	200	-	100	100	100	-	13
Iranba	In 8 schools 253 acres have been cultivated by crops planted not reported except for 22 acres planted with Millet and sweet potatoes at ILUNDA school.																	
Kondoa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTALS	11	9	12	30	3	112	119	13	6	71	27	200	3	500	400	600	8	15

It should be noted that while there is no report from Kondoa District because of the health officer's problems the report from Iranba and Manyoni are incomplete and unscientific in this section of school fields. We do not know what has been planted on the 253 acres cultivated in the 8 schools mentioned in Iranba nor do we know the acreage of the school fields in Manyoni District.

found to be climatically unsuited for the fruit trees. The results of this initial afforestation efforts have encouraged the SHO's in at least two Singida districts to begin planning the introduction of citrus seedlings. (Although soil and climate are apparently suitable, availability of oranges and lemons is low in the Region.)

In March and April, the vegetable planting initiative was undertaken in at least four districts. Tomatoes, cabbage and eggplant seeds were provided by TSHP. Preliminary results have been encouraging despite the arid climate and lack of irrigation. Tomatoes and cabbage have done well in most schools. Germination of the eggplant seeds has been poor, however, it is expected that vegetable planting will continue to be emphasized in months to come. Schools which do not currently plant vegetables will be encouraged to do so and a wider range of vegetable crops will be introduced.

b. School Feeding Program

Since operating the school feeding program is dependent on the availability of food, the major thrust of the TSHP school feeding program is not expected until after shamba improvements are significant. However, the SHO's introduced the concept of the school feeding program to all the schools early in the project. As early as October, 1981, cooking pots were purchased for all of the Manyoni schools with TSHP funds, (other districts have distributed cooking pots since then).

As of November 1981, feeding programs were in operation at a school in Kondoa by January, at two Manyoni schools. A large proportion of the remaining schools expect to begin the feeding program in July, 1982, a few as early as May.

between January and April, enthusiasm for the feeding program began to build in the communities in anticipation of the coming harvest. Several of the SHO's began to prepare plans for dining hall and kitchen facilities and distributing them to the schools. At least nine schools had prepared bricks to construct these facilities and other communities had donated existing buildings for this purpose. Building materials were requested from TSHP but in April it was confirmed that although kitchens (i.e., stoves) could be constructed, support for dining halls was not possible under TSHP.

One of the goals of TSHP is to improve the nutrition of school children by either using food grown in the shambas in a school feeding program or by using the money obtained from the sale of cash crops to buy nutritious food. On the baseline survey, it was found that four schools had kitchen facilities: 2 in Kondoa and 2 in Manyoni Districts as shown in Table 3.

C. DEVELOPMENT OF WATER AND LAIRINE SYSTEMS IN 80 SCHOOLS

TABLE 3

STATUS OF THE SCHOOL FEEDING PROGRAM

KITCHEN FACILITIES

D I S T R I C T	KITCHEN BUILDING EXISTING		BRICKS MADE		SCHOOL LUNCH	
	Present old one in schools	Not yet built in schools	Schools which have made them	Schools without bricks	Schools feeding	Schools not feeding
Mpwapwa	-	10	-	10	-	10
Dodoma Rural	-	10	-	10	-	10
Dodoma Urban	-	10	-	10	-	10
Manyoni	2	8	-	8	-	10
Singida Rural	-	10	-	10	-	10
Singida Urban	-	10	3	-	1	9
Iramba	-	9	6	-	1	8
Kondea	2	8	-	8	1	9
TOTALS	4	75	9	66	3	76

1. Water Supply Improvement

Pollard spent from October through April familiarizing himself with several water supply projects in Tanzania and assessing the feasibility of using a variety of types of pumps in TSHP. During this period, he visited the Arusha Appropriate Technology Center several times where he studied the Majengo handpump. At the Dutch Shallow Well Project in Morongoro, he was introduced to the "Kangaroo" or "Shinyanga" handpumps. It was recommended that each of these pumps be tried on a few schools on a test basis.

On the initial survey, it was found that approximately thirty-five percent of the eighty schools in Dodoma and Singida have water supplies which are further than one kilometre from the school. Only twenty percent of the schools have their own water source. This means that in eighty percent of the schools, water has to be obtained from a nearby village, farm or some other place, and is not immediately available in the school itself. In over half of the schools, it was reported that the water source, wherever it was located, was dry for at least one month of the year. In some schools, the school's own water supply is dry up to nine months of the year. Over half also reported that their source of water, when available, was in fact polluted. Table 4 summarizes these findings.

At the end of 1981, there was still an urgent need for the development of a safe water supply at 85% of the schools. Access to a good water supply is being prevented in an additional 5% of the school because of broken pipes and machinery. Only about 10% of the schools had access to safe water by the end of 1981. The status of water supply development at the end of 1981 is shown in Table 5.

The first significant water supply improvement occurred in August, 1981 in the village of Kwahemu in Dodoma Rural. The village had a deep well 400 meters from the school but the pump had not functioned in over 3 years. The SHO in the District had the pump repaired and arranged to have an expert spend three days in the village training a local operator to run and maintain the pump. The villagers then built a pump house of bricks to house the pump.

The project's first shallow well was built in Manyoni town. Construction began in January, 1982. With the assistance of the District Water Engineer, the well was dug over a 3 to 4 week period using concrete rings. A hand pump was obtained and the well became operational in April. A second shallow well was begun in Nagula Bahi in March and is expected to be completed by July 1982.

By April, the District Water Engineers had completed a water survey in each of the schools in Singida Region and prepared estimates for constructing wells, as well as storing water or piping it to the school where a good source is available nearby. Water surveys had not yet been completed in Dodoma Region.

2. Community Involvement

TABLE 4
BASELINE DATA ON WATER SUPPLY

	Water Supply 1000m from school		Own water source		Water source dry for at least one month per year		Reported pollution of water supply	
	No.	%	No.	%	No.	%	No.	%
<u>DODOMA</u>								
Dodoma Rural	4	40%	1	10%	4	40%	5	50%
Dodoma Urban	4	40%	1	10%	4	40%	6	60%
Mpwapwa	0	0%	5	50%	7	70%	0	0%
Kondoa	2	20%	2	20%	2	20%	5	50%
<u>SINGIDA</u>								
Singida Rural	3	30%	3	30%	6	60%	9	90%
Singida Urban	6	60%	1	10%	7	70%	7	70%
Manyoni	7	70%	1	10%	9	90%	8	80%
Iramba	<u>9</u>	<u>90%</u>	<u>2</u>	<u>20%</u>	<u>4</u>	<u>44.4%</u>	<u>4</u>	<u>44.4%</u>
SUMMARY	27	34.6%	16	20.5%	43	54.4%	44	55.7%

TABLE 5

WATER SUPPLY STATUS IN THE PILOT PROJECT SCHOOLS
AT THE END OF 1981

DISTRICT	PIPED WATER		PERMANENT SHALLOW WELL OR WATER SOURCE	
	Present	Present but not working or too far	Present	Not Present
Mpwapwa	-	2	-	8
Dodoma Rural	1	2?	-	7
Dodoma Urban	2	-	-	8
Manyoni	-	-	-	10*
Singida Rural	-	-	-	10
Singida Urban	1	-	-	9
Iramba	-	-	1 ⁺	8
Kondoa	3	-	-	7
Totals	7	4	1	67

* A permanent shallow well is being constructed in one school

⁺ This is an old shallow well where the project has provided as it were a cover to prevent water contamination or pollution.

? One village, Ewahema, has had its water pump repaired through school health project aid. Water is now available and the machine is in good condition though it is about $\frac{1}{2}$ a kilometer away from the school.

In the project paper, it was envisioned that Village School Health Committees (VSHC) would be established in each of the villages of the 80 pilot schools. This committee was to serve as a link between the School Health Program and the community. The School Health Officers were to be responsible for establishing these committees. When it was learned that there were already a number of official government committees in each village, it was agreed that one of the existing committees should serve as the core of the VSHC. Although the final composition was to be left up to the individual communities, it was recommended that an additional eight community members be considered: the agricultural agent, the livestock agent, the water agent, the public health agent, the local medical practitioner, the MCH aide, the School Health Coordinator, and the Head Teacher.

On June 16, 1981, a one-day seminar was given for the School Health Officers to explore ways in which the community could be involved with TSHP.

Between July 20 and 30, 1981, TSHP staff visited the ten villages in Dodoma Rural with TSHP schools. Meetings were held in each of these villages attended by the CCM party Chairman, members of the School Committee, members of the Education, Culture, and Social Affairs Committee, the School Health Coordinator, the Head Teacher and other interested teachers. At each meeting, the TSHP was described and the need for a VSHC was discussed. In each village, the committee was selected.

Community involvement in the project has remained high. Not only have the VSHCs established priority activities for TSHP but they have also worked side by side with the students and teachers. In Singida, the community constructed a first aid room at the school; in Iramba, one village donated a building for the first aid rooms and another donated a building for a dining hall; in Manyoni, the villagers contributed seeds to the school shamba.

3. Latrines

Between October, 1980 and April, 1981, Pollard contacted several individuals and organizations concerned with sanitation in Tanzania to learn about the various latrine designs that had been used and the problems that had been encountered. These included the Senior Health Officer at the Ministry of Health; the Director of the National Institute of Medical Research; the Archa Institute in Dar es Salaam, and the Arusha Appropriate Technology Center in Arusha. The consensus was that the Ventilated Improved Pit (VIP) latrine should be the design promoted by TSHP. It was also recommended that composting latrines should be tried as well. A major problem that had been encountered was that ferrocement slabs for the latrines were often improperly cured and, as a result, tended to crack. It was also learned that in a school latrine project similar to that of TSHP, construction had taken nine months to complete in spite of the fact that teachers and students worked on it daily.

During the planning phase, reference material in Kiswahili and English was ordered for the School Health Officers and the School Health Coordinators on constructing the foundation of a pit latrine, constructing a ferrocement slab and building a composting latrine.

Week-long latrine building seminars were given in Mpwapwa (May 1981) and Kondoa (June 1981) by the MOH supported by UNICEF. The seminars were attended by eight of the TSHP School Health Officers, and Pollard made a presentation on composting and VIP latrine design and construction. As part of the seminar, one VIP and one composting latrine were built in each of the three districts. In Kondoa, the two latrines were built at a TSHP primary school in the village of Unkunku.

On November 9, 1981, Pollard attended a water and sanitation conference in Dar es Salaam sponsored by FINNIDA at which representatives of projects throughout Tanzania met to formulate strategies. He met with Peter Morgan of the Blair Institute in Zimbabwe, Albert White and Richard Feachem of the World Bank's TAG group, and Bob Boydell, resident expert for the Low Cost Sanitation Project of the Ardhii Institute to discuss the TSHP project and to get their recommendations.

Pollard together with Kahesa spent one week in Zimbabwe in November, 1981 where they met with Dr. Peter Morgan of the Blair Institute at the Zimbabwean Ministry of Health. They visited their research center, and several field locations to learn more about the Blair VIP latrine -- a simple, maintenance-free, insect-free design. They also investigated a handpump designed at Blair which was durable, locally-made, maintenance-free, constructed entirely of plastic pipe, as well as a hand-washing tap with a foot-operated pump. As a result of the visit, they became convinced of the effectiveness of certain design features such as to compartmentalize the pits as well as the stalls themselves and to use separate vent pipes for each compartment.

The baseline survey showed that 96 percent of the project schools have latrines but only approximately half of the latrines were considered "clean" and usable. Only about half of the total number of latrines have shelters, i.e., good walls and a roof.

In almost two thirds of the schools, the bush is also used as a place for urination and defecation. School Health Officers noted an interesting point that school children, in eighty percent of the schools, are involved with latrine maintenance. This suggests a ripe opportunity for education about the need for maintaining a more adequate barrier between themselves and infectious pathogens. Table 6 summarizes the findings of the baseline survey.

Considerable activity has taken place around the construction of latrines, although serious setbacks have been experienced.

Substantial progress was noted by the end of 1981. The overall picture is that of a total of 79 reported schools 53.27% have latrine trenches dug out and 63.0% have either only prepared bricks or made them and burnt them ready for use. In a few areas, progress has not been as great as anticipated. In Mpwapwa District only three schools have prepared bricks for

TABLE 6

BASELINE DATA ON LATRINE AVAILABILITY

	With Latrines	Where "bush" is also used	Where latrines are considered "clean"	With shelter over latrines	Where school children are involved with latrines maintenance
	<u>No. %</u>	<u>No. %</u>	<u>No. %</u>	<u>No. %</u>	<u>No. %</u>
<u>DODOMA:</u>					
Dodoma					
rural:	9 90	6 66.7	7 77.8	2 25	8 80
Dodoma					
Urban:	10 100	6 100	8 88.9	3 30	8 80
Mpwapwa:	10 100	3 30	7 70	4 40	9 90
Kondoe:	10 100	7 70	2 20	6 66.7	10 100
<u>SINGIDA:</u>					
Singida					
Rural:	9 90	9 100	1 11.1	5 55.6	9 100
Singida					
Urban:	9 90	6 60	2 22.2	5 55.6	0 0
Manyoni:	10 100	4 40	7 70	6 60	9 90
Iramba:	10 100	5 62.5	0 0	5 50	9 90
SUMMARY:	77 96.3	46 63.9	34 44.7	37 49.3	63 80.8

- Average number of children reported per latrine: 156 - ranging from 44 (264 students using 6 latrines) to 290 (579 children using 2 latrines)

- 3 schools reported having only 1 latrine; 12 schools reported 3 or more latrines in use at the school

latrine building. Dodoma Urban has a toilet built by the Municipal council in one school while 3 schools have not completed digging the trenches. In Manyoni District seven schools have dug trenches of which six have not reached 3 meters deep. In Singida Rural District five of the seven schools have not had the trenches dug to 2 meters deep. Table 7 summarizes the status of latrine construction at the end of 1981.

Unfortunately, building materials, particularly cement, could not be obtained before the beginning of the rainy season for a variety of reasons. Slabs and latrine superstructures could not be constructed to protect the pits and foundations. As a result, many of the pits collapsed. By February, only 20% of the 34 pits that had been completed remained intact. 27 pits had to be partially or completely redug, some as many as three times. The damage to latrines in the various districts is shown in Table 8.

4. Standard Design Manual

A Standard Design Manual was to have been developed to guide the School Health Officers in the construction of latrines and water supply systems, but the TSHP staff is presently rethinking the utility of preparing a Standard Design Manual for Water Systems due to the diversity of systems needed to meet local conditions.

After consulting with experts from a number of latrine projects in Tanzania, Pollard recommended that the VIP latrine be accepted as the standard latrine design. This design has not yet been approved by the MOH for TSHP. Design specifications published by the Blair Institute for the VIP latrine were distributed to SHO's in lieu of developing a manual that may be redundant.

D. PROMOTE PUBLIC AWARENESS OF TSHP

1. Linkages to Other Ministries and Private Organizations

a. Interministerial coordination

Interministerial linkages have been formalized at all levels. Interministerial councils and committees have been established at the national, regional and district level. The project is overseen by an Executive committee with membership coming from the Ministries of Health and Education, and from JSI. The Executive Committee meets six times a year to review progress and obstacles encountered and to propose solutions to problems.

The first meeting of the National School Health Committee was held on October 25, 1980 at which time the preliminary project work plan and implementation schedule was reviewed. The Committee regularly meets four times

TABLE 7

STATUS OF PIT LATRINE CONSTRUCTION AT THE END OF 1981

DISTRICT	PIT LATRINE HOLES		BRICKS FOR BUILDING LATRINE	
	Schools with holes dug out	Schools without holes	Schools with Bricks	Schools without bricks
Mpwapwa	-	10	3	7
Dodoma Rural	9	1	5	5
Dodoma Urban	4	6	3	7
Manyoni	7	3	5	5
Singida Rural	7	3	9	1
Singida Urban	8	2	7	3
Iramba	6	3	3	6
Kondoa	1	9	-	10
TOTALS	42	37	34	45

TABLE 8

Damage to Latrines in Construction

District	Pits substantially completed before the rain	As of April 1982		
		Completely Destroyed	Partially Destroyed	Intact
Dodoma Urban	4	0	2	2
Dodoma Rural	7	3	1	3
Mpwapwa	0	0	0	0
Kondoa	0	0	0	0
Singida Urban	7	5	0	2
Singida Rural	6	3	3	0
Manyoni	1	1	0	0
Iramba	9	9	0	0

a year to ensure continuing interministerial cooperation. Regional and district committees are supposed to meet quarterly to discuss project progress on the local level. While these committees have been designated, none of the Regional Committees have met, and, of the District Committees, only the one in Manyoni has been active. A zonal committee (Dodoma and Singida combined) has been established and has been quite active. It has been speculated that its success is due to the fact that it is supported by project funds while the regional and district committees are not.

Representation on the various committees is summarized in the Table 9.

b. District Coordination

It became evident during this first year of the TSHP that there is, and probably will continue to be needs for additional skilled manpower at the district level. This is particularly true in the case of the development of environmental improvements. Although the project was designed with a strong orientation toward inter-ministerial coordination at all levels, it has often been difficult or impossible to elicit the active participation from ministries other than the MOH which such coordination requires. Using the Ministry of Water as an example, district water engineers have often been willing to cooperate with DSHO's in principle, but are hindered by lack of trained water technicians, transportation and spare parts.

c. Linkages with Expatriate Groups

U.S. Peace Corps. Very early in the project it was perceived by both USAID and JSI that the use of Peace Corps volunteers as technical counterparts for DSHO might be effective in reducing manpower constraints. The volunteers could work as technicians in the fields of water supply sanitation and agriculture as well as assist with teacher training.

The MOH was approached several times during the past year with the Peace Corps proposal, but the idea has been consistently rejected. The Ministry believed that the use of volunteers in this pilot project will only create a dependence by the project or foreign volunteers that will be a hindrance to the implementation of the project nationally. The pilot project should function as much as possible using manpower resources presently on hand in the Central zone.

However, it should be noted that foreign volunteers are replaceable by locally available manpower as more individuals are trained and enter the workforce.

Danish International Development Agency. DANIDA's interest in the School Health Project dates back to 1980 when the Project was still in its conceptualization stage. DANIDA was interested in promoting dental health education in Tanzania and saw TSHP as a vehicle for promoting dental health.

TABLE 9

Representation on Coordinating Committees

	NUMBER OF REPRESENTATIVES			
	TSHP Executive Committee	National School Health Committee	Regional School Health Committees	District School Health Committees
Ministry of Health	9	8	3	4
Ministry of Education	1	4	2	2
Ministry of Agriculture		1	1	1
Ministry of Water		1	1	1
Ministry of Veterinary Science		1	1	1
Ministry of Natural Resources		1	1	1
Ministry of Social Welfare		1	1	1
Prime Minister's Office		1	1	1
C.C.H. (National Political Party)				1
JSI	2	2	1	

In October of 1980, Berger first met with Eric Schmidt - Hansen, the Director of Health at DANIDA/T to exchange information on their respective projects. During the first six months, the two maintained a dialogue, meeting approximately every two weeks. In May and June, 1981, a consultant team of Danish dentists were in Tanzania to explore specific placement opportunities, particularly in the area of materials development for health education.

Early on, DANIDA expressed interest in the TSHP medical survey (see Baseline and Followup surveys, G.1), and were involved in some of the initial planning. However, since the survey was ultimately conducted by the RMO's and their staffs, DANIDA dentists were not able to do the dental screening they had hoped to do.

In October, 1981, two Danida dentists interested in preventive dentistry and health education, Sten Normark and Keld Jensen, began to work closely with the project. Dr. Normark joined the Planning Committee for the School Health Handbook, and both dentists attended the Marangu workshop. Together with Dr. Muya of Muhimbili Medical School, they developed an excellent chapter on Dental Hygiene for the Handbook.

2. Promote International Awareness of TSHP

Dr. Berger and Dr. Nagaliwa were invited to present a synopsis of the TSHP at a conference on International School Health, sponsored by the American School Health Association in Washington, D.C., during October 1981. Much interest about the TSHP was evident from the discussions there.

E. TRAINING

1. In-Country Training

Training of School Health Officers

The provision of training for the District Health Officers in the ten pilot districts to take on their roles as School Health Officers has been a priority activity for the Project since its inception. Because of their importance in promoting TSHP, the Regional Health Officers and the Regional Medical Officers from Dodoma and Singida have also been vigorously involved with the training.

Planning for the School Health Officers' training program began in November, 1980 with the appointment of a committee to design the training curriculum. The committee, composed of representatives of the Ministry of Health and the TSHP/JSI staff, prepared training objectives with regard to water and sanitation, infectious disease, data and management techniques.

The following Table 10 is a list of the training sessions provided for the SHO's:

Training of School Health Coordinators

In March, 1982, two two-day training sessions were held for the SHCs--one in Dodoma and one in Singida. Topics included a formal review of the program objectives, the role of the SHC, health education in the primary schools, illnesses common in primary school children and record keeping procedures. Forms for surveying the TSHP activities at the schools were distributed and discussed. The first draft of the School Health Handbook was previewed. In all, teachers from schools were trained.

Participation from the District and Regional Development Staff was good, including the Regional Education Officers who had previously shown little interest. The training was done by the staff of the Ministries of Health and of Education, the Regional Medical officers, the Regional Education Officers and JSI technicians.

2. Training Abroad

To ensure the ongoing operation of the Tanzania School Health Program, advanced training for three Ministry of Health staff members in school health administration is called for during the pilot phase.

In the spring of 1981, JSI collected the catalogues of all the American colleges and universities offering programs in Public Health and forwarded them to TSHP to review. A number of potentially appropriate programs were identified: East Carolina University, Tulane University, the University of Hawaii, Johns Hopkins University, University of Massachusetts and Yale University. In addition to the U.S. schools, the University of London, Institute for Child Health was felt to have a program worth investigating.

The three candidates were selected by the Ministry of Health in the fall of 1981 for training abroad. They were Dr. Simon Ngaliwa, Senior Medical Officer at the MOR and, Director of School Health; Dr. Hildegard Rugelmalira, an Assistant Medical Officer in Dar Es Salaam, and Andrew Kahesa, Regional Health Officer from Dodoma. To date Dr. Ngaliwa has been accepted by Tulane, Mr. Kahesa by East Carolina University and Dr. Rugelmalira at the University of Massachusetts.

3. Additional Training

Although not specified as part of the pilot project, there has been growing sentiment that the project should support additional special training for both office and field staff via contingency funds.

F. DEVELOPMENT OF LOGISTICS AND SUPPORT SYSTEMS

TABLE 10

Training Sessions Held for School Health Officers

Date(s)	Place	Training Activities
January 28, 1981	Singida	Project Orientation
March 17-18, 1981	Dodoma	Selection of TSHP schools
May 4-8, 1981	Mpwapa	Sanitation training for Mpwapa and Dodoma Urban
May 18-20, 1981	Iramba	Sanitation training for Singida Urban and Iramba
June 8-14, 1981	Kondoa	Sanitation training for Kondoa and Dodoma Rural
June 16, 1981	Dodoma	Medical survey and organizing School Health Committees
August 11-18, 1981	Arusha	Appropriate technology
August 20-22, 1981	Singida	Role of health professionals in TSHP, ORT for diarrhea, latrine design, water tank construction, vehicle maintenance
September 7-10, 1981	Manyoni	Sanitation training for Manyoni and Singida Rural
November 11, 1981	Dodoma	Project finances, school shambas, vehicle problems
February 11, 1982	Dodoma	Materials procurement for well and latrine construction, and water and grain storage
April 24, 1982	Dar es Salaam	Ardhi Institute training on standardized latrine design

1. TSHP Organization

a. Personnel

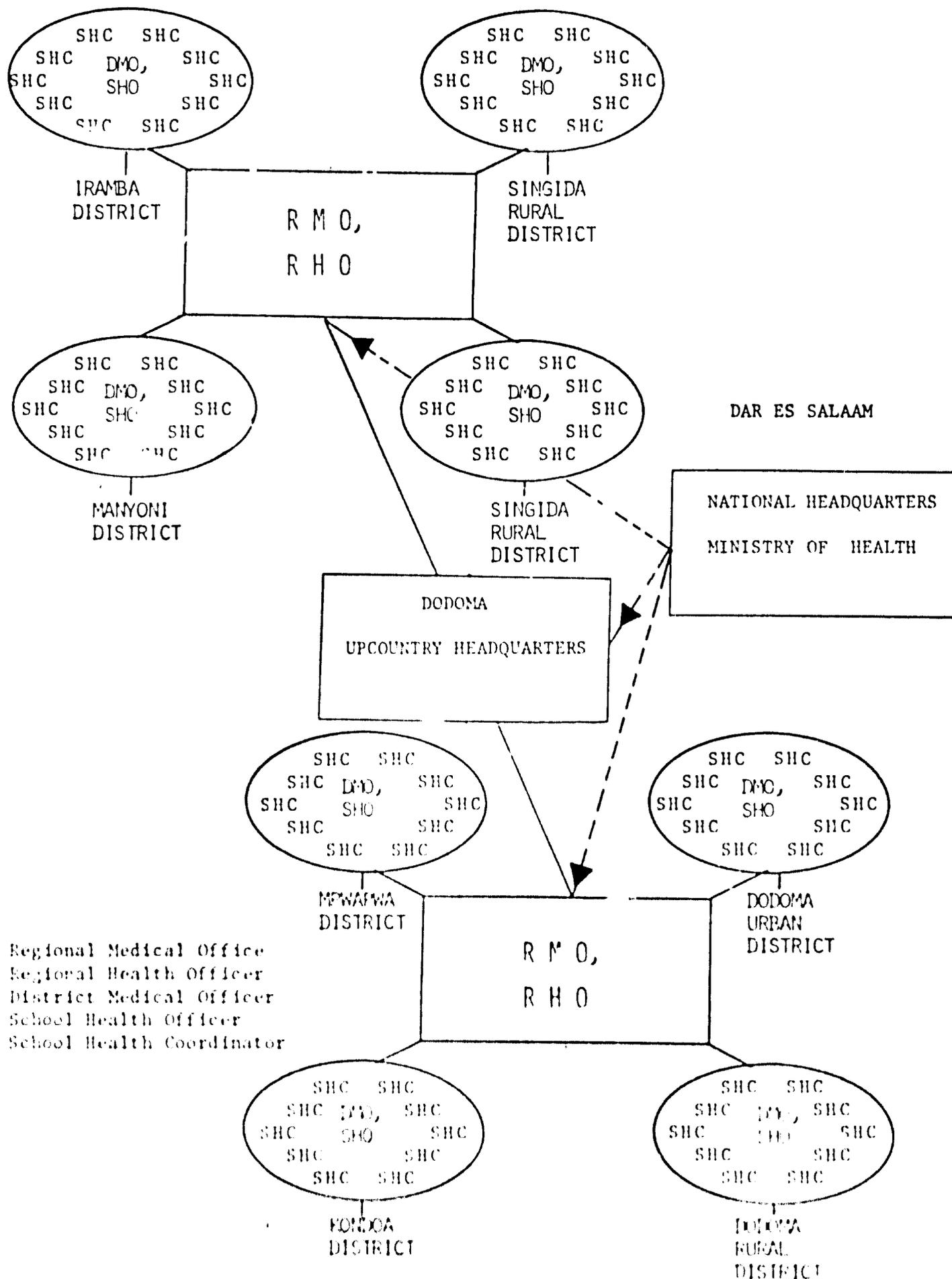
Departing from the original project design, a more elaborate personnel structure evolved quickly, as it became apparent that communications were poor between Dar Es Salaam and the districts, and that administrative coordination was necessary at the Regional level. Figure 1 illustrates the relationships among the School Health Coordinators (SHC) School Health Officers (SHO), Regional Health and Regional Medical Officers (RHO,RMO) and the National Headquarters in Dar es Salaam.

Headquarters Staff. Headquarters Staff at the Ministry of Health in Dar es Salaam include the National Director, Dr. Simon Ngaliwa who is a Senior Medical Officer, Ms. Sophia Ngayhoma, Secretary of the TSHP Interministerial Council who is a Public Health Nurse, and who has been assigned full time to the TSHP, Dr. Hildegard Rugemalira an assistant Medical Officer who has just recently been officially transferred to the TSHP from her previous duty as a clinician. Office staff also include an office manager and procurements officer, Maurice Mibuga; secretary-stenographer, Mrs. Flora Majebelle; and two messengers, Ms. Pili Stimi and Ms. Scholastica Buhabi.

Regional Coordination. Regional Health Officers and Regional Medical Officers were not considered integral to the pilot project as indicated in the project paper. In practice, however, the role of the RHO, especially, as a link between the National Headquarters and SHO's has proven to be a very essential part of the pilot program. RHO's, under the auspices of the Regional Medical Officers, maintain a regional headquarters for the TSHP. The two RHO's, in consultation with TSHP staff in Dar es Salaam, plan training sessions, distribute messages, funds, materials, advice and collect reports, data accounts, and other concerns from the SHO's. The RHO administrative link has proven to be indispensable. The RMO in Dodoma has in fact, become the Tanzanian Counterpart for the Sanitarian. Regional Medical Officers serve on the Regional Development Board as the chief administrators and coordinator of all health and medical activities, accounts, and other concerns from the SHO's in the region.

The TSHP is not isolated from all other health and development programs. According to Tanzania Development Policy, the RMO is the de facto head of the TSHP in each region (and the District Medical Officer, the head in each district). At such, the RMO (and, at least theoretically, the DMO) are in charge and responsible for personnel, equipment and funds. The RMOs have actually assumed this role in Dodoma and Singida. In Dodoma, the RMO has delegated this authority to the RHO. Because funds and equipment have so far, been maintained and distributed at the regional level, DMO's have not yet been involved to any large extent with administrative functions of the TSHP. DMO's however, have participated in training sessions and have helped to plan a medical survey for the project.

FIGURE 1 : PERSONNEL ORGANIZATION OF THE TANZANIA SCHOOL HEALTH PROGRAMME



RMO: Regional Medical Office
 RHO: Regional Health Officer
 DMO: District Medical Officer
 SHO: School Health Officer
 SHC: School Health Coordinator

School Health Officers. Although the Ministry of Health had planned for the availability of a District Health Officer in each project district to work full time as an SHO, SHO's were not appointed to each district until January 1981. All eight must also carry out the duties of a District Health Officer in each respective district until additional personnel are available. See Table 11.

As a continued shortage of Health Officer personnel is anticipated, the involvement of other types of health workers is being tried. One District Public Health Nurse and one Medical assistant from each region are being trained along with the SHOs, with the notion that either of these health professional categories could serve as a replacement for a health officer as an SHO, if this were necessary. Whether the nurse or medical assistant find their responsibilities acceptable will be important information regarding personnel disposition for national implementation of the TSHP.

School Health Coordinators. School Health Coordinators have been identified at each school. In some schools where there seems to be a rapid turnover of teachers, two School Health Coordinators were appointed, according to the SHO's. It was a recommendation at the Mirembe meeting of SHO's to appoint two SHC's at each school, one male and one female.

B. Base of Operations

The base of operations for the project consists of both the headquarters in Dar es Salaam and an upcountry headquarters in Dodoma.

Regional coordination for Dodoma is conducted through the Dodoma office whereas the regional supplies and communications center for Singida is at the Singida Regional Hospital, Office of the Regional Medical Officer.

Each School Health Officer is based at the main hospital serving his/her district. There, the project vehicle is maintained, supplies and records kept, and meetings held with district level experts in water, agriculture and education.

2. LOGISTICS

a. Transportation

Vehicles. Transportation has probably been the major limiting element in the implementation of the TSHP. The ten landrovers purchased by AID for the project were not all in mechanically sound condition when the JSI technicians arrived in country. Only six were initially in running condition: two were used by the JSI technicians in Dar es Salaam; one vehicle each were sent to Dodoma and Singida in January, 1981 and an additional vehicle was sent to each region in March, 1981. It was not until September, 1981 that the fleet was fully operational. Of these ten vehicles, a Landrover station wagon was assigned to Dr. Berger and Mr. Pollard and a Landrover

TABLE 11

Availability of SHOs for Field Activities during
the First Half of the Project

District	Date Appointed	Vehicle Arrived	Interruption of Activities	Months involved actively in TSHP Field Activities
Dodoma Urban	Sept. 1980	March 1981	Nov. - mid-March 4 mos.	10 months
Dodoma Urban	Feb. 1981	March 1981	Nov. - beg. of March 3½ mos.	11 months
Mpwawa	Jan. 1981	Sept. 1981	Nov. - mid-March 4½ mos.	3 months
Kondoa	Unknown	Unknown	Nov. - April 5 mos.	Unknown
Singida Urban	Aug. 1981	end Sept. 1981	Oct. (3 weeks) Vehicle sent to DAR	6 months
Singida Rural	Sept. 1980	Aug. 1981	-----	9 months
Manyoni	Feb. 1981	July 1981	-----	10 months
Iramba	Oct. 1981	Oct. 1981	-----	7 months

pick-up was assigned to each of the eight SHO's. The fact that vehicles were not available for use by the SHO's for more than eight months after they needed to begin using them caused considerable delay in the implementation of the project, particularly in the collection of baseline data and in the organization of local village School Health Committees.

SHO's have been encouraged to obtain driver's licenses and drive the project vehicles themselves rather than use government drivers with the hope that this would enhance the flexibility of travel schedules and allow for greater control over vehicle use and maintenance. In general, this plan has been working acceptably, although presently only four of the eight SHO's are in possession of valid licenses.

All the SHO's attended a one day workshop in Singida which covered basic vehicle maintenance, simple repairs and driving technique. This workshop took place on August 21, 1981 at the vehicle maintenance section of the Australia-Tanzania Groundwater Development Project.

SHO's have not been using their vehicles long enough to establish a reliable pattern of use/expense in the districts during this first year. However, initial estimates are that it will cost approximately Tsh 8000.00 monthly to run the project in each district.

During the first year of the TSHP several transport needs not foreseen in the project paper became evident. Firstly, it soon became apparent that the National Director of the TSHP was in need of a Landrover station wagon for his frequent trips to Dodoma and Singida regions. Secondly, it was noted that a vehicle was needed at the Dar es Salaam headquarters to carry out daily errands and to collect air and sea freight shipments. Finally, a great deal of coordination and management of the project was carried at the regional level through the Regional Health Officers. The RHO's have travelled an average of 2500 kms per month on project-related business. They had to rely on project vehicles assigned to DHO's for transport, an arrangement which reduced the efficiency with which both the RMO and DMO perform their work. In view of this, three additional Landrovers were requested from USAID in July 1981. The purchase of a Landrover for the National Director was approved and the vehicle finally delivered in February 1982. USAID also agreed to the acquisition of an office vehicle-- a Ford which was purchased from the British High Commission in September, 1981. The request for Regional level transport was denied. It was felt that regional vehicle needs could be met through arrangements with the RDD and his motor pool or, in Dodoma, through the project Sanitarian and his vehicle.

Around town and short distance driving consumes a large portion of the total petrol used by the project - In DSM an average of 403 liters/month/vehicle were purchased at the GSO pump, mainly for local travel. Because of the large expenditures for vehicle operation and maintenance, alternative forms of local transport have been used. It was felt that the use of motorcycles would cut around town petrol consumption by 40%. In April, 1981, four Yamaha 125cc motorcycles were ordered. They arrived in February, 1982.

Not unexpectedly, the use of the vehicles was reduced by accidents, thefts and general wear and tear. One vehicle was demolished in December, 1980; a second was out of service for months following a fatal accident in Kondo in November, 1981; one motorcycle was stolen while parked at the USAID office.

The route between Dodoma and Dar es Salaam is regularly traveled by project personnel and is another major source of transport expenses. To drive this route takes about eight hours and 100 liters of petrol. This works out to a cost of roughly 1000 shillings, excluding vehicle wear and tear. Alternatively, a plane ticket, one way to Dodoma costs 570 shillings and travel time is only 1 1/2 hours. The train is even cheaper at T.shs. 74/=, 2nd class. However, both of these forms of public transportation have limitations with respect to the availability of seats, scheduling, and amount of material transportable.

b. Communications

Internal Communication. Communication among the JSI technicians, MOH counterparts, project field staff, USAID/T staff and officials of various ministries and cooperating agencies is essential to the functioning of the project. This communication has been accomplished, with difficulty, via telephone, the mails, messenger, memorandum and face-to-face contact.

Since all of the project offices have been moved to the Ministry of Health, communication between the Chief of Party and other JSI personnel, and Ministry officials has been greatly enhanced. At least one person from the project staff goes to USAID/T daily for an informal conversation, mini-briefing or formal meeting.

Although the project has a telephone at both the Dar es Salaam Office and the Pollard's residence which serves as headquarters for the Dodoma office, and the telephones at the RMO's offices in Dodoma and Singida have been made available to the project, telephone communication is highly unreliable. The Dar es Salaam telephone goes through the Ministry of Health switchboard which frequently experiences difficulties. Even when functioning, the switchboard is operational only during scheduled Ministry hours, 7:30 a.m. - 2:30 p.m.. Calls are often cut off in mid-conversation. Meetings are more reliably scheduled via a messenger. Because of scheduling difficulties, communications tend to be informal and appointments are rarely necessary provided the person is in town.

Telephone communication between the Dar es Salaam and Dodoma offices, which is attempted every few days is also problematic. Calls must be booked well in advance and it often takes up to three days to get through. Communication, therefore, occurs by mail, telegram, and approximately once a week by telephone between Pollard and Berger at mutually agreed times.

Because supplies and large amounts of cash must be transported upcountry frequently, a trip is usually made by either Berger or Pollard once a month by Dar es Salaam and Dodoma. Meetings scheduled between headquarters

and field staff are often announced by letter to field staff with no feedback as to whether the recipients will attend.

Communication via memorandum tends to be formal and a reminder of work that needs to be accomplished, such as ordering an item of equipment or a short report on a meeting with someone of interest.

External Communications, Telephone calls abroad, telexes, mail and aerograms are all used and are all relatively efficient.

Telephone connection between Dar es Salaam or Dodoma and the United States are relatively clear. Calls usually take only fifteen minutes to get through but must be booked several hours in advance. Difficulty arises in making calls between Dar es Salaam and Boston because of the problem of locating an accessible telephone in Dar es Salaam during office hours in Boston (4 p.m. -midnight DSM time). At that time, the Ministry switchboard is closed.

Although requested in March, 1981, a telephone has not been installed at Berger's residence at Msasani a year later. This is apparently due to a lack of switching equipment available. Overseas calls were made from the Ocean Road office even after the TSHP office was moved to the Ministry, but that telephone was removed in December, 1981. Since that time, all overseas calls have to be made from the home of friends. No such problem exists for phone calls between Dodoma and the U.S. since the office telephone is located at Pollard's residence.

Prior to installation of the telex equipment, about one half day was required to process one telex message at the Public Telex office in Dar es Salaam. Telexes sent from Boston took three to five days to be received at the mailroom at USAID/T.

Telex installation at JSI/Boston and at the MOH was completed in making telex communication very convenient. Telexes are sent an average of three times a week in each direction and interactive telexes occur from time to time. Beginning in January 1982, monthly reports and financial information has been telexed from TSHP to JSI/Boston.

Mail correspondence takes ten days to two weeks through the Tanzanian Post, and a minimum of three weeks through the Diplomatic Pouch. Important documents and correspondence (hard copies of financial accounts, receipts and monthly reports, for example) are sent via the pouch. No messages are known to have been lost or "never received" via the telex system or Tanzanian Post. The Diplomatic Pouch is generally reliable. However, two items were received respectively three months and seven months after the postmark date from Boston, and one large mailing item sent from Dar to Boston went apparently to Hong Kong and back to Dar. A mail log system, recording each piece of mail sent, has been utilized by JSI staff. According to our scrutiny of the log, all items have been accounted for.

Following the initial shipping of household goods and project supplies, about half dozen shipments have been sent from Boston. Having engaged the

services of a reliable freight forwarder, shipments have been well-packed and have arrived intact. The office manager has become quite adept at clearing shipments through customs, a process which nonetheless takes several days to accomplish. Airfreight shipments between Boston and Dar es Salaam take either three days (the airlines' report) or two weeks (customs' version). The centralized seafreight shipment of household appliances was consigned in June 1981 and delivered to Dar es Salaam in November.

5. Staff Housing

The project paper calls for the construction of two houses in Dodoma to be used by the two JSI technicians during the last year of the project.

Plots for the houses were obtained by November, 1980 by the business manager of the Regional Hospital on behalf of TSHP. These plots were located in the Hazina section of Dodoma, a mixed density area on the edge of the city. As a result of a site visit by AID officials, these plots were found to be unacceptable. AID requested that new plots be obtained in Area "D" which had been designated as the embassy section. New plots were assigned in April, 1982.

Obtaining suitable plans for the houses has been a major factor in delaying construction. At first, AID provided plans for a colonial-style bungalow but it was learned that a Ministry of Health architect had to be used. In October, 1981, the MOH architect finally completed the plans. These plans were submitted to the Community Development Authority in Dodoma but were rejected because of the drainage system and aesthetic considerations. Alternatives had to be explored. The Ministry pursued one avenue while TSHP investigated another. The Ministry strongly advocated the construction of CCM Type A houses. Cost estimates indicate that the construction of these houses would be likely overrun the budget.

In the meanwhile, Pollara began discussions with Michael Radke, an architect living in Dodoma. In December, Radke agreed to submit a design for the TSHP houses. Initial floor plans and elevations were completed early in 1982. The design was attractive, employed appropriate technology and could be built within the budget.

As of June 1982, a decision was reached to construct one CCM house to be utilized by the MOH and one Radke-designed house to provide accommodations for AID/I Staff. If completed prior to the termination of the School Health Project, both houses could be used by TSHP staff.

4. Vehicle Maintenance Manuals

The original work plan calls for the development of a Vehicle Maintenance Manual to enable each School Health Officer to maintain and make minor repairs to the Landrover assigned to him/her.

As the project progressed, it became more apparent that the School Health Officers couldn't and shouldn't become mini-mechanics, thus the idea of developing a maintenance manual has been abandoned. The TSHP staff feels that a simple maintenance schedule which has been provided to the SHO's should serve the project needs adequately.

G. DEVELOPMENT OF MANAGEMENT AND EVALUATION SYSTEMS

In the first three months of the project, a Health Information Committee was formed to identify the health information needs of the project. The function of the Committee was to determine what data should be collected from the 80 TSHP schools and with what frequency. The Committee consisted of Berger and Ngaliwa of TSHP, Dr. Albert Henn from USAID, Wen Kilama from the Institute for Medical Research, A.S. Dahla from the Planning Unit at the MGH and Drs. Charles Kihamia, Martin Mandara, Masuma Mamdani, and Hans Kamumu, all from the Faculty of Medicine at the University of Dar es Salaam. The Committee has concentrated activities in five major areas: 1) baseline survey of environmental considerations at the schools; 2) baseline survey of health status of school children; 3) baseline survey of environmental conditions in the villages of TSHP schools; 4) routine data collection at the school; and 5) data handling needs and capabilities of the project.

1. Baseline and Follow-up Surveys

a. Survey of Environmental Conditions at the Schools

The survey of environmental conditions at the schools was intended to fulfill two objectives: to serve as a needs assessment to guide project planning, and to provide baseline data for the evaluation of project progress.

The data to be collected by the survey were identified by the Health Information Committee and a questionnaire drafted in English by Berger. The questionnaires were passed out to by SHO's, who were responsible for conducting the survey, in January 1981.

On their own initiative, each SHO decided to translate the questionnaire into Kiswahili and to revise the questionnaire format. The revised questionnaires tapped the same information but asked the questions in a much more general way. The TSHP staff did not become aware of the revisions until after the data had been collected. The disparity in the data required that it be recast back into the original format before analysis, a task that was performed by the TSHP staff in June, 1981. Tabulations of the data was completed in July. The findings of the survey have been summarized in previous sections (Shamba Improvement and Feeding Program B 5; Water Supply Improvement, C. 1; Latrines, C.3).

b. Survey of the Health Status of School Children

Like the survey of environmental conditions, the health status survey had the dual objectives of a needs assessment to determine project priorities and a baseline survey for evaluation purposes. The original proposal called for a tight experimental design in which changes in health status in the TSHP school children would be compared with changes in two control groups, non-TSHP schools in Dodoma and Singida and school children in other regions. Very early in the project, it became obvious that it would be logistically impossible to survey such an extensive control population.

In March, 1981, Dr. Walter Willett of Harvard School of Public Health provided two weeks of technical assistance in planning the survey. The evaluation design was detailed calling for cohort study of Standard II students in one TSHP school and one non-TSHP school in each district. A survey of school children in one urban and one rural school in both Iringa and Kilombero districts as an additional control was considered optional. The survey was to be conducted simultaneously in all districts within a two-week period.

The survey was viewed as a comprehensive assessment including examination of the skin, eyes, teeth, blood and stool, and nutritional status. Outcome variables were identified and data items specified. Berger and Willett drafted the questionnaire which subsequently underwent several revisions. A list of supplies and equipment needed to conduct the survey was prepared and forwarded to JSI/Boston at the end of March. JSI obtained bids, procured the necessary materials and shipped them to TSHP between the end of April and the beginning of June 1981.

The planning group recommended that simultaneous surveys in ten districts would be best coordinated by Dr. Charles Kihamia of the Faculty of Medicine using medical students to perform the assessment. The survey was scheduled for a 3-week period at the end of May and beginning of June, a period when the medical students would be available and before the primary schools closed for June vacation. Unfortunately, the logistics could not be worked out in time and the survey was postponed. At the June 16 zonal meeting, the survey was presented to the SHO's who were to help coordinate it on the local level. At that meeting, the Regional Medical Officer from Dodoma voiced strong opposition to the use of medical students and coordination from outside the regions. The RMO's took on the responsibility for conducting the survey in their respective regions.

At the Zonal meeting in November, 1981, it was noted that the survey had not yet been done and the RMO'S were requested to complete the survey by January 1, 1982. Shortly after this meeting, cholera struck the Dodoma Region and the survey was again postponed. Once the epidemic had passed, planning for the survey resumed. The survey was finally conducted at the sixteen schools in the Dodoma and Singida Regions during March, 1982. Results are currently being analyzed and will be available shortly.

c. Baseline Survey of Environmental Conditions in Villages of TSHP Schools

This survey has not yet been conducted.

2. Educational and Construction Progress Survey

An ongoing analysis of teachers' knowledge of TSHP, and the use of the School Health Handbook, the Health Kit, and water and latrine technology is to be conducted. Since the Handbook is not yet available to the teachers and the Health Kits not yet stocked, these aspects of the monitoring system have not yet been put in place.

Monitoring of latrine and water supply progress is done on a monthly basis. The SHO's prepare monthly reports according to a standard format and forward these to the TSHP headquarters. At Zonal meetings, each SHO presents his/her report to the group.

3. Health Card and School Health Summary Indicators

In the early planning stages, Mr. Dhala, Director of the MOH's Planning Unit requested that TSHP monitor health status indicators such as illness, absenteeism, diagnoses and referrals and forward these to his unit so trends could be tracked over time.

4. Program Cost Analysis

At the Marangu workshop, the participants identified the data items they felt the School Health Coordinators should report to the School Health Officers on a monthly basis. These data items were intended to provide the SHO's with information to plan their own work and monitor activities at each school as well as to enable them to mobilize outside resources when the data so indicated.

In January, 1982, these data items were organized into a monthly report form, and in February, modified and translated into Kiswahili.

A cost analysis will be performed for various components of the project--training, transport, construction, and materials such as the health kits--as these components are completed. These cost figures will serve as a guide for the national expansion phase. As of April 1982, none of the above program components have been completed. However, preliminary cost analyses have been done with regard to monthly transportation costs for the SHO's and are currently being used in the ongoing fiscal management of the program.

5. Data Handling

The Health Information Committee was particularly interested in how TSHP would be able to analyze the mass of data that was expected to result from the above studies and surveys. They determined that the volume of data to be analysed both for special studies as well as on a continuous basis was too great for manual tabulation and that TSHP consider automated processing. The Committee surveyed the ADP resources available in Dar es Salaam and found that there were no functioning computers that could meet the project needs.

Hans Remme, a biostatistician at the Department of Community Health of the Faculty of Medicine suggested that an NCR computer would meet the project needs and would be useful to Muhimbili Hospital as well. The Committee surveyed the potential demand for such a computer at Muhimbili and concluded that the combined demand was sufficient to warrant the purchase of an NCR computer.

The Committee proposed that the computer be purchased from project contingency funds and the proposal was accepted by AID/T. The proposal was then forwarded to a special AID committee that is responsible for reviewing all computer requests from AID. The committee agreed with the need for a computer in principle but disapproved the NCR model on the basis that it was primarily a business-oriented machine. TSHP and AID/T prepared a justification indicating that this machine had been chosen because of its serviceability and the request was ultimately approved. However, by the time the order could be placed, NCR was in the midst of a model change and suggested waiting for the new model. The computer is expected to arrive in Dar in July, 1981.

The Committee was also concerned with the physical location of the computer as well as the individual who would take ongoing responsibility for its operation and maintenance. Because of his research orientation, it was decided that Wen Erlam of the Institute of Medical Research should be designated as the person responsible for the computer. It was determined that there was no appropriate space available at the Ministry of Health. It was finally determined that the computer should be lodged at the Division of Community Medicine. The space was located and renovated and air conditioning installed by November, 1981.

II. PLAN FOR NATIONAL EXPANSION

In the third year of the project, the staff will analyze and synthesize the TSHP data and experiences and devise a plan for expanding the School Health Program nationwide.

Although the staff has not yet begun to plan formally for national expansion, several relevant lessons have already been learned from the preliminary work.

1. Teachers and communities are extremely enthusiastic about the TSHP particularly construction projects which are seen as a benefit to the community

as a whole. A high level of community involvement can probably be relied upon as the program expands as long as external encouragement and assistance continues.

2. TSHP has been designed to revolve around a new category of workers trained as health officers designated as School Health Officers. In the pilot project, these SHO's were to be District Health Officers who would be working exclusively with TSHP. Due to a manpower shortage, several of the SHO's had to function as both the SHO and the District Health Officer for an extended period. DHO functions often take priority as, for example, during the cholera epidemic. As the program expands, this problem is likely to multiply. Current training programs are unable to turn out a sufficient number of health officers to meet both the needs of the districts and the School Health Program. Consideration should be given early on to distributing the functions of the current SHO's among several categories of health personnel to ensure coverage.
3. Each SHO has been assigned a vehicle to enable him/her to coordinate activities in the field and to transport materials to the villages. In addition to the initially high cost of vehicle procurement, the cost of fuel and maintenance, as expected, have been extremely high. It is unlikely that such costs could be borne in a program of national proportions, yet the availability of transport for materials and technical assistants is a key to making the program work. A creative solution to this problem will have to be found in planning for national expansion.
4. School Health Coordinators have been selected for each school and are enthusiastically engaged in TSHP activities. They have received preliminary training and will receive additional training as the project progresses. However, due to transfers, trained SHC's have been lost to the project and new SHC's selected and trained. For example, in Singida Urban five of the ten original SHC's have been transferred in the first year and a half. In expanding the School Health Program nationwide, several steps can be taken to minimize the impact of such transfers on the program:
 - 1) designate more than one teacher as a SHC; 2) designate the head teacher, who is transferred less frequently, as a SHC; 3) provide training at

the Teachers Training College's so that all graduating teachers will be capable of undertaking the SHC role, and; 4) make sure that the School Health Handbook provides all the information needed to carry out the role.

IV. CONTRACT HISTORY

JSI submitted its competitive proposal on this small business set-aside to USAID, on February 15, 1980. A "Best and Final" proposal was submitted on July 21, 1980 and the contract was signed on August 1, 1980 for approximately 1.8 million dollars.

The JSI team arrived in Tanzania in early September. The USAID mission in Tanzania very quickly requested a contract amendment to expand JSI's scope of work to shift complete responsibility for all construction activities (wells, latrines, staff housing) from the Mission to the Contractor. In part because of rapid turnover of contract officers in Washington DC responsible for this project (five, including the incumbent), the amendment was not finally signed until August 3, 1981; a second amendment signed August 21, 1981 permitted costs to be incurred higher than permitted under the governing P10/T. The contract now totalled 3.96 million dollars. The amendments created a unique situation, however: since the contract is of the type designated for technical assistance rather than construction, no advances to cover large purchases of equipment and materials are permitted. Cash flow became critical for JSI also because of the long delays between billing and reimbursement.

After field expenditures were received in Dar Es Salaam, 6-8 weeks after costs were incurred, accounts were mailed to Boston where the requisite expenditure summary was prepared, returned to USAID in Tanzania, approved there, approved in Nairobi, and sent on to Paris for cash disbursement. Various delays caused up to a five-month lag in payments in 1981. Needless to say, the delays prevented JSI from purchasing construction materials (in Tanzania cement, especially, becomes available only intermittently and must be purchased with cash right away, or else the opportunity is lost), losing much time and effort for TSHP activities.

A third amendment was signed on September 23, 1981 that permitted hiring of cooperating and also third-country materials. It also added provisions for health and accident insurance for participant trainees.

In light of the need to respond quickly to construction requirements up-country a fourth amendment signed October 27, 1981 permitted purchase of supplies and materials in Tanzania (the hundreds of tons of cement was the principal target for this amendment). However, after months of trilateral negotiations with major banks in the United States and USAID it was finally recognized that a USAID letter of commitment would not be usable for purchases in Tanzania. Without the possibility of an advance or a usable letter of commitment to provide cash flow for up to 2 million dollars of materials purchase JSI was urged to borrow the funds from commercial banks. To assist in this, USAID and JSI signed amendment five on May 11, 1982 to increase JSI's fee in recognition of the very high interest rates JSI was required to pay just to obtain the funds at a time of general scarcity of loan funds. USAID has assisted JSI's cash flow considerably by streamlining the billing-reimbursement mechanism and delays have been considerably reduced.

Both USAID/Tanzania and USAID/Washington have been greatly cooperative and helpful; but contractual and bureaucratic constraints and tight money policies of the government combined to reduce the ability of the contractor to meet target deadlines for several components of the TSHP. We believe, however, that beginning May 1982, the situation has improved substantially.

V. SUMMARY OF FIELD ACTIVITIES

A. OVERVIEW

Field activities are the heart of the Tanzania School Health Project. They are carried out in 80 schools in the Central Zone (Dodoma and Singida Regions, shown in Figure 2).

Field activities are coordinated from the Dodoma office by Pollard. Eight School Health Officers are the coordinators at the district level. Each is responsible for ten primary schools in his or her district. The SHO's work closely with the School Health Coordinators at the schools and with the School Health Committee, introducing them the various TSHP activities, providing technical assistance, procuring and distributing project materials and monitoring project progress.

The School Health Coordinators are responsible for village level coordination and for supervising the day to day activities of TSHP.

The first year and a half of the project may be considered the organizational phase. The SHOs were appointed over the year's period, the last one coming on board in October, 1981. Training for the SHOs began in January of 1981 and has continued on a periodic basis. The Landrover fleet, needed to transport the SHOs and project materials to the schools, was not completely in place until October, 1981. Even during the organizational phase, considerable progress has taken place in latrine and water supply construction, agriculture and the school feeding program. In the first few months of their appointment, each SHO organized School Health Committees the villages participating in the project and gave orientation seminars to the School Health Coordinators and other teachers at the TSHP schools. Between February and June 1981, all of the SHOs conducted a baseline survey of the environmental conditions at the TSHP schools and in March 1982, they all took part in the baseline medical survey of Standard II students in selected schools.

The major impediments to progress were a variety of problems in the procurement of construction materials and agricultural supplies, and the cholera epidemic which diverted the energies of the SHOs in the Dodoma Region from November 1981 through mid-March 1982.

Table 11 summarizes the amount of time each of the SHOs was actively involved in field activities for the project as of April 20, 1982.

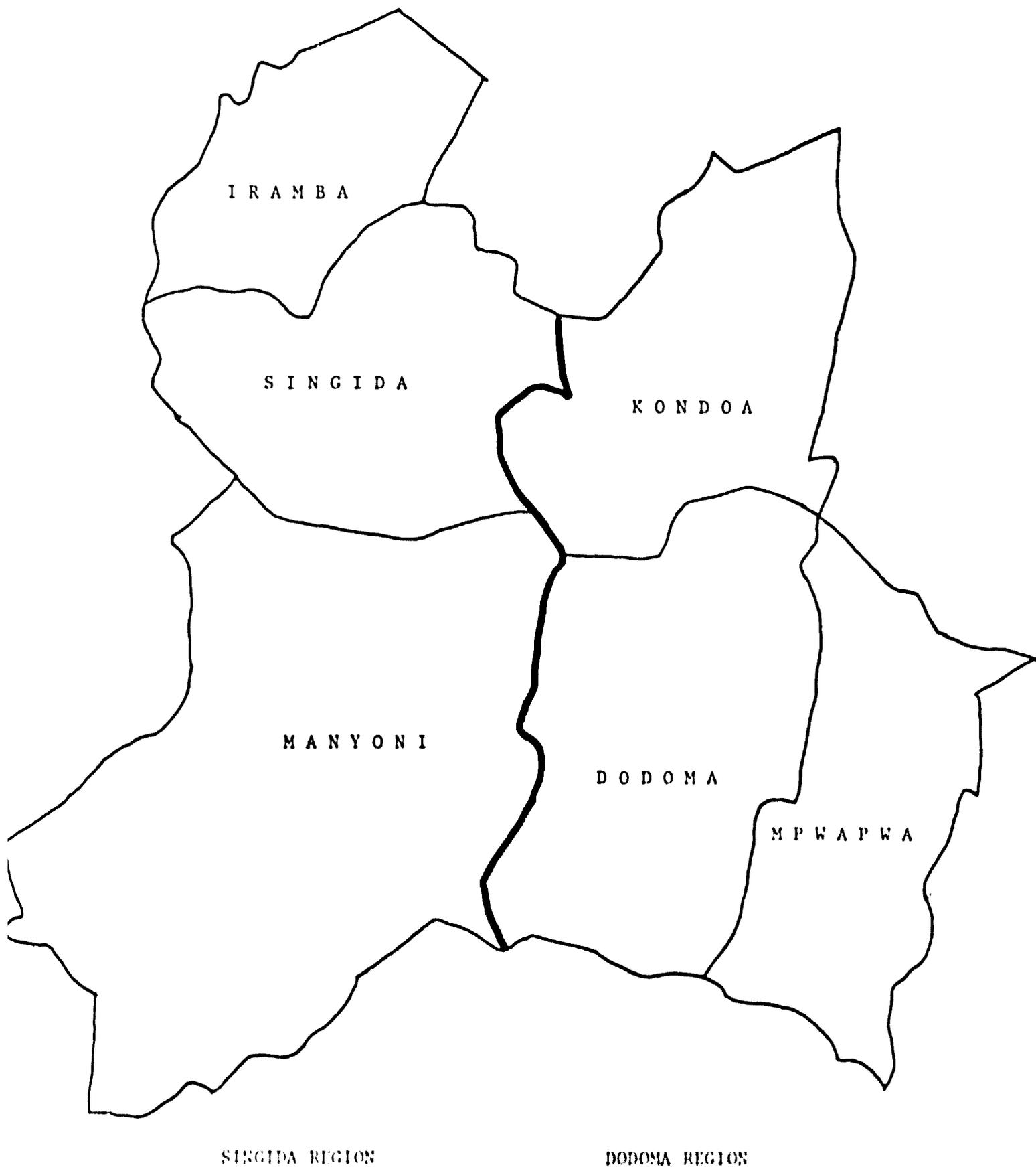
B. DISTRICT SUMMARIES

The following sections describe the field activities carried out in the eight districts.

1. Dodoma Urban

FIGURE 2

DISTRICTS IN THE CENTRAL ZONE OF TANZANIA



The SHO in Dodoma Urban was the first SHO to be appointed. Although there has been a vehicle available at least on a part time basis since March 1981, progress has been slow due, in large measure, to the cholera epidemic.

The principle TSHP activity has been latrine construction. Prior to the outbreak of cholera, two latrine pits had essentially been completed, but no slabs or substructures had been constructed. Consequently, the January rains partially destroyed the two pits.

The shamba program has been a priority in Dodoma Urban. Because there is little room for cultivation at the urban schools, the shambas are small. Seeds and hoes had been requested prior to the cholera epidemic but couldn't be delivered until March. During the cholera epidemic, schools were closed and work on the shambas was temporarily interrupted. As of April 1982 the primary crops grown were "uwele", "lulu", grain and grapes.

Several schools had attempted a school feeding program financed by parental contributions at the beginning of the project but these have since been discontinued. As of April 30, 1982, there were no operational school feeding programs in the District.

The cholera epidemic forced the postponement of the BCG campaign and when the SHO was finally able to find time to organize it, the vaccine was no longer available.

2. Dodoma Rural

In spite of a 3 1/2 month hiatus in the project due to cholera, Dodoma Rural is one of the most successful districts.

Latrine building began in April of 1981 when pits were started in several schools. In July and August, bricks were made and burned. In September, a small quantity of cement was obtained and distributed to reinforce the foundations but there was not sufficient quantity to supply all the schools that needed it. The foundation was constructed and slabs cast at one school in October, and all of the rest of the schools received instructions.

By mid-November, seven pits were substantially completed but the January rains completely destroyed three of them and partially destroyed a fourth. By April, however, nine pits and two foundations had been completed and at least five bags of cement distributed to each school to begin work on the slabs.

Rehabilitation of water supplies began in July of 1981 with the repair of a diesel pump that had been inoperable for 3 years. In spite of the fact that the village had a deep well, the village had been forced to use water from scooped out surface sources during this period. By August, a local person had been trained to maintain and repair the pump. In October, the villagers built a pump-house to protect the pump. Through April, this

village has had a reliable and safe source of water. A second water project was begun in the district in March 1982. This village had always relied on water holes yielding a few inches of murky water. Work has begun on a shallow well using concrete rings. The project is expected to be completed with the hand pump in place by July.

The agricultural effort has been extremely successful in Dodoma Rural. In July, 1981, the SHO began an educational campaign encouraging the School Health Coordinators to expand the acreage of the school farms. In February, after the cholera epidemic subsided, the shamba program began in earnest at seven schools. The SHO began to distribute maize and millet seeds. In addition, he taught the students new planting techniques and had them collect animal manure for use as fertilizer. The results were dramatic. Five schools showed significant improvement in yield per acre-- as much as a 20-fold increase. Of the seven shambas, only one was a complete failure. A second shamba experienced problems due to lack of water. In April, fruits and vegetables were introduced. Papaya and tamarind seedlings were distributed to seven schools, and tomato, cabbage and eggplant seeds were planted. Because of the arid climate, a unique system of irrigation is used to water the fruit trees until they become established: three students are assigned to each seedling. Each morning, the students bring a container of water to school and one waters in the morning, another at noon and a third at night. At the end of April, all but the eggplants, which did not germinate, were doing well.

Because the vegetable harvest had not been brought in yet, no schools had begun the feeding program by the end of April but a set of cooking pots had been distributed to each school. Two schools are expected to start feeding in May and the rest in July after school resumes. At one school where the climate is too dry for cultivation, the feeding program will be supported by parent contributions.

3. Mpwapwa

Of the eight districts, Mpwapwa has shown the least progress. Although the SHO has been assigned to the project since January 1981, he has not aggressively undertaken project activities. In addition to the SHO's lack of initiative, progress was impeded because the TSHP Landrover had been appropriated by a District official for personal use. In addition, Mpwapwa was the focal point of the cholera epidemic and some four and a half months were spent by the SHO trying to bring it under control.

Prior to the cholera outbreak, in November 1981, only two schools had engaged, even minimally, in any TSHP activities. These two schools had prepared bricks for latrine construction. The lack of activity prompted Ngalwa to make a trip to Mpwapwa to reprimand the SHO and Pollard to spend several days visiting the schools himself. As of April 30, 1982, little additional progress had been made. Bricks had been made at four more schools and latrine pits had been started at five schools. There had been virtually no activity in the areas of water supply, agriculture or school feeding. The poor showing in the district has prompted the project to replace the SHO. A new SHO is expected to be officially appointed as of July 1982.

4. Kondo

Kondo has only recently begun to show progress due to an unusual occurrence. In November 1981, the SHO was jailed following a fatal accident in the TSHP Landrover and was not replaced until April 1982.

Prior to the accident, only one school was actively involved in TSHP. By November, this school had begun digging the pit for the latrine. Villagers began planning to run a pipe from the village's deep well to the school, a distance of 600 meters. With cooking pots supplied by TSHP, a school feeding program had been started. Little work was done until April, when latrine construction resumed. The latrine is scheduled for completion in July.

With the appointment of a new SHO, the shamba program began. Hoes and vegetable seeds were distributed to a third of the schools, with the remainder scheduled to receive them in May. All of the schools had begun preparing the ground and one shamba had been planted and was doing well.

5. Singida Urban

In the six months that TSHP has been operating in Singida Urban, substantial progress has been noted. However, the rainy season accompanied by high winds took a heavy toll here. Progress was further hampered since five of the designated School Health Coordinators were transferred and the newly appointed ones had to be oriented to the project.

Shortly after being appointed in August 1981, the SHO initiated the latrine program. By January, 1982, seven pits had been completed but no cement was forthcoming and five of the pits were completely destroyed during the rainy season. The pits were redug, some three times. When the SHO surveyed the schools in April, he found the villagers disgruntled because the materials needed to complete the latrines had not yet arrived.

Over the six month period, a large supply of bricks have been made to build dining halls, first aid rooms, kitchens and grain silos. They were January stockpiled in anticipation of receiving construction material to complete the structures. Many of the bricks were damaged by the rains. In April, the SHO prepared preliminary sketches for combined dining hall/kitchens, first aid rooms and latrines, and distributed them to all the schools. More detailed plans will be prepared in the next few months.

In January and February 1982, the emphasis was on the agricultural component. Vegetable seeds were planted. These generally did well but, for lack of insecticide, there was some loss due to army worms. 1000-2000 fruit tree seedlings were also distributed. Although no oranges grow in the district, agricultural authorities indicate that conditions for their cultivation are favorable so plans are being made to obtain orange tree seedlings from Morogoro. Local priorities have put heavy emphasis on livestock and poultry production as part of the agricultural component.

Water is a problem at the TSHP schools, with the nearest water supplies 1-5 kilometers away. The District Water Engineer had surveyed all of the villages and had prepared estimates for providing water at the schools in December 1981, although no water supply projects had been undertaken as of the end of April.

Because of lack of materials, many of the construction projects have been stalled. To make productive use of his time, the SHO has been giving health education lectures in the classroom. He said "without materials, all I have to work with are my words!".

In Singida Urban, some medical treatment has been undertaken as part of TSHP. In February, regional medical personnel assisted in treating students in three TSHP school for schistosomiasis and hookworm, two serious problems in in the district.

6. Singida Rural

Although the Singida Rural SHO was appointed at the beginning of the project, he did not have a vehicle at his disposal for nearly a year.

The latrine program started off well but, as in Singida Urban, suffered heavily during the rainy season due to lack of materials to protect the completed pits. Six pits had been completed before the rains but all were partially or completely destroyed. As of April, nine latrine pits had been restored.

No water supply projects have been undertaken, but all of the villages have been surveyed. The most appropriate means of supplying water to the schools have been determined and estimates for doing so prepared. In most cases, the schools will tap into the regular village water supply via a pipe system.

Little progress in the shamba program has been made due to lack of tools and seeds.

7. Manyoni

Of the eight districts, Manyoni has shown the most progress in TSHP activities. In ten months, significant accomplishments have been made in all project components.

Agriculture was the first initiative undertaken by TSHP schools in the district. In September, 1981, the SHO began to counsel the School Health Coordinators on how to improve the shambas and encouraged them to increase their acreage. All of the schools but the one in Manyoni town responded favorably. The Manyoni shamba was flooded in October and the crop destroyed. As a result of advice from the SHO, a number of schools shifted from maize to millet production, a crop that does better under the arid conditions of district.

In those schools where maize continues to be raised, the 1982 harvest is expected to be 30 times as large as that of 1981. As yields increase, storage is becoming a problem.

A 1/4 acre demonstration plot was set up by the SHO in Manyoni town. Maize, millet and fruit trees were raised to show the effect of recommended practices. Vegetable seeds were not available in the early months of the shamba program. Nonetheless, one school was able to obtain seeds on its own and made a shift to vegetables. Since then, TSHP has distributed at least 20 hoes and 30 kilograms of seeds to each school. In April as the harvest approached, improvement was expected to be significant. Between January and March, an average of 200 fruit trees--papaya and guava--were distributed to each school. In eight of these schools, the fruit tree planting was highly successful; in two schools, the effort failed due to weather conditions.

In anticipation of the school feeding program, six 40 liter cooking pots were distributed to each school in October 1981. By January, two schools were feeding students meals of porridge made from grain contributed by the villagers or purchased through parent's donations. Seven other villages expect to begin feeding in July. In January, four schools began preparing areas for kitchens, selecting a site, collecting materials and making bricks.

By January 1982, one latrine pit had been completed only to be washed away by the rains. As the rainy season ended, latrine construction moved ahead quickly. In April, the project's first two latrines were completed. Seven other pits were well underway and are scheduled for completion in August.

In January, work began on 20' x 10' first aid rooms in three villages. Bricks were made in the village and TSHP supplied the cement, timbers, nails, windows, doors and corrugated iron roofs. By March, two of the first aid rooms were completed.

The District Water Engineer has surveyed all of the schools in Manyoni District. Estimates have been prepared for deep wells, shallow wells and storage systems. Construction of a shallow well began at the school in Manyoni town in January. The well itself was completed in early February and, with a hand pump supplied by the District Water Engineer, became operational in April-- the first newly constructed water system in the project.

In April, a BCG campaign was undertaken to immunize all of Standard I and II students in three schools. There was not enough vaccine to immunize students in the remaining seven schools.

8. Iranga

Even though the SHO was not officially appointed and did not receive his vehicle until October 1981, he had heard about the project and involved himself in TSHP activities three months earlier. By the time he had offi-

cially started, he had already formed School Health Committees and given orientation seminars to the School Health Coordinators in nine villages. One school had begun a feeding program on its own. In November 1981, the shamba program was launched in the district. The emphasis was on cassava and potatoes, which grow well in dry climates. The School Health Coordinators were also encouraged to increase their acreage. In December, the shambas were planted and most of the schools tripled their acreage. By March 1982, vegetables had been planted at each school. In April, the schools began a tree planting campaign. At nine of the schools at least 50 papaya seedlings were planted as well as a variety of other fruit and shade trees.

In December 1981, nine schools began digging latrine pits and most were completed by the end of the month. As a result of the January rains, all of the pits were destroyed, none of which had been redug by the end of April.

A large brick-making effort has been underway since March. As of April a large supply of bricks were on hand for latrines, kitchens and first aid rooms. One school had a donated building ready to renovate for a first aid room and another had a building designated as a dining hall. Both are waiting for materials from TSHP to make them usable.

In March, the District Water Engineer surveyed each school. He located an appropriate site and prepared estimates for constructing shallow wells at each of them. Three of the schools are planning to pipe water from the village well through support from the Diocese of Central Tanganyika.

C. SCHOOL SUMMARY

Table 12 summarize the status of TSHP activities at 69 of the project's 80 schools.

TABLE 12
IMPLEMENTATION REPORT - SCHOOL HEALTH PROGRAM

SINGIDA URBAN

NAME OF THE SCHOOL	LATRINE	FIELDS	KITCHEN	FOOD	WATER	OTHER EQUIPMENTS
1. MANGA	Available 45,000 bricks	Millet 10 acres Vegetables 1 acre Small beans 3 acres Beans 3 acres Cattle breeding project - 4 bulls	Not yet ready	Not ready	Estimates for 4 shallow wells ready	Cement
2. KIBAGINI	Pit ready 10,000 bricks ready	Vegetables 3 acres Chicken 7 Cattle 2	Not ready	Not ready	Estimates for supply of water ready - Shs. 8,000/-	Cement
3. UNYANIKULI	Pit ready 4,000 bricks	Millet 15 acres Cassava 8 " Small beans 4 " Vegetables 1 " Cattle for milk 5 Bull 1	Not ready	Not ready	Estimates for 2 shallow wells ready	
4. MASEMBO	Pit ready 27,000 bricks	Millet 5 acres Finger millet 6 " Sorghum 2 " 'Uwele' 2 " Vegetables 1 " Cattle 6 "	-	-	Estimates for water tank ready and already presented to the Ministry	
5. KISASIDA	Pit dug and iron sheets laid but was destroyed by wind	Maize 12 " Sorghum 8 " Cassava 5 " Garden 2 "	Not ready	Not ready	Estimates for 3 shallow wells ready	

NAME OF THE SCHOOL	LATRINE	FIELDS	KITCHEN	FOOD	WATER	OTHER EQUIPMENTS
6. UBAMAKA	Pit ready Bricks ready	Millet 6 acres Vegetables 2 "	Bricks in the process	-	Estimates for 3 shallow wells ready	
7. ITEMBE		They do not have enough plot - they keep 200 chicken	No any kind of arrangement - students eat at their homes	-	Water pipe available but not big	
8. UTEMINI	Bricks ready	Millet 4 acres	Bricks in the process	Not ready	Estimates for a well is shs. 5,760/-	
9. NIAMAA	Pit ready Bricks under process	Millet 5 acres Vegetables 3 "	Not ready	Not ready	Estimates for 4 wells ready	
10. UNYANKINDI	Pit ready 35,000 bricks ready	Millet 3 acres Maize 2 "	Bricks in the process	-	Estimates for shallow well is shs.20,000/-	
MANYONI DISTRICT *****						
1. MITOO	Pit not ready Bricks ready	They have cultivated and planted 400 seedlings of pawpaw and guava	Old one being renovated	There are 90 kg of millet for lunch. 6 saucepans bought	Estimates for a deep well done; shs. 500,000/-. Arrangements for pumping water from 4 km is also in the process	Seeds and hoes - 20
2. MANYONI (M)	Estimates for Vent. Pipe ready. Bricks not ready	Already cultivated and planted millet, beans, cassava and guava		Parents have contributed shs. 2,000 for buying food	Have started digging a shallow well, Hand pump bought by water engineer	Seeds and 30 hoes

NAME OF THE SCHOOL	LATRINE	FIELDS	KITCHEN	FOOD	WATER	OTHER EQUIPMENTS
3. LONDONI	Pit 4 ft Bricks not ready	Have started cultivating and planting sorghum, guava and pawpaw	Area for building already selected	6 saucepans bought by Min. of Education	Intend to use diesel machine instead of windmill	Seeds and 3 hoes
4. NGAITI	Pit 13 ft Bricks not ready	Have started to plant Sorghum, 'uwele' pawpaw and guava	Intend to renovate the present kitchen	Intend to contribute food for students	Estimates for bore hall and wind mill is shs. 250,000/-	6 bags of cement, seeds, 20 hoes
5. SASAJILA	Pit 4 ft 20,000 bricks First Aid hut	Sorghum, small beans, 400 pawpaw trees, and 200 guava trees	Not ready	-	Estimates for water storage tank - capacity 45,000 litres ready	Seeds 20 hoes
6. MHOGANI	Pit 3 ft Have build First Aid Room by using bricks; they have iron sheets.	Have cultivated millet and sorghum	Not ready	Not ready	Estimates for a shallow well already done	planks nails 20 hoes seeds
7. IPANDE	Pit: Depth 9 ft Width 4½ ft raw bricks have been used to build a 1st Aid room	Sorghum, small beans, cassava - 7 acres	Not ready	Were fed for one week. Villagers intend to contribute their food and 6 saucepans	Estimates for a deep well, storage tank, tank & Draw off points ready	Seeds 20 hoes
8. Stumbi	Pit 3 ft, 15,000	Have planted sorghum, millet and 300 pawpaw seedlings	Not ready	6 saucepans grain contributed but not yet grinded.	-	20 hoes seeds

NAME OF THE SCHOOL	LATRINE	FIELDS	KITCHEN	FOOD	WATER	OTHER EQUIPMENTS
9. IGWAMBEZE	Pit 8 ft 15,000 burnt bricks	Have cultivated sorghum	Not ready	Not ready	Estimates for a shallow well ready	20 hoes
10. MWANJEMBE	Not ready	Maize	Not ready	6 sauce- pans bought	Estimates for water storage tank done	20 hoes insecticide/pesti- cide
<u>IRAMBA DISTRICT</u>						
1. KITUMITU	Pit ready	Cultivated around 6-3/4 acres. Vegetable/fruit and shade trees garden ready	Bricks not yet ready	Not ready	Estimates ready	
2. MALOLA	Not ready 13,000 bricks ready	Cultivated around 9-38 acres. 50 seed- lings of pawpaw planted.		Not ready	Estimates for shallow well done. One well has a cover	
3. MANDU	Not ready Out of 100,000 bricks the burnt ones are 80,000	10 acres 50 seedlings of pawpaw planted		Not ready	Estimates for water storage tank ready	
4. LINDU	Pit available 20,000 bricks ready	Have cultivated more land. From 12 acres to 37. 50 seedlings of pawpaw and 209 shade trees planted	Not ready Bricks ready	Not ready	Estimates for two wells ready	

NAME OF SCHOOL	LATRINE	FIELDS	KITCHEN	FOOD	WATER	OTHER EQUIPMENT
5. KIKONDA	Pit available	Field expanded from 13 - 27 acres. 50 pawpaw seedlings 200 guava and 200 'zambarao' trees	4,000 bricks ready	Not ready	Estimates for a deep well and water tank ready	
6. MIENKENTE	Pit ready	50 pawpaw trees 200 guava trees 200 'zambarao' trees all already planted	9,000 bricks ready	Not ready	Estimates for supply of water ready	
7. MONGGO	Pit ready	Field expanded from 8 - 29 acres: 138 pawpaw seedlings 200 shade tree " 200 for plank	9,000 bricks ready	Not ready	Estimates for supply of water ready	
8. CHEMCHUM	2 Pits ready	Field expanded from 17-55 acres: They have planted 50 pawpaw seedlings and 50 guava seedlings	6,000 bricks	Have started feeding children since 7/81	Estimates for two wells ready	
9. ILULA	-	Field expanded from 17 - 22 acres for millet and irish potatoes cultivation	115,000 bricks ready	Not ready	Estimates for water storage tank ready	
1. MANG'ONYI	Pit 5 ft 8,000 bricks not yet burnt	Maize 4 acres, plank 4 acres, millet 5 ac. 400 seedlings of pawpaw, guava & zambar'	<u>SINGIDA RURAL</u> Not yet built	Not ready	Estimates for connecting water pipes to school not yet presented to the Ministry	

NAME OF SCHOOL	LATRINE	FIELDS	KITCHEN	FOOD	WATER	OTHER EQUIPMENT
2. SIBIANGANGI	Pit 12 ft has not yet been built 11,000 bricks not yet burnt	Have cultivated but the amount of acres not known	Not ready	Not ready	Research for bringing pipe water to the school has been completed	
3. MATYUO	Pit 2½ ft 3,000 burnt bricks	Millet 3 acres Cassava 3 " Proceeding to cultivate pawpaw, guava and "zambarao" seedlings	Not ready	-	Research for getting them water from a shallow well is ready	
4. MESTANGE	Pit 2 ft 4,800 bricks not yet burnt	Cultivated. 400 seedlings of fruits planted and they have 11 beehives	Not ready	-	Estimates for tank and gutters ready	
5. KIKIO	Pit 4 ft 8,000 bricks not yet burnt	Millet	Not ready	-	Estimates for bringing pipe water up to the school already done	
6. NTUNTU	Pit 5 ft 12,000 bricks already burnt	Millet) 15 acres Maize) Grape garden - 2 acr.	-	-	Estimates for bringing pipe water up to the school already done	
7. MAKURO	Pit 15 ft has been covered by soil	Maize 7 acres Expecting 1 acre of small beans	-	parents agreed to contribute 1 sack each	Estimates for connecting water from water source to sch. already done.	
8. NGAMU	Pit not yet ready 8,000 bricks for first aid room etc ready	Maize 7 acres Expecting 1 acre of small beans	-		Estimates for connecting water pipes to school done	

NAME OF SCHOOL	LATRINE	FIELDS	KITCHEN	FOOD	WATER	OTHER EQUIPMENT
5. NALA	Pit 1½ m Bricks not ready	Expansion of 'uwele' fields to be followed- up. Pond for bathing	-	-	-	
6. MIUNDA	Pit 3 ft. Bricks not ready	'Lulu' 1 acre Sunflower 1 "	-	Not provided Parents to contribute shs. 10 @ to start with	There is tape water and water storage tank	
7. CHIDIDIMO	Not available	They were preparing fields for 'uwele' and 'lulu'	-	-	Estimates not ready	
8. MAPINDUZI	Not ready	'Uwele' 6 acres	-	-	Water available	
9. MGOINZE	Available	There are fields for 'uwele' and 'lulu'	-	-	No water. Estimates not ready	
10. MICHESI	Available and others are being renovated	'Lulu' and millet shamba available six acres	-	-	No water	
			DODOMA RURAL *****			
1. KWAHEMU	Foundation 15 x 1 x 7 Slabs Beans	Maize 10 acres Beans 4 " Garden 2 "	-	-	Available at a distance of 400 ml. from school	8 Bags of cement Bricks are available

NAME OF SCHOOL	LATRINE	FIELDS	KITCHEN	FOOD	WATER	OTHER EQUIPMENT
2. BABALO	15 x 1 x 3	Maize 5 acres Sorghum 5 "	-	-	A pond available at a distance of 400 m from school	5 bags of cement Bricks available
3. CHIPANCA	15 x 1 x 4	'Lulu' 3 acres Grapes 1 " Maize 2 "	-	-	Available 1/2 ml from school	5 bags of cement Bricks enough for the construction of kitchen, latrine and 'chala'
4. BANGALI	15 x 1 x 4 They are now ready for the construction of foundation	Sorghum 10 acres	There is a cooker which uses kerosine oil	Awaiting cooking utensils	Available 1/2 km from school	10 bags of cement
5. MSISI	15 x 1 x 4 Foundation finished	Sorghum 8 acres lulu 4 "	-	-	1 1/2 piped water	10 bags of cement
6. NGUNCA	15 x 1 x 3	Millet 10 acres	-	-	1 1/2 pump machine 3/4m wind mill	5 bags cement
7. NAGULO BARI	15 x 1 x 5 Foundation ready	Rice 3 acres	-	-	Water available in wells 500 m away	10 bags cement
8. MANZASE	5	Sorghum 9 acres	-	-	2 km	5 bags cement
9. HUIZI	7 x 2 x 4 already built	8 acres	-	-	-	5 bags cement
10. MITAA	15 x 1 x 3	Sorghum 9 acres Grapes 1 acres	-	-	There is a stand pipe at the school	5 bags cement

MWAPWA

NAME OF SCHOOL	LATRINE	FIELDS	KITCHEN	FOOD	WATER	OTHER EQUIPMENT
1. LUPETA	Old latrine available	10 acres plot Tractor 'uwele and sorghum 3 oxen	-	-	Available Arrangements for tape water under process	
2. PWAGAA	Old one available 4,000 bricks	Sorghum 8 acres	-	-	Water available Pipes blocked, engine- ers will repair	
3. NDURUCUMI	No latrine Pit 8 ft 3,000 bricks not yet burnt	Maize 8 acres They need seeds for 3 acres - sorghum	-	-	Well available near school. Pond is being reconstructed	
4. LUHUNZWA	Old latrine available; Pit for new one not ready; 5000 bricks already burnt	Maize 6 acres Groundnuts 3 " Sorghum 3 "	-	-	Spring of water available. Engineer to look into this issue. Estimates not ready	
5. BERIGE	Pit 6 ft Bricks not ready	Sorghum 9 acres	-	-	No water. Well available 500 m from school. Pipes out of order. Estimates not ready.	
6. LEGANGA	Not ready 3,000 bricks ready but vil- lagers borrowed 300 bricks	Maize 13 acres	-	-	There is a well 1,000 m away. Estimates for water pipe not ready	
7. IGOJI 2	Pit 4 ft 6,000 bricks burnt	Sorghum 6 acres	-	-	No water Estimates not ready	

NAME OF SCHOOL	LATRINE	FIELDS	KITCHEN	FOOD	WATER	OTHER EQUIPMENTS
8. MANGALIZA	Fit 8 ft 6,000 bricks ready	Maize 10 acres Beans 5 "	-	Maize - 4 sacks	Spring of water. Estimates not ready	
9. MALAWANCA	Fit 4 ft 2,000 bricks burnt	Sorghum 8 acres	-	-	No water Estimates for extension of water pipes from Kilosa not ready	
10. MALONDO (NEW SCHOOL)	-	-	-	-	-	-

TSHP MILESTONES (continued)

- August 1981(cont'd)** -SHO training in appropriate technology (8/11-18/81)
-SHO training in the role of health professionals in TSHP, ORT for diarrhea, latrine design, water tank construction and vehicle maintenance (8/20-22/81)
-First significant water supply improvement (pump restored in Kwahemu, Dodoma Rural)
- September 1981** -Training for Manyoni and Singida Rural SHOs on sanitation (9/7-10/81)
- October 1981** -Berger and Ngaliwa in US for TSHP presentation at International Child Health Conference (10/3-20/81)
-Architectural plans for staff housing in Dodoma completed by MOH architect
-Selection of School Health Coordinators begun
-Klein TDY to plan and coordinate School Health Handbook workshop (10/19 - 12/20/81)
- November 1981** -Pollard and Kahesa trip to Blair Institute, Zimbabwe, to study latrine design and to investigate sources of materials for well and latrine construction (11/16-23/81)
-SHO training on project finances, school shambas, vehicle problems (11/11/81)
- December 1981** -Marangu Workshop held to develop draft of the School Health Handbook (12/1-14/81)
-Second architect (Radtke) selected to do plans for Dodoma staff houses
-Pollard on annual leave (12/19/81 - 1/11/82)
- February 1982** -SHO training on materials procurement (2/11/82)
-Radtke plans for Dodoma staff houses completed
- March 1982** -First School Health Coordinators' training for Dodoma Region (3/22-23/82)
-Zonal meeting of SHOs to discuss progress and problems (3/25/82)
-First School Health Coordinators' training for Singida Region (3/26/82)
- April 1982** -First shallow well completed (Manyoni District)
-First latrine completed (Manyoni District)
-SHO training at Ardhi Institute on VIP latrine construction, maintenance and promotion (4/27 - 5/8/82)

APPENDIX

GOALS, OBJECTIVES, OUTPUTS, AND ACTION PLAN FOR THE
TANZANIA SCHOOL HEALTH PROGRAM (TSHP)

I. PRINCIPAL GOALS

1. To improve the health of Tanzanian primary school children through first aid, preventive care, health education, safe water and sanitation, and improved school farms provided in the schools;
2. To extend these benefits to the schools' villages by community participation, child-child extension, and public education;
3. To test and measure strategies in a pilot TSHP (2 regions) in order to recommend a plan for national expansion.

II. PRINCIPAL OBJECTIVES

1. To develop educational materials for TSHF that can be implemented on a wide-scale;
2. To teach and promote first aid screening and preventive care and health education provided by primary school teachers to their students in about the 800 primary schools of Dodoma and Singida regions;
3. To develop better potable water supplies and human waste disposal at 60 selected schools, linking these activities to the villages;
4. To inform community officials, professionals and the public at large about TSHF;
5. To train selected Ministry of Health staff abroad in health administration and school health;
6. To develop a lasting, replicable logistic and support system for TSHF;
7. To create a management information system for monitoring and evaluation of TSHF;
8. To plan for national expansion of the TSHF.

III. OUTPUTS TO MEET OBJECTIVES

Objective 1: Develop Educational Materials

- a. Teacher's Guide - A set of self-instructional manuals, one for each primary grade and one general information text, each displaying the key protocols for first aid, screening and prevention, health education (including nutrition) and hygiene, well, latrine and shamba upkeep relevant to each grade; also educational methods and simple lesson plans.
- b. School Health Officer (SHO) and School Health Coordinator (SHC) Training manual--a compendium of training tools needed to implement the TSHP including job descriptions; syllabus and sample curriculum; sources of trainers and materials; logistics and management of training sessions; suggested designs for wells, latrines, shambas, and health kits.
- c. Portable Flip-Charts - For SHO's to teach SC's a set of visual aids similar to displays found in Teacher's Guide and SHO/SHC Training Manual; small, durable and locally produced.

Objective 2: Promote First Aid, Health Care, Health Education

- a. Health Care Protocols - Incorporated into Teacher's Guide as available separately: decision-tree style "standing orders" for first aid, screening prevention and hygiene; keyed to contents of the health kit.
- b. Health Kit - A standard supply (in durable box) of materials to support protocols and with instructions on renewing supplies from local sources; some local variations on contents will occur.
- c. Student Health Record System - Individual student record form listing health indicators, illnesses and absences, and referrals; forms for aggregating data by grade and by school (Teacher's Guide will explain use of system).
- d. Linkage to ECG Campaign - Scar survey and immunization against TB by SHO's.
- e. Shamba Improvement and Feeding Program - Promotion of good methods of cultivation, selection of nutritious crops, storage, menu planning and food preparation.

Objective 3: Develop Water and Latrine Systems in 80 TSHP Schools

- a. Water Supply Improvement in All 80 Schools - Based on local

circumstances and collection and storage of water from suitable sources.

- b. Community Involvement - Integration of water system with community interests and desires.
- c. Latrines - Standard design and construction of ventilated latrines, assisted by students and adult village residents, suitable for prolonged use.
- d. Standard Design Manual - Collection of all designs of water and latrine systems and methods of construction as actually used in TSHP plus useful variations (to be attached also to SHO/SHC Training Manual).
- e. Optional: Innovations in Appropriate Technology - Exploration at a few sites of newer ideas in water, latrine and shamba designs.

Objective 4: Promote Public Awareness of TSHP

- a. Linkages to Other Ministries, Voluntary Organizations - By means of seminars, participation in training sessions, inter-ministerial committees, and informal contacts; especially at regional and district levels.
- b. Media Coverage - connected to events in (a) above newspaper reports and radio spots.
- c. Optional: Newsletter for Primary School Teachers - Once or twice annual mailing describing TSHP and its progress.

Objective 5: Train MOH Officials Abroad

- a. Three Officials, selected by MOH, placed in Health Administration/School Health Programs Abroad (Child-to-Child aspects to be included).

Objective 6: Develop Logistic and Support Systems

- a. TSHP Organization - Development and documentation of staff, functions, committees, responsibilities and interrelationships at all levels, including lines of communication and accountability.
- b. School Health Committees - Development (or use of existing) village committees to plan and supervise local TSHP activities.

- c. Vehicle Maintenance Manual - Primer on TSHP vehicles: parts, functions, trouble shooting repairs, safe and efficient driving.
- d. Staff Housing - Two houses constructed in Dodoma according to approved design.

Objective 7: Develop Management Information and Evaluation Systems

- a. Baseline and Follow-up Surveys - Data gathered in selected TSHP schools and controls to measure health status, physical facilities, progress in construction and food production and use, unique local circumstances, and committee activities (formative evaluation).
- b. Educational and Construction Process Survey - Ongoing analysis of teachers' knowledge of TSHP and use of Teacher's Guide, health kit, and water/latrine/shamba technology (summative evaluation).
- c. Health Card and School Health Summary Indicators - Sampling of health status indicators (illness, absenteeism, diagnoses, referrals) to determine trends in time (summative evaluation).
- d. Program Cost Analyses - Component costs analyzed for training, transport, construction and maintenance materials; costs linked to output to derive unit cost data.

Objective 8: Plan for National Expansion - Analysis and synthesis of TSHP data and experiences (program, administration, costs) with recommendations for national TSHP.

IV. ACTION PLAN:

Objective

Educational Materials

OUTPUT AND TARGET	SEQUENTIAL ACTIVITIES	EST. DATE OF COMPLETION	PRINCIPAL PERSONNEL
Teachers' Guide for all schools	1. Establish committee (MCH/ MCE)	June	

OUTPUT AND TARGET	SEQUENTIAL ACTIVITIES	EST. DATE OF COMPLETION	PRINCIPAL PERSONNEL
	2. Workshop planning (resource materials, logistics)	Sept. 81	Mzaba, Berger Mgaliwa, Mbaga Ngahyoma
	3. Working to prepare test draft	Nov. 81	Committee
	4. Circulate draft for review and approval	Nov-Dec. 81	Committee
	5. Edit test draft (Memeographed copies)	Dec. 81	Ngaliwa, Mzaba, Berger, Mbaga, Ngahyoma
	6. Test & analysis in selected schools	Jan. 82	SHOs/SHCs, Committee
	7. Revise draft	Mar. 82	Ngaliwa, Mzaba, Berger, Mbaga, Ngahyoma
	8. Final approval of Guide	Apr. 82	Committee
	9. Printing & Distribution	May 82	MOE/MOH
b. SHO/SHC Training Manual	1. Document Planning, Agenda and outcomes of SHO training sessions	Ongoing	Ngaliwa, Ngahyoma, Berger, Pollard
	2. Compile monthly SHO reports	Ongoing	Pollard
	3. Draft manual	June 82	Berger
	4. Circulate draft	July 82	SHOs, RMOs, DMOs
	5. Edit manual print & distribute	Sept. 82	MOH, Berger
c. Portable Flip charts for SHCE (10 sets)	1. See Activities 1-5 under Teachers' Guide		
	2. Artist preparation and production	Dec. 81	MOH, Berger

OUTPUT
AND
TARGET

SEQUENTIAL
ACTIVITIES

EST. DATE
OF
COMPLETION

PRINCIPAL
PERSONNEL

OBJECTIVE 2:

First Aid, Health
Care, Health Educa-
tion

a. Health Care Protocols	1. Draft Idea	Done	
	2. See Activities 1-7 under Teacher's Guide		
b. Health Kit	1. Assemble full Committee	Done	
	2. Committee proposes contents--coordinate with committee work- ing on Teachers Guide to make kit and Guide consistent with each other	Sept. 81	2 RMOs, 2 DMOs 2 SHOs, among others
	3. Health kit committee person attends Teachers' Guide workshop and presents recommendations	Nov. 81	To be named
Student Health Record System	1. Assemble committee	Done	
	2. Draft version	Sept. 82	Committee, Berger
	3. Circulate draft for Approval.	Oct. 82	MOH
	4. Committee person attends workshop on Teacher's Guide to present recom- mendations	Nov. 81	To be named
	5. Incorporate into Teacher's Guide	Nov.-Dec. 81	Mzaba, Berger Mwaga, Ngahyena
4. Linkage to FCC Campaign	To be determined		

OUTPUT AND TARGET	SEQUENTIAL ACTIVITIES	EST. DATE OF COMPLETION	PRINCIPAL PERSONNEL
e. Shamba improve- ment & feeding programme in 80 schools	1. Survey current situ- ation in 80 schools to determine short and long term improve- ments	Done	
	2. Calculate shamba size by student population, nutritional needs and environmental conditions	Begin Nov. 81	SHOs, DAOs, Extension Workers
	3. Establish model plot in Dodoma to train SHOs	Done	Pollard
	4. Procure and distribute Agricultural and food preparation tools	Nov. 81	Pollard
	5. Coordinate with Catholic Relief Services	Ongoing	Pollard
	6. Train SHOs in intensive agricultural, compost- ing, and water con- serving techniques	Feb. 82	Pollard
	7. Train SHOs, IAs, ex- tension workers, among others	Ongoing after Feb. 82	SHOs
	6. Establish proper cook- ing facilities at schools	Mar. 82	SHOs
	9. Introduce Standard Tanzanian Menu	Mar. 82	Ngahyoma, Tanzanian Food and Nutrition Council (Mrs. Sarakhya)
	10. Build food storage facilities as needed		

OUTPUT AND TARGET	SEQUENTIAL ACTIVITIES	EST. DATE OF COMPLETION	PRINCIPAL PERSONNEL
OBJECTIVE 3: Water Supply and Latrines			
Water Supply Im- provement in 80 Schools	1. Survey 80 schools for current needs, re- sources and environ- ment	Done	
	2. Categorize schools by ease of access to source	Done	
	3. Develop a Construction Plan	Dec. 81	Pollard
	4. Coordinate with Wizarya Ya Maji to improve or repair systems in those schools with exist- ing developed access to water (about 25/80 schools)	Feb. 82	SHOs, Pollard
	5. Build storage tanks in those schools with bore holes and diesel pumps (about 15/80 schools)	Ongoing until June 82	SHOs, Pollard
	6. Sink wells or cover springs in about 18/80 schools with undeveloped but accessible ground water supply	Ongoing until Dec. 82	SHOs, Pollard
	7. In 40 schools with inaccessible or scant water supply review other ap- propriate technology options and cost them out	Ongoing	SHOs, Pollard
b. Involve com- munity	1. See Objective C, Out- put b		

OUTPUT AND TARGET	SEQUENTIAL ACTIVITIES	EST. DATE OF COMPLETION	PRINCIPAL PERSONNEL
c. Latrines	1. Survey present needs and existing facilities	Done	
	2. Villages and Schools alerted to prepare trenches and bricks	In process (15% done)	SHOs, School and Village persons
	3. Develop a construction plan, procure materials, build latrines' foundations and slabs in schools already prepared (about 25/80 schools)	Dec. 81	SHOs, Pollard
	4. Design superstructure, obtain material for above	Jan. 82	Pollard
	5. Complete latrine construction in balance of schools	Ongoing by Jan. 83	SHOs, Pollard, Schools & Vil- lages persons
d. Standard Design Manual for water supply and latrines	1. Inventory and document successes or failures and determine improvements needed	March 83	SHOs, Pollard
	2. Prepare bibliography of existing field manuals and distribute selection to SHOs and schools	April 83	Pollard
	3. Prepare draft, get approval, edit, publish	July 83	Wizara ya Maji Wizara ya Afya Ngaliwa, Pollard

OBJECTIVE: Publicize TSHP

a. Inform Regional and District officials and news media (Dodoma, Singida)	1. At each regional or district meeting or seminar invite MD, DDD, CCM Chairman. Also Regional & District Officers for Water (Maji), Education (Elimu) Veterinary (Majiwa), Agriculture		
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OUTPUT AND TARGET	SEQUENTIAL ACTIVITIES	EST. DATE OF COMPLETION	PRINCIPAL PERSONNEL
	(Kilimo); Catholic Relief Services	Ongoing	RMOs
b. Radio coverage assured for whole country	1. Input into exist- ing school health education radio program (Elimu ya Afya katika Shule za Msangi	Ongoing	Mbagu, Ngaliwa
c. Inform VOA, BBC	1. Prepare talk for taping	To be determined	Ngaliwa, MOH
OBJECTIVE 5: Train MOH Officials Abroad			
a. 3 candidates trained for one year each	1. MOH nominates candi- dates	Done	
	2. Appropriate schools suggested for con- sideration	Fall 81	JSI, Boston
	3. Orientation of candi- dates to TSHF	Fall 81	Ngaliwa, Berger
	4. First candidate tentatively assigned	Oct. 81	MOH, Ngaliwa
	5. Candidates kept in touch while abroad, site visits arranged	Ongoing	JSI, Boston
OBJECTIVE 6: Develop Logistics and Support			
a. TSHF Organization established	1. Prepare Organization chart with explanatory notes	Oct. 81	Ngaliwa
b. School Health Committees established	1. Communicate with each CCM Chairman and Divisional Secretary and Ward Secretary	Done	DMOs and SHOs

OUTPUT AND TARGET	SEQUENTIAL ACTIVITIES	EST DATE OF COMPLETION	PRINCIPAL PERSONNEL
	2. Help form committee (or use existing Committee) through village government	Done	DMOs, SHOs
c. Vehicle Maintenance Manual (12 copies)	1. Prepare outline of contents based on commercial manual (parts and trouble shooting); include driving techniques	Dec. 81	Pollard
	2. Review and produce	Feb. 81	TSHP
d. Two staff houses in Dodoma	1. Select Plots	Done	
	2. Create design, make blueprints	Done	
	3. Submit for tender	Nov. 81	Ngaliwa, Pollard
	4. Choose contractor	Dec. 81	Ngaliwa, Pollard
	5. Start construction obtain standard government issues for fixtures, etc.	Jan 82	Ngaliwa, Pollard
	6. Finish construction	1982	Contractor

OBJECTIVE 7: Management Information and Evaluation Systems

a. Baseline and follow-up surveys	1. Perform physical inventory of 80 schools	Done	
	2. Assess status of health records in 80 schools	Sept. 81	SHOs
	3. Assess status of 80 village committees	Sept. 81	SHOs
	4. Medical survey of children's health in selected schools (8 schools in TSHP, 8 schools within Dodoma and Singida not in TSHP, 4 outside these regions)	Nov. 81	RMOs, DMOs

OUTPUT AND TARGET	SEQUENTIAL ACTIVITIES	EST. DATE OF COMPLETION	PRINCIPAL PERSONNEL
	5. Assess status of current school health education	Jan. 82	SHCs
	6. Repeat surveys 1-5 and end of project	June 82	As above
		June 83	
	7. Monitor progress health education, and construction activities (monthly)	Ongoing	SHOs, SHCs, Pollard, Berger
	8. Monitor health cards (and aggregate data) for health status indicators		SHOs, SHCs, Berger
	9. Program cost analyses	Jan-June 1983	Ngaliwa, Berger

OBJECTIVE B: Plan for National Expansion

Sequence to be determined
in next annual work plan.