MINISTRY of WATER DEVELOPMENT

K I W A S A P

KILIFI WATER AND SANITATION PROJECT

PROJECT PROGRESS

YEARLY PROGRESS REPORT

for the period January - December 1991

For:
THE DIRECTOR
Ministry of Water Development
MAJI HOUSE
P.O. Box 30521
NAIROBI

By:Murage J.W.V.
Project Manager
KIWASAP
Kilifi Water and Sanitation Project
P.O. Box 666
KILIFI
December 1991

The Permanent Secretary,
Ministry of Water Development,
P.O. Box 30521,
NAIROBI.
(Attn: Director of Water Development)

KWS/029/VOL.I(4) 13th February,1992

RE: **YEARLY PROGRESS REPORT**

Under the able guidance of the Kilifi District Commissioner, the Project Steering Committee has seen the project through strides of achievement during this year 1991.

The Joint Monitoring Committee, under the chairmanship of your office has continuously kept the thrust of implementation of project objectives within the framework of GoK and GTZ policies throughout the year.

It is for these reasons that the Project Management Committee, chaired by the Kilifi District Water Engineer, has found a rather daunting task relatively easy to accomplish.

I am therefore pleased to forward to you the yearly report for the Kilifi Water and Sanitation Project for the year 1991. The report has also been detailed to encompass earlier activities in Phase I and is therefore the yearly cum Project Status Report. This report is mainly a record of the activities of the first year of Phase II.

(Murage, J.W.V.)
Project Manager.

encl.

c.c. 1. GTZ Co-ordinator (MOWD)
KGWT-NAIROBI

2. District Commissioner,
Kilifi District

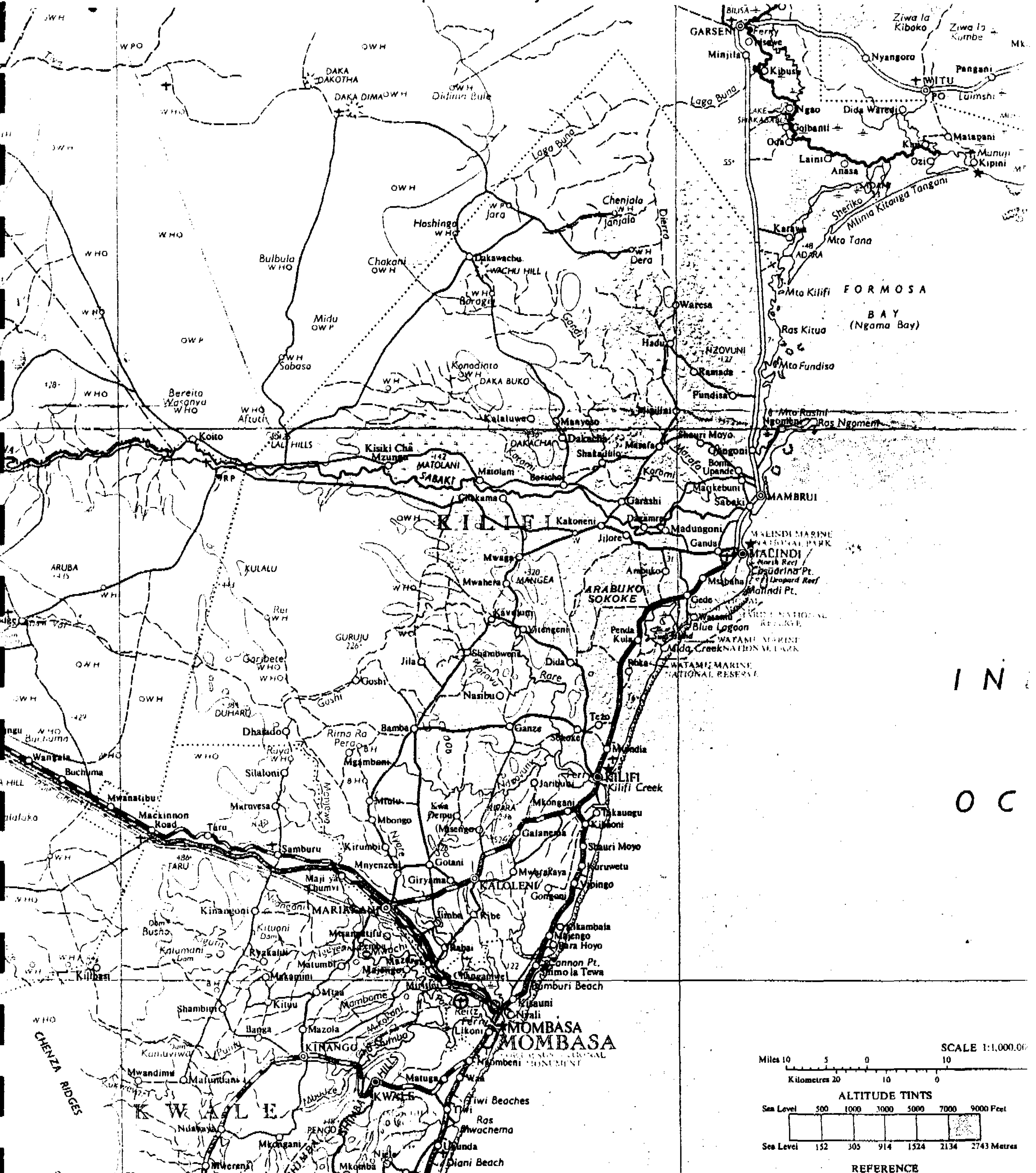
3. Provincial Water Engineer,
Coast Province

4. District Water Engineer,
Kilifi District

5. Other Members of Project Steering Committee
(DDO, ASAL, DSDO, DPHO, DEO)

6. Other Collaborating Agencies
(UNDP, WRAP, AMREF, AWN, SIDA, FINNIDA, KWAHO,
NETWAS, UNICEF)

Map of the Project Area



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LIST OF ABBREVIATIONS

AMREF	-	African Medical Research Foundation
CHW	-	Community Health Worker
DC	-	District Commissioner
DDC	-	District Development Committee
DPHO	-	District Public Health Officer
DSDO	-	District Social Development Officer
DWE	-	District Water Engineer
GoK	-	Government of Kenya
GTZ	-	Gesellschaft Fur Technische Zusammenarbeit (German Agency for Technical Co-operation)
HQ	-	Headquarters
KGWT	-	Kenyan-German Water Team
KIWASAP	-	Kilifi Water and Sanitation Project
KWAHO	-	Kenya Water for Health Organisation
MOCSS	-	Ministry of Culture and Social Services
MOE	-	Ministry of Education
MOLD	-	Ministry of Livestock Development
MOASALR	-	Ministry of Arid and Semi-Arid Lands and Reclamation
MOWD	-	Ministry of Water Development
NGO	-	Non-Governmental Organisation
NWCPC	-	National Water Conservation and Pipeline Corporation
O+M	-	Operation and Maintenance
PWE	-	Provincial Water Engineer
STE	-	Short Term Expert
Sub-DDC	-	Divisional Development Committee
UNDP	-	United Nations Development Progamme
VIP Latrine	-	Ventilated Improved Pit Latrine
WASH	-	Water and Sanitation for Health
ZOPP	-	Objectives-Oriented Project Planning

1. INTRODUCTION

1.1 PROJECT HISTORY

Kilifi Water and Sanitation Project-KIWASAP, is funded jointly by the Government of Kenya through the Ministry of Water Development and the German Government through the German Ministry of Development Aid through the GTZ (German Technical Co-operation Agency).

KIWASAP was mooted in 1985 after a report of an appraisal mission for the Kilifi District Rural Water Supply made to the GTZ. In collaboration with the Provincial Administration, the Ministry of Water Development and other agencies, the report recommended that an integrated project encompassing the three Ministries of 'Water Development', 'Health' and 'Culture and Social Services' focusing strongly on water and health aspects targets on the then Kilifi Central Division, Mariakani and the Bamba hinterland of the Ganze Division and underscored the vital role of community participation.

The First Phase of the project was subsequently launched in February 1988 to end in December 1990 and focused attention on parts of Bahari and Ganze Divisions of Kilifi District. It was during this phase that the project, KIWASAP established itself in the District with an office constructed in the District Water Engineer's compound.

The beginning of this year (January, 1991) saw the start of the Second Phase of the project destined to end in December 1993 covering the wider part of the Bahari Division including a water pan construction component in the Bamba hinterland of the Ganze Division.

In effect, the project expects to reach a total population of some 60,000 people at a cost of Kshs 30 million in addition to Kshs 5.5 million spent in the First Phase.

1.2 PROJECT EXECUTIVE SUMMARY

1.2.1 The overall goal of the project is to improve the health of the community in the project area through the provision of improved water supplies and sanitation facilities which will be self sustaining.

1.2.2 As a means to achieving the above goal, the project needed an effective community education component and close working inter-ministerial collaboration between the Provincial Administration and the Ministries of 'Water Development', 'Health', 'Culture and Social Services', 'Education' and 'Reclamation of Arid and Semi-Arid Lands and Wastelands' among others.

And as the project is District based, the project steering committee is chaired by the Kilifi District Commissioner while a joint Ministry of Water and GTZ committee in the Ministry of Water Development monitors achievement of programme targets as planned.

1.2.3 In general, the project areas are Kapecha/Mkomani and Bamba hinterland of the Bahari and Ganze Divisions of Kilifi District respectively.

The areas covered by Kapecha/Mkomani are Kapecha, Mkomani, Kadzinuni and Makonde altogether referred to in this report as Kapecha I while the extended area referred to as Kapecha II covers Pingilikani, Dindiri, Makata and Kaole.

Other areas covered by the project in this report are Ng'ombeni and Mavueni which are essentially an extended part of Kapecha II.

The Bamba hinterland covers Digiriya and Bamba locations.

1.2.4 The project implementation focuses attention on community education and training, water supply and hygiene education and Sanitation.

1.2.4.1

Sustainability of water and sanitation projects has to be pivoted upon community education and training if long term results are to be realised. In particular, success of the sanitation component of the project is highly dependent on how quickly hygiene education penetrates traditional barriers.

The beneficiaries have been explained the need for cost sharing in both project implementation and for operation and maintenance. They have responded well by turning out in large numbers and contributed unskilled labour and subsequently paid 20 cents per jerry-can of water drawn from water kiosks.

This has been achieved through community organization planned within the framework of their own local traditional social structures. Eleven water committees have so far been formed since the project started.

The rest of the community education and training has been propagated through various means and achieved as follows.

1.2.4.1.1 Training of primary school teachers for certain schools in the project to help reach the parents of school going children either through the Parent-Teachers Association or indirectly via the school going children themselves.

Fourteen teachers from fourteen schools have been trained in this ongoing exercise.

1.2.4.1.2 The project has trained local artisans on the application of low cost and appropriate technologies employed in the project and thereby transfer the technology for the future use of the community.

Up to now the persons trained are as follows:

i) Four men trained on ferrocement tank construction;

ii) Ten men trained in O&M of pipelines;

iii) Fourteen women trained in O&M of pipelines;

iv) Eleven men trained in VIP latrine construction;

Focus on training women in O&M has featured prominently of late since the 10 men in (ii) above earlier trained have since left the project area for better jobs elsewhere after they got trained. This has denied the community the intended O&M local capacity.

1.2.4.1.3 On going also is training of community extension workers hereafter referred to as Community Health workers being conducted at the project to help speed up community training. Eight community health workers are currently being trained.

1.2.4.1.4 In addition, the project has developed a VIP latrine slide show in Kiswahili with pictures taken on the spot. This is expected to help community members better crystallize messages said to them.

1.2.4.2 Propagation of the sanitation component has, in addition to the education and training explained above, taken the form of demonstration and promotion through:-

1.2.4.2.1 Construction of training and demonstration of VIP latrines in primary schools. The community dig the hole and make stabilized soil blocks. The project provides cement, the slab, vent pipe (+ wire gauze), hires and pays the local artisan.

1.2.4.2.2 Construction of demonstration VIP latrines near gathering points like income generating activities of women groups, water kiosks, etc at the request of the group. Contributions are as above.

1.2.4.2.3 Provision of VIP latrine slabs, vent pipe (+mosquito gauze) to individual homesteads at a subsidized price of Kshs 150/- as opposed to the retail price of Kshs 450/-. This is done against proof of a dug hole and helps speed up raising the number of local artisans trained in VIP latrine construction and encourage the construction and use of VIP latrines.

1.2.4.3 The water supply component of the project so far achieved the completion of two pipelines and five ferrocement tanks reaching a total of 11,000 people, 10 primary schools and one chief's office as follows

1.2.4.3.1 Seven kilometre pipeline with 7 kiosks in Kapecha I for Kapecha, Mkomani and Kadzinuni (two primary schools) serving some 4000 persons at a cost of Kshs 1.0 million

1.2.4.3.2 Twelve kilometre pipeline with 11 water kiosks in Kapecha II for Pingilikani and Ziani Ng'ombeni sub-locations (four schools) serving 7000 people at a cost of Kshs 2.3 million.

1.2.4.3.3 Four ferrocement tanks in Bamba serving five primary schools and chief's at a cost of Kshs 200,000/-. This cost includes tanks and fittings, soakaway structures and aluminium gutters to resist corrosion of coastal weather.

2. ORGANISATION AND MANAGEMENT

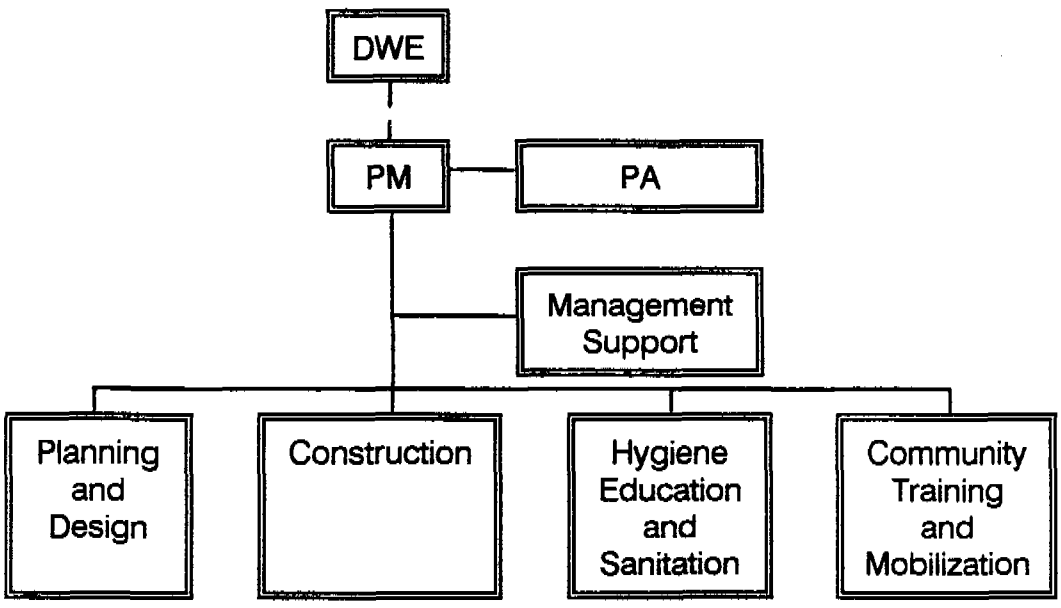
2.1 PROJECT ORGANISATION

2.1.1 General Structure

The current project framework is a result of observations made in phase I and in response to the demands of efficient management achievement of project activities as required by the dictates of the May ZOPP workshop.

It has been observed that it will be necessary in future to organise a project ZOPP ground workshop to immediately follow the inter-ministerial planning workshop to help interpret the plan of operation into a more concrete workable framework.

The general project structure and organisation as designed after the planning workshop in May 1991 was found to work well and as such no changes have been made as shown on the extract below.



2.1.2 Project Staff Structure

2.1.2.1 Project Staffing

The available staff strength at the project has grown from seventeen(17) at the end of the last half year to thirty three (33) at the end of the year (1991).This has become possible because of continued staff secondment from both the PWE's and the DWE's offices as requested by the Project as well as temporary recruitment of community extension workers as contained in the Plan of Operation of May 1991. Details of the staffing Position are shown in Table 2-1 below.

Table 2-1: Manpower Input

Staff Category	Designation in Project	No. Req.	No. Avail	Source or Location
a. Full-time				
i.Direct Implementation staff	1. Project Manager	1	1	Project
	2. Project Adviser	1	1	-"-
	3. Engineering Assistant	1	1	-"-
	4. Inspector Construction	3	3	-"-
	5. Charge Hand	1	1	-"-
	6. Public Health Technician	1	0	MOH or Hire
	7. Community Devl. worker	1	0	MOCSS or Hire
ii.Administrative staff	8. Executive Assistant	1	0	MOWD
	9. Accountant/ Accounts clerk	1	1	Project
	10. Secretary/ typist	1	0	MOWD or Hire
iii.Support staff	11. Pipe fitter	2	2	Project
	12. Mason	2	2	-"-
	13. Extension worker (Female)	4	4	-"-
	14. Extension worker (Male)	4	4	-"-
	15. Drivers	8	8	-"-
	SUB-TOTAL 1	32	28	
b.Part-time	16. Draughtsmen	1	1	DWE's office
	17. Survey assistants	2	2	-"-
	18. Geologist	1	1	-"-
	19. Geology Assistant	0	1	-"-
	20. Hydrologist	1	1	PWE's office
	21. Hydrology Assistant	0	1	DWE's office
	6. Public Health Technician	1	1	MOH(Div.level)
	7. Community Dev. worker	1	1	MOCSS
	5. Charge hand(Male)	0	1	DWE's office
	23. Charge hand (Female)	1	1	PWE's office
	24. Chainmen	4	4	DWE's office
	11. Pipe fitter	1	1	-"-
	12. Mason	1	1	-"-
	25. Carpenter	1	1	-"-
	SUB-TOTAL 2	15	18	-
	TOTAL	47	46	

N.B.: "No. Required" on this Table refers to number of staff either requested for during the year on a temporary basis or number required on a full time basis.

2.1.2.2 Staff Training

Staff training is a key area in human resource development. Like all other activities within GTZ assisted Programmes, full details of the intended training including dates and budgets must be forwarded to GTZ for approval in the preceding year

This component had not been included in the planned schedule for the year 1991 during 1990 and no training could therefore be done this year. The Project has now made appropriate arrangements for staff training during 1992 starting in January.

2.1.3 Project Assets

2.1.3.1 Office

The position of office accommodation has basically remained the same as it was at the end of the first half of the year except that the original reception room was converted into an office to yield the present office utility situation as shown on Table 2-2 below.

Table 2-2: Office space Availability and Allocation

OFFICE SPACE	OFFICER
Room No.1	Project Manager
Room No.2	Project Advisor
Room No.3	Planning & Design
Room No.4	Pipeline construction/Technical operations(Logistics)
Room No.5	Sanitation-Bamba and Bahari
Room No.6	Ferrocement tank construction
Room No.7	Project Accountant/Administrator
Room No.8	Community Training & Mobilization
Room No.9	Receptionist/Typist
Room No.10	Conference Room

2.1.3.2 Vehicles

The number of vehicles have increased from four(4) to nine(9) during this year while that of motor cycles has increased from eight(8) to twelve(12).

The current fleet of vehicles comprises of 3 No Toyota Land Cruiser 4 WD Pick Ups(one with a matatu body for safety when transporting people),2 No Mercedes Benz 4 WD Station Wagons, 1 No Suzuki Sierra 4 WD Station Wagon and 1 No long wheel base Land Rover Station Wagon.

All twelve(12) motor cycles are 125 cc Honda Trail motor cycles.

The actual details of the vehicles and motor cycles are shown in Appendix I.

2.1.3.3 Equipments

The Project has during this year acquired several equipments for general and specific uses to help put in place a more efficient utilisation of manpower resources placed at its disposal.

Details of the equipment are summarised below.

i. Two (2 No) - ACER 915V and ACER 1110SX, Computers with colour monitor. Each of the two Computers have UPS (Uninterrupted Power Supply) Batteries
ii. One (1 No) Toshiba 1600 Portable Computer
iii. One (1 No) EPSON LQ-2550 Printer
iv. One (1 No) ACER III Laser Printer
v. One (1 No) Heavy Duty Air Conditioner
vi. One (1 No) Light Duty Air Conditioner
vii. Two (2 No) Block Making Machines for making soil blocks
viii. One (1 No) Slide Sound Projector
ix. Two (2 No) Short Wave Radio Call Sets with one (1 No) Solar Module for the field Radio stationed in Bamba
x. Ten (10 No) Mobile Radio Call Sets

xi. Two (2 No) Pocket Radio Call Sets for Motor cycle riders

xii. One (1 No) VHS Movie Video Camera

xiii. One (1 No) Non Recording Video Cassette Player

xiv. One (1 No) Monochrome Monitor(Black and White Television set)

xv. One (1 No) Switch Board with Printer

xvi. One (1 No) Kodak Printer

xvii. One (1 No) Gestetner Heavy Duty Photocopier

xviii. One (1 No) Olympia Calculator

xix. One (1 No) Olympia Typewriter

xx. Water Resources Survey Equipment.

Please find the details of the above equipment contained in Appendix II.

2.1.3.4 Furniture

The Project has procured furniture for use by all officers in the office and the furniture so far bought has proved adequate. In addition,furniture has been bought for use in the accommodation of the Project Manager which is currently rented. Details of the furniture are set out in Appendix II.

2.2 PROJECT MANAGEMENT

2.2.1 Strategy outline

The management structure of the Kilifi Water and Sanitation Project has primarily been designed to enable the Project to integrate within the District Establishment through various committees and thus be easily responsive to the needs of the District Focus for Rural Development.As such,in addition to the Project Management Team (PMT), there is the Project Steering Committee (PSC), the Joint Monitoring Committee (JMC) and the Project Management Committee (PMC).

Secondly, the Project Management Structure and Schedule of meetings is geared towards an action oriented approach that as well embodies an evaluation and monitoring component within itself.

This procedure has been found to help keep in place the tempo of the achievement of Project Objectives.

Following is an outline of the activities of the Management Structure during the year.

2.2.2 Project Steering Committee (PSC)

The Project Steering Committee is essentially a sub-committee of the District Executive Committee (DEC) which is a Sub-Committee of the District Development Committee (DDC). This Committee is Chaired by the District Commissioner and because of its composition, it guarantees liaison among collaborating Agencies within the District. It also serves the important role of guiding the mandate of Project prioritisation.

The Membership of the Committee as originally constituted has been found to work well and currently stands as follows:

a.	**District Commissioner** (CHAIRMAN)	Mr. Harry Wamubeyi
b.	District Development Officer	Mr. Ng'ayu
c.	District Water Egineer (SECRETARY)	Mr. P.K. Gicheru
d.	Project Manager	Mr. J.W.V. Murage
e.	Project Advisor	Mr. L.A. Vijselaar
f.	District Officer, Bahari Division	Mr. Lentaaya
g.	District Officer, Ganze Division	Mr. Leparmarai
h.	District Social Development Officer	Mr. Muchendu
i.	District Public Health Officer	Mr. Baya
j.	District Education Officer	Mr. Muriuki
k.	District Asal Officer	Ms. Rondo

Meetings for the PSC are scheduled quarterly and preferably one week before the DDC meeting to facilitate the presentation of agenda from the PSC meeting to the DDC.

The PSC met three times at the DC's Office this year as shown below and copies of the Minutes of the Meetings sent to MOWD (Hq) and the PWE's Office.

PSC Meeting No 1(1991): Wednesday,17th July 1991

PSC Meeting No 2(1991): Thursday,03rd October 1991

PSC Meeting No.3(1991): Wednesday,13th December 1991

2.2.3. Joint Monitoring Committee (JMC)

The Joint Monitoring Committee is primarily constituted of the monitoring team overseeing the performance of the Project Management and has at the core MOWD and GTZ personnel from the Ministry of Water Development Headquarters.The Committee mainly plays the role of monitoring and evaluating the achievement of Project targets.It authorises action by the Project Management in the light of field requirements and assists in the interpretation of GOK and GTZ Policies.This role has helped overcome several and various problems this year.

The committee currently has the following Members:

a.	**Deputy Director/ Monitoring and Coordination**	(CHAIRMAN)	:**Mr.K. Njui**
b.	GTZ Co-ordinator (MoWD)		:Mr.M. Trojanow
c.	Provincial Water Engineer		:Mr.Gikanga
d.	District Water Engineer		:Mr.P.K. Gicheru
e.	Project Advisor		:Mr.L. Vijselaar
f.	Project Manager	(SECRETARY)	:Mr.J.W.V. Murage

The committee meets quarterly and preferably a week after the DDC meeting.This timing is meant to help the Project Management to respond immediately to recommendations of the DDC.

The JMC has met four times this year as follows.

JMC Meeting No 1(1991): Monday, 18th March 1991

JMC Meeting No 2(1991): Monday, 29th April 1991

JMC Meeting No 3(1991): Tuesday, 02nd July 1991

JMC Meeting No 4(1991): Thursday, 17th October 1991

2.2.4 Project Management Committee (PMC)

The Project Management Committee is essentially the Site Committee that keeps constant track of the achievement of Project Objectives according to the Plan of Operation and thus maintain the thrust of Project Implementation.

To integrate the Project within the District Establishment,the Committee is Chaired by the District Water Engineer.

The committee had the following members during the year:

a.	**District Water Engineer** (CHAIRMAN)	:**Mr.P.K. Gicheru**
b.	Project Advisor	:Mr.L. Vijselaar
c.	Project Manager (SECRETARY)	:Mr.J.W.V. Murage
d.	Water Resources Assessment	:Mr.R. Maithya
e.	Planning and Design	:Mr.J. Wahiu
f.	Pipeline+kiosks Construction	:Mr.C. Nyamu
g.	Ferrocement tank Construction	:Mr.Z.A. Ali
h.	Water Pan Construction,Bamba	:Mr.M. Mrombo
i.	Sanitation Construction,Bamba	:Mr.S. Nganga
j.	Sanitation Construction,Bahari	:Mr.S.M.S. Hatibu
k.	Community Water Management	:Mrs.M. Mwasi
l.	Accountant	:Mr.D. Mwaro

The PMC is scheduled to meet once every month to review progress and set the pace for the coming month.These are Meetings of brief agendas and are set to be held preferably in the first week of each month.

This timing ensures that Officers produce their Work and Budget Plans for that ensuing month and at the same time submit Monthly Reports for the month ended.

2.2.5 Project Management Team (PMT)

This is the team that ensures the day to day execution of planned activities. Members of the PMT are basically the ones of the PMC minus the DWE and are therefore the officers on the ground expect this time chaired by the Project Manager.

The meetings of the PMT are scheduled to be held once a month and are held two weeks after the PMC Meeting.This way,members of the PMT are essentially meeting fortnightly to schedule and adjust programs according to need.The PMT Meetings

draw Agenda from proposals of the PMC Meeting as an accelerant to the commitments made at PMC Meeting.
As such, the PMT Meetings are held in the third week of each month to help brace the team for the achievement of the monthly targets.

This pattern has proved particularly helpful in the beginning of this Project Phase to enable each member to fully understand their roles in line with the overall Project Objectives. The sitting of this Team is also used for Short Training Sessions of the Senior Officers in the Project in areas of Management and Technology Development.

3. PLANNING AND DESIGN

3.1 PLANNING FOR WATER RESOURCES DEVELOPMENT

3.1.1 Baseline Survey for level of Indicators

The Project has conducted a baseline survey to bring into view the level of initial (prior to project implementation) indicators that will serve as a measure of Project impact at the end of the Project Phase.

The levels of indicators relating to water development are summarised in the following Tables.

Table 3-1: Age Distribution of Water Fetchers in the Project Area

AGE GROUP OF WATER FETCHER	PROJECT AREA					
	KAPECHA I		KAPECHA II		BAMBA	
	SAMPLE SIZE	%	SAMPLE SIZE	%	SAMPLE SIZE	%
0-5 Yrs	0	0.0	1	0.7	2	0.9
6-15 Yrs	39	28.1	27	17.6	50	23.6
16-25 Yrs	43	30.9	48	31.4	75	35.4
26-35 Yrs	28	20.1	41	26.8	60	28.3
36-45 Yrs	20	14.4	24	15.7	20	9.4
46-55 Yrs	9	6.5	10	6.5	5	2.7
above 55 Yrs	0	0.0	2	1.3	0	0.0
TOTALS	139	100	153	100	212	100

Source : Sample Survey

Table 3-2: Percentage of Homestead Members involved in Fetching Water

PROJECT AREA	KAPECHA I	KAPECHA II	BAMBA
Number of Water Fetchers in Sample	139	153	212
Number of Homesteads in Sample	464	515	831
Water Fetchers as % of Homestead Members	30.0	30.0	25.5

Source : Sample Survey

Table 3-3: Distances Travelled by Water Fetchers each turn (To and Fro)

CHARACTERISTICS	KAPECHA I		KAPECHA II		BAMBA	
	DRY	WET	DRY	WET	DRY	WET
Range (Kms)	9.0	6.9	14.0	7.0	40.0	4.2
Median (Kms)	6.0	5.6	8.0	3.0	13.0	3.0
Mean (Kms)	4.2	3.8	7.9	2.4	13.5	1/8

Source : Sample Survey

Table 3-4: Average Water Consumption per person per day

Kapecha I	-	10.1	Litres
Kapecha II	-	11.1	Litres
Bamba	-	9.3	Litres

Source : Sample Survey

3.1.2 Assessment of Water Demand

For purposes of the preparation of design reports, the Project has made studies of the water demand situation for areas where project implementation is scheduled to start.

This exercise has so far been conducted for the Kapecha I, Kapecha II and Ng'ombeni sub-components of the project activities. Water demand assessment for the Bamba sub-component is yet to be done but a reconnaissance survey has been done in the Bamba area.

While full details of these activities appear in separate reports, results on the water resource computations have been summarised below.

Table 3-5: Water Demand in Project Area

PROJECT AREA	WATER DEMAND (M_3)			
	WHEN ASSESSED	INITIAL DEMAND (Year)	FUTURE DEMAND (Year)	ULTIMATE DEMAND (Year)
Kapecha I Kapecha II Ng'ombeni	January 1990 January 1991 September 1991	78(1990) 122(1991) 65(1991)	97(2000) 164(2001) 92(2001)	130(2010) 220(2011) 130(2011)
Bamba	-	-	-	-

3.1.3 Water Resources Assessment

3.1.3.1 The adopted strategy

While no water resources assessment had been conducted by the start of this year (1991), the need to forge ahead project activities in the absence of such an assessment prompted the project to adopt the following approach.

Firstly, to implement small pipeline projects in the Bahari Division based on the Sabaki-Mombasa pipeline and thereby have time to prepare the ground for a water resource study.

Secondly, to construct ferrocement water tanks in selected primary schools in the Bamba hinterland based on available meteorological data whilst a hydrological study to enable the implementation of the water pans component of the project is done.

3.1.3.2 Sabaki-Mombasa Pipeline

Measurements were made on the pressure regime at off-take points designated for abstraction along the branch lines from this pipeline. In the case of the areas served so far served in the Bahari Division, this was done on the Ubaoni off-take which has an average measured pressure of approximately 70 metres within the reach of the Bahari section of the project area.

3.1.3.3 Ferrocement tank construction

The available data was found to have various parts missing and was rather scantily distributed within the project area thereby lacking in both amount and quality. However, corroborating block figures available indicated that the hinterland has an average rainfall of some 450-750 Millimetres of rainfall.This figure was used for estimation in the construction of ferrocement tanks.

3.1.3.4 Water pans for Bamba hinterland

Before the second half of this year, aerial photographs were taken for the Bamba hinterland as part of the preparation for the hydrological study and also for the demographic study. A hydrologist was sent in November 1991 to undertake the hydrological study for the Bamba hinterland.

The reconnaissance and data collection based on existing sources has now been finalised and an initial working report is expected to be ready by the end of this year. A more detailed data collection is planned for 1992 for detailing this report.

Towards this end,the project has written to the Water Resources Assessment and Planning (WRAP) Project in the Ministry of Water Development Headquarters to assist in a more detailed study of the water resources on a wider scale to cover both the Bahari and Bamba Divisions (See Letter in Appendix III).

3.1.4 Zones for project implementation

Projects implementation has dwelt on the designated areas of Bahari and Ganze Division and priorities for specific areas of project selection has been made according to sub-DDC priorities.

In the last Project Steering Committee (PSC) meeting No. 3 of 1991, it was further resolved that priority projects which remained uncompleted within the Bahari and Ganze Divisions be given first priority as a starting point for activities of the KIWASAP come 1992.

Subsequently, the project attended the Ganze Divisional Development Committee through the Project Advisor on 18th December 1991. The members of the DDC were explained on the need of organising water pan committees as a pre-requisite to water pan construction in the Bamba hinterland. These water pan committees will be responsible for the management of the water pan and its protection through tree planting. It was observed that the ASAL programme in the area would also require community input.

3.1.5 Formation of water Committees

Water committee so far formed only exist in the Bahari Division where water has been supplied in a community scale unlike the Bamba area where rain harvesting in schools can only reach a few school going children.

As such,water committees formed in the Bahari Division have originated from existing women groups or formed new specifically because of the water project.

A total of ten (10) women group are currently actively selling water as water committees with two (2) in Kapecha I, six (6) in Kapecha II and two (2) in Ngo'mbeni. Details on the women groups and their activities are contained in Appendix IV.

The project has started to create awareness for the formation of committees in the Bamba hinterland and the response is good.

3.2 SANITATION PLANNING

3.2.1 Assessment of community needs in hygiene and Sanitation

During the year (1991), the project conducted a baseline survey to establish community needs in hygiene and sanitation alongside the water needs.

The assessment focused on the number of households as an indicator of the sanitation situation in the area and was basically dealt with in two blocks.

One being the general community latrine availability and the other the numbers of pit latrines in primary schools (See tables 3-6 and 3-7)

Table 3-6: Pit latrine situation in Homesteads

Project area	Kapecha I	Kapecha II	Bamba
No. of people in homesteads in sample	464	515	831
No. of pit latrines in homesteads in sample	5	4	2
No. of people per pit latrine	93.0	104.0	416.0
% of homesteads with pit latrines	12.8	9.3	5.3

Source: Sample survey report (September 1991)

Table 3-7: Pit latrine situation in primary schools

Project area	Kapecha I	Kapecha II	Bamba
Student population	835	898	2553
Pit latrine facilities	12	9	18
Students per latrine	69.6	99.8	141.8

Source: Sample survey report (September 1991)

3.2.2 Design of Hygiene and Sanitation Curricula

During the year, a draft framework curriculum was prepared by the project with its objectives as:-

1) To educate community to construct and make better use of sanitation facilities;
2) To reduce the incidence of faecal and water related diseases within the target community.

Details for this curriculum are being prepared to enable compilation of a full document.

It is important to note that the project observed that,for the specific target community within the Giryama people, different curricula for elders, women, children, teachers,

artisans or "fundis" and teacher-parent. Associations (TPAs) should be developed due to the variations within them.

3.2.3 Preparation of training materials and Programme

Training materials and training programme was meant for the community health workers who would undertake the education and training of community members.

Towards the end of the year (1991), eight (8) community health workers were identified for the Bahari Division covering Kapecha I, Kapecha II and Ng'ombeni water supplies.

Curriculum for training the community health workers was developed as they were trained and included theory as well practical training.

3.2.4 Identification and Recruitment of Community Health Workers

Out of the eight originally selected, two (2) did not qualify and only six (6) were engaged (please see Appendix V for details).

The project expects to locate some other eight (8) community health workers for the Bamba hinterland and have them trained during 1992.

3.2.5 Training of trainers

The trainers in this case refers to the community health workers and their training was taken immediately after their recruitment as the project felt that there was no need of letting them work before they were prepared at all.

The ones for Bamba will be trained at the appropriate time.

3.2.6 Training of School teachers in Hygiene and Sanitation

While the project strove to reach as many people as possible through demonstration of VIP latrines in the project area including promotion through subsidies, the effort was destined to be uphill task if not coupled with some high return training and education campaign that would help overcome traditional barriers.

It was observed that hygiene education was yet to reach the majority of the people and it was important that the message reached the population as naturally as possible. In this regard, the project invested in long term training via primary school teachers and thereby pupils who would eventually influence their parents in the long run.

So far, six (6) teachers from Kapecha I+II and eight (8) teachers from Bamba have each had nine (9) training sessions and are all set to sit an examination early next year (1992).

3.2.7 Training community in Hygiene and Sanitation

This task is viewed in the project as the most important task in the line of trying to improve the sanitation situation in the project area.

The project has during 1991 embarked on preparing material for use in this purpose. The main obstacle to be addressed is a high level of illiteracy prevalent within the target community.
Because of this, the project is in the process of developing appropriate audio visual materials and has videotaped a health and sanitation play together with several slides for training purposes.

3.3 EVALUATION AND MONITORING

3.3.1 Evaluation

The project is set to keep to specific targets as laid out in the Plan of Operation developed in May, 1991 and reviews achievement of targets in the Project Management Committee Meetings.

The various indicators and assumptions are highlighted throughout the project implementation and reported in the various chapters of the reports.

In short, the Plan of Operation has been used to develop the reporting format for this

report.

3.3.2 Monitoring

Project monitoring comprises of an internal project monitoring as well as an external monitoring. In general, this involves site inspections and /or meetings.

3.3.2.1 Site inspections

Although work plans by the senior staff are discussed and reviewed in the Project Management Committee Meetings, the project management also makes site visits to check general progress.

This sometimes overlaps with visits made by the Joint Monitoring Committee or visiting teams from elsewhere (please see visits Chapter 7)

3.3.2.2 Meetings

The main monitoring meeting for the Project is the Joint Monitoring Committee (JMC) meeting which keeps track of progress and helps steer technical and managerial aspects by both visiting the site and discussing progress as well as lay strategies on achievements of targets as planned.

3.4 DESIGN

3.4.1 Technology development

The project has during the year (1991) generally dwelt on employing conventional technology particularly for the water supply component which has mainly depended on use of pipelines.

All the same, there has been specific applications in the roof catchment component in Bamba where V-shaped aluminum gutters with L-shaped rain traps has helped overcome the two problems of corrosive coastal climate and the elimination of fascia boards which are expensive to procure and maintain. These have been used to fill water in 15,000 litre ferrocement tanks constructed in a weld mesh double 1/2 inch chicken mesh on either side of the weld mesh and 1:3 cement mortar trowelled 1.5 inch thick in batches lasting not more than 15 min from the start of mixing and the end of trowelling.

The sanitation component has tried various technologies which have been promoted during the year. The notable ones are:

i) use of stabilised soil fibrous blocks in the construction of pit latrine lining and walls;

ii) development of round and rectangular VIP slabs as promotional material;

iii) fabrication of "makuti" doors bound in light timber; and

iv) specially positioned squat holes designed and tested to reduce fouling of the toilets.

3.4.2 Water supply Design

During the year under review, the design of water supplies has been especially simplified by the lack of investigated sources other than pipeline options depending on branch lines from the Sabaki pipeline to Mombasa with a pressure of 90 metre head of water at the off-takes.

This has been the case for Kapecha I, Kapecha II and Ng'ombeni water supply projects. The ferrocement tank option was designed in general(See 3.4.2.5).

3.4.2.1 Kapecha I

Kapecha I water supply located some 120 metres above mean sea level in Junju location of the Bahari Division was taken up by the KIWASAP from the DWE's office at the design stages in September 1989 and design work finalised in October 1989. This was done during phase I of the project and thereby marked the entry of the KIWASAP into Bahari Division.

It was designed to deliver 130 cubic metres of water per day to an ultimate (year 2010) population of 4000 persons spread over an area of approximately 20 square kilometres.

3.4.2.2 Kapecha II

Kapecha II water supply lying some 110 metres above mean sea level is located astride Chonyi and Mwarakaya locations in Bahari Division. The project was designed in January and February 1990 at the DWE's office awaiting funding from any donor for implementation.

It was designed to supply an ultimate (year 2011) population of 7000 persons with the delivery of 220 cubic metres of water per day over an area of

approximately 40 square kilometres.

3.4.2.3 Ngo'mbeni

Ng'ombeni water supply is an extension of the Kapecha II pipeline and is situated some 60 metres above mean sea level and also lies between Chonyi and Mwarakaya locations of Bahari Divisions.

This was designed in the third quarter of 1991 to draw water from Kapecha II pipeline at an off-take pressure of 70 metre head of water. Bush clearing for the survey work was done by the community.

The project was designed to deliver 130 cubic metres of water per day to an ultimate (year 2011) population of 2000 persons spread over an area of some 30 square kilometres.

3.4.2.4 Silala-Bamba pipeline

The Silala-Bamba Nyayo pipeline was included in the KIWASAP Plan of Operation as a constituent component of water supply to the Bamba hinterland.

The pipeline had since its construction in 1989/90 experienced numerous operational problems occasioned by inadequate class of pipe that result in frequent bursts in addition to a problematic pump.

During the third quarter of 1991 KIWASAP carried out a study on the problems of the pipeline and proposed the replacement of approximately 5 kilometres of pipeline with the proper class to enable it to deliver the designed flow of 45 litres per second.

3.4.2.5 Ferrocement tank construction in Bamba

The ferrocement tank option in Bamba was proposed as head start for the main season of demonstration although it also served to introduce KIWASAP to the Bamba hinterland.

Design for this option in Bamba hinterland drew reference simply from the rainfall data showing a minimum of 400 mm/year and the available roof area of minimum dimension of 7 m x 20 m giving 56 cubic metre (say 60 cubic metres).

The size of 15 cubic metres for ferrocement tanks was preferred on the strength of its reliability both from a cost perspective and also in the light of uniformity for the various artisans trained in construction procedures.

4. COMMUNITY PARTICIPATION

4.1 PARENT TEACHER ASSOCIATIONS (PTAs)

4.1.1 Approach to Parent Teacher Associations

The project has during the year (1991) embarked on ferrocement water technology promotion in primary schools in Bamba and construction of VIP latrines in both Bamba and Bahari.

To incorporate community participation in these two components,the project used the PTAs in schools.

4.1.2 Inputs from PTAs

During the year under review the PTAs in schools contributed by providing unskilled labour towards digging foundations and pits for latrines as well as gathering hard core for the foundations.

This ratio of contribution went on well and towards the end of the year, the PTAs and school children had embarked on making soil blocks for constructing walls for the pit latrines.

4.1.3 Inputs from KIWASAP

For the schools, KIWASAP contributed primarily in technical know how and in providing materials that needed to be fetched from outside the immediate vicinity notably cement, chicken/ weld mesh, vent pipe and wire ganze, soil block making machine and timber.

4.2 COMMUNITY MEMBERS

4.2.1 Approach to direct community participation

In general, KIWASAP has adopted the strategy of implementing projects in its scope within the context and convenience of the beneficiary communities. In the projects already highlighted, community members have been consulted in siting locations of

water kiosks for instance.

The community are left to choose when it is convenient to dig trenches and to avail themselves for training and so on.

In this regard, arrangements have been made with water committees either already in existence or formed specifically for the new water project like in the case of Ng'ombeni water project.

KIWASAP has tried as much as possible to avoid use of authority of the administration for example Chiefs and Assistant Chiefs in a bid to foster wilful participation of the community members which approach, has so far been found to achieve positive fruits in implementation.

4.2.2 Community inputs

Community inputs varied according to the use of technology and the stages of implementation.

These inputs can be summarised as follows.

4.2.2.1 Design stage

i. Bush clearing for survey routes

ii. Siting of water pan locations and water kiosks.

4.2.2.2 Pipeline project construction

i. Digging of pipe trenches

ii. Carrying pipes to location in site

iii. Back filling trenches after pipe laying

4.2.2.3 Water kiosk/ferrocement tank construction

i. Digging foundation

ii. Collecting hard core for foundations

4.2.2.4 VIP latrine construction

i. Digging of latrine pit

ii. Making soil blocks for pit lining and construction of wall

iii. Roofing in "makuti".

4.2.3 Inputs from KIWASAP

As in the case of the Parent Teacher Associations (PTAs) in 4.1.1 above, KIWASAP contributes in technical know how including training and with materials that are not easily available on the spot, cement and chicken/weld mesh for example.

This approach has been found helpful and the project hopes to progressively reduce its inputs per unit of water supply and VIP latrine construction to better tap community input and thereby reach a wider population.

5. PHYSICAL IMPROVEMENTS

5.1 WATER SUPPLY

5.1.1 Pipeline Construction/extension

Pipeline projects implemented during the year (1991) draw water from water kiosks constructed having the following features:

-Plan dimension 2.7 m x 2.4 m;

-Sitting on strip foundation dug 0.8 m deep;

-Walls in 0.2 m x 0.4 m coral blocks, 12 courses in front and 11 courses in the rear set in 1.6 mortar, plastered inside and painted light blue;

-Single 2.0 m x 0.9 m doors at the rear;

-Double windows of overall dimension 1.0 m x 1.0 m;

-8 pieces of red asbestos cement roofing sheets each 2.0 m x 0.97 m; and

-Revenue collection table measuring 1.25 m long x 0.5 m wide x 0.9 m high with lockable drawer.

The pipeline projects so far completed are as follows:

5.1.1.1 Kapecha water supply I

Construction of Kapecha water supply I was completed in February 1990 during the first Phase of KIWASAP at a cost of Kshs.1.0 million.

It comprises of a seven (7) kilometre pipeline with seven (7) water kiosks and covers the trading centres of Kapecha, Mkomani and Kadzinuni (two primary schools).

5.1.1.2 Kapecha water supply II

Kapecha water supply II was constructed in the first quarter of year under review (1991) at a cost of Kshs. 2.3 million.

The system is composed of

i. 12 kilometre uPVC pipeline of diameters varying from 4 inches at the off-

take point to 2 inches at the end points;

ii. 3 No. air valves, 2 No. washouts and 4 No. section valves; and

iii. 11 No. water kiosks with features as described above.

The intention to construct the project was aired to the beneficiaries through the provincial administration who in this case helped in getting the project understood to the beneficiaries.

The community turned out in large numbers for digging trenches for pipes and backfilling after pipe laying. They accomplished the task of laying the 12 km pipeline in 30 days only. It was particularly notable that women turned out in larger numbers than men - a clear indication of their relief from walking up to 5 kilometres and more to fetch often contaminated water.

5.1.1.3 Ng'ombeni water supply

Construction of Ng'ombeni water supply was done from an off-take from Kapecha water supply II. This activity was carried out in October and November 1991 at a cost of Kshs. 710,000/=.

The construction comprised of a 4.2 kilometre uPVC pipeline of 2.5 inches diameter and 3 No. water kiosks.

Community members, especially women, turned up for trenching and backfilling of trenches after pipe laying - a task they completed inside 4 weeks.

5.1.2 Water harvesting facilities

The original mandate of KIWASAP was to supply water for the Bamba hinterland as a priority. It was however noticed in the early stages of the project that ground water possibilities for the Bamba area did not stand a good chance of success. To what extent this view could be followed depended on findings of a hydrogeological survey. The other possibility was rainwater harvesting which required some reasonable degree of hydrological survey before it could be done on a large scale.

For a number of reasons, these studies were not carried out up to the end of the first

phase and it was imperative that something be done to enable the project address its mandate of supplying water to Bahari and the Bamba hinterland.

The water harvesting facilities constructed in the Bamba hinterland were based on available data as explained in 3.4.2.5 above.

Four (4) 15,000 litre tanks were constructed in ferrocement in four primary schools in the Bamba hinterland, while one (1) 5,000 litre tank was constructed in a Chief's office.

Construction of the tanks comprises of a weld mesh cylindrical cage bound with a layer of 1/2 inch chicken mesh on either side of it and set in 1.5 inch thick 1:3 cement mortar.
The tanks are meant for demonstration and the primary schools should subsequently raise money to put up additional tanks.

5.1.3 Water Conservation facilities

Construction of water conservation facilities were planned to be in the form of water pan construction. KIWASAP has embarked on preparations for the construction of water pans from January, 1992.

In the meantime 3 metre deep test pits are being dug to give an indication of the soil stratification in the sites intended for water pans.

5.1.4 Shallow wells

Shallow well construction has not yet become a component of KIWASAP.
This component is envisaged to the latter part of 1992 when results from water resource studies become conclusive as to the ground water potential in the project area, particularly in Bahari Division.

5.1.5 Appropriate water technologies

The project has so far implemented the pipeline and ferrocement tank technology with

aluminium V-shaped gutters and L-shaped water traps tied to roof purlins or rafters.

In general the pipeline projects have supplied water at approximately Kshs.329/= (US$ 11.- at end 1991 exchange rate) per person and depending on the number of consumers, the cost per cubic metre of water supplied varies from Kshs.5400/= (US$ 180.-) to Kshs.10,500/= (US$350.-).

The ferrocement tanks are meant for day use for drinking and hand washing purposes by the school children. Observations on usage at break times in between lessons have indicated that pupils on average consume less than one (1) litre per day.Allowing one (1) litre per pupil per day, 60 pupils will be served per year and the cost computes to Kshs. 400/= (US$13) per pupil and to Kshs. 1,600/= (US$53.-) per cubic metre.

These costs are viewed by the project as high for the target rural areas and ways will be looked into to achieve a lower per capita as well as unit costs.

5.2 SANITATION

5.2.1 Construction of Demonstration VIP latrines in Schools

Construction of VIP latrines in schools saw rapid development during the year.Their development in Bahari Division was slightly above target whilst in the Bamba area,the physical implementation was relatively higher by numbers.

The idea at the beginning of this project phase was to put up duplex units in primary schools and the numbers of VIP latrines as evidence in the targets according to the last quarterly report attests to that.

However, as the project progressed through the year, it was observed that the idea of demonstration dictated a different approach in addition to the fact that the project learned at the outset that duplex units tended to have the unwelcome characteristic of foul odour.

5.2.1.1 Kapecha I

Progress in Kapecha I has been rather slow and only three (3) out of a planned six (6) VIP latrines were completed (See Table 4-1 below).

KIWASAP is still studying the problems of this part of the project area but in general, the problems seem to stem from the fact that KIWASAP tended to be over enthusiastic to do a lot for the community in the early stages including water kiosks,bathrooms and toilets. As such, KIWASAP feels that the change to request community members to contribute towards the (VIP) construction is viewed by them with suspicion.

All the same, they are catching up.

Table 5-1: VIP latrine construction in Kapecha I

PRIMARY SCHOOL (Planned No.)	TYPE OF VIP LATRINE (No.)	PIT DIGGING	SLAB	BLOCKS		STAGE OF VIP LATRINE
				TYPE	STAGE	
1. Kapecha (3)	i) Spiral(1) ii) Circular(1) iii) Rectangular(1)	Complete Complete Complete	Complete Complete Complete	Soil Soil Soil	Complete Progress Complete	Complete In progress Complete
2. Kadzinuni (3)	(i) Rectangular(1) ii) Spiral (1) iii) Circular(1)	Complete Complete Progress	Complete Complete Complete	Soil Soil Soil	Complete Progress Progress	Complete In Progress In Progress

5.2.1.2 Kapecha II

Achievements in Kapecha II have been relatively higher with nine (9) VIP latrines completed out of a planned twelve (12) (See Table 5-2 below).

Most of the construction was started after the middle of the year and was affected partly due to work overload on the implementing officer from KIWASAP and schools closure. In addition, the Parent Teacher Associations were slow to fully support the construction work - particularly the pit digging.

Table 5-2: VIP latrine construction in Kapecha II

PRIMARY SCHOOL (Planned No.)	TYPE OF VIP LATRINE (No).	PIT DIGGING	SLAB	BLOCKS		STAGE OF VIP LATRINE
				TYPE	STAGE	
1.Bokini (4)	i. Spiral (1) ii. Rectangular(1) iii. Circular (1) iv. Circular (1)	Complete Complete Complete In progress	Complete Complete Complete Complete	Soil Soil Soil Soil	Complete Complete Complete Complete	Complete Complete Complete In progress
2.Pingilikani(3)	i. Spiral (1) ii. Rectangular(1) iii. Circular(1) iv. Circular(1)	Complete Complete Complete In progress	Complete Complete Complete Complete	Soil Soil Soil Soil	Complete Complete Complete Complete	Complete Complete In progress In progress
3.Dindiri (4)	i. Rectangular(1) ii. Rectangular(1) iii. Circular(1) iv. Circular(1)	Complete Complete Complete Complete	Complete Complete Complete Complete	Soil Soil Soil Soil	Complete Complete Complete Complete	Complete Complete In progress In progress
4.Makata (3)	i. Spiral (1) ii. Circular (1) iii. Rectangular(1)	Complete Complete Complete	Complete Complete Complete	Soil Soil Soil	Complete Complete Complete	Complete In progress Complete

5.2.1.3 Bamba

Construction progress in the Bamba hinterland followed the pattern of construction propagated from the low level of sanitation facilities in the schools of the area. This required that many schools be addressed at the start. In total, Fourteen (14 No.) have been completed out of a planned sixteen(16)(Please see Table 5-3)

Table 5-3: VIP latrine construction in Bamba

PRIMARY SCHOOL (Planned No.)	TYPE OF VIP LATRINE (No.)	PIT DIGGING	SLAB	BLOCKS		STAGE OF VIP LATRINE
				TYPE	STAGE	
1. Jila(3)	i. Rect.(1)	In progress	Complete	Coral	Complete	In progress
2. Mirihini(5)	i. Rect.(2) ii. Rect.(3)	Complete In Progress	Complete In Progress	Coral Soil	Complete In progress	Complete In progress
3. Katendewa (5)	i. Rect.(3) ii. Rect.(2)	Complete In progress	Complete Complete	Soil Soil	Complete In progress	Complete In progress
4. Kidemu(5)	i. Rect.(3)	In progress	Complete	Soil	Not started	In progress
5. Mitsemerini(6)	i. Rect.(3) ii. Rect.(3)	Complete In progress	Complete Complete	Soil Soil	Complete In progress	Complete In progress
6. Bamba(3)	i. Rect.(2) ii. Rect.(1)	Complete In progress	Complete In progress	Coral Soil	Complete Complete	Complete In progress
7. Chapungu (2)	i. Rect.(2)	Complete	Complete	Soil	In progress	Complete
8. Maryango (4)	i. Rect.(2) ii. Rect.(2)	Complete In progress	Complete In progress	Coral Sand stone	Complete In progress	Complete In Progress

5.2.2 Support to community in Construction

The project has embarked on the promotion of VIP latrine construction technology appropriate for the project area.

In this regard, the project has constructed various forms of VIP latrine slabs and used various methods of construction according to the dictates of local conditions.

The VIP latrine slab now in use is costing some Kshs.450/=.
This cost was Kshs.380 earlier in the year but the slab of one (1) inch thick used then had a hollow sound and was later abandoned purely from an aesthetic point of view as residents felt insecure with the sound. However,it was perfectly safe from a structural point of view.

These slabs are sold to community members at a price of Kshs. 150/= together with vent pipe and wire gauze for promotional purposes. So far, the number of slabs bought and fully paid for by community members are 36 and nil in Bahari and Bamba respectively. The Bamba people have started paying in instalments. The project policy adopted for home pit latrines is to supply slab, vent pipe and wire gauze while the user does the rest of the construction with KIWASAP technical advice.

The project has acquired a block making machine for making stabilised soil blocks. This has been used successfully by community members but its full impact is yet to be evaluated since it was introduced to them later in the year. However, the soil block technology propagated in the project area has been well accepted.

At the same time,specific community members have been trained in VIP latrine construction. This exercise is designed to help leave the skills with community members who can then construct VIP latrines when the project(KIWASAP) is no longer there (see Appendix VII(c)).

5.2.3 Appropriate Construction of VIP latrines

The methods employed in the construction of VIP latrines have been changed dramatically since the project started in 1988 mainly to foster more community involvement as well as increase the usage of locally available materials.

As a result,the concrete structures that were prominent in Kapecha I have now been replaced with much more modest but more popular soil block and "makuti" roofed VIP latrines that have now dotted Kapecha II.

The end result is that the project now only supplies the slab and vent pipe plus wire gauze while the owner of the latrine provides the hole and the walling plus roofing materials.

6. OPERATION AND MAINTENANCE

6.1 COMMUNITY EDUCATION AND TRAINING

6.1.1 Training needs in O&M

The project conducted a study on training needs in the project area in September and some interesting findings were made.

It was abundantly clear that the project must design the training from the point of view that the larger part of the adult section of the community is not well informed as they have had very little formal education or non at all.
Indeed, 59%, 62% and 89% of the people interviewed had no formal education at all in Kapecha I, Kapecha II and Bamba respectively.

Luckily for the project over 90% of the people declared their willingness to learn in the subjects the project intended to teach.

6.1.2 O&M Training curricula

During 1991, the project developed a framework for a draft training curriculum part of which is the O&M training curriculum.

The O&M training curriculum was designed to cover the four topics of:-

i. water pipeline installation;
ii. water pipeline maintenance;
iii. water kiosk operation and management;
iv. operation and maintenance of water pans and dams;

In general, the target groups are elders, men, women, "fundis" and water committees (Details are contained in Appendix VI)

6.1.3 Water Committees

In addition to the Kapecha - Kadzinuni water committee (in Kapecha I) formed at the end of 1990, there has been an additional nine (9) water committees formed during 1991, one of which is in Kapecha I.

It has been observed that the number of water committees formed immediately after the formation of Kapecha II were dissolved later after a few found out that they would be better-off by merging. This was an interesting development that the project is monitoring closely to advice and educate them so that a stable sustainable structure can be reached.

These water committees are at present the same women groups but registered to deal with water affair.

6.1.4 O&M Trainers

The project has been utilising the existing members of staff as O&M trainers for the women groups. The members of staff dealing with community training are qualified in water construction and in operation and maintenance for water supplies.

It is planned to have them trained in communication skills to better quip them for this training.

6.1.5 Training Programme

During the year under review the project responded to the convenience of the schedules of the committees and found it rather premature to develop specific blueprint training schedules etc.

All the same, the project managed to evolve a general strategy framework for the teachers training which is being written for use in future teacher training programme on hygiene education and sanitation.

A schedule for community training will be developed in the early part since most training materials required for this purpose hitherto not in the project has now arrived.

6.1.6 Training of Trainers in O&M

Six (6) community health workers have been recruited from and for the Bahari area so far. They have already undergone an induction training course on approaching communities and they have also been exposed to hygiene education and sanitation in particular.

Their continued deployment for the duration of this phase of the project is planned to include backstopping from time to time to enable them discharge their duties effectively.

6.1.7 Training Community members in O&M

6.1.7.1 On-the-job Training

During 1991, community members have been trained in O&M through water committees. During 1990, the project trained ten (10) men in operation and maintenance on-the-job. However, they virtually all disappeared within six months after training and landed jobs as plumbers in the nearby hotels with the newly acquired skills.

While this training helped to create jobs for them, it defeated the original project purpose of training them in an effort to build-in capacity within the community for pipe repairs when need arose. Because of this experience, the project embarked on training women for subsequent project components. Fifteen women have been trained in O&M for water.
The project plans to include men as well in the training programme in future to balance gender representation.

Certain community members, specifically in the Bamba hinterland,have been trained on the construction of ferrocement tanks and have been tested and found to be capable of doing such construction (See Appendix VII(b) for list of members trained).

6.1.7.2 Seminars

Day seminars have been conducted to train community members, particularly women,on O&M matters during 1991. Fourteen women have so far been trained in 11 sessions (See Appendix VII(a)).

6.1.8 Support to water committees

6.1.8.1 Management training

Support to water committees during the year took the form of participation in the meetings of water committees and this was only in Kapecha I during which time the project staff had the opportunity to advice and teach basic record keeping to the water committees.

The project plans to continue with this procedure but in a more structured manner along the lines of the developed training curricula.

6.1.8.2 Leadership training etc.

Leadership training during the year (1991) and indeed the period during the first phase of the project was not well articulated and as such did not take off. Information on leadership was floated to the water committees in Kapecha I and Kapecha II water supply areas however. This did not take the form of a structured curriculum as the project still had no one to implement this component.

Leadership training is expected to take shape during next year(1992) when the project expects to have an officer to deal with that aspect of project implementation. This is in addition to the fact that a curriculum has been developed for that purpose in addition to the fact that a curriculum has been developed.

6.2 TEACHER TRAINING IN O&M

There was no teacher training in O&M in 1991.

7. VISITS

7.1 VISITS TO KIWASAP

The project received about fifty visitors during the year 1991.

The most notable visitor in 1991 was the Minister for Water Development, Honorable John H. Okwanyo E.G.H.,MP.,who came to open the Kapecha water supply II (Please see full list of visitors on Appendix VIII(a)).

Visitors coming to KIWASAP either toured the project area accompanied by the KIWASAP management or staff members or held discussions at the project office.

7.2 VISITS MADE BY KIWASAP

7.2.1 Visit by KIWASAP team

From the 8th to 10th July 1991, a KIWASAP project team comprising of the Project Manager, Mr. Murage, J.W.V., Project Advisor Mr. L.Vijselaar, Mr. S.M.S. Hatibu and Mr. Stephen Nganga made a tour to Nairobi, Machakos and Taita Taveta Districts. During the tour, the team visited various organisation and institutions in a trip that proved fruitful.Details of the visit are contained in Appendix VIII(b).

7.2.2 Visit by the Kapecha Women Groups

Members of Women groups from the Kapecha area were taken by the project to visit the other women groups in the Voi area. The aim of the visit was to get the women to have first hand experiences about the development of other women.

The women who participated in the visit reported that the trip served as an eye opener in the areas they did not know before and indeed pledged to embark on starting similar projects to the ones they had seen in their own areas as well.

These activities included VIP latrine construction, manufacture of stabilised soil blocks and sisal fibre reinforced roofing tiles. Other activities they saw in the visit included water sales and water kiosk construction from materials made above, child health care clinic and bread bakery project.

The list of the women who made the visit is in Appendix VIII(c)

8. WORKSHOPS, SEMINARS, EXHIBITIONS

8.1 WORKSHOPS

The project held a mini-ZOPP workshop in Kilifi in January 1991 which replanned project activities during the first half of the year 1991.
A major ZOPP workshop was subsequently held from 19th to 24th May 1991 in which the project activities were rescheduled for the period ending December 1993.

In addition to the two ZOPP workshops the project made a small staff workshop as a follow up to the May ZOPP workshop to help detail activities generated in the May ZOPP workshop.

The project also attended a workshop on the preparation of Guidelines for the Construction and Rehabilitation of Small Dams and Pans in Kenya.
The workshop was funded by the Kenya-Belgian Co-operation (See Plate in Appendix IX (a)).

8.2 CONFERENCES AND SEMINARS

Through the Project Manager, the project attended the 1991 annual Provincial/District Water Engineers Conference organised by the Ministry of Water Development from 21st to 27th July 1991 at the Golf Hotel in Kakamega and funded by the Finnish International Development Agency (FINNIDA)(See Plate in Appendix IX (b)).

The Conference brought together District/Provincial Water Engineers from all over the Country to review achievements of the 1990/91 financial year and set targets for the 1991/92 financial year.

8.3 EXHIBITIONS

During the year 1991, the project made a small exhibition at the Mombasa Ministry of Water stand. The stand won the "Best Government stand Trophy"in August 1991.

From August 1991, the project spent time and made a two month effort in preparations for the Malindi show. These preparations earned the Ministry the coveted overall "Best Theme Interpretation" trophy (Please see attached certificate in Appendix IX(c))

By: (**Murage, J.W.V.**)

Project Manager.

APPENDICES

APPENDIX I: Details of Vehicles and Motor Cycles				
No	Reg. No	Vehicle Description		
		Make	Type	Age (Mon)
1	KAB 885S	Toyota Land Cruiser 4WD	Station Wagon	7
2	KAB 883S	Toyota Land Cruiser 4WD	Pick Up(matatu)	7
3	KAB 927S	Toyota Land Cruiser 4WD	Pick Up	8
4	KAB 295P	Mercedes Benz 300GD 4WD	Station Wagon	10
5	KAA 024M	Toyota Land Cruiser 4WD	Pick Up	24
6	KZS 411	Suzuki Sierra 4WD	Station Wagon	30
7	KZB 398	Toyota Land Cruiser 4WD	Pick Up	36
8	KWC 988	Mercedes Benz 240D 4WD	Station Wagon	120
9	GK 944Q	Long WB Land Rover V8	Station Wagon	120+
		Motor Cycle Description		
1	KZV 796	All Honda *Trail* 125 cc		24
2	KZV 797			24
3	KZV 798			24
4	KZV 800			24
5	KZW 751			24
6	KZW 752			24
7	KZW 753			24
8	KAB 704V			2
9	KAB 705V			2
10	KAB 706V			2
11	KAB 710V			2

APPENDIX II: LIST OF OTHER MOVABLE PROJECT ASSETS			
CATEGORY	ITEM DESCRIPTION	GTZ/SERIAL NO	QTY
Computer	1. Toshiba 1600 + Printer 2. Epson LQ 2550 printer 3. UPS stabiliser Odyne 4. Stabiliser solatek 5. Epson 1050 Printer 6. Computer ACER 915 V 7. Computer ACER 11105X 8. ACER III Laser Printer 9. UPS 500VA	048 030 034 036 078 - 060 061 064	1 1 1 1 1 1 1 1 1
Drawing	1. Drawing Table + Tools	012	1
Office	1. Ceiling Air rotor 2. Air Conditioner 3. Olympia Calculator 4. 20 ft Container 5. Photocopy machine 6. Olympia Typewriter 7. Telephone System 8. Yamaha Generator	032 025 020 027,033 034,053,076 035 082 083	10 2 2 2 3 1 1 1
Surveying	1. Geophysical Equipment + Generator 2. Water Quality Equipment 3. Stereoscope	009,017 014 009	2 7 1
Furniture	1. Chairs, Tables, Desks 2. Shelves cabinets 3. PM House	021,024,039,080 021,024 067,060,072,073,070	54 23 31
Tools	1. Tools 2. PM House	003,015 069,071	17 2

APPENDIX III: REQUEST FOR WRAP WATER RESOURCES STUDY INPUT

The Permanent Secretary,
Ministry of Water Development,
P.O. Box 30521,
NAIROBI.
(Attn: The Project Manager,
Water Resources Assessment Project (WRAP): Mr. Nziok

KWS/053 /VOL.I (17) 6th November,1991.

RE: **PRIORITISATION OF KILIFI DISTRICT FOR WATER RESOURCES ASSESSMENT STUDY**

The Kilifi Water and sanitation Project, KIWASAP was visited by the WRAP Senior Advisor, Mr. Robert Van Lissa on Wednesday, 23/10/1991 and informed that the WRAP is in the process of identifying and prioritising Districts in the forthcoming Phase of implementation.

KIWASAP is a GTZ assisted project with a possibility of covering a wider part of Kilifi District beyond the current phase that is scheduled to end in December,1993.

Subsequent to this visit, the project has gathered information on some agencies that are committed to developing water resources in Kilifi District as follows.

While KIWASAP is making a hydrological study to help in its project implementation, the study is very limited in its scope and resources and would be of little use to the other interested agencies.

The purpose of this letter is therefore to seek to urge inclusion of Kilifi District on high priority as the water Resources Assessment study will be put into immediate use in the District as a whole and KIWASAP in particular.

It would be most opportune if this matter could be treated as urgent.

Murage, J.W.V.
Project Manager.

cc.

1. The District Commissioner
   Kilifi District.
2. GTZ Co-ordinator (MOWD)
   KGWT.
3. Provincial Water Engineer
   Coast Province.
4. District Water Engineer
   Kilifi District.

APPENDIX IV: COMMUNITY HEALTH WORKERS IN KAPECHA I + II		
NAME	ORIGINAL LOCATION	PRESENT LOCATION
Mr. Franton Rimba	Dindiri	Kadzinuni
Mr. Lucas Mwanje	Bokini	Bokini
Mrs. Rose Chiro	Chasimba	Makata
Mr. Humphrey Nzai	Kadzinuni	Kadzinuni
Mrs. Agnes T.Yaa	Bandrasalama	Kadzinuni
Miss Dorothy Medza	Pingilikani	Pingilikani

APPENDIX V: WOMEN GROUPS			
GROUP	MAIN ACTIVITY	OTHER ACTIVITY	REMARK
KAPECHA I			
1. Bado Sisi	i. water	cultivation	More training required
2. Hindeni-Mbele	i. water	cultivation	More training required
KAPECHA II			
1. Songa-Mbele (Pingilikani)	i. water ii. paraffin	cultivation enable farming	Hard working require training
2. Shika-lako (Pingilikani)	i. water ii.tomatoes	cultivation	Need encouragement
3. Kaa-Mbele (Bokini)	i. water ii.making pots	have plans to acquire milling machine	Hard working required
4. Imaara (Mazuka)	i. water	-	Fair
5. Sauti (Dindiri)	i. water ii. making pots	cultivation cassava	Hard working conversant in meter reading
6.Kaa-Chonjo (Makata)	i. water ii.making pots	block making hare, rabbits cultivation	Very hard working and meter reading by them
7.Msichoke (Dindiri)	i.making pots	cultivation	Fair
NG'OMBENI			
1.Bado-Sisi (Ng'ombeni)	i.water ii.making pots	cultivation	Hard working
2.Umoja ni Nguvu (Ng'ombeni)	i.water	cultivation	Fair

APPENDIX VI: OPERATION AND MAINTENANCE TRAINING CURRICULA

APPENDIX VI(a): WATER PIPELINE INSTALLATION

Objectives:

(i) To mobilise and motivate the community to install the water pipeline network, initially and later on to operate and maintain the installed water pipeline network efficiently and effectively.

(ii) To give the community pre-conditions for the project's intervention in the area e.g.

* Activities that the community must agree to undertake.
* Funds to be contributed by the community.
* Community's willingness and agreement to be trained in various courses offered by KIWASAP.
* Community's willingness and agreement to cooperate with KIWASAP officials.

Target Group:

Elders
Men
Women
Fundis
Water committees.

APPENDIX VI(b): WATER PIPELINE MAINTENANCE

Objective:

To enable the community to operate and to maintain its water pipeline with very limited support from outside.

Target group:

Elders
Men
Women
Water committees

Sub-Topics:

a) Common pipeline maintenance tools and their usage
b) Pipeline maintenance practicals
c) Introduction to pipeline fittings
d) Elements of water kiosk assembly and maintenance
e) General practical maintenance

APPENDIX VI(c): WATER KIOSK OPERATION AND MANAGEMENT

Objectives:

To enable the community to operate and manage the water kiosks effectively and efficiently.

Target group:

All water committees.

Sub-Topics:

a) Registration of water committee
b) Meter reading and recording
c) Conversion of meter units into cash
d) Banking
e) Cash Book
f) Elements of financial control
g) Basic law and procedure of meetings
h) Principles of leadership
i) Fundamentals of water law in Kenya

APPENDIX VI(d): OPERATION AND MAINTENANCE OF DAMS AND WATER PANS

Objectives:

To enable the community to operate and to maintain dams and pans in a hygienic manner that ensures safety, general health and satisfaction of all the people served by the dams and water pans.

Target group:

Elders
Men
Women
Water committees.

Topics:

a) Registration of water committees
b) Economic usage of water
c) Maintenance of surroundings
   * Prevention of soil erosion
   * Fencing
   * Cleaning of surroundings
d) Establishment of water fetching points
e) Pan and dam maintenance
f) Basic law and procedure of meetings
g) Principles of leadership

APPENDIX VII: COMMUNITY MEMBERS IN TRAINING OR TRAINED

APPENDIX VII(a): Community Members in training in operation and Maintenance

PROJECT AREA	NAME OF PERSON	AREA OF TRAINING	NEIGHBOURHOOD
1. Kapecha I	-	-	-
2. Kapecha II	Mrs.Lillian Mrs.N.Hassan Mrs.Rose Ngoma Mrs.Mbeyo Gambo Mrs.Luvuno Munga Mrs.Nyavu Jumaa Mrs.Mose Kiti Mrs.Kasichana Mrs.Mwachiro Mrs.Mbodze Mrs.Mwazombo Mrs.Mbodze Mrs.Mwagambo Mrs.Kombo Paul Mrs.Saumu Barawa Mrs.Esther Mrs.Mwagambo Mrs.Elizabeth Bingo Mrs.Kenya Kudunda	11 Sessions each on: i. Making of socket (UPVC) ii. Threading of G.I. pipe iii. Adapting G.I and UPVC iv. Change of defective G.I. valve v. Use of plumbing tools	Dindiri School Makata School for all the others
3.Bamba	-	-	-
4. Ng'ombeni	-	-	-

APPENDIX VII(b): COMMUNITY MEMBERS TRAINED IN CONSTRUCTION			
PROJECT AREA	NAME OF PERSON	AREA OF TRAINING	NEIGHBOURHOOD
1. Kapecha I	-	-	-
2. Kapecha II	-	-	-
3. Bamba	Mr. Charo Kombe	Ferrocement tanks:- * setting out * putting up the structural cage * trolling the cage * making gutters from aluminium sheets * fixing gutters	Jila primary school
	Mr. Siad M. Menza		Mirihini primary school
	Mr.Mwalimu C. Nzai		Mitsemerini primary school
	Mr. Gunia		Chapungu primary school
4. Ng'ombeni	-	-	-

APPENDIX VII(c): PEOPLE TRAINED ON-THE-JOB ON VIP LATRINE CONSTRUCTION		
PROJECT AREA	NAME	NEIGHBOURHOOD
a. Kapecha I	Mr. Morris Safari Mr. Murima Mwagambo	Kapecha school Bokini Pri. school
b. Kapecha II	Mr. Mbanu Kalama Mr. Samson Dunga	Pingilikani Pri. school Makata shopping centre
c. Bamba	1. Mr.Pishi Charo 2. Mr.Kariba Charo 3. Mr. Kazungu Baya * 4. Mr.Nicodemus Fondo ** 5. Mr.Joseph Kitsao 6. Mr. Ruali Kitsao 7. Mr. Ezekiel Shariff	Mitsemerini school Katendewa school Mirihini school Chief's camp-Bamba Maryango school Chapungu school Bamba school
Ng'ombeni	-	-

Areas covered in Sessions

1. Construction of slabs
2. Lining of pits
3. Formation of stabilised blocks
4. Walling processes
5. Fixing of vent pipes and flyscreens
6. Setting out of pits
7. Siting of VIPs
8. Excavation techniques

* (left Bamba to Mombasa)
** (block making by machine)

APPENDIX VIII: VISITORS

APPENDIX VIII(a): LIST OF VISITORS TO KIWASAP

NO.	DATE	NAME	ADDRESS
1.	18/11/91	**HONORABLE JOHN H. OKWANYO, E.G.H., MP.**	**Minister for Water Development**
2.	18/11/91	**Mr. S.M. M b o v a**	**Permanent Secretary,** Ministry of Water Development
3.	18/11/91	Mr. S.B. Mwangi	Principal Accounts Controller
4.	18/11/91, 17/10/91, 29/4/91	Mr. M. Trojanow	GTZ Co-ordinator (MOWD) Kenyan-German Water Team
5.	18/11/91, 17/10/91, 29/4/91	Mr. K. Njui	Deputy Director, Monitoring and Co-ordination, MOWD
6.	18/10/91	Mr. L.M. Musyoka	Deputy Director, Operation and Maintenance
7.	27/11/91	Mr. C.S. Chengo	AGRIC Mechanic Services, Box 29, MARIAKANI
8.	27/11/91	Mr. B.M. Rashid	DAEO's Office, Box 37, KALOLENI
9.	21/11/91	Mr. Stephen N. Wanjohi	Box 30020, NAIROBI
10.	19/11/91	Mr. H.F. Kremeier	Resident Engineer DCU, Box 7025, NAKURU
11.	16/11/91	Mr. D.M. Nzuve	District Information Officer, Box 364, KILIFI
12.	14/11/91	Lt.W.I. (RTD)S.A. Mole	Chairman Arena Committee Malindi show, Box 1, MALINDI
13.	11/11/91	Mr. H.K. Muriuki	District Education Officer, Box 42, KILIFI
14.	11/11/91	Mr. Francis M. Nyamano	Assistant Education Officer, Bahari, Box 86, KILIFI
15.	4/11/91	Mr. Hardmut Schwarzback	Weidenallee 56, 2000 Hamburg 36, GERMANY
16.	23/10//91	Mr. Robert Van Lissa	WRAP- Senior Advisor (MOWD) Box 53147, NAIROBI
17.	17/10/91	Mr. P.K. Munoru	Regional Manager Water Corporation Box 90534, MOMBASA
18.	17/10/91, 29/4/91, 25/4/91	Mr. A.M. Gikanga	Provincial Water Engineer's office Box 90534, MOMBASA
19.	1/10/91	Mr. Athuman Chiguzo	Box 9, KILIFI
20.	1/10/91	Mr. M. Ngoto	Public Health Officer, Box 9, KILIFI
21.	1/10/91	Mr. David F. Mallingi	PPHO, PMO's office, Box 90233, MOMBASA

22.	1/10/91	Mr. Ali M. A. Kidiku	Ag. C.P.H.O., MOH(HQ) NAIROBI
23.	11/9/91	Mr. Havan C. Amoi	District Statistical Officer, Box 29, KILIFI
24.	18/7/91	Mr. George Ochola	HDRU, University of Nairobi, Box 30197, NAIROBI
25.	15/7/91	Mr. P.S. Sehmi	Box 30521, NAIROBI
26.	2/7/91	Mr. N.N. Kaigai	Box 30521, NAIROBI
27.	14/6/91	Mr. S.M. Muchendu	District Development Officer, Box 256, KILIFI
28.	6/6/91	Mr. Alphonse Ziro Lewa	Makata Primary school, Box 7, TAKAUNGU
29.	6/6/91	Mr. Herbert D. Kiti	Pingilikani Primary school, Box 8, VIPINGO
30.	6/6/91	Mr. Daniel Charo	Bokini Primary school, Box 157, KILIFI
31.	6/6/91	Mr. Wycliffe T. Mwangome	Kadzinuni Primary school, Box 18, VIPINGO
32.	6/6/91	Mr. Garama Ziro	Kapecha Primary school, Box 9, VIPINGO
33.	6/6/91	Mrs. Lilian Hassan	Dindiri Primary school, Box 6, VIPINGO
34.	6/6/91	Mr. Guenter Seefried	GASP, Box 150, LAMU
35.	6/6/91	Mr. A.W. Ngigi	GASP, Box 69, MPEKETONI
36.	6/6/91	Mr. Paul Patrick Onyango	GASP, Box 69, MPEKETONI
37.	6/6/91	Mr. Tony Vergrvesea	GTZ, Box 150, LAMU
38.	27/5/91	Mr. Michel T. Van Scheltinga	Vwevwesi Com Dev.Centre, Box 268, KALOLENI
39.	25/4/91	Mr. Bernard Mulwa	Provincial Water office, Box 90534, MOMBASA
40.	25/4/91	Mr. Morris Muleshe	KFWWSP, Box 774, KAKAMEGA
41.	25/4/91	Mr. Aswan Mohammed	KFWWSP, Box 774, KAKAMEGA
42.	25/4/91	Mr. Isaac Nyansikera	KFWWSP, Box 774, KAKAMEGA
43.	25/4/91	Mr. K. Kaniaru	KFWWSP, Box 774, KAKAMEGA
44.	25/4/91	Mr. J.G. Muriuki	KFWWSP, Box 774, KAKAMEGA
45.	25/4/91	Mr. C.M. Kinga	KFWWSP, Box 774, KAKAMEGA
46.	25/4/91	Mr. Luka Imbwaga	KFWWSP, Box 774, KAKAMEGA
47.	25/4/91	Mr. Chrysanthus Wanjala	KFWWSP, Box 774, KAKAMEGA
48.	25/4/91	Mr. Matti Leppaniemi	KFWWSP, Box 774, KAKAMEGA
49.	24/4/91	Mr. B.K. Mwalenga	GoK/AMREF PHC Project, Box 358, KALOLENI

APPENDIX VIII(C): VISITS MADE BY KIWASAP PROJECT TEAM		
DATE	PLACE VISITED	ACTIVITY
8/7/91	Ministry of Water Headquarters - Maji House	Met Mr. Njui, Deputy Director- Monitoring and Co-ordination
8/7/91	Centre for appropriate Technology - Karen, NAIROBI	Displays and experiments on appropriate building, sanitation, energy, water and other technologies seen
8/7/91	United Nations Development Programme (UNDP) world Bank - Park View Plaza, NAIROBI	Information and advisory body with useful training material
8/7/91	Housing Development Research Unit (HDRU), University of Nairobi	Researching on materials for low cost and appropriate technology for building
9/7/91	Danish International Development Agency (DANIDA) - Rehani House, NAIROBI	Has developed manuals on ferro-cement tank construction in Kitui District
9/7/91	Africa Housing Fund - Shelter Afrique House, NAIROBI	Developing appropriate Housing on low cost technology
9/7/91	Kenya Water for Health Organisation (KWAHO) - Industrial area (MOWD compound)	Discussed possible future working relations within their area of community water and sanitation activities including documentation
9/7/91	African Medical Research (AMREF) - Wilson's Airport, NAIROBI	Purchased useful books in AMREF bookshop and visited documentation centre on posters and information exchange
10/7/91	Kibwezi schools water and sanitation project implemented through KWAHO - Machakos District	Visited Ithumula and Katilamuni primary schools where VIP latrines from Soil blocks and both above ground and underground ferrocement tanks drawing water through improve gutters have been constructed.
10/7/91	Buguta - Makwasinyi community water projects Taita-Taveta District implemented by KWAHO	A community water project with stabilized soil block-making, cement mortar and sisal fibre roofing tides, VIP latrine slabs, tree nursery and a bakery as income generating activities alongside the water project in addition to a child health care clinic

APPENDIX VIII(C): LIST OF KIWASAP VISITORS TO KASIGAU, Voi

1. Mrs. Mbonze Madzbo
2. Mrs. Katuma Mwalua
3. Mrs. (Mama) Sirya
4. Mrs. Margaret Charo
5. Mrs. J. Kabele
6. Mrs. Prisca Timothy
7. Mrs. Mary Mwasi (KIWASAP)
8. Mrs. B. Mwero (MOCSS)
9. Mrs. J. Katana (MOCSS)

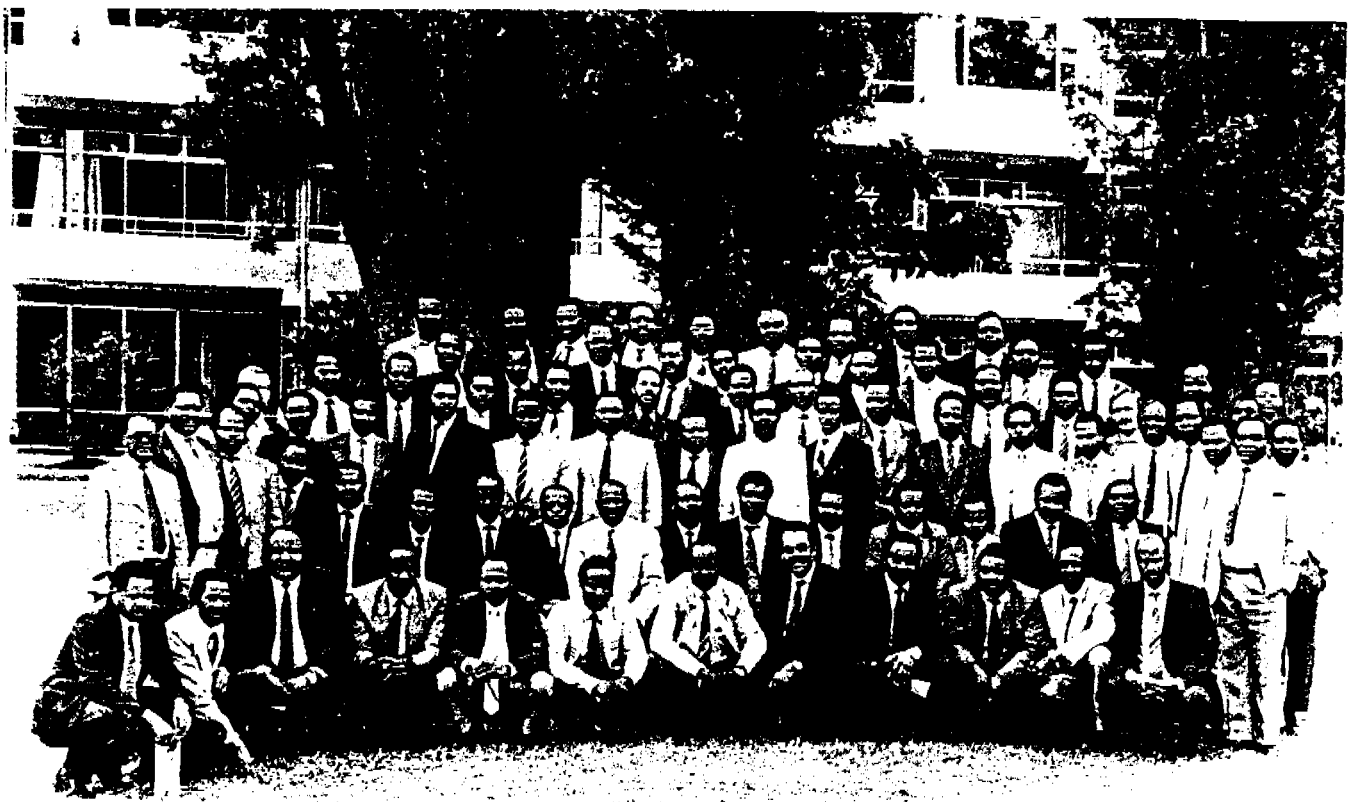
APPENDIX IX: WORKSHOPS,CONFERENCES AND EXHIBITIONS

APPENDIX IX(a): PARTICIPANTS OF THE WORKSHOP ON "Guidelines For the Design ,Construction and Rehabilitation of Small Dams and Pans in Kenya"

VENUE : GREEN HILLS HOTEL,NYERI

TIME : 18TH TO 20TH JUNE 1991

APPENDIX IX(b): PARTICIPANTS OF THE 1991 ANNUAL PROVINCIAL/DISTRICT WATER ENGINEERS CONFERENCE

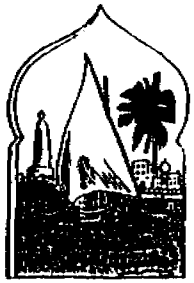


VENUE : GOLF HOTEL,KAKAMEGA

TIME : 21ST TO 27TH JULY,1991

APPENDIX IX(C) : "BEST THEME INTERPRETATION" CERTIFICATE FROM THE MALINDI SHOW

MALINDI AGRICULTURAL SHOW



HELD AT MALINDI SHOWGROUND

From 6/12/1991 To 8/12/1991

.....

Awarded to MINISTRY OF WATER DEVELOPMENT .....

For the BEST THEME INTERPRETATION .....

..... Judge ..... Chairman

..... Judge ..... Chief Steward