APPENDIX 5

GENERAL DATA (TABLES AND FIGURES)

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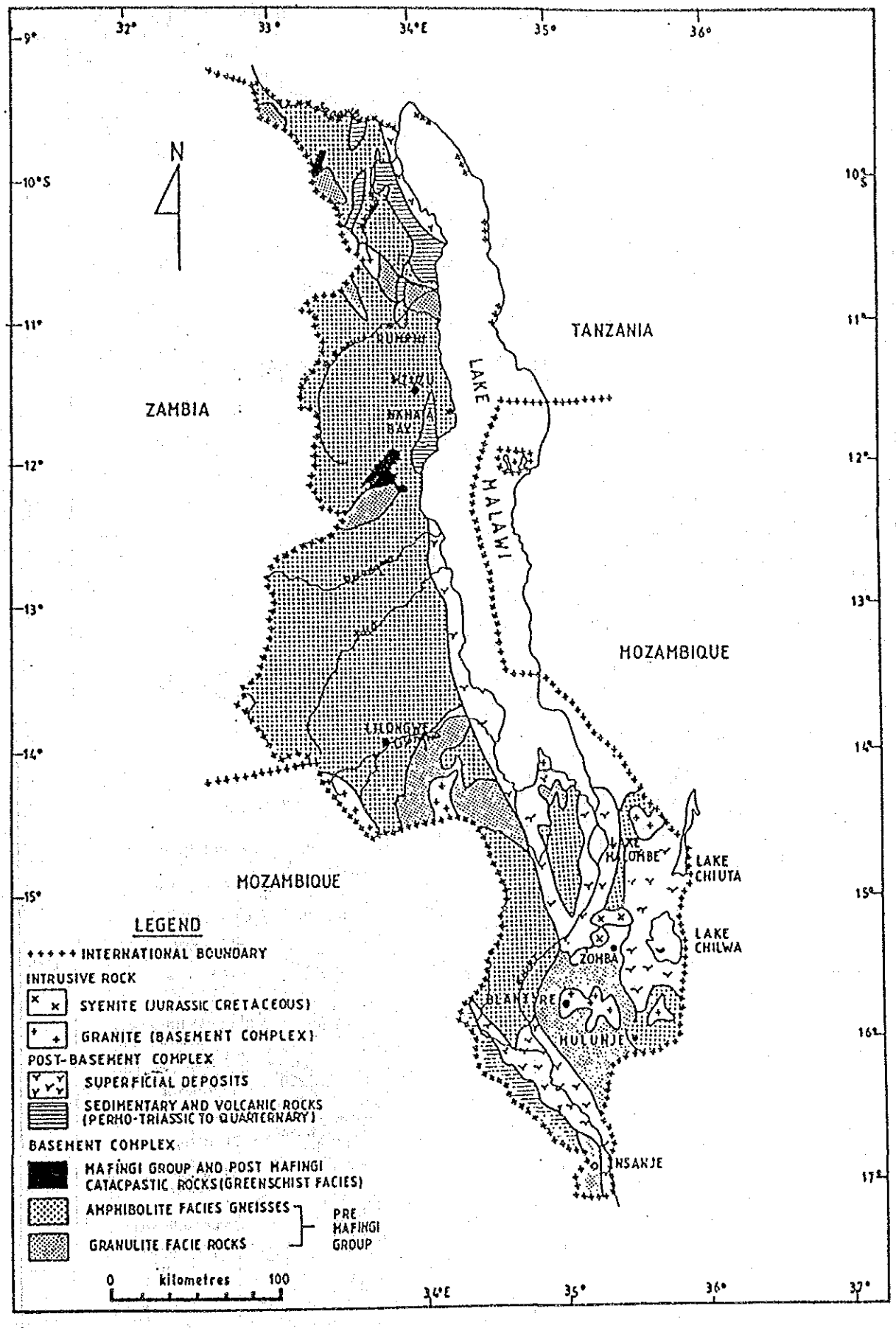
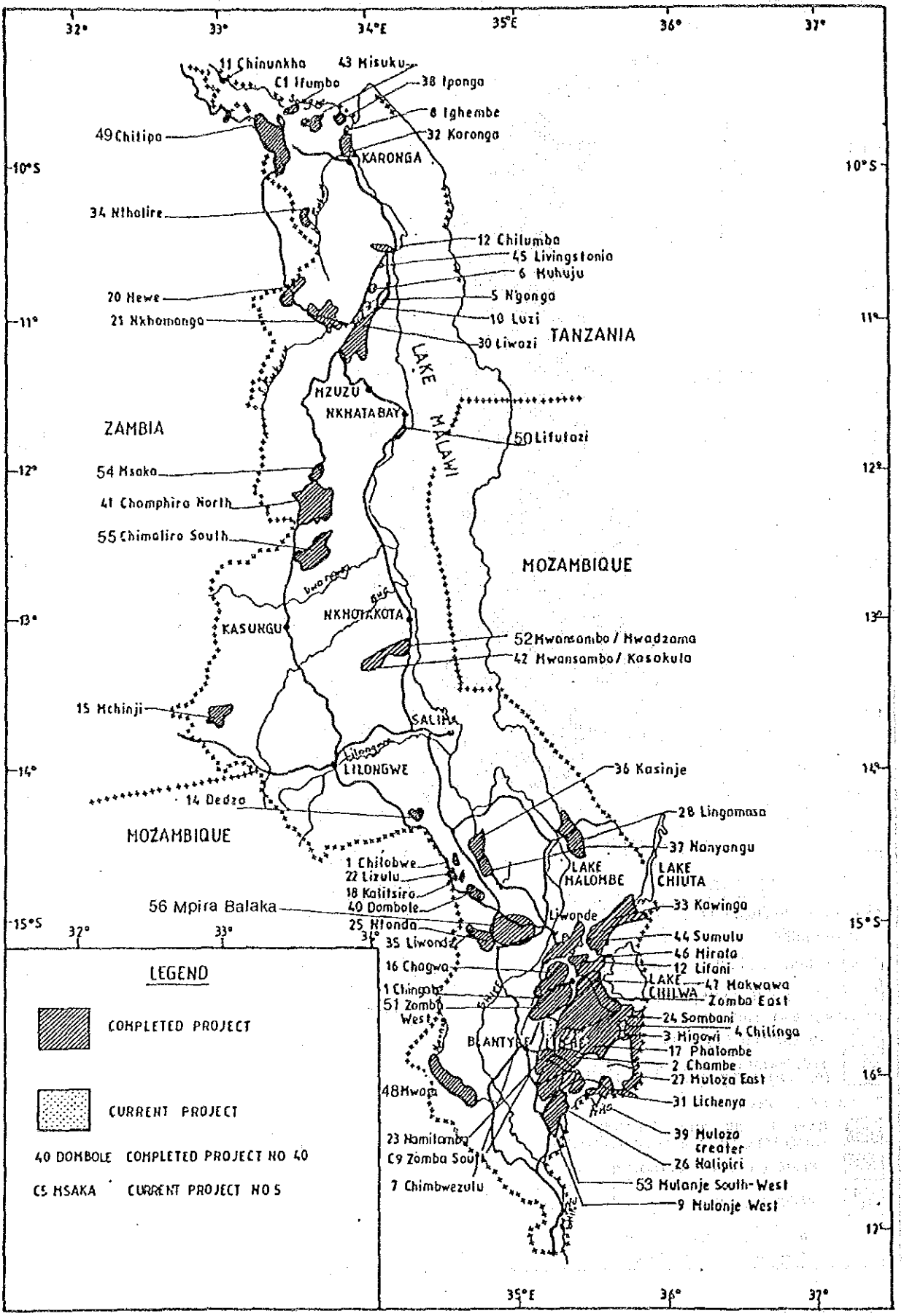
A－1 Geological Map of Malawi



A－2(1)　Location Map of Rural Piped Water Projects



A－2(2) Completed Rural Piped Water Projects as on 1991

No.	Project	Disrict	Region	Population involed	Length of Piping (km)	Number of Taps	Cost of Materiais (K)	Year Completed	Country of Assistance	Consultant	Contractor
1	Chingale	Zomba	South	5,000	40	60	6,000	1969	USAID	MG	MG
2	Chambe	Mulanje	South	30,000	96	180	64,000	1970		- do -	- do -
3	Migowi	Mulanje	South	6,000	24	45	12,000	1971		- do -	- do -
4	Chilinga	Mulanje	South	2,000	10	14	4,000	1972		- do -	- do -
5	Ngonga	Rumphi	North	2,000	17	20	6,000	1972	USAID	- do -	- do -
6	Muhuju	Rumphi	North	1,000	19	21	7,000	1973		- do -	- do -
7	Chin kwezulu	Machinga	South	700	2	9	1,000	1973	USAID	- do -	- do -
8	Ighembe	Karonga	North	4,000	17	36	7,000	1974	- do -	- do -	- do -
9	Mulanje West	Mulanje	South	90,000	237	460	170,000	1975	- do -	- do -	- do -
10	Luzi	Mzimba/Rumphi	North	8,000	59	44	24,000	1975	- do -	- do -	- do -
11	Chinunka	Chitipa	North	4,000	25	51	12,000	1975	- do -	- do -	- do -
12	Chilumba	Karonga	North	4,000	17	29	8,000	1975	- do -	- do -	- do -
13	Chilobwe	Ntcheu	Central	1,200	6	14	2,000	1975	- do -	- do -	- do -
14	Dedza	Dedza	Central	1,400	8	10	5,000	1976		- do -	- do -
15	Mchinji	Mchinji	Central	20,000	136	215	52,000	1976	USAID	- do -	- do -
16	Chagwa	Machinga	South	7,000	80	110	15,000	1976	- do -	- do -	- do -

A－2(3) Completed Rural Piped Water Projects as on 1991

No.	Project	Disrict	Region	Population involed	Length of Piping (km)	Number of Taps	Cost of Materiais (K)	Year Completed	Country of Assistance	Consultant	Contractor
17	Phalombe	Mulanje	South	140,000	400	660	500,000	1977	USAID	MG	MG
18	Kalitsilo	Ntcheu	Central	1,000	6	13	3,000	1977	- do -	- do -	- do -
19	Lifani	Zomba/Machinga	South	20,000	100	152	72,000	1977	- do -	- do -	- do -
20	Hewe	Rumphi	North	8,000	42	42	30,000	1977	- do -	- do -	- do -
21	Nkhamanga	Rumphi	North	12,000	75	120	134,000	1978	- do -	- do -	- do -
22	Lizulu	Ntcheu	Central	6,000	24	34	20,000	1978	- do -	- do -	- do -
23	Namitambo	Chiladzulo/ Mulanje	South	60,000	290	360	480,000	1979	- do -	- do -	- do -
24	Sombani	Mulanje	South	40,000	184	300	240,000	1979	- do -	- do -	- do -
25	Ntonda	Ntcheu	Central	25,000	120	194	120,000	1980	- do -	- do -	- do -
26	Nalipiri	Mulanje	South	9,000	27	55	40,000	1980	- do -	- do -	- do -
27	Muloza East	Mulanje	South	32,000	150	180	120,000	1980	- do -	- do -	- do -
28	Lingamasa	Mangochi	South	12,000	43	118	50,000	1981	- do -	- do -	- do -
29	Zomba Domasi	Zomba	South	100,000	448	813	711,000	1981	- do -	- do -	- do -
30	Luwazi	Mzimba	North	8,000	80	54	79,400	1981	- do -	- do -	- do -
31	Luchenya	Mulanje	South	46,000	168	270	180,000	1982		- do -	- do -
32	Karonga	Karonga	North	30,000	195	250	290,300	1983		- do -	- do -

A－2(4) Completed Rural Piped Water Projects as on 1991

No.	Project	Disrict	Region	Population involed	Length of Piping (km)	Number of Taps	Cost of Materiais (K)	Year Completed	Country of Assistance	Consultant	Contractor
33	Kawinga	Machinga	South	70,000	571	450	926,600	1983	DANIDA	MG	MG
34	Nthalire	Chitipa	North	3,000	21	46	66,500	1983	USAID	- do -	- do -
35	Liwonde	Machinga	Central	23,000	110	130	198,000	1983			
36	Kasinje	Ntcheu	Central	14,000	32	95	60,000	1983			
37	Kanyungu	Ntcheu	Central	20,000	53	131	150,000	1983		MG	MG
38	Iponga	Karonga	North	5,600	24	35	40,000	1983	USAID	- do -	- do -
39	Muloza Crater	Mulanje	South	8,000	22	45	40,000	1983	- do -	- do -	- do -
40	Bombole	Ntcheu	Central	22,000	107	140	286,700	1983	- do -	- do -	- do -
41	Champhira/North	Mzimba	North	24,000	167	154	236,000	1984		- do -	- do -
42	Mwansambo/Kasakula	Nkhotakota/ Nchisi	Central	25,000	60	145	157,300	1984		- do -	- do -
43	Misuku	Chitipa	North	3,700	17	70	40,900	1984		- do -	- do -
44	Simulu	Machinga	South	23,500	80	100	261,000	1984		- do -	- do -
45	Livingstonia	Rumphi	North	3,000	15	21	9,600	1984	PHICS	- do -	- do -
46	Mirala	Machinga	South	13,000	56	81	108,000	1985		- do -	- do -
47	Kakwawa	Zomba	South	16,000	68	101	93,000	1985		- do -	- do -
48	Mwanze Valley	Chikwra	South	40,000	218	400	1,079,400	1987	USAID	- do -	- do -

A－2(5) Completed Rural Piped Water Projects as on 1991

No.	Project	Disrict	Region	Population involed	Length of Piping (km)	Number of Taps	Cost of Materiais (K)	Year Completed	Country of Assistance	Consultant	Contractor
49	Chitipa (Extensions)	Chitipa	North	46.000	323	300	301.400	1987	USAID	MG	MG
50	Lifutazi	Nkhatabay	North	6.000	40	43	33.800	1987	- do -	- do -	- do -
51	Zomba West	Zomba	South	60.000	340	353	690.800	1987	- do -	- do -	- do -
52	Mwansambo Mwadzama	Nkhotakota	Central	18.000	50	100	60.800	1987	- do -	- do -	- do -
53	Mulanje South West	Mulanje	South	24.000	117	140	708.000	1987	- do -	- do -	- do -
54	Msaka	Mzimba	North	3.000	37	35	58.200	1987	- do -	- do -	- do -
55	Champhia South	Mzimba	North	32.000	221	200	512.400	1986	- do -	- do -	- do -
56	Mpira/Balaka	Ntcheu /Machinga	Central /South	250.000	1.200	1.800	28.489.000		DANIDA/ADB	- do -	- do -

A--3(1) Population Sheet and Construction Plan at Village Level

Zone	T.A./S.T.A.	Village	Estimated Population (1995)	Number of Boreholes			Tentative Depth (m)	Phase			Borehole No.
				Total	Existing Boreholes	New Boreholes		1	2	3	
1	Mlonyeni	Chidambo (007)	310	1		1	50	1			1-1
		Chiute (009)	300	1		1	50	1			1-2
		Tsamphale (009)	290	1		1	50	1			1-3
		Chamveka (010)	280	1		1	50	1			1-4
		Maliwane (011)	590	2		2	40	2			1-5, 6
		Mlonyeni (012)	1,380	3	1	2	55	2			1-7, 8
		Mkangeni (018)	560	2		2	60	2			1-9, 10
		Chiwaula (018)	300	1		1	60	1			1-11
		Chabwela (018)	390	1		1	60	1			1-12
		Mbeza (019)	450	1		1	50	1			1-13
		Mzevezere (016)	240	1		1	65	1			1-14
		Mgwende (020)	290	1		1	50	1			1-15
		Mwandawala (021)	250	1		1	50	1			1-16
		Kadzakumanja (021)	350	1		1	50	1			1-17
		Mlonga (013)	290	1		1	50	1			1-18
		Mzikawaka II (014)	340	1		1	40	1			1-19
		Mkhala (015)	280	1		1	65	1			1-20
		Chibonyola(B) (015)	320	1		1	65	1			1-21
		Mwanayumo (016)	240	1		1	65	1			1-22
		Kbongo (016)	250	1		1	65	1			1-23
		Chibonyola(A) (016)	620	2		2	65	2			1-24, 25
		Mkhwinjilli (017)	410	1		1	55	1			1-26
		Kapita (017)	490	1		1	55	1			1-27
		Maganga (021)	390	1		1	50	1			1-28
		Nemezlo (009)	80	1	1		—				
		Kafulama (015)	—	1	1		—				

A—3(2) Population Sheet and Construction Plan at Village Level

Zone	T.A./S.T.A.	Village	Estimated Population (1996)	Number of Boreholes			Tentative Depth (m)	Phase			Borehole No.
				Total	Existing Boreholes	New Boreholes		1	2	3	
1	Mlonyeni	Tembwe (801)	1,450	4	4		—				
		Tsumba (008)	340	1	1		—				
		Sankhani (010)	160	1	1		—				
	Sub Total		11,640	37	9	28	1,535	28			
	Mavwere	Alfred (001)	610	2		2	50	2			1-29, 30
		Mtsiliza (002)	410	1		1	50	1			1-31
		Mkonda (003)	220	1		1	50	1			1-32
		Kitsenga (003)	1,280	4		4	50	4			1-33, 34, 35, 36
		Mkwezendumba (003)	410	1		1	50	1			1-37
		Gumulira (003)	730	2		2	50	2			1-38, 39
		Kunjare (004)	430	2		2	50	2			1-40, 41
		Mtukwa (004)	1,100	3		3	50	3			1-42, 43 44
		Mwenyaanthu (005)	290	1		1	50	1			1-45
		Dambo (006)	370	1		1	50	1			1-46
		Khungwa (008)	950	3		3	40	3			1-47, 48 49
		Mlemba (008)	300	1		1	40	1			1-50
		Misale T.C. (008)	280	1		1	40	1			1-51
		Verentino (008)	260	1		1	40	1			1-52
		Mselela (009)	450	2		2	40	2			1-53, 54
		Ngelule (009)	250	1		1	40	1			1-55
		Masitala (010)	280	1		1	40	1			1-56
		Chilundu (011)	290	1		1	50		1		2-1
		Pinda (011)	730	2		2	50		2		2-2, 3
		Chikuta (012)	460	2		2	50		2		2-4, 5
		Kamganda (014)	300	1		1	50		1		2-6
		Nkhumba (014)	440	2	1	1	50		1		2-7

A--3(3) Population Sheet and Construction Plan at Village Level

Zone	T. A. /S. T. A.	Village	Estimated Population (1996)	Number of Boreholes			Tentative Depth (m)	Phase			Borehole No
				Total	Existing Boreholes	New Boreholes		1	2	3	
1	Mavwere	Makanda (017)	600	2		2	50		2		2-8, 9
		Wisikoti (017)	320	1		1	50		1		2-10
		Manthalua (018)	520	2		2	50		2		2-11, 12
		Chamosola (019)	390	1		1	50		1		2-13
		Chalimba (019)	260	1		1	50		1		2-14
		Mbwerera (025)	440	2		2	40		2		2-15, 16
		Papa (025)	250	1		1	40		1		2-17
		Mzingo (028)	680	2	1	1	40	1			1-57
		Nathyola (Herbert) (028)	2, 020	5	1	4	50	4			1-58, 59, 60, 61
		Nkhuzu (030)	280	1		1	50	1			1-62
		Guwende (020)	460	2		2	50		2		2-18, 19
		Kazule (029)	370	1		1	55	1			1-63
		Kaole (030)	630	2		2	50	2			1-64, 65
		Kamphemvu (030)	1, 120	3		3	50	3			1-66, 67, 68
		Malamba (030)	300	1		1	50	1			1-69
		Nyongani (034)	330	1		1	50	1			1-70
		Mtonya (034)	310	1		1	50	1			1-71
		Walilanji (038)	390	2	1	1	50	1			1-72
		Likungwi (039)	370	1		1	50	1			1-73
		Kajiwa (040)	300	1		1	50	1			1-74
		Kankhande (035)	600	2		2	50	2			1-75, 76
		Mkusa (035)	330	1		1	50	1			1-77
		Tankttule (036)	390	1		1	50		1		2-20
		Welesani (041)	310	1		1	50		1		2-21
		Temanimwendo (041)	470	2		2	50		2		2-22, 23
		Mnamizana (040)	920	3	1	2	50	2			1-78, 79

A—3(4) Population Sheet and Construction Plan at Village Level

Zone	T.A./S.T.A.	Village	Estimated Population (1996)	Number of Boreholes			Tentative Depth (m)	Phase			Borehole No
				Total	Existing Boreholes	New Boreholes		1	2	3	
1	Mawwere	Geni (044)	480	2		2	40		2		2-24, 25
		Sunumbe (044)	950	3		3	40		3		2-26, 27, 28
		Chithumba (044)	310	1		1	40		1		2-29
		Njiwa (046)	510	2	1	1	40		1		2-30
		Lumelo (047)	580	2		2	45		2		2-31, 32
		Kamtsuka (047)	360	1		1	45		1		2-33
		Chigunda (047)	460	2		2	45		2		2-34, 35
		Sitombe (048)	940	3	1	2	45		2		2-36, 37
		Chiwyata (042)	650	2	1	1	40		1		2-38
		Mkokeza (051)	280	1		1	55		1		2-39
		Mkonkha (051)	420	1		1	55		1		2-40
		Mkonkha T.C. (051)	420	1		1	55		1		2-41
		Chazuka (052)	520	2	1	1	55		1		2-42
		Kapanga (053)	440	2		2	55		2		2-43, 44
		Kadzombe (054)	440	2		2	55		2		2-45, 46
		Msampha (055)	410	1		1	55		1		2-47
		Chiyeselewi (056)	280	1		1	55		1		2-48
		Chamani (057)	640	2		2	55		2		2-49, 50
		Kabuthu (057)	510	2		2	55		2		2-51, 52
		Nkhomphola (058)	350	1		1	55		1		2-53
		Chalaswa (058)	400	1		1	55		1		2-54
		Manyengo (059)	280	1		1	55		1		2-55
		Kanyinclúlà Sch/T.C. (031)	280	1		1	50	1			1-80
		Kamlilika (020)		1		1	50		1		2-56
		Njolomole (019)	220	1		1	50		1		2-57
		M'manja (037)	230	1		1	50		1		2-58

A-3(5) Population Sheet and Construction Plan at Village Level

Zone	T.A./S.T.A.	Village	Estimated Population (1996)	Number of Boreholes			Tentative Depth (m)	Phase			Borehole No.
				Total	Existing Boreholes	New Boreholes		1	2	3	
1	Mavwere	Mankhwala (054)	240	1		1	55		1		2-59
		Jusi (015)	220	1		1	50		1		2-60
		Mavwere (022)	370	1	1		—				
		Chilenga (008)	—	1	1		—				
		Pinda Sch. (010)	—	1	1		—				
		Lezinala (055)	40	1	1		—				
		Misale MCDE (007)	280	1	1		—				
		Nkhwazi ADMC (801)	—	1	1		—				
		Kachere (015)	380	1	1		—				
		Msukuwala Sch. (005)	—	1	1		—				
		Mchekeni (029)	—	1	1		—				
		Mphalabungu (016)	420	1	1		—				
	Sub Total		37,510	131	19	112	5,440	52	60		
	Zulu	Mailosi (019)	280	1		1	45		1		2-61
		Mtamadzorgo (019)	400	1		1	45		1		2-62
		Mwandawala (018)	530	2		2	45		2		2-63,64
		Mkumba (020)	500	1		1	45		1		2-65
		Jamu (020)	320	1		1	45		1		2-66
		Chimpamba (027)	260	1		1	50		1		2-67
		Chiwoko (028)	980	3	1	2	50		2		2-68,69
		Mazawa (029)	510	1		1	50		1		2-70
		Mbachundu (029)	800	2		2	50		2		2-71,72
		Chintanda (030)	390	1		1	50		1		2-73
		Kachikondo (030)	370	1		1	50		1		2-74
		Chiphala (032)	500	2		2	50		2		2-75,76
		Dzidzwa (033)	660	2		2	50		2		2-77,78

A-3(6) Population Sheet and Construction Plan at Village Level

Zone	T.A./S.T.A.	Village	Estimated Population (1996)	Number of Boreholes			Tentative Depth (m)	Phase			Borehole No.
				Total	Existing Boreholes	New Boreholes		1	2	3	
1	Zulu	Kalilawgwe (034)	260	1		1	50		1		2-79
		Msemwe (034)	890	2		2	50		2		2-80, 81
		Mando (035)	400	1		1	55		1		2-82
		Gereta (035)	290	1		1	55		1		2-83
		Matimba (037)	630	2		2	50		2		2-84, 85
		Jenjewa (804)	780	2	1	1	40		1		2-86
		Kanjelengu (804)	330	1		1	40		1		2-87
		Kamudaya (036)	280	1		1	55		1		2-88
		Mzati (027)	240	1		1	50		1		2-89
		Zefalino (031)	230	1		1	50		1		2-90
		Chiphala (035)	230	1		1	55		1		2-91
		Chamveka (014)	210	1		1	45		1		2-92
		Kamwendo T.C. (014)	—	2		2	45		2		2-93, 94
		Chiosha Agr. (026)	—	1	1		—				
		Guillime (804)	320	2	2		—				
		Chimteka sch. (026)	510	1	1		—				
		Chisoni (027)	260	1	1		—				
		Benjamin (030)	410	1	1		—				
		Chikhutu (031)	410	1	1		—				
	Sub Total		13,180	43	9	34	1,655		34		
	Total		62,330	211	37	174	8,630	80	94		
2	Zulu	Kachaje (012)	630	2		2	45			2	3-1, 2
		Geresono (012)	330	1		1	45			1	3-3
		Mchambo (013)	370	1		1	45			1	3-4
		Chikoloka (013)	270	1		1	45			1	3-5
		Tika (013)	270	1		1	45			1	3-6
		Chimwere (021)	410	1		1	45			1	3-7

A－3(7) Population Sheet and Construction Plan at Village Level

Zone	T. A. /S. T. A.	Village	Estimated Population (1996)	Number of Boreholes			Tentative Depth (m)	Phase			Borehole No.
				Total	Existing Boreholes	New Boreholes		1	2	3	
2	Zulu	Kathyuka (021)	540	2	1	1	45			1	3-8
		Chiwete (022)	310	1		1	45			1	3-9
		Chadewa (022)	250	1		1	55		1		2-95
		Chikomeni (023)	290	1		1	55		1		2-96
		Changata (023)	260	1		1	50			1	3-10
		Langwani (023)	270	1		1	50			1	3-11
		Kamangilila (024)	430	1		1	50		1		2-97
		Kwachaoname (024)	360	1		1	50		1		2-98
		Chikoyi (025)	290	1		1	50		1		2-99
		Chimleka (025)	510	2		2	50		2		2-100, 101
		Chetambala (038)	260	1		1	50		1		2-102
		Chiwenka (039)	250	1		1	50		1		2-103
		Mphanga (040)	540	2	1	1	50		1		2-104
		Dulira (040)	310	1		1	50		1		2-105
		Chituluka (040)	330	1		1	50		1		2-106
		Chingwe (040)	270	1		1	50		1		2-107
		Mudunga (041)	290	1		1	50		1		2-108
		Kaligwenje (021)	230	1		1	50		1		2-109
		Kalona (025)	230	1		1	50		1		2-110
		Sinosi (023)	210	1		1	55			1	3-12
		Kanyimbo (012)	200	1		1	45			1	3-13
	Sub Total		8,910	31	2	29	1,415		16	13	
	Mduwa	Machilika (031)	330	1		1	35			1	3-14
		Kazira (037)	250	1		1	50			1	3-15
		Kayenda (037)	290	1		1	50			1	3-16
		Mberere (037)	250	1		1	50			1	3-17

A－3(8) Population Sheet and Construction Plan at Village Level

Zone	T.A./S.T.A.	Village	Estimated Population (1996)	Number of Boreholes			Tentative Depth (m)	Phase			Borehole No.
				Total	Existing Boreholes	New Boreholes		1	2	3	
2	Mduwa	Mikundi T.C. (027)	450	2	1	1	50			1	3-18
		Fihmoni (028)	340	1		1	50			1	3-19
		Tongole (034)	250	1		1	50			1	3-20
		Kalinde (035)	580	2		2	50			2	3-21, 22
		Chipunthika (036)	320	1		1	50			1	3-23
		Kadiso (042)	300	1		1	55			1	3-24
		Mzama (042)	280	1		1	50			1	3-25
		Tenje (027)	380	2		2	50			2	3-26, 27
		Lezani (034)	260	1		1	50			1	3-28
		Goseni (026)	310	1		1	45			1	3-29
		Timoti (026)	330	1		1	45			1	3-30
		Sigereta (025)	490	2	1	1	45			1	3-31
		Chisamba (025)	430	2		2	45			2	3-32, 33
		Saidi (025)	350	1		1	45			1	3-34
		Mikuwa (031)	220	1		1	45			1	3-35
		Sundwe (037)	190	1		1	50			1	3-36
		Mphomwa (029)	200	1		1	50			1	3-37
		Layisi (029)	180	1		1	50			1	3-38
		Kabungwe (031)	200	1		1	45			1	3-39
		Mchakulu (042)	230	1		1	50			1	3-40
		Kakuda (041)	—	1	1		—				
		Beni (040)	180	1	1		—				
		Mtunga (039)	—	1	1		—				
		Mikukndi Agr. (029)	—	1	1		—				
		Sundwe (037)	—	1	1		—				
		Mzama Sch. (042)	70	1	1		—				

A－3(9) Population Sheet and Construction Plan at Village Level

Zone	T.A./S.T.A.	Village	Estimated Population (1996)	Number of Boreholes			Tentative Depth (m)	Phase			Borehole No.
				Total	Existing Boreholes	New Boreholes		1	2	3	
2	Mduwa	Tsindwi (042)	20	1	1		——				
		Kazila (037)	250	1	1		——				
		Chimongo (033)	210	1	1		——				
		Mikundi ADMC (027)	190	1	1		——				
	Sub Total		8,330	39	12	27	1,300			27	
	Dambe	Kapiri (801)	350	1		1	45			1	3-41
		Dambe (008)	470	2	1	1	50			1	3-42
		Chalunda (015)	340	1		1	45			1	3-43
		Kasanda (016)	520	2	1	1	45			1	3-44
		Sinoya (016)	350	1		1	50			1	3-45
		Katonda (018)	530	2	1	1	55			1	3-46
		Kamera (019)	400	1		1	50			1	3-47
		Chisenga (019)	340	1		1	50			1	3-48
		Nkhunumbu (019)	320	1		1	50			1	3-49
		Kabvuta (019)	440	2		2	50			2	3-50,51
		Mphanda (020)	270	1		1	50			1	3-52
		Mtanila (020)	300	1		1	50			1	3-53
		Marten (020)	390	2	1	1	50			1	3-54
		Kazimbe (021)	260	1		1	50			1	3-55
		Gandali (022)	360	2	1	1	45			1	3-56
		Chipumi (025)	990	3	1	2	50			2	3-57,58
		Kapiri Hospital Wards & Mission & Dispe (015)	400	3	2	1	50			1	3-59
		Chimatilo (017)	170	1		1	50			1	3-60
		Gong'ontha (019)	210	1		1	50			1	3-61
		Tsengo (018)	180	1		1	55			1	3-62
		Wizimani (015)	220	1		1	50			1	3-63

A－3(10) Population Sheet and Construction Plan at Village Level

Zone	T.A./S.T.A.	Village	Estimated Population (1996)	Number of Boreholes			Tentative Depth (m)	Phase			Borehole No.
				Total	Existing Boreholes	New Boreholes		1	2	3	
2	Dambe	Kwaloza (016)	220	1		1	45			1	3-64
		Ndangiza (021)	210	1		1	50			1	3-65
		Chikoti (008)	210	1		1	50			1	3-66
		Nthema (008)	510	3	3		—				
		Gandali (022)	360	1	1		—				
		Chiphesi (020)	300	1	1		—				
		Kapiri Court (801)	110	1	1		—				
		Kadummanja (022)	350	1	1		—				
	Sub Total		10,140	42	15	26	1,335			26	
	Total		27,380	111	29	82	4,050		16	66	
3	Mkanda	Lubani (027)	250	1		1	45			1	3-67
		Chinkhali (028)	430	2		2	50			2	3-68,69
		John (051)	270	1		1	50			1	3-70
		Dima (029)	500	2		2	50			2	3-71,72
		Lameki (029)	340	1		1	50			1	3-73
		Kaledza (037)	270	1		1	55			1	3-74
		Malungo (037)	380	1		1	55			1	3-75
		Kadewele (038)	280	1		1	75			1	3-76
		Mbewa (038)	260	1		1	75			1	3-77
		Kangulu (038)	340	1		1	75			1	3-78
		Mkanda T.C. (801)	980	3	1	2	40			2	3-79,80
		Mazombwe (048)	260	1		1	50			1	3-81
		Thendo (048)	260	1		1	50			1	3-82
		Masiwa (048)	300	1		1	50			1	3-83
		Kambadekha (048)	290	1		1	50			1	3-84
		Jimu (029)	220	1		1	50			1	3-85

A-3(1) Population Sheet and Construction Plan at Village Level

Zone	T.A./S.T.A.	Village	Estimated Population (1996)	Number of Boreholes			Tentative Depth (m)	Phase			Borehole No.
				Total	Existing Boreholes	New Boreholes		1	2	3	
3	Mkanda	Lupya (039)	220	1		1	40			1	3-86
		Chisauka (039)	240	1		1	40			1	3-87
		Kosamu (039)	220	1		1	40			1	3-88
		Msanda (030)	210	1		1	60			1	3-89
		Zandana (035)	210	1		1	55			1	3-90
		Kamphata (026)	10	2	2		—				
		Mkanda (801)	1,010	4	4		—				
		Kaigwazanga (051)	—	1	1		—				
		Masitala (018)	410	1	1		—				
		Mseka (037)	180	1	1		—				
		Kawere (040)	330	1	1		—				
		Lufina (030)	—	1	1		—				
		Peter Sch. (028)	300	1	1		—				
		Chakwawa (028)	330	1	1		—				
		Ngolomi (047)	—	1	1		—				
		Kambadekha (048)	290	1	1		—				
		Poko (049)	—	1	1		—				
		Fanuel (027)	390	1	1		—				
	Sub Total		9,980	42	18	24	1,105			24	
	Dambe	Khwere (003)	450	2		2	75			2	3-91,92
		Mkumbi (009)	350	1		1	40			1	3-93
		Kambuwe (011)	580	2		2	65			2	3-94,95
		Kalulu (026)	1,670	5	3	2	50			2	3-96,97
		Juwelo (012)	290	1		1	50			1	3-98
		Mtulira (013)	290	1		1	40			1	3-99
		Nthema T.C. (014)	360	1		1	50			1	3-100

A－3(12) Population Sheet and Construction Plan at Village Level

Zone	T. A. /S. T. A.	Village	Estimated Population (1996)	Number of Boreholes			Tentative Depth (m)	Phase			Borehole No.
				Total	Existing Boreholes	New Boreholes		1	2	3	
3	Dambe	Diti (014)	260	1		1	65			1	3-101
		Chitonde (024)	260	1		1	40			1	3-102
		Kaiulu T. C. (026)	820	3	1	2	50			2	3-103, 104
		Katsopano (026)	330	1		1	50			1	3-105
		Chimwala (026)	620	2		2	50			2	3-106, 107
		Chiti (027)	800	2		2	50			2	3-108, 109
		Mphako (027)	250	1		1	50			1	3-110
		Chafulumila (024)	—	1	1		—				
		Chikukmbusto (003)	—	3	3		—				
		Kalungwisu (004)	—	1	1		—				
		Nthma Rood Camp (014)	30	1	1		—				
		Mchonkwe (025)	390	1	1		—				
	Sub Total		7,750	31	11	20	1,065			20	
	Total		17,730	73	29	44	2,350			44	
	Grand Total		107,440	395	95	300	15,035	80	110	110	

A－4(1) Data on Existing Boreholes

Location			Borehole No.		Drilling Year	Finance Agency /Client	Depth (m)	Diameter (mm)	Static Water Level (GL-m)	Max. Safe yield at Completion Time (ℓ/min)	Depth of Main Aquifer (m)	Type of Pump at Completion Time	Geology	Remarks
Zone	T.A./S.T.A.	Village												
1	T.A. Mlonyeni	Nemezio	1	DP-120	1972	T.A.	45.0	—	6.0	37.5	27.0～30.0	Bush	gneiss. 30～45m fracture zone	
		Kafulama	2	GK-229	1975	—	60.0	—	12.0	24.0	37.5	——	0～60m weathered zone of gneiss and quartzite	
		Tembwe H/C	3	GM- 81	1985	K.A.D.D.	40.0	200	4.6	60.0	35.0～36.0	——		
		Tsumba	4	GM- 80	1986	K.A.D.D.	35.0	200	9.0	90.0	6.2	——		breakdown
		Tembwe	5	IR- 80	1981	D.D.C.	30.0	200	3.0	90.0	0.0	——	25～30m gneiss	
		Sankhani	6	KB- 38	1991	K.A.D.D.	—	—	—	——	——	——		under construction
		Tembwe Agr.	7	SM- 80	1977	A.R.D.	45.0	200	3.9	93.0	37.0	——	0～23m soil and weathered rock. 39～45m gneiss	
		Mlonyeni	8	W－ 18	1950	M.G.	36.0	150	6.7	72.0	9.0	——	0～7.5m clay etc. 7.5～22m mudflow	
		Tembwe T/C	9	W -136	1957	—	33.0	—	—	24.0	——	——		
	S.T.A. Mavwere	Sitombe	10	A - 72	1961	P.C.C.P.	41.1	130	12.0	42.0	33.0～41.0	——	0～24m sand. 24～37m quartzite. 37～41m weathered gneiss	
		Mavwere	11	A - 73	1962	P.W.D.	47.0	130	6.6	54.7	39.0～45.0	Bush	0～0m soil and gravel. 0 ～35m Highly weathered rock. 35～47m weathered gneiss	not being used due to salty water
		Nkumba	12	A - 74	1962	P.C.C.P.	36.8	150	2.1	42.0	28.5～34.0	——	0～0m soil and gravel. 0 ～24m Highly weathered rock. 24～36m weathered gneiss	
		Chilenga MCDE	13	FM-361	1984	C.S.C.	45.0	200	3.5	60.0	34.0	Climax	weathered gneiss	
		Waliranji	14	GM- 83	1986	K.A.D.D.	38.4	150	2.6	124.0	33.0～35.0	Limani		
		Pinda Sch.	15	GM- 85	1986	K.A.D.D.	31.5	200	3.14	120.0	——	Limani	0～15m reddish clay. 15～30m weathered gneiss	
		Njiwa	16	HD- 8	1951	M.G.	34.5	150	7.2	73.0	7.2～20.0	Climax	0～9m lateritic weathered rock. 9～27m gneiss	
		Mzingo	17	IR- 81	1981	D.D.C.	30.0	200	4.0	——	——	——		
		Lezinala	18	PM-820	1991	UNHCR	—	—	—	——	——	——		
		Misale MCDE	19	R - 60	1969	M.G.	45.0	200	—	76.0	33.0～39.0	Bush	0～15m lateritic soil. 15～45m weathered gneiss	
		Nkhwazi ADMC	20	R -142	1970	F.M.B.	45.0	200	27.0	——	27.0	Bush	30～45m quartzite and gneiss	
		Kachere	21	R -143	1970	M.D.C.	45.0	200	18.1	38.0	15.5	——	0～25m laterite. 25～45m crushed gneiss	
		Nathyola (Herbert)	22	RK-111	1979	D.D.C.	45.0	200	26.0	187.0	39.0	N/L		
		Chazuka Sch.	23	SM- 79	1976	D.D.C.	45.75	200	5.1	85.5	12.2	Bush	0～6.1m soil. 6.1～29m gravel and weathered gneiss 29～45.95m gneiss (36.6m crushed)	
		Msukwala Sch.	24	SM-216	1977	D.D.C.	45.0	200	10.5	27.0	——	Bush	0～45m soil and weathered rock. 45m quartzite	
		Chinyata	25	W - 27	1959	M.G.	34.5	150	4.2	54.0	24.0～25.5	Bush	0～2m soil. 2～28m laterite. 28～34.5m clay and gravel	
		Nnamizana	26	W -190	1951	M.G.	45.0	150	6.0	54.0	——	——		
		Mphalabungu	27	Y -101	1971	D.D.C.	47.0	200	3.9	24.0	——	Climax	upper:sandy soil. lower:gneiss	

A－4(2) Data on Existing Boreholes

Location			Borehole No.		Drilling Year	Finance Agency /Client	Depth (m)	Diameter (mm)	Static Water Level (GL-m)	Max. Safe yield at Completion Time (ℓ/min)	Depth of Main Aquifer (m)	Type of Pump at Completion Time	Geology	Remarks
Zone	T.A./S.T.A.	Village												
1	S.T.A. Mavwere	Mchekeni	28	Y -192	1972	D.D.C.	48.0	200	2.4	12.5	6.0	—	gneiss (27m quartzite)	
	T.A. Zulu	Chisoni	29	DP-121	1972	D.D.C.	45.0	150	3.0	30.0	27.0～36.0	Climax	0～37m colluvial deposite and weathered rock. 37～45m gneiss	
		Benjamin	30	FP- 11	1973	—	45.0	150	7.5	166.0	10.1	Climax	upper:gravel. lower:schist and gneiss	
		Chiosha Agr.	31	GM- 80	1986	K.A.D.D.	35.7	150	6.8	60.0	27.0～34.0	Climax		
		Chikhutu	32	KB- 39	1991	K.A.D.D.	—	—	—	——	—	—		under construction
		Guiltime	33	Q -223	1968	T.A.	33.9	150	2.1	78.0	14.0～25.0	——	0～4.5m colluvial deposite. 4.5～18m weathered rock. 18～30m gneiss	
		Chimteka Sch.	34	R - 63	1970	M.D.C.	49.5	200	15.0	48.0	19.0～41.0	Climax	0～39m latertic weathered rock. 39～49.5m gneiss	
		Jenjewa	35	W - 17	1959	M.G.	35.1	200	4.32	54.0	23.0～24.0	Bush	0～4.5m soil. 4.5～9m gravel. 9～21m laterite. 21～37.5m clay and savel	
		Chiwoko	36	W - 24	1959	M.G.	31.5	200	14.4	54.0	18.0	Bush	0～3m soil. 3～12m sand and clay. 12～28m yellow clay. 28～31.5m hard rock	
		Guiltime Area	37	W - 92	1959	M.G.	38.0	200	6.0	55.0	27.0～30.0	——	0～4.5m soil. 4.5～24m sandy soil. 24～27m laterite. 27～38m clay	
	S.T.A. Mavwere	Kanongo Est.	1	CC- 59	—	Private	48.0	—	6.0	54.0	16.0	N/L		Private
		Likasi Est.	2	R - 61	1970	〃	51.0	200	0	——	41.0	N/L	0～2.4m soil. 2.4～41m laterite. 41～51m weathered rock	〃
		Likasi Est.	3	R -175	1970	〃	36.0	200	22.0	——	33.0	Godwin	0～3m soil. 3～24m laterite. 24～36m gneiss	〃
2	T.A. Zulu	Kathyuka Sch.	1	GM- 87	1986	K.A.D.D.	35.0	150	5.4	60.0	25.0～30.0	India	15～30m gravelly quartz. 30～35m weathered gneiss	
		Mphanga	2	RR-110	1980	—	45.0	150	3.0	45.6	18.3	Powered		
	S.T.A. Mduwa	Kakuda	3	A - 69	1962	P.C.C.P.	36.3	100	9.12	18.0	33.6	Bush		breakdown
		Beni	4	A - 75	1961	—	48.9	—	1.24	54.0	39.0～45.0	——	0～9m soil and gravel. 9～18m highly weathered rock. 18～49m weathered gneiss	
		Mtunga	5	GK-138	1974	D.D.C.	48.0	150	10.64	91.0	42.0	Climax	6～33m weathered rock. 33～48m gneiss	
		Mikundi Agr.	6	GM- 79	1989	K.A.D.D.	—	110	7.4	——	—	—		
		Sundwe	7	KB- 37	1991	K.A.D.D.	—	—	—	——	—	—		under construction
		Mzama Sch.	8	PM-195	1976	D.D.C.	58.5	200	9.0	54.0	55.2～55.5	Bush		
		Tsindwi	9	PM-196	1976	D.D.C.	36.6	120	6.0	96.6	36.0	Bush		
		Sigereta	10	PM-197	1976	D.D.C.	36.0	200	5.1	125.0	13.0～21.0	——	0～3m soil. 3～15m soft rock. 15～36m gneiss	
		Mikundi T/C	11	R - 62	1969	M.G.	42.0	150	3.0	330.0	18.0	——	0～31.5m weathered gneiss. 31.5～42m gneiss	
		Kazila	12	R -135	1970	D.D.C.	43.5	150	7.2	136.5	—	—	weathered gneiss with quartzite	
		Mikundi ADMC	13	R -136	1970	F.M.B.	42.0	150	13.5	54.0	30.0～39.0	——	0～9m soft soil. 9～40m laterite. 40～42m gneiss	
		Chimongo	14	W - 21	1959	P.C.C.P.	36.9	150	4.5	72.0	—	Bush	upper:lateritic clay	

A－4(3) Data on Existing Boreholes

Location			Borehole No.		Drilling Year	Finance Agency /Client	Depth (m)	Diameter (mm)	Static Water Level (GL-m)	Max. Safe yield at Completion Time (ℓ/min)	Depth of Main Aquifer (m)	Type of Pump at Completion Time	Geology	Remarks
Zone	T.A./S.T.A.	Village												
2	S.T.A. Dambe	Chipumi	15	A - 68	1970	D.D.C.	45.0	80	6.7	54.6	33.0	—	upper:laterite, lower:gneiss	
		Kadammanja	16	A - 76	1962	P.C.C.P.	39.6	80	6.0	36.0	12.3	Climax	clay and gravel	
		Kapiri Mission	17	GK-114	1974	C.M.	90.0	200	9.0	18.0	24.0	—		
		Nthema Agr.	18	CM- 86	1985	K.A.D.D.	23.6	110	4.4	——	4.4	India	5～23.6m soft gneiss	
		Rural H/Nthema	19	CM-130	—	R.H.	35.0	200/150	4.77	——	8.1	—		
		Nthema	20	KB- 36	1991	K.A.D.D.	—	—	—	——	——	—		under construction
		Marten	21	PM-194	1976	D.D.C.	45.0	—	4.5	125.0	36.0～37.0	Climax	15～45m gneiss	
		Katonda Sch.	22	PM-198	—	D.D.C.	45.0	—	4.5	33.0	9.0	—		
		Dambe (Nthema)	23	RK- 78	1979	C.S.C.	45.0	—	6.0	83.0	33.0～45.0	—	0～3m soil, 3～33m gravelly soil, 33～45m gneiss	
		Panye Sch.	24	RK-109	1979	D.D.C.	45.0	—	6.0	48.7	15.0&25.5	—		
		Gandali	25	R -139	1970	D.D.C.	33.0	120	9.0	75.0	15.0	Godwin	upper:laterite, lower:gneiss	
		Kapiri Court	26	R -292	—	D.D.C.	61.0	150	11.4	45.6	35.0～47.0	Climax	0～32m colluvial sediment and weathered rock, 32～61m gneiss	
		Kasanda	27	SM- 72	1976	D.D.C.	36.0	—	3.3	25.8	27.0～33.0	Bush	0～3m soft rock, 3～10m gneiss, 10～36m basement rock	
		Chiphesi	28	SM-215	1977	D.D.C.	45.0	150	4.5	96.0	30.0～39.0	Bush	0～6m gravelly soil, 6～45m gneiss	
		Kapiri Dispe.	29	Y -195	1971	C.S.C.	45.0	—	4.0	30.0	35.0～40.0	—	0～15m gravelly soil, 15～45m gneiss	
	S.T.A. Dambe	Zikomo Est.	1	KK-157	1978	Private	60.0	—	4.5	101.0	42.0～57.0	N/L	0～6m soil, 6～25.5m quartzite, 25.5～60m crushed gneiss	Privat
		Rusa Est.	2	P - 85	1971	〃	60.0	—	6.0	35.6	45.0～57.0	—	weathered gneiss	〃
3	T.A. Mkanda	Kamphata	1	AM- 25	1978	C.T. Kadzamira	60.0	150	13.2	78.0	45.0	Powered	0～30m soil, 30～60m fracture zone	
		Mkanda Market	2	FM- 37	1984	C.S.C.	45.0	—	6.5	60.0	20.0～32.0	—	0～9m soil, 9～25m gravelly weathered rock, 25～45m gneiss (32m fracture)	
		Kaigwazanga	3	FP- 9	1974	D.D.C.	45.0	152	1.83	54.0	—	Climax	gneiss	
		Masitala	4	GK- 2	1972	D.D.C.	90.0	—	10.67	16.2	75.0～81.0	—	0～21m colluvial soil, 21～90m gneiss (fracture)	
		Mseka	5	GK-150	1975	D.D.C.	67.5	200	5.79	75.0	39.0～40.0	Climax	0～6m soil, 6～15m unconsolidated sediment, 15～45m hard quartzite	
		Chawala	6	GK-228	1975	D.D.C.	29.6	—	4.57	78.0	—	—		
		Mkanda Agr.	7	CM- 77	1986	K.A.D.D.	31.5	—	5.73	120.0	28.0	—		
		Kamphata	8	KB- 35	1991	—	—	—	—	——	——	—		under construction
		Lufina	9	PM-192	1976	D.D.C.	52.5	200	3.05	37.9	45.5～47.0	Climax		
		Peter Sch.	10	PM-193	1976	D.D.C.	45.0	150	4.5	15.2	27.0～30.0	Bush	0～3m soil, 3～6m gravel, 6～15m soft rock, 15～45m basement rock	

A－4(4) Data on Existing Boreholes

Location			Borehole No.		Drilling Year	Finance Agency /Client	Depth (m)	Diameter (mm)	Static Water Level (GL-m)	Max. Safe yield at Completion Time (ℓ/min)	Depth of Main Aquifer (m)	Type of Pump at Completion Time	Geology	Remarks
Zone	T.A./S.T.A.	Village												
3	T.A. Mkanda	Mkanda H/C	11	RK- 91	1980	M. Health	45.0	200	6.9	120.0	8.0	Bush	weathered rock	
		Chakwawa	12	RK-108	1979	D.D.C.	45.0	200	4.27	54.0	8.0	—		
		Mkanda	13	RK-280	1986	K.A.D.D.	28.3	160	3.45	———	5.0	India		
		Ngolomi	14	R - 57	1970	D.D.C.	45.0	120	18.3	90.8	—	Bush	0～4m soil. 4～39m weathered rock	
		Fanuel	15	R - 58	1969	D.D.C.	39.0	150	6.1	21.2	30.0～39.0	Bush	0～13m soil. 13～39m gneiss	
		Kambadekha	16	SM-437	1983	M. Health	31.6	150	1.7	105.0	10.0～25.0	Climax	0～6m silty clay. 6～25m weathered gneiss. 25～39m basement rock	
		Poko	17	W - 22	1959	D.D.C.	36.3	—	5.79	33.3	7.5～19.5	Bush	0～6m clay. 6～17.4m gravel. 17.4～36.3m clay	
		Mkanda Court	18	W - 23	1959	M. Justice	30.0	—	5.49	18.2	—	Bush	gravel	
	S.T.A. Dambe	Kalulu	19	A - 67	1962	D.D.C.	40.5	100	2.44	42.0	35.4	—	upper:laterite. lower:gneiss	
		Kalulu	20	GM- 75	1986	K.A.D.D.	29.85	—	6.27	60.0	28.0	—		
		Mchonkhwe	21	GM- 76	1980	M. Health	31.0	—	6.3	60.0	26.0～28.0	—		
		Chafulumila	22	IR- 79	1981	D.D.C.	33.3	—	2.7	120.0	14.2～22.2	—	2～16m weathered quartzite. 16～28m fracture zone. 28～33.3m gneiss	
		Kalulu	23	RB-269	1973	ADMRC	45.0	150	12.2	11.4	36.0～40.0	—	0～6m soil. 6～39m soft rock	
		Chikumbusto	24	RM- 66	1975		—	—	3.96	———	—	—		
		Chikumbusto	25	RM- 67	1975		78.0	—	7.32	290.0	30.0～45.0	—	0～3m soil. 3～21m weathered rock. 21～43m unconsolidated sediment. 43～78m gneiss	
		Kalungwisu II	26	RM- 69	1975		60.0	—	4.56	250.0	27.0～36.0	—	0～5m weathered rock. 5～30m gneiss. 30～60m basement rock	
		Chikumbusto	27	RM- 75	1978		—	—	6.10	———	—	—		
		Kalulu ADMC	28	R -138	1970	D.D.C.	—	—	12.2	———	—	—		
		Nthema Road Camp	29	SM-218	1977	D.D.C.	45.0	—	7.62	25.0	18.0～40.0	—	0～30m weathered rock & quartzite. 30～45m gneiss	
	T.A. Mkanda	Chalimbana Est.	1	FC- 87	1971	Private	51.0	150	10.5	150.0	3.6	—	0～35m unconsolidated sediment. 35～51m gneiss	Private
		— do —	2	M - 30	1976	〃	48.0	—	4.5	300.0	10.5	—	granulite	〃
		Kamphinda Est.	3	GX-116	1974	〃	88.0	150	1.8	120.0	81.0～88.0	Climax	0～6m soil. 6～10m unconsolidated sediment. 10～42m weathered rock. 42～88m gneiss	〃
		Chalimbana Est.	4	RS-231	1983	〃	47.8	150	26.0	75.0	—	India		〃
		— do —	5	RK-261	1983	〃	36.5	200	12.5	4.8	18.0	—		〃
		— do —	6	R -108	1969	〃	50.0	150	11.4	54.0	10.5	Bush	gneiss and granite	〃
		Tolefa Est.	7	SM- 86	1976	〃	61.5	100	4.2	78.0	39.0～57.0	Powered	0～6m sandy soil. 6～39m quartzite. 39～61.5m gneiss	〃
		Chalimbana Est.	8	SM- 89	1976	〃	61.0	150	6.0	30.0	15.25	Powered		〃

A－4(5) Data on Existing Boreholes

Location			Borehole No.		Drilling Year	Finance Agency /Client	Depth (m)	Diameter (mm)	Static Water Level (GL-m)	Max. Safe yield at Completion Time (ℓ/min)	Depth of Main Aquifer (m)	Type of Pump at Completion Time	Geology	Remarks
Zone	T.A./S.T.A.	Village												
3	T.A.Mkanda	Chalimbana Est.	9	SM-417	—	Private	—	—	—	84.0	——	Limani		Private
	S.T.A.Dambe	Mpini Est.	10	AM- 22	1978	〃	45.0	150	3.6	250.0	21.0～30.0	Powered	0～6m weathered rock. 6～45m gneiss	〃
		— do —	11	AM- 23	1978	〃	—	—	—	——	——	——		〃
		Rusa II	12	GM-143	1986	〃	—	—	3.5	——	——	——		〃
		Nkoleza Est.	13	KK- 1	1977	〃	75.0	150	6.3	96.0	12.0	Powered	0～18.3m sandy soil. 18.3～48.8m weathered gneiss. 48.8～75m gneiss	〃
		Rusa Est.	14	P - 86	1970	〃	45.0	150	10.5	60.0	25.0～40.0	Climax	0～20m gravelly soil. 29～42m gneiss and quartzite	〃
		— do —	15	P - 91	1970	〃	50.0	150	11.1	75.0	9.0	——		〃
		— do —	16	P - 92	1970	〃	50.0	—	15.0	24.0	8.0	——	40～50m slightly weathered gneiss	〃
		— do —	17	P - 93	1970	〃	45.0	150	15.0	12.0	——	——	15～45m gneiss	〃
		Khamalidyetsa Est.	18	RK-260	1982	〃	33.5	200	4.62	42.0	——	Powered	gneiss	〃
		Chikumbutso Est.	19	RM- 68	1975	〃	78.0	150	4.5	300.0	45.0～55.0	——	0～20m sandy soil. 20～50m gneiss. 50～78m basement rock	〃
		Est.59	20	R -280	1976	〃	67.1	—	12.0	258.0	18.3	——	0～29.3m unconsolidated sediment. 29.3～67.1m weathered gneiss	〃
		— do —	21	R -281	1976	〃	—	—	—	——	——	——		〃
		Est.57	22	R -286	1971	〃	61.0	120	12.6	54.0	21.35	Powered	0～21.3m gravelly soil. 21.3 ～42.7m weathered rock. 42.7～61.0m gneiss	〃
		— do —	23	R -287	1971	〃	64.0	—	7.8	138.0	9.15	Mono	0～45.7m colluvial soil with cobble of quartzite. 45.7～64m gneiss	〃
		Nkoleza Est.	24	SM- 67	1976	〃	61.0	—	2.4	144.0	33.0～57.0	Powered	0～15m weathered rock. 15～61m gneiss	〃
		Est.57	25	SM- 70	1976	〃	76.2	150	6.0	54.0	15.25	Powered	0～6.1m soil. 6.1～36.6m weathered quartzite. 36.6～71.2m gneiss	〃
		Thokozire Est.	26	SM- 73	1976	〃	81.0	100	4.8	252.0	51.0～66.0	Powered	0～6m weathered rock. 6～33m gneiss. 31～81m soft rock	〃
		Chikumbutso Est.	27	SM- 74	1976	〃	61.0	200	—	78.0	30.0～51.0	Powered	0～33m weathered rock. 33～61m gneiss and diorite	〃
		— do —	28	SM- 75	1977	〃	60.0	150	1.5	210.0	——	Powered	0～3m soil. 3～25m soft rock. 25～61m gneiss	〃
		Mpini Est.	29	SM- 76	1976	〃	60.0	150	3.0	180.0	30.0～39.0	Powered	0～6m soil. 6～39m quartzite. 39～60m gneiss	〃
		— do —	30	SM- 78	—	〃	—	—	—	——	——	——		〃
		— do —	31	SM- 84	1976	〃	—	—	—	——	——	——		〃
		Mchalsi Est.	32	SM- 90	1976	〃	68.9	—	5.7	150.0	9.0～60.0	Powered	0～6m weathered rock. 6～45m gneiss and quartzite. 45～68.9m gneiss	〃
		Rusa Est.	33	KK-167	1978	〃	60.0	150	17.1	78.0	——	Climax	gravelly weathered rock	〃

A－5(1) Meteorological Data

Station Name : LILONGWE

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
Temp (℃)		21.0	20.9	20.7	19.7	17.6	15.6	15.2	17.0	19.9	22.7	23.0	21.7	19.6
Rel Humidity (%)		84.0	85.0	82.0	79.0	72.0	68.0	64.0	58.0	53.0	51.0	62.0	78.0	70.0
Evaporation (mm)		135.3	112.5	122.1	112.5	127.7	119.3	128.2	163.3	207.7	263.9	216.6	154.9	1864.0
Evapotranspiration(mm)		132.4	116.8	130.8	117.9	105.1	91.2	100.8	127.7	159.0	193.4	174.9	139.5	1589.5
Rainfall (mm)		215.3	202.9	133.8	41.9	8.8	1.0	1.0	1.0	3.3	6.0	66.2	166.3	847.5
Rainy Days	0.3mm	20	18	14	7	2	1	0	0	1	1	7	16	7
	1.0mm	17	14	1	1	0	0	0	0	0	1	1	16	4
	10.0mm	7	6	0	0	0	0	0	0	0	0	0	1	1
Pressure (HPA)		886.9	886.8	888.1	889.5	891.4	892.9	893.3	892.2	890.6	888.7	888.0	887.3	889.7

A－5(2) Meteorological Data

Station Name : CHITEDZE

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
Temp (℃)		20.8	20.7	20.5	19.6	17.6	15.5	15.4	17.0	19.8	22.3	22.7	21.3	19.5
Rel Humidity (%)		84.0	85.0	83.0	79.0	72.0	67.0	63.0	58.0	52.0	50.0	60.0	78.0	69.0
Evaporation (mm)		108.4	100.8	116.0	112.2	111.2	108.4	122.4	154.4	209.0	255.5	206.5	147.0	1751.8
Evapotranspiration (mm)		131.4	115.1	127.1	114.6	99.5	84.3	94.2	119.4	150.9	183.2	167.4	138.0	1525.1
Rainfall (mm)		229.3	197.1	138.6	48.0	9.6	2.5	0.5	0.5	2.0	4.3	82.0	204.7	919.1
Rainy Days	0.3mm	20	18	14	7	2	1	0	0	0	1	7	18	7
	1.0mm	17	16	11	6	1	0	0	0	0	1	6	16	6
	10.0mm	7	6	4	2	0	0	0	0	0	0	3	6	2
Pressure (HPA)														

A－5(3) Meteorological Data

Station Name : MKANDA

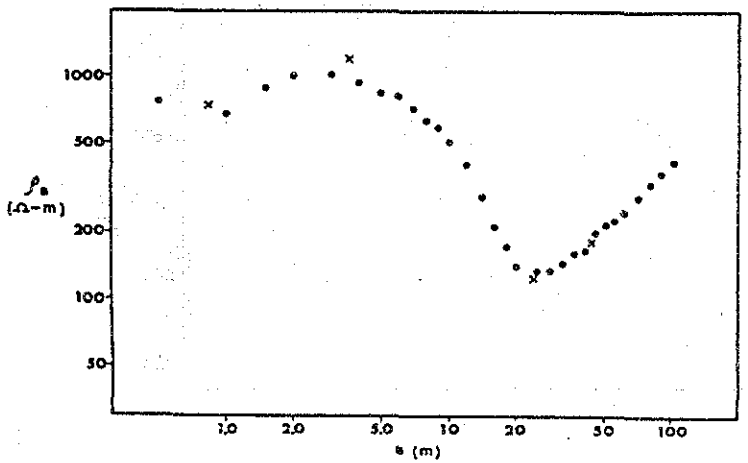
Manthly Rainfall (mm)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
1982										20.3	83.7	242.6	
1983	235.2	105.5	155.4	9.4	0.0	0.0	2.9	0.0	0.0	1.4	0.9	224.6	735.3
1984	127.9	183.0	92.1	9.4	0.0	0.0	0.0	0.0	0.0	1.0	145.5	194.3	753.2
1985	136.6	212.0	185.3	73.2	0.0	0.0	0.0	0.0	3.8	48.4	123.6	279.5	1062.4
1986	354.8	240.6	187.9	48.8	7.2	0.0	0.0	0.0	0.0	42.9	142.5	163.9	1188.3
1987	112.2	84.2	74.5	15.9	0.0	0.1	0.0	0.0	6.7	4.6	15.6	79.5	403.3
1988	139.0	193.0	259.0	23.6	8.4	1.4	2.3	1.8	0.0	35.4	26.6	251.4	941.9
1989	355.0	187.7		11.5	6.5	0.0	0.0	0.0	0.0	0.0	175.5	254.3	
1990	239.4	115.5	139.9	38.7	18.8	0.0	0.0	0.0	0.0	0.0	19.7	147.4	719.4
AV.	212.5	165.2	156.3	28.9	5.1	0.2	0.7	0.2	1.3	18.2	81.5	204.2	874.3

A－6(1)　ρ－a Curve (Electric Prospecting)

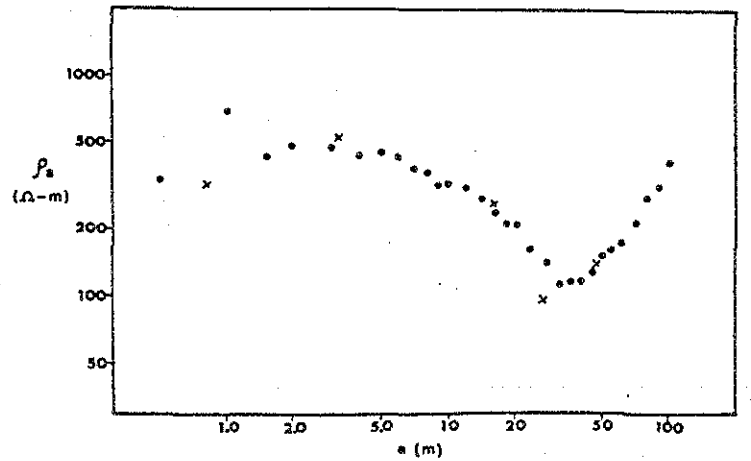
Appendix　　ρ—a Curve

No. 1 Tsumba (GM89)



750	1500	120	375	3600

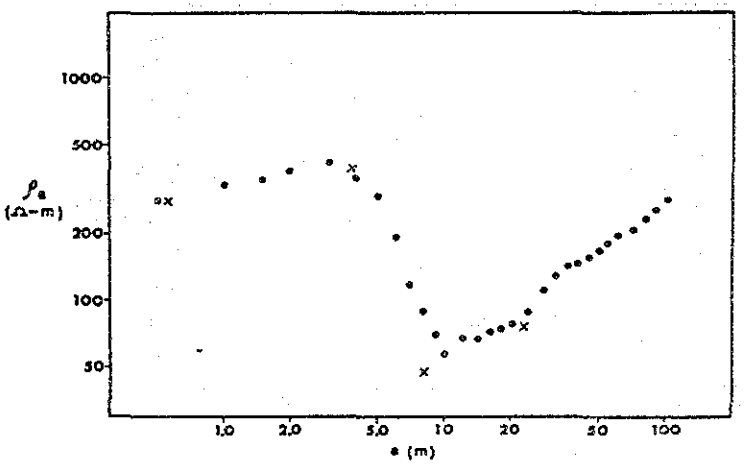
No. 2 Chamvcka



310	620	260	50	300	2800

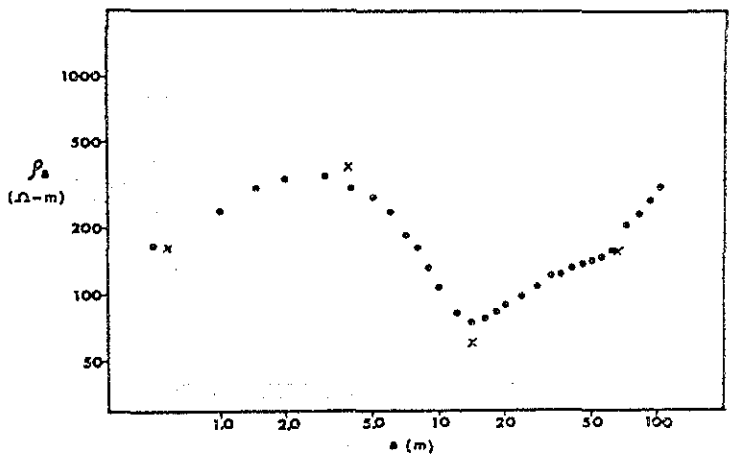
Appendix　　ρ—a Curve

No. 3 Sankhani Sch.



280	420	30	125	640

No. 4 Sankhani (KB38)

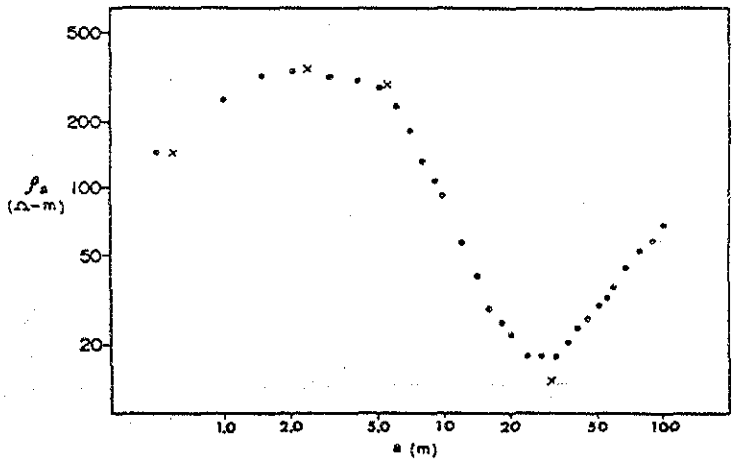


160	480	50	240	2400

A－6(2)　ρ－a Curve (Electric Prospecting)

Appendix　　ρ—a Curve

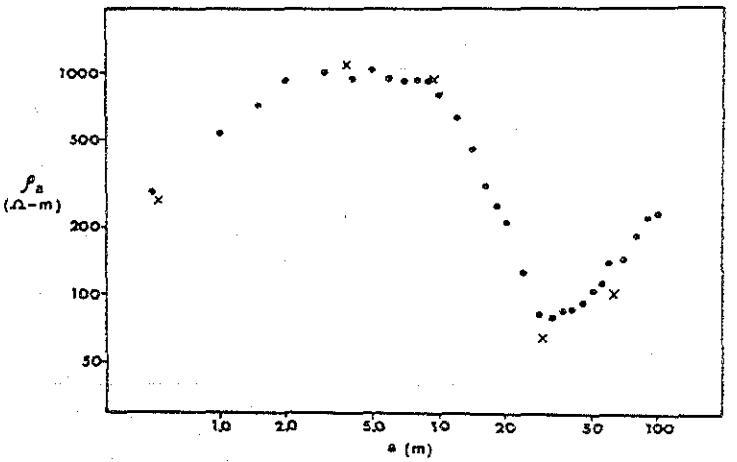
No.5 Maliwane



150	750	290	15	750

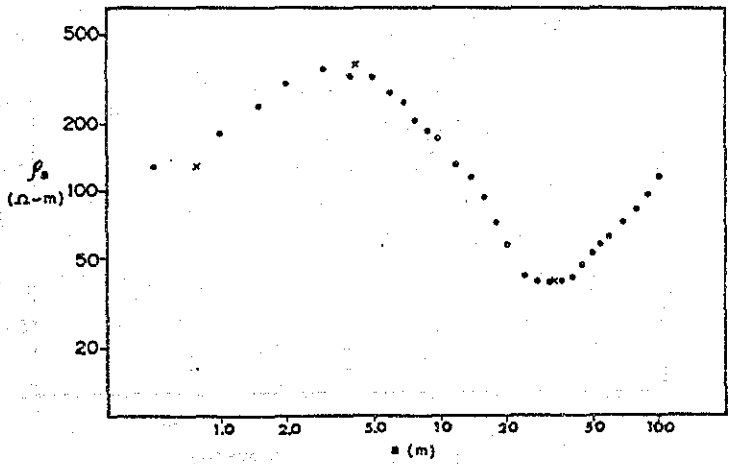
Appendix　　ρ—a Curve

No.7 Mlonyeni T.C.



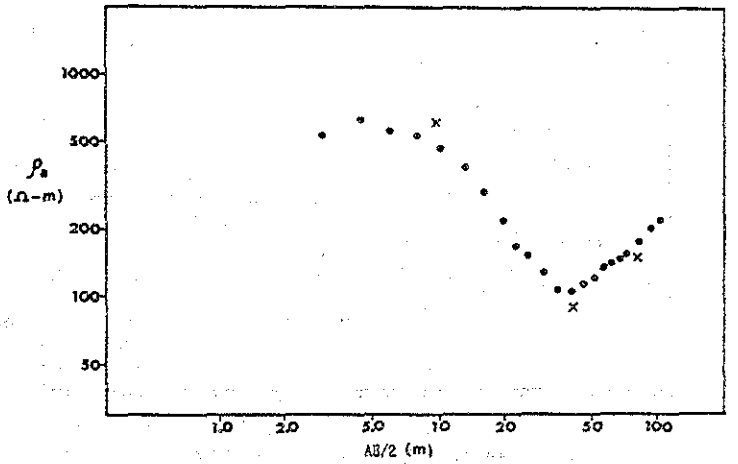
250	2 250	920	50	195	5000

No.6 Mlonyeni (W18)



130	650	40	2000

No. 8 #Tembwe T.C. W-135

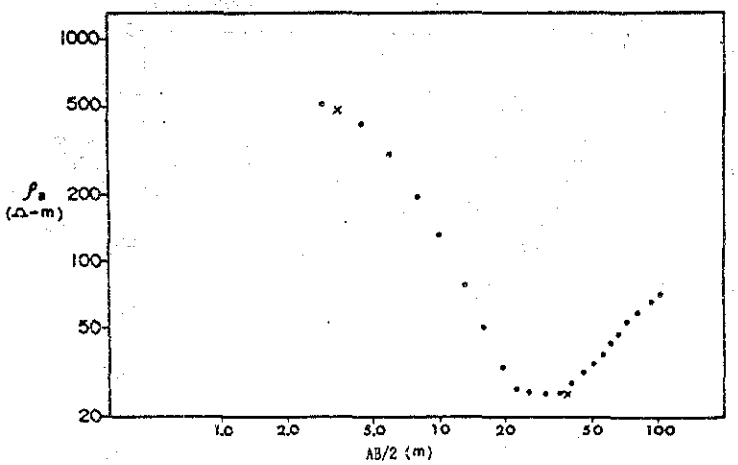


600	75	360	1200

A－6(3)　ρ－a Curve (Electric Prospecting)

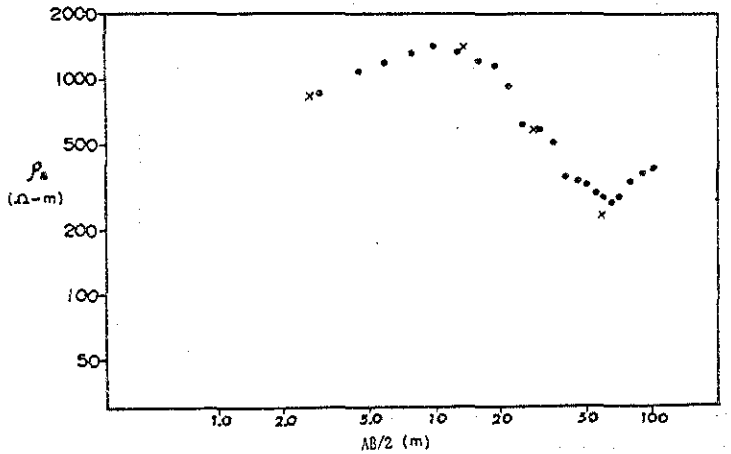
Appendix　　ρ—a Curve

No. 9 #Maganga



520	25	1300

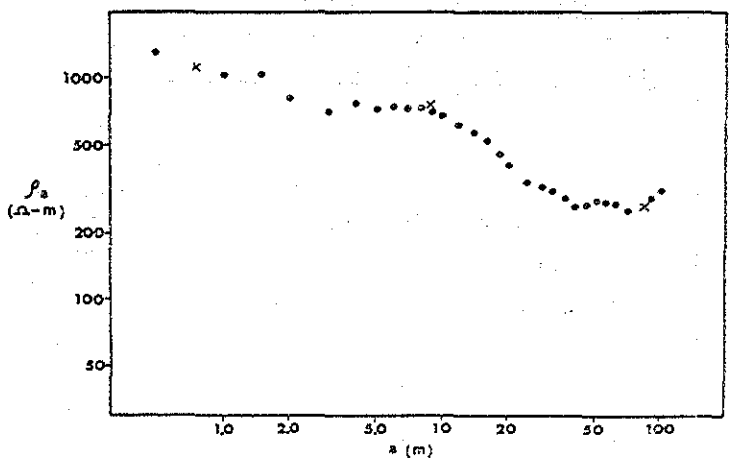
No. 10 #Mskwala A.D.



850	1700	470	140	1150

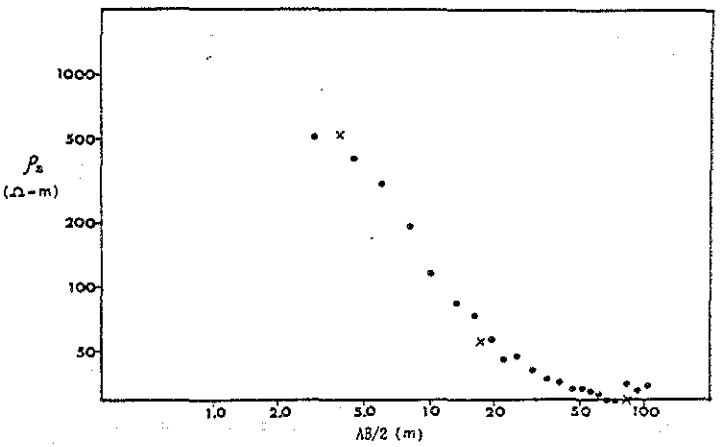
Appendix　　ρ—a Curve

No. 11 Mskwala (SM216)



1300	370	260	800(

No. 12 #Kanyindula

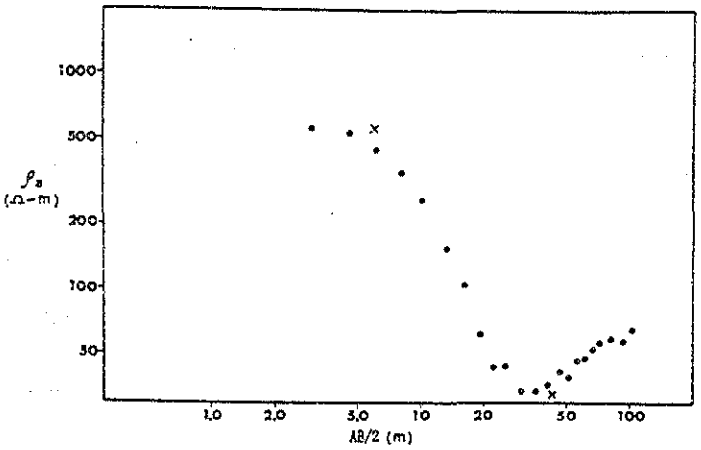


500	60	30	60

A－6(4)　ρ－a Curve (Electric Prospecting)

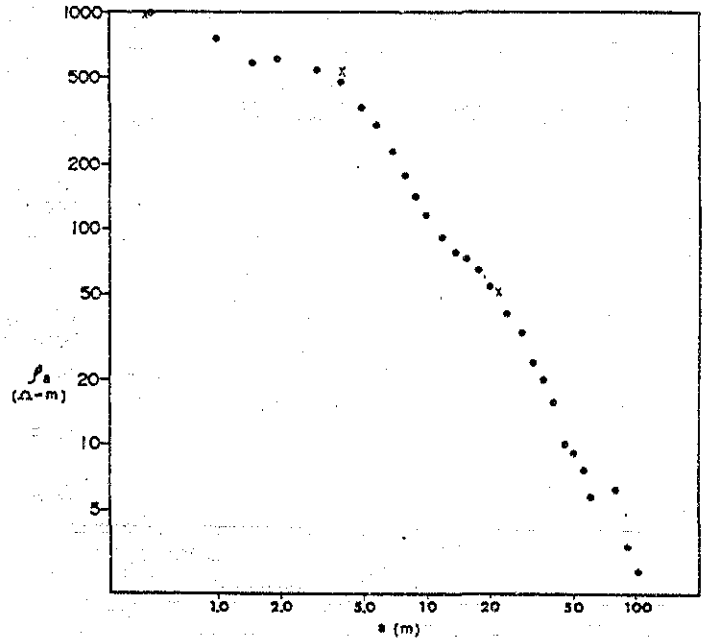
Appendix　　ρ－a Curve

No.13 ‡Mphalabuingu (Y-191)



580	30	130	

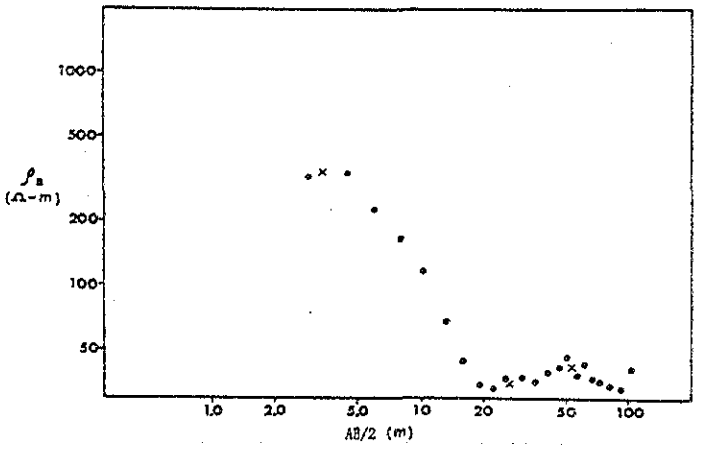
No.14 Mavwele (A-73)



1000	500	50	2

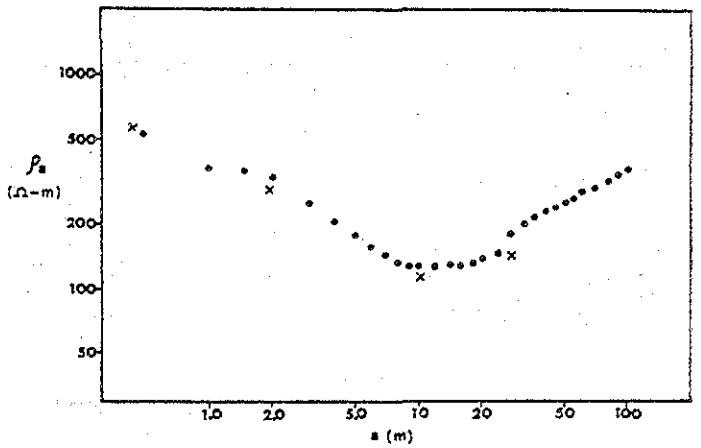
Appendix　　ρ－a Curve

No.15 ‡Waliranji (GM83)



320	35	70	25

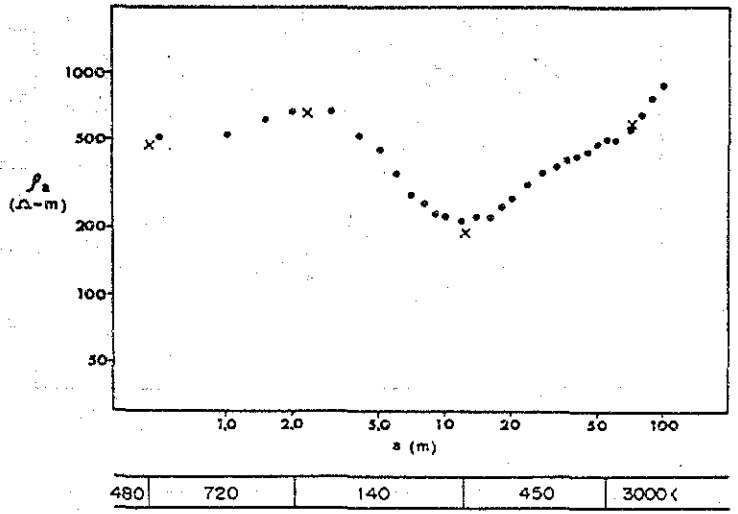
No.16 Chazuka Sch (SM79)



560	280	1 000	170	560

Appendix　ρ—a Curve

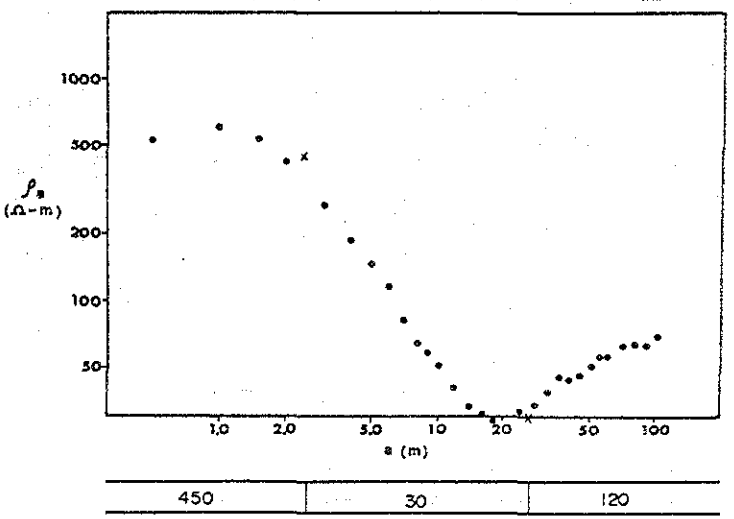
No.17 Chisitu



480	720	140	450	3000<

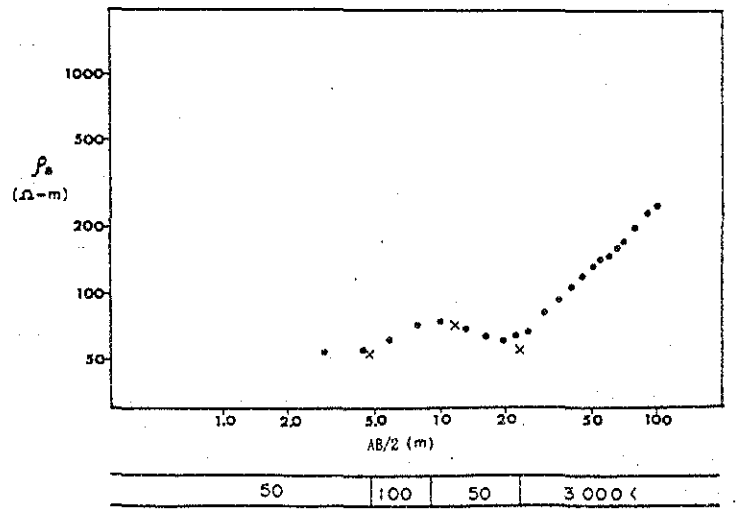
Appendix　ρ—a Curve

No.19 Chiwoko (W24)



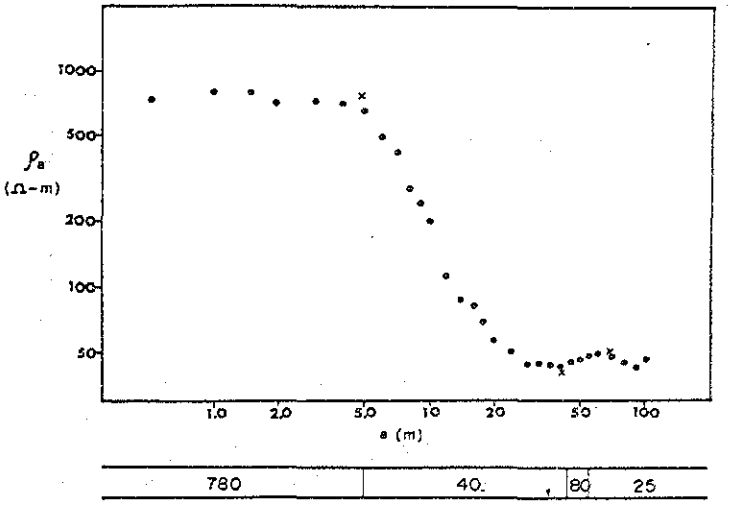
450	30	120

No.18 tChibaya



50	100	50	3 000<

No. 20 Chimphamba (West)

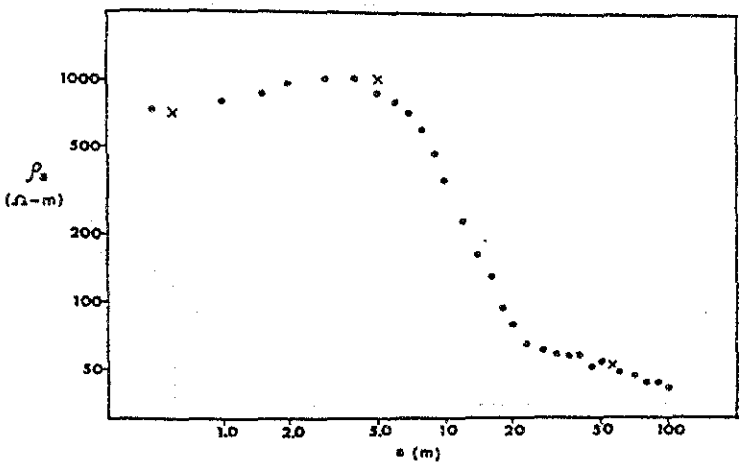


780	40.	80	25

A－6(6)　ρ－a Curve (Electric Prospecting)

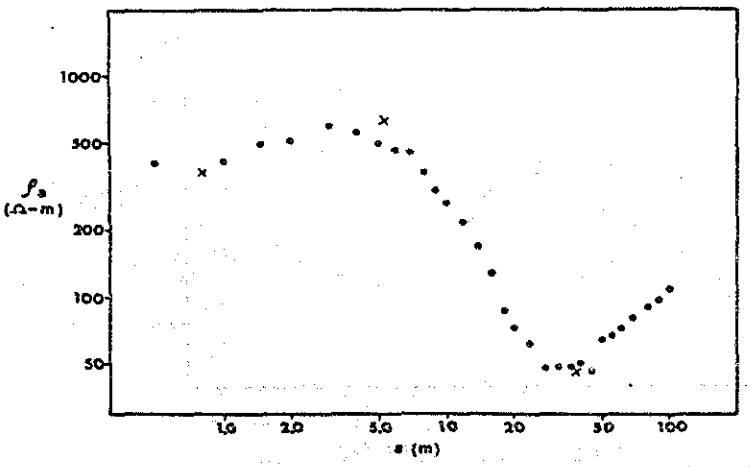
Appendix　ρ—a Curve

No. 21 Chimphamba (East)



700	1 050	50	25

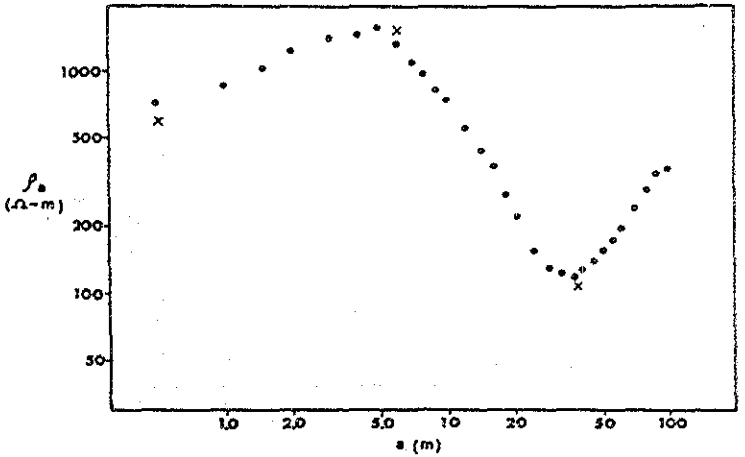
No. 22 Nando



370	740	45	280

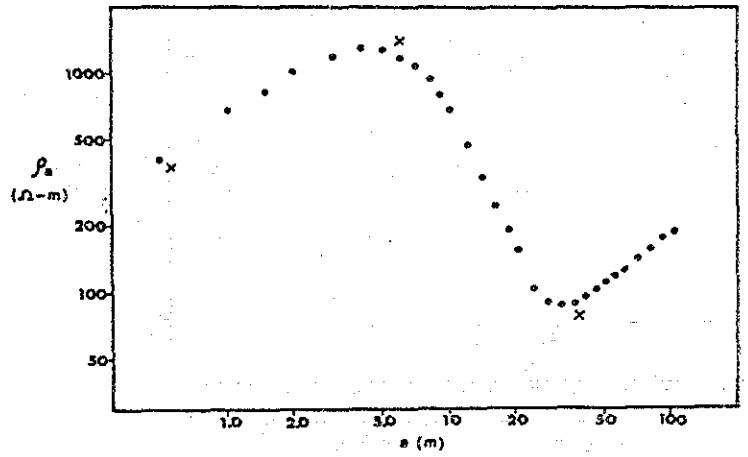
Appendix　ρ—a Curve

No.23 Mtiwa



600	1 800	110	1 650

No.24 Kathyuka (GM87)

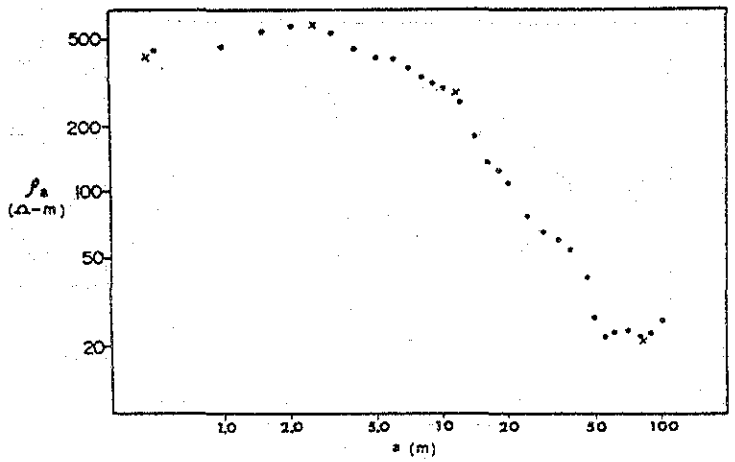


380	1750	75	400

A－6(7)　ρ－a Curve (Electric Prospecting)

Appendix　ρ－a Curve

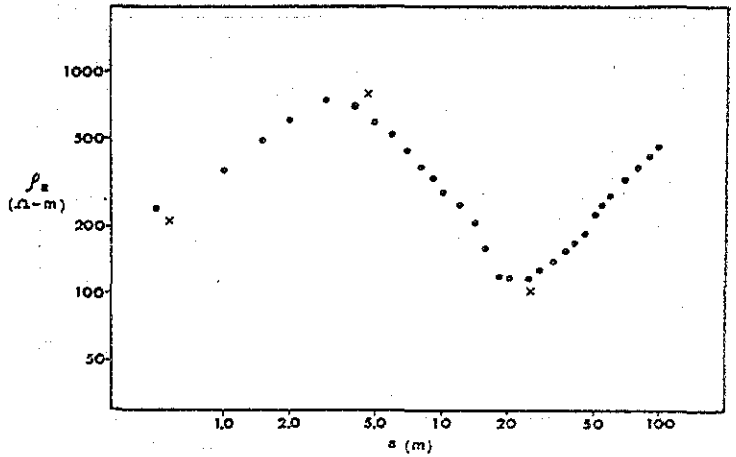
No.25 Siwelera



420	630	300	20	65

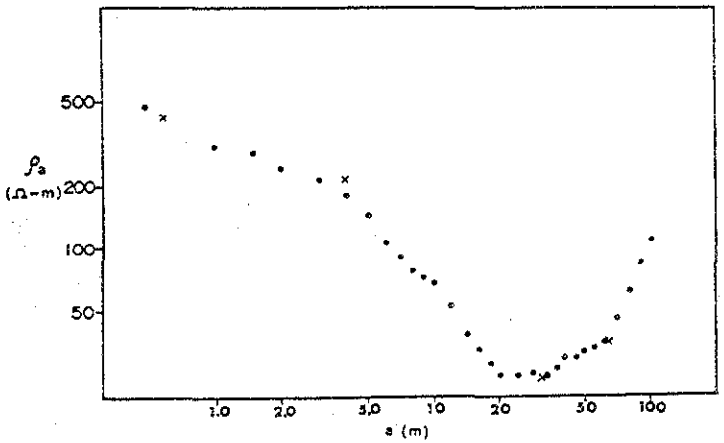
Appendix　ρ－a Curve

No.27 Chimoka



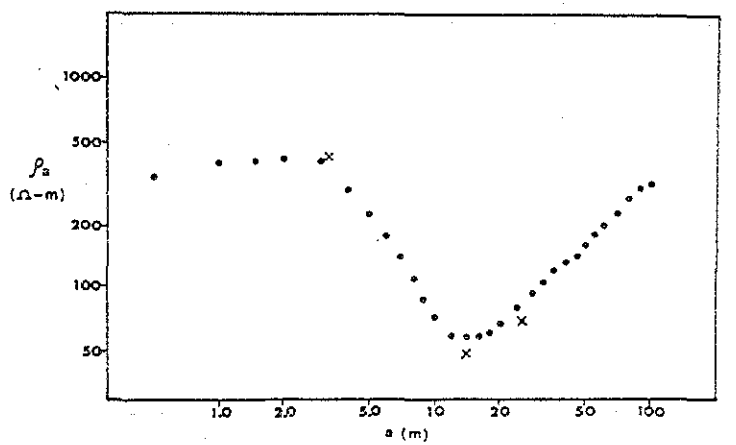
210	1 260	1000	2000

No.26 Chiosha Sch. (GM80)



420	210	25	65	3000<

No.28 Chiwanga

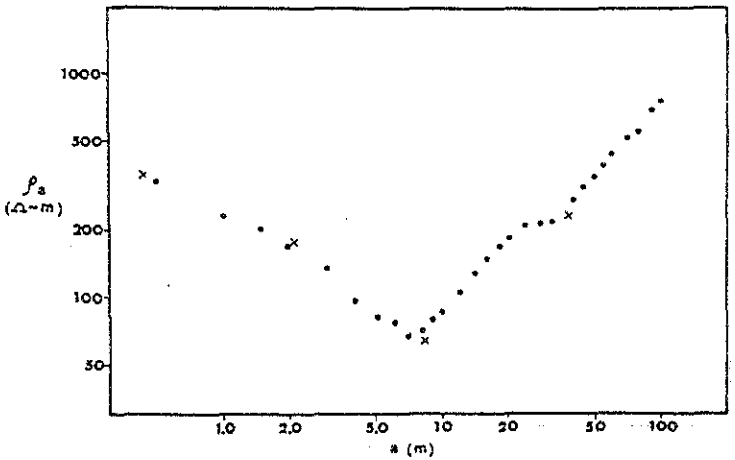


400	40	125	1 400

A－6(8)　ρ－a Curve (Electric Prospecting)

Appendix　ρ－a Curve

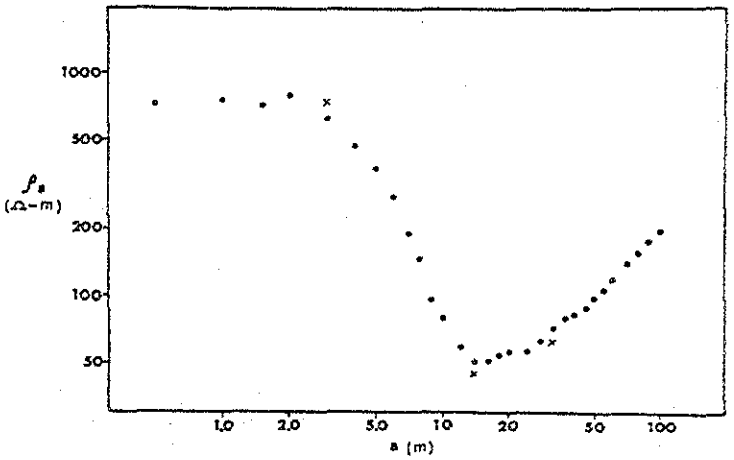
No.29 Panja



360	180	60	540	4800

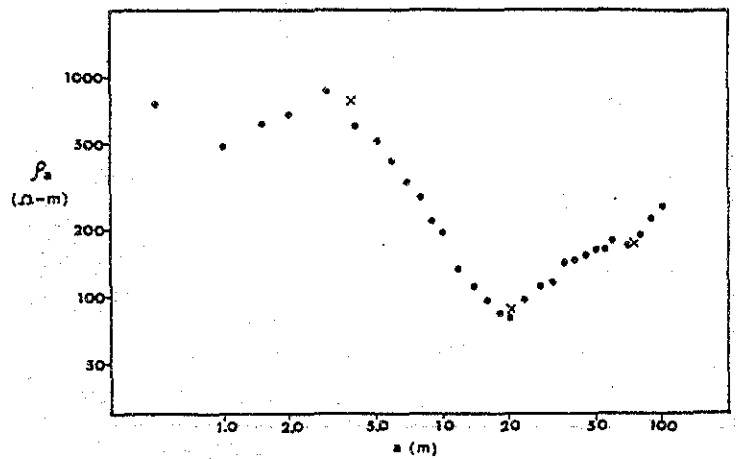
Appendix　ρ－a Curve

No.31 Mzama



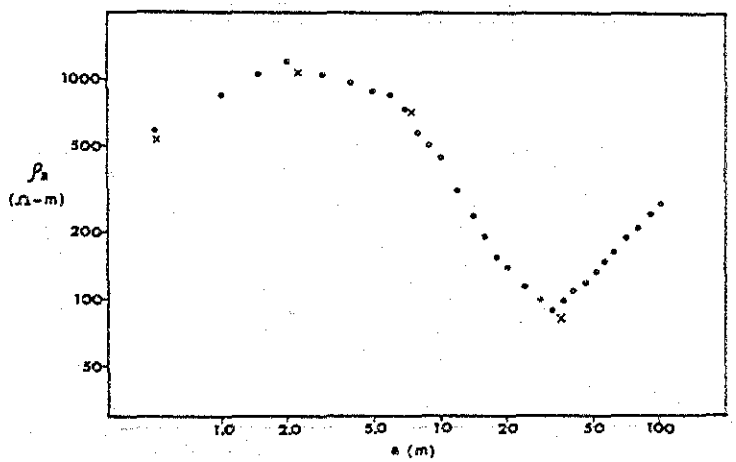
780	40	100	650

No.30 Mzama Sch (PM195)



780	80	255	1400

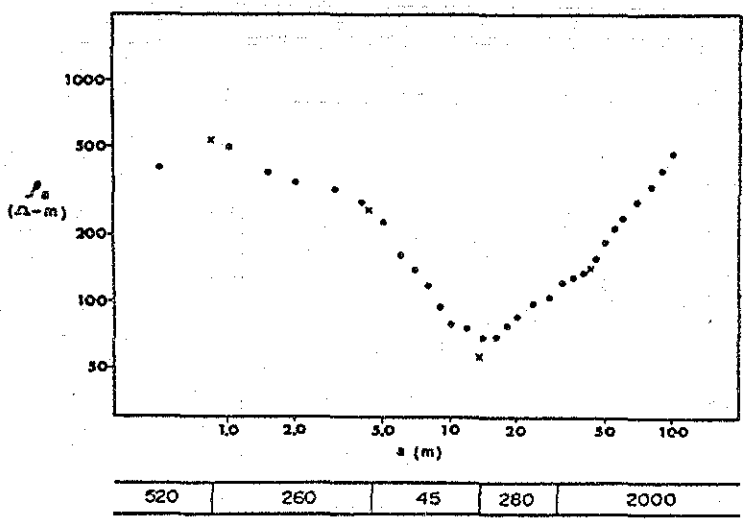
No.32 Kapiri (R292)



520	1560	700	70	1275

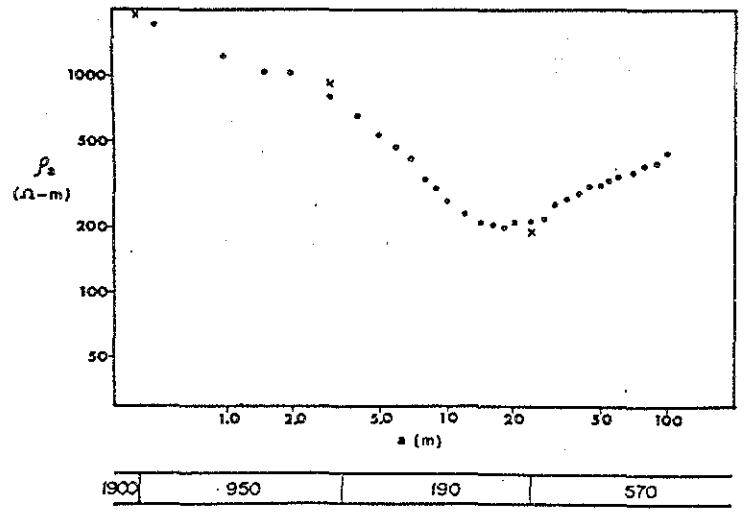
Appendix　ρ—a Curve

No. 33 Panye Sch. (RK109)



520	260	45	280	2000

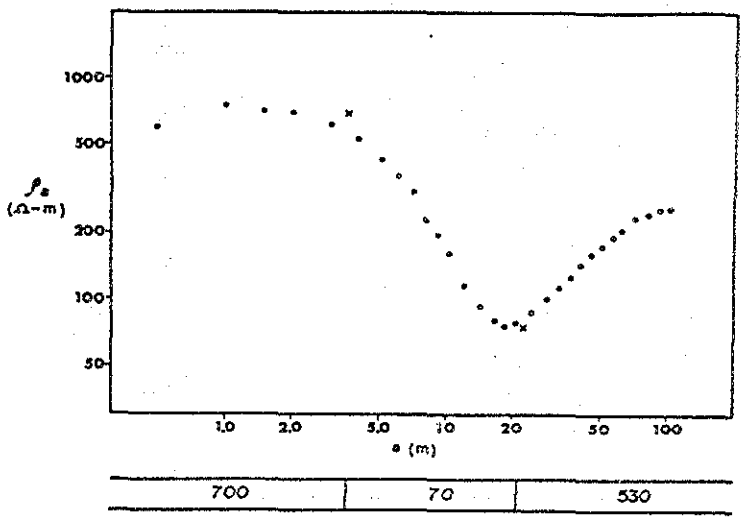
No. 34 Kwaloza



1900	950	190	570

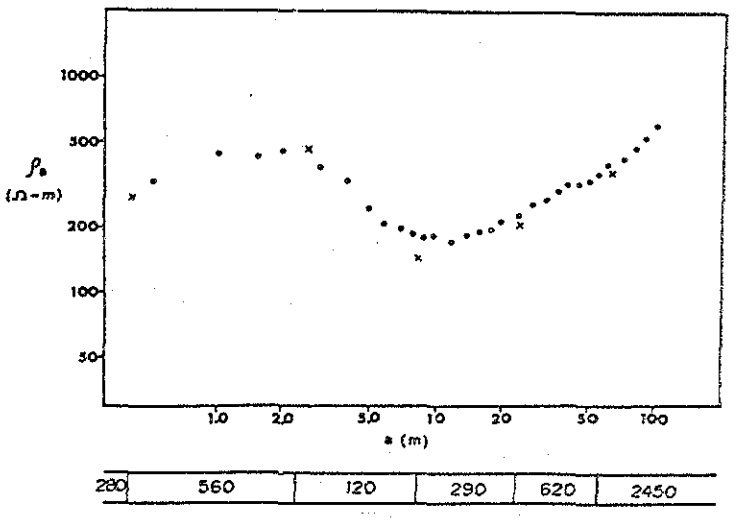
Appendix　ρ—a Curve

No. 35 Chiphesi (SM215)



700	70	530

No. 36 Katonda Sch. (PM198)

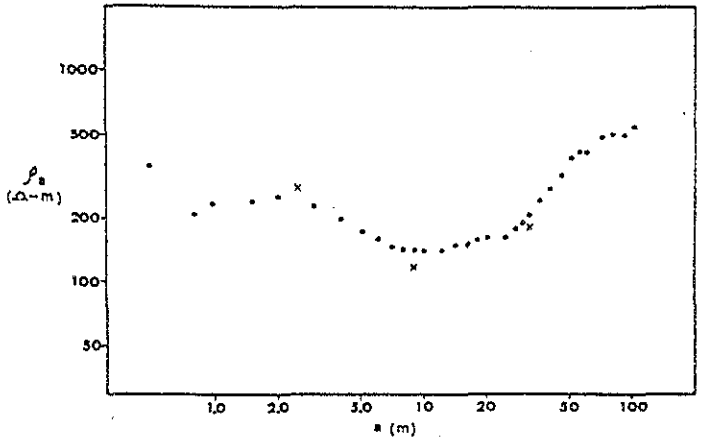


280	560	120	290	620	2450

A－6 (10)　ρ－a Curve (Electric Prospecting)

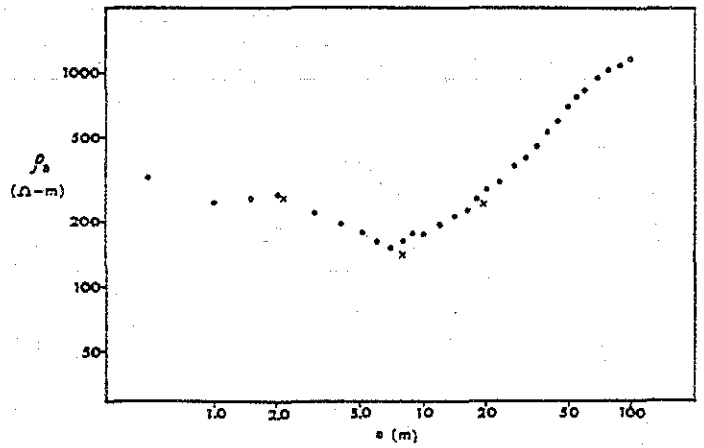
Appendix　ρ－a Curve

No. 37 Mkumbi



210	315	120	240	1900

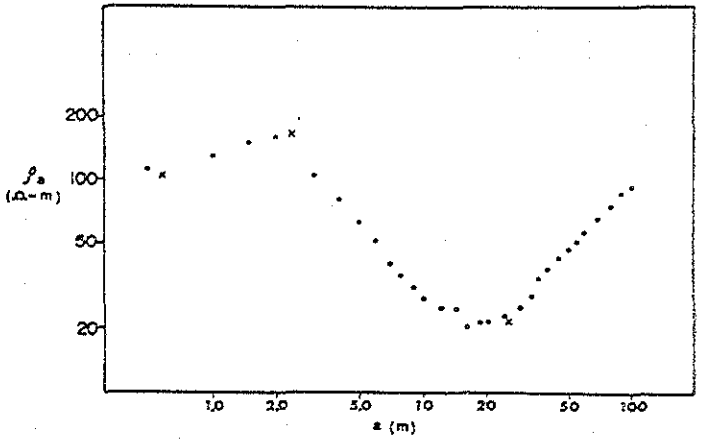
No. 38 Nthema (KB36)



260	130	420	3000<

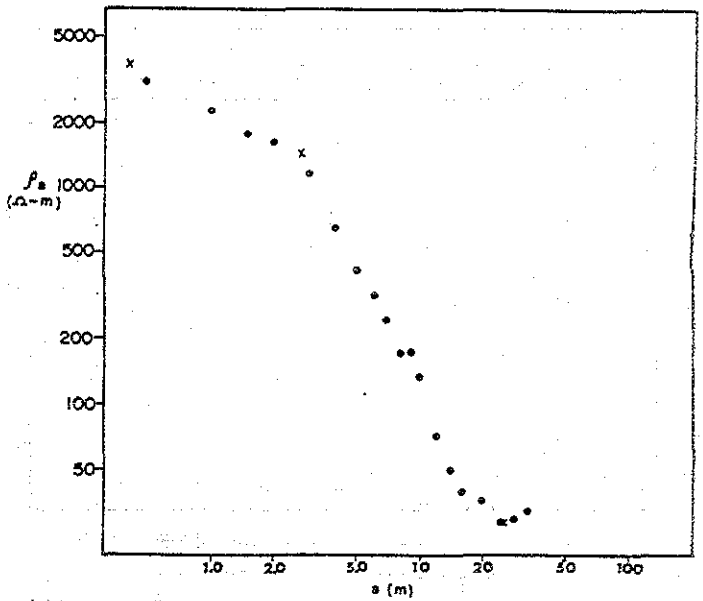
Appendix　ρ－a Curve

No. 39 Mkanda (W23)



105	210	20	670

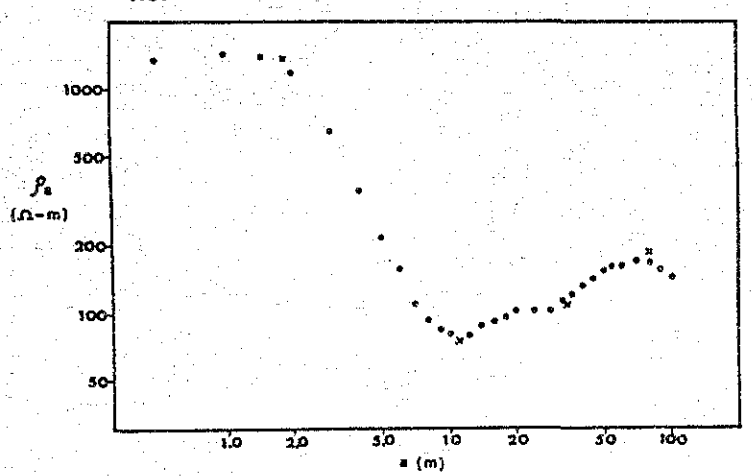
No. 40 Betelehemu



3800	1520	30	60

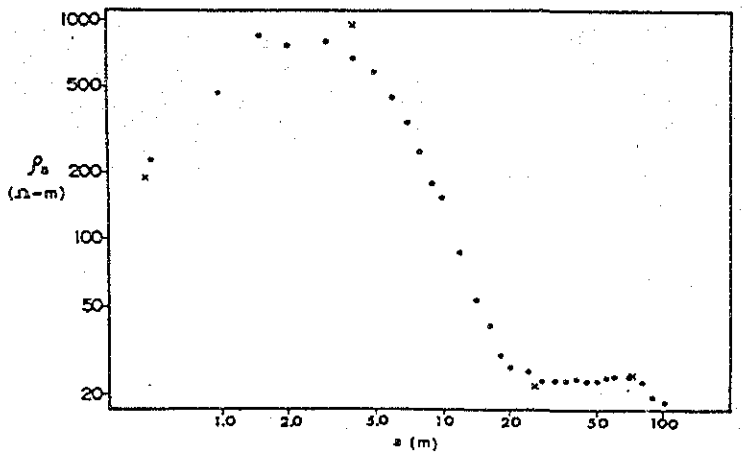
Appendix　　ρ—a Curve

No. 41 Kadewele

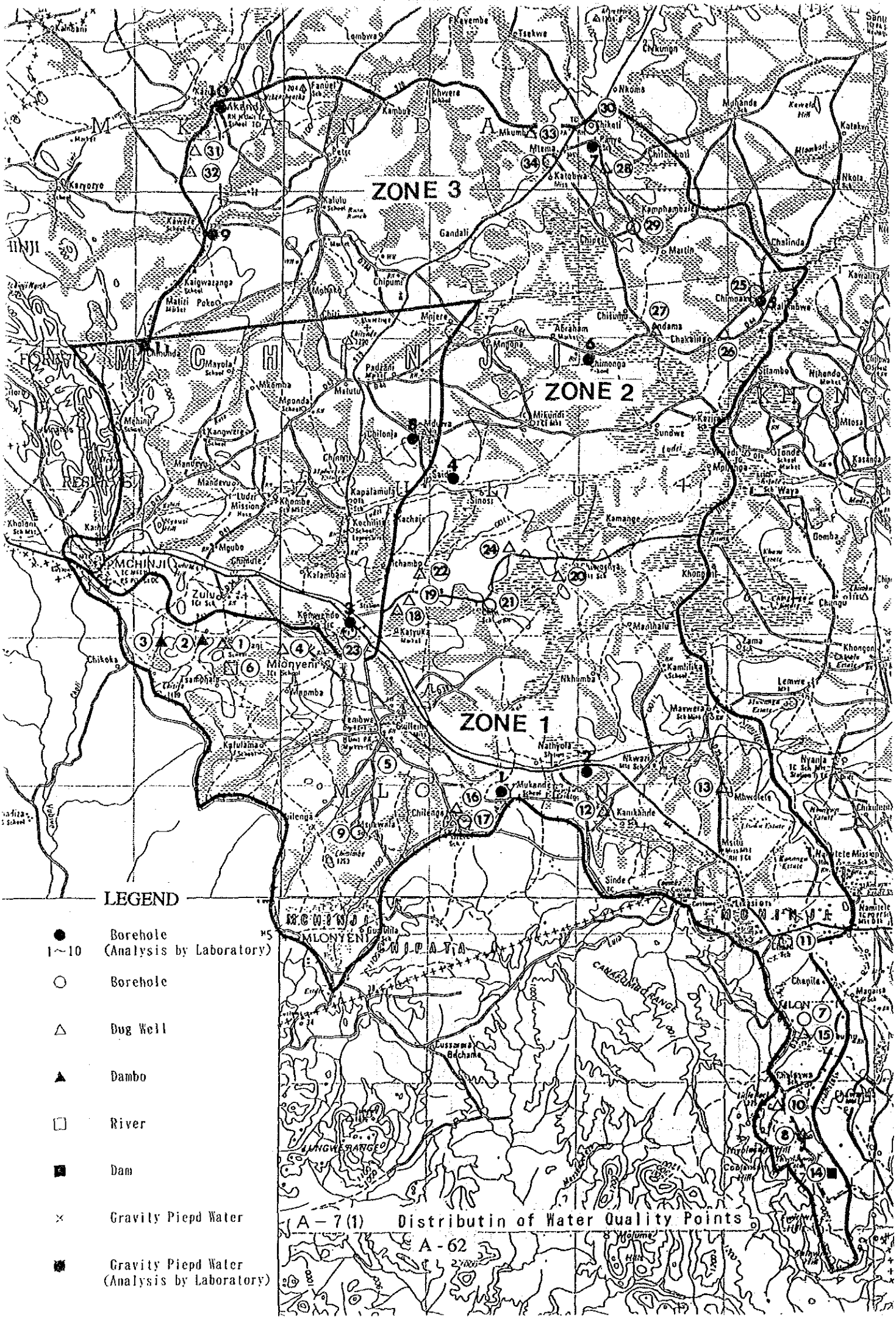


1350	70	160	330	50

No. 42 Chawala



190	1900	20	30	10



(A-7(1) Distributin of Water Quality Points

A－7(2) Results of Water Quality Analysis

Zone	Sl. No.	T.A./S.T.A.	Locality	Water Source	Temperature (℃)	Electric Conductivity (μS/cm)	PH	SG⁴	Turbidity	Total Hardness	NH^{+4} (ppm)	Cl^{-1} (ppm)	Fe (ppm)	Mn^{+2} (ppm)	Coliform Group	Bacteria	Remarks
1	1	Mlonyeni	Sankhani	Dug Well	26.4	207	7.7	Existed	Gray	110	1.0	0.1>	0.5	0.5>	Existed	Existed	
1	2	Mlonyeni	Chamveka	Dambo	26.6	46	6.1	None	W-Gray	10	0.5	0.1>	1.5	0.5>	—do—	S-Existed	
1	3	Mlonyeni	Tsumba	—do—	28.5	94	6.3	—do—	W-Brown	45	0.5>	0.1>	0.2>	0.5>	—do—	Existed	
1	4	Mlonyeni	Maliwane	Dug Well	24.0	174	9.2	—do—	M-White	65	0.5	0.1>	0.2	0.5>	—do—	—do—	
1	5	Mlonyeni	Tembwe	—do—	24.0	91	6.4	—do—	Brown	15	0.5	0.1>	0.5	0.5	—do—	—do—	
1	6	Mlonyeni	Bua River	River	25.3	217	7.0	—do—	None	150	0.5	0.1>	0.5	0.5>	—do—	—do—	to the Sourth of Mchinji Boma
1	7	Mavwere	Lezinala	PM-820	25.9	268	8.7	—do—	—do—	350	0.5>	0.1>	0.2>	0.5>	None	S-Existed	Afridev
1	8	Mavwere	Kamende	Dug Well	24.6	132	7.3	—do—	M-White	260	0.5	0.1>	0.2>	0.5>	Existed	Existed	Static Water Level G.L.-6.50m Water Depth 0.1m
1	9	Mavwere	Msukwala	SM-216	26.7	213	6.5	—do—	None	115	0.5>	0.1>	10.0	0.5>	—do—	S-Existed	
1	10	Mavwere	Chisitu	Dug Well	26.0	54	8.9	—do—	—do—	25	0.5	0.1>	0.2>	0.5>	—do—	Existed	along Chisitu River
1	11	Mavwere	Chazuka	SM-79	25.0	270	8.5	—do—	—do—	14	0.5	0.1>	5.0	0.5>	None	S-Existed	
1	12	Mavwere	Kanyindula	Dug Well	23.0	176	6.6	—do—	—do—	30	0.5	0.1>	0.2>	0.5>	Existed	—do—	Static Water Level G.L.-10.0m
1	13	Mavwere	Mavwere	—do—	25.0	114	8.6	Existed	M-White	20	0.5>	0.1>	0.3	0.5	—do—	—do—	
1	14	Mavwere	Mlulu	Dam	27.6	68	10.2										
1	15	Mavwere	Gezani	Dug Well	25.0	82	7.2										Static Water Level G.L.-4.70m
1	16	Mavwere	Misale	—do—	24.6	71	7.4										
1	17	Mavwere	Misale	FM-361	26.4	204	7.2										
1	18	Zulu	Mtiwa	Dug Well	29.0	134	7.5	None	M-White (Including some mica)	250	1.0	0.1>	0.2	0.5>	Existed	Existed	
1	19	Zulu	Kathyuka	—do—	24.7	77	6.4	—do—	M-White	150	0.5	0.1	0.2	0.5	—do—	—do—	Static Water Level G.L.-6.15m Water Depth 0.10m
1	20	Zulu	Chimphamba	—do—	28.8	124	7.5	Existed	—do—	120	1.0	0.1>	1.0	0.5>	—do—	—do—	
Proposed Standard in Malawi							6.0 ∫ 9.5	800	5	800		750	3.0	0.5			

M-:Muddy W-:Whity S-:Slightly

A－7(3) Results of Water Quality Analysis

Zone	SL No.	T.A. / S.T.A.	Locality	Water Source	Temperature (℃)	Electric Corductivity (μS/cm)	PH	SO^{4}	Turbidity	Total Hardness	NH^{+4} (ppm)	Cl^{-2} (ppm)	Fe (ppm)	Mn^{-2} (ppm)	Colliform Group	Bacteria	Remarks
1	21	Zulu	Chiwoko	W-24	27.7	165	8.6	None	None	350	0.5>	0.1>	1.0	0.5>	S-Existed	S-Existed	
2	22	Zulu	Siwelera	Dug Well	26.8	137	6.3	None	M-White	160	0.5	0.1	0.2	0.5>	Existed	Existed	Static Water Level G.L.-7.90m Water Depth 0.15m
2	23	Zulu	Kamendo	W-154	28.2	112	7.4	—do—	None	160	0.5	0.1	0.2	0.5>	None	S-Existed	near Project Area
2	24	Zulu	Kazambala	Dug Well	29.2	47	7.0										
2	25	Mduwa	Mzawa F.P.Sch.	PM-195	28.5	331	7.5	None	None	180	0.5	0.1	10.0	0.5>	S-Existed	None	
2	26	Mduwa	Panja	Dug Well	27.0	121	6.8	—do—	Gray	70	0.5	0.1	0.3	0.5	Existed	Existed	Static Water Level G.L.-2.35m Water Depth 0.17m
2	27	Mduwa	Chiwanga	—do—	26.6	139	8.4	—do—	None	504	0.5>	0.1>	0.3	0.5>	—do—	—do—	along Chulevyni River
2	28	Dambe	Kwaloza	—do—	25.0	288	7.5	—do—	M-White	215	0.5	0.1	0.2	0.5	—do—	—do—	Static Water Level G.L.-7.00m Water Depth 0.70m
2	29	Dambe	Katonda	PM-198	26.2	274	8.2	—do—	None	180	0.8	0.1>	0.8	0.5>	None	None	
2	30	Dambe	Chikoti	R-292	26.2	191	7.5	—do—	—do—	110	0.5	0.1>	2.0	0.5>	—do—	—do—	
3	31	Mkanda	Zandanmu	Dug Well	26.8	119	8.2	None	M-White	75	0.5	0.1>	0.8	0.5>	Existed	Existed	Static Water Level G.L.-2.95m Water Depth 0.25m
3	32	Mkanda	Beteleheu	—do—	25.2	77	6.5	—do—	Brown	35	0.8	0.1	0.2	0.5>	—do—	—do—	Static Water Level G.L.-5.10m Water Depth 0.15m
3	33	Dambe	Mkumbi	—do—	26.6	191	7.5	—do—	M-White	110	0.5>	0.1>	2.0	0.5>	—do—	—do—	Static Water Level G.L.-1.40m Water Depth 0.30m
3	34	Dambe	Nthema	SM-218	25.5	304	7.6	—do—	None	185	0.5>	0.1	0.2	0.5>	—do—	S-Existed	
Proposed Standard in Malawi							6.0 ~ 9.5	800	5	800		750	3.0	0.5			

M-:Muddy W-:Whity S-:Slightly

A－7(4) Water Qualyty Analysis Results of Laboratory

Analyzed Item \ Water Source	GM-85 S. T. A. Mavwere Pinda Sch. Zone 1	RK-111 S. T. A. Mavwere Nathyola Zone 1	W-323 T. A. Zulu Kamendo Zone 1	PM-197 S. T. A. Mduwa Sigereta Zone 2	PM-195 S. T. A. Mduwa Mzama Sch. Zone 2	W-21 S. T. A. Mduwa Chimongo Zone 2	RK-109 S. T. A. Dambe Panye Sch. Zone 2	FP-10 T. A. Mduwa Matutu Zone 2	GK-228 T. A. Mkanda Chawala Zone 3	W-23 T. A. Mkanda Mkanda Court Zone 3	Langa G. P. W	Proposed standard in Malawi
CO_2	19.0	18.0	7.0	17.0	17.0	14.0	17.0	24.0	37.0	40.0	5.0	
CO_3	103.0	114.0	45.0	86.0	177.0	122.0	101.0	77.0	210.0	135.0	26.0	
$C\ell^{-2}$	0	0	1.3	0	0	3.0	7.0	2.1	9.7	13.0	0	750
SO_4^{-2}	0	40.0	19.0	0	11.0	8.0	33.0	26.5	28.0	17.0	5.0	800
NO_3	0.40	0.10	0.6	0.1	0	2.0	0	9.4	4.0	0	0	100
F	0.58	0.76	0.9	0.6	0.59	0.60	0.81	0.74	0.9	0.59	0.6	3.0
Na	13.00	19.00	8.0	8.0	22.0	14.0	11.0	12.0	25.0	37.0	0.3	500
K	3.30	8.00	3.0	2.0	5.0	3.0	4.0	2.2	4.0	2.0	0.1	
Ca^{+2}	22.80	28.80	11.0	18.3	29.0	25.0	28.0	32.2	43.0	29.0	8.0	
Mg^{+2}	8.70	8.80	4.0	7.5	9.0	11.0	12.0	6.7	22.0	12.0	3.0	
Fe	1.09	1.18	1.44	0.6	5.53	0.08	3.26	2.78	0.52	0.21	0.03	3.0
Mn^{+2}	0.01	0.06	0.08	0.08	0.79	0	0.19	0.05	0.08	0	0.05	0.5
PH	8.30	8.30	8.10	8.20	8.30	8.10	8.20	8.40	8.30	8.40	8.30	6.0～9.5
EC	253	357	151	206	357	290	335	317	560	467	73	
TDS	174	266	150	127	262	178	219	192	313	248	55	
SiO_2	55.0	86.0	72.0	31.0	76.0	38.0	54.0	36.0	45.0	31.0	21.0	
SS	6	1	9	1	9	9	9	1	9	9	9	
Turbidity	12	16	3	5	60	5	39	30	4	0	2	25
Total Hardness	94	110	46	77	119	107	125	112	198	122	32	800
Alkalinity	116	123	48	98	173	123	111	103	233	177	29	
* Coliform Group			0		S-Existed		0		0	0	0	
* Bacteria			S-Existed		0		0		0	0	Existed	
Remarks			near Project Area					near Project Area			Gravity Piped Water	

Note) * : Results analysis in the field.
S- : Slightly