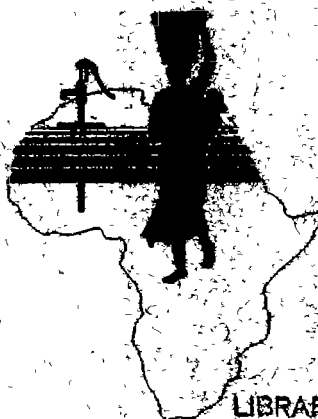


Ghana Upper Region Water Programme Evaluation Project

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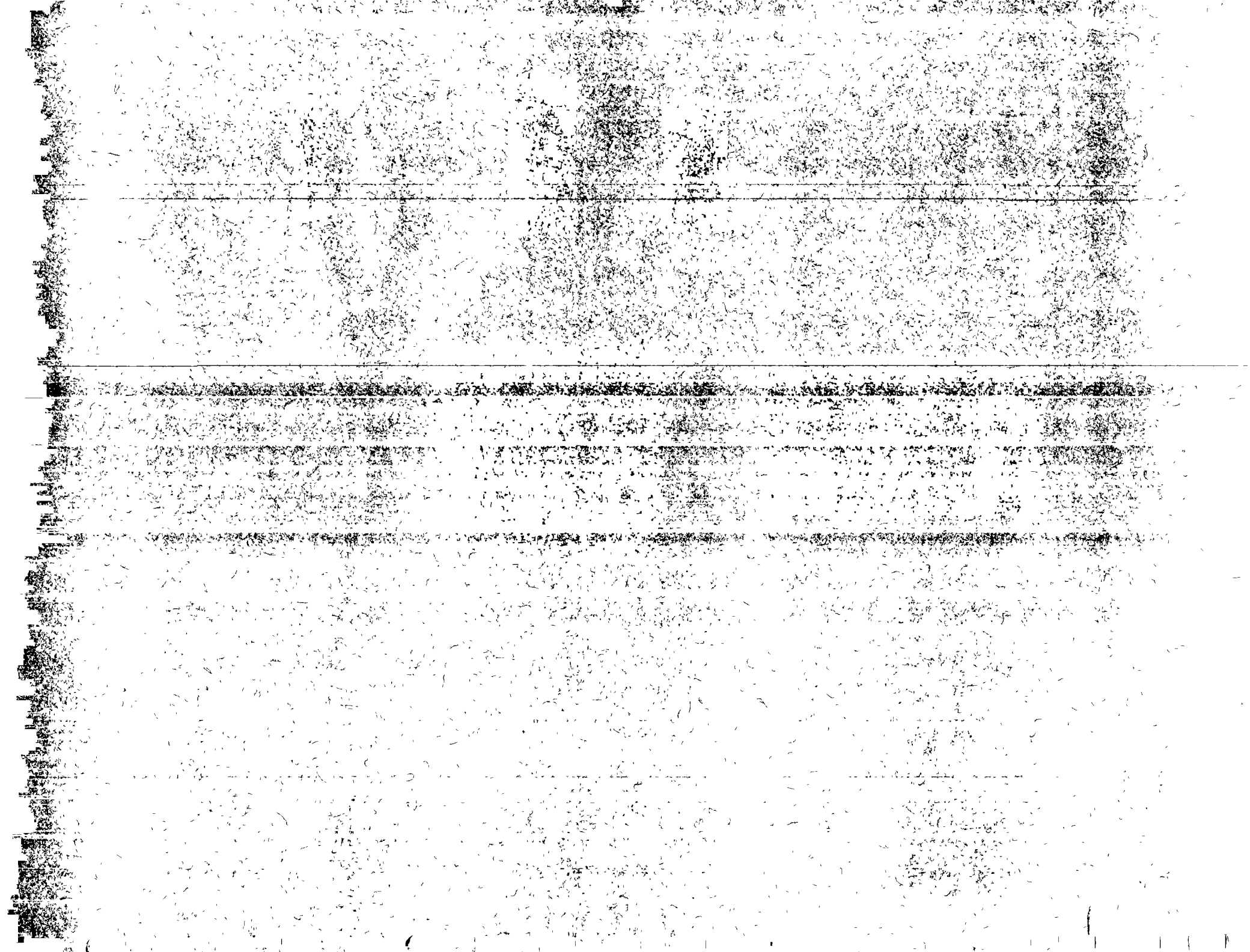
Report 4

Evaluation of the Education and Participation Components

1985

Prepared for:

CANADIAN INTERNATIONAL DEVELOPMENT AGENCY



GHANA UPPER REGION WATER PROGRAMME EVALUATION PROJECT

REPORT 4

EVALUATION OF THE
EDUCATION AND PARTICIPATION COMPONENTS

by
Alan Etherington

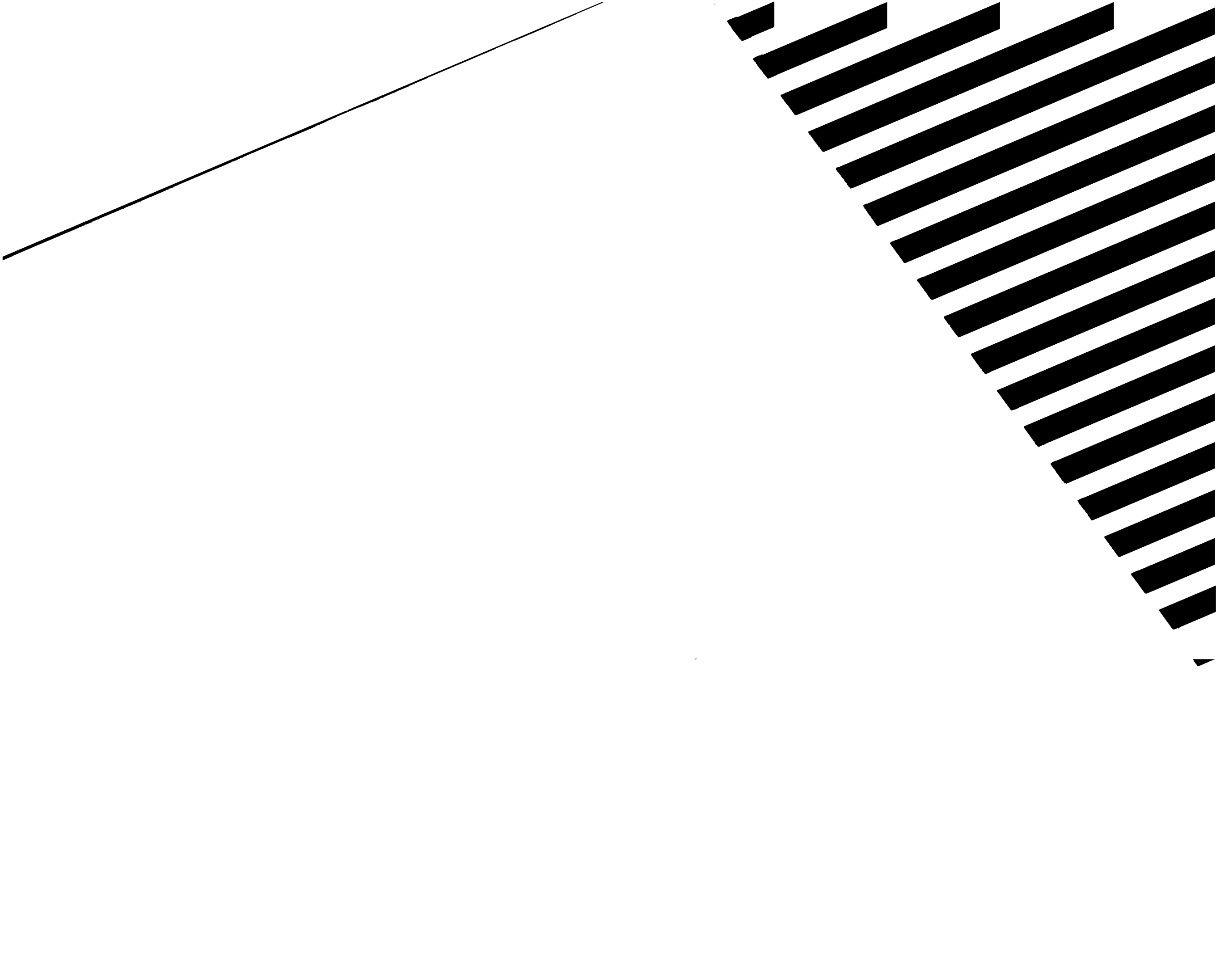
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GHANA UPPER REGION WATER PROGRAMME EVALUATION PROJECT

The six evaluation reports of the project are as follows:

- REPORT 1 Technological Evaluation of Urban and Rural Water Supply Systems
- REPORT 2 Part I: Political and Economic Context
Part II: Project Expenditures and Economic Issues
- REPORT 3 Review of Programme Organization and Management
- REPORT 4 Evaluation of the Education and Participation Components
- REPORT 5 Results of a Social Survey of Water Drawers
- Technical Appendix One: Survey Methodology
- Technical Appendix Two: Survey Area Maps and Profiles
- Appendix Three: The Anthropology of Water, Health and Hand-pumps
- REPORT 6 Summary of the Evaluation

TABLE OF CONTENTS

	<u>Page</u>
EXECUTIVE SUMMARY	i
1.0 INTRODUCTION	1
2.0 THE DEVELOPMENT OF THE EDUCATION PROGRAMME	3
2.1 A Brief History	3
2.2 The Composition of the Education Programme in 1984	8
2.3 The VEW Programme	9
2.4 Educational Materials	10
2.5 Community Outreach	10
2.6 Public Information	10
2.7 Monitoring of the CE Programme	11
2.8 Water Users Committees	15
2.9 Pump Caretakers	16
2.10 Site Development	17
2.11 Sanitation	18
2.12 The Context of Programme Development	18
2.13 Inputs to the CE Programme	18
3.0 RESEARCH METHODOLOGY FOR THE EVALUATION OF THE CE PROGRAMME	21
3.1 Evaluation Terms of Reference	21
3.2 Field Activities to Address the Terms of Reference	22
4.0 RESULTS OF THE SOCIAL SURVEY	24
4.1 The Selection of VEW Presentation Locations for Inclusion in the Survey	24
4.2 Results from the Social Survey	28
4.2.1 Introduction	28
4.2.2 Coverage by Different Educational Programmes	29
4.2.3 An Educational Gradient	32
4.2.4 Audience Recall from Water Education	33
4.2.5 Differences in Observed Conditions of Compounds	36
4.2.6 Education and Source Choice	39
4.2.7 Education and Water Contamination	39
4.2.8 Education and Guinea Worm	40
5.0 RESULTS OF OTHER RESEARCH ACTIVITIES	41
5.1 Survey of VEW Audience Members	41
5.1.1 Introduction	41
5.1.2 Brief History of the Audience Research	42
5.1.3 Results	44
5.2 Highlights from a Review of VEW Report Forms	48

TABLE OF CONTENTS cont'd

	<u>Page</u>
5.3 Results from a Survey of Training Needs of VEWS	50
5.4 Interviews with VEWS	58
5.5 Selected Results from a Survey of Women in Development Activities in Northern Ghana and Follow Up Interviews	60
5.6 Selected Results from Group Discussions with VEWS	62
5.7 Commentary on the VEW Presentation Visual Aids	62
5.8 Translation of a VEW Presentation	76
5.9 Interviews with Pump Caretakers and Their Trainers	76
5.10 The Assessment of the WUP Sanitation Component	79
6.0 COMMENTARY CRITIQUE AND PROPOSALS	80
6.1 The Programme Process	80
6.1.1 The Selection of Goals for the CE Programme	81
6.1.2 From Goals to Messages	81
6.1.3 The Choice of a Volunteer Based Means of Dissemination	89
6.1.4 From Dissemination to Reception by Audience	89
6.1.5 Audience Size and Coverage	89
6.1.6 Incorporation of Educational Messages by the Audience and Their Communities	91
6.2 The Development of the Programme	92
6.3 Analysis of the Educational Content	94
6.4 Analysis of the Educational Process	100
6.5 Analysis of the Educational Materials	102
6.6 VEWS, Their Training and Support	104
6.7 Community Outreach	105
6.8 Monitoring and Evaluation of the CE Programme	106
6.9 Pump Caretakers	107
6.10 Water Users Committees	109
6.11 Women's Participation	110
6.12 Traditional Healers	111
6.13 Relocating the Water Education Programme	113
6.14 Mass Learning Campaigns	114
6.15 A Summary of Proposals	115
7.0 CONCLUSIONS	117
REFERENCES	121
APPENDIX A GWSC WUP Posters	
APPENDIX B Transcript of a VEW Presentation	

LIST OF TABLES

<u>Table</u>	<u>Page</u>
1	Details and Results from CE Programme Social Surveys 12
2	Total Annual WUP Disbursements at Current and Constant Prices (CDN) 19
3	Number of Locations at which VEWS Report Having Given One or More Presentations, by All VEWS and Sample VEWS 26
4	Distribution of Reported VEW Presentations, Bolgatanga District 27
5	Attendance at and Knowledge of VEW Talks by Sample and Seasons 29
6	Reported Attendance at Concerts by Sample and Season 30
7	Reported Clinic Attendance and Exposure to Clinic Talks on Water by Sample and Season 31
8	Reported Radio Ownership and Exposure to Broadcasts on Water by Sample and Season 31
9	Educational Gradient by Sample and Season 32
10	Number of Items Recalled from Water Education 33
11	Items Recalled from Talks by Nurses, VEWS and Concerts by Audience Members 34
12	Reported Prior Knowledge, Prior and Current Implementation of All Items Recalled from Any Educational Presentation 35
13	Seven Major Items Recalled From Educational Talks by Changes in its Reported Practice 36
14	Comparison of Observed Conditions of Compounds by Sample - Wet Season 1984 37
15	Comparison of Observed Conditions of Compounds by Sample - Dry Season 1985 37
16	Selected Comparison of Observed Conditions of Compounds by Reported Exposure to Education, V and P Samples 38
17	Reported Selection of a Hand-Pump as Major Water Source by Education and Season 39

List of Tables cont'd

		<u>Page</u>
18	Presence of Contaminated Drinking Water at Compounds Using Hand-Pump Water by Education and Season	39
19	Reported Percentage Prevalence of Guinea-Worm in Compounds using Hand-Pump Water by by Education and Season	40
20	General Classification of Items Recalled by 47 Audience Members of VEW Presentations or Puppet Shows	45
21	Twelve Major Messages Recalled from a VEW Presentation	46
22	Have You Ever Been to Other Talks on Health and Water?	46
23	Prior Knowledge of Items Recalled from a VEW Presentation by Previous Attendance at Another Water and Health Talk(s)	47
24	Audience Opinions of VEW Presentations	47
25	Reported Percentage Distribution of Total Adults and Children at VEW Presentations	49
26	Reported Use of Teaching Aids by VEWs	49
27	Topics Reported Discussed by VEWs at 83 VEW Presentations	50
28	Perceived Training Needs Ranked by Region and District	53
29	Assessment by VEWs of Different Aspects of the VEW Programme	57
30	Self Assessment of VEW Effectiveness	57
31	Pump Caretaker Selection	77

LIST OF FIGURES

		<u>Page</u>
1	Map of Ghana.....	2
2	VEW Presentation areas and VEW and Pump Sample Locations	25
3	Comments by VEWs on Presentation Visual Aids	63
4	Stages of the Education Process	80
5	A Comparison of the Community Education Programme Standards and Associated Messages and Media, With Commentary by the Evaluation	82
6	The Process of Communication - From CE Programme Through VEWs to the Audience	90
7	Cycle of Contamination of the Environment through the Stools of Infants and Small Children	112

LIST OF ABBREVIATIONS

CE	Community Education
CHC	Canadian High Commission
CIDA	Canadian International Development Agency
CPP	The Convention Peoples' Party
CSM	Cerebrospinal Meningitis
CUSO	Canadian University Students Overseas
FHIG	Family Health in Ghana
GOG	Government of Ghana
GRAAP	Groupe de Recherche et d'Appui pour l'Autopromotion Paysanne (Group for Research and Support to Peasant Self Development)
GWSC	Ghana Water and Sewerage Corporation
ISSER	Institute of Statistical, Social and Economic Research
MFEF	Ministry of Finance and Economic Planning
MOU	Memorandum of Understanding
N	No Pump Sample
NGO	Non-Governmental Organization
NLC	National Liberation Council - First Military Government formed after the overthrow of Nkrumah in 1966
NPP	The Northern Peoples' Party
NRC	National Redemption Council - Second Military Government formed after the overthrow of the Busia government in 1972
ORT	Oral Rehydration Treatment
P	Pump Sample
PCV	Peace Corp Volunteer
PNDG	Provisional National Defense Council - the Military government instituted after the overthrow of Limman's government in 1981
PNP	Peoples' National Party
POP	Plan of Operation
PP	Progress Party
RWSU	Rural Water Supply Unit
SMC	Supreme Military Council - new name of the NRC after a reshuffle
SPSS	Statistical Package for the Social Sciences
URs	Upper Regions
URADEP	Upper Region Agricultural Development Project
URPE	Upper Region Programme Evaluation
URWSP	Upper Region Water Supply Programme
V	VEW and Pump Sample
VEW	Village Education Worker
VHWS	Village Health Workers
W	Wet Season Survey
WHO	World Health Organization
WSA	Water Storage Area
WUCs	Water Users Committees
WUP	Water Utilization Project

EXECUTIVE SUMMARY

The Evaluation

Report 4: Evaluation of the Education and Participation Components is one of six reports of the Ghana Upper Region Water Programme Evaluation Project. This report summarizes the history of the education activities associated with the hand-pumps and utilizes the results from a variety of research activities to assess its impacts.

Background to the Programme

For over a decade, the Canadian International Development Agency has been extensively involved in a programme to provide the people of the Upper Region of Ghana with an assured supply of potable water. This programme which started in 1974 included the following projects:

- . Upper Region Water Supply Project Phase I 1973-1977
- . Upper Region Water Supply Project Phase II 1977-1981
- . Water Utilization Project 1979-1984
- . Water Utilization Project Phase II 1985-1988
- . Maintenance Stabilization Project 1982-1986

The water supply projects were both urban and rural in nature. The urban projects were essentially oriented towards improving the water supplies of three main towns: Bolgatanga, Bawku and Wa.

The rural water supply focused on the drilling of wells and the installation of hand-pumps. Over the course of Phase I and II of the Water Supply Project, approximately 2,500 boreholes were drilled and fitted with hand-pumps (1,200 original Beatty pumps were subsequently replaced by Moyno pumps during 1983 to 1985). In addition, repair and maintenance infrastructure and equipment were provided. This included regional and district workshops, vehicles, spares, tools and other equipment.

The Water Utilization Project (WUP) aimed to ensure that the supply and potability of the hand-pump water was maintained through pump repair and maintenance, pump site improvements and user education.

History of the Education Component

An educational component to the Upper Region Water Supply Programme (URWSP) was seen as important soon after the pump installation programme had begun.

Key events in the development of the education component included:

- | | |
|------|--|
| 1976 | CIDA commissioned two consultants to advise on education related to health and water |
| 1977 | the MOU for URWSP Phase II directed the consultants to liaise with public health, education and community development activities |
| 1978 | the Water Utilization Programme was initiated |
| 1980 | first adult education supervisor appointed |
| 1981 | first adult education advisor appointed,
Community Education (CE) Methodology produced |
| 1982 | CIDA commissioned a Review and Design mission to appraise all aspects of WUP |

Inputs to the Education Component

Major inputs to the CE Programme have included:

- . 4-5 person years of Canadian CE advisor;
- . approximately 6 person years of Ghanaian counterpart time plus approximately 20 person years of artist and support staff;
- . an estimated 15-20% of all WUP Phase I expenditures, i.e. \$344,000 - \$458,000 (1983 dollars).

Design and Objectives

The major medium of water utilization education was through volunteer Village Education Workers (VEWs). Each was expected to utilize a standard set of visuals to give three talks at each of 10 pumps each year. During 1984, the 60 VEWs should have covered about a quarter of all pumps.

The water utilization education aimed to promote the use of hand-pump water, instill an appreciation of clean water, and improve practices involved in the collection, transport, storage and distribution of water, and other aspects of domestic hygiene.

Major activities within the Community Education component included:

- . village education; through presentations by VEWs
- . public information; using a range of media (posters, calendars, puppets, drama, concerts) to raise water consciousness
- . community outreach; using extension agents from other organizations to disseminate water messages.

Impact of the Village Education Programme

1. Only a small minority of those with access to the water utilization education report any exposure to it.

Of the sample with access to a VEW presentation, 10% (wet) and 13% (dry) of respondents reported that they or someone else from their yard had attended a VEW presentation. Overall, between 2 to 4 percent of the total population, (i.e. 25,000 to 50,000 of 1.2 m people) are estimated to have been reached by a VEW presentation each year.

There are also other sources of health related non-formal education in the area, particularly through clinics. Reported total exposure to education through all means by all samples varied between 5 percent and 28 percent.

 Total Report Exposure to Health Education (all sources)

Sample	No Pump	Pump	VEW & Pump
Wet	23%	10%	22%
Dry	15%	5%	28%

2. Some of the intended education messages do not reach the audience. Many people already practice some of the messages while some important information has been omitted.

Combining results from different research activities permits the educational messages to be followed from 1) as designed by the CE staff, through 2) as disseminated by the VEWs, to 3) as recalled by the audience. This suggests that:

- . some of the intended messages have not reached the audience
 - . messages concerning site care and development have been introduced to the programme after the design of the visuals
 - . most messages disseminated by VEWs are recalled by the audience
 - . there are problems with some of the visual aids used by VEWs arising from, for example, inappropriate symbols and confusing sequences.
3. Those with exposure to any health education recall an average of five items immediately afterwards and less than two items some time later.
4. VEWs were effective disseminators but not well utilized.

They appear to have been effective in disseminating the messages they had been given but their impact was curtailed by being asked to disseminate questionable messages. As volunteers most of their work was restricted to work on weekends.

5. Access to education is associated with higher hand-pump use and attachment of value to clean water. However, given the low level of reported exposure to the education, it is unlikely that this is a causal relationship.

Statistically significant differences between the Pump, and VEW and Pump samples were found with respect to the higher rate of pump usage by the VEW and Pump sample and by that sample's reference to selecting a source because of its "good or clean" water.

Given the relatively low exposure to any form of health education by the VEW and Pump sample, it is not clear that these differences have been caused by the education. Such ambiguity can best be avoided in future with baseline information and the random allocation of interventions.

6. Access to education is not associated with improved domestic hygiene.

Investigation of more than a dozen indicators of domestic hygiene yielded no patterns of differences from among the samples. Among the eight indicators below, most of which were measured in both wet and dry seasons, there is only one statistically significant result.

Selected Indicators of domestic Hygiene

	Season	Sample		
		No Pump %	Pump %	VEW and Pump %
Collecting containers reported cleaned every trip/once per day or more	(D)	59.0	62.8	57.8
Observed dipper/ladle/cup for distribution	(W)	23.5	23.8	28.2
	(D)	19.6*	31.7	27.0
Observed drinking pots covered	(W)	88.5	89.8	88.9
	(D)	93.7	94.2	92.8
Other Domestic hygiene taught by WUP				
Observed bathhouses in compounds	(W)	49.6	54.8	62.1
	(D)	54.5	50.8	60.4
Observed bathhouses with soakaway pit	(D)	1.9	8.2	7.7
Observed latrine in compound	(W)	0.9	2.4	0
	(D)	4.5	3.5	0
Observed or reported line or stick for drying clothes	(W)	44.7	44.9	47.4
	(D)	54.0	61.7	55.5
Observed drying area located off the ground for utensils	(D)	5.4	3.3	6.3

* N-P difference is significant at 5%

7. Access to education is probably associated with a higher level of pump site development.
8. Involvement by other extension agencies in water education is negligible but could be significant.

There was no evidence that any other extension organization had incorporated any water messages or related activities into their programme as a result of community outreach.

9. Pump caretakers could be more effective in the monitoring of pump conditions and fault reporting with better training.
10. GWSC's mandate and expertise is water supply. The place of water utilization education within GWSC is uncertain.
11. From the results of the social survey, other research tasks and the evaluation project's own assessment of the educational programme it is concluded that no more than a start has been made to addressing the educational tasks.

A number of factors have contributed to this situation:

- . The task is large and an innovation in the area
- . The social development aspects of promoting participation and good utilization were largely overshadowed by a (correct) concern to keep the hand-pumps operative.
- . The CE Programme has existed for only two years in the area of research, though other educational programmes have existed for many years.
- . The education and participation activities were outside the mandate of the Ghanaian counterpart agency.
- . The donor and recipient were inexperienced in providing software support to hardware projects.
- . Inadequate human resources were allocated to these activities, most particularly at the senior levels. CIDA provided only approximately four person-years of advice between 1981-84 with some weeks of consultant input. GWSC as a water supply agency had substantial problems in recruiting appropriate social development staff.
- . The major education advisor in WUP phase I was selected for a Health Science background, not adult education.
- . The development of the educational content, delivery system and materials did not follow any recognized procedure, and was based more on hunch and preconception than research and experimentation.
- . An unjustified reliance was placed on the untested method of volunteer Village Education Workers.



- . WUP has wasted some of its resources on a latrine programme, which offers a relatively low return to health in this context.

On a more positive note, a wide range of activities have been started under difficult circumstances. Hand-pumps have been kept operative and about half the pump sites developed at a price of more community participation in the programme and loss of some of the potential health benefits of the potable water supply.

A redesigned education programme that addresses these concerns by building upon an understanding of health problems and practices, and uses existing extension agencies must now be developed through WUP phase II.

Recommendations

1. Begin a process of curriculum design and development of learning materials that aims to maximize the health benefit of water; utilizes a problem-based approach, and is sensitive to local culture and context.
2. Develop new means of extension using existing extension agencies (including GWSC's pump mechanics and pump caretakers) and disband the VEWS.
3. Investigate the relocation of the organizational base for the water and health education programme to an agency(ies) that has a mandate to promote health.
4. Develop better pump caretaker training methods.

1.0 INTRODUCTION

To assist readers of this report, its organization will be briefly reviewed. There are four major sections. The first of these is a brief history of the education and participation related activities, mostly organized through the Water Utilization Project (WUP).

The report then lists the various methods followed by the Evaluation Project to evaluate these activities and gives the results from each.

The third section of the report is a commentary and critique of each education and participation component with, where appropriate, our proposals for the further development of the project.

A final section summarizes the major conclusions from this study.

Extensive cross-references are provided to assist readers in referring to other sections of the report, particularly in the section with the commentary and critique.

The report deals specifically with the education and participation components of the Water Utilization Project during 1984 and early 1985.

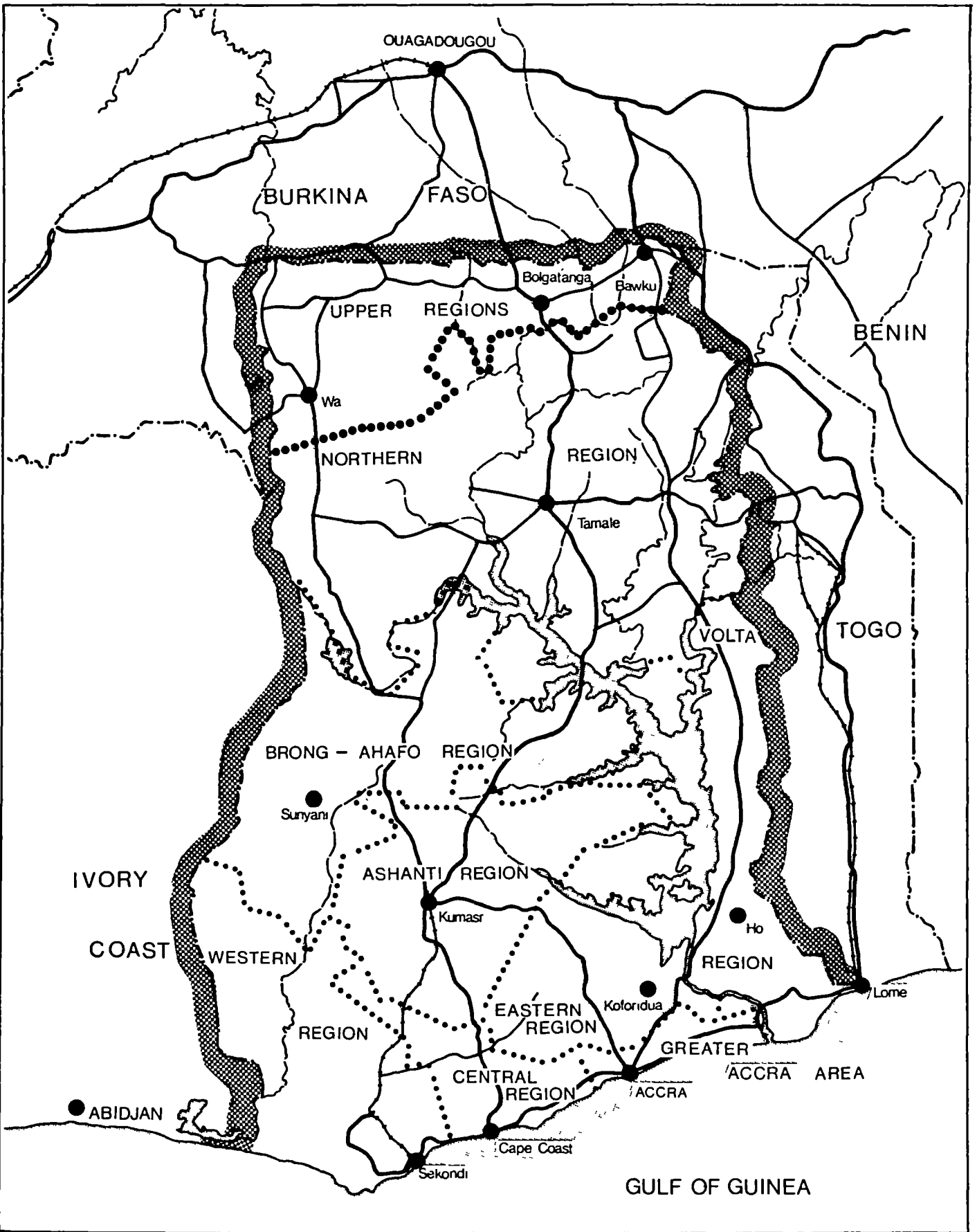


Figure 1 Map of Ghana



2.0 THE DEVELOPMENT OF THE EDUCATION PROGRAMME

2.1 A Brief History

Within the first year or two of the Upper Region Water Programme it became clear that drilling wells and providing hand-pumps were not enough. Important issues had not been addressed, including user awareness of the potential benefits of clean water and user responsibility for pump maintenance.

In 1976, the Canadian International Development Agency (CIDA) commissioned two consultants to advise on these and other matters (1). The major points of their report may be summarized as recommending:

1. a "community involvement implementing structure 'to support village development committees' taking up the questions of village health, water usage and sanitation";
2. an "education campaign on health education and water usage";
3. educational additions to the well construction process;
4. the production of relevant training materials and training of extension personnel;
5. an interministerial Health Education and Water Usage Committee;
6. a network of a district co-ordinator and one part-time village worker for every 50 sites in the district, recruited from the area to work during the dry season;
7. the provision of one educational advisor and one community development advisor to assist items 1 - 6;
8. in addition the report also recommended: compound soakaway pits; pump caretakers to perform preventive maintenance; backfilling and better pads at the pump sites; expansion of the hand-pump test programme; monitoring of static water levels; additional drilling techniques; the provision of shop manuals; increased general responsibility by GWSC including more involvement in the expatriate consultant procedure etc.

The Memorandum of Understanding (MOU) governing URWSP Phase II that came into effect in April 1977 included the following (2):

LIAISON WITH PUBLIC HEALTH, EDUCATION AND COMMUNITY DEVELOPMENT ADVISERS

The Consultant will co-ordinate his activities with public health, education, community and development advisers, both Ghanaians and expatriates to ensure that the project meets the needs of the local population not only with respect to the provision of potable water but to achieve the broader social, economic and public health benefits which are expected to accrue from this programme. Due cognizance must be taken of the sensitivities and local customs of the rural population. The Consultant will be guided by the GWSC, and their advisers, as to their relationship with the local people so as to minimize the technological impact of well-drilling operations.

Some areas for this liaison shall include:

- (i) assist in implementing an education programme which will take place during the well drilling;
- (ii) make appropriate modifications to the production schedule to ensure the effectiveness of the educational programme associated with the well drilling and pump installation activities;
- (iii) co-operate in providing data from the pump test programme to assist in the evaluation of the health and water usage educational campaign.

The theme of community involvement was taken up a few months later with a proposal to pilot a programme in five or six villages. GWSC motorcycle maintenance personnel were to train village appointed "pumpmen" in preventive maintenance for the pump, to educate about pump usage, and maintain site cleanliness. This was to provide some experience with which to guide the Water Utilization Project (WUP) then under formulation (3).

WUP began in 1978 with a mandate to provide training in hand-pump maintenance, community health education and community development self-help projects. The WUP team leader was responsible for the educational component, a situation that continued through three different team leaders until the appointment of a Ghanaian adult education supervisor in early 1980 and a year later a Canadian adult education advisor.

In mid-1981 a Village Health Education Methodology (4) was produced that set out an organization of one co-ordinator, ten instructor-trainers and one hundred instructors working in a total of one thousand villages each year. It would be volunteer-based with "reasonably generous incentives".

Its characteristics were grouped under the acronym SPARE (in the sense of frugality) - simple, practical, affordable, relevant and entertaining. A final characteristic was to be standardization to "ensure quality, uniformity and simplicity." The objectives were to:

1. reinforce behaviours that favoured health;
2. change unhealthy behaviours;
3. increase awareness of the relationship between water and health;
4. encourage community efforts to care for water supplies and improve sanitation.

By the end of 1981 the Village Education Worker (VEW) programme had been initiated in three districts, Lawra, Wa and Bawku, and by the end of that dry season (March 1982) Navrongo and Sandema had been started. A total of 73 VEWs were trained of which 11 (13%) were women. In the final district, Bolgatanga, the programme commenced in January 1983 with twenty-one trainees.

While no records of VEWs could be found that allowed their participation to be completely traced, some districts were reported to have had substantial drop-out rates.

The handing-over notes of the CE advisor written in early 1984, reported that between then and the beginning of the programme the percentage of VEWs replaced were: 80%, Lawra; 60%, Wa and Bawku;

40%, Sandema; and 30% in Navrongo. Bolgatanga reported only 5% drop-out in its first year, a low rate which probably reflected the proximity of staff to volunteers.

During 1982, CIDA appointed a Review and Design Mission to appraise all aspects of WUP and define possible future activities. Despite having only about six person weeks in the field, the consultants produced a voluminous study, exceeding 100,000 words, which reviewed every aspect of WUP and remains the fullest reference source on WUP in the period to mid 1982 (5).

With regard to the CE programme, the report began by endorsing the CE method (sometimes with qualification):

"The mission believes that the overall methodology (of the VEW programme) is viable." (p. 134)

"The content of the eight-hour (training session for VEWs) is thorough." (p. 138)

"even in its current rough form...(the manual for training volunteers)...promises to be a valuable training tool." (p. 139)

"the strategy of the "exponential" model involving ten instructors in each district covering 100 villages is well articulated and seems manageable." (p. 146)

"Although the message appears sound and well prepared, its effectiveness has not been proven." (p. 148)

The report then proceeded to imply a number of criticisms of some of the practical aspects of the programme by making thirteen recommendations. For immediate implementation, it recommended:

1. better provision of bicycles and parts;
2. regular briefings on CE for GWSC senior staff;
3. investigation of the potential of a mass radio campaign;
4. development of a regional Advisory Committee on public education for water utilization;
5. development of linkages between CE and NCWD, FHIG, etc.;
6. recruiting more women VEWs;
7. more training for VEWs in discussion, visuals and drama;



8. sufficient allocations of fuel, vehicles, and parts to CE staff;
9. engagement of at least two cooperants and two counterparts for CE;
10. hiring cooperants with the appropriate skills, preferably women;
11. training of CE counterparts;
12. a long-term evaluation; and
13. making women the primary target group of the CE programme. (5, pp. 204 - 209, 318 - 327)

Further on the report took its criticisms further in a list of 14 critical needs, some of which (a, b,) addressed no less than the core of the CE programme:

- a. to determine the effectiveness of the message;
- b. to determine the educational task;
- c. to determine the effect of the VEW program in Lawra and Bawku;
- d. to recruit additional advisors and volunteers;
- e. to determine whether GWSC is prepared to be associated with CE;
- f. to expand CE to Bolgatanga and Tumu;
- g. to train instructors for the VEW programme;
- h. to provide additional training for VEWs;
- i. to recruit more VEWs, particularly female;
- j. to supervise VEWs;
- k. to train counterpart CE staff;
- l. to define the position of CE counterparts within GWSC;
- m. to focus upon fourteen priority areas (see Section 2.7); and
- n. for ongoing systematic evaluation of its impact on villagers (5, pp 423-425).

The mission recognized the need for more education staff and recommended two CE advisors, a recommendation included in the Plan of Operations for WUP Phase II which provides for up to eight person years of such technical assistance (6). There was, however, a twelve month period (from March 1984) between the departure of the first long term CIDA advisor and her replacement. During this time, which was also the major period of the evaluation project, the CE programme was led by an ex-Peace Corps volunteer on a short term contract for seven months, and then by a newly arrived PCV.

The Review and Design Mission report will be discussed further in section 6.2.

2.2 The Composition of the Education Programme in 1984

By the beginning of 1984 the education programme had expanded to include four components. They were:

1. Public Information to raise water consciousness throughout the Region via a wide range of media;
2. Community Outreach to use extension agents from other organizations to disseminate water messages;
3. The volunteer (VEW) programme to make water presentations at selected villages; and
4. Community Mobilization to promote participation in decision making and development through Water Users Committees and to enhance WUP staff skills in communication and organization.

In addition, a proposal had been made in 1983 to introduce a cadre of Pumpsite Education Workers, who would be trained by VEWs to provide a continuing educational input in the village.

In her handing-over notes, the advisor estimated the resource allocation to each as:

	time (%)	budget (%)
Public Information	15	23
Community Outreach	15	11
VEW Programme	30	66
Community Mobilization	30	0
Administrative functions	10	



It should be noted that, with the transfer to GWSC administration of the staff person responsible for Community Mobilization in Bawku district, this component has now ceased. It is therefore excluded from the present evaluation. The proposal for Pumpsite Education Workers has not been implemented.

2.3 The VEW Programme

By the end of 1983 the VEW programme's targets had been scaled down significantly from the 1981 plan to seventy volunteers working in seven hundred villages. At each village they agreed to make three standard water and health presentations each year.

As part of the preparation for the Evaluation Project's social survey the reported work of eighteen VEWs during their first eight month period in Frafra district was examined. These eighteen volunteers reported a total of 337 presentations (average of 19 each) in 151 different locations (average 8.4 locations per VEW) usually at a pump site, the house of a chief or section head, or at a central meeting point. In practice, VEWs appear to have replaced the target of villages with pump sites or village sections.

The VEWs are supported by a CE staff of an advisor, an assistant, an artist, a secretary, a driver and a messenger in Bolgatanga within the Water Utilization Project/Rural Water Supply Unit of GWSC.

VEWs received about eight hours of orientation and training when they were first recruited and met with the Community Education staff at district centres every month or two.

Each VEW is loaned a bicycle which they own after three years of satisfactory service. They also have received T-shirts, caps and shoulder bags and have access to control-priced bicycle parts, imported from Burkina Faso. The bicycle is a substantial incentive. In 1984 a bicycle sold in the Upper Regions for around 15,000 cedis - about 8 to 12 months of an average civil service salary.



2.4 Educational Materials

Each VEW has a series of twenty-four A4 size black and white pictures to support the presentations. These are reviewed in section 5.7.

These pictures are accompanied by a seven page script that lists the questions a VEW should ask about each picture, together with the correct answers expected from the audience. This is reviewed in section 6.1.

2.5 Community Outreach

Community Outreach activities, the attempt to use extension agents from other organizations to disseminate water messages, are reported to have included a mutual briefing with many Regional and District organizations, participation in relevant committees and in public meetings etc.

2.6 Public Information

The Public Information component involves the use of a range of different media to raise general awareness about water. These media include posters, calendars, drama, puppet shows, and radio scripts.

A series of five posters have been produced in English on the themes of "Clean Compounds", "Refuse Control", "Protect Your Water", "Improve Drainage" and "Latrines". One thousand copies of each were printed (Appendix 1).

In 1980 WUP produced 5,000 copies of a 43-page booklet in Frafra on water (Ko'om) in cooperation with the Ghana Institute of Linguistics. This appears to have been WUP's only publication in an indigenous language.

In addition to the posters, WUP's Public Information work has included calendars (1,000 copies printed for 1984), a play produced by a local drama club, puppetry, public displays and, recently, items on the Bolgatanga radio.

One important public informational process of WUP is the use of drama and puppets to spread the water messages. Similar methods have been used with some success in other African countries as an entertaining way of introducing a variety of educational messages including those that deal with topics that people are reluctant to acknowledge or discuss, for example alcoholism (7).

A local theatrical group and the Arts Council have worked with the Community Education Programme to produce a play and puppet show respectively dealing with water and sanitation.

2.7 Monitoring of the CE Programme

One regular component of the CE programme has been interviews with water users. The reported objectives of the survey were 1) to give the volunteer an opportunity to measure and observe the education activity in terms of expected outcomes, 2) to monitor the development progress within the District among VEW villages, 3) to provide baseline information from year one (start) to project-end to evaluate impact, 4) to provide the supervisory staff with a monitoring tool to check on reported village presentations (8).

Results from seven such surveys were located at Bolgatanga; their details and results are given in Table 1. The surveys were conducted by selecting one village from each VEW's presentations in which from three to seven compounds would be visited and a man and woman interviewed together using a standard questionnaire. The seven surveys covered 214 interviews in 52 villages across four districts. Results were presented as simple frequencies.

An earlier survey in September 1982 in Wa district had prompted the CE staff to recommend 14 priorities on which the programme should focus:

1. Treatment of surface water before drinking (boiling or filtering);
2. Cleaning of calabashes (clean sand/scouring/sun drying/storage);
3. Covering of water storage containers;
4. Transfer dipper for drinking water;

TABLE 1 Details and Results from CE Programme Social Surveys

Date	11/82	12/82	04/83	05/83	07/84	08/84	09/84
# of Interviews	31	27	21	22	39	36	38
# of Villages	9	9	7	9	7	6	5
District	Bawku	Lawra	Navrongo	Sandema	Navrongo	Sandema	Bawku
% with operating hand-pumps	74	89	86	100	82	75	79
of which, % using hand-pump	100	67	100	95	81	78	77
% of Hp users who choose Hp water for cleanliness	48	72	62	52	28	19	53
% reporting that the village has a WUC	71	66	76	50	21	33	74
% of respondents who were members of WUC	29	19	52	45	NA	NA	NA
average per capita water consumption (litres)	11	7	15	11	NA	NA	NA
% with covered drinking water containers	94	96	100	100	97	94	61
% using a handled dipper	77	89	52	77	28	39	29
% drinking non-hand-pump water	52	56	29	18	44	50	39
of which, % who boil/filter	25	0	0	0	0	0	3
% drying clothes off the ground	94	18	100	100	56	92	87
% burying faeces	0	0	22	27	27	34	26
% using latrine	3	4	13	NA	5	81	34
% with soakaway for bath house	0	0	0	0	NA	NA	NA
% who had met VEW	100	48	62	NA	21	8	50
% who had attended VEW presentation	93	33	52	50	13	8	32

5. Pito protection (covered pots/ladle);
6. Latrine construction and maintenance;
7. Burning and burying of refuse and siting of disposal areas;
8. Maintenance and cleaning of cattle troughs;
9. Animal confinement and maintenance of animal compounds;
10. Protection of food and cooking utensils (insect free storage);
11. Drainage of waste water;
12. Drying of clothes (off the ground);
13. Pump site cleaning and backfilling; and
14. Access road maintenance.

Another related product has been the preparation of a set of criteria for evaluation of WUP at the end of Phase II (9). This developed the four objectives formulated in 1981 (Section 2.1) into six "standards" as follows:

1. Assumption of responsibility for protection and maintenance of water supply (hand-pump).
2. Value attached to clean water and understanding of the relationship of clean water to good health.
3. Demonstration of protective care in handling and storage of water within their home environment.
4. Active involvement in planning and implementing communal and individual projects to improve sanitation and domestic hygiene.
5. Agencies which have a mandate for health and sanitation are assuming active roles in water protection education.
6. Communities have developed the organizational skill to identify needs and follow problem solving approaches to village development in areas which are non-water related, maximizing use of local resources.

To each standard was attached between four and twenty-six specific criteria, all of which included a target expressed as a

percentage compliance. The targets for these 63 individual criteria ranged from 100% to 20%. Some examples include:

- 100% formation of Water Users Committees;
- 100% appointment of a Pump Caretaker;
- 100% use of the pump water for drinking, cooking, and washing bowls;
- 100% boiling of surface water if used for drinking or washing raw foods;
- 100% of water containers covered;
- 100% of drinking water changed daily;
- 100% site development (backfill, extended pad, gutter);
- 100% of compounds, schools and churches have latrines;
- 100% of adults use latrines;
- 100% of villages have conducted a clean-up campaign;
- 80% use the pump for bathing;
- 80% do not use a dipping vessel for drinking;
- 80% wash hands before drawing water;
- 70% of children use latrines;
- 70% do not give animals free access to the living and cooking areas;
- 60% of communities have undertaken a project to construct farm stores;
- 60% use pump water for washing clothes;
- 50% of latrines are cleaned with ashes each day;
- 50% of compounds shelter their animals a safe distance from the compound;
- 40% of compounds bury their refuse;
- 20% of villages have undertaken an adult literacy programme.

These will be discussed further in 6.1.

2.8 Water Users Committees

All communities are encouraged to form a Water Users Committee (WUC) at each pump or group of pumps. Its primary functions are:

- (i) To select and support an interested and responsible pump caretaker.
- (ii) To organize community participation in self-help projects including latrine, soakaway pit, concrete pad and access road construction.

Although it is currently claimed that more than 1,300 WUCs exist (10) WUP has also acknowledged a number of problems with the committees.

1. WUCs mostly comprise the chief and several elders rather than the actual pump users;
2. some WUCs have responsibility for more than one pump in a relatively large area so that they are not necessarily aware of conditions, nor do they feel any immediate responsibility;
3. many WUCs have not been active since their inception; some have dissolved completely; others are not known to the community;
4. where WUCs do exist and are active, members are often vague about their responsibilities and do not offer effective support to the pump caretaker; and
5. in some cases, when caretakers have died or retired, they have not been replaced (11, p 53-4).

In 1983 WUP proposed extending each WUC's responsibility to, include:

- (iii) To select and support Pumpsite Education Workers from among members of the community who use the well (particularly women).

WUP has perceived the Water Users Committees as the "cornerstone of . . . [its] . . . entire programme . . . without strong committees there is little chance of villager commitment to care and management of the village water systems." (8, p 11).

2.9 Pump Caretakers

The Hand-Pump Caretaker Training Programme was established as part of WUP in 1978 to train local "caretakers" to maintain and lubricate Beatty pumps and to keep the pump sites reasonably sanitary. The scope of the programme was soon expanded to include Monarch, Moyno, and Godwin pumps.

Training was carried out by Extension Mechanics at each pump site under the supervision of WUP's Site Development Advisors and Supervisors. A booklet, "Extension Mechanics Manual," was prepared as a guide for caretaker training in 1980 by a CIDA cooperant.

Caretaker training was organized in three phases:

Phase I included: meetings with the local chief and village committee to explain WUP and the caretaker programme; selection and training of the caretaker.

Phase II (3-6 months after Phase I) included: testing the caretaker and further training as necessary; explaining the pump breakdown report and organizing backfill or access road construction.

Phase III (3-6 months after Phase II) included: a further evaluation of the pump caretakers ability to maintain pump and well site. A certificate authorizing the caretaker to replace Beatty parts was awarded if appropriate and if the pump caretaker did not prove capable, it would be recommended to the village committee that he be replaced (12, pp. 7-9).

According to WUP records, by 1984 some 2,672 caretakers had been trained at Phase I, and 1,850 had received Phase II training. Of these, it was estimated that some 10-15% had moved, died, or been ineffective.

The training had initially dealt with the maintenance and lubrication of the Beatty pumps which have now been substantially replaced by the Moyno, a more durable pump, operating on a different principle (revolving rather than reciprocating) with sealed bearings and self lubricating bushings. Lubrication is now no longer required and may be considered counter-productive. On both Moyno and Monarch pumps grease serves to hold abrasive particles on the guide surfaces. The emphasis upon tightening the bolts of the Beatty can be downplayed with the Moyno and Monarch as these pumps are less

prone to the loosening of bolts. Attempts are currently underway to start a widespread programme of retraining pump caretakers to appropriately maintain the Moyno and Monarch and unlearn much of what they had been taught about the Beatty (13).

2.10 Site Development

At the time of drilling, a small concrete pad was constructed around the borehole as a base for the hand-pump. In subsequent years there has been a programme to develop the site with the construction of:

1. an extended pad;
2. backfill around the pad;
3. a gutter draining splashed water to
4. concrete ponds or troughs for animals;
5. an access road; and
6. bath houses.

This programme has been organized by WUP utilizing VEWs and extension mechanics to initiate a process of community labour and cash donations for some or all of the above. WUP also provides the services of a mason for laying the concrete.

According to WUP records the percentage of hand-pump sites with each of the above at September 1984, is as follows:

	<u>%</u>
backfill	48.4
extended pad	44.0
gutter & animal pond/trough	32.1
access road	16.1

Difficulties with obtaining cement and fuel regularly impede this programme.



2.11 Sanitation

Another component of WUP has been the construction of rural latrines. By September 1984, 393 had been constructed. In mid 1983, WUP carried out a regional survey of 242 latrines, 76% of which were Mozambique slabs and 23.5% multiple holes. It found that 34% were not in use, mainly because there was no privacy wall. Of those in use:

- 57% were public and 43% private;
- 6% were within 20m of a water source;
- 21% had no privacy wall;
- 30% had no roof;
- 64% did not always cover the drop hole;
- 28% had faeces on the decking;
- 37% used ashes for cleaning;
- 49% would use the faeces for composting; and
- 21% had received no instruction on latrine use.

As with the CE Surveys (Section 2.7) results were presented as simple frequencies.

2.12 The Context of Programme Development

It is important to acknowledge the context within which these activities have been pursued. For Ghana this was a period of political change and economic decline. For GWSC all of its activities have often been curtailed by fuel restrictions, transport problems and organizational shortages. All of these are reviewed in more detail in Report 2 and Report 3.

2.13 Inputs to the CE Programme

Canadian disbursements for Phase I of the complete WUP programme, including some relatively minor expenditures during its preparatory phase in 1976-78, total \$1.9 million, or about \$2.3 million in constant 1983 dollars (Table 2).

TABLE 2 Total Annual WUP Disbursements at Current and Constant Prices (\$CDN)

Year	Current Expenditure (\$000)	CPI 1983=100	Constant Price Expenditures (1983 dollars) (\$000)
76/77	20.7	53.7	38.5
77/78	6.6	57.9	11.3
78/79	59.8	63.1	94.8
79/80	293.5	68.9	426.0
80/81	275.2	75.9	362.6
81/82	475.2	85.3	557.4
82/83	472.3	94.5	499.8
83/84	296.2	100.0	296.2
84/85	5.8	104.4	5.6
TOTAL	1,905.6		2,292.2

Source: CIDA disbursement on 400/00601

A partial list of inputs to the CE Programme include:

- a Feasibility Mission, January 1977;
- 4-5 person years of Canadian CE advisors (WUP team leaders part time 1979-81; full time advisor 1981-1984; short term advisor for about half of 1984);
- a Review and Design Mission, October 1982;
- approximately 6 person years of Ghanaian counterpart time plus approximately 20 person years of artist, secretarial etc.;
- a consultant editor for approximately 20 days to prepare a WUP/CEP handbook from notes and reports prepared by the CE advisors, in 1985;
- an estimated 15-20% of all WUP expenditures, i.e. \$344,000 - \$458,000 (1983 dollars).

3.0 RESEARCH METHODOLOGY FOR THE EVALUATION OF THE CE PROGRAMME

3.1 Evaluation Terms of Reference

The feasibility study for this evaluation project proposed that the evaluation of the CE programme should include the following activities:

Public Information Component

1. an assessment of the content, messages as conveyed, clarity and comprehensibility of the audio-visual aids
2. observation of the aids in use
3. examination of the scale of dissemination of materials
4. appropriateness of mode of dissemination for reaching the target audience

Community Outreach Component

5. the specific objectives
6. the number and nature of contacts with other agencies
7. perceptions on the part of those agencies contacted of the programme and their relationship to it
8. the extent to which changes have been made to the programmes carried out by these agencies
9. the frequency and scale with which the CE messages are being delivered to village people as a result of these links

The Village Education Workers Component

10. the training programme for the village workers will be evaluated in terms of its effectiveness in increasing their knowledge of appropriate health and sanitation practices
11. the recruitment and selection process for obtaining VEWS
12. characteristics of VEWS
13. interviews with a sample of VEWS to determine their understanding of villagers' situation, particularly the constraints they face in their ability to integrate recommended behaviors into their life styles



14. the number and location of villages visited by VEWs and frequency of presentations
15. follow-up of Village Education Workers' visits by visits of the Site Development Officer
16. to provide baseline information on village life in a no water/no education situation, as it relates to water use, sanitation, and hygiene
17. to increase understanding of villagers' perceptions of health and the relationship of their own environment and behaviors to illness or disease
18. to feed data back to the Village Education Programme so that it can become more responsive to villagers' needs
19. to assess the extent to which and the ways in which the Village Education Programme has successfully achieved its objectives in changing the knowledge and practices of villagers with regard to water use and appropriate domestic and personal hygiene (14,p 68-76).

3.2 Field Activities to Address the Terms of Reference

The remaining sections of this report draw upon data generated in twelve different ways. Each of these methods is briefly described below and some will be discussed further with their results.

1. In the social survey of approximately 360 women drawers of water chosen from 31 areas around Bolgatanga, the access to an educational presentation by a VEW during 1983 was a determining criterion for 10 of these survey areas.
2. Four VEW presentations and one puppet show were attended and interviews with 47 adult members of the presentation audience were conducted soon or immediately after the event. These interviews investigated message recall and views about the presentation.
3. Every time a VEW completes a presentation he or she is requested to complete a report form that describes some aspects of the presentation. During 1984, this form was revised and expanded; a further component of the research is an analysis of the data contained on these forms from the Bolgatanga district.
4. A self administered questionnaire was developed that listed possible training needs and VEWs were requested to complete this to help them describe how they perceive their own training needs.



5. Nine VEWs, eight of them in the Bolgatanga District, were interviewed at some depth, over a period of about 1.5 to 2 hours. In some of these, part of the interviews included their commentary on the visual aids used in the presentation.
6. The evaluation was fortunate to coincide with a CIDA commissioned survey of programmes related to women throughout northern Ghana. We were able to utilize this information to investigate the attempts of WUP to coordinate its activities with other agencies. This was followed up in 1985 to verify data collected by this study on the relations between WUP and three selected agencies.
7. Meetings were held with VEWs in all districts of the Upper Regions to both explain the evaluation to them and record their views about a number of aspects of the CE programme.
8. At one VEWs meeting in Bolgatanga, the visual aids for a VEW presentation were distributed among all the VEWs who then proceeded to give a presentation. This was tape-recorded and translated into English.
9. Interviews with 17 pump caretakers were conducted from the 21 survey areas with pumps and with pump caretaker trainers in two districts.
10. The evaluation staff reviewed files and materials in both Bolgatanga and at CIDA.
11. A preliminary analysis of the CE programme was drafted by the evaluation in September 1984 and developed for discussion at CIDA in early 1985. This somewhat controversial document provoked a number of responses and reactions, all of which have contributed to the evaluation process and provided input to the present document.
12. In March 1985, CIDA commissioned an assessment of the WUP sanitation component by John Van Nostrand Associates of Toronto.

Only the social survey, method number one above, may be regarded as a rigorous social investigation yielding statistically valid data. Results from the other research should be seen as descriptive and hypothesis-generating rather than hypothesis-testing.



4.0 RESULTS OF THE SOCIAL SURVEY

4.1 The Selection of VEW Presentations for Inclusion in the Survey

The single largest activity of the Evaluation Project was a social survey of water drawers. This was designed to compare the water related behaviours of three independent samples of women drawers; those without access to a pump; those with access to a pump; and those with access to a pump and VEW presentation(s). The VEW-pump sample was a simple random selection of ten of the 139 locations in Bolgatanga district at which VEWs reported having made presentations in the period between January 1983 and February 1984 (Figure 2). As Tables 3 and 4 indicate, the eight VEWs and ten locations of VEW presentations selected for the sample were slightly different from the total population of VEWs and locations of VEW presentations. The sample VEWs had given slightly more presentations per VEW (16.1) than all VEWs taken together (12.2) and the number of presentations at each of the ten sample locations were slightly more on average (2.50) than at all locations taken together (2.34).

The first sample of fifteen locations was reduced to ten after two months of field work when it became clear that the project had inadequate resources to do the field work in 45 survey areas (i.e. three samples of 15 survey areas each). These ten survey areas were subsequently modified by the exclusion of one area (Feo Soboko, V6, now P11) and the inclusion of a survey area (Nyogabre, V11) thought to have been a pump-no VEW survey area which was found to have been the location of two VEW presentations.

The following section reports the results of surveys conducted between July-September 1984, the wet season (W) and between January-March 1985, the dry season (D).



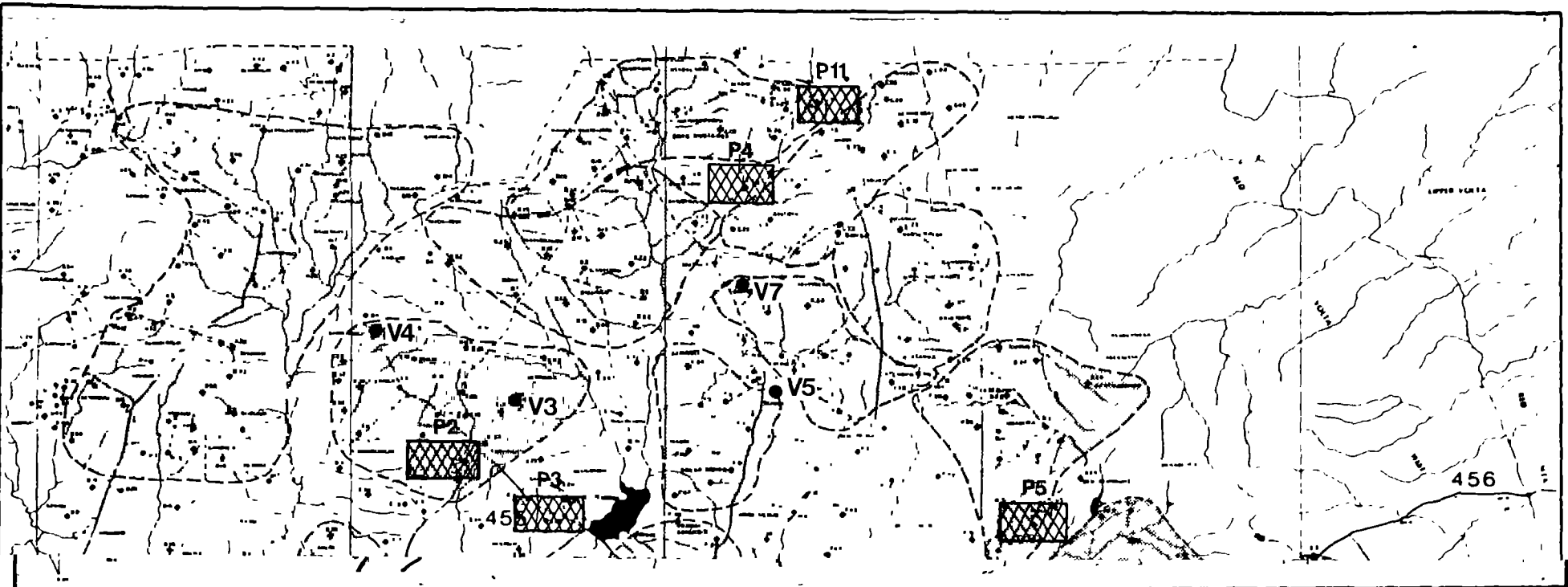


Figure 2 VEW Presentation Areas
and VEW and Pump
Sample Locations

Note: VEWs have not made
presentations at all pumps
included in each VEW
presentation area

TABLE 3 Number of Locations at which VEWs Report Having Given One or More Presentations, January 1983 - March 1985 by All VEWs and Sample VEWs

Number of Locations	All VEWs	Sample VEWs
6-10	8	2
11-15	7	4
16-31	3	2
Total	18	8
Total Presentations	219	129
Mean Number of Presentations per VEW	12.2	16.1

Source: VEW Report Forms, Bolgatanga District

TABLE 4 Distribution of Reported VEW Presentations Per Location, Bolgatanga District

Period	January 1983 to February 1984		January 1983 to March 1985	
	All Locations	Selected Sample Locations	All Locations	Actual Sample Locations
1	39	3	79	2 (V3, V10)
2	44	4	55	3 (V4, V5, V11)
3	40	7	43	3 (V1, V2, V9)
4	12	0	25	2 (V7, V8)
5	1	1	9	
6	1	0	5	
7			3	
Total Locations	137	15	219	10
Total Presentations	306	37	514	25
Mean Presentations Per Location	2.23	2.47	2.34	2.50

4.2 Results from the Social Survey

4.2.1 Introduction

Most of the discussion of results from the social survey are to be found in Report 5. This section covers only those results that relate directly to the educational input. Specifically this includes data on:

1. knowledge of a talk on water in the respondent's village;
2. knowledge of who had given any such talk;
3. attendance at such a talk;
4. attendance at a concert on water;
5. attendance by the respondent at a clinic or hospital;
6. the date of the most recent visit;
7. exposure to a talk on water during any visit to clinic or hospital;
8. radio ownership;
9. listening to any talk on the radio about water;
10. if any exposure to education, (through village talk, concert, clinic, hospital, or radio) what items could be remembered from these talks;
11. was this item now done?
12. had the item been done before?
13. had it been known before?
14. thirteen observations of the respondent's yard and compound;
15. source choice in wet and dry seasons; and
16. the prevalence of guinea worm.

All items except 5, 6, 7, 15 and 16 above were asked of everyone present at the interview, including other adults and children.

The two major forms of analysis are by sample and by educational gradient.

4.2.2 Coverage by Different Educational Programmes

1. Talks by the VEW

In the VEW-pump (V) sample one or more of the group being interviewed in approximately one-quarter to one-third of the compounds knew there had been a talk by the VEW. Of these compounds, someone from about 40% had attended a talk; of all compounds someone from 10-13% of compounds had attended a talk (Table 5). In each of the other samples at the most only one compound reported having attended a VEW talk.

TABLE 5 Attendance at and Knowledge of VEW Talks by Sample and Season

Sample	N		P		V	
	W	D	W	D	W	D
n	115	109	128	117	112	109
%	%	%	%	%	%	%
No knowledge of VEW talk ever in Village	95.7	99.1	98.4	99.2	74.1	67.3
Knew of VEW talk but did not attend	4.3	0	0.8	0	16.1	20.0
Attended VEW talk	0	0.9	0.8	0.8	9.8	12.7

NOTE: N = no pump
 V = pump and VEW presentation
 P = pump, no VEW presentation

W = wet season
 D = dry season

2. Attendance at Water Concerts

Few respondents reported having attended a water concert in the district. Slightly more respondents had attended water concerts elsewhere; these were distributed among all samples (Table 6).

TABLE 6 Reported Attendance at Concerts by Sample and Season

Sample	N		P		V	
	W	D	W	D	W	D
n	110	107	128	119	114	109
%	%	%	%	%	%	%
Attended concert in district	0.9	0	0.8	0	3.5	3.7
Attended concert in Kumasi or Accra	1.8	2.8	1.6	1.7	1.8	2.8

3. Attendance at Health Facilities and Exposure to Talks by Health Workers

In all three samples, a majority of respondents reported having attended a clinic. For between 34% and 61% this had been in the last year; between 14% and 37% reported having attended a clinic in the last month. At least one respondent in eight from the N and V samples had listened to a clinic talk on water given by a nurse, Village Health Worker or other health worker (Table 7).



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TABLE 7 Reported Clinic Attendance and Exposure to Clinic Talks on Water by Sample and Season

Sample	N		P		V	
	W	D	W	D	W	D
n	117	109	130	117	117	109
Attended in last month	27.4	27.5	13.8	16.2	36.8	33.9
Attended in last year	46.2	61.5	33.8	44.4	52.1	55.0
Ever attended	74.4	83.5	63.8	75.2	82.1	84.4
listened to talk on water at clinic						
- all respondents	21.4	12.8	6.9	3.4	15.4	13.8
- all who ever attended a clinic	28.8	15.3	10.8	4.5	18.8	16.4

4. Reported Radio Ownership and Exposure to Talks on Water on the Radio

Approximately 9% of the district's compounds report ownership of radios. Almost none reported hearing any talk on the radio concerning water. This is to be expected as the WUP radio messages have only been broadcast within Bolgatanga to date. With the completion of the Upper Region FM network expected soon, radio may become a more important dissemination medium in the future (Table 8).

TABLE 8 Reported Radio Ownership and Exposure to Broadcasts on Water by Sample and Season

Sample	N		P		V	
	W	D	W	D	W	D
n	115	108	127	115	116	105
Radio ownership	3.5	13.9	3.2	4.5	8.6	13.3
of which, radio not working	1.7	2.8	0.8	0.9	0.9	1.0
no talks in local language		4.6	0.8	3.6	1.7	7.6
no radio talks heard on water	1.7	6.5	0.8	0	6.0	4.8
heard radio talk on water			0.8			



4.2.3 An Educational Gradient

A useful (but statistically improper) analysis, in addition to a comparison among the N, P, and V samples, is between those with exposure to education and those without. The data from section 4.2.2 may be combined to identify all respondents who reported any exposure to education. These total 66 respondents in the wet season and 54 in the dry (Table 9).

TABLE 9 Educational Gradient by Sample and Season

Season	Wet				Dry			
Sample	N	P	V	Total	N	P	V	Total
<u>Reported Education Exposure</u>								
VEW talk, Clinic talk, & Concert			1	1			1	1
VEW talk & Clinic talk			3	3			1	1
VEW & Concert			3	3		1	1	2
Clinic talk & Concert	1		1	2	1		1	2
VEW talk only		1	4	5	1		11	12
Clinic talk only	24	9	13	46	13	4	12	29
Concert only	2	3	1	6	2	1	4	7
Total with some exposure to education	n 27 23.1	13 10.0	26 22.2	66 -	17 15.0	6 5.0	31 27.9	54 -
Clinic attended but no education	n 59 50.4	69 53.1	66 56.4	194 -	71 62.8	77 64.6	62 55.9	210 -
No clinic, no education	n 31 26.5	48 36.9	25 21.4	104 -	25 22.1	38 31.4	18 16.2	81 -
TOTAL	n 117 100.0	130 100.0	117 100.0	364 -	113 99.9	121 100.0	111 100.0	345 -

4.2.4 Audience Recall from Water Education

If the respondent or those sitting with her during the interview reported any exposure to water education through the clinic, the VEW, or a concert, they were asked about what things they could remember from such education.

No less than 34 different messages were recalled in the wet season by the 66 who reported receiving any education and 31 different messages by 54 respondents in the dry season. An average respondent could recall almost two items of information and about a quarter could recall three or four items (Table 10).

TABLE 10 Number of Items Recalled From Water Education

No. of items	Percentage of audience recalling this number of items	
	Wet	Dry
0	11.6	12.5
1	34.8	37.5
2	27.5	23.2
3	15.9	17.9
4	10.1	8.9
TOTAL	99.9	100.0
MEAN	1.78	1.73

Of these messages, five were recalled by an average of 10 percent or more in both seasons - to cover water pots, to boil water, oral rehydration through sugar and salt solution, keeping water containers clean and bathing of children (Table 11). These five messages accounted for over half of all items recalled.

One respondent in eight or nine could recall nothing from the talk.

TABLE 11 Items Recalled from Talks by Nurses, VEWs and Concerts by Audience Members

Season	Percentage of audience recalling this item	
	Wet	Dry
n	66	54
boil water/boil non hand-pump water	39.4	23.2
keep water pots covered	19.7	17.9
oral rehydration	13.6	17.9
keep water containers clean	10.6	14.3
bathe children/keep children clean	12.1	12.5
reduce fever by bathing/sponging	12.1	5.4
keep hand-pump site clean	4.5	10.7
cover left-over food	9.1	5.4
good diet/food	7.6	3.6
self-cleanliness	1.5	8.9
don't play on hand-pump	1.5	8.9
keep clothes clean	4.5	5.4
keep compound clean	6.1	1.8
how to use hand-pump	3.0	3.6
keep water clean	4.5	1.8
boil water when sick	3.0	1.8
send sick children to clinic	3.0	1.8
bathing at pump contaminates the well	4.5	0
prevent stagnant water	1.5	1.8
wash utensils	3.0	0
do not give enemas	3.0	0
use dipper, cup or ladle	3.0	0

All of the following items were each recalled by one person in one season only: avoid dirt/bathe in bath house/bathe children in warm water during cold weather/feed children when hungry/do not drink dugout water/do not let more than two children sleep together/bathe child with cold water (even if he/she has a cold)/give more water to children with measles/give children clean water/boil water because you may get illness and guinea worm/do not bathe in the open/cover faeces/keep animals away from utensils/do not store water for long/back-filling/keep animal trough clean/ wash hands before cooking/site development/allow water to settle/give more water to children with diarrhoea/store water for children in bottles.

Nothing remembered from the talk wet: 12.1% dry: 12.5%

In evaluating an educational programme, one is interested in knowing not only what is recalled, but also if this is then implemented and if this was new information.

About half the items recalled from the talks were reportedly known beforehand and, of these, almost all were reported to have been followed. At the time of interview, respondents reported implementing between 86% to 92% of all the items recalled (Table 12).

TABLE 12 Reported Prior Knowledge, Prior and Current Implementation of All Items Recalled from Any Educational Presentation

Season	Wet	Dry
Prior Knowledge	43.1	52.9
Prior Implementation	44.0	47.7
Current Implementation	91.7	85.8

An analysis of the seven most recalled items by change in reported practice revealed substantial differences among the items (Table 13). The most important measure is the percentage of those recalling each message who did not practice this item before but now do (current implementation - yes; prior implementation - no). For four of these items - oral rehydration, bathing children, boiling water and reducing fever by sponging - more than half of those who recalled each item also reported a change in their behaviour.

By contrast, only slightly over a fifth reported having started to cover their water pots after an educational talk.

TABLE 13 Seven Major Items Recalled from Educational Talks by Changes in Reported Practice

Current Implementation		Yes		No	
Prior Implementation		Yes	No	Yes	No
Item	n	%	%	%	%
Oral Rehydration	14	7.1	78.6	7.1	7.1
Bathe Children/Keep Children Clean	14	35.7	64.3	0	0
Boil Water/Non hand-pump Water	37	8.1	59.5	10.8	21.6
Reduce Fever by Bathing/Sponging	14	14.3	57.1	7.1	21.4
Keep Water Containers Clean	12	50.0	50.0	0	-0-
Keep hand-pump Site Clean	8	50.0	37.5	0	12.5
Keep Water Pots Covered	23	69.6	21.7	0	8.7

4.2.5 Differences in Observed Conditions of Compounds

In sections 4.2.3 and 4.2.4, differences in reported activities or knowledge were discussed. The survey also included an attempt to observe differences of hygiene and sanitation among households. Tables 14 and 15 display a comparison of results between P and V samples in wet and dry seasons arranged in descending order of differences between the samples. In the dry season, only one indicator, the presence of a cleared path through the animal yard (which reduces the possibility of the transmission of animal faeces from the animal yard to the living quarters) has a statistically significant difference between samples (chi square=6.61, sig at 1%). It is perhaps important to note that the difference in latrines is almost statistically significant at a 5% level (chi square = 3.80, chi square 95% = 3.84), with, surprisingly, more latrines in villages without VEW presentations.

The wet season comparison reveals no statistically significant differences between the samples. The only statistically significant observation of the dry season, the presence of a cleared path through the animal yard, is not only not significant in the wet season, but its direction has reversed.

TABLE 14 Comparison of Observed Conditions of Compounds by Sample
- Wet Season 1984

	P %	V %
No place where used water from the compound collects	69.8	78.6
No fowl faeces and/or fowl present in the living area	66.9	74.4
Bathhouse in the compound	54.8	62.1
Dipper, ladle, or cup for transferring water from the drinking water containers	23.8	28.2
Bathhouses with a soakaway pit	36.2	40.3
Livestock prevented from entering the living area	92.4	95.7
Line or stick for drying clothes	44.9	47.4
Entrance other than through the animal yard	32.0	32.5
No human or livestock faeces in the living area	90.2	90.6
Pots with drinking water are covered	89.8	88.9
Compound has a latrine	2.4	0
Drying area located off the ground for utensils	17.1	14.5
Cleared path through the animal yard	47.6	40.2

TABLE 15 Comparison of Observed Conditions of Compounds by Sample
- Dry Season 1985

	P %	V %
Cleared path through the animal yard	16.0	30.3
Bathhouse in the compound	50.8	60.4
Drying area located off the ground for utensils	3.3	6.3
No human or livestock faeces in the living area	91.7	91.9
Bathhouses with a soakaway pit	8.2	7.7
No place where used water from the compound collects	87.4	88.3
Pots with drinking water are covered	94.2	92.8
Compound has a latrine	3.5	0
Livestock prevented from entering the living area	90.8	86.5
Dipper, ladle, or cup for transferring water from the drinking water containers	31.7	27.0
Entrance other than through the animal yard	35.8	30.6
Line or stick for drying clothes	61.7	55.5
No fowl faeces and/or fowl present in the living area	60.0	68.4

Comparing these results between wet 1984 and dry 1985 indicates some apparent anomalies. These include:

1. a substantial decline in the number of compounds with a raised drying area for utensils;
2. a substantial decline in the percentage of bathhouses with soakaway pits; and
3. a substantial rise in the number of compounds with a line or stick for drying clothes.

Some of these may be the result of more training of the interviewers between the two seasons and increased emphasis upon observation (for instance, of the soakaway) rather than simply asking the respondent in those yards where it was not easily seen.

This analysis was repeated for the V and P samples comparing those who reported exposure to education with those without. There were no statistically significant differences at a 5 percent level (chi square > 3.84) between these groups in either season. Some results were statistically significant at a 10 percent level (chi square > 2.71). As the directions of the first two indicators change between seasons, there is no clear indication of the impact of education (Table 16).

TABLE 16 Selected Comparison of Observed Conditions of Compounds by Reported Exposure to Education

Season	Wet			Dry		
	ed.	no ed.	chi square	ed.	no ed.	chi square
n	39	204		37	194	
	%	%		%	%	
Dipper ladle or cup for transferring water from the drinking water containers	38.5	23.5	3.80	16.2	32.0	3.71
No place where used water from the compound collects	64.1	76.1	2.79	97.3	86.1	3.67
No fowl faeces and/or fowl present in the living area	82.1	68.3	2.97			

Note : P and V samples only.

4.2.6 Education and Source Choice

With the installation of hand-pumps it is hoped that the population will use them, and because of an appreciation of the protected purity of the water, place a value upon pump water. This is particularly important in the wet season when the rains result in other water sources that are often closer to the compound.

In both seasons the percentage of respondents with education who select the hand-pump as their major source of water is greater than those without (Table 17). More significant is the larger decline of hand-pump use between seasons for those with education than those without. If water drawers really place a value on pump water, then they should do so in both seasons and the proportion selecting a pump in the wet season would be the same as those making that selection in the dry season.

TABLE 17 Reported Selection of a Hand-Pump as Major Water Source by Education and Season

Season	Wet		Dry	
	%	(n)	%	(n)
Education	69.2	(39)	97.3	(37)
No Education	60.6	(208)	72.8	(195)

Note: P and V samples only.

4.2.7 Education and Water Contamination

At almost all water sources, and at about one respondent's yard in five, samples of water were collected and tested for faecal contamination. For yards that report using the hand-pump, about 30% had some contamination in their drinking water. There was no statistically significant difference between seasons or associated with education.

TABLE 18 Presence of Contaminated Drinking Water at Compounds Using Hand-Pump Water by Education and Season

Season	Wet		Dry	
	%	(n)	%	(n)
Education	35.7	(14)	26.7	(15)
No Education	30.9	(42)	28.6	(49)

Note: P and V samples only.

4.2.8 Education and Guinea Worm

Guinea worm (dracunculiasis) is a parasitic worm that usually lies under the skin, often of people's legs. The female worm produces a blister on the leg which bursts and releases larvae. If this occurs so that the larvae enter the water, the larvae may pass through 'cyclops,' a tiny aquatic crustacean. People are infected if they drink water containing the cyclops. Guinea worm causes intense pain and results in a significant loss of labour. It may be eradicated by improved water supply.

Guinea worm is an important water-based indicator of the impact of improved water supply. Because of its associated pain and scar, reporting of its incidence is likely to be both reliable and valid. About 15 percent of all respondents reported having had guinea worm at some point in their lives, and about 3.5 percent reported that someone in their compound had it at the time of the survey (Report 5, Results of a Social Survey of Water Drawers).

An analysis of the reported incidence and prevalence of guinea worm by education and season suggests no association except that those with education reported a significantly higher incidence of guinea worm within the last year in the wet season (chi square = 4.96, significant at 95 percent) than those with no education.

TABLE 19 Reported Percentage Prevalence of Guinea-Worm in Compounds using Hand-Pump Water by Education and Season

Season Education	W		D	
	with	without	with	without
n	27	125	36	140
Respondent:				
- guinea-worm ever	11.1	9.7	8.3	10.0
- guinea-worm in the last year	7.4	0.8	-0-	0.7
- guinea worm now	-0-	0.8	-0-	-0-
anyone in this compound with guinea worm now	3.7	3.2	5.5	2.2

Note: P and V Samples only

5.0 RESULTS OF OTHER RESEARCH ACTIVITIES

5.1 Survey of VEW Audience Members

5.1.1 Introduction

In the main social survey, one third of the survey areas were randomly selected from locations where VEWs had reported giving presentations, and compounds were then randomly selected within each area.

As it became clear that this survey would contact only a small number of villagers who had ever actually attended a VEW presentation, a smaller scale study was attached to specific presentations to investigate what people recalled immediately or soon after a VEW presentation.

It was felt important that the presentation be as typical as possible. Unfortunately, as soon as a VEW or headman learns that visitors may be expected to attend a presentation, plans are usually made to make it a special occasion with gifts, speeches and a large crowd. An attempt to overcome this was made by asking VEWs to provide advance notice of all of the presentations they planned to make. A sample would then be selected from this for visits without their prior knowledge.

Another major issue was the period between presentation and interview. As detailed below, a "day-after" survey was first tried, but as this located only one third of the adult audience and wasted considerable time and effort going to compounds from which no one had attended, it was decided to proceed with interviews immediately after the presentation.

This small study was constrained by the fact that fieldwork staff were not available until late March 1985. All interviews were conducted between March 29 and April 12. It was further restricted by the fact that of nine presentations that were selected to attend, only three were held. However, one puppet show was also attended and six audience members interviewed.

This experience illustrates the difficulties of observing typical VEW presentations, a major problem inherent in trying to monitor the VEW programme.

5.1.2 Brief History of the Audience Research

Pre-Test

- 6 September 1984 Attended a VEW presentation as previously arranged with the VEW at 455G-1. Attendance about 50-60 (30 adult males, 9 adult women, 5 male youths, 13 children).
- 7 September Returned to pump and sent pairs of interviewers off in all directions to visit all compounds in the neighbourhood and interview both those who had attended the presentation and those who had not. Visited 25 compounds and interviewed 13 who had attended and 12 who had not.

Fieldwork

- 11 February 1985 Attended VEWs meeting in Bolgatanga and requested VEWs to let CE staff know in advance of their presentations so that evaluation project staff might attend; 3 presentations reported during the next 4 weeks, none attended by the evaluation staff.
- 21 March At the next VEWs meeting in Bolgatanga all 15 VEWs were asked to list his or her presentations over the next month or so; this produced a list of 34 presentations. It was again explained that the evaluation staff would select some presentations to attend and interview the audience after the VEW presentation. In an attempt to ensure that the presentations were as typical as possible, VEWs would not be informed before-hand of which presentations were to be included.
- 23 March
(Saturday) Selected presentations: 456D-25 at 0900 hrs. and 456D-27 at 1100 hrs. Nothing organized, people near the pumps claimed not to know of the VEW.
- 25 March
(Monday) Selected presentation: 456G-7 at 1400hrs. Interviewed eight audience members after the presentation.

- 29 March
(Friday) Selected presentation 455F-34 at 0900 hrs. VEW was waiting at Bongo market at 0915 hrs. to see if we would arrive. Arrived with VEW at pump 0940 hrs. Presentation lasted from 1005 to 1142 hrs. Twelve audience members interviewed afterwards.
- 30 March
(Saturday) Selected presentation: 455I-41 at 0900 hrs; Nothing at pump; local headman knew nothing of any presentation but knew the VEW well. At her compound the VEW reported that she had telephoned WUP on Friday to find out if we were coming but had not been able to get through.
- 1 April
(Monday) Selected presentation: 456H-4 at 0900 hrs; Pump isolated and empty. Located VEW at his compound in Nangodi; he explained that the meeting had been postponed at the community's request after a murder on Sunday.
- 2 April
(Tuesday) Selected presentation: 455C-33 at 0900 hrs. Met another VEW on the road who directed us to the pump. Pump users reported that their VEW had said there would be a meeting today but not when. VEW arrived at 1005 hrs. Eight audience members interviewed afterwards.
- 2 April
(Tuesday) Selected presentation: 456G-19 at 1400 hrs. Found the VEW distributing kerosene at the market; he claimed to have given his presentation in the morning. Two days later we visited about six compounds near the pump to interview the audience none of whom knew anything of the presentation. Found VEW again who admitted that no presentation had been given.
- 11 April
(Friday) Puppet show at Abiliba Middle School, Bolgatanga. Six adults or youths interviewed after Arts Council performance.
- 12 April
(Saturday) Selected presentation: 455E-37 at 1000 hrs. No presentations at pump, neither women drawers nor pump caretaker knew of any presentation since about a year ago.

5.1.3 Results

In the interview, respondents were asked what things they remembered from the event, if they knew this before, what feelings they had about the event and if they had ever been to another talk on water and health.

Each audience member recalled between five and six items on average ($257/47 = 5.5$). There were no fewer than 122 different items recalled within 18 general categories of content (Table 20) of which twelve messages accounted for 40% of all items recalled (Table 21).

The audience reported that approximately 60% of all items recalled were known by them prior to the presentation; that is to say only 40% of the messages represented new information. Exactly half (17/34) reported having attended a previous talk (Table 22). An analysis of prior knowledge of these different items by previous attendance at a talk on Water and Health suggests that those who have attended previous talks recall more and learn more. It may be hypothesized that attending one talk helps prepare an individual to learn at the next (Table 23).

Audience members in general found the VEW presentation neither too long nor too short and basically of an acceptable length. Only a handful felt that too many items had been included, no one thought too few things had been covered and a great majority found the number of items discussed to be acceptable. When those who had attended a presentation given by a male VEW were asked if it would have been better to have had a female VEW only a minority agreed.

TABLE 20 General Classification of Items Recalled by 47 Audience Members of VEW Presentations or Puppet Shows

Category	Number of Different Items	Total Number of Items Recalled	
		n	%
Protection of stored water	13	33	12.8
Cleaning water containers, bowls, utensils, calabashes, etc.	21	32	12.5
Household cleanliness	17	27	10.5
Boiling water	6	21	8.2
Pump use and care	7	18	7.0
Children using the pump	7	18	7.0
Defecation	2	15	5.8
Do not use non HP water	9	14	5.4
Hand-pump site construction and care	6	14	5.4
Bathing children	4	12	4.7
Latrines	4	11	4.3
Bathhouses	6	10	3.9
Rubbish	6	9	3.5
Personal cleanliness	3	8	3.1
Hand-pump water	6	8	3.1
Bathing	4	4	1.6
Eye care	2	2	0.8
Animals	1	1	0.3
TOTAL	122	257	

TABLE 21 Twelve Major Messages Recalled from a VEW Presentation

Message	% of audience who recalled this message (n = 47)
Cover drinking pots/water containers	31
Do not defecate in the open	25
Boil non HP water before drinking	23
Do not let children play with hand-pump	21
Wash utensils	19
Take good care of the hand-pump	17
Keep pumpsite clean	15
Construct a pit latrine in the compound	15
Sweep yard	13
Bathe children well	13
Pour boiled water into washed pot	10
Wash bowls after eating	10

TABLE 22 Have You Ever Been to Other Talks on Health and Water?

	<u>% of audience</u> (n = 34)	
No		50%
Yes - VEW	15%	
- Teacher	6%	
- Sanitary inspector	3%	
- nurse	3%	
- puppet show	3%	
- but don't know/cannot recall	21%	<u>50%</u>
	TOTAL	<u>100%</u>

TABLE 23 Prior Knowledge of Items Recalled from a VEW Presentation by Previous Attendance at Another Water and Health Talk(s)

		Reported Previous Attendance	
		Yes	No
Number of individuals		17	17
Number of items recalled		103	79
Mean number items recalled		6.1	4.6
Mean number of items of new information		2.6	1.4
=====			
Reported Prior Knowledge of Each Item	Yes	55%	71%
	No	45%	29%

Chi-square = 3.95, sig at 5%

TABLE 24 Audience Opinions of VEW Presentations

Was the talk too long, too short, or O.K.? (n=42)

O.K.	83%
Too Long	12%
Too Short	<u>5%</u>
TOTAL	<u>100%</u>

Did the VEW talk about too many things, too few things, or was it O.K.? (n=43)

O.K.	88%
Too Many	<u>12%</u>
TOTAL	<u>100%</u>

One of the evaluation staff, a nurse on secondment from the Ministry of Health, was asked to listen carefully to the three talks by the VEW. He reported the following misunderstandings:

- onchocerciasis (river blindness) is caused by drinking river water
- guinea worm enters through the genitals or anus
- guinea worm causes thinness (picture 23)
- jaundice (yellow eyes, picture 22) is yellow fever
- ignorance about flies as agents of transmission
- not bathing will raise your body temperature
- confusion among malaria, yellow fever, and jaundice

5.2 Highlights from a Review of VEW Report Forms

This review covers 83 VEW report forms that reported on 78 village presentations and 5 presentations at schools in late 1984 and early 1985 in the Bolgatanga district.

The major findings from these forms include:

- high variation in reported audience size ranging from 15 to 282
- mean audience size of 57; 36 adults and 21 children
- audience size at schools averaged 80 children and 4 adults
- VEWs estimated that at 40% of village meetings there were more male adults than female, at 24% there were more women than men and at 35% of meetings the number of men and women was equal.

VEWs also reported on their use of the various teaching aids (Table 26).

When asked to list what they had discussed during the presentation, VEWs listed 82 different items, and reported discussing an average of 2.2 items per event, (Table 27).



TABLE 25 Reported Percentage Distribution of Total Adults and Children at VEW Presentations (n=78)

Total Adults or Children	Percentage of Meetings	
	Adults	Children
0	0	3.9
1-9	7.7	29.0
10-19	32.1	40.9
20-29	17.9	2.6
30-39	12.8	7.9
40-49	12.8	3.9
50-99	7.7	9.2
100-180	9.0	2.6
TOTAL	100.0 =====	100.0 =====
mean	36	21
sd	38	26

Source: VEW Report Forms

TABLE 26 Reported Use of Teaching Aids by VEWs

Teaching Aids Utilized	Percentage of Presentations
Pictures	49
The pump site	4
Others (dirty areas/things; insects; stories; examples of bad practices; children)	10
Nothing	<u>37</u>
TOTAL	100% ===

TABLE 27 Topics Reported Discussed by VEWS at 83 VEW Presentations

	% of Meetings
Pit latrines	39
Care of pump site	35
Sanitation	23
Bathhouses	20
Care & proper use of pump	18
Access roads	17
Cattle trough	17
Extended pad	12
Water protection	8
16 other topics	5-1% each
personal cleanliness/hand-dug wells/primary health care/ malaria/backfill/Water Users Committees/measles/childrens' health/family care/dysentery/fever/HP repairs/different sources of water/communal labour around HP/drink clean water/soakaways	

Source: VEW Report Forms

5.3 Results from a Survey of Training Needs of VEWS

The questionnaire for this self-administered survey of training needs (15) was based upon a list of training needs gathered by reviewing health education programmes for rural development workers around the world (16). This classified skills under five categories:

1. Social diagnostic skills;
2. Skills in helping groups and individuals to change;
3. Technical knowledge concerning water-related health and sanitation;
4. Skills in supporting and linking to other resources; and
5. Evaluation.

To the total of 49 items listed under these categories seven more were added under a section titled "GWSC and the CE programme." VEWS



were handed a questionnaire at a district meeting and asked to rank how important he or she felt it was to receive training in each topic. Responses could be "it is a priority to be trained in this/it is somewhat important/no training is required/do not know". After responding to all items, they were asked to review all those they had marked as a "priority" and select the three most important.

This instrument was pre-tested in one district where it worked reasonably well. The survey was then distributed at VEW meetings in five district centres and completed by 41 VEWs (about 60% of all registered volunteers). It should be noted that some VEWs encountered difficulty with reading or understanding the text.

The responses were weighted as follows: no training required = 0; somewhat important = 1; priority = 3; one of the 3 most important priorities = 7. Average scores were calculated for each item by each district, and for the whole region.

VEWs ranked the priority of the broad classifications of training needs as follows:

1. Skills in supporting and linking to other resources;
2. Social diagnostic skills;
3. Skills in helping groups and individuals to change;
4. Evaluation skills;
5. Knowledge of GWSC and the CE programme; and
6. Technical health and sanitation knowledge.

The ten specific training needs judged to be most important were:

1. Stimulate the formation of a water users committee to lead water and sanitation activities within the community;
2. Understand the nature and contribution of evaluation to improve the effectiveness of your programme;
3. Establish and maintain the trust of villagers; understand their view of the world, their concerns and needs;
4. Present information in ways that are sensitive to people's own theories of water-related diseases;
5. Understand the connections between people's needs and concerns and the aims of the community water education programme;



6. Know of technical support resources in health, water and sanitation;
7. Know about VEW administration procedures;
8. Know about the goals and structure of Rural Water Supply Unit/WUP;
9. Continue support with village water groups until strong enough to work independently; and
10. Identify formal and informal leaders, people with influence and decision-makers among men and women.

One important point in these results concerns the responses to the health and sanitation category. The results for these items were significantly reduced by the fact that the 14 (34%) VEWs who were trained health workers almost unanimously judged they required no training in this area. For the remaining VEWs who have not been trained in this previously, such technical knowledge is important and can often be provided by their fellow VEWs.

An omission from the list added by the evaluation project was an item concerning pumps. This was specifically mentioned during our later interviews with VEWs (Section 5.4) and written in by a few VEWs on this survey.

Detailed results of rankings by region and by all districts are given in Table 28.

TABLE 28 Perceived Training Needs Ranked by Region and District

SKILL OR KNOWLEDGE	RANKING					
	DISTRICT					
SKILLS IN SUPPORTING AND LINKING TO OTHER RESOURCES	R	B	L	N	S	W
knowledge of technical supporting resources in health, water, and sanitation	1	1	2	1	2	1
continue support with village water groups until strong enough to work independently	2	2	1	3	1	2
maintain contact between the group and relevant government agencies and other external resources	3	3	3	2	3	3
SOCIAL DIAGNOSTIC SKILLS	R	B	L	N	S	W
establish and maintain the trust of villagers; understand their view of the world, their concerns and needs	1	4	3	1	3	6
understand the connections between peoples' needs and concerns and the aims of the community water education programme	2	1	2	3	2	5
identify formal and informal leaders, people with influence and decision-makers among men and women	3	5	1	5	1	1
continuously identify new individuals and groups with the potential for active participation in your programme	4	3	6	4	6	4
identify factions, groups, or classes in conflict with one another, competing for power, influence or control over resources	5	6	4	6	4	2
identify traditional healers and build up trusting relationships with them	6	2	5	2	5	3

R = Region, B = Bawku, L = Lawra, N = Navrongo, S = Sandema, W = Wa



Table 28 (cont'd.)

DISTRICT

SKILLS IN HELPING GROUPS & INDIVIDUALS TO CHANGE	R	B	L	N	S	W
stimulating the formation of water user's committee to lead water sanitation activities within the community	1	1	1	3	3	1
present information in ways that are sensitive to people's own theories of water-related diseases	2	3	4	1	1	6=
organize with other village workers (e.g. teachers), a broad village health education programme to change water, sanitation and other behaviours	3	6=	2=	5=	2	2
organizing group discussions to develop group responsibility, problem solving abilities rather than having health worker the focus of group attention	4	2	2=	4	7	3
resolution of conflicts or potential conflicts over the control or use of water sources	5	8	5=	2	5=	5
present information in ways that stimulate discussion rather than make the audience listen to a lecture	6	5	7	5=	4	6=
present information in ways that are supported by simple home-made visual aids	7	6=	5=	7	5=	4
present information in ways that allow the audience to specify solutions and changes	8	4	8	8	8	8

Note: Rankings with "=" are of equal ranking to another in the District.

R = Region, B = Bawku, L = Lawra, N = Navrongo, S = Sandema, W = Wa



Table 28 (cont'd.)

EVALUATION SKILLS	DISTRICT					
	R	B	L	N	S	W
understand the nature and contribution of evaluation to improve the effectiveness of your programme	1	3	1	1	1	1
able to do simple evaluations of the outcome of activities in terms of changes in knowledge and behaviour	2	2	2	5	2	2
able to do simple evaluations of the process of events and activities	3	1	4	3=	3	5
promote the participation of water groups in designing and using evaluation	4	5	3	2	4	3=
recognize and react flexibly to signs of slow-down, low interest etc. within the community	5	4	5	3=	5	3=
KNOWLEDGE ABOUT GWSC AND THE COMMUNITY EDUCATION PROGRAMME	R	B	L	N	S	W
VEW administration procedures	1	1	5	3	10	4=
the goals and structure of RWSU/WUP	2	2	1	1	11	6
the goals and structure of GWSC	3	3	2	5	9	1=
roles and responsibilities of VEWs	4	4	4	2	4	1=
the VEW bicycle agreement	5	6	3	8	1	7=
site development techniques:						
- extended pad	6	7=	10	4	5=	3
- latrines	7	5	6	6	2	7=
- gutter	8	9	7=	7	5=	4=
- animal trough	9	7=	7=	9	5=	10
other project techniques:						
- bathhouses	10	10=	11	10	3	11
- back-filling	11	10=	9	11	5=	7=

R = Region, B = Bawku, L = Lawra, N = Navrongo, S = Sandema, W = Wa

Table 28 (cont'd.)

DISTRICT

TECHNICAL WATER-RELATED HEALTH & SANITATION	R	B	L	N	S	W
malaria	1	14	1	22=	1	4=
yellow fever	2	11=	2=	6=	2=	4=
bilharzia/schistosomiasis	3	1=	14=	16=	7	18=
infectious hepatitis	4	4=	2=	11=	13=	4=
diarrhoeal diseases	5=	13	2=	6=	9	4=
conjunctivitis	5=	4=	2=	2=	23	4=
onchocerciasis (river blindness)	5=	11=	2=	9=	10=	4=
elephantiasis	5=	4=	2=	6=	20=	4=
scabies	9	7	2=	18=	10=	4=
intestinal worms	10	1=	2=	25	15=	4=
environmental hazards	11	16=	14=	1	20=	2
typhoid	12	1=	2=	16=	19	20=
tetanus	13	8=	20=	14=	13=	20=
convulsions	14	8=	20=	14=	20=	4=
faecal and urinary pollution of water sources	15	19	11=	11=	8	24
sanitation and safe sewage disposal	16	20=	11=	11=	15=	4=
the hygiene of water collection	17	20=	18=	9=	5=	20=
Guinea Worm	18	15	14=	24	12	16=
the hygiene of water usage	19	20=	18=	21	5=	4=
infant hygiene	20	25	25	4=	15=	1
the hygiene of domestic water storage	21	20=	14=	18=	15=	18=
personal hygiene	22	20=	24	22=	2=	20=
faecal - oral transmission routes	23	18	11=	2=	24	25
behavioural hazards	24	16=	20=	18=	25	3
measles	25	8=	23	4=	4	16=

R = Region, B = Bawku, L = Lawra, N = Navrongo, S = Sandema, W = Wa

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In a final section of this questionnaire VEWs were asked to assess various aspects of the VEW programme. While on most items a majority thought the programme excellent or good, relative problem areas appeared to concern bicycle parts and GWSC support (Table 29).

TABLE 29 Assessment by VEWs of Different Aspects of the VEW Programme

	n	Excellent %	Good %	Fair %	Poor %
VEW presentation pictures	40	42.5	42.5	12.5	2.5
VEW bicycles	40	40.0	45.0	12.5	2.5
Basic Training Course for VEWs	33	30.3	66.7	3.0	0
WUP posters (improve drainage etc.)	40	27.5	60.0	7.5	5.0
Regular VEW meetings	40	20.0	72.5	2.5	5.0
Arrangements for bicycle parts	41	12.2	46.3	19.5	22.0
GWSC support to VEWs	40	10.0	42.5	15.0	32.5
Average Rating		25.9	53.3	10.6	10.2

VEWs were also requested to assess their own effectiveness; 60% judged themselves to be good or excellent on all four aspects, though they assessed their abilities in mobilizing groups to do projects and changing people's behaviours to be relatively weak (Table 30).

TABLE 30 Self Assessment of VEW Effectiveness

	n	Excellent %	Good %	Fair %	Poor %
Your skills as a presenter of information	40	22.5	75.0	2.5	0
Your skills as a discussion group leader	39	18.0	69.2	12.8	0
Your effectiveness in getting groups to do projects	39	20.5	43.6	28.2	7.7
Your effectiveness in changing people's behaviours	39	10.3	71.8	17.9	0
Average Rating		17.8	65.0	15.3	1.9

5.4 Interviews with VEWs

To learn more about VEWs and how they perceive their work, interviews with nine VEWs were held, all but one of whom worked in the Bolga district (17).

VEWs report they have more or less done what they were asked to. This means they have: 1) selected an area in which to work and within which they have chosen ten pumps; 2) they have organized meetings to be held at the pump site, chief's house, or schools; and 3) they have given talks utilizing their 24 pictures.

Some VEWs reported having added supplements to their talks or introducing variety in its presentation. Such supplements include: the importance of weaning foods, organic farming, and the need for a weekly cleaning of the hand-pump site. To introduce some variety to his talks one VEW distributes his pictures among the audience and asks them to do the presentation.

VEWs felt a widespread boredom with the presentation and material among both themselves and the audience. No new materials had been distributed to them since they had joined the programme, in the period of 1981 to late 1983.

All VEWs are reluctant to cease work in a village. They argue there is a need for regular reminders and repetition of messages if villagers are not to revert to their previous patterns of water-related behaviour. Among the more active Bolgatanga VEWs the pattern appears to be one of increasing the number of presentation sites while maintaining a minimal level of visits and contacts at those sites with which they commenced their work. The less active VEWs still work only in the ten or so locations where they commenced work in early 1983.

There have been some difficulties with relations between VEWs and CE staff. When VEWs were recruited they were provided with bicycles on the understanding that each VEW would organize three presentations a year in ten locations. After three years and 90 presentations the bike would become the VEWs personal property. The basis for monitoring the VEWs performance would be the report forms that he or she would submit after each presentation. Over the past three years problems have arisen with VEWs who have not submitted 30

report forms a year and with the provisions of spare parts for the bicycles. Among the Community Education staff there have been on occasion suspicions that some report forms have been fabricated and even that some VEWs have been selling spare parts. From the VEWs perspective they agreed to work as VEWs on a voluntary basis; however, when they meet with the CE staff they are treated more like salaried workers and expected to give targets each quarter for the number of presentations they will give and latrine and site development that they will organize. At the end of each quarter, they must publicly report on how well they have met these targets. There is also some uncertainty concerning the bicycle after a VEW has served his or her three year period. The bikes are not very strong and after three years of being used on rough rural roads are generally in poor shape. For VEWs who wish to continue with the programme, the issue is whether CE staff will provide a second bike and write off the first from their books. This question did not appear to have been considered at the introduction of the programme and in early 1985 was being shelved until the executing agency took over the WUP programme.

There are also some difficulties for VEWs in their relations with villagers. For villagers, the distinction between GWSC staff and WUP volunteers is difficult to perceive and the implications hard to appreciate. In some cases the VEW is the most visible and regular contact the village has with GWSC; in those cases VEWs are expected by the villagers to be the major medium for communication between them and the Corporation. Most commonly this means that villagers expect the VEW to report any pump breakdowns. Moreover, if the pump takes some time to be repaired they may hold the VEW responsible for the delay. At another level, some VEWs tell the pump caretaker to be responsible for ensuring what the VEW has told the village is practiced after the VEW has departed.

There is little or no concern by VEWs for traditional healers within the village. A few VEWs had encountered traditional healers in their work and a few had managed to persuade them to attend presentations.

VEWs felt that villagers genuinely appreciated their work and would attend presentations two and three times even after they knew the content of the talk well.

Some VEWs had ideas on what could be improved in the programme. Many felt there was a need for new materials and some were able to suggest how this might be done. One suggestion was to vary the presentations by season. VEWs would also like training in how pumps work, common faults with hand-pumps, dams and hand dug wells, health issues, etc. One VEW reported that he was confused about yellow fever, jaundice, and malaria.

5.5 Selected Results from a Survey of Women in Development Activities in Northern Ghana and Follow-up Interviews

To assess the impact of the Community Outreach activities of the CE project, the Evaluation Project was able to utilize the results of a recent CIDA-sponsored mission (18) to review Women in Development activities in northern Ghana.

The timing, approach and mandate of this survey were fortunate for the evaluation. Because they did not mention WUP, VEWs or CE in the introduction to their interviews and visits and because their terms of reference required a complete listing of reported programmes and activities, the researchers probably produced a study with a more accurate description of CE inter-organizational linkages than the evaluation could have done.

For the purposes of the evaluation, the most significant result is that in the detailed listings of the programmes and activities of relevant organizations, no mention was made of CE materials or training or cooperation with WUP with the one exception of the Arts Council of Ghana which discussed the water dramas commissioned by WUP.

A number of Upper Region organizations did, however, list activities related to CE's mandate with whom future cooperation could be organized. These include:

1. Agricultural Home Extension, URADEP - soakaway pits;
2. Department of Rural Housing and Cottage Industries Ministry of Youth and Rural Development - pit latrines;
3. Department of Nutrition, Ministry of Health - safe water;
4. Bongo Rural Development Project - Family Health Programme - household sanitation;

5. Nandom Agricultural Project - Women's Agricultural Home Extension - Sanitation talks; and
6. Family Health in Ghana (FHIG), Home and Agriculture Extension Activities - pit latrine programme (using pit latrines from a factory in Langbensi this has put 20 pit latrines in a hookworm infested village).

This study was followed up by the evaluation project in April 1985 to verify and explore the relationships between WUP and three selected groups in more detail. (URADEP Home Extension, National Council on Women and Development, Bolgatanga; and FHIG, Bongo). All three groups could recall attending or being invited to attend one or two meetings to discuss community education or related programmes. In addition, the FHIG workers utilized three of the education illustrations (the posters on clean surroundings and covering containers and the black and white drawing of the child falling off the pump) among their 25 or so visual aids.

All three agencies, and especially URADEP and FHIG, saw potential for cooperation with the education programme. URADEP has some 60 extension workers in the Upper Region involved in home visits, group meetings, and they are about to commence a joint programme with UNICEF to encourage dry season gardening near hand-pumps.

The FHIG network includes six clinics in the Upper Regions and another five in the Northern Region with each clinic working in a number of other villages. The Bongo clinic for example works in five other areas. Typically, a clinic organizes two visits a month to each of its villages, one for child weighing and another for group meetings. Posters are used on both visits as well as for the home visits conducted by their staff. In addition, the Bongo clinic utilizes seven local Village Health Workers (VHWs) to provide a daily support to their work.

For both groups visual aids were a problem. URADEP reported that they did not have enough and FHIG utilized visual aids designed for the Ashanti Region; the vegetables, housing, and clothing, for example, were all inappropriate for northern Ghana.

5.6 Selected Results from Group Discussions with VEWs

During one evaluation session in Lawra VEWs were first asked to list the conditions and characteristics of a village before and then after their work. The dozen or so items they had named were then discussed before selecting four broad indicators of change:

1. The pump site should be fully developed (extended pad, back-filling, gutter, animal trough) with good access road and regularly (at least once a week) cleaned;
2. The outside and surrounding areas of compounds should be clean;
3. Pots should be cleaned with pump water and be covered; and
4. Animal faeces should be swept into a compost.

These items appeared to these VEWs to be the essence of their present task. These were the only items that were (1) important, (2) not commonly practiced already and (3) which villagers should be able to implement.

5.7 Commentary on the VEW Presentation Visual Aids

Many VEW presentations are built around the 24 visual aids. In light of their experience with these visuals, VEWs had a number of comments and questions on many of them (see Figure 3).

Figure 3 Comments by VEWs on Presentation Visual Aids

Picture 1

- it is a Beatty pump - most have now been replaced
- it is better to demonstrate good pumping actions
- the important point is slow, complete strokes



Picture 2

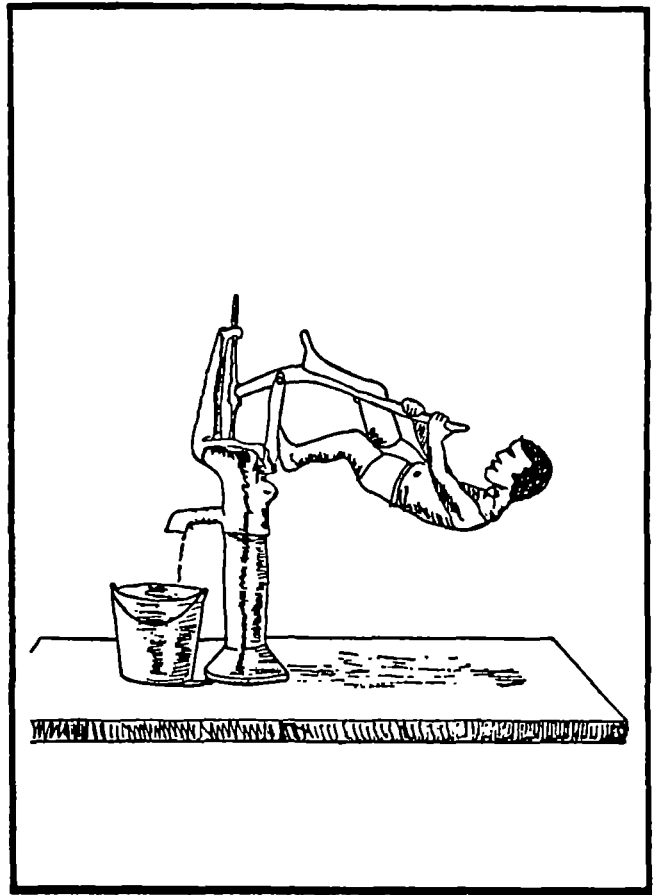
- problem is reverse turns
- do two handles mean two people share the pump?
- only the strong can turn the pump alone; usually it is turned by pairs of women or children



Figure 3 (Cont'd.)

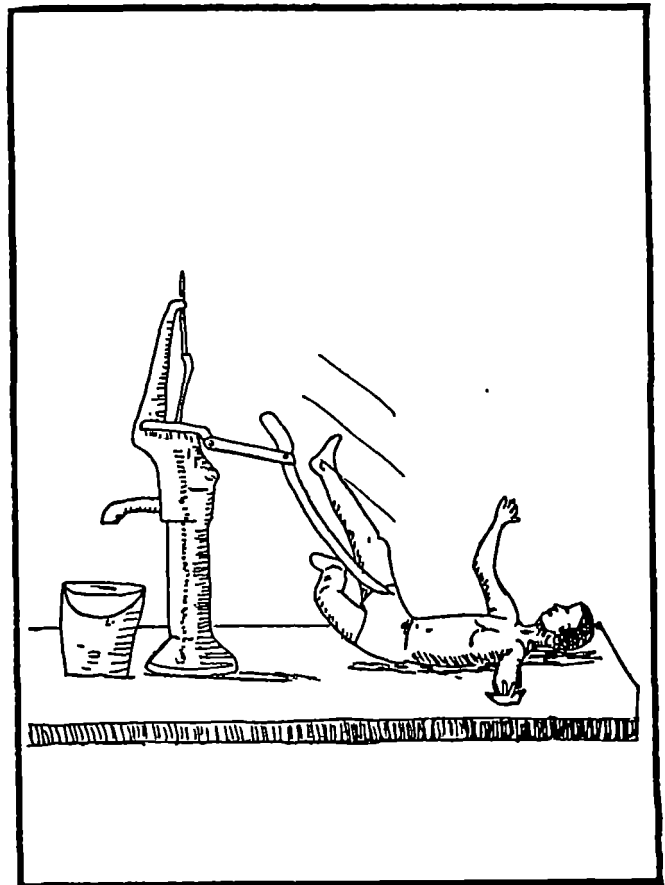
Picture 3

- this is a warning to rascals but children do not actually do this
- throwing stones up the spout is a more important problem
- this situation is actually impossible as the handle would fall before the boy could climb up the pump



Picture 4

- this is over-exaggerated as the handle is metal and cannot break like a stick
- there are more problems with the Moyno handles than with a Beatty or Monarch - the children can get hit in the head with the Moyno handles





Picture 5

- this shows animals in a wet season pond but goats are normally tethered in the wet season

Picture 6

- pigs love water more than any other animal
- they could be included in Picture 5

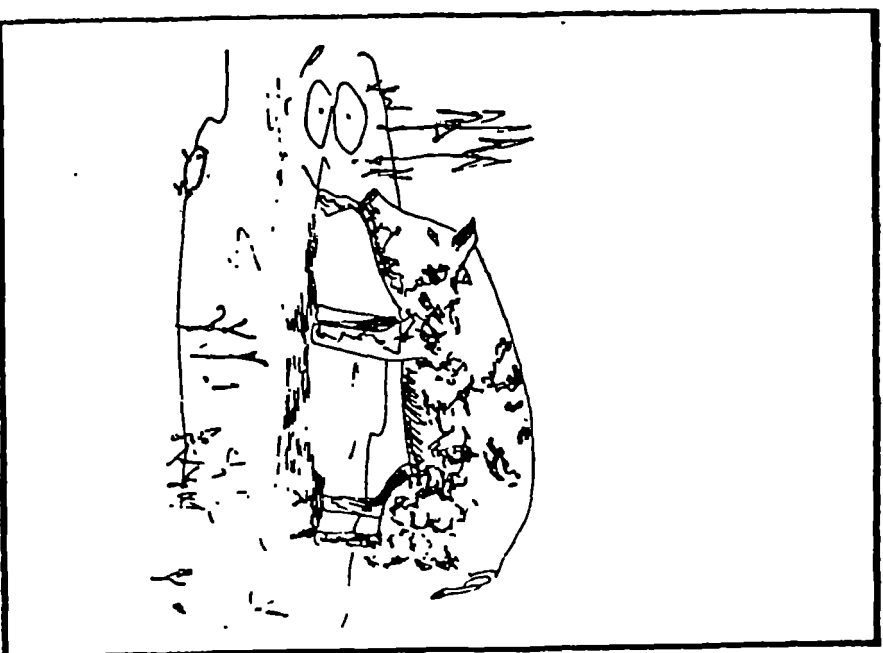
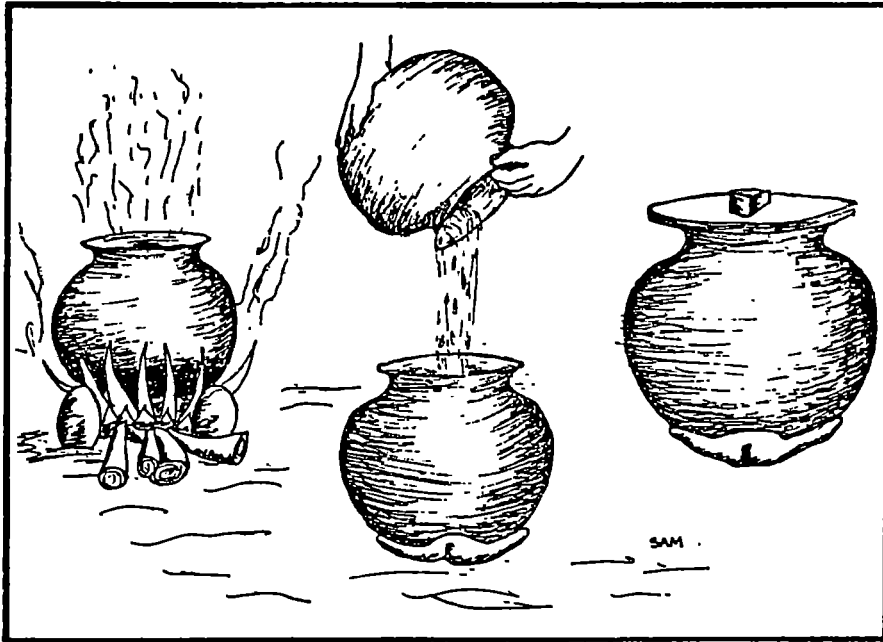


Figure 3 (Cont'd.)

Figure 3 (Cont'd.)



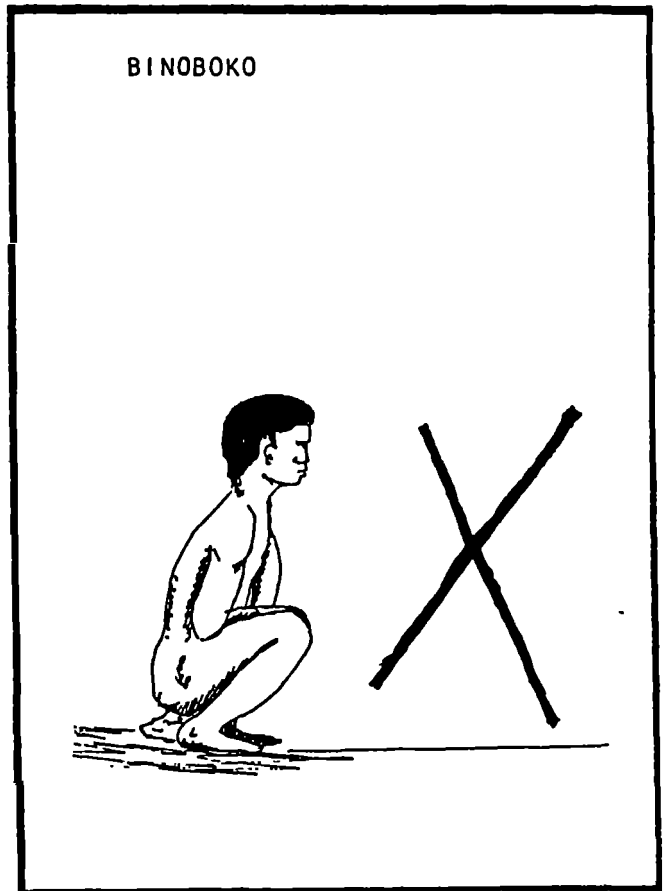
Picture 7

- if people draw water from any source but a pump, the water should be boiled, sieved and stored
- you have to assume there is a cloth or net to sieve the water
- people see this as a four different pots we have to explain that this is a sequence with only two pots
- the pot is hot so you would need a cloth to hold it with
- the hands are not attached to a body

Figure 3 (Cont'd.)

Picture 8

- X has no meaning, except to some school children
- some people laugh and ask how do the whites know we free ourselves in the open ("free range")
- binoboko is Frafra (for "hole for faeces"); literates in other areas ask why we use a Frafra word?



Picture 9

- a check or tick mark has no meaning
- we have to explain this is not a photograph but a cutaway
- some people say the man would fall down the hole as the block would over-balance

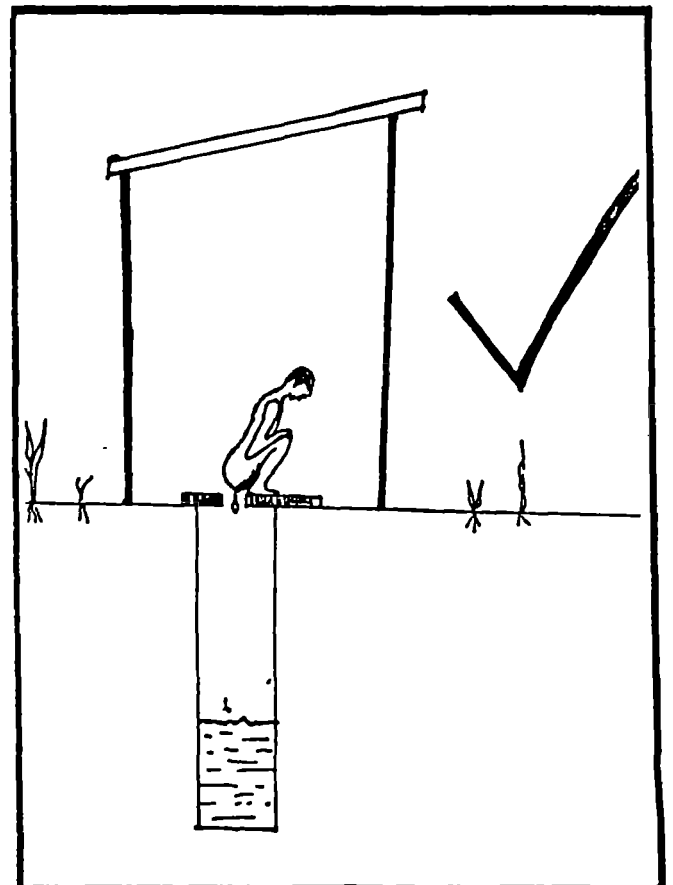
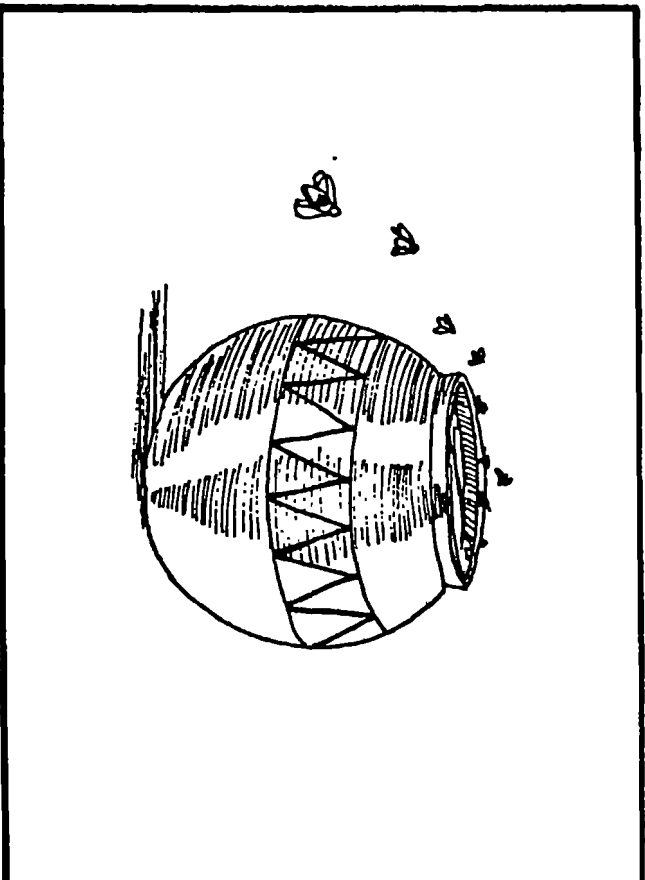
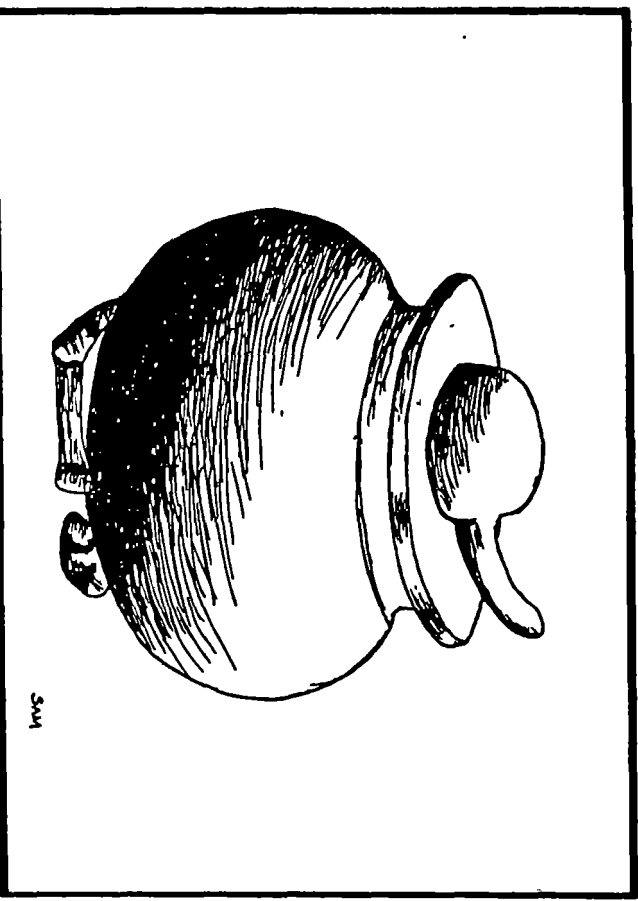


Figure 3 (Cont'd.)



Picture 10

- some people see these as bees as only bees go in a group and an uncovered pot with water could attract bees



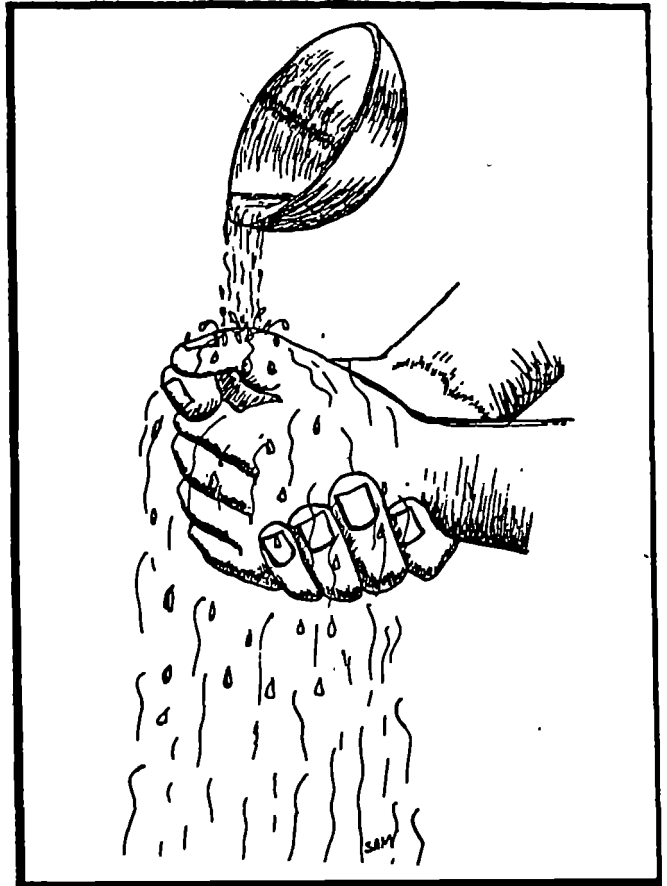
Picture 11

- only the Dagarti use such a ladel
- otherwise; if your mother is living it is forbidden to use such a long handled ladel

Figure 3 (Cont'd.)

Picture 12

- where is the body for the hands?
- what magic keeps the bowl above the hands?



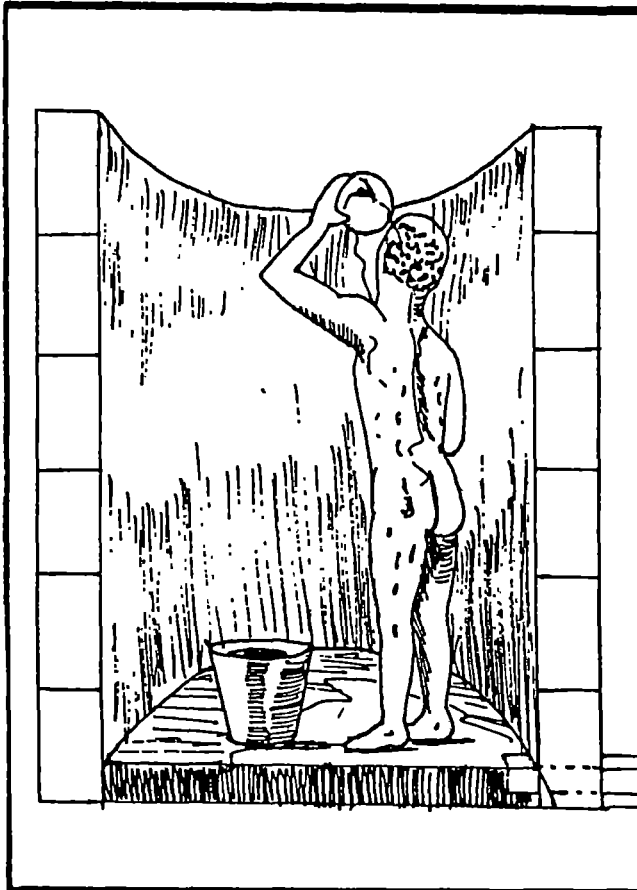
Picture 13

- if you can bathe your child only once a day, do so in the evening so he will be cool to sleep

Figure 3 (Cont'd.)

Picture 14

- is the wall transparent?
- it is wasteful to use a calabash to soak yourself
- if you need more water, you will have to call the children to fetch it for you, as you are naked



Picture 15

- washing clothes
- using a line or stick to dry the clothes helps keep them cleaner than drying on the ground



Figure 3 (Cont'd.)

Picture 16

- tell them to dry the dishes in a basket; the zinc is too modern
- traditionally people wash dishes before they cook, not after they have eaten



Picture 17

- women sweep inside the compound and men outside
- if the background is a wall the woman is sweeping inside
- if the background is hills, then the women is sweeping outside the compound and this is not done

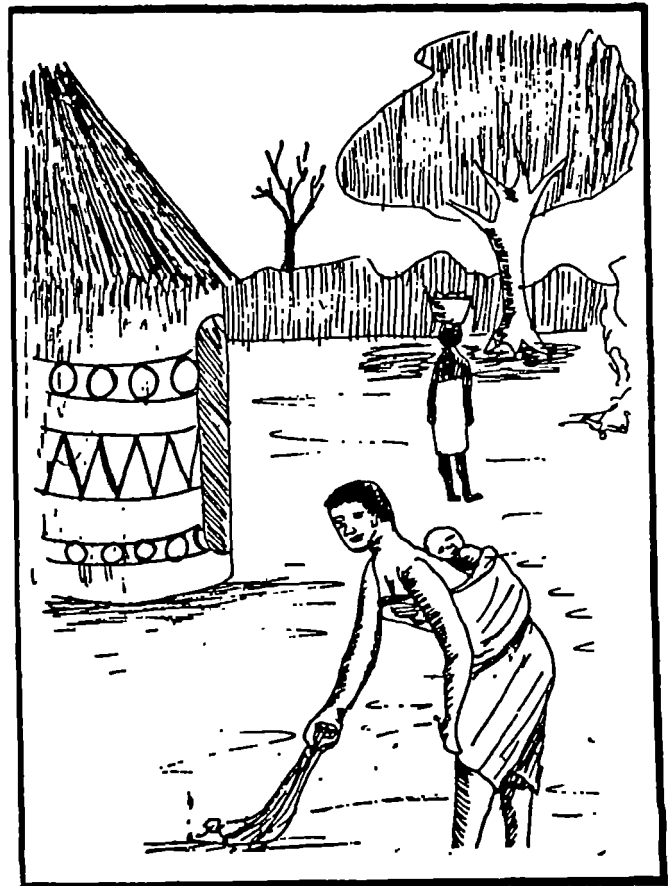
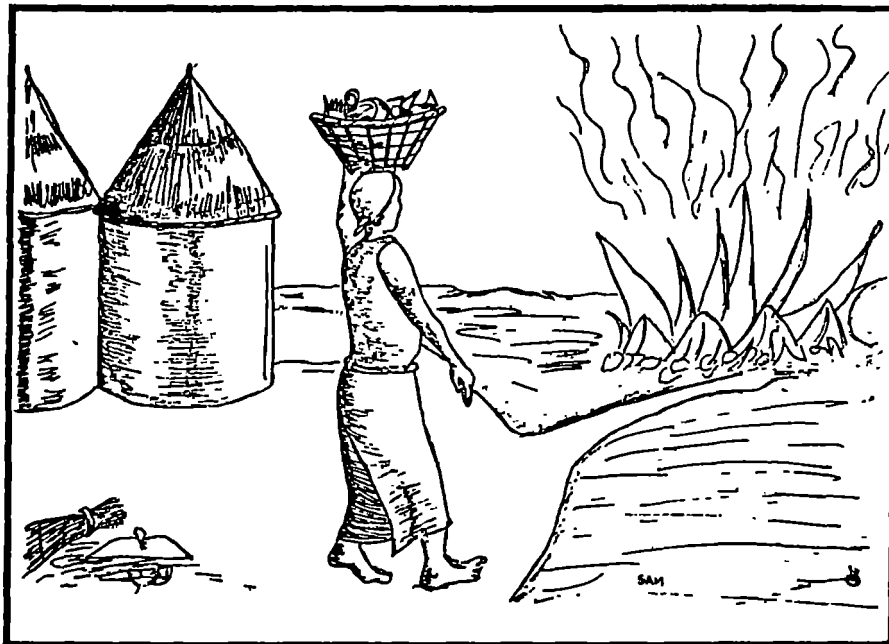
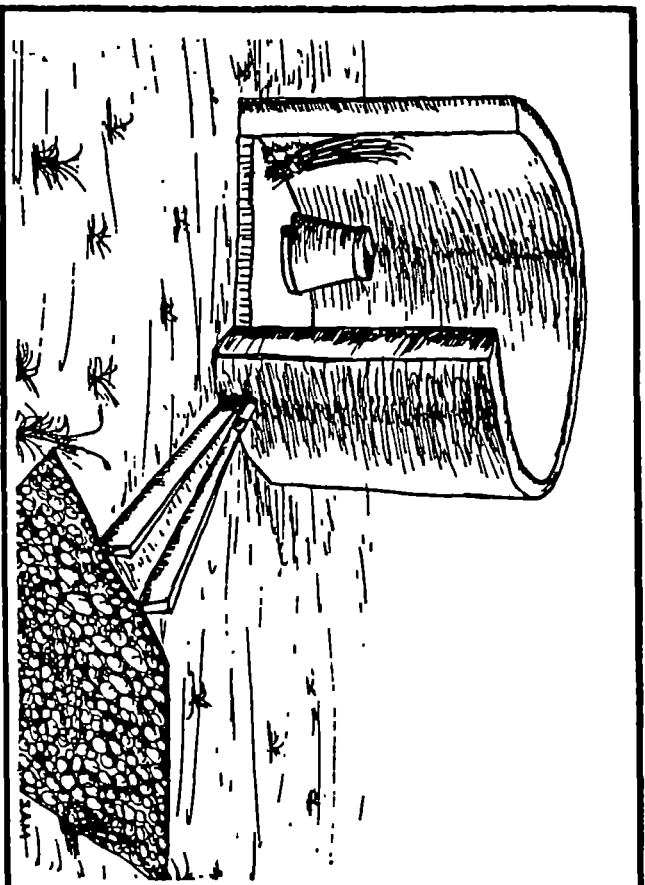


Figure 3 (Cont'd.)



Picture 18

- this fire is too big, some people see it as hills
- anyway, rubbish should not be burned
 - you might burn your farm
- better to compost



Picture 19

- a very good bathhouse with soakaway
- some audience members are confused by the inverted bucket and want the picture turned upside down

Picture 20

- a healthy animal showing the importance of a supply of good water
- this is a better design of cattle trough than the ponds that are normally built

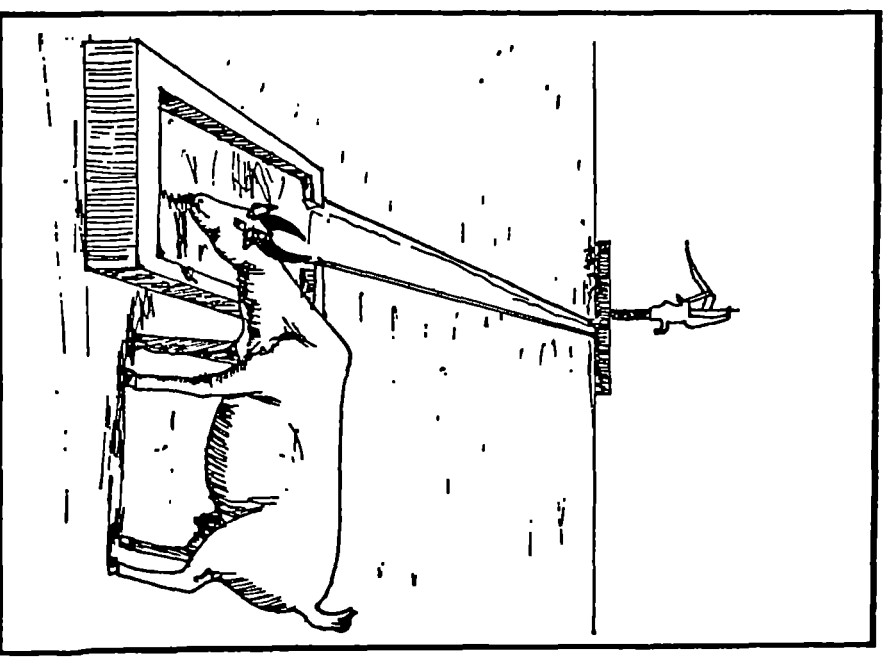
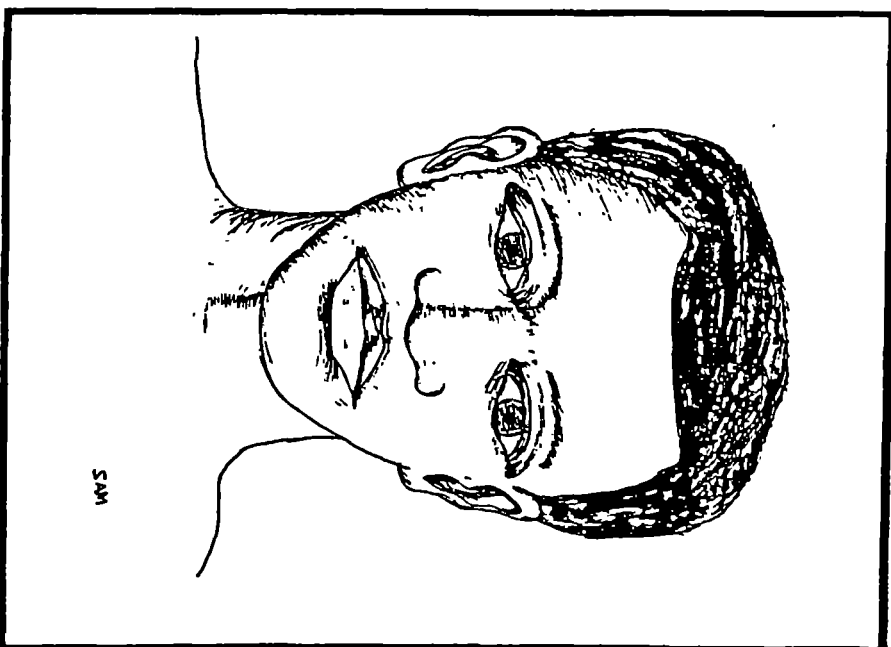


Figure 3 (Cont'd.)

Figure 3 (Cont'd.)

Picture 21
(Note: eyes are coloured
yellow)

- local people say this is a man with yellow fever



Picture 22

(Note: discharge is coloured
yellow and the whites are
red)

- a man with oncho (1)

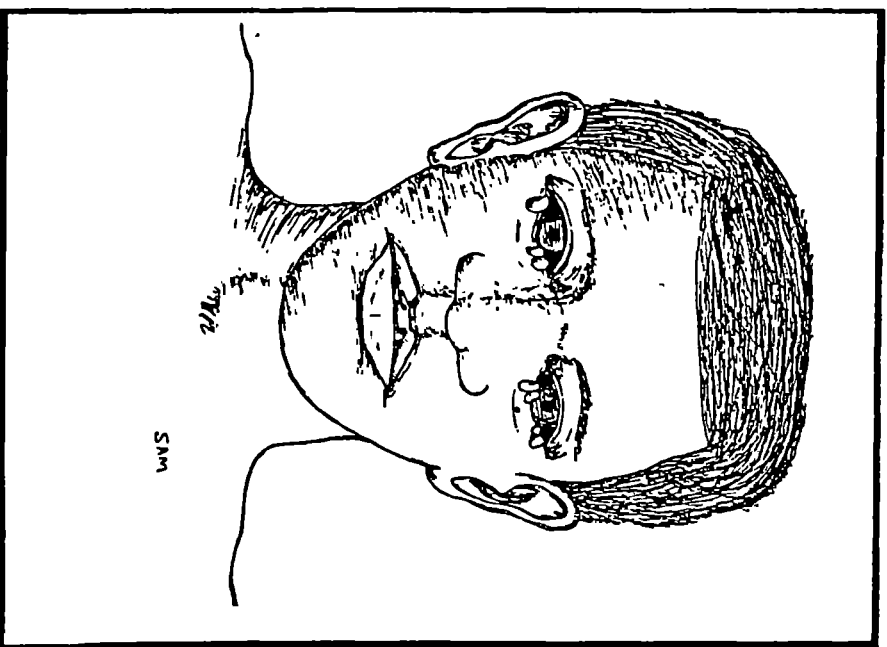
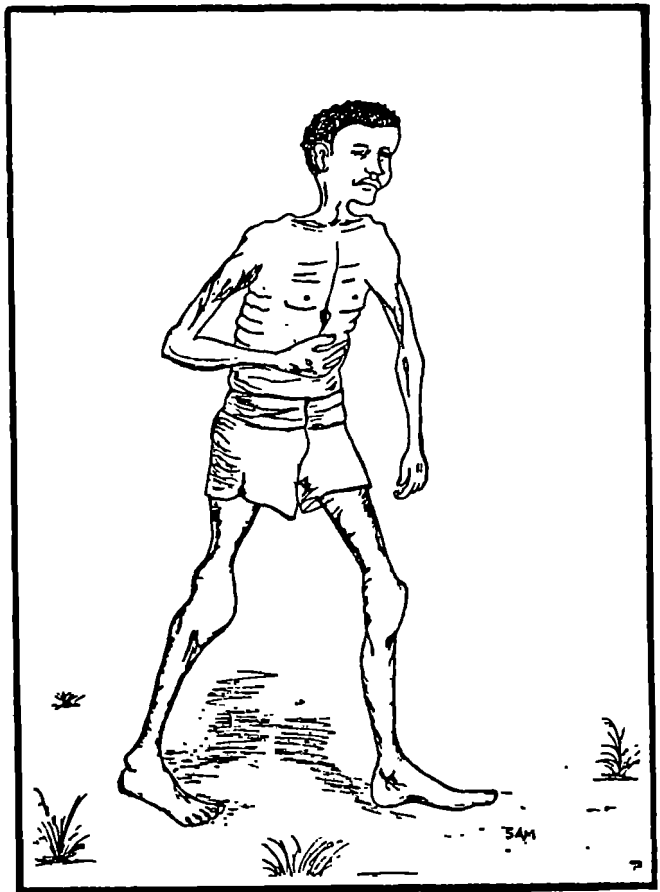


Figure 3 (Cont'd.)

Picture 23

- "the effects of poor personal hygiene"
- "if you do not follow all that I have told you today then you will look like this"
- "maybe TB or stomach pains?"



Picture 24

- guinea worm from drinking contaminated water



5.8 Translation of a VEW Presentation

For those who do not speak one of the indigenous languages of the Upper Regions, it is impossible to obtain a detailed insight into exactly what is said during a VEW presentation. Even the best interpreters can do no more than provide a general summary.

To solve this, just once the VEWs of Bolgatanga were asked to each take one or two of the 24 pictures and make a presentation to their colleagues. The audience VEWs were requested to be a reasonably typical village audience, posing the kinds of questions and passing the sorts of comments that typically occur.

The recording was then translated into English - a task that took at least ten person days (19). The resulting transcript is produced in full in Appendix B. This transcript reveals a rich discourse with analogy (the Moyno as a bicycle, the Monarch as grinding flour), humour (picture number 4 - "his bucket is full and he is only relaxing"), and linkages between the different themes.

5.9 Interviews with Pump Caretakers and their Trainers (25)

There were a total of 19 pump caretakers at these 17 pumps (at two pumps there were two caretakers); seventeen were interviewed by the Evaluation Project (20). Most caretakers had been selected by the community with about a third chosen by GWSC. At two pumps the position had been inherited from the caretaker's father and one headman viewed the position as a legitimate part of his duties (Table 31). All caretakers were male. One case of dual caretakers had arisen at the time of site development when the GWSC workers had decided the current caretaker was too infirm and replaced him with his neighbour. The original caretaker had been upset by this action and claimed that although he was old and sick his son had always carried out the duties (such as reporting faults) that he had been unable to perform. He was therefore refusing to hand over his tools to the replacement. At the other hand-pump with a second caretaker, villagers had appointed as an assistant a farmer who had a bullock plough and was therefore familiar with the tightening of bolts.

TABLE 31 Pump Caretaker Selection

<u>Local Selection</u>		<u>GWSC Selection</u>	
by villagers	4	drilling crew	3
by chief	3	site development workers	1
by elders	3	extension mechanic	1
		GWSC unspecified	1
 <u>Other</u>			
inherited position from father	2		
as part of duties as a headman	1		

Twelve caretakers reported having tools issued by GWSC, usually two spanners and an allen key. Four had never been issued any and one had had his tools collected back by GWSC.

All but four of the 17 pump caretakers reported having received some training, usually from the extension mechanic. This usually involved fault detection and bolt tightening. Some complained about no or inadequate training on the Moyno or Monarch when one of these had replaced a Beatty. Some also complained about not having received guidance on the fault reporting diagram.

Many had been selected because of their close proximity to the pump, although a few had been selected because of appropriate experience (for instance the man with a bullock plough) or because as a trader they would regularly be travelling to the district centre and thus able to report a fault to GWSC.

Proximity to the pump is important because it means that it is easier for GWSC workers to locate the pumpman when they visit the pump. The pumpman is also likely to quickly hear of any breakdown. It also allows him to keep the pump under reasonable surveillance and act quickly to prevent any vandalism.

Caretakers saw their roles as encompassing the following activities: tightening bolts, reporting faults to GWSC - sometimes with the fault diagram, collecting money for their transport to the

district centre to report faults and for site development, organizing meals, drinks and gifts for repair crews or motorcycle mechanics, organizing the site development labour, chasing children away if they were abusing the pump, instructing the women on how to use the pump and ensuring they keep the site clear.

Almost all caretakers would like more training so that they could do more repairs themselves and reduce the number of trips to report breakdowns. A couple had even tried to make their own tools to try to reduce the number of trips they had been required to make with the Beattys. A few mentioned the need for more water, particularly small dams for animal watering. Two caretakers reported accidents with Moyno handles hitting drawers on the head.

In two cases the interview was supplemented by asking the caretaker to give the interviewer an inspection report of the pump. At one pump the caretaker who was unable to identify a loose shoulder bolt, or a missing rubber bumper at the other. During the course of the year long village research quite a number of pumps were encountered with evidence of neglect by the caretaker over such simple items.

Rural Water Supply Unit (RWSU) staff have also complained of caretakers over-tightening nuts and not monitoring their pumps regularly and carefully. The over-tightening might result from a training procedure that demonstrates bolt tightening by first loosening and then tightening rather than just tightening. Some caretakers then proceed to regularly follow this procedure which tends to apply too high a torque, resulting in a lower life of the component.

One suggestion that had been made to the evaluation project concerned the appointment of female caretakers as one way by which women could learn more about the pumps. This possibility was discussed with caretakers as a proposal that allocated the woman caretaker primary responsibility for the daily monitoring of the pump and identification of the need for preventive maintenance. This would be communicated to the male caretaker who would then be responsible for collecting any travel money if necessary and reporting it to GWSC.

In general, this produced a wide range of negative reactions - women have "no authority," "do not listen to each other's advice," they would "not be available all the time, for instance when nursing," they "would not have enough time" and they are responsible "only for domestic activities." However, in a few cases there was some support to at least discuss such an arrangement further, if for no other reason than the fact that almost all women have to visit the pump each day.

5.10 The Assessment of the WUP Sanitation Component

The mission to assess WUP's sanitation activities concluded that the major sanitation problems are to be found in urban and peri-urban areas, rather than in rural areas where WUP has focused its work.

The mission noted:

1. the scale of other WUP activities in site development, caretaker training, pump maintenance and education;
2. the low level of institutional support to the latrine programme by GWSC for whom it is outside its mandate;
3. insufficient research into the appropriateness of the private multiple-user pit latrine in a rural context of relatively low population density and possibly, where a high use value is placed on faeces for compost;
4. the relatively high cost and technological level of the MUP latrine which restricts its unassisted replicability;
5. WUP's relatively successful public multiple-hole pit latrine at markets, clinics.

The mission recommended that WUP cease all of its current and proposed sanitation activities.

If CIDA wished to continue sanitation-related activities, then its focus should be on the urban areas. If this were unacceptable, and WUP were to include a sanitation component, then the WUP Phase II resources to meet the target of 1,250 rural latrines should be re-allocated to a programme of research, public latrines, demonstration latrines and institution building (21, p 51-54).

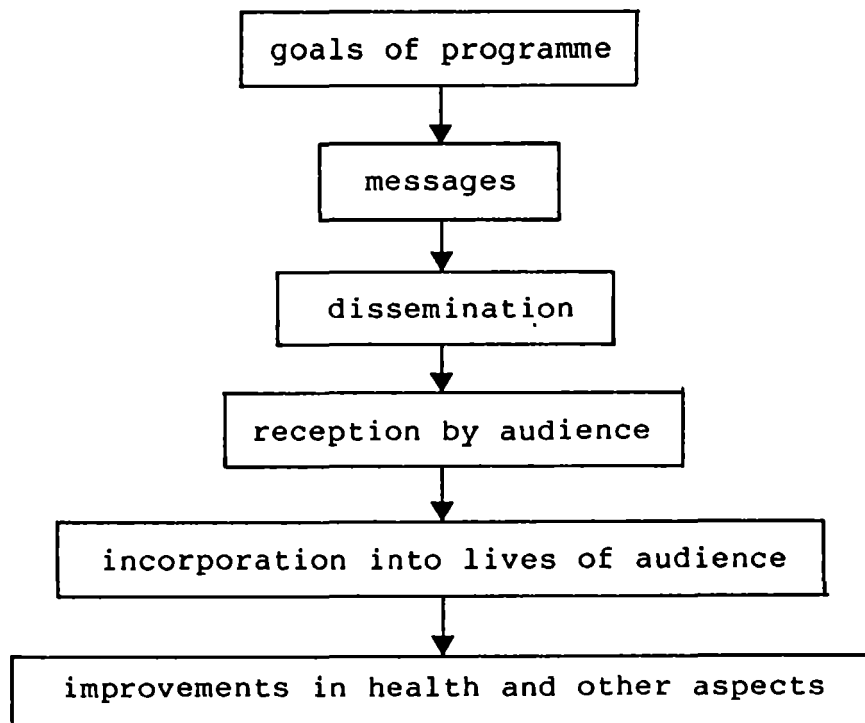
6.0 COMMENTARY, CRITIQUE AND PROPOSALS

6.1 The Educational Process

The educational process may be viewed as consisting of six stages (Figure 4). Objectives of the programme were implicitly or explicitly set; messages were chosen and visually displayed in a series of pictures; these messages were then disseminated by VEWs; received by audiences; who then decided whether to incorporate these ideas into their lives. If they did make changes then some benefits in health or other areas should have resulted.

The stages in this process will now be reviewed in the light of the evaluation findings.

Figure 4 Stages of the Education Process



6.1.1 The Selection of Goals for the CE Programme

The basis for the selection of the programme goals is unclear. In the original proposal for a community education strategy (4), (Section 2.1), no detailed discussion is included on the goals of the programme. A more detailed statement of priority messages arose out of research done in Wa district in 1982 (Section 2.7) but the single most detailed analysis of goals is the criterion referenced evaluation listing. This was undated and probably completed in late 1982 or 1983. In general, the basis for programme goals appears to have been preconception, intuition and ideas from elsewhere. Even with the 14 priorities resulting from the Wa district research it is hard to follow the linkage between research results and action priorities. In other words, no attempt appears to have been made to systematically investigate water-related problems as perceived by the target audience, or to systematically consult with health workers in the area to see what they identify as useful and appropriate goals, or to review what epidemiological data are available.

6.1.2 From Goals to Messages

There is a poor match between these (inadequately formulated) goals and the messages that VEWS took to the villages. A careful comparison between the most detailed statement of objectives and the messages contained in the pictures and accompanying script reveals both widespread omissions (i.e. objectives excluded in the messages) and some inclusion of messages not explicitly stated as objectives. Approximately half of the specific items suggested as evaluation criteria at the end of WUP Phase II are excluded as messages; in addition, there are some seven messages included in the drawings that are not explicitly named as a programme objective (Figure 5).

CE PROGRAMME STANDARD AND CRITERIA	MESSAGE AND MEDIA	EVALUATION COMMENTARY
<p>1) Members of the community have assumed responsibility for protection and maintenance of the water supply (hand pump)</p> <p>1.1 formation of a village Water User Committee (or like organization)</p> <p>1.2 appointment for a Pump Caretaker</p> <p>1.3 village support for Pump Caretaker (money, food, labour, transport)</p> <p>1.4 maintenance of an access road to Pump</p>	<p><u>Picture 1</u></p> <p>Q. What do you see in this picture? R. Woman at the pump.</p> <p>Q. What is the woman doing? R. Pumping water.</p> <p>Q. Is this the way the pump should be used? R. Yes.</p> <p><u>Picture 2</u></p> <p>Q. What is this picture? R. Man at a hand pump. This is a different type of hand pump. There may be several different types in your village.</p> <p><u>Picture 3</u></p> <p>Q. What is the child doing? R. The child is climbing on the pump. Do you see children playing like this at the pumps? Is this the way the pumps should be used?</p> <p><u>Picture 4</u></p> <p>Q. Do you see what will happen if this continues? R. The child has fallen - the handle has broken. The child has spoiled the pump. Perhaps he is hurt bringing trouble to the family. Now there is no pump water. Pumps are machines. Like all machines they will spoil if used carelessly. The pump is not a toy for children to play with. Now where will the people of this village fetch water? By all means they need to drink, so they are forced to use the streams.</p>	<p>Pictures 1 and 2 relate to correct usage of pump - not an explicit criterion.</p> <p>Pictures 3 and 4 relate to children playing on the pump - not an explicit criterion.</p> <p><u>Omissions</u></p> <p>1.1</p> <p>1.2</p> <p>1.3</p> <p>1.4</p>

Figure 5 A Comparison of the Community Education Programme Standards and Associated Messages and Media, with Commentary by the Evaluation



CE PROGRAMME STANDARD AND CRITERIA	MESSAGE AND MEDIA	EVALUATION COMMENTARY
<p>2) Members of the community value clean water and understand the relationship of clean water to good health</p> <p>2.1 use of pump or pipe water for</p> <p>2.2 drinking</p> <p>2.3 cooking</p> <p>2.4 bathing</p> <p>2.5 washing bowls</p> <p>2.6 animal consumption</p> <p>2.7 washing clothes</p> <p>2.8 surface water is boiled if used for</p> <p>2.9 drinking</p> <p>2.10 washing bowls</p> <p>2.11 washing raw foods</p> <p>2.12 bathing is daily</p>	<p><u>Pictures 5 & 6</u></p> <p>Q. Now, what do you see at the stream? R. Animals drinking.</p> <p>Q. What do you know about these animals? R. They are easing themselves in the water.</p> <p>Q. Who is prepared to share his drinking water with these animals? Can this water be clean enough for people to drink?</p> <p><u>Picture 7</u></p> <p>Q. What do you see in this picture? R. Water being boiled and cooled. If there is no pump water this is the only way to clean the stream water to make it safe to drink.</p> <p><u>Picture 13</u></p> <p>Q. What do you see here? R. A woman bathing her child.</p> <p>Q. Is it necessary that children be bathed? Why? R. To prevent itching, sores, scabies, lice. It helps them grow neat and fine.</p> <p><u>Picture 14</u></p> <p>Q. What is this man doing? R. He is bathing.</p> <p>Q. Is it necessary that adults bathe? Why? It protects the skin from disease. It keeps him fresh, looking good, and feeling good.</p> <p><u>Picture 16</u></p> <p>Q. What is happening here? R. Woman washing pots.</p> <p>Q. Is it necessary to wash the bowls? Why? R. Leftovers attract flies and rodents. Left over food quickly spoils.</p> <p>Q. How is the woman drying her bowls? R. Off the ground in the sun.</p> <p>Q. Why? R. So not to pick up dirt. To keep insects off. To bleach the calabashes white in the sun.</p> <p><u>Picture 21</u></p> <p>Q. What do you see here? R. Jaundice. Yellow eyes.</p> <p>Q. What has happened to him? How do you think he became sick? R. Dirty water. Dirty food.</p>	<p>Pictures 5 and 6 deal with the nature of surface water - not an explicit criterion.</p> <p>Picture 7 relates to 2.8</p> <p>Pictures 13 and 14 relate to 2.12 and partially to 2.4</p> <p>Picture 16 relates partially to 2.5 and 2.10</p> <p>Pictures 21 - 24 relate to the relationship between water and health though these specific diseases are not given as criteria.</p> <p>Criterion 2.6 is covered in picture 20 (below)</p> <p>Criterion 2.7 is partially covered in picture 15 (below)</p> <p><u>Omissions</u></p> <p>2.2</p> <p>2.3</p> <p>2.11</p>

Figure 5 (Cont'd.)



CE PROGRAMME STANDARD AND CRITERIA	MESSAGE AND MEDIA	EVALUATION COMMENTARY
<p>2) Cont'd</p>	<p><u>Picture 22</u></p> <p>Q. And here? What is happening to this man? R. He has sore eyes.</p> <p>Q. What do you think is the cause of this? R. He has bathed in dirty water. He has swam in dirty water. Maybe he does not bathe at all.</p> <p><u>Picture 23</u></p> <p>Q. Is this man well? What do you think is happening? R. The man is sick. He is thin. He has a stomach ache.</p> <p>Q. What do you think has caused his suffering? R. Drinking water or eating food that is not clean.</p> <p>Q. Can this man farm well? R. Not at all.</p> <p>Q. What do you think will happen to him and his family? R. Unable to work or provide food. Unhappy family.</p> <p><u>Picture 24</u></p> <p>Q. And this woman, what do you think is wrong with her? R. She has Guinea Worm.</p> <p>Q. How do you think she came to have Guinea Worm? R. She has taken dirty water. She fetches from a stream. She does not boil the stream water before she drinks. She does not understand the need for good water.</p> <p>Q. She can no longer help the family. How do you think all this suffering could be prevented? R. Drink pump water.</p>	

Figure 5 (Cont'd.)



CE PROGRAMME STANDARD AND CRITERIA	MESSAGE AND MEDIA	EVALUATION COMMENTARY
<p>3) Individuals in the community demonstrate protective care in handling and storage of water within their home environment.</p> <p>3.1 water containers are covered</p> <p>3.2 drinking water is changed daily</p> <p>3.3 separate container is used for drinking water</p> <p>3.4 handled dipper is used for drawing drinking water</p> <p>3.5 dipping vessel is not used for drinking</p> <p>3.6 drinking water dipper is washed daily</p> <p>3.7 collection container is scoured before fetching (any clean abrasive)</p> <p>3.8 hands are washed before drawing water</p> <p>3.9 large storage containers for water are cleaned every other day or more often</p> <p>3.10 family members are instructed in water protection practices</p>	<p><u>Picture 10</u></p> <p>Q. What do you see here? R. Flies in the pot. Q. Where do you think these flies are coming from? R. From feces. Q. What is now going to happen to the water in this pot? R. Becomes dirty. Q. What do you think will happen if you drink this water? R. Become sick. Q. Apart from flies, what else do you think can make the water dirty? R. Dust, cockroaches, mosquitoes, and animals. Q. Since we know all these things what do you think we can do about it?</p> <p><u>Picture 11</u></p> <p>Q. Should this be the right way? (Pot with cover and ladle).</p> <p>Before fetching water the container should be clean, have a cover to keep it clean and have a long handled dipper or cup with handle to keep dirty fingers out of the clean water.</p> <p>This picture shows a long handled calabash.</p> <p>A cup with a handle can be used as well.</p> <p><u>Picture 12</u></p> <p>Q. What do you see here? R. Hand washing. Q. Is it important to wash your hands? R. Yes.</p> <p>How many of us remember to wash our hands? After defecating? After child care? Before cooking?</p> <p>Sickness can be spread from one person to another on the hands. Skin sores, eye infections and even diarrhoea can pass from person to person on the hands.</p> <p>This is especially important for mothers to remember because they handle the family's food.</p>	<p>Picture 10 deals with transmission agents as a rationale for 3.1 - not an explicit criterion.</p> <p>Picture 11 relates to 3.4</p> <p>Picture 12 relates to hand washing although not specifically before drawing water (3.8).</p> <p><u>Omissions</u></p> <p>3.2 3.3 3.5 3.6 3.7 3.9 3.10</p>

Figure 5 (Cont'd.)



CE PROGRAMME STANDARD AND CRITERIA	MESSAGE AND MEDIA	EVALUATION COMMENTARY
<p>4) Members of the community are actively involved in planning and implementing communal and individual projects to improve sanitation and domestic hygiene.</p> <p>4.1 pump site is drained adequately</p> <p>4.2 back filled 4.3 extended pad built 4.4 45' gutter</p> <p>4.5 latrines are constructed</p> <p>4.6 household compound 4.7 public 4.8 schools 4.9 churches</p> <p>4.10 latrines are being utilized by</p> <p>4.11 children 4.12 adults</p> <p>4.13 latrines are maintained</p> <p>4.14 drop holes covered 4.15 ashes used daily 4.16 decking swept or washed daily</p>	<p><u>Picture 20</u></p> <p>Q. Is this place neat? R. Yes. Q. Why has the gutter been built? R. To keep waste water from the pump site. To keep the place dry to prevent flies and mosquitoes from breeding. Q. Why has the trough been built? R. To keep animals away from the pump so droppings will not pollute the surroundings. To give animals clean water. Q. Why do you think this animal is looking strong and healthy? R. Because of clean water to drink.</p> <p><u>Picture 8</u></p> <p>Not only animals but we ourselves can spoil the water.</p> <p>Q. What do you see here? R. Child defecating openly. Q. This open defecation can be carried into our water. How? R. By wind, by rains, by animals, by flies. Although we now that surface water contains these things, we know we must drink and the child we have seen has spoiled the pump. Q. How can we make this dirty water safe to drink? R. By boiling.</p> <p><u>Picture 9</u></p> <p>Now that we have seen that open defecation can find its way into our food and water making it unsafe, can we do something about it?</p> <p>Something like this?</p> <p>Q. What do you see here? R. A latrine. Q. What do you think of this compared to open defecation? R. No wind can blow feces around. No rain can carry it to streams. No flies can chop it. No animals to carry feces about. It is private. Latrines can help protect your water.</p>	<p>Picture 20 relates to 4.1, 4.2, 4.4, 2.6</p> <p>Picture 8 relates to "free range" defecation - not an explicit criterion and to 2.8</p> <p>Picture 9 relates to 4.5 and 4.6</p> <p><u>Omissions</u></p> <p>4.2 4.7 4.8 4.9 4.11 4.12 4.13 4.14 4.15 4.16</p>

Figure 5 (Cont'd.)



CE PROGRAMME STANDARD AND CRITERIA	MESSAGE AND MEDIA	EVALUATION COMMENTARY
<p>4.17 soakaway pits are constructed</p> <p>4.18 at public bath house 4.19 at private bathhouses</p> <p>4.20 cattle troughs are cleaned weekly</p> <p>4.21 there are village public disposal sites</p> <p>4.22 contained 4.23 burned 4.24 buried</p> <p>4.25 compounds have controlled refuse disposal areas</p> <p>4.26 contained 4.27 burned 4.28 buried 4.29 composted</p> <p>4.30 animals are not given free access to the living and cooking areas</p> <p>4.31 animals are sheltered a safe distance from the compound (20m)</p> <p>4.32 clean clothes are dried off the ground</p> <p>4.33 a village cleanup campaign has been conducted</p>	<p><u>Picture 19</u></p> <p>Q. What do you see in this picture? R. A bathhouse, drain, gutter, and soakaway pit. Q. Do you know what is at the end of the gutter? R. A soakaway pit.</p> <p>The soakaway pit is a place to drain away dirty water. This prevents flies and mosquitoes from breeding there.</p> <p>It also keeps the area free from animals and waste which can make the place filthy.</p> <p>Q. Why is the broom in the bathhouse? R. To sweep the floor clean for the next person who visits.</p> <p><u>Picture 17</u></p> <p>Q. What do you see happening here? R. Woman sweeping compound. Q. Is it necessary to have our compounds kept clean? Why? R. To keep away mosquitos, flies, snakes, scorpions, and rodents which live and breed in dirty places. To keep the place neat and clean and safe for children to play.</p> <p><u>Picture 18</u></p> <p>Q. What is this woman carrying? R. Waste from the compound. Q. Where is she taking it? R. To a place away from the house to burn. Q. Why should waste be burned? R. To prevent a breeding place for insects and rodents. Q. What should be done with waste which cannot be burned? R. Bury it to prevent mosquitoes breeding in such things as cans and broken pots.</p> <p><u>Picture 15</u></p> <p>Q. What do you see here? R. A woman washing clothes. Q. Why do we wash our clothes? R. To look neat. To take away dirt. Q. How is the woman drying the clothes. R. on a line. Q. Why that way and not on the ground? R. To keep dirt off. To keep insects off. To keep skin clean. To keep away from animals.</p>	<p>Picture 19 relates to 4.17</p> <p>Picture 17 relates to sweeping, not an explicit criterion</p> <p>Picture 18 relates to 4.27</p> <p>Picture 15 relates to 4.32</p> <p><u>Omissions</u></p> <p>4.20 4.21 4.22 4.23 4.24 4.25 4.26 4.28 4.29 4.30 4.31 4.33</p>

Figure 5 (Cont'd.)



CE PROGRAMME STANDARD AND CRITERIA	MESSAGE AND MEDIA	EVALUATION COMMENTARY
<p>5) Agencies which have a mandate for health and sanitation are assuming active roles in water protection education</p> <ul style="list-style-type: none"> - Community Health Nursing - Home Extension URADEP - Community Development - Agricultural Extension Workers - Environmental Health Officers - Teachers - N.G. Agencies - Christian Mothers Associations - Red Cross Society <p>6) Communities have developed the organizational skill to identify needs and the problem solving approaches to village development in areas which are non-water related maximizing use of local resources</p> <p>community projects undertaken include</p> <ul style="list-style-type: none"> - improved market design - farm stores - school improvement - feeder roads - adult literacy programme 		<p>Standard 5 was addressed through the community outreach component.</p> <p>Standard 6 was addressed through the community development and community mobilization components, both of which have been discontinued.</p>

Figure 5 (Cont'd.)



6.1.3 The Choice of a Volunteer Based Means of Dissemination

With respect to the selection of the volunteer VEW method, the May 1981 proposal (4) cites no Ghanaian or other experience with volunteers on which to base this choice, nor are any options reviewed. Volunteerism is an ambiguous concept subject to different cultural interpretations and expectations. Furthermore, by receiving a bicycle worth eight or more months salary in return for 90 village presentations over three years, it may be argued that VEWs received the equivalent of two days salary or so for each presentation.

6.1.4 From Dissemination to Reception by Audience

From the evaluation data it appears that the VEWs with their visual aids have basically disseminated the messages to an audience that has, to a significant extent, correctly perceived some of these messages.

If the major messages as designed are compared with what is disseminated and with what is recalled by 10% or more of the audience, then it is possible to construct a model of the communication process showing what messages are transmitted and which are lost at each stage (Figure 6). It also shows the subsequent addition to the process of messages concerning site development.

6.1.5 Audience Size and Coverage

A realistic estimate of coverage by VEWs would appear to be 8 to 10 pump sites per VEW. If all 68 VEWs currently listed covered that number every year then about 21% to 27% of all 2,550 pump sites can be estimated to be included in the programme.

At each presentation VEWs are required to complete a form that includes their estimate of attendance. Earlier data on attendance, (5 p.132) reported a total attendance of almost 28,000 in 220 meetings - an average of 126 per meeting. Recent data from VEW report forms on the 3rd quarter of 1984 reported almost 4,800 in 169 meetings, an average of 28 people per meeting. In the period around the 1984 year end, VEWs reported an average attendance of about 36



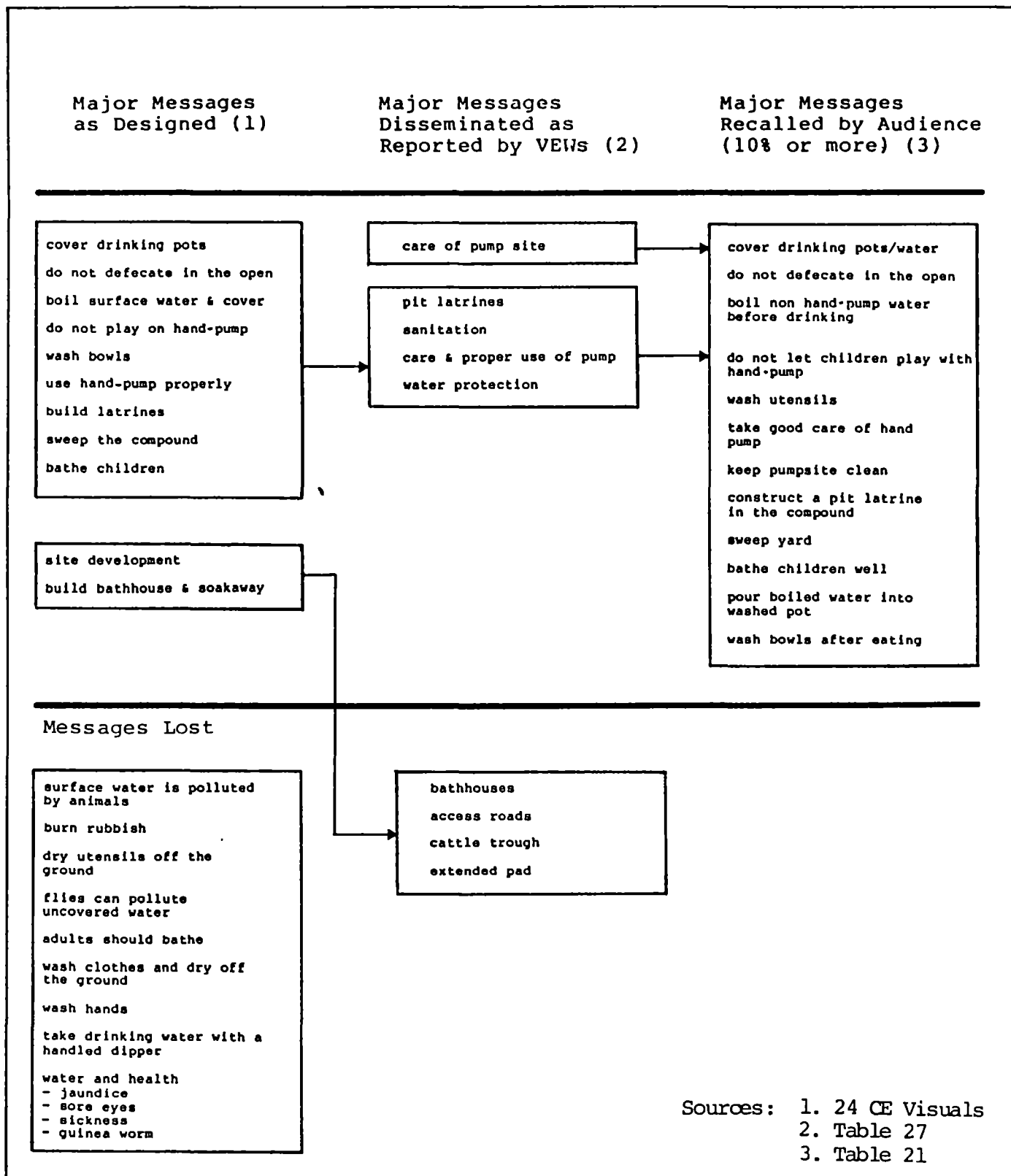


Figure 6 The Process of Communication - From CE Programme Through VEWs to the Audience



adults and 21 children (Section 5.2). During observations of a few VEW presentations by the Evaluation Project, the VEW has always overestimated the actual attendance. A typical audience for the observed presentations is around 20-30 adults and around 15-20 children. Other evidence suggests that 25% of the audience has previously attended a VEW talk and another 25% a talk given by someone else (Table 23).

From the social survey results a weighted estimate of the total population in Bolgatanga district reached by the VEWs during 1983-84 is 4% (dry) and 3% (wet) or about 1.5-2.0% per annum. This is roughly compatible with a maximal estimate of the annual exposure to a VEW presentation of 68 VEWs by 10 locations by 3 visits by 25 different people each time; this equals 51,000 or about 4% of the estimated total 1.2 million population of the Upper Regions.

6.1.6 Incorporation of Educational Messages by the Audience and Their Communities

A review of the survey results (Sections 4.2.5 to 4.2.8) reveals no patterns of differences between those with access to a VEW presentation and those without access, nor between those with exposure to any form of education and those without such exposure.

This result is disappointing but not surprising. Firstly, the survey was organized in a district in which the education programme had been running for only two years. Secondly, as indicated elsewhere, there appears to be a number of inadequacies in the process of developing the CE goals, messages and media. Thirdly, site development messages were effectively disseminated by the VEWs and extension mechanics with substantial success despite the fact that few explicit educational materials on this subject were developed. Fourthly, it is important to appreciate the difficulty adults in all cultures have in changing ingrained patterns of behaviour. This underlines the need for adequate research to explore traditional behaviours, understand their rationale and focus only on carefully selected changes. A further implication of these survey data is that they may be considered as baseline information with which to measure the impact of education at the next phase of the evaluation, proposed for 3 to 5 years time.

6.2 The Development of the Programme

The basic flaws in the education programme may be traced back to its origins, exemplified in the original proposal for a community education strategy (4). This was described in Section 2.1.

There is no Ghanaian or other experience cited on which the ambitious organizational targets or the use of volunteers are based. The emphasis upon standardization may appear to make a programme easier to run but may leave the extension agent confused when the audience behaves in unexpected ways. More importantly, a good non-formal education programme should be responsive to the learners and thus flexible enough to respond to each community's particular needs.

A better approach would have been to proceed by reviewing similar programmes in Ghana and elsewhere and based upon what had been learned by those experiences, propose small pilot programmes to test and compare different approaches. Many such experimental options existed including some that could have built upon the work of earlier members of WUP. One of these was the 1980 publication on water in Frafra language which was presumably designed for use by local adult literacy classes, schools etc. Another was the utilization of the GRAAP method from Upper Volta. Various WUP members and other Canadians and Ghanaians had attended seminars given by the Groupe de Recherche et d'Appui pour l'Autopromotion Paysanne (Group for Research and Support to Peasant Self-Development or GRAAP) in Bobo-Dioulasso. They had been impressed enough to arrange for one of the GRAAP publications to be translated and have CIDA pay for the printing of 1,000 copies. Through the Nandom Agricultural Project in Upper West Region the method, which appears to be similar to the conscientization process of Paulo Freire, was attempted in two villages in Upper West. No report of this has been located. The method is reported to be used now in Senegal, Mali, Ivory Coast as well as Burkina Faso. Its problem-based materials are reported to include aspects of Primary Health Care. Other educational trials could have been conducted through governmental agencies such as Community Development and URADEP as well as clinics.



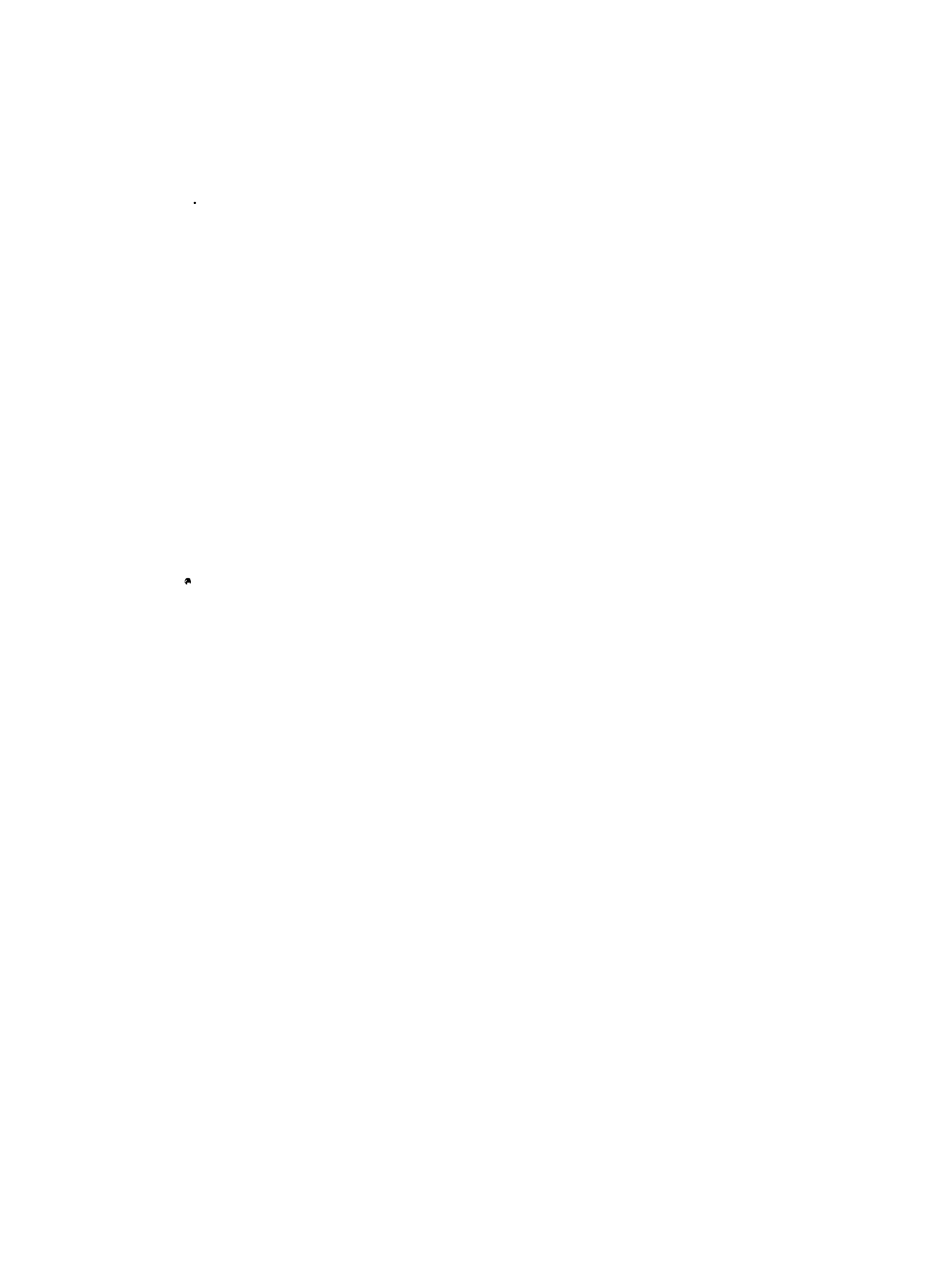
The Review and Design Mission, as discussed above (Section 2.1) recognized many of these flaws, but with hindsight, this thorough study can be faulted for its presentation. It laid out no less than 14 "needs" for the programme to deal with, but the sequence in which these needs should be addressed could not have been clear to the CE staff. Should their emphasis have been upon evaluation (needs c, n), clarification of the programme's goals and messages (needs a, b, m), improvement of the existing programme (e, g, h, i, j, k, l) or expansion (d and f)?

A shorter, more direct paper that spelled out one strategy in some detail would probably have been of more assistance to those in the field.

By endorsing many aspects of the CE programme and then making a large number of recommendations and identifying a substantial number of needs that the programme had to address, the consultants were attempting to both support the work and critique it. It was clearly important to maintain morale and give credit for what had been achieved under difficult circumstances; it was also important to indicate that the basis for some of the programme's messages and means of operation were questionable.

The difficulties in the presentation of these nuances are demonstrated in the CIDA plan of operation (POP) for WUP Phase II. In this document the report's findings were erroneously summarized as concluding that the project had successfully developed and implemented methodologies for: 1) training village pump caretakers, 2) carrying out community self-help projects related to water, and 3) providing a community health education programme related to water use (6, p. 1). Further on the POP also summarized the report as noting that despite vehicle down time, recruitment constraints, lack of spare parts, and a worsening of economic conditions in Ghana the output from the Site Development and Community Education Programme have been "impressive" (6, Appendix A).

In our view, the WUP Phase II POP also misunderstands the nature of the CE advisor by specifying a Health Sciences background. The health related requirements for this position are minimal and better lend themselves to input from short term consultants.



The task requires an emphasis upon educational process rather than content and thus an advisor with a background in non-formal (22) adult education would be more appropriate.

By mid-1985 this issue appeared to have been addressed by the executing agency who had drafted the job description for the second CE advisor to emphasize such experience. However, because of the large task of programme development to be tackled it will be necessary to re-schedule the eight person years of education advisors so that more resources are recruited in the next few months.

6.3 Analysis Of The Educational Content

The present educational content may be criticized on the following grounds:

1. it starts from the concerns of engineers or public health workers (e.g. posters with slogans such as "Improve Drainage", "Refuse Control" and "Protect your Water");
2. the content is not sensitive to the culture of the learners (e.g. messages about domestic duties of women);
3. some of the messages are dealt with inappropriately (e.g. pictures to show how to correctly use a pump when demonstrations would be more effective), or make unrealistic proposals (e.g. boil water, build latrines);
4. important issues are ignored (e.g. dehydration and diarrhoea, children dropping stones down pumps) while practices that are almost universal (e.g. bathing, covering pots) or issues with a questionable connection to water (e.g. thinness) are included.

The single most important task is to revise the messages of the water education programme. This process must start with the water-related concerns and problems of villagers. These include such items as water for animals, pump breakdowns and water-related illnesses. Starting from these concerns not only produces a message of direct relevance to the audience but ends up addressing all of the concerns of engineers and health workers. For example, the poster of the animal trough at the hand-pump (Appendix A) is labelled "improve drainage" but the villager would first see the goat drinking from the trough. Similarly, a concern with preventing pump breakdowns would

have to involve proper care and use of the pump. A focus upon diarrhoea must lead to emphasizing the washing of hands, cleaning of utensils and other hygienic messages.

While such a problem-based approach will be a substantial improvement, it is also important to be culturally appropriate and utilize arguments and examples that, as much as possible, respect and build upon traditional ideas and practices related to water. For example, the cultural implications of messages that tell women how to perform their traditional duties must be re-considered. The present message may imply that their mothers failed to teach them how to sweep the compound, dispose of waste or cover their storage pots. That such messages are usually delivered by a male VEW (only 9% of VEWs are female) may compound the insensitivity. The educators must also investigate local concepts of water (for example some Frafras talk of 'good', 'bad', 'white' and 'clear' water), as well as contamination, purification, storage, filtration, sanitation, etc.

While there are some local practices upon which to build, (such as boiling and filtration in pito-brewing and preparing some traditional medicines; filtration of water in dugouts by dams and streams and the use of a different hand for eating from the one used for cleaning after defecation), the appropriate presentation of health promoting messages within an animistic peasant world-view that understands sickness in terms of social relations and superstition, is likely to be a real challenge.

Another example of the need for cultural appropriateness, and one that involves an issue that must be discussed at the appropriate time, is diarrhoea, especially in young children. It may be assumed that its incidence is at minimum, comparable with other poor communities in the developing world in which UNICEF has estimated the average child will have between 6 and 16 bouts of diarrhoea infection each year. The high infant mortality rate in the Upper Regions, perhaps 170 deaths per 1,000 births would also support the probable importance of diarrhoea.

Diarrhoea belongs to the water education programme because of its importance and because water is sometimes a cause and always part of the treatment and prevention.

Among the Frafras, diarrhoea is commonly treated by older women who apply herbal enemas in the belief that it results from a foreign body that must be expelled from the stomach. This is a harmful treatment that accelerates dehydration. Educators can explain the causes of diarrhoea, its prevention and, thanks to oral rehydration treatment (ORT), its treatment. Simple exhortations are unlikely to be effective and an educational strategy needs to be developed that allows the older women to maintain their status within the compound as those responsible for treating the illnesses of children.

A common concern among villagers about the hand-pump is that it is too far away. When closer surface sources are available, then the women are tempted to use these. A realistic message that addresses both the collectors' concern to minimize the cost of water collection and WUP's concern that clean water be used would be to use the pump for at least drinking water.

Even some of the messages that address real problems and have existing local applications require careful study before dissemination. For example, boiling water in some circumstances (such as preparation of ORT and infant feeds) or from surface sources is promoted by local clinics as well as VEWs.

Boiling water appears to be fairly widespread knowledge among women and many of these claim to do it. However, evidence of the practice is sparse and some may believe that once water is boiled it does not need to be carefully protected. Boiling certainly requires time and firewood, both of which may sometimes be in short supply. Also, boiled water is judged to be tasteless. It may be more realistic to stress using hand-pump water in clean containers as means of preventing and treating illness. Bacteriological tests of hand-pump water so far have generally shown nil or minimal contamination (Report 5).

The tasks of the educator are thus considerable: research into the subjective (as seen by villagers) and objective (those seen by professionals) health and water problems; research into the traditional ideas and practices; the selection of helpful messages that are appropriate to the local culture and resources; and the preparation of materials that utilize, where possible, local knowledge or at least are sensitive to people's own theories of disease.

Such a problem-based approach should not be seen as a radical or unorthodox educational procedure. A recent WHO document, for instance, proposed a twelve stage process for developing a programme of education and information for health (23, p. 11). The first four steps were:

1. The movement starts with the people: what are the problems?
2. Do the felt needs truly reflect the major issues in the communities?
3. What are the priorities? - as decided by communities and health professionals.
4. Central support comes into play.

With respect to ensuring cultural sensitivity, we are fortunately able to begin such a process with the works of Fortes, Goody, Rattray and other anthropological studies, including Chabot (Report 5, Appendix 3: Anthropology of Health Water and Hand-Pumps).

Based on the observations, discussions and research of the Evaluation Project, it is possible to sketch out a preliminary curriculum that draws from villager perceived problems, health phenomena, and the existing programme, and built around a vision of how a village should be organized in relation to the new water source.

This vision starts with the new source itself. Most importantly, the source is working all the time. Pump users know enough about the pump itself to be able to recognize when preventative maintenance is required and utilize the reporting system to ensure that such attention is provided. The pump itself is used in a way that minimizes stress by users on its components. The site is clean and well drained with low possibility of contaminated water entering the borehole. There is a cattle trough available to ensure that the water needs of animals are met during the dry season. There is a bath house for men and another for women some distance away from the pump. It has a concrete floor and soakaway. There is some area for washing clothes and a stick or line on which wet clothes may be

hung to dry off the ground. During the rainy season the animal trough is drained and filled with sand to prevent mosquitoes from breeding.

Water that is pure at the source is still pure at the time of consumption. This vision requires that poor storage practices in contaminated containers or poor drawing practices from the water storage area in the compound have been eliminated. The villagers also have the basic knowledge of the most important water-related diseases and sicknesses and their transmission routes. This includes diarrhoea and malaria, schistosomiasis and guinea worm.

The educational messages that this vision imply include the following:

1. Correct use of the pump. This will normally be done by demonstration at the pump and practice by a few users. With the Moyno the most important point to emphasize is rotation in the correct direction and never trying to force a rotation in the other direction. With the Monarch pump the emphasis should be on full perpendicular strokes, avoiding stroke actions that move in a diagonal plane or short rapid motions. All users should intervene to prevent any vandalism such as forcing stones up the pump spout.
2. Identification of components that require attention. For both types of pumps it is necessary for users to know what parts they must monitor so that at the first sign of wear this is reported to GWSC and addressed before the pump breaks down. In the Moyno, this would probably mean paying attention to loose nuts in the handle and in the pump body. For the Monarch, attention needs to be paid to the bushings and bolts around the pump body. There should be a woman pump caretaker whose duty it is to report such potential problems to the male pump caretaker who in turn will report such faults to the GWSC staff. All educators should be given drawings with the common faults on both Moynos and Monarchs and utilize the appropriate set at each presentation.
3. Site Development. Where the site has not been fully developed the educator needs to work with the pump caretaker and Water Users Committee, if one exists, to organize the appropriate labour and financial contributions to construct the extended pad, gutter, and animal trough. This is stage one site development with a possible second stage to include two bathhouses, and if interest is displayed, a clothes washing area.
4. Reporting faults and breakdowns to GWSC. This might utilize visual aids that show a woman drawer reporting to the female pump caretaker that the bushing on a Monarch is

beginning to wear. She then discusses this with the male pump caretaker who in turn travels to the district capital and reports this to GWSC. The mechanic then comes out to the site and replaces the bushing. Alternatively a pump caretaker could replace it by himself.

5. Seasonally appropriate site maintenance. During the wet season the animal trough has been drained or filled with sand.
6. The bathhouse. This juxtaposes a woman carrying water back to her compound for her family to bathe, with her family members fetching their own water from the source and bathing at the public bathhouse near the pump. A significant proportion of water collected for the compound is used for bathing. This means a significant expenditure of energy by the collectors. In some cases men and other members of the family are prepared to fetch their own water for bathing at the pumpsite, thus saving the women time and energy.
7. Diarrhoea. Diarrhoea is suspected to be one of the major causes of the very high infant mortality in the area. Present practices in treating diarrhoea among infants are counter-productive. The child is dehydrated with enemas rather than rehydrated with liquids. Oral rehydration therapy using a mix of water, sugar and salt offers an important treatment to the illness. Before this message is promoted, further research is required into; 1) local, natural sources of glucose (sugar), 2) the range of water, sugar, salt ratios that are still effective and 3) locally available measuring "instruments".
8. An attempt should also be made to try and discuss the causes of diarrhoea. This is probably much more difficult but experiments can be made with visual aids and discussions of the oral-faecal transmission route. One starting point may be to describe the different transmission routes such as through hands and flies and water. Another starting point is faeces of infants and young children. These are not only deposited in a more indiscriminate manner than adults faeces but are also more likely to be infectious because of the higher incidence of gastro-intestinal infections among children.

The single most important faecal oral transmission route is probably through the treatment of the faeces of young children by the child's mother or the child-minder. The baby is often wiped with the cloth worn by the mother or guardian who may proceed to prepare food without washing her hands or changing her cloth. The faeces-fingers-food contamination chain requires considerable educational attention (25). This leads to such messages as bury all faeces with a hoe, and if soap is available, use it to wash

hands before preparing food. (There is a possible linkage here between the agricultural messages associated with good organic farming using compost methods and hygienic faecal disposal.) Messages should continue to stress the importance of the cleaning of collecting and storing containers. Experimentation into the efficiency of solar purification of such containers should recommence. The question of whether such exposures increases the potential of the pots to dry and crack should also be investigated.

9. Malaria. This could start from a description of the natural history of the disease. It cannot be assumed that villagers understand that malaria comes from mosquitoes or that larvae in the water produce mosquitoes. This latter point may be easily demonstrated by trapping larvae in a glass container which is then covered for a few days until they have hatched. The message arising from this is to minimize mosquito breeding areas. This has, of course, already been touched on above in the recommendation (to drain animal troughs) during the wet season.
10. Dams. Small scale dams constructed largely with village labour offer a source of water for animals and gardening. In addition, by feeding the local aquifer they support the discharge at the hand-pump and at any hand dug wells. In this context, these impacts outweigh the adverse results such as increased malaria and schistosomiasis which will require additional education and treatment.
11. The hand-pump tariff; in particular explaining the costs of replacing and maintaining the pump.
12. Measles. This is also treated by counter-productive methods and many children die from the complications arising from the disease.

After consultation with the primary health agencies in the regions water education workers might also discuss in their presentations other topics such as immunization, growth monitoring and the use of clinics.

6.4 Analysis Of The Educational Process

The major education procedure is through the VEW presentation utilizing the 24 pictures described above.

From observations of a few VEW talks this is a standardized drill in which the VEW talks about each picture in turn for a total of about 45 minutes. The VEW does most of the talking with audience participation limited to answering rhetorical questions, asking questions at the end and making occasional interjections.

This approach may be criticized on four points:

1. it is too much of a lecture;
2. it is a standardized approach;
3. it covers too many points of information;
4. the focus by the VEW is upon the presentation, rather than subsequent change and development.

A more effective approach would be a discussion with the content selected from the interests and concerns of each group. The educator's task is therefore to facilitate a discussion of water-related concerns among villagers and then, with the help of appropriate visual aids, focus on a few priorities with an aim of arriving at a community and/or individual commitment to change. While there may be some need for large meetings, it is usually more effective to organize meetings with smaller, more homogeneous groups of the village (e.g. the headman and elders to discuss site development; village women to discuss hygiene).

The reporting of the meeting needs to be supplemented with a regular evaluation by the VEW of what changes have happened in the area since she/he began the work.

The complex task of changing traditional behaviours has to date been reduced to a simple didactic process. Little if any attempt has been made to understand the anthropology of the situation or look at the education from the perspective of the learner. What is her incentive to change, to go against the practices of her, and perhaps more importantly, her husband's ancestors? In many cases nothing less than an act of faith is required as the relationship between cause and effect will take considerable time to emerge and will be subject to many compounding variables. Why should behaviours that were good enough for their ancestors be changed? How do you teach an unschooled villager about bacteria invisible to the naked eye?

There are, of course, no easy answers. Only a disciplined and imaginative process of learning from the audience, addressing their problems and searching out their beliefs, proverbs, stories and behaviours will result in an education programme that presents scientific health knowledge in local terms and thus may improve health.



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One important part of this approach will be to widen the content of the education programme to include other aspects of primary health care. WHO, for example, has recently defined health education to embrace motivation, knowledge and action:

any combination of information and education activities leading to a situation where "people want to be healthy; know how to attain health; do what they can do individually and collectively to maintain health and seek help when needed (23, p.2).

6.5 Analysis of the Educational Materials

At present, there are two major sets of educational materials. A set of five A3-sized posters is printed in yellow and black on white (Appendix A). They are written in English with slogans that have been characterized above as reflecting the concerns of public health workers or engineers. GWSC and WUP are written in large letters. They have been observed occasionally in the community, in a few offices, on a tree by a chief's compound. Posters require very clear objectives (e.g. to remind people of a talk on, for instance, different food groups or to startle, as in some 'don't drink and drive' posters in the West).

These WUP posters contain minimal information and may be viewed as mainly public relations for WUP and GWSC among other departments. As such, without a larger programme of inter-agency cooperation, they are irrelevant.

As implied above, some of the content of the 24 pictures is also irrelevant and many important areas have been omitted. They may also be too small to be easily seen in a large gathering though their size makes them easy to carry. Some VEWs have been observed to pass them around the audience at a large gathering. They were pre-tested for perception and apparent logic (11, Appendix G) with a 70% success rate considered acceptable. Finally, they are neither well drawn nor do they utilize the excellent guidelines suggested by communication experts. Some were drawn by a teacher in 1980 and others by the present WUP artist. None are up to the present standards of the WUP artist.

These visual aids should be nothing short of excellent. They will be scrutinized by illiterate peasants who will derive great amusement at the educator's expense if there are illogical features to the picture. Illiteracy does not mean stupidity and audience members display considerable peasant wisdom in critiquing the visuals and posing sensible and practical questions:

- how can anyone remove a pot of boiling water from a fire without a cloth? (Picture 7);
- if goats are using a wet season pond then why aren't the goats tethered? (Picture 5);
- how can a boy climb up a Beatty pump handle without the pump swinging to the vertical, and the boy being upside down? (Picture 3);
- how can we use a calabash with a handle when it is (culturally) forbidden to do so? (Picture 11); and
- what kind of latrine is this without a wall? (Picture 9).

There has been considerable research into guidelines for visual communication with such audiences. One excellent work (26) stresses such factors in drawings as:

- o faces and expressions
- o simplicity and detail
- o completeness
- o landmarks
- o body proportions
- o culturally appropriate symbolism
- o humour

Perhaps, most importantly, visuals need to be pre-tested for correct perception, logic, cultural appropriateness, message significance and clarity, and emotional response. This can be done relatively easily through the development of alternative visuals and group discussions about them.

They must be satisfactory on all of these counts for almost everyone.

The present set of 24 visuals should be discarded. Once a core set of health and water messages have been decided upon, an appropriate collection of visuals of a significantly higher standard than at present, should be developed.

6.6 VEWs, Their Training and Support

The seventy or so VEWs are the single best product of the education programme to date. While they have been effective disseminators of information their impact has been curtailed by being asked to disseminate questionable messages. They have taken up a significant proportion of the time of the CE staff and, as volunteers able to devote only a limited time to their VEW work, this has not been cost effective.

It would probably be more efficient to work with all extension staff from all departments to encourage them to include water and health messages in their daily work.

Although it is therefore recommended that the VEWs be disbanded this new strategy will continue to include those VEWs who are extension workers as water educators. There are also some useful lessons from their experience that can guide this programme.

One source of ideas for training is the results of the 1984 VEW training survey (Section 5.3). In general there appear to have been substantial omissions in the training of VEWs in content (pumps, site development, health), process (non-formal education, working with different groups, working with traditional healers, facilitation, evaluation) and analysis (there was too much 'blaming the victim' by some VEWs and a low appreciation of the constraints faced by women implementing CE messages).

All of these areas are important. A knowledge of technical content about pumps and health allows an educator to give better advice to the village, recognize the causes of problems, provide better reports to GWSC and gives him or her more credibility in the eyes of the village. Process skills build up an educator's sensitivity to developing local leadership and responsibility for the pump and health. Social analytical skills provide an understanding

of the village, what their goals can be, who will work with whom and who will be most prepared to change. It provides a context for what they do and how they do it.

Not only should better training of educators increase their competence and self confidence, it may also assist them to better deal with the banter to which VEWs were sometimes subjected. During their village talks, audience members pose questions that VEWs found difficult to answer and the CE illustrations were sometimes closely scrutinized by villagers (Section 6.5). While much of this is clearly good natured and fun for the audience, there is perhaps an element of redressing the gap between the unschooled villager and the formally educated outsider to whom the village had been instructed to listen by the local chief or section head.

Most extension agents and programmes are named by what they teach, not where they work. Both names of Community Education and Village Education Worker imply a general responsibility for education within a village rather than with water education and both should be reviewed.

6.7 Community Outreach

There was, and undoubtedly is, great potential for cooperation between Community Education and other related agencies, particularly in the utilization of commonly produced and developed training aids.

Considerable amount of time is reported to have been invested by the CE staff in developing community outreach connections, and yet little has arisen from this investment of time and effort. Obviously, building good relationships with other agencies is an important task. Care must be taken to ensure that new initiatives are compatible with existing programmes. It may be useful to distinguish between a first round of contacts that aim mainly to introduce the new programme and make it compatible with other related work and a second round to develop deeper relationships after the production of tools and aids that other agencies with lesser resources might then be able to utilize. It will only be at this stage that the cooperation intended through the Community Outreach component becomes real.



One of the most surprising results from the social survey concerns the high percentage of women who have recently attended a clinic. Clinics are undoubtedly the single most effective way of regularly reaching women and should be a target for future Community Outreach work.

6.8 Monitoring and Evaluation of the CE Programme

Again, there is much to question in this work. Firstly, it is hard to see how the objectives match the design of the research. An evaluation of the impact of VEWs requires a before and after comparison and involves two visits to the same villages, or the data would have to compare the responses of those who had heard a VEW presentation with the responses of those who had not. As no cross tabulations have been done of the data from the CE surveys, this information has been lost. Secondly, there was no attempt to compare results across districts or within the same district over time. As far as is known, Table 1 is the first time that the data from the different surveys have been brought together. Such a comparison suggests some interesting speculations. For example, it is worth noting that in six of the seven surveys at least 94% of the compounds reported covering their drinking water containers. In the light of such results, the inclusion of this message in the VEW presentation seems redundant. It is worth noting that between 18% to 56% of respondents reported drinking non-hand-pump water; this might merit much more emphasis in the VEW presentation.

Some of the CE staff who conducted the interviews have also reported that when VEWs were used as interpreters they sometimes prompted respondents to give appropriate replies.

In some or all of the later surveys, VEWs were replaced as interpreters by other GWSC staff. This may explain the substantial reduction in the percentage reporting that they choose hand-pump water for its cleanliness. This averaged about 59% for the first four surveys and 33% for the last three. However, this could also be associated with attendance at a VEW presentation which averaged 57% and 18% respectively. Without better data analysis, it is impossible

to know just what these results suggest, and this probably explains why the reports of the surveys are simple lists of results for each question with minimal or no discussion.

The substantial amount of effort that this social research required has been largely wasted because of fuzzy objectives, poor field procedures, inadequate analysis and no feedback of results to modify the programme. It should not continue until these inadequacies have been addressed. A similar critique may also be made of the latrine survey (Section 2.11).

The development of better tools for monitoring and evaluation needs to involve educators in a manner outlined above (Section 5.6). Such a tool should help to provide them with a focus to their work. It no longer stops at the presentation. Instead, they must regularly look at their places of work, measure what changes are occurring and decide when they can move on to another section or pump.

6.9 Pump Caretakers

From the Evaluation Project's interviews with pump caretakers, two significant omissions were noted: firstly, no pump caretaker reported having been selected by a Water Users Committee---the WUC's primary function; and secondly, no caretaker mentioned his role in the monitoring of pump condition or maintenance of the pump.

On a more positive note, it is important to remark that all pumps had a caretaker, and in some cases, two. Their selection appeared to be logically grounded in such appropriate criteria as proximity to the pump, or less frequently, mechanical aptitude. Some had displayed initiative in trying to make their own tools. One pumpman reported having attended a meeting called by a chief of all the pumpmen in that chief's jurisdiction.

The case for every pump having a guardian is strong and apparent to all parties---the users, the elders, headmen and chiefs and GWSC. The apparent weaknesses in the present system arise from uncertainty about the caretaker's role and inadequacies in the procedure and content of caretaker training. These problems are connected; without a clear idea of what the caretaker should do, it is difficult to provide a clear training content.

A caretaker training trial should be conducted on an experimental basis in one or more districts. In general, responsibilities for a caretaker should include:

1. keeping bolts correctly tightened;
2. reporting preventive maintenance requirements;
3. reporting faults; and
4. pump and site surveillance

Training should be organized in local groups of caretakers organized on the basis of pump type. Chiefs will be requested by GWSC to assemble a group of 12-15 caretakers at one central location at a particular time.

The RWSU/GWSC training team should come by truck with two or three extra pumps, nuts and bolts, bushings, commonly broken components, two or three torque wrenches, etc.

The training course should then include:

1. discussion by caretakers of problems at each pump site;
2. tightening bolts---direction, torque, over-tightening;
3. partial or complete pump disassembly and explanation of pump operation by GWSC workers;
4. fault identification; and
5. preventative maintenance.

The emphasis should be upon experiential learning---having pumpmen themselves tighten and over-tighten nuts, assessing the tightness of each others nuts and checking it with a torque wrench. To ensure pump caretakers have learned to recognize problems, their peers can create a problem(s) in a spare pump and see if the caretaker can identify the fault and know the appropriate procedure.

The advantages of such a training design include:

1. it is based on the principle of "learning by doing;"
2. it is learning within a group which creates a peer pressure to learn;
3. it is a more sustained training than the present one-on-one system;
4. its content is problem-based---the caretakers start by discussing their problems with GWSC workers before dealing with the problems that GWSC perceives it is having with the caretakers; and

5. caretakers who display mechanical and leadership abilities may be identified. They could receive additional training, and then take on broader responsibilities in assisting neighbouring pump caretakers.

While such training will initially require much more preparation than the present system, it is likely to be considerably more effective. Because it covers so many caretakers at once, it is unlikely to take more time.

The reporting of faults, preventative maintenance and service levels of pumps under the care of participants in such a trial should be compared with a similar group who have received the standard training. Improvements to this outline will undoubtedly be suggested through the experience of such trial(s).

A more ambitious trial could link this with the proposal to appoint female caretakers. Training should probably be organized in two stages with the men trained before the women (this is further discussed in section 6.11).

6.10 Water Users Committees

Only slight reference was made to Water Users Committees in the Evaluation Project Feasibility Study (14, p. 32). During the fieldwork very few opportunities arose in which they might be investigated. Only one of the 21 pump areas included in the social survey of water drawers claimed to have a WUC. When interviewed, the WUC chairman described a committee of seven (4 men, 3 women), with a role to promote site development, constrained by a lack of cement.

WUP's estimate of 1,300 WUCs (at approximately 50% of the pumps) is almost certainly an exaggeration. It is difficult to see the need for a permanent committee to 1) select and support the pump caretaker, and 2) organize the one-time site development.

More work is now required to review the need for such a committee and its role with respect to the new hand-pump tariff, its previous functions and its possibilities in linking to present and future user education activities. Until there is clearer definition of duties and responsibilities and some liaison with other agencies

interested in the establishment of effective Village Development Committees, Water Users Committees should not receive any emphasis from WUP. Their title might also be improved by naming such a committee a Pump User's Committee.

6.11 Women's Participation

Women have been and continue to be largely excluded from the water project. There are no female pump caretakers, very few women on Water Users Committees and only one VEW in ten is female. To some Canadians this has been a major concern:

by ignoring the importance of women in water collection and management, and by denying women the training and control of modern technology in the new water supply, CIDA (in the URWSP) has contributed to the undermining of the position of women within their society.(27)

Drawing upon a similar analysis, the Review and Design Mission concluded that "without resolution of the 'women's question', WUP is destined to fail to achieve its objectives" and recommended a Task Force be established to propose ways in which this issue might be addressed (5, p. 268).

While the Evaluation Project also believes that this is important, in no discussion with male Ghanaians about all aspects of the programme has this issue been mentioned. Moreover, it is not clear that CIDA or GWSC ever took a position on what the Water Programme's relationship to women should be, or even could be.

As in any patriarchal society there are likely to be many practical obstacles. Women and girls have more domestic and agricultural duties to perform and a lower rate of participation in formal schooling than males. They are thus less available and perhaps less able to meaningfully participate in some aspects of the water programme. As indicated in the interviews with pump caretakers at least some males hold sceptical attitudes that oppose female participation.

To change the male bias of the programme will probably require a demonstrable payoff. Care of pumps, site maintenance and utilization



of pump water must be shown to improve as a result of increased participation by women to justify the extra effort such a policy will, at least initially, require.

It is probable that the issue of women's participation will only be resolved with a serious attempt in the field. Such an experiment should be included within WUP Phase II. One aspect of this should be an attempt to have a female pump caretaker appointed to work with each male pump caretaker. Another will be to make women as far as possible the target audience of the water education programme. This is not just an ideological argument. Women occupy a central role in the transmission of faecal contamination as the sole link between food preparation and water drawing, and the handling of faeces of the small children in their care (Figure 7).

Within any educational programme two important guidelines will be to reach women via other women (i.e. female VEWS and other extension agents) after obtaining the permission of their husbands and, possibly older female relatives. This means that the men must be briefed about what the women will be told and their agreement obtained to do so before the women are approached. Until the men are convinced that a new idea is better, the women will not usually be allowed to practice it. While this should probably be done by a male, the work with the women should be done by women, which of course requires a continuing effort to recruit female educators.

6.12 Traditional Healers

One difficult issue for many health programmes is their relationship with traditional healers. While programmes to promote better health usually advocate changes in traditional behaviours, healers, diviners and soothsayers attempt to enforce compliance with these behaviours.

Although it may be unreasonable to expect traditional healers to actively support new health-promoting behaviours, they can be useful to such a programme by their explanation of local ontology (world view) as a contribution to designing educational approaches. Moreover, through such dialogue, it may be possible to allow both

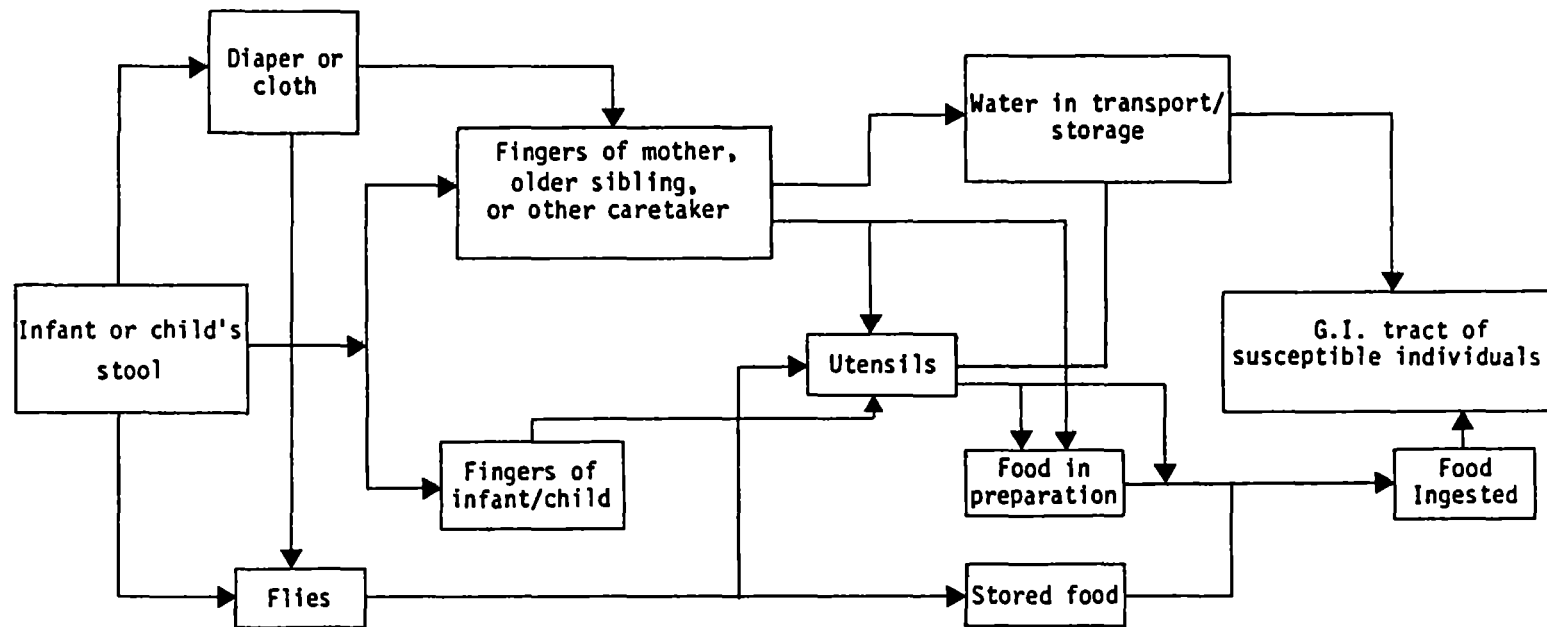


Figure 7 Cycle of Contamination of the Environment Through the Stools of Infants and Small Children (25, p.137)





parties to co-exist in much the same way that individual villagers may subscribe simultaneously to both scientific and traditional explanations and treatments of any illness.

To date, WUP has not made any effort to explore these areas because they have been outside the staff's experience. In Report 5, Appendix III, the Evaluation Project has begun a preliminary exploration of some of these issues.

6.13 Relocating the Water Education Programme

Whatever the practical merits may be of GWSC having an extension arm, creating and maintaining a rural and urban water supply system is widely considered within the Corporation to be a sufficiently large mandate for its resources. This, combined with the fact that GWSC management are engineers, not familiar enough with education and social development to provide the required direction and control to the education programme, has resulted in the present UR Regional Manager indicating that when the CIDA assistance to the education programme ceases, GWSC is also likely to discontinue its support, unless the Corporation has taken a national decision to include such a programme.

Water education needs to form part of a larger body of health education and information (ideally itself part of a primary health care programme). While access to potable water is a major precondition for good health, without substantial advances in other aspects no significant improvement in health may be expected.

Thus, from the points of view of both GWSC and the educational needs of water users, the water education programme needs to investigate its locational options to identify the best available department where it will be supported, understood and valued and also contribute to a wider health programme.

It should be a task of the Executing Agency to identify the best location for the water education programme and propose a strategy for its transfer from GWSC.

This search should consider both governmental and non-governmental options. With many Governmental departments there is some risk that too high a proportion of any resources allocated by

CIDA for water education will be diverted to support departmental overheads in the face of substantial delays and reductions in Government of Ghana subventions.

However, there does not yet appear to be an NGO that might be in a position to organize the water education, although there are many, particularly clinics involved in the FHIG network, that might make an active contribution. It may be possible, with some appropriate intervention, perhaps by the Executing Agency, to encourage the formation of a local non-formal education NGO. CUSO, which already provides support to some village organizations and related NGOs, would almost certainly be open to supporting such an NGO.

One important implication of this relocation concerns staffing. The recent GWSC/RWSU scheme of service is flexible enough to include education staff, although there is no specific category. However, with prospects for only short term employment within GWSC it is unlikely that GWSC staff will now apply for a transfer to the education programme. For reasons of both staff continuity and to ease the relocation process it will be important to invite applications for secondment to the water education programme from organizations that are its possible eventual locations. A circular to this effect was in fact distributed in November 1984 to Ministry of Health and the Department of Community Development. The Evaluation Project has itself seconded staff from four different agencies and has found the procedure to work reasonably well.

6.14 Mass Learning Campaigns

One educational strategy that may be appropriate for the water education task is a mass radio learning campaign. In raising this possibility, it is only proper that a personal interest be declared (28) though it should be noted that both sets of consultants (Hall and Merriman, Jackson and Palmer) have raised this suggestion, without it being followed up.

A mass campaign recognizes the very substantial difficulties in sustaining an education programme. It therefore utilizes a short duration (six weeks or so) campaign, mobilizing many educational and extension workers and others by releasing them from their normal

duties. Their task is to organize many locally led study groups that meet once or twice a week, listen to campaign radio programmes, read some supporting materials and look at pictures, discuss their relevance to their situation and try to agree on what actions they should take. Apart from its short duration, such a campaign has the added advantages of requiring only one literate per group and producing and disseminating educational materials that can be a reference after the campaign. It does, of course, require considerable organization and planning and must have top level political support. A feasibility study of this proposal should be undertaken by the executing agency in the near future. A mass campaign is perhaps the one way that CIDA may complete the educational task within the Water Programme over the next few years.

6.15 A Summary of Proposals

A large number of proposals have been scattered throughout the proceeding sections. These may be summarized as follows:

1. Recruit two additional adult non-formal education/training advisors.
2. Design a Water and Health education curriculum that addresses water and health related problems as perceived by villagers and health workers.
3. Develop educational materials to disseminate these messages by reference to local beliefs and practices and other educational programmes in northern Ghana and elsewhere.
4. Test and adapt these educational materials.
5. Organize small scale trials that compare different means of using these materials such as clinics, URADEP Home Extension, Community Development.
6. Recruit a consultant to conduct a feasibility study of a mass campaign.
7. Design a Pump Caretaker curriculum for the Moyno and Monarch pumps that addresses the problems of both caretakers and GWSC.
9. Develop, test and adapt appropriate caretaker training materials.



10. Organize small scale trials of pump caretaker training in groups.
11. Disband the VEWs and develop working relationships with most or all rural extension agencies.
12. Locate one education/training advisor in the Upper West Region when the period of curriculum and materials development is completed.
13. Investigate the potential of regional Governmental and Non-Governmental agencies for taking on responsibility for Water and Health Education.
14. Maintain the current site development activities.
15. The present monitoring and evaluation surveys organized by CE should be replaced by the monitoring of the trials proposed in 5 and 10 above.
16. Change the CE title to better reflect the water and health content.

After such an overwhelming list of activities it is a relief to propose:

17. Discontinue all latrine construction activities.

The financial requirements of this process of revision and development of the water education programme should mostly fall within a rescheduled version of the present WUP II budget. The proposed trials (item 5 above) may require a "contract" with selected local agencies to disseminate water related messages and consequently, additional local funding.

7.0 CONCLUSIONS

1. After seven years of WUP (1978-1985) no more than a start has been made to the Education and Participation component.

After two years of the CE programme in the Bolgatanga district, there is no evidence that access or exposure to education is associated with improved health promoting behaviours. Before the hand-pumps were installed, people drew water from the most accessible source and basically they still do, even when the water is unlikely to be potable.

This may be explained by a number of factors:

- The task is large and an innovation in the area;
- The social development aspects of promoting participation and good utilization were largely overshadowed by a (correct) concern to keep the hand-pumps operative;
- The CE Programme has existed for only two years in the areas of research though other educational programmes have existed for many years;
- The education and participation activities were outside the mandate of the Ghanaian counterpart agency;
- The donor and recipient were inexperienced in providing software support to hardware projects;
- Inadequate human resources were allocated to these activities, most particularly at the senior levels. CIDA provided only approximately four person-years of advice between 1981-84 with some weeks of consultant input. GWSC as a water supply agency had substantial problems in recruiting appropriate social development staff;
- The major education advisor to date was selected for a Health Science background, not adult education;
- The development of the educational content, delivery system and materials did not follow any recognized procedure, and was based more on hunch and preconception than research and experimentation;
- An unjustified reliance was placed on the untested method of volunteer Village Education Workers; and

- WUP has wasted some of its resources on a latrine programme, which offers a relatively low return to health in this context.

2. Community participation and user education remain important and necessary components for the enduring realization of the goals of the Rural Water Supply Programme. A period of further development is now required.

Some areas of the programme require a fresh formulation. These include:

- . the specific objectives of the programme;
- . the detailed messages;
- . the visual aids;
- . increased emphasis upon working cooperatively with all rural extension departments and training of extension staff;
- . the choice of a counterpart agency; and
- . the content and process of pump caretaker training.

The first part of this process should proceed by:

1. Determining the educational content by investigating both the subjective (as seen by the villagers) and objective (as seen by health workers) health and water education needs;
 2. Identifying messages that address these needs that are implementable in the context and culture of northern Ghana;
 3. Preparing, testing and developing excellent visual and written materials that portray these messages; and
 4. Experimenting with different means of disseminating these messages.
3. A few areas of the programme provide a basis upon which a future programme may be built.

In particular these include the VEW experience, the better pump caretakers, and perhaps, the drama and puppets.

4. Women must play a more important part in as many aspects of the programme as possible.

- As the target audience: the programme must experiment with reaching women through their husbands and fathers and the elder women of the community;
- with materials that address the concerns of women;
- as educators; and
- as female pump caretakers: where the community agrees, two pump caretakers should be appointed---a woman to monitor the condition of the pump each day and a man who reports faults to GWSC.

5. A feasibility study should be made of the use of a mass learning campaign.

This is the one method that might achieve much of the educational task in a relatively short time. It would, however, require considerable political support and a concentrated burst of external resources.

6. The location of all CE advisors in Bolgatanga has resulted in a neglect of the Upper West, despite some good support to the VEWS by the Site Development Advisors in Wa and Lawra.

Within the next year or so an educational presence must be established in the Upper West.

7. Only approximately 20% of the Canadian human resources allocated to WUP have worked on education.

WUP Phase II proposes two education advisors for a total of up to eight person-years. In the face of the magnitude of the immediate educational task this needs to be rescheduled to bring in more resources in the next few months.

Responsibility for a disappointing start should not be laid on the CE advisors. Faced with a large task, under difficult circumstances and with inadequate preparation, experience, and resources, they have made an impressive effort and started a wide range of activities on many different fronts. This provides a valuable base of experience upon which a more focussed programme may now be developed.



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 1. informal education - the truly lifelong process whereby every individual acquires attitudes, values, skills and knowledge from daily experience and the educative influences and resources in his or her environment - from family and neighbours, from work and play, from the marketplace, the library and the mass media.
 2. formal education - the hierarchically structured, chronologically graded "educational system," running from primary school through the university and including, in addition to general academic studies, a variety of specialized programmes and institutions for fulltime technical and professional training.
 3. non-formal education - any organized educational activity outside the established formal system - whether operating separately or as an important feature of some broader activity - that is intended to serve identifiable learning clienteles and learning objectives.

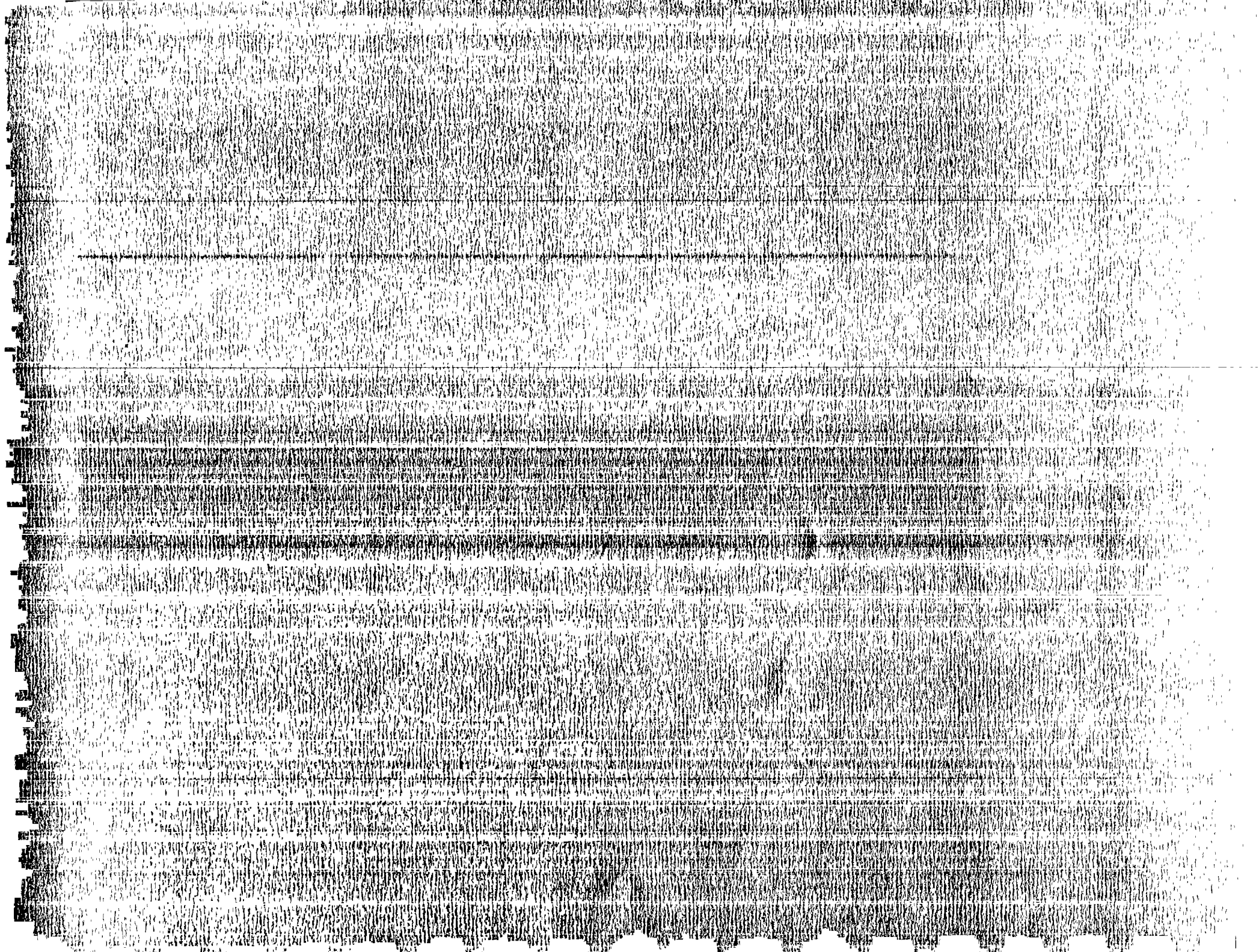
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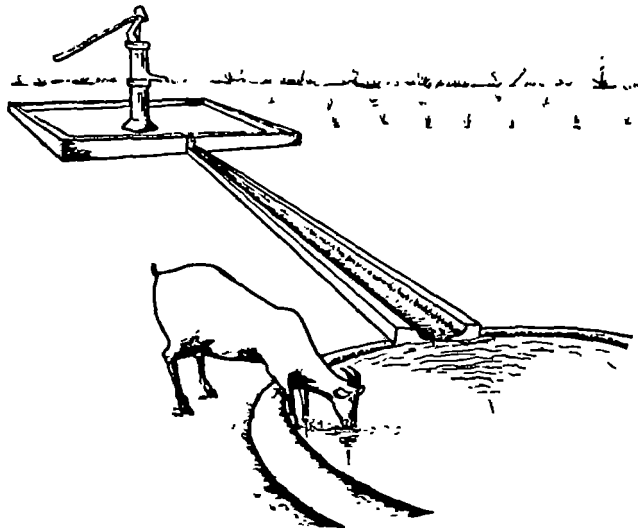


Appendix A



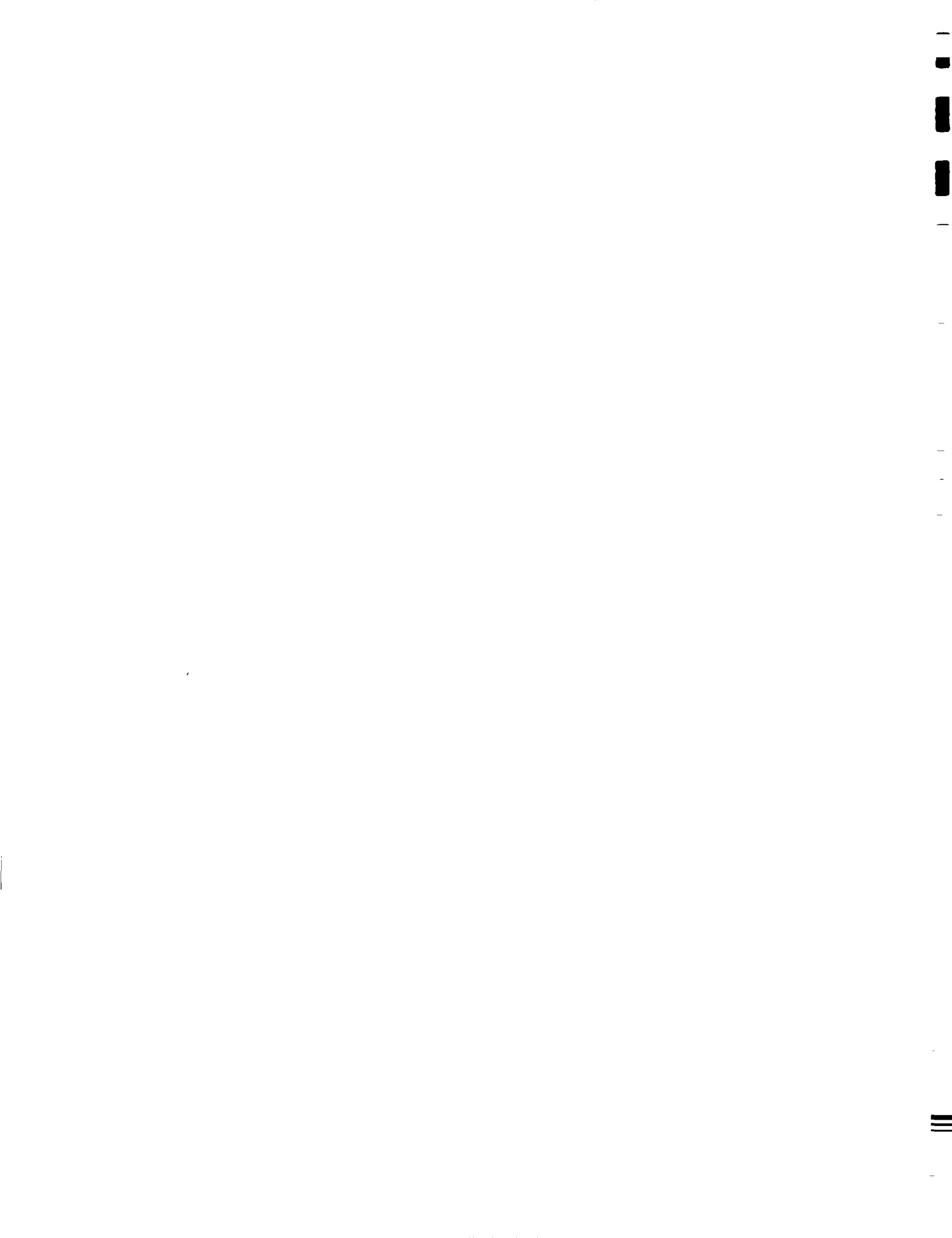


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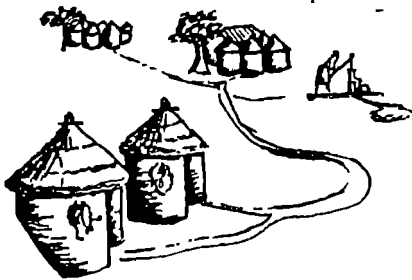
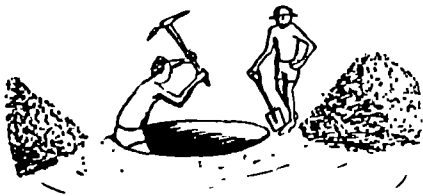


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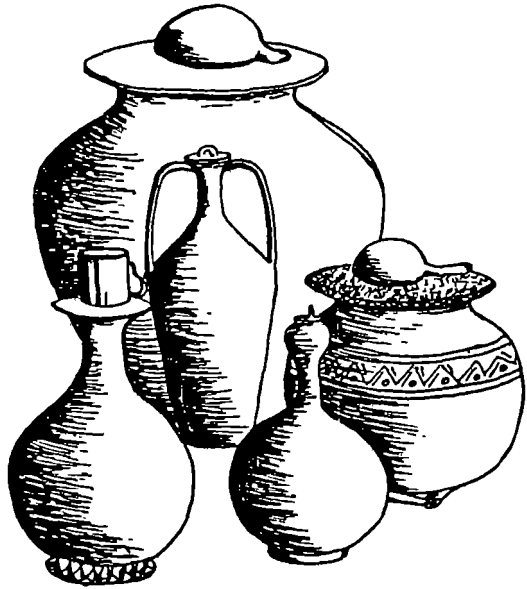


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COVERED CONTAINERS & HANDLED DIPPERS

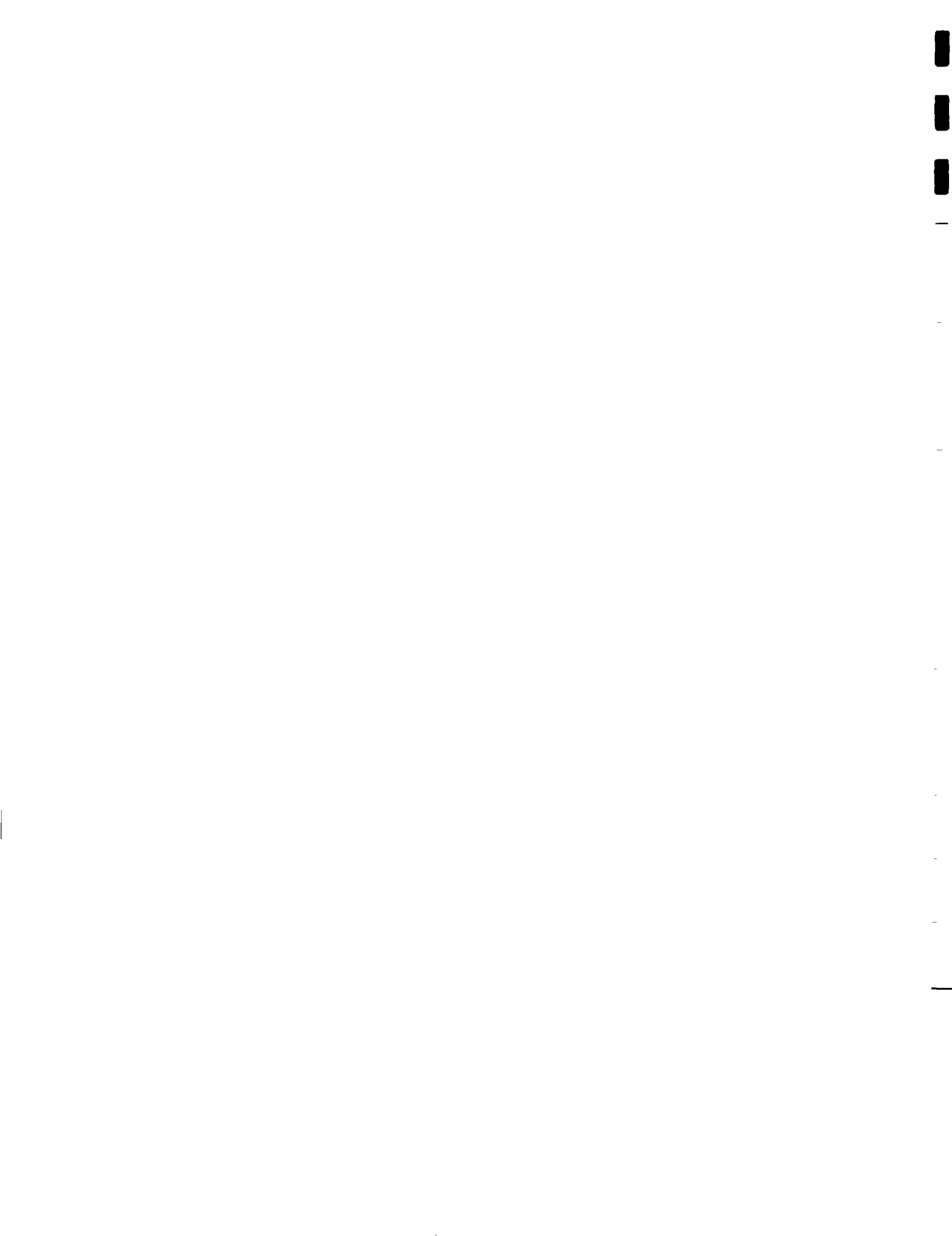
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Clean Compounds



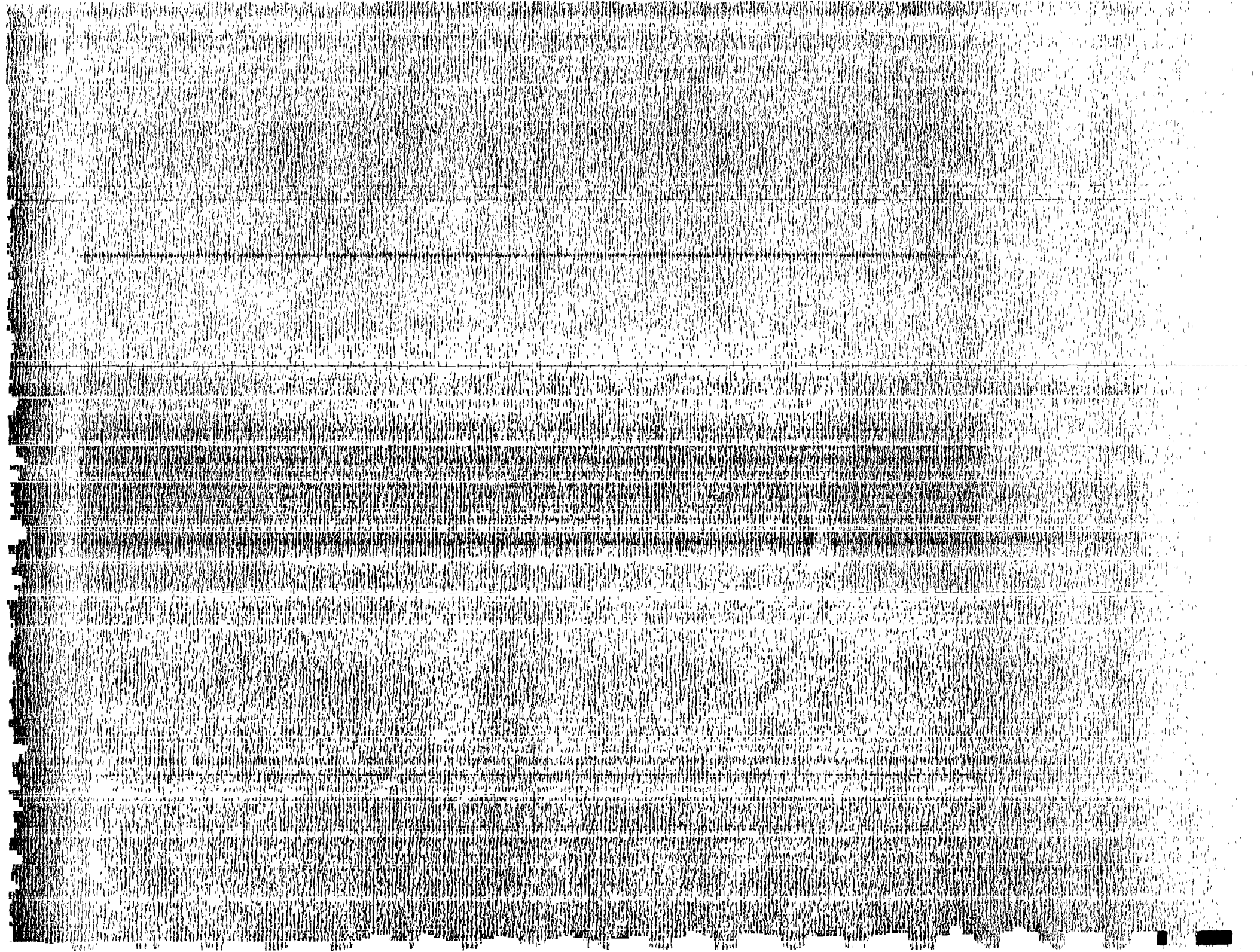
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Appendix B





APPENDIX B

- 1 -

VEW

Audience

Picture No. 1

What is she doing?

Ask the woman, ask the woman.

A woman?

She is at the hand-pump.

Is the woman at the hand
pump?

Yes!

Is she not grinding flour?
And clay pot?
You should look well.

No, she has a clay pot.

She is pumping water into the
clay pot.
The woman is pumping the hand-
pump.

Is it? Is she not about to
cut some firewood.

No! Hand-pump.

Have you seen the way she is
standing?

Yes!

The women should look well.
Open your eyes and look.

The way she is standing

She has kept one of her legs
in this way and leaves the handle
to go down, push it up, push it
down and allow it to go up.

If she wants, she can sing all along.
That is the way they want you to
pump that hand-pump.

It is not that you have to use it
roughly (force) gberigberi! gberigberi!
gberigberi! These standing are like
clay.

And have music?



APPENDIX B

- 2 -

VEW

Audience

Ah! That will allow it to go! bon.
When they are grinding flour don't
they sing? The way she is standing
as if she is grinding some flour
beo! beo! beo!

Have you seen that?

E' Haa!

That is!

This is the way they want you to
treat the hand-pump.

Have you heard?

It isn't clearly heard

No! No!

Picture No .2

That is the hand-pump. Have you
seen the low of the water. She is
not pumping quickly.

But it is flowing at the same rate.

If tomorrow she wants to fetch, she
can come and fetch the water.

Have you heard?

Yes.

Excuse me!

Actually what we want to tell you
is that if you peddle a bicycle well
you will know definitely that water
will flow at a smaller rate. But some
of us will like to pump quickly so
the water flow rate will increase.
But what is inside is that we have
to be pumping like this!

When we pump in this way, it means
water will flow. But if we want
to pump more than this, it will still
have same water flow rate.

We know definitely that if we pump
in this way and change it in this way
that it breaks down.



VEW

Audience

We should then be careful whenever we pump, we should pump gradually gradually and the water flow will be gradually, gradually.

When we pump it carefully and fetch water it is better than when we pump it roughly Kerikeri! Unlike when you want to pump it backward to show your strength, is definitely no.

Don't think that what we want to do shows how we can do boxing.

But what we want to do is how we can control and fetch water and go.

This is what I got for you.

We will go backwards.

Picture No. 3

Let us all look at what is in this picture I have got.

Is a child in uniform? And what else?

The child now is pumping the hand-pump.

When we look at here and compare to the one we looked at the first stage, is there any difference in pumping or the same?

Look at the way the child has jumped and hanged. This way is likely to bring or cause break down to us.

The hand-pump is made for us. Look after it well. Pump the way it is to be pumped. When you pump it hard so as you want the water to flow quickly, quickly.

A child is in uniform.

A child is coming to fetch some water with a bucket.

The child is now pumping the hand-pump.

There is some difference.
There is difference.



APPENDIX B

- 4 -

VEW

Audience

When you pump smartly or quickly that is "suku-suku" then it looks as if you want the "suku-suku", the "suku-suku" then means spoil, spoil, which is in the picture coming.

So as the child has jumped and hanged this is likely to cause the breakdown.

The way they want us to do, so that the hand-pump could last, and not break - down is that; we know that children like playing. If it could be done. - you should leave it. When children come and are about to fetch water, we should drive them away and allow the grown ups to fetch.

As we are here we are grown up; mothers, fathers. It is for us to strengthen our efforts not to allow children to come and fetch some water because he is jumping and hanging on the handle. If it breaks down it is going to disturb us and it will not allow us to get good drinking water and we will start drinking bad water.

This is what I have got to tell.

Picture No. 4

OK have you seen this thing?

O---OO---OO the child is full of dirt.

What has it done?
Has he fallen?

He has fallen
Yes the hand-pump is broken that is why he has fallen.

The hand-pump has broken, is that why it has fallen?

He is only relaxing.

OK you mean he is relaxing?
Ha look.

Haven't you seen blood on his head.

No his bucket is full that is why he is relaxing. Is that bucket full of water?

OK you talk, what has he done?

He is lying down.

APPENDIX B

- 5 -

VEW

Audience

Is he lying down?

He is lying down sleeping.

He is lying down sleeping? He is lying in the water sleeping?

Is he even not wounded?
His right hand is wounded.

Only his right hand or every part of him?

You look. The reason is that this thing, this thing I showed you and the way he was pumping the hand-pump, is why he is now what you have seen.

Right now we have shown you how to turn the pump small, small, as if you are grounding flour and the other one too turns small, small like you are peddling a bicycle.

But our youth will not do that but would like to show their strength.

They take one of their legs and chuck it somewhere and then jump and hold somewhere and allow the water to flow, allow it to flow.

See saw, see saw

See, saw "aba!" haven't you seen? You have done well. O.K. and he misused it. When he was in action the thing broke. It did not break when he was down but the time he was hanging up and he fell from it. Right now all his legs are full of blood, the head is only blood. O.K. how many times has he killed us?

Maybe the medicine that would be at the hospital so that in case I have a lorry or bicycle accident and they will use it to treat me, he has gone for it that is terrible work he has done. When I get an accident and I get to the hospital there is no medicine for me and coming back to water, there is no water. Is it not he above who has killed me or someone else?

It is he, I even spoke about these children.

1



APPENDIX B

- 6 -

VEW

Audience

You see the reason is that there are some children who say their parents bought the pump for people to say O--OO--OO. This fellow is not coming to drive such people away. There is nobody who can buy the hand-pump that has already been given to us. I don't think there is someone else who can buy the pump for us.

I even wanted to say something and they told me their father used a cow to buy the pump and I don't know the reason why they say their father used a cow to buy the pump.

For that they are telling lies. No one bought something. Nobody bought something. When he tells you that you tell him right now to sell the pump so he should buy one in addition to that one.

They were pumping doing something and when I commented they asked me whether it was my fathers own. They asked is it my father's own or is it for the government?

Was that what they said?

Yes.

Who is the government? You ask them, "Who is the government?" Have they ever seen the government coming there to fetch water for drinking?

Does the government like this water? Is the government drinking from this pump? The government drinks refrigerator water. So it means that because of the government they drive our children away not to fetch water ha! Because of the government our children should be driven away not to fetch water?

I am saying when have you seen the government coming here to fetch for drinking.

APPENDIX B

- 7 -

VEW

Audience

Have you ever seen the white men who drill these pumps for us? Have you ever seen a white man coming here to fetch water for drinking?

Don't they drink water?

They drink but not this water they drink.

No, stop your arguments like that, for it is O.K.

It is O.K.

We will only drive away the children.

You drive the children away. That is all.

So that they won't spoil the pumps.

A woman says if you won't drive the children away and you see a child with a bucket there, pump for him and drive him to go away.

O.K. if he says his child is for the pump you wait when it spoils. You wait for about five days and you tell him he said he bought the pump he should go and tell them to come and repair the pump.

But if I am in the house and I send a child to fetch me water to bath and go somewhere will you drive him away to bring home a empty bucket?

They won't drive him away if he pumps and they know he can pump well. But if those around see that he is going to spoil the pump will they refuse to pump for him knowing that when he spoils it he damages all their lives?

How GWSC works is first come first served. If your pump spoils and you come first it is there that they go. So that if ten pumps spoil in other places and you come after the ten people they have to go and maintain the ten before they can think of your one. Will you therefore stop drinking water those days till it is maintained?

It's O.K. we have heard you. It's finished, we have heard you.



VEW

Audience

Picture No.5

Everybody should look in this picture.
What have you seen?

We have seen goats.

What are they doing?

They are drinking water,
swimming and bathing and one
is standing.

One is standing because it has
drank to its satisfaction and what
else?

One is drinking and the other
is standing.

O.K. Have you seen when we are
telling you to keep your pumps
well all that the animals are doing
is watering in a dugout where goats
bath in. They wash all their dirt
in it. The pump which the child
jumped and hung on got broken and
you've gone to tell them to repair
it but they have not come so now
where are you going to fetch your
water from?

You will go to these Dugouts and you
have seen what is happening in them.
The goats and other animals are
washing their dirt into them. Their
dirt remains there and if you fetch
this water to drink, it is dirt and
dirt gives us sickness. That is why
we say you should advise your children
and pump them well so that these
troubles will not get up. If you
do not advise your children and you
do not keep your hand-pumps well and
these troubles get you and you go
to fetch this water and drink the
next day you start complaining that
your stomach is paining. There is
also no medicine. That is how your
stomach will pain because if you
earlier on advised you children and
also used your pump with care, would
you have fetched water like this?

No, our fore/grandfathers were
drinking water from those
Dugouts and they were also
O.K. but because the world has
changed that is why you are
telling these lies.

The world has changed.

APPENDIX B

- 9 -

VEW

O.K. did you used to board a lorry to market or even to Kumasi when you used to go?

When you used to go to Kumasi did you used to board lorries? Why do you now board lorries to these places?

It should settle. When you got there how was the water? When you fetch that water will you see through to the bottom of a calabash? Will you see the bottom of the calabash?

What is making the water white? What is making it white? When it rains and you use a container to collect some of the water does it always look white but in the ground they dig and that comes out. That is what is why it looks white.

They don't fall sick? But when your stomach pains you what causes it?

What kind of water has no dirt? Water has dirt alright, I say water has dirt. I want to show you that is why the white man has come to drill us hand-pumps to help us get good water for drinking.

Audience

No, my friend. Ask him whether he used to board a lorry to market or even board to Kumasi when he used to go there?

We used to walk and drink dugout water and we were fit.

Is it the goat which is drinking that makes the dirt? If I fetch the water to the house won't it settle?

What do they use to wash water? When the water is white you are saying what? Don't you know white is good?

Pump water doesn't taste good.

They even bath in it and you fetch it and drink yet they don't fall sick.

Has water got dirt?



VEW

Audience

Dirty water is where the animals drink. That is why I now want to tell you that you should not drink that water because it will give you troubles.

O.K. We have heard all you said and we know but when the pump breaks what can we do to fetch from there?

Picture No. 6

Have you seen what is in this paper?

No, it is a pig.

It is a pig.

What is inside it?

Where is it in?

It is in water.

It is in water.

Sand.

It is in a swamp which has small water.

They told us that when you come to fetch water in a pump you do your best to use the pump with care so that it won't spoil. But see how this thing is behaving in this water and you know it is the dirtiest animal so far and it is now doing this in the water. You know you will be forced to fetch from this dugout when the pump breaks. You have seen how this pig is behaving in the water. When you fetch this home what are you going to do with it?

Before you fetch you will dig it more by collecting the sand already in the dugout.

It is swimming there and it is taking its bath. That is why it says that because a goat doesn't bath it is not its friend and, therefore, should not come near it because it will make him dirty, yet it is making itself more dirty and it says the goat should not come near it because it will make it dirty.

APPENDIX B

- 11 -

VEW

Audience

Therefore, try to always use your pump "slowly! slowly!" So that it won't spoil or else when it spoils you will be forced to go back to the dugout and you and the animals will wrestle for water.

Because when you are trying to fetch and the pig too wants to drink it will rush upon you and you will stand there with your calabash and say ish! ish! but it will still rush upon you.

If your hand-pump had not broken you wouldn't have gone to the dugout and you and the animals wouldn't be fighting over water.

You will dig. When you get there and the pig is there it is not at that dugout were we fetch but at the dirty water near by so that when the pig spoils the water you have to dig and bring out the dirty water and good water will yield because the dirty water is different from that of the good water.

But it is still dirty water because it has washed its dirt inside it.

When? The water is coming out from the ground as a new yield.

It is still. Do you know what is in the water?

When you fetch and go it goes back into the water to relax.

The dirt will still go into it to relax after you leave.

But when they come back to fetch they collect the dirty water and pour it out and fetch the new yield one.

If you collect that water at all and pour it out, what of the dirt that is under the water? Can you collect that dirt - the dirt that is under the water?

APPENDIX B

- 12 -

VEW

It is but that one is deeper.
That of the dugout is on the
surface, so when it rains running
water can easily collect dirt and
rubbish from other parts of the land
into the dugout to make the water
dirty.

A pig too is very dirty and smells
so when it gets there it will like to
to take its bath and when it does
that the dirt remains in the water
and you come to fetch and drink and
you complain about stomach pains.

The time you used to say water has
no dirt is not now. We now want to
prove to you that water has actually
got dirt and it gives us sickness
so that we will know what to do and
be healthy. So that it won't disturb
us. That is why the white man has
brought us these sources, so that
everybody will know that it is good to
drink good so that some of the sickness
will not get us. That is why. Thank you
very much.

Picture No. 7

Look at this, what is in it?

And what else?

Fire burning.

Ha!

Audience

What is the hand-pump water?
Is it not also coming from the
ground?

Pigs can even eat faeces and
come to put their mouths into
it.

You say water has dirt. They
used to water cows and bath in
dugouts yet they drank from
them. What happened?

As you are talking, there is
no pump at our area.

Pots.

There is fire burning.

And why is that one hanging
like that?

Why is it hanging like that?

APPENDIX B

- 13 -

VEW

Audience

She is pouring water.
She is pouring water into
something.

Who is pouring?

Ha!

Is it the pot itself which is
pouring?

That is a woman.

No, there is no one there. Is
that magic?

That is a hand at the other side
of the pot.

Yes there is a hand. What is
she doing?

She is pouring water into
another pot.

What of here? And she is
cooking. Is she cooking soup?

She is not cooking soup.

She is boiling water. No, she
is boiling rice.

No, you want to know and I will
tell you. If you don't know you
will soon know. The reason is
that the pigs you saw in the other
picture in which you fetched
water from a dugout and there were
also goats there. It will be nice to
do something to the water, and what
is it you do so that it will be good
for you to drink?

We will put it down to settle.

No, not to allow it to settle
but that you will boil it. Boiling
is the true story.

We will boil it. If we boil
it, it won't taste good.

No, it won't be tasteless. When
you boil it and put it down to
cool and you sieve it and pour in
your pots for drinking, but if you
fetch it like that for drinking,
then you have not yet fetched water.
This picture shows that when you
fetch water which pigs, fowls, and
goats have stepped in or swam in, that
water will be dirty but if you boil
it well and let it cool and you sieve
it and pour into another pot, and you
cover for drinking...

You will let the woman suffer.

APPENDIX B

- 14 -

VEW

Audience

No, they will not be suffering. The woman will not suffer for the reason that ...

How can she do all that work and cook again.

It is good to boil but we are not saying you should use fire wood to boil like that but when a woman is cooking in the local kitchen where we have built something like a coal pot and we can use two pots to cook at the same time, she should put the pot of water behind the food cooking pot and keep putting fire in. She will be doing double cooking and the water can be boiled and so will whatever else is there.

How many of you are in a family and you will fetch and boil for such a large number to drink.

But you still have to boil it or else you will be drinking dirty water.

"O--y", and you will come to cook millet porridge?

But it is right for you to boil the water because....

We have never heard that they boil water.

No, it is good to boil.

Do they boil drinking water before or it is because of Ghana today?

But right now it is right for you to boil your drinking water because of the dirt in the water and not because you boil the water but not you, yourself like or do not like to boil the water.

Then when you boil does it mean that the dirt will die? But we would like white water and when you boil the colour wouldn't be there.

No, you are not supposed to drink white water that is why they have brought you the hand-pumps.

But why don't we boil the pump water before drinking. Is that one not from the ground?

APPENDIX B

- 15 -

VEW

That one is good.

Nothing has stepped into it. Pigs cannot get into it neither fowls nor goats because they have a plan where they drink from and because of that they cannot make that water dirty.

The reason is that you have spoiled your pump and you can't get water so you have to treat the dirty water like that before drinking and you have to boil water.

Picture No. 10

Keep quiet and listen here for I have another talk to tell you.

What is in my hand here?

But what are these flying?

They are not bees. Who says they are bees?

Mosquitoes are not there. These are only flies. What do you think is in the pot?

O.K., that is why we are saying when they dance like this and pigs go to the dirty water and when people free themselves the flies go to sit on theirs and when you fetch good water from the pump and you send it home without covering your pot they bring that dirt to swim inside, then it is not good water. What do you have to do?

Audience

Ha!

This lorry goes around to teach today's youth of Ghana you have only taken this as a chance to collect salary but not that you are working. Then you also do that for pay.

You know but he is working because of his pay.

It is a pot.

Bees.

They are flies. Flies and mosquitoes.

They are dancing. Water.

APPENDIX B

- 16 -

VEW

Audience

You have to get something to cover the pot.

You get something to cover the pot and you use something clean to fetch from the pot. Always wash the thing you use so that whenever you want to fetch you use that one and always wash your hands before dipping them in the container to fetch. Always keep it at a clean place where it won't be contaminated because these flies can cause us to get diarrhea, we and our children. That is why our children are always sick. It is the cause of flies because they can carry every type of sickness around but when you see it, it is always cleaning itself and you think it is clean but it is not. That is why they say as clean as a fly. But flies are very dirty. We don't want them to fall in our water before we drink. When a fly falls in your water it is not good to drink it. So when you fetch your water to the house it is not always good to leave it like that without covering it and let flies fall in it, because that causes diarrhea, what we call diarrhea. Have you heard me?

Yes, it is the water you use in cooking the food therefore it is good you do everything the same to be nice. So when you cook food cover the food with bowls and lids and do not allow flies to touch anything that is edible. Don't allow flies to touch anything because they are very dirty.

Yes.

What if they fall in food and we eat it. Does that cause our being sick?

But at times when there is meat which flies do not come near they say there is sickness in it but when flies touch it there is no sickness. And when flies do not touch they really don't eat.

APPENDIX B

- 17 -

VEW

Don't say that because there are people there for that work for there is a reason why they say that there are people for that job. There is a reason why they say if flies do not touch that meat it means it has something called antwax but if it is flies, they are not suppose to touch something, to touch meat before you cook it.

You can't boil it. "Ha". But if you even fetch from the pump and keep it, you fetch to drink but not to boil. You fetch from the pump to drink so it is good that you use something to cover and flies will not touch the water.

Your food and everything is to be covered because a fly is a disease carrier.

Right now they make lids to clay bowls.

Right now we have them.

When you go to the market you will see them or you even look for a big calabash and cover.

It is nice that you cover your food and water.

Audience

Meat is even better but when it touches water you can't boil it.

When the women buy the bowls from the market, how can you have lids?

The clay bowls, how can you have lids to them?

Right now?

Then when you break your bowls and you buy those ones it will be better. Then you can use a calabash to cover.

How do you even keep food without covering it. Does it look nice?

VEW

Audience

Picture No. 11

What have you all seen?

We have seen a pot and a tree.

And what else?

Tree, there near a house.

And what is in the pot?

You even saw the first pot which has water in it where flies go to bathe. And we already told you flies have sickness. Why do they have sickness. When they go into your water, when somebody frees himself they go to sit on this waste matter. Where there may be larva of some germs, they pick them up and send it into your water which is in your pot and wash these eggs in it.

You claim you have fetched good water for drinking, yet you have fetched the eggs and drink and they hatch into larva and later on grow as living organisms (parasites). When you go to free yourself you see a living thing in your waste matter and you complain that there is a living thing in your stomach. You don't know how and where it passed into you, forgetting the water you fetched without covering your drinking pot. Flies bathed in it and brought in that living thing and you drank it into yourself. And also what else? These our children we have are always outside playing or they go to free themselves and after that they may be thirsty yet they don't know it is nice to ask their mothers to fetch them water but they pick any container and dip it into the water, fetch and drink. May be where they were playing isn't good and may be there was rubbish there or may be a child freed himself and it was collected and thrown there and our children after playing with this go to dip it in the water

APPENDIX B

- 19 -

which is sickness which they put into the pot for you to drink.

The calabash here has a holding side which can become dirty but when you use a ladle or something with a long handle and put it on the top of the pot's lid, and you want to fetch water, you hold only the handle of the ladle and transfer the water into your calabash or cup and drink. You won't use the calabash and drink but you won't use the calabash with dirt. That is why the ladle is on the lid.

It is forbidden to drink directly from it but when you use it to transfer water into a calabash, it is not forbidden. We all know that.

If it is a calabash or a cup, you must use a ladle in transferring. If it is a cup you know everybody will not use it. If a cup is used to transfer water into a calabash or bowl, don't children use it and leave it anywhere and when you are in need of it you look around and pick it from anywhere and use it? No! That is sickness you are inviting.

But if you don't know and you do it then it is not forbidden.

All women, I beg you, if you want them to know that you are women and it is fine, when you fetch your water home try as much as possible to use something in covering the mouth of your pot and make it well so that flies won't fall into it. That will show that you are a woman but if they come to see that your pot is not covered then they will call you a useless woman and that too is not good.

Woman you are saying the truth? What about the ladle on the lid of the pot?

What! but it is forbidden to use a ladle in drinking water.

But can't you use a calabash or cup?

What if the child does not have the sense that we don't use ladles in drinking and comes to use it?

No, but if you do and something happens...

APPENDIX B

- 20 -

VEW

Audience

Picture No. 13

Have you seen?

Our daughter you have done well and we thank you.

What is she doing?

Yes.

The woman listens well . What is she doing?

She is bathing her child.

And what?

She is bathing her child and there is a bucket standing by.

A head basin.

A head basin.

Where is she bathing her child?

In the head basin.

Why is she bathing her in the head basin?

She has it for her work and it is one of those...

So women, listen well. Have you seen you don't like bathing your children. It is your duty to bath your children every evening because they always go about playing and make themselves dirty. So bath them like the woman bathing her child. Have you seen?

You heard them talking about water. Do you think if there is no water you can bath your children?

No.

And if he doesn't bathe what happens to him?

It is sickness.

It is sickness. He is restless and can't go to school and you can't also work. So always fetch water and bath your children every evening like the woman is doing. Have you seen?

Yes. What if you have no head basin?

If you have no head basin you have a broken pot or a big calabash, you can put him down and bathe but it is

APPENDIX B

- 21 -

VEW

Audience

because she has a head basin that is why she has put him there to bathe. She doesn't want to waste water. That is why she is bathing him there but you can bathe your child whilst he is standing on the ground or if you have a broken pot you can use it for bathing him.

It is because her husband is rich and she has a head basin that is why she is bathing her child in it.

But if you haven't got one how can you do that?

If we don't have basins then we can't bathe them. Do the children ever say they can't sleep because they haven't bathed.

That gives them sickness when the child gets up in the morning without washing the face and you leave him to sleep like that. Without bathing he will be sick so it is necessary to bathe your children well.

Picture No. 14

Have you seen this picture? What is in it?

It is a human being.

What is he standing there doing?

It is a man bathing.

It is a man bathing

It is a woman.

It is a human being. It is a grown up.

O.K. the picture shows that it is not only children that should bathe. Grown ups also want to be sound so try and after bathing your child you bathe yourself. Bathing gives you good health. After working you look tired but when you bathe you look strong so when you bathe your children the grown ups should bathe themselves so that you will look sound. Bathing doesn't mean to bathe with any water. You bathe

APPENDIX B

- 22 -

VEW

Audience

because you want to wash away dirt but when you bathe with dirty water it is still dirt so use good water for bathing just like we have shown you to drink good water.

Picture No. 16

O.K. What is here?

It is water and local (black) medicine.

The women should keep quiet and look and tell me what you have seen here. Women, keep quiet and look what have you seen?

A woman is sitting down with her child.

And doing what?

She is washing a bowl. She is washing bowls and draining on wood.

Where is she draining them?

Wood.

She is washing the bowls and draining them on wood. But are the bowls draining down or up somewhere?

It looks like zinc. They are on something.

Why do you think they are draining them on something?

She wants the water to drain out.

So women, what we want to show you in this picture is that the ground is dirty so when you wash your bowls and drain them up on some wood and they drain and you go to keep them, it is better than washing them and putting them down and the sand and dirt is found on them. Have you heard, that is why we want to show you to do like we have said but do not say you have used good water in washing so they won't be dirty.

VEW

AUDIENCE

Picture 15

O.K. look in this picture and tell me what is in it.

A woman is stooping. Is she washing bowls or sweeping? Those are clothes hanging up. She is washing clothes. This is a smock and a bucket standing...

You know very well that we spoke about bathing, how we will bath and look healthy and we also know that when we have a dress and it gets dirty finally we will have living things living on it.

You know that when we wear them and they become very dirty we have living things looking white which they call "karisa" (ticks). When all these are found in your clothing but when you wash them sometimes...

You have seen how the women has hung them up. If you put them on the ground knowing all diseases are on the ground and by the time you dry them on the ground you know they will enter into your dresses. When we pick them to fold and later on when we put them on, all that will chop our bodies. The woman has hung them so that the wind is blowing them and that will make them dry. When she picks them up those who are educated iron their things, but those of us who are grown in the house only keep them like that and wear them. When it is this way as you hang them after they are dried you pick your things and go home. So when we are washing our clothes it is nice to tie a rope.

The is no soap but,..

There is no soap these days.

There is no soap but we also know that in the olden days when there was no soap some used to use salt-peter for washing and others used

When you go to Burkina Faso to buy soap for 80 cedis, there is no soap.

VEWAudience

the trunk of okra for washing but others who had none of these used only water to wash for they say a "chiefs white son is better than a chiefs dirty son". If you use soap your clothes will be clean but since you have no soap when you wash like that it will be better than without washing. So the dirt that would have gone out by soap will only be left but that of the water will go out and it will be better for you to wear than when you leave it like that and use it.

As you know you are always walking but not sitting and as you are walking and not sitting it means you are walking and it can't enter you but if you lay at one place it enters because you are always at the same spot.

You see the foot you know is thicker than any part of the body and it is because we use the foot on the ground as we walk so the cells there are dead and make the foot thick so any dirt there can not penetrate but will stay there till it is washed out but that of the body has holes and dirt can enter easily.

I have a question to ask. Everything we do we have to put our legs down and when you wash you dress and put it down will the worms (tics) or "karisa" you spoke of enter the grains so that it can pass to your stomach, or it will only enter you dress?

As we are sitting here some of us have no sandals on and as you know we have been here for long, does it mean that those worms can pass through your feet into you? So that if it is that then you tell the white men to look for sandals to wear.

VEW

Audience

And even if you put a dress down it doesn't matter whether it is wet or dry because those who like wet things will enter into a wet dress and those who like dry will enter into a dry dress so that is why it is good to hang them on a hanging rope.

Picture 12

What else have you seen?

He is washing his hands.

He is washing his hands. Why is he washing?

He is washing to eat.

As you have seen, is it nice to wash your hands before eating?

That is when your hands are dirty.

We earlier on said dirt is sickness so the men and all the women as you know we all farm and when farming we use our hands. Maybe you are up matting grass between which there might be faeces and you use your hands without knowing and when you get to the house and they give you food you say your hands do not walk on the ground so there is not need washing them and you go to eat like that without washing. Maybe you come to eat without washing your hands so it is all sent down you stomach which will give you sickness. That is why they say when you come from the farm wash your hands no matter whether you get food or not because you wouldn't know when you will get food.

But won't they become dirty?

Even when it becomes dirty you have already washed what was in you hands away.

What if you want to take tobacco.

If you want to do what?

To take tobacco.

APPENDIX B

- 26 -

VEW

To take tobacco?

The tobacco itself is dirty.

The tobacco itself is dirt. We don't even know what we will do to it.

To me it is true that they give us sickness.

You can't sleep?

Anyway I look at it to be sickness.

Then if you know you can stop then it is good, you stop.

No we don't swallow it unless only that you have hunger for it. Why you don't swallow is because it is not good, but if it was good you could have been swallowing it but they know it is not good that is why.

Anyway kola is better but why do you have to take kola?

The women too when you are in the kitchen or grinding flour and you come out to urinate it is good to wash your hands well after that before going back to continue with what you were doing. Even if you blow your nose it is right to wash your hands before continuing your work.

It is nice to always wash your hands before doing any work.

Audience

If you want to take tobacco you have to wash your hands before.

Itself is dirt?

Though it is not good but we take.

But if I don't take tobacco I can't sleep.

No.

Then I will stop it.

But see how it looks in your mouth yet you swallow it.

If that is the case then you give me kola to be taken.

Anyway we men are better but you women when you want to grind something for soup you don't wash your hands before.

The women should listen well.

It is true that women are more dirty than we. We thank you for your speech.

VEW

Audience

Picture 8

Have you seen this thing I am holding?

yes.

What is inside it?

Someone has squat and is freeing himself.

Someone is squatting, freeing himself and the faeces are not coming out?

He is urinating.

Ha!

He is urinating. He is freeing himself.

How? He is squatting and freeing himself. Is it nice?

That is how they even squat to free themselves and you are asking whether it is nice.

Have you all seen? As you know, the pump people came here to talk about water, that we should drink good water but look at how he is squatting to free himself. It is not nice that we do that and flies go to sit on it and it comes back to the water. It is good to drink good water and eat good food. As he is easing it will be carried to the nearby dugout where we or animals will drink.

It is good to dig a pit and free ourselves into it but it is not good to free ourselves like this.

As he is freeing himself when he gets home to eat and flies come to his food it is the same that has been at his faeces and now in his food but he may not know so that is not good. It is sickness.

You all listen well.

So what we have to tell you is that you all try and dig a hole and build a toilet. We will show you how to dig the pit and bring you cement and cement it for you and you will pay an amount.

APPENDIX B

- 28 -

VEW

The gov't is doing it but if you dig it is not wrong.

We will help you to get the toilet.

When there are strangers it is not nice to have them loitering about to free themselves. But if it is only the faeces we don't want to see about that is no problem because the pigs around will not allow faeces to stay for a minute.

It will be good for you all, especially for your wives and children. It is me, myself, who is speaking to you and I know the reason why I am speaking to you. Am I speaking "kabone" but not "talne"?

So you all listen well because if its not good I wouldn't tell you. You try your best and I will also talk to the white men and they will come and help you to build your toilets so that you can ease into the pit and flies won't get to settle on.

There are days you free yourselves and flies go to settle on it before coming to settle on your food and you eat without knowing it but if it is in the pit toilet where it is dumped in a hole flies can't transfer this faeces into your food. Maybe there is some one with sickness and this may be in his faeces and when flies bring it into your food and you eat, you contact it and finally you are all sick just because of the bad way of freeing yourselves. They eat this and come to eat our food and we eat both.

Audience

But is it not the gov't digging?

If the gov't is to give us a toilet why should we dig like that?

Do you think when we all free into that hole it will still look the same?

You are speaking "talne."

Anyway your talk is nice but where will someone get money to lay this cement when it is costly like this and even zinc.

APPENDIX B

- 29 -

VEW

The water people are ready to provide you all these things and you only have to pay 200 cedis. They will help us build a nice one which will last.

If it is the room you try your best and do that.

Picture 9

Amorgrebisi people, good morning. It is your duty now to gather and listen to what I have for you. Today I have a new picture to show you. As you have seen what is it in the picture?

Is he squatting outside or in a room? What is he doing?

As you have seen him squatting there freeing himself is it nice or not?

That is why I was telling you the other day...

Amorgrebisi! Good morning. Anytime Atori comes here all of you rush here so that we can listen to his speech.

Today we have got some new pictures to show it to you. As you look what can you see from the picture.

Who can tell me what it is?

Is that person squatting inside the room or outside the compound?

Audience

If I have money won't I use it in building a zinc house?

But won't they help us build a room?

Someone is squatting.

He is freeing himself.

Yes it is because he is hiding and no one can see him.

A person squatting; squatting inside a room.

The person is squatting inside the room and the person is emptying his bowel.

APPENDIX B

- 30 -

VEW

Audience

Ayamga, what is the person squatting

The person is squatting emptying his bowel.

As you look at the place where the person is at toilet, is it nice or not?

It is nice.
How can a toilet place be nice?

What?

How can a toilet place be nice when one is at toilet and squeezing his face!
The person is in a room and cannot be seen so it is nice.

Yes!

Yes! Yes! You should try to keep quiet and I will tell you something. That is why I came here the other time and showed a picture to you telling you that going to toilet in the open place so that you can be seen by people, animals and all the other things is not nice.

It is necessary and good for us to try to dig a fine hole so that the whiteman can help us to build it so that when you enter here privately and empty your bowels and the feaces are scattered (everywhere) but in a confined area. It will not scatter everywhere to give or bring diseases to us. That is what I have got for you today. You should try. The digging is not hard.

The amount for the cement they will come to use to make it for you is not much, it is 100 Pounds (200 cedis). Only we require you to do it.

That is why I want you to try so that we help each other. I thank you very much

Is it only 100 Pounds (200 Cedis) you want to tell us?

VEWAudiencePicture 24

Let all of us look at what is inside this picture. All that we have been talking of now; how we feel when we drink good water and if we do not get good water to drink we can or we are likely to get different types of diseases.

As you (people) look, what do you see?

A woman sitting.

And what else.

There are sores on her leg.

There is something coming from her leg.

Let me tell, if there is no good drinking water there are different types of diseases which will attack us.

This woman sitting down is sick from Guinea Worm now.

It is Guinea Worm that has attacked her leg. And it is likely that she may stay indoors and she may probably not come outside.

If you look, you women around here, if one of you is attacked by Guinea Worm, as you know, there is some high price of maize at the market, Yelwango. If you are this woman who is attacked by Guinea Worm now because you have been fetching bad water and sending it to the house and drinking it and attacked by this you will raise your head up and weep and say "God has thrown you away". It is not so, you have left yourself.

A woman sitting.

A woman sitting.
The woman bending.
The woman sitting with white cloth and a wood.

A chair.
It looks as if there is something. The woman is sitting and resting and you are saying!

There are sores on her leg.

There is something coming from her leg.

Look, it is Guinea Worm

Oh!

VEW

Audience

You know it is necessary to drink good water and not to drink bad water. That is why you have had this kind of disease.

In addition, you male adult, if it is in the wet season and this kind of disease attacked you you are likely to commit suicide and say God has thrown you away. If you see your fellow farmers going to their farms and you have been attacked by Guinea Worm and you are sitting down you will be worried.

What we will do and it will be nice and we will not be attacked by different types of diseases is that we have to drink water from the hand-pump which the whitemen have made for us.

This type of water does not have parasites which will attack us.

This is what I have got for you.

Picture 23

As we have been talking about water, we know very well that some of you do not do it afterwards, i.e. you throw it away.

You should look at this picture and see this man.

The man is begging. A beggar.

A man! As you look, is he well?

Poverty is making him weak.

What!

He is experiencing old age.

If you look, is he well?

No. He is lean. (so many talking and difficult to analyse)

APPENDIX B

- 33 -

VEW

Audience

You sitting down, would you like to marry this man? If they say this man is your husband would like to be married to this type of man?

The way he is it might be that he has wives and children and how is he? This particular man, how will he be able to farm to feed his wives and children.

There is no strength. That is why we have been talking that you should try to look after yourselves well.

The water problem that we have for a long time been talking of up to today; it is that the water problem, the disease does not attack you and you will stay indoors but it is doing you in this way, drying you small, small, small and you will be drying up and you are dried up.

(Note: Dried up means the stage whereby a person is weak, looking old, wrinkled due to sickness)

Look at his ribs we can see and count them. Is he a human being? That is why we have been talking that you should try to look after yourselves well, well. And you say we should. Let us drink good water. Don't see anything and try to smell it before you eat.

All that we have talked and reached is that we should not let it be like this.

You see somebody walking and is he not eating? He is eating, but drying up because of small, small, small, small, small, small diseases. Water diseases have made him look like this.

Have you listened to this one?

Yes, that is why we brought this picture to show it to you.

No. There is no strength.

Yes.

APPENDIX B

- 34 -

VEW

AUDIENCE

Picture 19

This is a bathhouse. Have you see it? What is inside?

They have built it.

They have built it around, around. There is a bucket turned upside down. There is also a broom.

Yes.
And flies.

And flies.

There are also flies.

No! They are not flies. They are grasses. They are not flies.

If you see after bathing he will use the broom to sweep and wash it very, very well. It is necessary to do this nice thing in our homes.

Look at the back of the bathhouse. Have you seen that they have made a gutter?

And have you seen that they have some stones and other things whereby the water runs into --?

Yes.

Have you seen that person who is drawing water and has got thin arms and wrinkled legs? Do you know the reasons? It is water diseases.

Mosquitoes have bitten him and made him like that. So if you have a bathhouse and you do not do it in that way and water accumulates and pigs come there to swim and mosquitoes lay their eggs and hatch them and in the night they will bite you and you will not get a chance to sleep and when it is at dawn you will say - Mosquitoes did not allow you to sleep and you would not know where these mosquitoes come from. You are breeding the mosquitoes like that in your compound.

VEW

Audience

If you do it in this way the water will sink to the bottom and everywhere is dry up and the bathhouse is dried up and not smelling. Have you seen?

When you do it in this way you will get good health.

We want to show you. Those who have bathhouses or if you have a soakaway and not only a bathhouse soakaway but a kitchen soakaway or any soakaway, when you go back you should dig it well, well. Collect stones and gravel so that the water can flow on and the mosquitoes will not reach you to bite. Have you heard it?

Yes.

That is it.

Picture 21

We have talked about bad water, not sweeping our homes so that it will look nice and we have talked about when you let water accumulate and you do not dig a soakaway so that water can pass through it and you do not sweep nicely, then different sicknesses are going to attack us.

This is one type of sickness. When we leave it, and do not sweep our homes, do not do cleaning and cleaning of our bathhouses and the water does not run a long way and does not sink into the soakaway and mosquitoes lay eggs.

This is the type of sickness we call jaundice.

This sickness.

No! He has not been drinking dirty water. It is jaundice.

Hasn't he been drinking dirty water that has made his eyes yellow?

He was not able to sleep yesterday/last night. He is feeling sleepy!

VEW

He is not feeling sleepy.
It is sickness./ He is ill.

Since the mosquitoes have bitten him and he could not sleep and the sickness has also made his eyes to be in that way.

That is it.
The mosquitoes have bitten him and so they want you to allow water in your bathhouses to run out of it as we have shown you in the picture and wash. And the broken containers which collect water when it rains are breeding places where mosquitoes lay their eggs and hatch them so that when you sleep and beat yourselves "bap' bap'bap", these mosquitoes bite us and inject diseases into our bodies.

That is the sickness mentioned here that we call jaundice.

I want you to try when it is in the wet season and it has been raining to capsize your containers and look at your bathhouses.

And when it is dry season you should try to make sure that water runs freely out to the soakaway so that there will not be any stagnant water anywhere so that mosquitoes will not breed in these places and bring this type of sickness to us.

This is what I want to tell you.

Picture 22

Have all of you seen this type of picture?

Audience

He is feeling sleepy in addition because the mosquitoes bit him last night and he could not sleep.

(Response not clearly heard.)

Yes.

APPENDIX B

- 37 -

VEW

Audience

We have been talking and have finished talking about water. Now we have this to look at.

What is in his eyes

(Response not clearly heard.)

He has dirt in his eye. This results from the bad water. It is like if there is a large stagnant water where children go there to swim and even at times adults go there to swim. If you swim your eyes are likely to pain and your eyes are likely to accumulate dirt.

This sickness?

What is the name of this type of sickness?
Yes.

When your eyes pain you, you have dirt accumulated in the eyes.

(Responses not clearly heard.)

Oh! Yes.
This is sickness. You should try to prevent children from swimming. And also when they come it is not good to use rags to towel yourselves often or else you're adding more dirt to your bodies.

So when you want to towel yourselves you should look for a nice and clean cloth, and when it is dirty you try to wash it and another thing is that if you use it for long and do not wash it, it will make you dirty all the time.

(Further presentation not clearly heard.)

VEW

Audience

Picture 18

Have you people seen?
Look at this picture.
What have you seen?

(Many responses not clearly heard.) A woman carrying rubbish to pour it away.

A woman carrying rubbish...
to empty it away.

So far we have been talking
we try to show you what is
good and the importance
of drinking good water and
washing and wearing neat clothes.

This part wants to tell us
that our wives at home should
everyday, everyday sweep their
rooms and yards well and make
sure that there is no rubbish
any place and put it in a specific
place.

(Responses not clearly heard.)

If she sends it out she
should, they should build
a small pit so that when she
empties the rubbish it will
be confined to one place and
cannot scatter anywhere. If she
does it it is good and if a
stranger comes and sees that
her yard is dirty then it means
the woman has not got up to sweep
her yard then the woman is a
"careless woman".

A "careless woman" is a name
chosen for women of such
acts but it does not mean
that her fellow women are
better than her.

The white men want to change
them so that they have to
take care of their homes
and do not let it be dirty.

When you sweep and collect
the rubbish and because it is
tiresome, you just keep it
near the wall (small wall

VEW

Audience

separating animal yard from court yard) and pour the rubbish onto the animal yard and it goes to sit down is not good. Take it outside and empty it onto the confined place, TAMPURI. If you want you can leave or burn it if the wind is likely to carry it away or if you do not have any specific place or tampure, burn it so that the wind cannot blow it away. This is what the whitemen want you to do.
(Note: Tampure is a place in front of almost every compound where rubbish is kept and digested.)

Do you want to just put the rubbish any place?

Listen!!

(Responses and further discussion not clearly heard.)

(Note: several talks not clearly heard between the VEW and the audience)

I thank you very well.

OK SITE DEVELOPMENT

Picture 20

You should listen well and when we have finished talking, look at the pump that they have made it nicely so that we can get water to drink from it. We have all seen that.

It is necessary for us to get good water for drinking so that it is necessary

So we do not want this, but the white men want this. We do not want this.

(Responses and discussion not clearly heard.)
It is ok you talking, are you a whiteman?

He is thanking us.

Yes

VEW

Audience

to have good health. When one becomes sick he is likely to spend between ---- five hundred pounds (1000 cedis) and six hundred pounds (1200 cedis). Is it not plenty of money? Because the person is not drinking good water.

When you see it you will think it is good health but it is bad health.

Have you understood? It is necessary of all of us to look for good but some want hardships. So we should try to see that - probably these existing pumps when they want to make it (site development - animal trough, extended pad etc.), it is not difficult to make it. It is only eight hundred pounds (1600 cedis) If they want to calculate the actual cost involved it will be more than two thousand pounds (4000 cedis)

Only eight hundred pounds (1600 cedis).

Only eight hundred pounds (1600 cedis) so that they will come and make it.

(Part of response not clearly heard.) But then, I am an educated worker and collect my salary but it is good for me to tell you and if you want you can leave it.

Have you heard?
When are you like this?
It is money.
When is it that?

When you see it you will think it is good health.

How many pounds? How much?

Is it only?

(Many responses not clearly heard.)
As you are working collecting your salary! When asked can you afford it?

Yes.

APPENDIX B

- 41 -

VEW

AUDIENCE

Is it a lie/true- If he
is drinking good water,
will he be like that?

Note: Some talk difficult
to differentiate between
the audience and the VEW.

It is a tie.

He is drinking bad water
and one day we will drink
in this way. They have
taught us not to eat
dirt. Goats do drink bad
water and do die and you
can eat it and also we will
not worry.

It is necessary for us to do
what is good. It is necessary
for us to try to contribute
twenty pounds (40 cedis) to
make your pumps look
nice.

And you will get good water
to drink. They are helping
you.

Do the whitemen come here
to drink water?
The white men themselves go.
Do they ever try to come to
drink water from the pump?
If they have done so tell
me and it is the same
(Not Clearly heard.)

Will he be around his house
drinking bad water.
He is drinking water obtained
from a dam and river.

- Been drinking bad water.
- Your talks are good. It is
better than when we use the
money for pito.

APPENDIX B

- 42 -

VEW

Audience

(Some discussion not clearly heard.)

It is better and will do nothing. I beg you to try to come together and do what they have told you.

I thank you very much.

We thank you also.

