


WEDC
12th Conference: Water and sanitation at mid-Decade: Calcutta 1986
Shecou-Bah Kabbah
The improved bailer well


INTRODUCTION

This paper, gives a brief account of project activities, and description of the Improved Bailer Well, and other related information of the Rural Sanitation Research Phase I and II Project.

It was observed during the initial phase of this Research that despite the presence of other ongoing development Projects within the selected villages, the local people appreciated the dangers associated with drinking water from streams and rivers, that were used for disposal of material and human wastes.

As demonstrated by the Results, the core objective of the project was an attempt to break the chain of transmission of human excreta and water related diseases, through preventive rather than curative measures within selected village samples. It was hopeful that the combination of bailer wells VIP Laterines and the health Education component of the project, would serve as eye opener to full health benefits in the rural areas of Sierra Leone and other third World Communities.

The local participation and initiative demonstrated by the communities in the construction, maintenance and uses of the facilities during the period of this project have shown clear indications that the new behaviour patterns have made the people to start self initiations of social obligations and responsibilities, for building a healthy community, as they seem to identify with the improved latrines and wells.

The basic health education aspect of the Research have facilitated awareness for health practice among neighbouring villages, who are requesting that the facilities be extended to their communities. It is also hopeful that the experiences gained and lessons learned by common effort have

greatly influenced individuals and families to realize their health needs and problems in relation to the community as a whole.

BACKGROUND

Poor environmental condition in many third world rural communities seriously impede efforts to improve health status of their populations. Simple sanitation intervention such as the provision of intervention of safe, adequate water supplies and sanitation facilities and improvements in general hygiene are means of improving community health. However, many developing country governments are constrained in their efforts to design and implement such programs due to limited human and financial resources. Local Non-Governmental organizations (N.G.Os) are being called upon increasingly to respond to this situation.

In this regard, a vigorous awareness has been sipping into the minds of our rural communities and the need for collective responsibility have gradually become evident through the efforts of the community development council in Bo, Southern Province of Sierra Leone in order to answer to our health and general sanitation problem, the council has embarked on rural sanitation research in the Tikonko Chiefdom, Bo District which is one of the most affected areas. Lack of clean drinking water, poor wells, lack of proper latrine facilities, ignorance of proper Health education, contaminated rivers and springs etc. have offered correct solutions to the problems. After a period of feasibility studies in collaboration with the IDRC representative the Ministry of Social Welfare, the Ministry of Development and Economic Planning, Ministry of Health, the Paramount Chief, Elders and Sub-chiefs of Tikonko Chiefdom, the research commenced in December, 1982 with the pilot centre at Lembema village, nine miles from Bo Town.

COMMUNITY DEVELOPMENT COUNCIL- CDC

The community Development Council (CDC) an indigenous, non profit non-governmental organization (NGO) was founded in 1980. The primary emphasis of this NGO is to assist rural communities in becoming self-sufficient through a range of community based and community- supported activities. In 1982, the CDC received an IDRC grant to investigate the extent to which active community participation and hygiene education could motivate people to construct and maintain their own water supply and sanitation facilities (RURAL SANITATION RESEARCH SIERRA LEONE)". The project demonstrated that communities can take responsibility for constructing and maintaining their own sanitary facilities, improved environmental conditions and reduce hazards to health.

As a result of the perceived benefits of the project, neighbouring communities have since requested the community Development Council to expand the project activities to their communities. As a relatively young NGO with very limited resources, the Community Development Council has requested IDRC support for a phase II study project to replicate and evaluate the impact of the strategies used in phase I. Based on the experiences gained in Phase I, improvements will be made to the Bailer wells and the Improved VIP Latrines, to enhance their acceptability and technical performance. The proposed phase II has been approved by IDRC. In this phase the CDC (with the help of a consultant) will evaluate the impact of these interventions on the health status of the communities involved. The project will continue in fifteen new communities identified for Phase II.

COMMUNITY PARTICIPATION

Much has been written in development literature about the role and potential impact of community participation. Yet it appears that community participation is often nothing more than volunteer (free) labour. Community members are rarely actively involved in the actual planning, implementation evaluation of project activities. However, it is generally agreed that the success of a project requires the active involvement of the community in all aspects. This project there-

fore has provided an opportunity to study the role and impact of active community participation in the planning, construction, proper utilization and evaluation of water supply and sanitation facilities.

The continuous requests by almost the total enlightened people of the Tikonko Chiefdom, together with the energy, experience and self help ambitions of the project leader of the CDC, have made it much easier to develop co-operative spirit in the minds of the peoples and no sooner the trumpet of self help blasted all hands went on deck. Before their collective willingness by the local people, there had been long years of Health Education dialogues between the CDC and the people and also much voluntary teachings on Rural Sanitation and general Community Development took place in the Court Barriers and school rooms as well as open spaces during the dry season.

In 1980, about mid February, a sort of awareness got so much hold on the local people that they approached their local chief who in turned brought their request to the Paramount Chief. Incidentally the CDC has already been formed and in operation with Rural Technology, adult and Health Education. The matter was actively reviewed by the CDC who soon learnt that a General Rural Sanitation must be embarked upon in order to save the chiefdom from mortality rate especially in children. But thus the idea of a Rural Sanitation Research was born.

Community Involvement Techniques

During this research, it was observed that, to ensure effective community participation in the development of village water supplies and sanitation facilities, it is necessary that the community be involved from the planning stage onwards. It is important that the community takes an active role throughout the development of their own water and sanitation facilities, so that they feel it is their own achievement and that they can claim responsibility for its planning and construction. This should ensure proper use and maintenance of the facilities provided when the development of the facilities has been finalised.

THE IMPROVED BAILER WELL

The water supply and sanitation techniques developed and constructed in Phase I is now being improved upon in the present project. The Improved Bailer well is simple in design, easy to construct, requires minimal maintenance. The community latrines are based on a design developed in Zimbabwe at the Blair Research Laboratory. Both technologies maximize the use of local materials and provide relatively low-cost and practical solutions.

WATER IS LIFE GIVER! WATER IS A KILLER! (water is a good servant; and could be a bad master if you allow it to be). This slogan is being used by our village Health Educators during our Basic Health Education Exercises.

This Bailer well design is the newest type of well in Sierra Leone. It is an attempt to design a water retrieval system for village level use. Its selection is based on the following advantages; sanitary design low-cost effective, low maintenance appropriate to local conditions and durable.

The design which emerged has become known as the Bailer. The system can be adopted to hand dug village wells or installed with boring equipment. Each has its advantages and drawbacks. Hand dug village well technology exists in many forms in Rural Sierra Leone and to modify these capabilities toward the Bailer system should not prove difficult.

The design is a plan of a hand-dug well known as Bailer, which has been constructed in eighteen (18) villages in the southern province of Sierra Leone, during the CDC phase I and phase II research project. This study has been an attempt to eliminate earlier problems of village water sources and it was also an attempt to present a bucket well which shall be as technologically appropriate, as inexpensive, durable, sanitary and culturally acceptable by the people.

CONSTRUCTION

A well approximately 1m (3ft) in diameter is dug by hand. The aquifer is penetrated to the greatest depth possible 2m (6ft) being the minimum depth. After satisfactory digging, culvert molds 2'6" x 2'6" constructed

with $\frac{1}{2}$ " and $\frac{1}{4}$ " iron reinforcement and concrete mixture of 1:2:4 were lowered. Four culvert in each well. A 150mm (6") layer of clean sand is placed at the bottom of the well to act as filter. 150mm (6") plastic pipe is lowered into the well. This pipe is perforated at the base 3m (9ft) to increase sippage into the pipe. A concrete sealing with a centre hole of (6 $\frac{1}{2}$ ") diameter is placed at the top of the top-most culvert. The shaft is backfilled with clean gravel up to 4m (12ft) from ground level. These act as filter. The shaft is sealed with 150mm (6") layer 1:2:4 mixture of concrete. The rest of the shaft is backfilled with soil removed from the hole up to 150mm (6") off the ground level. The bucket fitted with plastic tube and has a single valve at the bottom and its capacity is the same as the normal bucket. (30cm).

Although the initial capital investment for the construction of the above well may be high for either a submersible pump or drilling machine should they prove necessary. The actual unit cost for constructional materials per Bailer system, keeps on having a steady smooth rise, because of problems with high cost of goods, transportation and services, required materials, equipments and transportation; due to the devaluation of our currency and fuel shortages, these issues have made cost of goods, transportation and services sour everyday. In 1982, the unit cost per Bailer system falls in Le 600.00 range for 40 feet depth 1983, the unit cost went up to Le 1,700.00, in 1984 the unit cost per Bailer system now range at Le4,200.00.

Mechanically the system has few weakness or points of vulnerability the Bailer device, with minor maintenance and repair should last for years. It is possible that local bucket makers could imitate the design to further the availability of the device. Maximum utilization requires maximum penetration in to the aquifer and here we need to consider seriously the options before us. The basic hand dug well with bucket-bailing cannot attain the necessary depth desired. Yet is totally local input. The submersible pump is an aid to bailing and may permit significant penetration. The boring method requires little local

input yet gives maximum penetration
in the least time.

In the attempt to provide suitable drinking water for all there is a place for the Bailer.

FEATURES OF IMPROVED BAILER WELL