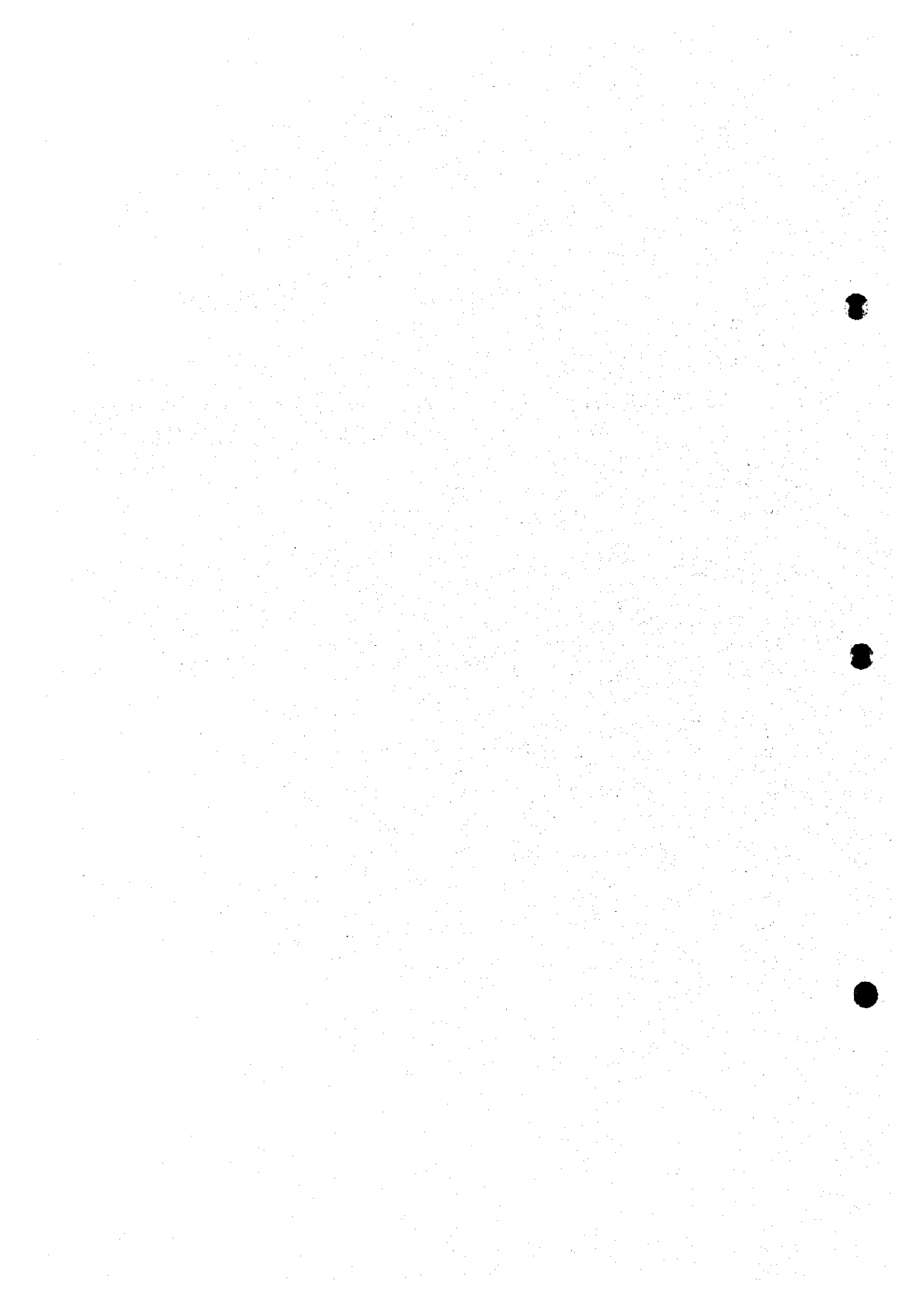


DATA BOOK IV

**RESULT OF SURVEY ON EXISTING RURAL
WATER SUPPLY SYSTEMS**



**THE AFTERCARE STUDY
ON THE NATIONAL WATER MASTER PLAN**

DATA BOOK

**DATA BOOK IV : RESULTS OF SURVEY ON EXISTING RURAL WATER SUPPLY
SYSTEMS**

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GRAND SUMMARY

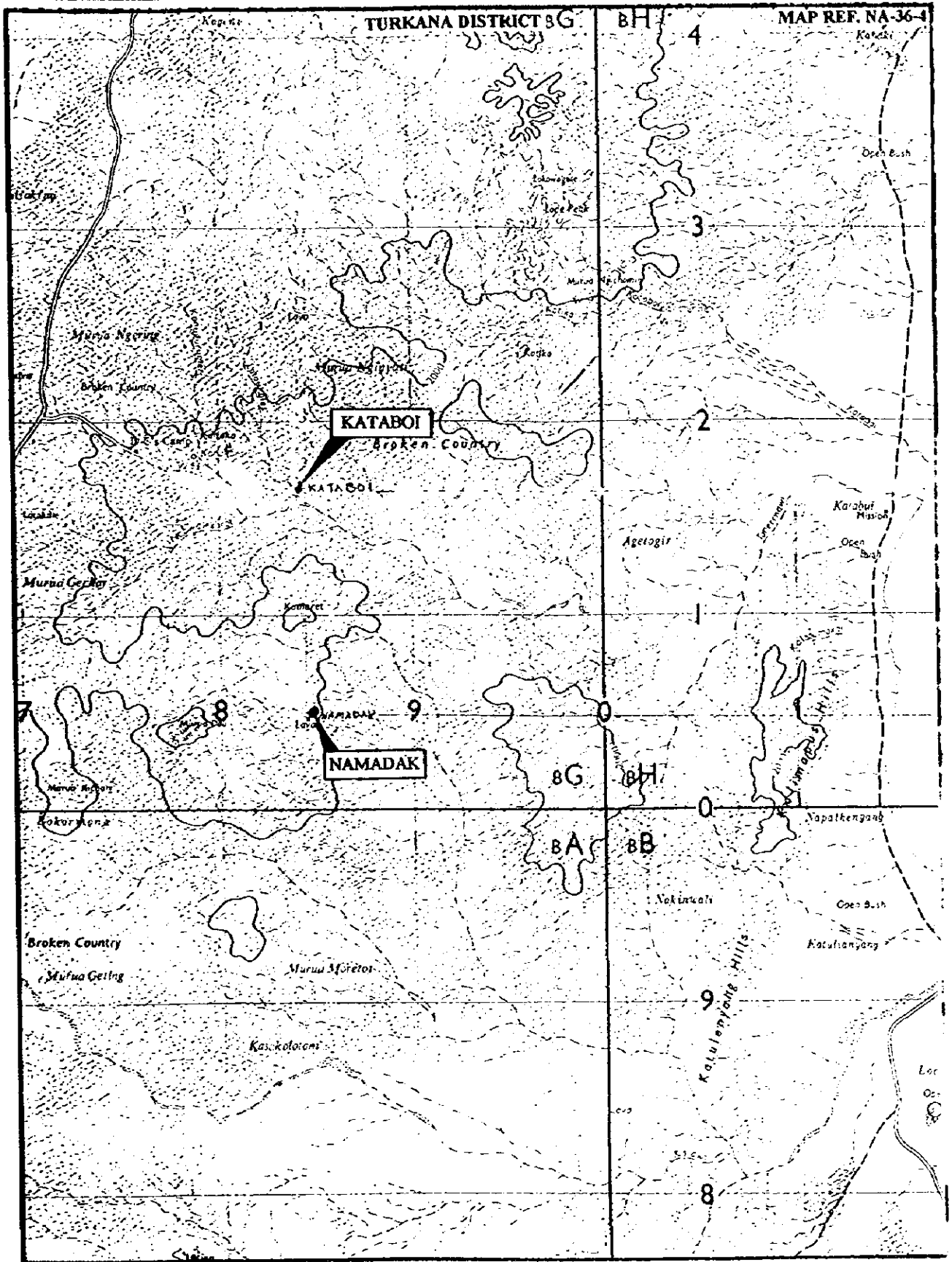


DISTRICT	NAME OF RURAL SCHEME	WATER UNDERTAKER	REFERENCE MAP (1/250,000)	WATER SOURCE/ TREATMENT PROCESS	CHEMICALS DOSED	PRODUCTION M3/DAY	CONSUMER METERING		HOUSEHOLDS SERVED	REMARKS
							METERED	UNMETERED		
TURKANA	KATABOI	MOWR	-	Hand dug well / None		None	None	All	840 (Persons)	Scheme currently unoperational since 1992 due to pump breakdown. there are no operators' houses. the scheme needs urgent rehabilitation and should include chlorination facility.
	NAMADAK	MOWR/ Community	-	Borehole/ None	None	26	None	All	340	Problems include prevalent vandalism, unqualified community managers/operators, insufficient funds and transport for operation & maintenance and lack of treatment facility. Chlorination treatment is urgently required. Future borehole development is proposed to augment supply.
	LOKORI	MOWR/ Community	-	Borehole near Kerio River/ Chlorination only	Chlorine (Tropical Chloride of Lime-TCL)	32.9	700	Nil	700	Problems include lack of communication, delays by consumers in paying bills, and production lower than demand. Rehabilitation of staff and pump houses required. Future plans are to increase productivity to 30m3/hr to serve 6500 persons by yr. 2005
	KAINUK	MOWR	-	Shallow wells/ Chlorination only	Chlorine (TCL)	72	None	1820 (All)	1820	Lack of communication system, accommodation for operating personnel and delays in payments by consumers are major problems. Expansion is required with extra boreholes to serve 20,000 persons.
	LOKICHOGIO	Community/NGOs	-	Shallow wells near Ewaso River/ Chlorination (irregular)	Chlorine (TCL)	Data N/A	None	All	5400 (Persons)	Poor communication due to remoteness, lack of trained operators and staff quarters are main problems. Future expansion is required by addition of more boreholes. Immediate measures include installation of 1 No. standby pump.
KEYYO & MARAKWET	CHIGILET	Community	-	Kibomo Spring/ None	None	60	None	500	500	Major problems include lack of funds for operation and maintenance, absence of supply operator, and extensive damage by floods of sections of the network, for which there are no funds for repairs. A new source needs to be identified to augment supply.
	NYALIL	Community	-	Nyalil Spring/ None	None	60	None	500	500	Damaged gravity main and distribution lines across gullies, intake foundation, lack of funds to carry out the necessary repairs and absence of local scheme attendant are major problems. Extension of supply is required. A new spring source has been identified but yield is not known.
	NERKWO	Community	90/1	None	None	5			800	The pumpset frequently breaks down and there is delay in repairs due to lack of funds and qualified staff.
	CHEPKORIO	MOWR	-	Kipkarren river/ Full treatment capacity but only Chlorination	Chlorine (TCL)	31.8	405	None	405	Supply is inadequate for demand. There are frequent power interruptions and inadequate O&M staff.
	KAPSOWAR	MOWR	-	Emston river/ Chlorination only (irregular).	Chlorine (TCL)	1,600	None	All	5000 (Persons)	Water from the current source is polluted and proper treatment lacking. The water is moreover insufficient to cater for demand. A new source is required with provisions for full treatment.
MURANGA	GATANGO	MOWR	-	Take off from Galango w/s None - Treatment at larger GATANGO W/S	None	2,640	335	1194	1,529	Vandalism and misuse of and wastage of water are rampant. Full treatment is required.
	MATHIOYA	MOWR	-	River Hembe/ Chlorination only	Chlorine (TCL)					There is misuse of and wastage of water due to flat rate connections. Lack of funds for operation and maintenance are other problems. There are plans for full treatment and augmentation.
	KIGUMO	MOWR	-	River Irati/ Plain Sedimentation and Chlorination only	Chlorine (TCL)	8,640	Few (No Data)	Most (No Data)	150000 (Persons)	Scheme requires augmentation with full treatment, to serve 300,000 persons
	KANDARA	NWCPC	-	Thika river/ None	None	14,640	4300	11,000	15,300	Demand outstrips supply. This is mainly due to the size of the scheme which was designed to meet the 1982 population demand. Other factors include lack of funds for O&M, and wastage of the little water available. Preliminary design for augmentation including full treatment has been carried out by Consultants.
	KAHUTI	NWCPC	-	S Mathiyo / Maragua rivers/ Phase II and Kangema Urban only. Coagulation, sedimentation, Filtration, and Chlorination.	Chlorine (TCL)	12,910	750	11,050	11,800	The scheme constructed between 1950 and 1977 comprises three independent phases viz. phases I, II III and Kangema Urban. The schemes have surpassed their design horizons and are therefore unable to meet demands. Other constraints include lack of funds for O&M, and wastage of water by consumers due to flat rate connections.
NAROK	LEMEK		SA - 36 - 8	Lemek borehole/ None	None	100	600	None	600	Inadequate staff and funds for O&M. More storage facilities required including extension of pumphouse to accommodate 2 new pumpsets. Construction of treatment facilities, especially for chlorination as an immediate measure and two new water kiosks required.
	MULOT	MOWR	SA - 36 - 8	Mara river/ None	None	300	2500	None	2500	Inadequate staff and funds for O&M. 1 No. standby pump required. Construction of treatment facilities, especially for chlorination as an immediate measure is required. As demand outstrips supply, major augmentation is required.
	OLOLUNGA	Community	SA - 36 - 4	Ewaso Nyiro river/ None	None	110	None	910	910	There is inadequate staff, funding and technical know-how for O&M. There is also frequent breakdown of pumps. Construction of treatment facilities as an immediate measure is required.

DISTRICT	NAME OF RURAL SCHEME	WATER UNDERTAKER	REFERENCE MAP (1/250,000)	WATER SOURCE/ TREATMENT PROCESS	CHEMICALS DOSED	PRODUCTION M ³ /DAY	CONSUMER METERING		HOUSEHOLDS SERVED	REMARKS
							METERED	UNMETERED		
	OLOPITO	Community		Borehole/ None	None	9	None	93	93	Financial constraints in O&M. At present only one communal water point(CWP). More CWP's needed to serve the larger community. Disinfection is required.
	ILMASHARIAN	MOWR		Spring/ None	None	216	None	1800	1800	Financial constraints, therefore cost sharing recommended. Erratic supply of electricity and frequent pump breakdowns. Standby pump needed. There is inadequate staff for O&M. Treatment facilities required especially chlorination as an immediate measure.
WAJIR	WAGALLA	Community		Hand dug shallow well/ None	None	5	None	300	300	There are individual shallow wells which are not protected and whose water is saline and contaminated. Supply from these wells is not treated and users do not boil before drinking.
	SABUNLEY	Sabunley boys sec. school		Hand dug shallow well/ Chlorination only	Chlorine		None	400	400	Well no. 4 not protected and likely to be contaminated. Purchase of chlorine for disinfection done irregularly due to lack of funds.
	LEHELEY	Community	NA-37-11	Shallow well / None	None		None	210	210	Hand pump used. World vision to install solar powered pumps to supply mostly Leheley clinic.
	WAJIR CATHOLIC MISSION	Catholic mission	NA-37-11	3 no. Shallow wells / Chlorination only	Chlorine (TCL)		None	70 persons	70 persons	Catholic mission has three water supplies. There are no private consumers under this supply.
	WAJIR REHAB. CENTER CATHOLIC MISSION (GIRL'S TOWN)	Catholic mission	NA-37-11	5 no. shallow wells/ Chlorination only	Chlorine		None	530 persons	530 persons	Catholic mission has three water supplies. There are no private consumers under this supply.
KILIFI	PIDIMANGO	NWCPC/Community		Take off Baricho pipeline/ Full treatment	Alum, Soda Ash, Chlorine	42				Water from wells turns turbid during rainy season and has undesirably high nitrate content. The wells generally dry up during dry weather. Electric pumps replaced every two years. MSF Belgium presently providing clean water technology to the mission.
	KITSOENI BUNGU	NWCPC/Community		Take off Baricho pipeline/ Full treatment	Alum, Soda Ash, Chlorine	26	433	None	433	Billing dispute with NWCPC results in high bills. The scheme is dependent on the operations of Baricho Treatment works which serves Mombasa. Expansion desired.
	KAPECHA 1	NWCPC/Community		Take off Baricho pipeline/ Full treatment	Alum, Soda Ash, Chlorine	48	420	None	420	Billing dispute with NWCPC results in high bills. The scheme is dependent on the operations of Baricho Treatment works which serves Mombasa.
	MWELE	MOWR		Take off Baricho pipeline/ Full treatment	Alum, Soda Ash, Chlorine	13				Billing dispute with NWCPC results in high bills. The scheme is dependent on the operations of Baricho Treatment works which serves Mombasa.
	MAJAJANI	MOWR		Take off Baricho pipeline/ Full treatment	Alum, Soda Ash, Chlorine	27	400	None	400	Billing dispute with NWCPC results in high bills. The scheme is dependent on the operations of Baricho Treatment works which serves Mombasa.
	NGERENYA	MOWR		Take off Baricho pipeline/ Full treatment	Alum, Soda Ash, Chlorine	29			592	Scheme self-sustaining. Expansion is desired but proposals not prepared by community yet.
TAITA-TAVETA	DEMBWA WUSI	MOWR	SA-37-14	Kengwa spring and Vuria river/ Chlorination only	Chlorine	110	300	None	300	Lack of operation and maintenance, transport, laboratory and offices. Chlorination facilities need rehabilitation.
	MWAJKA TERI	MOWR	SA-37-14	Rivers Mwaroro, Mwakika and Mwereri/ Chlorination only	Chlorine	71	165	None	165	Lack of O&M, revenue collection personnel, transport, laboratory and offices.
	MWAKIKI	Community		Sangunyi and Mkongonyi Springs/ None	None		None	1470	1470	Revenue not being collected from water supplied.
	MWAMBITI	Community		Mwambighili, Bwaka and Mashighati springs/ None	None					The scheme primarily serves Mambiti Sec. school, with limited service to the surrounding community.
KISII	GESONI	MOWR	SA-36-4	Ria Modito spring/ Occasional Chlorination only	Chlorine	60	None		18 : 5 schools (Pop. - 6000)	Frequent breakdown of generator engine and pump.
	GESUSU/GETERI	MOWR	SA-36-4	Spring/ None	None	15	2 schools	25	25	Supply inadequate and often dries up during the dry season. Treatment of water and testing facilities required.

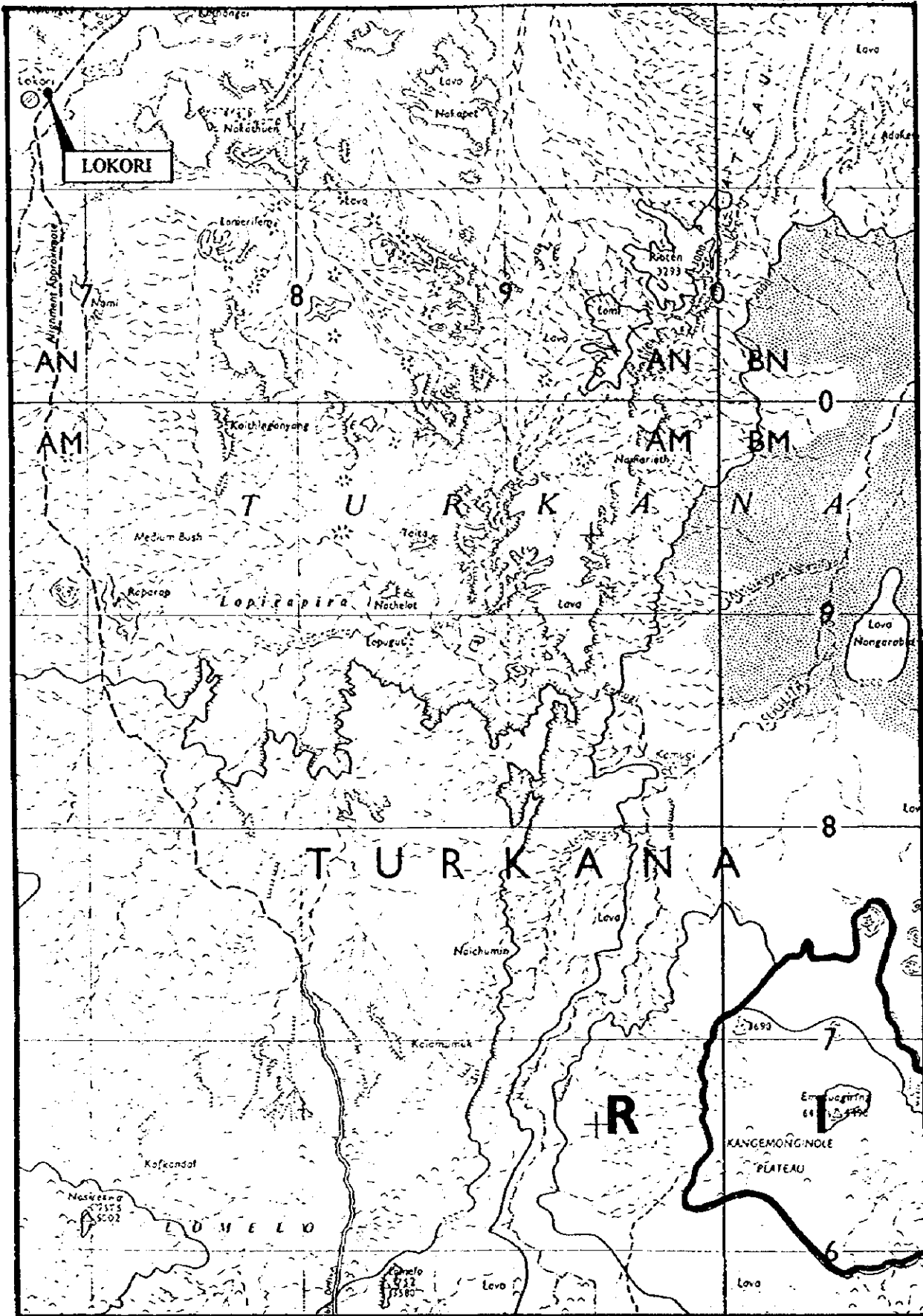
DISTRICT	NAME OF RURAL SCHEME	WATER UNDERTAKER	REFERENCE MAP (1/250,000)	WATER SOURCE/ TREATMENT PROCESS	CHEMICALS DOSED	PRODUCTION M ³ /DAY	CONSUMER METERING		HOUSEHOLDS SERVED	REMARKS
							METERED	UNMETERED		
	NYAMACHE	MOWR	SA-36-4	Kambi ya Nyang'au spring/ None	None	24	None	160	160	Treatment of the water is required. The supply is inadequate due partly to vandalism of pipeline. Trained personnel lacking.
	MOSOCHO NYANEREMA	Community	SA-36-4	Nyanderema river/ Occasional Chlorination only	Chlorine	108	None	All consumers	40 + 4 schools each - 400 students	Water rationing due to inadequate supply. Frequent breakdown of diesel engine. Full Treatment is required.
	NYAMARAMBE	MOWR	SA-36-4	Nyangore river/ Full treatment	Alum, Soda ash, Chlorine	190	14	26	40	Only small portion of Nyamarambe water production is used by Nyamarambe. Most of the supply is consumed by Rongo Township.
	TABAKA	MOWR	SA-36-4	Bombure Spring/ None	None	100	120	80	200 + - 2000 students	There is inadequate water at source and as a result production is limited. A new source needs to be developed. Treatment is urgently required.
NANDI	BARATON	University of Eastern Africa - Baraton		Kimondi river, spring and Borehole/ Full treatment	Alum, Sosa ash, Chlorine	350	50	85	135	A University of Eastern Africa, Baraton scheme but also serves the surrounding community. Borehole source not operational due to financial constraints. Alum and Chlorine dosing is not done properly as dosers are not working. The scheme was adversely affected by the El-nino floods.
MACHAKOS	WAMUNYU	MOWR		Athi river/ Full treatment	Alum, Soda ash, Chlorine	4310	150	150	300	The treatment units need repair and augmentation. Old pumps require frequent repairs. There are frequent bursts and a large no. of consumers are disconnected due to non-payment.
	KONZA	Community		Take off Nol Turesh pipeline/ Chlorination only	Chlorine	358			Pop - 3500	Nol Turesh supply not reliable. A standby borehole supply should therefore be developed. Distribution system needs improvement.
	DAM	Community		Dam on Kyethivu stream/ None	None	100			Pop - 9000	Treatment is required. There is lack of trained operators. Engine and pumps need repair and the rising main needs augmentation.
	MUTHETHENI GIRLS INSTITUTE	Institution		3 no. boreholes/ None	None			All consumers	-860 students	Supply entirely for institutional use and is subsidized by contributions from parents. It is well run but needs at least chlorination at storage before use and augmentation due to increasing student enrollment.
	MEKILINGI	Community		Mekingili river/ None	None	124			pop. -10000	Lack of funds for purchasing new pumpset and to overhaul one currently in use. Treatment is required urgently. The partial filtration system and dam scour are clogged. Desiltation is necessary.
	MANYATTA	Manyatta sec. school		Borehole near Kyaani river (C3066)/ Chlorination only	Chlorine(TCL)	100		All consumers	- 500 students	Replacement of generator diesel engine for borehole and chemical mixing and dosing arrangement for chlorination required.
KITUI	MATINYANI	Community		Borehole at Kalia/ None	None	120	69	None	69	The scheme is well run and makes profit. Chlorination is required.
	MUTOMO	MOWR	SA-37-6	Tira Borehole/ None	None	14				O&M costs are high compared to revenue collected. As such operations are normally suspended due to delay in repairs. The borehole yield has dropped considerably.
	NGUNI	MOWR	SA-36-2	Hand dug well/ None	None				200	The supply was abandoned sometime in 1984 due to high sulphide content of the borehole water. A new borehole needs to be drilled to produce 150 m ³ /d
	KABATI	Community	SA-37-6	2 no. Boreholes/ None	None				1300	One of the two boreholes has been abandoned. The pump in the operational one fell inside and has not been retrieved. The Masinga-Kitui pipeline is a viable source for the scheme.
	MUTITO	MOWR		Ngulini and Muthua springs/ None	Chlorination during epidemics	48	None	500	500	There is a lot of wastage since the scheme is unmetered. Repairs are delayed mainly due to lack of funds.
SIAYA	UYOMA	Community	SA-36-3	Lake Victoria/ Filtration and chlorination	Chlorine(TCL)	1080			1000	Pumping equipment is very old and dilapidated. Poor access to the scheme makes delivery of diesel difficult.
	ALUOR	MOWR	SA-36-3	Ogomo river/ None	None				-2000 persons	Lack of funds in suspension of operations since 1992. All pumping equipment needs replacement. Chlorination is required.
	YENGA SIRANGA	Community	NA-36-15	Yenga river/ None	None					The scheme is not operational due to lack of funds and poor management. Chlorination will be required when the scheme becomes operational.
	MAUNA DAM	MOWR	NA-36-15	Mauna Dam and spring/ Chlorination only	None currently		10	2490	2500	The scheme has not been operational since 1992 due to lack of funds. 1 No. pumpset needs replacement and repairs are required for storage tanks, cattle troughs and some pipes.

DISTRICT	NAME OF RURAL SCHEME	WATER UNDERTAKER	REFERENCE MAP (1/250,000)	WATER SOURCE/ TREATMENT PROCESS	CHEMICALS DOSED	PRODUCTION M ³ /DAY	CONSUMER METERING		HOUSEHOLDS SERVED	REMARKS
							METERED	UNMETERED		
	BAR OBER	Community	SA-36-3	Spring at Bar Ober/ None	None				-2000 persons	The scheme is not operational due to lack of funds. Chlorination will be required when the is functional.
NYANDARUA	HUHRIO	Community		River Malewa/ None	None	44	None	180	160	There is lack of funds for O&M and trained staff. Full treatment is required.
	PASSENGA	Passenga sec. school		Nyalroko river/ None	None	8 - 10			Serves only the school	Originally, the community was managing the scheme but failed to run it efficiently and the school took over. Full treatment is needed as the public is using the river water directly without any treatment.
	KIRIMA	MOWR		Rivers Pesl, Karuruma and Kahaho/ None	None	258	None	659	659	Treatment of supply and repairs to burst pipes required.
	MAWINGO	Community		Kiriandu spring/ None	None	7	None	All consumers		Due to lack of funds for expansion, the scheme serves only the dispensary at Mawingo.
	MUGUMO	Community		Borehole/ None	None	53	30	None	30	Chlorination and repairs to pipe bursts required.
KERICHO	TEGUNOT	Community	SA-36-4	Small dam/ None	None		None	13	13	Construction of a new rising main, storage tank and distribution mains in Phase II of the scheme.
	LITEIN	NWCPC	SA-36-4	Itare river/ Full conventional treatment	Alum, Soda ash and chlorine	6850	425	5214	5639	The existing scheme not able to meet demand. Preliminary design for the rehabilitation of existing scheme and expansion including bulk and individual metering has been carried out by a firm of consulting engineers.
	CHEPSIR ZONE A AND B	MOWR	SA-36-4	Small dam and spring/ None	None		None	19	All consumers	Some of the consumers have defaulted on payment and have been disconnected. Treatment is urgently required. The dam in zone A requires desilting.
	NG'ECHEROK	Community	SA-36-4	Kiboi river/ None	None		None	360	360	Treatment of supply and construction of additional storage tank is required.
	BARGEYWET	MOWR		Bargeywet spring/ None	None		None	60	60	Protection of the intake and desilting the sump area is required. Treatment of the supply is needed.
UASIN GISHU	KIPKABUS	Community		Lolgarini springs/ None	None	4	None	390	390	No treatment is being done as the construction of the treatment works has not been completed. Priority should be given to the completion of the works.
	YAMUMBI	Passenga Sec. school		Sosiani river/ None	None		None	1500	1500	Eldoret Municipal Council has agreed to supply the community from its water supply system but the community is required to supply the necessary pipes and fittings for the construction of a pipeline off-take.
	MOI UNIVERSITY	Moi University		Samul river/ Full treatment	Alum, Soda ash and chlorine	1600	150		150 + 3500 students	The scheme serves the University students and staff. There are frequent power supply interruptions. Phases IB and II have not been completed; the treatment works are incomplete (backwash pumps not yet installed)
	SOSIANI	MOWR		2 no. boreholes/ None	None	2			104	Low production in 1996 due to frequent breakdown of pumps. Chlorination should be carried out as a priority.
	ARANGAI	Community		River Rongai/ None	None			5290	5290	Chlorination, as an immediate measure, should be carried out. The main problems are lack of community organization and management. Arangai is one of the seven schemes under Ainabkoi complex. A new scheme is proposed with lake Narasha as source.



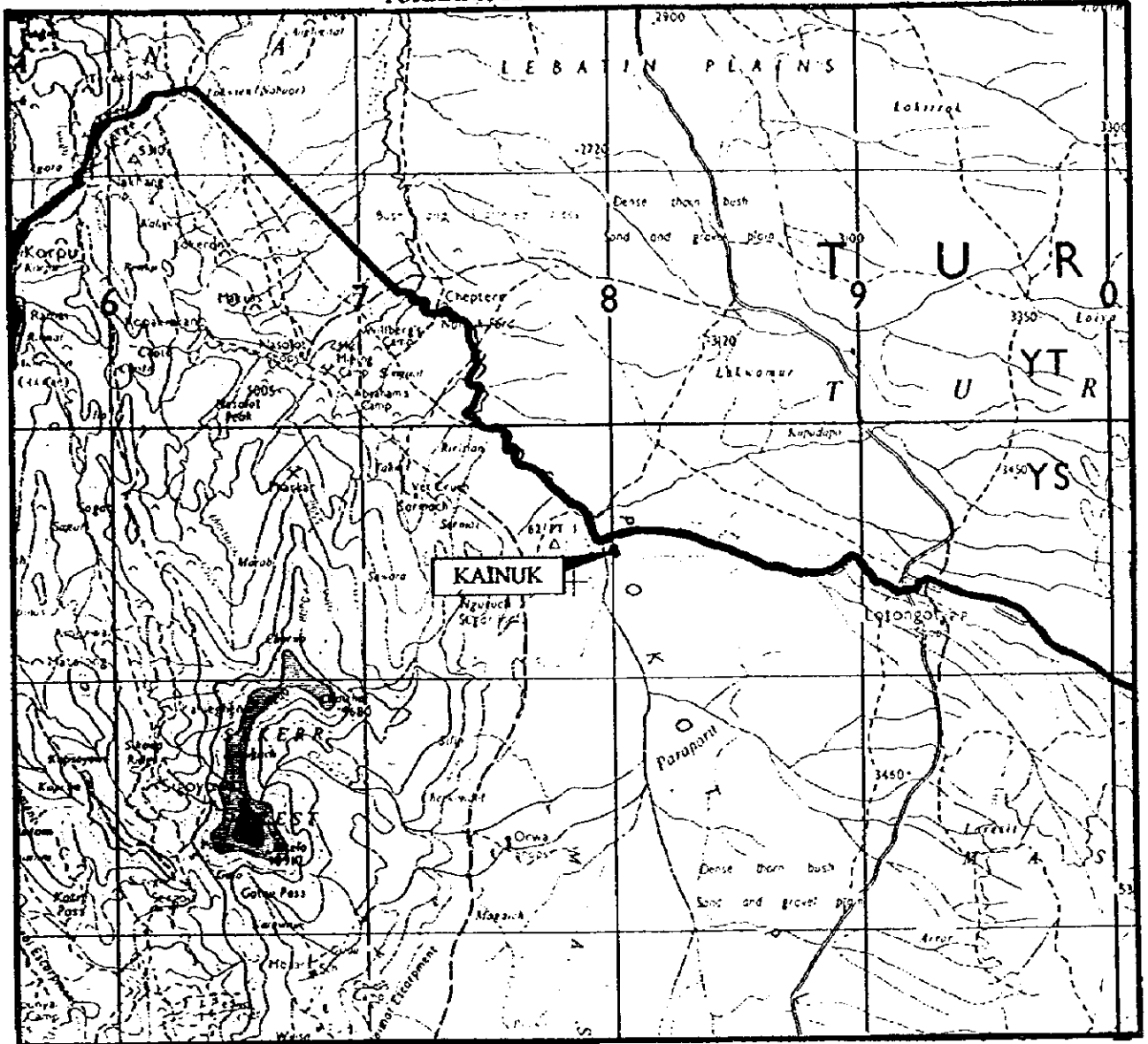
TURKANA DISTRICT

MAP REF. NA-37-9.



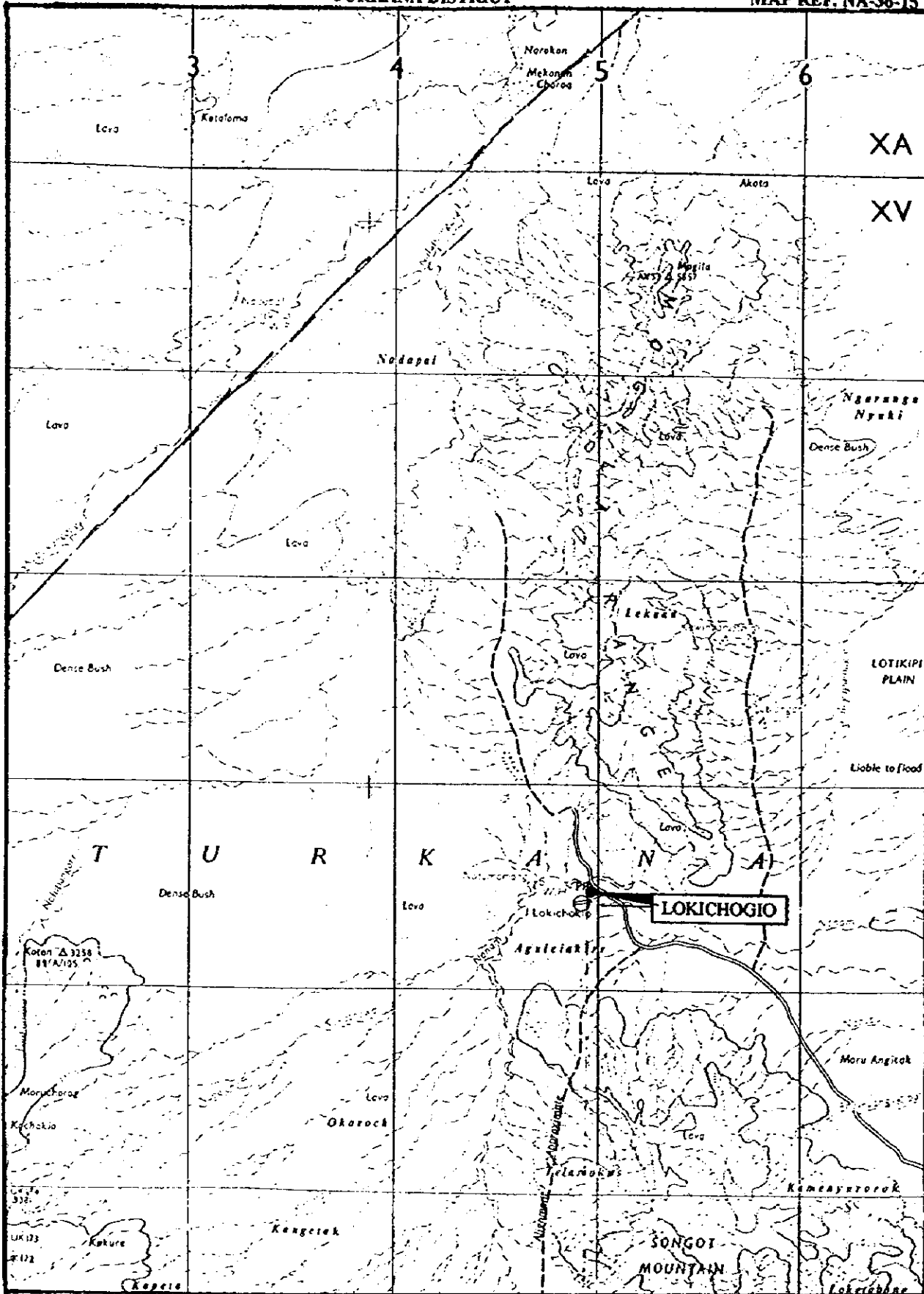
TURKANA DISTRICT

MAP REF. NA-36-12



TURKANA DISTRICT

MAP REF. NA-36-15



General

Name of Rural water Supply: Namadak Location / District: Turkana
 Organisation / Water Undertaker: MOWR/Community Map Ref _____
 Drainage Sub Basin _____ Co- Ords. X: _____ Y: _____

Construction Details

Year of Construction Phase I: 1988 Phase II: 1995 Phase III _____
 Constructed By: MOWR/Contractor Funded By: World Bank
 Total Construction Cost Ksh.3.5 million
 Year Operation Started: 1990

Existing Facilities

Water source: Nawat-Ekorot Borehole Intake Facilities: B/hole
 Raw Water Transmission Pumping
 Treatment Facilities None

Chemicals DosedNone**Master Meter Details**None installed**Distribution Mains**

Diameter	75mm	50mm	50mm		
Length	5km	4km	1km		
Materials	uPVC	uPVC	G.I.		

Service Reservoirs

1 No.	100m ³ Masonary tank, 1 No. 10m ³ ferrocement tank
-------	--

Pump Details

On rising main 1 No. Lister engine/generator powered grundfos
 submersible pump, Q=4 m³/hr.; H=70m

Customer Details**Households Served**

Members	Other H.H's	Total
340		340

Customers Metered

No _____ Metered _____ Unmetered 340

Operation & Maintenance**Water Production**

	Production	H.H Served
1993	11520m ³ /d	300
1994	11520m ³ /d	312
1995	10370m ³ /d	320
1996	9300m ³ /d	340
1997		

Service area 0.3 km²

Water Consumption

Domestic	Institutional	Irrigation	Others	Total
80%	15%	2%	3%	100%

Problems / Future Expansion / Remarks**Problems:**

1. Unqualified community operators/ managers

2. Vandalism

3. Insufficient funds and transport for operation and maintenance

4. Chlorine treatment urgently required!

Future borehole development is proposed to improve supply

Prepared by POM

Date 5/3/98

General

Name of Rural water Supply: Lokori Location / District: Turkana
 Organisation / Water Undertaker: Community / MOWR Map Ref _____
 Drainage Sub Basin _____ Co- Ords. X: _____ Y: _____

Construction Details

Year of Construction Phase I: 1978 - 1981 Phase II: 1984-87 Phase III: 1994-95
 Constructed By: MOWR + Self Help Funded By: GOK, RDF, World Bank
 Total Construction Cost: Kshs. 4.6 million
 Year Operation Started: 1981

Existing Facilities

Water source: Borehole on Kerio River Bank Intake Facilities: Submersible Pump
 Raw Water Transmission: Pumping - 75mm dia. uPVC/GI for 700m - 80mH
 Treatment Facilities: Only disinfection using chlorine

Chemicals Dosed: Chlorine

Master Meter Details: 1 No - in good condition

Distribution Mains

Diameter	75				
Length	4.2 km				
Materials	GMS, uPVC				

Service Reservoirs: 1 No 100m³ + 1 No. steel tank of 20m³

Pump Details: 15m³/hr @ 80m head

Customer Details

Households Served

Members	Other H.H's	Total
120	580	700

Customers Metered

Yes _____ Metered _____ Unmetered _____

Operation & Maintenance

Water Production

	Production	H.H Served
1993	26280m ³	
1994	26280m ³	
1995	26280m ³	
1996	12,000m ³	700
1997		

Water Consumption

Domestic	Institutional	Irrigation	Others	Total
80%	20%			100%

Problems / Future Expansion / Remarks

1. Lack of communication system + transportation
2. Delays in payments of bills
3. Production lower than demand
4. Future plan - 30m³/hr to serve 6500 by 2005
5. Require staff housing and rehabilitation of pump house

General

Name of Rural water Supply: Kainuk Location / District: Turkana
 Organisation / Water Undertaker: MOWR Map Ref: _____
 Drainage Sub Basin _____ Co- Ords. X: _____ Y: _____

Construction Details

Year of Construction Phase I: 1969 - 1990 Phase II: 1994 - 96 Phase III: _____
 Constructed By: MOWR Funded By: Rural Development Fund and World Bank
 Total Construction Cost: 1.7 Million
 Year Operation Started: 1990

Existing Facilities

Water source: Shallow Well on Wewei river Intake Facilities: Pumping abstraction
 Raw Water Transmission: Pumping - 1.0km of 50mm dia. - Southern Cross Pump-50m head, 12.8Hp, 4m suction
 Treatment Facilities: Only chlorination

Chemicals Dosed

Chlorine

Master Meter Details

No**Distribution Mains**

Diameter	80mm	50mm	25mm	18mm	
Length					
Materials	<u>4.7 Km of uPVC and GI</u>				

Service Reservoirs

1 No. ferrocement - 23m³, elevated steel tonne - 50m³

Pump Details

8m³/hr @ 50m head**Customer Details**

Households Served

Members	Other H.H's	Total
<u>360</u>	<u>1460</u>	<u>1820</u>

Customers Metered

Yes _____ Metered _____ No _____ Unmetered Yes _____

Operation & Maintenance

Water Production

	Production	H.H Served
<u>1993</u>		
<u>1994</u>		
<u>1995</u>		
<u>1996</u>	<u>26,280</u>	<u>1,820</u>
<u>1997</u>		

Water Consumption

Domestic	Institutional	Irrigation	Others	Total
<u>85%</u>	<u>10%</u>		<u>5%</u>	<u>100%</u>

Problems / Future Expansion / Remarks

- Lack of communication
- Lack of accommodation for the personnel
- Delays in payment from consumers
- Expansion of the water supply required with extra boreholes to serve 20,000 persons

General

Name of Rural water Supply: Lokichogio W/S Location / District: Turkana
 Organisation / Water Undertaker: Community/NGOs Map Ref _____
 Drainage Sub Basin _____ Co- Ords. _____

Construction Details

Year of Construction Phase I: 1978-1979 Phase II: _____ Phase III _____
 Constructed By: MOWR Funded By: GOK/AIC/CRC/CANADIAN HC
 Total Construction Cost Ksh. 1,600,000
 Year Operation Started: 1979

Existing Facilities

Water source: Shallow wells near Ewaso Nyiro River Intake Facilities: Pumping/hand pumps
 Raw Water Transmission Pumping: submersible pump run by generator - main, 50mm dia. GI pipe 2.08km long, Head 40m
 Treatment Facilities Chlorination done but irregularly and unquantified.

Chemicals Dosed

Chlorine

Master Meter Details

None

Distribution Mains

Diameter	63mm	40mm			
Length	500m	N/A			
Materials	uPVC/GI	uPVC/GI			

Service Reservoirs

1 No. elevated tank 25m³

Pump Details

Submersible pump powered by a diesel generator.

Customer Details

Households Served

Members	Other H.H's	Total
5400 people		5400 people

Customers Metered

No Metered Nil Unmetered All consumers

Operation & Maintenance

Water Production

	Production	H.H Served
1993		
1994		
1995		
1996		
1997		

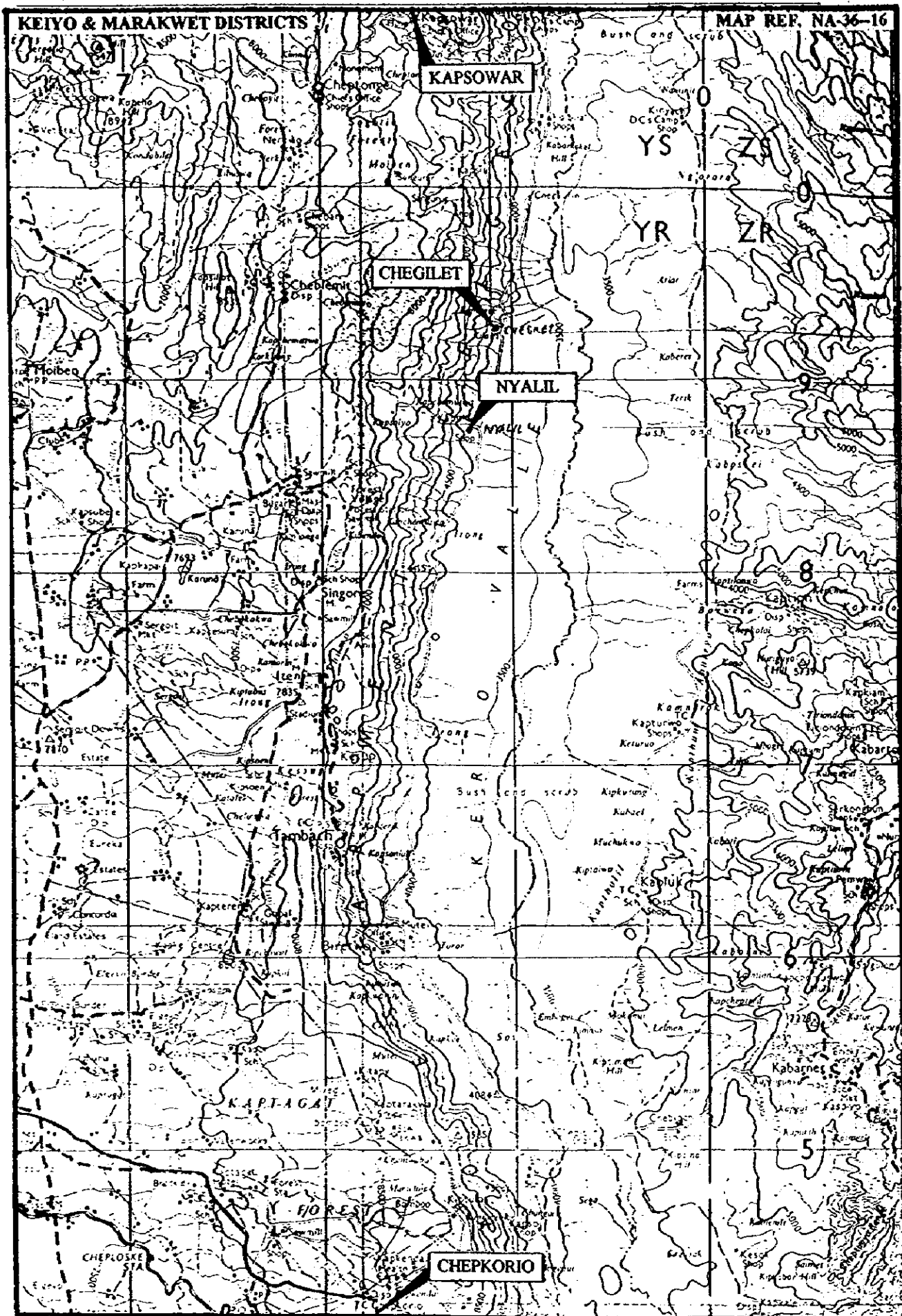
Area served 6 km²
Data not available

Water Consumption

Domestic	Institutional	Irrigation	Others	Total
50%	50%	-		100%

Problems / Future Expansion / Remarks

1. Communication problem because of long distance between Lokichogio and district headquarters.
2. Staff quarters required.
3. Lack of trained operators
4. Additional boreholes required.
5. Inadequate staff for operation and maintenance.
6. Future expansion entails installation of 1 No. standby pump.



Aftercare Study on
the National Water Master Plan

CHEGILET (1/1)

Rural Water Supply
System Survey

General

Name of Rural water Supply: Chegilet Location / District: Keiyo
 Organisation / Water Undertaker: Community Map Ref _____
 Drainage Sub Basin _____ Co- Ords. X: _____ Y: _____

Construction Details

Year of Construction Phase I: 1982-83 Phase II: 1984-86 Phase III _____
 Constructed By: Self Help Funded By: CARE (Kenya), ASAL, GOK
 Total Construction Cost Kshs. 580,000/-
 Year Operation Started: 1986

Existing Facilities

Water source: Spring - Kibome Sp. Intake Facilities: Weir
 Raw Water Transmission Gravity
 Treatment Facilities None

Chemicals Dosed None

Master Meter Details None

Distribution Mains

	400mm	25mm			
Diameter	400mm	25mm			
Length	2350m	3700m			
Materials	GMS	GMS			

Service Reservoirs Masonry 20m³

Pump Details N/A

Customer Details

Households Served

Members	Other H.H's	Total
500		500

Customers Metered

No _____ Metered _____ 0 Unmetered _____ 500

Operation & Maintenance

Water Production

No records

	Production	H.H Served	
1993			
1994			
1995			
1996	21,900	500	500 h'holds @ 6 members per h'hold @ 20 l/Cap/d
1997			

Water Consumption

	Domestic	Institutional	Irrigation	Others	Total

Problems / Future Expansion / Remarks

1. Lack of funds to procure maintenance materials
2. No operator assigned for operation and maintenance
3. New source need to be identified and connected to the network to augment the supply
4. The 1997 floods have washed away considerable section of the network and no funds available to repair the damage

General

Name of Rural water Supply: Nyalil Location / District: Keiyo
 Organisation / Water Undertaker: Community Map Ref _____
 Drainage Sub Basin _____ Co- Ords. X: _____ Y: _____

Construction Details

Year of Construction Phase I: 1986 - 87 Phase II: 1992 - 96 Phase III _____
 Constructed By: _____ Funded By: ASAL
 Total Construction Cost Kshs. 2.3 million
 Year Operation Started: 1996

Existing Facilities

Water source: Nyalil Spring Intake Facilities: Weir
 Raw Water Transmission Gravity
 Treatment Facilities None

Chemicals Dosed None

Master Meter Details None

Distribution Mains

Diameter	50mm	40mm	25mm		
Length		9.0km			
Materials		GMS			

Service Reservoirs

Masonry	45m ³ + 2 No. 25m ³ : Total = 90m ³		
---------	--	--	--

Pump Details None

Customer Details

Households Served

Members	Other H.H's	Total
500		500

Customers Metered

No Metered Unmetered

Operation & Maintenance

Water Production

No records

	Production	H.H Served	
1993			
1994			
1995			
1996	21,900	500	500 h.holds @ 6 members per h.hold @ 20 l/Cap/d = 60m ³ /d
1997			

Water Consumption

Domestic	Institutional	Irrigation	Others	Total

Problems / Future Expansion / Remarks

1. Gravity and distribution line across gullies need repairs
2. Extension of supply required
3. Lack of funds cited
4. No local scheme attendant
5. Intake weir leaning from the base
6. New spring identified as an alternative source, but requires yield tests to be carried out

Aftercare Study on
the National Water Master Plan

CHEPKORIO (1/1)

Rural Water Supply
System Survey

General

Name of Rural water Supply: Chepkorio Location / District: Keiyo
 Organisation / Water Undertaker: Ministry of Water Resources Map Ref _____
 Drainage Sub Basin _____ Co- Ords. X: _____ Y: _____

Construction Details

Year of Construction Phase I: 1978 - 1981 Phase II: 1992 - 96 Phase III _____
 Constructed By: _____ Funded By: ASAL
 Total Construction Cost _____
 Year Operation Started: 1982

Existing Facilities

Water source: Kipkarren River Intake Facilities: Weir
 Raw Water Transmission Pumping - 2Nos pumps @ 10m³/hr @ 15m head
 Treatment Facilities Full treatment - Capacity of 300m³/d initially increased to 500m³/d.
Not fully treated at present. Only chlorine being dosed.

Chemicals Dosed

Master Meter Details

Distribution Mains

Chlorine

1 No. existing and in good condition

Diameter	80mm	50mm			
Length	10km				
Materials	uPVC				

Service Reservoirs

Pump Details

11 No. storage tanks with a total capacity of 384m³

2 No. low lift - 10m³/hr x 15mH. 2 No. high lift 16m³/hr x 80mH

1 No. booster - 16m³/hr x 80mH. Average pumping time = 10 hrs

Customer Details

Households Served

Customers Metered

Members	Other H.H's	Total
	1300	1300

Yes _____ Metered _____ 1300 _____ Unmetered _____

Operation & Maintenance

Water Production

No records

Water Consumption

	Production	H.H Served			
1993	11424m ³	375			
1994	10973m ³	372			
1995	11685m ³	389			
1996	11550m ³	405			
1997					
	Domestic	Institutional	Irrigation	Others	Total
	9,818m ³	1,386m ³		347m ³	11,550m ³

Problems / Future Expansion / Remarks

1. Supply inadequate to serve the demand
2. Frequent power breakdowns detrimental to consistent supply
3. Inadequate operating staff

General

Name of Rural water Supply: Kapsowar W/S Location / District: Kapsowar/Marakwet
 Organisation / Water Undertaker: Kapsowar AIC Mission community. Map Ref _____
 Drainage Sub Basin _____ Co- Ords. X: _____ Y: _____

Construction Details

Year of Construction Phase I: 1880-81 Phase II: _____ Phase III _____
 Constructed By: MOWR Funded By: MOWR/Kapsowar AIC Mission
 Total Construction Cost Ksh. 4000,000
 Year Operation Started: 1992

Existing Facilities

Water source: Emaston river in Kipkunar Forest Intake Facilities: Weir
 Raw Water Transmission Gravity - 100mm dia. pipe 5.5km long, abstracting 324m³/d
 Treatment Facilities Only Chlorination is being carried out sometimes.

Chemicals Dosed

No other treatment

Master Meter Details

No master meter

Distribution Mains

Diameter	80	50	40		
Length	2km	25km	2.7km		
Materials	GI	UPVC	GI		

Service Reservoirs

1 No masonry tank of capacity 100m³

Pump Details

None

Customer Details

Households Served

Members	Other H.H's	Total
	5,000	5,000

people

Customers Metered

No Metered _____ Unmetered All consumers

Operation & Maintenance

Water Production

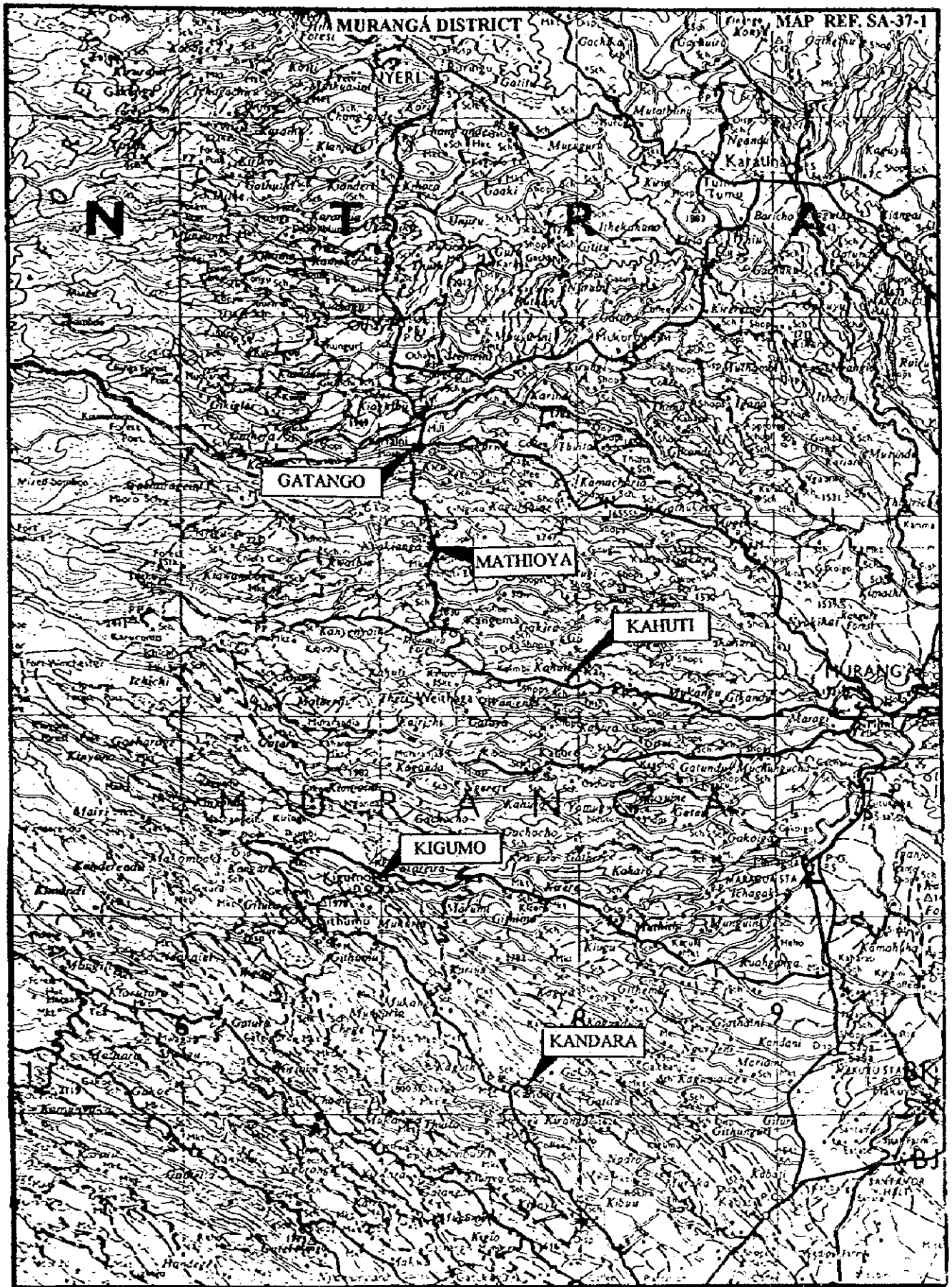
	Production	H.H Served
1993	250m ³ /d	Hospital, school and community
1994	280m ³ /d	
1995	600m ³ /d	
1996	1000m ³ /d	Area serve
1997	1600m ³ /d	

Water Consumption

Domestic	Institutional	Irrigation	Others	Total
26%	63%		11%	100%

Problems / Future Expansion / Remarks

1. Water from current source is polluted (240coliforms/100ml). A new source is required to be developed with provisions of full treatment.
2. Water supply is insufficient to cater for demand.



General

Name of Rural water Supply: Gatango Location / District: Maragua
 Organisation / Water Undertaker: MOWR Map Ref: _____
 Drainage Sub Basin: _____ Co- Ords. X: _____ Y: _____

Construction Details

Year of Construction Phase I: 1970-72 Phase II: _____ Phase III: _____
 Constructed By: Contractor Funded By: Self help, MOWR
 Total Construction Cost: 30,000,000 distribution system
 Year Operation Started: 1972

Existing Facilities

Water source: Pipeline offtake - North Mathioya River Intake Facilities: Offtake
 Raw Water Transmission: Pumping and gravity
 Treatment Facilities: North Mathioya - untreated

Chemicals Dosed: None at at Muranga

Master Meter Details: None

Distribution Mains

Diameter					
Length					
Materials					

Service Reservoirs: 5No. 50m³ + 9No m3 + 6No 5m3 all masonry

Pump Details: _____

Customer Details

Households Served

Members	Other H.H's	Total
1529		1529

Customers Metered: Yes _____ Metered 335 Unmetered 1194

Operation & Maintenance

Water Production

	Production	H.H Served
1993	2,640	1500
1994	2,640	1500
1995		1510
1996		1529
1997		

Service area 96km²

Water Consumption

Domestic	Institutional	Irrigation	Others	Total
75%	20%		5%	100%

Problems / Future Expansion / Remarks

- 1) Treatment of North Mathioya River supply required
- 2) Another parallel gravity main started from river to distribution tank started in 1984 but not completed

Aftercare Study on
the National Water Master Plan

MATHIOYA W/S (1/1)

Rural Water Supply
System Survey

General

Name of Rural water Supply: Mathioya W/S Location / District: Maragua
 Organisation / Water Undertaker: MOWR Map Ref _____
 Drainage Sub Basin _____ Co- Ords. X: _____ Y: _____

Construction Details

Year of Construction Phase I: 1980-84 Phase II: _____ Phase III _____
 Constructed By: WRD (INT) LTD Funded By: MOWR stage 1, DAFFODIL stage 2
 Total Construction Cost Ksh. 53000000
 Year Operation Started: 1984

Existing Facilities

Water source: River Hembe Intake Facilities: Weir
 Raw Water Transmission Gravity 355mm and UPVC pipe 250m long
 Treatment Facilities Only chlorination

Chemicals Dosed

Tropical Chlorinated lime

Master Meter Details

1 No but in poor condition

Distribution Mains

Diameter	350-75mm				
Length	174kmtotal				
Materials	UPVC/DIGS				

Service Reservoirs

8 No reinforced concrete tanks 339m³ each

Pump Details

Customer Details

Households Served

Members	Other H.H's	Total
1,250		1,250

Customers Metered

No _____ Metered _____ Unmetered # _____

Operation & Maintenance

Water Production

	Production	H.H Served
1993	6000 m ³ /d	3,390
1994	6000 m ³ /d	3,890
1995	6000 m ³ /d	4,390
1996	6000 m ³ /d	4,890
1997		

Service area 143km²

Water Consumption

Domestic	Institutional	Irrigation	Others	Total
45%	55%			100%

Problems / Future Expansion / Remarks

- 1) There are plans for full treatment works and augmentation
- 2) There is wastage of water due to flat rate connections
- 3) Lack of funds for O&M and for expansion

General

Name of Rural water Supply: Kigumo Location / District: _____
 Organisation / Water Undertaker: MOWR Map Ref _____
 Drainage Sub Basin _____ Co- Ords. X: _____ Y: _____

Construction Details

Year of Construction Phase I: 1975-77 Phase II: 1987 Phase III _____
 Constructed By: Contractor & self help Funded By: Self help, MOWR
 Total Construction Cost 445,000,000
 Year Operation Started: 1987 - Kigumo is partly a very large scheme by the same name

Existing Facilities

Water source: River Irabi Intake Facilities: Weir
 Raw Water Transmission Gravity 315mm and UPVC pipe = 5km long
 Treatment Facilities Only plan sedimentation done

Chemicals Dosed

Chlorine

Master Meter Details

only V notch

Distribution Mains

Diameter	<u>315-80mm</u>				
Length	<u>180km totl</u>				
Materials	<u>UPVC</u>				

Service Reservoirs

<u>Total storage capacity 50m3</u>			
------------------------------------	--	--	--

Pump Details

Customer Details

Households Served

Members	Other H.H's	Total
<u>15,000</u>		<u>15,000</u>

Customers Metered

Yes / No Metered few Unmetered majority

Operation & Maintenance

Water Production

	Production	H.H Served
<u>1993</u>	<u>8,640</u>	<u>100,000</u>
<u>1994</u>	<u>8,640</u>	<u>120,000</u>
<u>1995</u>	<u>8,640</u>	<u>145,000</u>
<u>1996</u>	<u>8,640</u>	<u>150,000</u>
<u>1997</u>		

Service area 725km2

Water Consumption

Domestic	Institutional	Irrigation	Others	Total
<u>98%</u>	<u>15%</u>		<u>5%</u>	<u>100%</u>

Problems / Future Expansion / Remarks

- 1) The scheme may be augmented in the near future to serve a population of 300,000.
- 2) Currently Chlorination is at least required.

General

Name of Rural water Supply: Kandara Location / District: Muranga
 Organisation / Water Undertaker: NWCPC Map Ref _____
 Drainage Sub Basin _____ Co- Ords. X: _____ Y: _____

Construction Details

Year of Construction Phase I: 1975-1980 Phase II: _____ Phase III _____
 Constructed By: Self help/Contractors Funded By: Local community and GOK
 Total Construction Cost _____
 Year Operation Started: 1980

Existing Facilities

Water source: Thika river Intake Facilities: Concret weir
 Raw Water Transmission: Gravity
 Treatment Facilities: None

Chemicals Dosed: None

Master Meter Details: No master meter

Distribution Mains

Diameter	300-80mm				
Length	72km				
Materials	UPVC/GI				

Service Reservoirs

45m ³ - 1No	90m ³ - 4No	150m ³ - 1No	225m ³ - 4	250m ³ - 1No	450m ³ - 2No
------------------------	------------------------	-------------------------	-----------------------	-------------------------	-------------------------

Pump Details

Customer Details

Households Served

Members	Other H.H's	Total
		15,300

Customers Metered

Yes / No _____ Metered 300 Unmetered 11,000

Operation & Maintenance

Water Production

	Production	H.H Served
1993		
1994		
1995	14,640 m ³ /d	15,300
1996		
1997		

Water Consumption

Domestic	Institutional	Irrigation	Others	Total
75%	25%			100%

Problems / Future Expansion / Remarks

The existing scheme was constructed in stages between mid 1970 and 1980, mainly on self-help basis by the local community, and covers an area of 426km². The existing scheme is managed by NWCPC and is not able to meet the demand in the area due to various constraints. The constraints are lack of operation and maintenance funds; facilities were constructed to meet the 1982 water demand of 10,866m³/day whereas the present demand is 30,972m³/day, water wastage due to taps left running all the time as majority of consumers are on flat rate. Preliminary desing for rehabilitation of the existing scheme and expansion including full conventional treatment has been carried out by a firm of Consulting Engineers. In 1995, a customer survey indicated that there are 15,300 connections in the system and the production is 14,640m³/d. The scheme manager's records indicate that there are approximately 7,000 customers. Approximately 60% of the consumers get regular supply

General

Name of Rural water Supply: Kahuti Location / District: Muranga
 Organisation / Water Undertaker: NWCPC Map Ref _____
 Drainage Sub Basin _____ Co- Ords. X: _____ Y: _____

Construction Details

Year of Construction Phase I: 1950's Phase II: 1972 Phase III 1977
 Constructed By: Self help group/Contractors Funded By: GOK and local community
 Total Construction Cost _____
 Year Operation Started: 1950

Existing Facilities

Water source: South Mathiyoia and Maragua rivers Intake Facilities: Concrete weir
Phase I: South Mathiyoia River
Phase II: South Mathiyoia River
Phase III: Maragua River

Raw Water Transmission

Treatment Facilities Full conventional treatment for phase ii and Kangema urban coagulation, sedimentation, filtration and disinfection by chlorine

Chemicals Dosed

No treatment facilities for phase III Soda Ash, Alum and Chlorine

Master Meter Details

1 No. 300mm Dia type Kent for phase II Scheme

Distribution Mains

Diameter	300mm	200-100mm	80-25mm		
Length	0.25km	26.4km	213km		
Materials	UPVC	UPVC/GI	UPVC/GI		

Service Reservoirs

250m³ - 1No 200m³ - 1No 100m³ - 7No 50m³ - 23 250m³ - 22No

Pump Details

High level zone - 2 No capacity 17.53m³/hr, head 133.5m make WKL 40/10

High level zone-2 No capacity 17.5m³/hr, head 197m make MOVI 40/80

Customer Details**Households Served**

Members	Other H.H's	Total
		11,800

Customers Metered

Yes / No Metered 750 Unmetered 11,050

Operation & Maintenance**Water Production**

	Production	H.H Served
1993		
1994		
1995	12,910 m ³ /d	11,800
1996		
1997		

Service area 143km²

Water Consumption

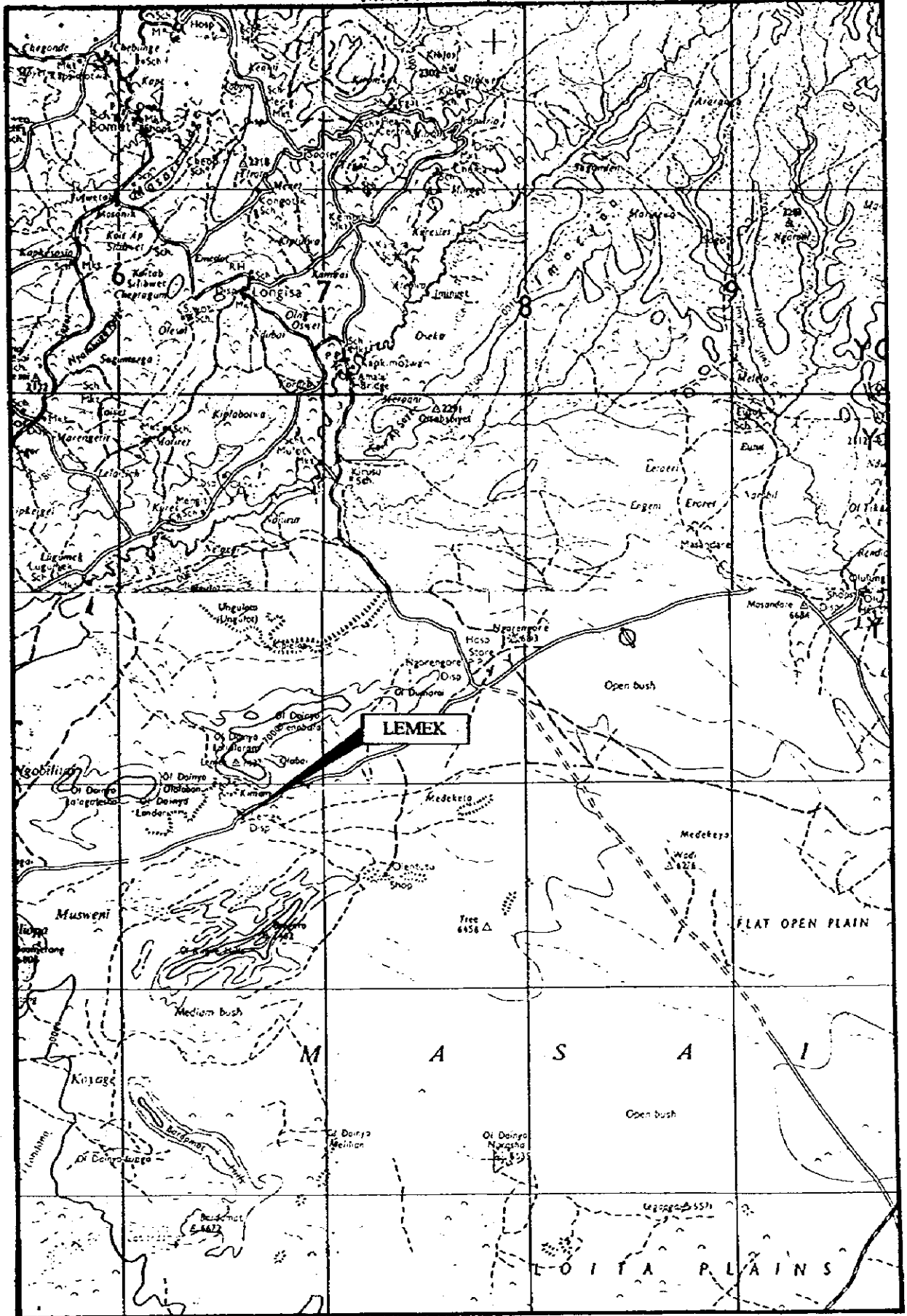
Domestic	Institutional	Irrigation	Others	Total
75%	25%			100%

Problems / Future Expansion / Remarks

1. The existing Kahuti water supply scheme was constructed between 1950 and 1977 in various phases, and comprises of three independent phase viz. Phase I, Phase II, Phase III and Kangema Urban. The schemes have surpassed their design horizons and are not able to meet the demand of the growing rural population. Lack of operation and maintenance funds has resulted in continued lowering of standards of service in the scheme. In 1995, a customer survey indicated that there are 11,800 customers and the production is 12,910m³/d. However, not all customers get water. Estimated number of customers who get water regularly is about 6,500. Most of the consumers are on flat rate and thus not careful on water usage and wastage is prevalent. Preliminary design for rehabilitation and augmentation of the existing scheme including bulk and individual metering has been carried out by a firm of Consulting Engineers

NAROK DISTRICT

MAP REF. SA-36-8





Aftercare Study on
the National Water Master Plan

LEMEK W/S (1/1)

Rural Water Supply
System Survey

General

Name of Rural water Supply: Lemek W/S Location / District: Narok
 Organisation / Water Undertake _____ Map Ref 5A - 36-B
 Drainage Sub Basin _____ Co- Ords. X: 35° 23' Y: S01° 06'

Construction Details

Year of Construction Phase I: 1973-74 Phase II: _____ Phase III _____
 Constructed By: MOWR Funded By: MOWR
 Total Construction Cost _____
 Year Operation Started: 1972

Existing Facilities

Water source: Lemek borehole Intake Facilities: B/Hole
 Raw Water Transmission Pumping mains varying from 75mm to 25mm
 Treatment Facilities None

Chemicals Dosed None Testing done once a year)

Master Meter Details None

Distribution Mains

	63mm	40mm	32mm	25mm
Diameter	63mm	40mm	32mm	25mm
Length (km)	3	2	0.5	0.5
Materials	UPVC	G.I.	G.I.	G.I.

Service Reservoirs 1 No. masonry tank of capacity 45m³

Pump Details Mono pump 640, prime mover 13HP, Q=9m³/hr, H=120m

Customer Details

Households Served

Members	Other H.H's	Total
600		600

Customers Metered

yes _____ Metered 600 Unmetered _____

Operation & Maintenance

Water Production

	Production	H.H Served
1993		
1994		
1995		
1996		
1997	app. 100m ³ /d	600

Water Consumption

	Domestic	Institutional	Irrigation	Others	Total

Problems / Future Expansion / Remarks

1. Inadequate staff and funds to carry out operations and maintenance.
2. More storage facilities are required.
3. Extension of pump house to accommodate two new pumpsets is required.
4. Two new water kiosks require to be constructed.
5. Treatment facilities required, especially chlorination as an immediate measure

General

Name of Rural water Supply: Mulot W/S Location / District: Narok
 Organisation / Water Undertaker: MOWR Map Ref SA-36-8
 Drainage Sub Basin _____ Co- Ords. X: 35° 25' Y: S 00° 56'

Construction Details

Year of Construction Phase I: 1979-80 Phase II: 1981-85 Phase III _____
 Constructed By: MOWR & Self help Funded By: GOK
 Total Construction Cost _____
 Year Operation Started: 1980

Existing Facilities

Water source: Mara River Intake Facilities: Direct abstraction
 Raw Water Transmission 1 No. Loewe centrifugal pump, Q=30m³/hr, H=150m
 Treatment Facilities None

Chemicals Dosed NoneMaster Meter Details None**Distribution Mains**

Diameter	75mm	50mm	32mm	25mm	
Length	3 km	1.5 km	2 km	0.5 km	
Materials	uPVC/G.I.	uPVC/G.I.	uPVC/G.I.	uPVC/G.I.	

Service Reservoirs 2 No. masonry tanks, 45m³ and 90m³Pump Details Loewe centrifugal pump - Q=30m³/hr, H=150m**Customer Details**

Households Served

Members	Other H.H's	Total
1,000	1,500	2,500

Customers Metered

Yes Metered 2,500 Unmetered N/A**Operation & Maintenance**

Water Production

	Production	H.H Served
1993		
1994		
1995		
1996		
1997	300m ³ /d	

Water Consumption

Domestic	Institutional	Irrigation	Others	Total
50%	30%	-	20%	100%

Problems / Future Expansion / Remarks

- Regular breakdown of pumps
- Insufficient funds to purchase repair materials
- Inadequate staff for operation and maintenance
- Treatment facilities required, especially chlorination as an immediate measure.
- 1 No. standby pump required.
- Demand oustripping the supply, major augmentation required.

General

Name of Rural water Supply: Olokunga Location / District: Narok
 Organisation / Water Undertaker: Community Map Ref SA-36-4
 Drainage Sub Basin _____ Co- Ords. X: 35° 40' Y: S 01° 00'

Construction Details

Year of Construction Phase I: 1983-1985 Phase II: 1988 Phase III _____
 Constructed By: DDC Funded By: Self Help & World Bank
 Total Construction Cost Ks. 1,600,000
 Year Operation Started: 1985

Existing Facilities

Water source: Ewaso Nyiro River Intake Facilities: Direct abstraction
 Raw Water Transmission 2 No. pumps: Q= 27m³/hr pumping 4-6 hours/d twice a week, rising main 100mm dia.
G.I./UPVC 3.6 km long pipe
 Treatment Facilities None

Chemicals Dosed None
 Master Meter Details None

Distribution Mains

Diameter	100mm				
Length					
Materials					

Service Reservoirs _____
 Pump Details _____

6 No. masonry tanks 45m³ and 1 No. 90m³, total 360m³
2 No. pumps, 1 duty, 1 standby: Q= 27m³/hr pumping 4-6 hrs a day, twice a week

Customer Details

Households Served

Members	Other H.H's	Total
410	500	910

Customers Metered

No Metered Nil Unmetered 910

Operation & Maintenance

Water Production

	Production	H.H Served
1993		
1994		
1995		
1996		
1997	110m ³ /d	

Area served 16 km²

Water Consumption

Domestic	Institutional	Irrigation	Others	Total
70%	30%	-		100%

Problems / Future Expansion / Remarks

1. Financial constraints.
2. Lack of technical know-how to operate and maintain the scheme.
3. Frequent breakdown of pumps.
4. Treatment facilities required, especially chlorination as an immediate measure.
5. Inadequate staff for operation and maintenance.

General

Name of Rural water Supply: Olopito W/S Location / District: Narok
 Organisation / Water Undertaker: _____ Map Ref _____
 Drainage Sub Basin _____ Co- Ords. X: _____ Y: _____

Construction Details

Year of Construction Phase I: 1991 Phase II: _____ Phase III _____
 Constructed By: Salvation Army Funded By: Salvation Army
 Total Construction Cost _____
 Year Operation Started: 1991

Existing Facilities

Water source: Borehole - pumping Intake Facilities: _____
 Raw Water Transmission: Pumping
 Treatment Facilities: None

Chemicals Dosed: None

Master Meter Details: None

Distribution Mains

Diameter	25mm				
Length	500m				
Materials	GI				

Service Reservoirs: 1 No. elevated tank of 9 m³

Pump Details: Submersible pump

Customer Details

Households Served

Members	Other H.H's	Total
93	-	93

Customers Metered

Yes / No _____ Metered _____ Unmetered _____

Operation & Maintenance

Water Production

	Production	H.H Served
1993		
1994		
1995		
1996		
1997	3315 m ³ /d	

Water Consumption

	Domestic	Institutional	Irrigation	Others	Total
	75%	25%	-	-	100%

Problems / Future Expansion / Remarks

- 1) Financial constraints in the operation and maintenance
- 2) At present only one communal water point. Need more to serve the community widely
- 3) Disinfection required

Aftercare Study on
the National Water Master Plan

IIMASHARIAN W/S (1/1)

Rural Water Supply
System Survey

General

Name of Rural water Supply: Iimasharian W/S Location / District: Narok
 Organisation / Water Undertaker: MOWR Map Ref _____
 Drainage Sub Basin _____ Co- Ords. _____

Construction Details

Year of Construction Phase I: 1980-86 Phase II: _____ Phase III _____
 Constructed By: Ranch Water Team Funded By: MOWR
 Total Construction Cost _____
 Year Operation Started: 1996

Existing Facilities

Water source: Spring Intake Facilities: Weir
 Raw Water Transmission: Pumping: Caprari - Q=20m³/hr, H=150m
 Treatment Facilities: None

Chemicals Dosed

None

Master Meter Details

Distribution Mains

Installed, in good working condition

Diameter	100mm	75mm	50mm	35mm	
Length	3.7km	1.5km	1.8km	1km	
Materials	uPVC/GI	uPVC	uPVC	uPVC	

Service Reservoirs

2 No. masonry tanks: 225m³ and 45m³, total 270m³

Pump Details

Raw water pumps: Q=20m³/hr, H=150m

Customer Details

Households Served

Members	Other H.H's	Total
1,600	200	1,800

Customers Metered

No Metered Nil Unmetered All consumers

Operation & Maintenance

Water Production

	Production	H.H Served
1993		
1994		
1995		
1996		
1997	App.216m ³ /d	

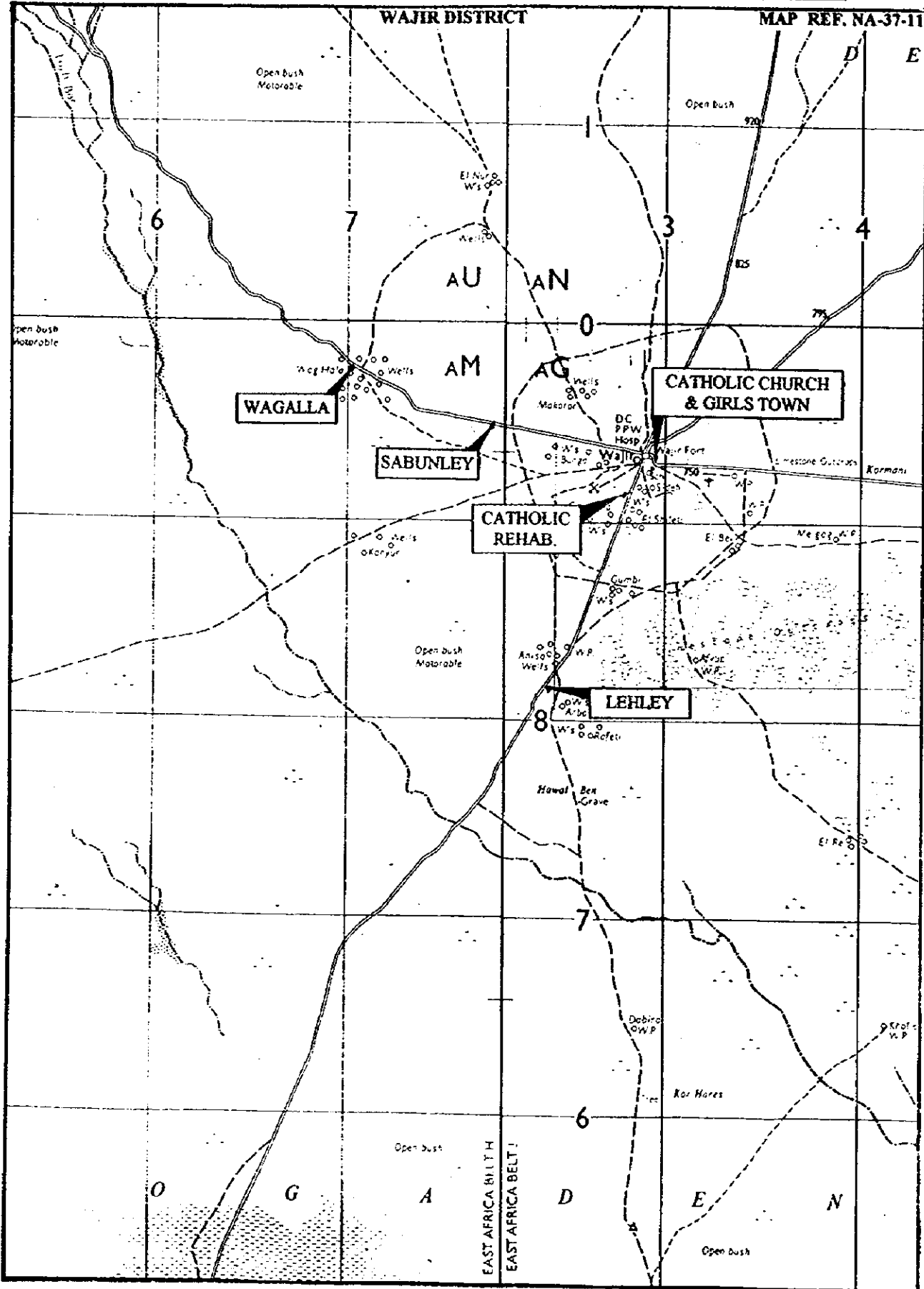
Area served 9 km²

Water Consumption

Domestic	Institutional	Irrigation	Others	Total
60%	20%		20%	100%

Problems / Future Expansion / Remarks

1. Financial constraints. Cost sharing recommended
2. Electricity supply required for more reliable and continuous running of pumps.
3. Frequent breakdown of pumps.
4. Treatment facilities required, especially chlorination as an immediate measure.
5. Inadequate staff for operation and maintenance.
6. Future expansion entails installation of 1 No. standby pump.



General

Name of Rural water Supply: Wagalla Location / District: Wajir

Organisation / Water Undertaker: Local Community Map Ref _____

Drainage Sub Basin _____ Co- Ords. X: _____ Y: _____

Construction Details

Year of Construction Phase I: 1988 Phase II: _____ Phase III _____

Constructed By: Self Help Funded By: Local Community

Total Construction Cost _____

Year Operation Started: 1988

Existing Facilities

Water source: Hand Dug Shallow Well Intake Facilities: N/A

Raw Water Transmission: Hand Pump

Treatment Facilities: No Treatment

Chemicals Dosed: None

Master Meter Details: None

Distribution Mains

Diameter	Length	Materials

Service Reservoirs: _____

Pump Details: Hand Pump

Customer Details

Households Served

Members	Other H.H's	Total
		300

Customers Metered: No Metered _____ Unmetered _____

Operation & Maintenance

Water Production

Year	Production	H.H Served
1993		
1994		
1995		
1996		
1997	5m ³ /Day	

Water Consumption

Domestic	Institutional	Irrigation	Others	Total
60%	40%			100%

Problems / Future Expansion / Remarks

The Wagalla Community approximates 5 000 persons. However there are other individual shallow wells which are not protected and water from these wells is saline and contaminated. Supply from these wells is not treated at all and the local community does not boil water before drinking. Recently so many people have been dying daily after suffering from water borne diseases

General

Name of Rural water Supply: Sabunley Location / District: Wajir
 Organisation / Water Undertaker: Sabunley Boys Sec. School Map Ref: _____
 Drainage Sub Basin: _____ Co- Ords. X: _____ Y: _____

Construction Details

Year of Construction Phase I: 1978 Phase II: 1982 Phase III: 1989
 Constructed By: School Staff Funded By: Ministry of Water Resources
 Total Construction Cost: Kshs. 1,000,000
 Year Operation Started: 1978-1979

Existing Facilities

Water source: Shallow hand dug wells - 5No. Intake Facilities: _____
 Raw Water Transmission: Well No 1&2 abandoned, Well No 3 equipped with wind mill
 Treatment Facilities: Well No. 4 equipped with hand pump, well No. 5 equipped with submersible pump

Chemicals Dosed: Disinfection by chlorine

Master Meter Details: None

Distribution Mains

Diameter	40				
Length	220				
Materials	GMS				

Service Reservoirs: 1 No-6m³

--	--	--	--	--	--

Pump Details: _____

Customer Details

Households Served

Members	Other H.H's	Total
40	360	400

Customers Metered: No _____ Metered _____ Unmetered _____

Operation & Maintenance

Water Production

	Production	H.H Served
1993		
1994		
1995		
1996		
1997		

No records

Water Consumption

Domestic	Institutional	Irrigation	Others	Total
80%	20%			100%

Problems / Future Expansion / Remarks

Well No. 4 is not protected and it is most likely contaminated. Purchase of chlorine for disinfection is irregular due to lack of funds which result in water being consumed without been disinfected. Water borne diseases are very common in this area.

General

Name of Rural water Supply: Lehley Water Supply Location / District: Wajir
 Organisation / Water Undertaker: Community Map Ref NA-37-11
 Drainage Sub Basin _____ Co- Ords. X: 40° 00' Y: N 01° 37'

Construction Details

Year of Construction Phase I: 1995 Phase II: 1998 Phase III: 1992
 Constructed By: AIC+Community Funded By: World Vision - to instal solar panel, pump and pipework
 Total Construction Cost _____ to distribution tank
 Year Operation Started: 1995

Existing Facilities

Water source: Shallow well Intake Facilities: Well
 Raw Water Transmission: Plans to instal a solar powered pump. Equipment not installed yet
 Treatment Facilities: None

Chemicals Dosed

Chlorination planned

Master Meter Details

None

Distribution Mains

Diameter	<u>32-20mm</u>				
Length	<u>66m</u>				
Materials	<u>G.S.</u>				

Service Reservoirs

<u>1 No. elevated plastic tank capacity 6.5m³</u>			
--	--	--	--

Pump Details

Solar powered pump for both raw water and distribution planned but not installed yet

Customer Details

Households Served

Members	Other H.H's	Total
<u>210 persons</u>		<u>210 persons</u>

Customers Metered

No Metered _____ Unmetered All consumers

Operation & Maintenance

Water Production

	Production	H.H Served
<u>1993</u>		
<u>1994</u>		
<u>1995</u>		
<u>1996</u>		
<u>1997</u>		

Area served about 0.5 km²

Water Consumption

Domestic	Institutional	Irrigation	Others	Total
<u>90%</u>		<u>10%</u>		<u>100%</u>

Problems / Future Expansion / Remarks

World Vision International is to instal solar powered pumps. Currently a hand pump is used.

Most of this supply will be used by Lehley clinic for out-patients and staff.

General

Name of Rural water Supply: Catholic Mission supply Location / District: Wajir
Girls' Town

Organisation / Water Undertaker: Community Map Ref _____
Drainage Sub Basin _____ Co- Ords. X: _____ Y: _____

Construction Details

Year of Construction Phase I: 1970 Phase II: 1978 Phase III 1994
Constructed By: Catholic Mission Funded By: Catholic Mission/ British H. Comm.
Total Construction Cost Information Unavailable
Year Operation Started: 1970

Existing Facilities

Water source: 6 No. wells of Mission Intake Facilities: Well
Raw Water Transmission Pumping, 75mm dia. G.I. rising main 60m long.
Treatment Facilities Chlorination only

Chemicals Dosed Chlorine only

Master Meter Details None

Distribution Mains

Diameter	60mm-50mm				
Length	400m				
Materials	G.I.				

Service Reservoirs 1 No. 20m³ masonry and 1 No. 30m³ steel tank both elevated on masonry walls

Pump Details Raw water pumps -TORBOSSOM

Customer Details

Households Served

Members	Other H.H's	Total
100	300	400

Customers Metered No _____ Metered _____ Unmetered 400

Operation & Maintenance

Water Production

	Production	H.H Served
1993		
1994		
1995		
1996		
1997		

Water Consumption

Domestic	Institutional	Irrigation	Others	Total
7.5	92.5			100%

Problems / Future Expansion / Remarks

1. Water from wells turns turbid during rainy seasons.
- 2 Water has undesirably high nitrate content.
3. Electric pumps have to be replaced every 2 years
4. Wells generally dry up in dry weather
5. MSF Belgium is presently providing clean water technology to the mission

General

Name of Rural water Supply: Wajir Rehab. Centre w/s Location / District: Wajir
 Organisation / Water Undertaker: catholic Mission Map Ref NA-37-11
 Drainage Sub Basin: _____ Co- Ords. X: 40° 04' Y: N 01° 44'

Construction Details

Year of Construction Phase I: 1972-1973 Phase II: 1984-85 Phase III 1992
 Constructed By: Catholic Mission Funded By: Catholic Mission and Overseas Private Donors
 Total Construction Cost N/A
 Year Operation Started: 1972

Existing Facilities

Water source: 5 No. Shallow wells Intake Facilities: Well
 Raw Water Transmission 3 No. pumps: Q=16.6m³/hr H=16m through 32mm G.I. pipe about 200m long to elevated tank. 1 No. hand pump
 Treatment Facilities Water for households is chlorinated. 250grams of Tropical Chloride of Lime is used weekly
 Chemicals Dosed Chlorination
 Master Meter Details None
 Distribution Mains

Diameter	50mm-12mm				
Length	400m				
Materials	uPVC				

Service Reservoirs 2 No. fibreglass elevated tanks 10m³ each and 1 No. plastic tank 2.5m³
 Pump Details Raw water pumps only

Customer Details

Households Served

Members	Other H.H's	Total
530 persons		530 persons

Customers Metered No Metered _____ Unmetered All consumers

Operation & Maintenance

Water Production

	Production	H.H Served
1993		
1994		
1995		
1996		
1997		

Water Consumption

Domestic	Institutional	Irrigation	Others	Total
8%		92.50%		100%

Problems / Future Expansion / Remarks

Catholic Mission has three water supplies in three separate areas
All schemes are financed by catholic Mission. There are no private consumers under the supply

General

Name of Rural water Supply: Wajir Catholic Mission Location / District: Wajir
Church plot

Organisation / Water Undertaker: catholic Mission Map Ref NA-37-11
Drainage Sub Basin _____ Co- Ords. X: 40° 05' Y: N 01° 44'

Construction Details

Year of Construction Phase I: 1979-80 Phase II: 1980 Phase III 1997
Constructed By: Catholic Mission Funded By: Catholic Mission
Total Construction Cost N/A
Year Operation Started: 1980

Existing Facilities

Water source: 3 No. Shallow wells Intake Facilities: Well
Raw Water Transmission pumping: rising main 32mm G.I. pipe about 100m long to elevated tank
Treatment Facilities Chlorination only

Chemicals Dosed Tropical Chloride of Lime, 250grams/week

Master Meter Details None

Distribution Mains

Diameter	N/A				
Length	N/A				
Materials	N/A				

Service Reservoirs N/A

Pump Details Raw water pumps only

Customer Details

Households Served

Members	Other H.H's	Total
<u>About 70 persons</u>		<u>About 70 persons</u>

Customers Metered No Metered _____ Unmetered _____
All supply is free

Operation & Maintenance

Water Production

	Production	H.H Served
1993		
1994		
1995		
1996		
1997		

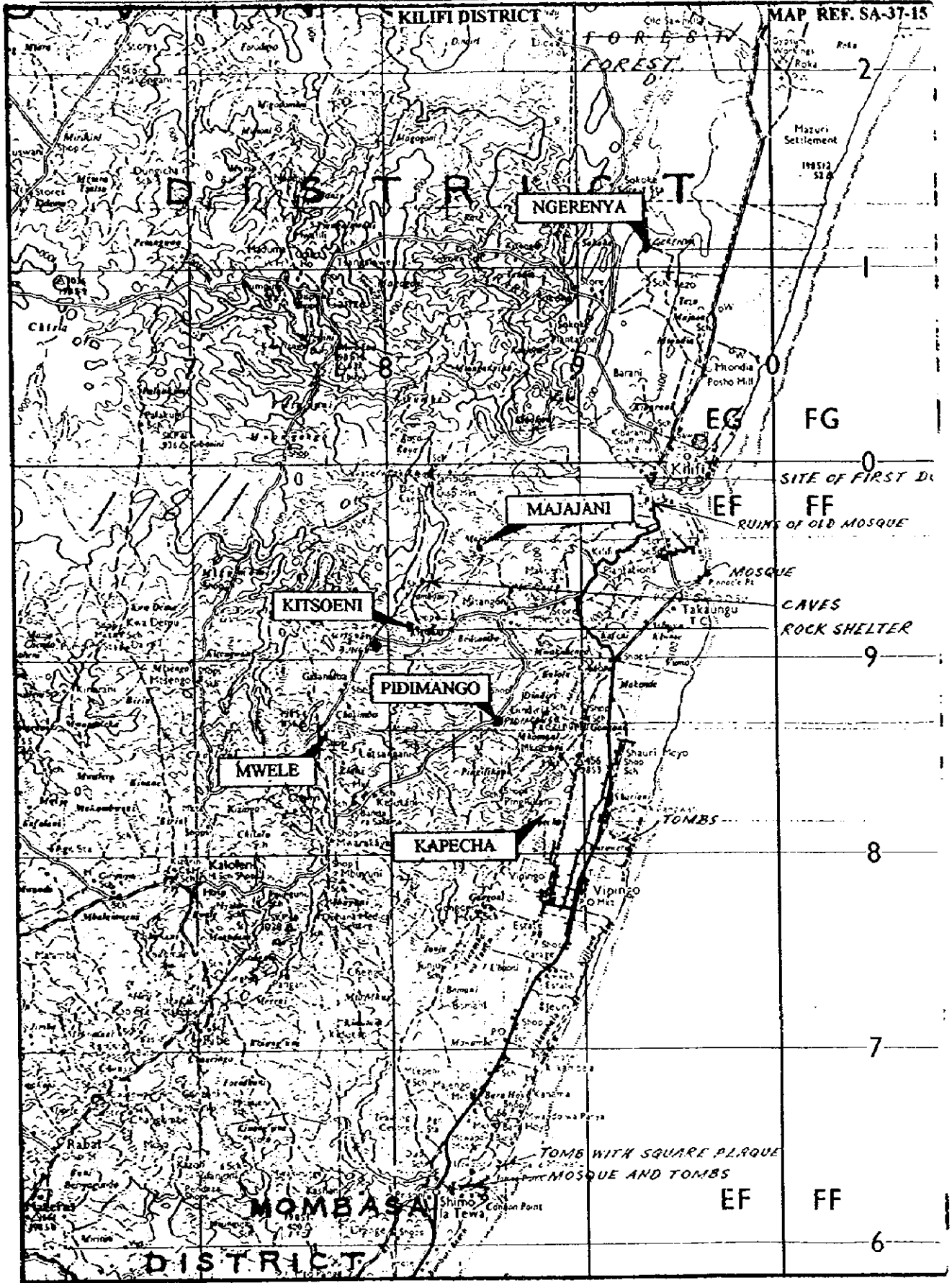
Water Consumption

Domestic	Institutional	Irrigation	Others	Total
<u>20%</u>	<u>80%</u>			<u>100%</u>

Problems / Future Expansion / Remarks

Catholic Mission has three water supplies in three separate areas

All schemes are financed by Catholic Mission. There are no private consumers under this supply



General

Name of Rural water Supply: Pidmango Location / District: Chonyi/Kilifi
 Organisation / Water Undertaker: NWCPC/Community Map Ref: _____
 Drainage Sub Basin: _____ Co- Ords. X: _____ Y: _____

Construction Details

Year of Construction: Phase I: _____ Phase II: 1994 Phase III: _____
 Constructed By: Self Help Funded By: GTZ (KWASAP)
 Total Construction Cost: Ksh.2.8 million
 Year Operation Started: 1991

Existing Facilities

Water source: Baricho-Mombasa pipeline Intake Facilities: off-take
 Raw Water Transmission: N/A
 Treatment Facilities: Baricho T/Works

Chemicals Dosed: Full treatment at Baricho Treatment Works

Master Meter Details: Installed, in good working condition

Distribution Mains

Diameter	100mm	80mm	75mm	50mm	
Length	Total length 15.7 km				
Materials	uPVC	uPVC	uPVC	uPVC	

Service Reservoirs: 3 No. ferrocement total capacity 150m³

Pump Details: N/A

Customer Details

Households Served:

Members	Other H.H's	Total

Information not available

Customers Metered: Yes _____ Metered _____ Unmetered _____
Information not available

Operation & Maintenance

	Production	H.H Served			
1993	11,928m ³	1124			
1994	12,608m ³	1168			
1995	11,940m ³	1215			
1996	15,481m ³	1264			
1997					
Water Consumption	Domestic	Institutional	Irrigation	Others	Total
	99%	1%			100%

Problems / Future Expansion / Remarks

Billing dispute with National Water Conservation and Pipeline Corporation resulting in high accumulated bills. The scheme is dependent on the operations of the Baricho Treatment works which serves Mombasa and Coastal Water Supply
Future expansion is desired but not yet identified by the community

General

Name of Rural water Supply: Kitsoeni Bungu Location / District: Chonyi/Kilifi
 Organisation / Water Undertaker: NWCPC/Community Map Ref: _____
 Drainage Sub Basin: _____ Co- Ords. X: _____ Y: _____

Construction Details

Year of Construction: Phase I: 1989 Phase II: 1994 Phase III: _____
 Constructed By: Self Help Funded By: GTZ (KIWASAP)
 Total Construction Cost: N/A
 Year Operation Started: 1995

Existing Facilities

Water source: Baricho-Mombasa pipeline Intake Facilities: off-take
 Raw Water Transmission: N/A
 Treatment Facilities: Baricho T/Works

Chemicals Dosed

Full treatment at Baricho Treatment Works

Master Meter Details

Installed, in good working condition

Distribution Mains

Diameter	90mm				
Length	4km				
Materials	uPVC				

Service Reservoirs

2 No. ferrocement total capacity 100m³

Pump Details

1 No. on rising main, Q=14.4m³/hr, H=90m

Customer Details

Households Served

Members	Other H.H's	Total	
433		433	1997

Customers Metered

Yes: _____ Metered: 433 Unmetered: Nil

Operation & Maintenance

Water Production

	Production	H.H Served
1993		
1994	5366m ³	370
1995	9547m ³	384
1996	9470m ³	400
1997		433

Water Consumption

Domestic	Institutional	Irrigation	Others	Total
98%	2%			100%

Problems / Future Expansion / Remarks

Billing dispute with National Water Conservation and Pipeline Corporation resulting in high accumulated bills. The scheme is dependent on the operations of the Baricho Treatment works which serves Mombasa and Coastal Water Supply

General

Name of Rural water Supply: Kapecha 1 Location / District: Junju/Kilifi
 Organisation / Water Undertaker: NWCPC/Community Map Ref: _____
 Drainage Sub Basin: _____ Co- Ords. X: _____ Y: _____

Construction Details

Year of Construction: Phase I: 1989 Phase II: _____ Phase III: _____
 Constructed By: Self Help Funded By: GTZ (KWASAP)
 Total Construction Cost: N/A
 Year Operation Started: 1990

Existing Facilities

Water source: Ubaoni br. of Baricho-Mombasa line Intake Facilities: off-take
 Raw Water Transmission: N/A
 Treatment Facilities: Baricho T/Works

Chemicals Dosed: Full treatment at Baricho Treatment Works
 Master Meter Details: Installed, in good working condition

Distribution Mains

Diameter	90mm				
Length	5km				
Materials	uPVC				

Service Reservoirs: None

Pump Details: No pumping

Customer Details

Households Served:

Members	Other H.H's	Total
420		420

 1997

Customers Metered: Yes _____ Metered 420 Unmetered Nil

Operation & Maintenance

	Production	H.H Served
Water Production 1993	11,000m ³	359
1994	12,000m ³	373
1995	12,000m ³	388
1996	17,455m ³	404
1997		420

Water Consumption	Domestic	Institutional	Irrigation	Others	Total
	90%	1%			100%

Problems / Future Expansion / Remarks

Billing dispute with National Water Conservation and Pipeline Corporation resulting in high accumulated bills. The scheme is dependent on the operations of the Baricho Treatment works which serves Mombasa and Coastal Water Supply

General

Name of Rural water Supply: Mwele Location / District: Chonyi/Kilifi
 Organisation / Water Undertaker: MOWR Map Ref: _____
 Drainage Sub Basin: _____ Co- Ords. X: _____ Y: _____

Construction Details

Year of Construction: Phase I: 1993 Phase II: 1996 Phase III: _____
 Constructed By: Self Help Funded By: GTZ (KIWASAP)
 Total Construction Cost: Ksh.1.7 million
 Year Operation Started: 1996

Existing Facilities

Water source: Baricho-Mombasa pipeline Intake Facilities: off-take
 Raw Water Transmission: N/A
 Treatment Facilities: Baricho T/Works

Chemicals Dosed

Full treatment at Baricho Treatment Works

Master Meter Details

Installed, in good working condition

Distribution Mains

Diameter	<u>90mm</u>	<u>63mm</u>			
Length	<u>Total length 9.7 km</u>				
Materials	<u>uPVC</u>	<u>uPVC</u>			

Service Reservoirs

2 No.	<u>total 150m³ ferrocement</u>			
-------	---	--	--	--

Pump Details

1No. 2.1's, 10HP on rising main.

Customer Details

Households Served

Members	Other H.H's	Total	<i>Information unavailable</i>		

Customers Metered

Yes _____ Metered _____ Unmetered _____
Information unavailable

Operation & Maintenance

Water Production

	Production	H.H Served
1993		
1994		
1995		
1996	<u>4,800m³</u>	<u>521</u>
1997		

Water Consumption

	Domestic	Institutional	Irrigation	Others	Total
	<u>10000.0%</u>	<u>0%</u>			<u>100%</u>

Problems / Future Expansion / Remarks

Billing dispute with National Water Conservation and Pipeline Corporation resulting in high accumulated bills. The scheme is dependent on the operations of the Baricho Treatment works which serves Mombasa and Coastal Water Supply.

GeneralName of Rural water Supply: Majajani Location / District: takaungu-Mavueni/KilifiOrganisation / Water Undertaker: MOWR Map Ref: _____

Drainage Sub Basin: _____ Co- Ords. X: _____ Y: _____

Construction DetailsYear of Construction: Phase I: 1993 Phase II: _____ Phase III: _____Constructed By: Self Help Funded By: GTZ (KIWASAP)Total Construction Cost: Ksh. 1.45 millionYear Operation Started: 1995**Existing Facilities**Water source: Takaungu br. of Baricho-Mombasa line Intake Facilities: off-takeRaw Water Transmission: N/ATreatment Facilities: Baricho T/WorksChemicals Dosed: Full treatment at Baricho Treatment WorksMaster Meter Details: 100mm dia. in good working condition

Diameter	90mm	63mm			
Length	<u>Total length 9.3 km</u>				
Materials	<u>uPVC</u>	<u>uPVC</u>			

Service Reservoirs: 2 No. 30m³ each (ferrocement)Pump Details: N/A**Customer Details**

Members	Other H.H's	Total
<u>400</u>		<u>400</u>

Customers Metered: Yes Metered Unmetered*Information not available***Operation & Maintenance**

	Production	H.H Served
1993	<u>8000m³</u>	<u>355</u>
1994	<u>8400m³</u>	<u>384</u>
1995	<u>7856m³</u>	<u>400</u>
1996	<u>9684m³</u>	<u>416</u>
1997		

Water Consumption	Domestic	Institutional	Irrigation	Others	Total
	<u>97%</u>	<u>3%</u>			<u>100%</u>

Problems / Future Expansion / RemarksBilling dispute with National Water Conservation and Pipeline Corporation resulting in high accumulatedbills. The scheme is dependent on the operations of Baricho treatment works which serves Mombasaand Coastal Water Supply.

Aftercare Study on
the National Water Master Plan

NGERENYA (1/1)

Rural Water Supply
System Survey

General

Name of Rural water Supply: Ngerenya Location / District: Kilifi
 Organisation / Water Undertaker: MOWR Map Ref: _____
 Drainage Sub Basin: _____ Co- Ords. X: _____ Y: _____

Construction Details

Year of Construction: Phase I: 1995 Phase II: _____ Phase III: _____
 Constructed By: Self Help Funded By: GTZ (KIWASAP)
 Total Construction Cost: Ksh.2.7 million
 Year Operation Started: 1996

Existing Facilities

Water source: Kilifi branch of Baricho-Mombasa line Intake Facilities: off-take
 Raw Water Transmission: N/A
 Treatment Facilities: Baricho T/Works

Chemicals Dosed

Full treatment at Baricho Treatment Works

Master Meter Details

100mm dia. in good working condition

Distribution Mains

Diameter	90mm	63mm			
Length	<u>Total length 9.2 km</u>				
Material's	<u>uPVC</u>	<u>uPVC</u>			

Service Reservoirs

1 No.	50m ³ ferrocement			

Pump Details

No pumping

Customer Details

Households Served

Members	Other H.H's	Total
<u>30</u>	<u>562</u>	<u>592</u>

Customers Metered

Yes _____ Metered _____ Unmetered _____
 Information unavailable

Operation & Maintenance

Water Production

	Production	H.H Served
1993		
1994		
1995		
1996	<u>105,38m³</u>	<u>592</u>
1997		

Water Consumption

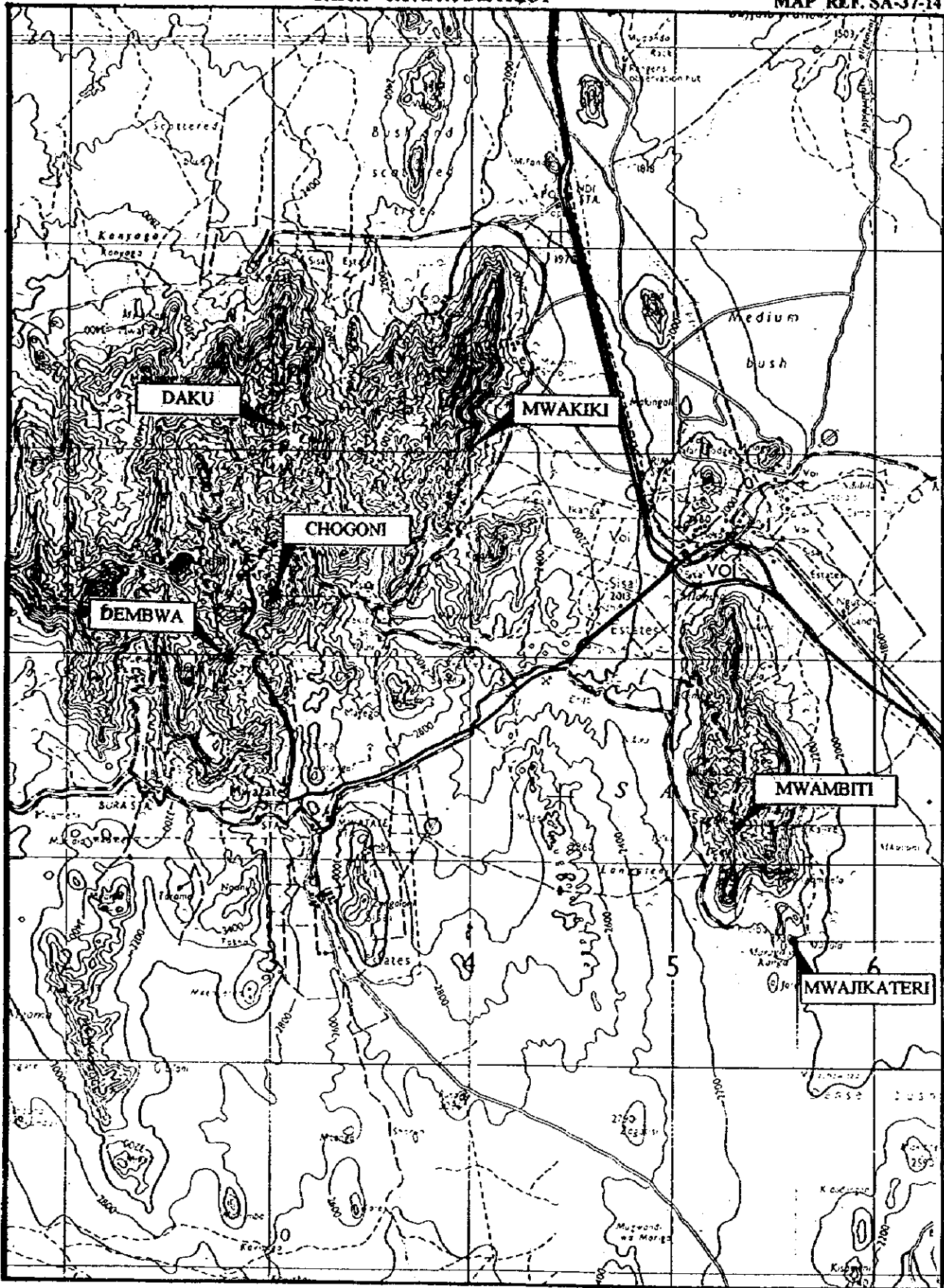
Domestic	Institutional	Irrigation	Others	Total
<u>100%</u>				<u>100%</u>

Problems / Future Expansion / Remarks

Scheme self sustaining. Expansion is desired but proposals not prepared by community yet

TAITA - TAVETA DISTRICT

MAP REF. SA-37-14



Aftercare Study on
the National Water Master Plan

DEMBWA WUSI (1/1)

Rural Water Supply
System Survey

General

Name of Rural water Supply: Dembwa Wusi Location / District: Taita Taveta
 Organisation / Water Undertaker: MOWR Map Ref: SA-37-14
 Drainage Sub Basin: _____ Co- Ords. X: 38° 21' Y: S 03° 27'

Construction Details

Year of Construction: Phase I: 1974 Phase II: 1975 Phase III: _____
 Constructed By: MOWR Direct labour Funded By: GOK
 Total Construction Cost: Ksh. 5.5 million
 Year Operation Started: 1976

Existing Facilities

Water source: kengwa spring + Vuria river Intake Facilities: Weir
 Raw Water Transmission: Gravity
 Treatment Facilities: Chlorination only

Chemicals Dosed

Chlorine

Master Meter Details

Installed but in poor condition

Distribution Mains

Diameter	50mm	50mm	38mm	25mm	
Length	<u>Total length 10 km</u>				
Materials	<u>G.I.</u>	<u>uPVC</u>	<u>uPVC</u>	<u>uPVC</u>	

Service Reservoirs

1 No.	<u>25m³ masonry, 5 No. R.C. each 5m³</u>		
-------	--	--	--

Pump Details

No pumping

Customer Details

Households Served

Members	Other H.H's	Total
<u>300</u>		<u>300</u>

Customers Metered

Yes _____ Metered 300 Unmetered _____

Operation & Maintenance

Water Production

	Production	H.H Served
1993	<u>29,875m³/yr</u>	<u>292</u>
1994	<u>35,130m³/yr</u>	<u>294</u>
1995	<u>39,120m³/yr</u>	<u>256</u>
1996	<u>40,150m³/yr</u>	<u>280</u>
1997		

Water Consumption

Domestic	Institutional	Irrigation	Others	Total
<u>97%</u>	<u>2%</u>		<u>1%</u>	<u>100%</u>

Problems / Future Expansion / Remarks

Problems include lack of operation and maintenance, transport, laboratory and offices. Chlorination

facilities need to be rehabilitated

There are no immediate plans for future expansion

General

Name of Rural water Supply: Mwajika Teri Location / District: Taita Taveta
 Organisation / Water Undertake: MOWR Map Ref: _____
 Drainage Sub Basin: _____ Co- Ords. X: _____ Y: _____

Construction Details

Year of Construction Phase I: 1972 Phase II: 1973 Phase III: 1978
 Constructed By: MOWR Funded By: GOK
 Total Construction Cost: _____
 Year Operation Started: 1974

Existing Facilities

Water source: Mwaroro, Mwajika & Mwereri rivers Intake Facilities: weir
 Raw Water Transmission: Gravity
 Treatment Facilities: Chlorination only

Chemicals Dosed: ChlorineMaster Meter Details: Installed but in poor condition**Distribution Mains**

Diameter	75mm	50mm	38mm	25mm	19mm
Length	<u>length 14km</u>				
Materials	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>

Service Reservoirs: 1 No. 450m³ masonry 1 No. R.C. 10m³ and 1 No. steel 10m³Pump Details: No pumping**Customer Details**

Households Served:

Members	Other H.H's	Total
<u>165</u>		<u>165</u>

Customers Metered:

Yes _____ Metered _____ Unmetered 165**Operation & Maintenance**

Water Production:

	Production	H.H Served
<u>1993</u>	<u>21,826</u>	<u>145</u>
<u>1994</u>	<u>23,150</u>	<u>157</u>
<u>1995</u>	<u>24,925</u>	<u>166</u>
<u>1996</u>	<u>25,760</u>	<u>165</u>
<u>1997</u>		

Water Consumption:

Domestic	Institutional	Irrigation	Others	Total
<u>96%</u>	<u>3%</u>			<u>100%</u>

Problems / Future Expansion / RemarksProblems include lack of operation and revenue collection personnel transport, laboratory and officesThere are no immediate plans for future expansion

Prepared by POM

Date: 5/3/98

Aftercare Study on
the National Water Master Plan

MWAKIKI (1/1)

Rural Water Supply
System Survey

General

Name of Rural water Supply: Mwakiki Location / District: Mbololo/Taita Taveta

Organisation / Water Undertake Community Project committee Map Ref _____

Drainage Sub Basin _____ Co- Ords. X: _____ Y: _____

Construction Details

Year of Construction Phase I: 1970 Phase II: 1989 Phase III _____

Constructed By: Self help Funded By: Mwambiti Sec. School

Total Construction Cost _____

Year Operation Started: 1991

Existing Facilities

Water source: Sangunyi and Mkongonyi springs Intake Facilities: spring chamber

Raw Water Transmission Gravity

Treatment Facilities None

Chemicals Dosed None

Master Meter Details Installed but in poor condition

Distribution Mains

Diameter	Length	Materials			
	<u>ut length 6km</u>				

Service Reservoirs 4No. masonry tanks each 25m3

Pump Details No pumping

Customer Details

Members	Other H.H's	Total
<u>1470</u>		<u>1470</u>

Customers Metered No Metered _____ Unmetered 1470

Operation & Maintenance

Year	Production	H.H Served	
<u>1993</u>			} Information not available
<u>1994</u>			} available
<u>1995</u>			}
<u>1996</u>			}
<u>1997</u>			}

Domestic	Institutional	Irrigation	Others	Total

Problems / Future Expansion / Remarks

1. No treatment, even chlorine which is very essential is done!

It appears that revenue is not being collected from water supplied

Prepared by POM

Date:5/3/98

General

Name of Rural water Supply: Mwambiti Location / District: Sagala/ Taita Taveta
 Organisation / Water Undertake Mwambiti Community Map Ref _____
 Drainage Sub Basin _____ Co- Ords. X: _____ Y: _____

Construction Details

Year of Construction Phase I: 1951 Phase II: _____ Phase III _____
 Constructed By: Self help Funded By: Mwambiti Sec. School
 Total Construction Cost _____
 Year Operation Started: 1951

Existing Facilities

Water source: Mwambighili, Bwaka+ Mashighati Spri Intake Facilities: spring chambers
 Raw Water Transmission Gravity, 35mm G.G. main
 Treatment Facilities None

Chemicals Dosed

None

Master Meter Details

Installed in good working condition

Distribution Mains

Diameter	25mm	19mm			
Length	N/A	N/A			
Materials	G.I.	G.I.			

Service Reservoirs

1 No.	80m ³ masonry and 50m ³ masonry tank	
-------	--	--

Pump Details

Raw water pumps delivery to distribution tanks

Customer Details

Households Served

Members	Other H.H's	Total

Customers Metered

Yes / No _____ Metered No _____ Unmetered Yes _____

Operation & Maintenance

Water Production

	Production	H.H Served	
1993			} Information not available
1994			
1995			
1996			
1997			

Water Consumption

Domestic	Institutional	Irrigation	Others	Total

Problems / Future Expansion / Remarks

1. No treatment, at least even chlorine is done!
This sheme primarily serves Mambiti Sec. School, with limited service to the surrounding communities.

Prepared by POM

Date:5/3/98

Aftercare Study on
the National Water Master Plan

MWAMBITI (2/4)

Rural Water Supply
System Survey

General

Name of Rural water Supply: Mwambiti Location / District: Sagala/ Taita Taveta
 Organisation / Water Undertake Mwambiti Community Map Ref _____
 Drainage Sub Basin _____ Co- Ords. X: _____ Y: _____

Construction Details

Year of Construction Phase I: 1951 Phase II: _____ Phase III _____
 Constructed By: Self help Funded By: Mwambiti Sec. School
 Total Construction Cost _____
 Year Operation Started: 1951

Existing Facilities

Water source: Mwambighili, Bwaka+ Mashighati Spri Intake Facilities: spring chambers
 Raw Water Transmission Gravity, 35mm G.G. main
 Treatment Facilities None

Chemicals Dosed None

Master Meter Details

Distribution Mains

Installed in good working condition

Diameter	25mm	19mm			
Length	N/A	N/A			
Materials	G.I.	G.I.			

Service Reservoirs

1 No.	80m ³ masonry and 50m ³ masonry tank	
-------	--	--

Pump Details

Raw water pumps delivery to distribution tanks

Customer Details

Households Served

Members	Other H.H's	Total

Customers Metered

Yes / No _____ Metered No _____ Unmetered Yes _____

Operation & Maintenance

Water Production

	Production	H.H Served	
1993			} Information not
1994			} available
1995			}
1996			}
1997			}

Water Consumption

	Domestic	Institutional	Irrigation	Others	Total

Problems / Future Expansion / Remarks

1. No treatment, at least even chlorine is done!
This scheme primarily serves Mambiti Sec. School, with limited service to the surrounding communities.

Prepared by POM

Date: 5/3/98

General

Name of Rural water Supply: Mwambiti Location / District: Sagala/ Taita Taveta
 Organisation / Water Undertake Mwambiti Community Map Ref _____
 Drainage Sub Basin _____ Co- Ords. X: _____ Y: _____

Construction Details

Year of Construction Phase I: 1951 Phase II: _____ Phase III _____
 Constructed By: Self help Funded By: Mwambiti Sec. School
 Total Construction Cost _____
 Year Operation Started: 1951

Existing Facilities

Water source: Mwambighiti, Bwaka + Mashighati Spri. Intake Facilities: spring chambers
 Raw Water Transmission Gravity, 35mm G.G. main
 Treatment Facilities None

Chemicals Dosed None

Master Meter Details Installed in good working condition

Distribution Mains

Diameter	25mm	19mm			
Length	N/A	N/A			
Materials	G.I.	G.I.			

Service Reservoirs 1 No. 80m³ masonry and 50m³ masonry tank

Pump Details Raw water pumps delivery to distribution tanks

Customer Details

Households Served

Members	Other H.H's	Total

Customers Metered Yes / No Metered No Unmetered Yes

Operation & Maintenance

Water Production

	Production	H.H Served	
1993			} Information not
1994			} available
1995			}
1996			}
1997			}

Water Consumption

	Domestic	Institutional	Irrigation	Others	Total

Problems / Future Expansion / Remarks

1. No treatment, at least even chlorine is done!
This scheme primarily serves Mambiti Sec. School, with limited service to the surrounding communities.

Prepared by POM

Date:5/3/98

Aftercare Study on
the National Water Master Plan

MWAMBITI (4/4)

Rural Water Supply
System Survey

General

Name of Rural water Supply: Mwambiti Location / District: Sagalaj/Taita Taveta
 Organisation / Water Undertake Mwambiti Community Map Ref _____
 Drainage Sub Basin _____ Co- Ords. X: _____ Y: _____

Construction Details

Year of Construction Phase I: 1951 Phase II: _____ Phase III _____
 Constructed By: Self help Funded By: Mwambiti Sec. School
 Total Construction Cost _____
 Year Operation Started: 1951

Existing Facilities

Water source: Mwambighiti, Bwaka + Mashighati Spri Intake Facilities: spring chambers
 Raw Water Transmission Gravity, 35mm G.G. main
 Treatment Facilities None

Chemicals Dosed None

Master Meter Details Installed in good working condition

Distribution Mains

Diameter	25mm	19mm			
Length	N/A	N/A			
Materials	G.I.	G.I.			

Service Reservoirs

1 No.	80m ³ masonry and 50m ³ masonry tank	
-------	--	--

Pump Details

Raw water pumps delivery to distribution tanks

Customer Details

Households Served

Members	Other H.H's	Total

Customers Metered

Yes / No _____ Metered No _____ Unmetered Yes _____

Operation & Maintenance

Water Production

	Production	H.H Served	
1993			} Information not
1994			} available
1995			}
1996			}
1997			}

Water Consumption

	Domestic	Institutional	Irrigation	Others	Total

Problems / Future Expansion / Remarks

1. No treatment, at least even chlorine is done!
This scheme primarily serves Mambiti Sec. School, with limited service to the surrounding communities.

Prepared by POM

Date: 5/3/98

GUCHA DISTRICT

MAP REF. SA-34-1



Aftercare Study on
the National Water Master Plan

MOSOCHO GESONI W/S (1/1)

Rural Water Supply
System Survey

General

Name of Rural water Supply: Mosocho Gesoni W/S Location / District: Kisii
 Organisation / Water Undertaker: MOWR Map Ref: 1:250,000 SA-36-4
 Drainage Sub Basin _____ Co- Ords. X: 34° 45' Y: S 00° 32'

Construction Details

Year of Construction Phase I: 1987-1988 Phase II: 1989 Phase III _____
 Constructed By: MOWR Funded By: MOWR
 Total Construction Cost Kshs. 1,500,000 - 1987
 Year Operation Started: 1988

Existing Facilities

Water source: Ria Modito Spring Intake Facilities: Weir
 Raw Water Transmission Pumping 100mm dia. pipe
 Treatment Facilities Occasional dosing of chlorine

Chemicals Dosed

Chlorine

Master Meter Details

No master meter

Diameter	75			
Length	App. 2 Km			
Materials	uPVC			

Service Reservoirs

30m ³	masonry	in good condition		
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Pump Details

1 pump: discharge Q = 18m³/h, 137m head

Customer Details

Households Served

Members	Other H.H's	Total
36	5 schools	41

Customers Metered No Metered Nil Unmetered All

Operation & Maintenance

Water Production

Year	Production	H.H Served
1993	100m ³ /d	36+5 schools
1994	100m ³ /d	36+5 schools
1995	60m ³ /d	18+5 schools
1996		
1997		

No records area served 25km²
Population served 6000

Water Consumption

Domestic	Institutional	Irrigation	Others	Total
20%	80%			100%

Problems / Future Expansion / Remarks

No treatment facilities - rarely samples taken for testing
Frequent breakdown of generator engine and pump

General

Name of Rural water Supply: Gesusu-Gateri w/s Location / District: Kisii
 Organisation / Water Undertaker: MOWR Map Ref: 1:250,000 SA-36-4
 Drainage Sub Basin _____ Co- Ords. X:34° 50' Y: S 00° 53'

Construction Details

Year of Construction Phase I: 1977 Phase II: 1989 Phase III _____
 Constructed By: MOWR Funded By: MOWR/Rural Development Fund
 Total Construction Cost Kshs. 19,806,485
 Year Operation Started: 1977

Existing Facilities

Water source: Spring Intake Facilities: Pan
 Raw Water Transmission Gravity: upto pump house. Twin pipes 50mm dia Phase I 63mm dia
Phase II total length 1608m
 Treatment Facilities None

Chemicals Dosed

Master Meter Details None 1 No. in poor state

Distribution Mains

	32mm	63mm			
Diameter	32mm	63mm			
Length	1000m	420m			
Materials	uPVC	uPVC			

Service Reservoirs

20m ³	masonry	1 No			
------------------	---------	------	--	--	--

Pump Details

1 No 16 H.P. Diesel Engine generator, pump Q. = 10.9^l/s
Head - 239m

Customer Details

Households Served

Members	Other H.H's	Total
25	2 schools	27

Customers Metered

Yes Metered 2 Nr Unmetered domestic

Operation & Maintenance

Water Production

	Production	H.H Served
1993	15m ³ /d	25
1994		
1995		
1996		
1997		

No records

area served 6 km²

Water Consumption

Domestic	Institutional	Irrigation	Others	Total
50%	50%			100%

Problems / Future Expansion / Remarks

1. Source dries up during draught periods
2. Land owner near intake interferes with the system of intake
3. Inadequate supply
4. Treatment of water and testing facilities required

Aftercare Study on
the National Water Master Plan

NYAMACHE (1/1)

Rural Water Supply
System Survey

General

Name of Rural water Supply: Nyamache Location / District: Gucha
 Organisation / Water Undertaker: MOWR Map Ref: 1:250,000 SA-36-4
 Drainage Sub Basin _____ Co- Ords. X:34° 49' Y: S 00° 52'

Construction Details

Year of Construction Phase I: 1989 - 1990 Phase II: _____ Phase III _____
 Constructed By: MOWR/Rural Dev. Fund Funded By: MOWR & Community
 Total Construction Cost Kshs. 450,000
 Year Operation Started: 1990

Existing Facilities

Water source: Kambi Ya Nyangau Spring Intake Facilities: Pan
 Raw Water Transmission Gravity: 75mm uPVC pipe, 500m long
 Treatment Facilities None

Chemicals Dosed None

Master Meter Details

Distribution Mains

Diameter	63/40mm				
Length	4.5km				
Materials					

Service Reservoirs

1 No	25m ³	Masonry tank			
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Pump Details

No pumping

Customer Details

Households Served

Members	Other H.H's	Total
160		

Total population served 2880

Customers Metered

No _____ Metered Nil Unmetered All

Operation & Maintenance

Water Production

No records

	Production	Pop.
1993	26m ³ /d	
1994	25m ³ /d	
1995	23m ³ /d	
1996	24m ³ /d	
1997		

Population served 2000
area covered 4 km²

Water Consumption

Domestic	Institutional	Irrigation	Others	Total
35%	65%			100%

Problems / Future Expansion / Remarks

1. Inadequate water supply
2. Lack of trained personnel
3. Treatment required
4. Distruction of pipe lines by vandalism to be curbed

General

Name of Rural water Supply: Mosocho Nyanderema Location / District: Kisii
 Organisation / Water Undertaker: Self Help/Community Map Ref: 1:250,000 SA-36-4
 Drainage Sub Basin: _____ Co- Ords. X:34° 44' Y: S 00° 35'

Construction Details

Year of Construction Phase I: 1994 - 1995 Phase II: _____ Phase III _____
 Constructed By: MOWR Funded By: MOWR
 Total Construction Cost Kshs. 806,200
 Year Operation Started: 1996

Existing Facilities

Water source: Nyanderema River Intake Facilities: Weir
 Raw Water Transmission Gravity 75mm - Ductile Iron Pipe
 Treatment Facilities Only chlorination done occasionally

Chemicals Dosed Chlorine occasionally

Master Meter Details None

Distribution Mains

Diameter	50mm			
Length	2.5km			
Materials	uPVC			

Service Reservoirs

1No	20m ³	Masonry in good condition	
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Pump Details 1No. pump for treated water. 1No. High lift pump and Electric pump dia. = 18m²/h, Head 140m

Customer Details

Households Served

Members	Other H.H's	Total	
40	4 schools		4 school have each approximately 400 students

Customers Metered _____ Metered No _____ Unmetered

Operation & Maintenance

	Production	H.H. Served	
1993			
1994			
1995			
1996	108 m ³ /d	20	area served 9 km ²
1997			

Water Consumption	Domestic	Institutional	Irrigation	Others	Total
	25%	75%			100%

Problems / Future Expansion / Remarks

1. Inadequate water supply for area population , water is rationed
2. Full Treatment required
3. Frequent Breakdown of diesel engine

Aftercare Study on
the National Water Master Plan

NYAMARAMBE (1/1)

Rural Water Supply
System Survey

General

Name of Rural water Supply: Nyamarambe Location / District: Gucha
 Organisation / Water Undertaker: MOWR Map Ref: 1:250,000 SA-36-4
 Drainage Sub Basin _____ Co- Ords. X: 34° 38' Y: 500° 45'

Construction Details

Year of Construction Phase I: 1988 - 1997 Phase II: _____ Phase III _____
 Constructed By: MOWR Funded By: MOWR
 Total Construction Cost Kshs. 790,200
 Year Operation Started: 1990

Existing Facilities

Water source: Nyangore River Intake Facilities: Weir
 Raw Water Transmission 2 No pumps suction 100mm dia. Ductile Iron = 7m³/h 50m head
 Treatment Facilities Treatment plant exists, in good condition but the supply was abandoned in
November due to clashes in the area
 Chemicals Dosed Alum, soda ash and chlorine

Master Meter Details

Distribution Mains

Damaged					
Diameter	75mm				
Length	5km				
Materials	Ductile Iron				

Service Reservoirs

1 No	50m ³	Masonry			
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Pump Details
1 No. pump for treated water. 1 No. High lift pump and
3 No electric motors are disconnected

Customer Details

Households Served

Members	Other H.H's	Total

Customers Metered

Total 40	Metered	14 No	Unmetered	26
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Operation & Maintenance

Water Production

	Production	Pop.
1993		
1994	143m ³ /d	45
1995	168 m ³ /d	53
1996	190 m ³ /d	60
1997		

Water Consumption

	Domestic	Institutional	Irrigation	Others	Total
	60%	40%			100%

Problems / Future Expansion / Remarks

Only small portion of Nyamarambe water production is used by Nyamarambe. Most of the supply is consumed by Rongo Township

General

Name of Rural water Supply: Tabaka Location / District: Gucha
 Organisation / Water Undertaker: MOWR Map Ref SA-36-4
 Drainage Sub Basin: _____ Co- Ords. X: 34° 38' Y: S 00° 45'

Construction Details

Year of Construction Phase I: 1975-76 Phase II: _____ Phase III _____
 Constructed By: MOWR Funded By: MOWR
 Total Construction Cost: Ksh 4 million
 Year Operation Started: 1975

Existing Facilities

Water source: Bombure Spring Intake Facilities: Pan
 Raw Water Transmission: Pumping + Gravity; Gravity through 75mm dia. D.I. for 20m then pumped. Q=6.15l/s, H=114m
 Treatment Facilities: None

Chemicals Dosed: None

Master Meter Details: Installed but not working

Distribution Mains

Diameter	75mm				
Length	1 km				
Materials	Mostly D.I. with uPVC in small sections				

Service Reservoirs: _____

	1 No 25m ³ masonry			
--	-------------------------------	--	--	--

Pump Details: _____

	1 No Q=20m ³ /hr H=150m			
--	------------------------------------	--	--	--

Customer Details

Households Served

Members	Other H.H's	Total
200	2000 stud.	Approx. 200 members + 2000 students

Customers Metered Yes _____ Metered 120 Unmetered 80

Operation & Maintenance

Water Production

	Production	H.H Served
1993	480m ³ /d	100
1994	N/A	N/A
1995	N/A	
1996	100m ³ /d	200
1997		

Population served about 4200
Area served 2 km²

Water Consumption

Domestic	Institutional	Irrigation	Others	Total
25%	75%			100%

Problems / Future Expansion / Remarks

1. There is inadequate water at source and as a result production is limited. A new source needs to be developed
2. Treatment is urgently required
3. A nearby private water supply also serves few consumers in Tabaka