

METEO-HYDROLOGICAL DATA

7. SEDIMENT DATA

SAMPLING DATA OF SEDIMENTATION

IH8 (1)						
No.	Date of Sampling day month year	Stage (m)	Discharge (m ³ /s)	Sedimentation (mg/l) (SA-t/d)		
1	11 8 58	1.62	17.56	89	135	
2	9 9 58	1.23	11.04	89	85	
3	23 12 58	2.53	38.20	700	2,310	
4	30 12 58	2.32	33.05	489	1,650	
5	31 1 59	1.43	14.15	339	414	
6	8 4 59	1.78	28.27	265	647	
7	20 4 59	1.19	10.84	258	242	
8	27 5 59	2.44	36.51	250	789	
9	28 10 70	1.30	8.83	70	53	
10	20 2 71	1.71	22.10	244	466	
11	24 4 71	3.62	215.36	1,340	28,655	
12	25 4 71	6.00	218.48	2,160	40,774	
13	29 4 71	1.00	233.76	4,200	84,827	
14	5 5 71	6.14	243.95	8,420	177,471	
15	31 5 71	3.02	64.54	188	1,048	
16	1 6 71	2.91	60.35	238	1,241	
17	2 6 71	2.82	57.32	181	896	
18	3 6 71	2.74	52.08	212	954	
19	4 6 71	2.64	50.56	122	533	
20	5 6 71	2.59	43.10	229	853	
21	19 7 71	1.83	22.46	260	543	
22	3 2 72	1.62	14.07	189	219	
23	17 2 72	1.63	15.82	120	164	
24	19 2 72	1.58	14.02	170	145	
25	17 4 72	4.50	126.29	278	2,946	
26	27 4 72	6.76	317.04	2,937	80,451	
27	9 6 72	3.93	101.34	225	1,970	
28	21 6 72	1.46	20.00	22	38	
29	25 9 72	1.58	23.76	17	34	
30	11 12 72	2.84	67.76	68	399	
31	26 12 72	2.51	53.64	73	337	
32	27 12 72	2.43	50.16	73	318	
33	28 12 72	2.32	46.42	109	437	
34	30 1 73	4.05	111.70	1,540	14,662	
35	2 2 73	3.29	80.74	1,230	8,580	
36	3 2 73	3.11	67.05	261	1,512	
37	4 2 73	3.04	68.54	331	1,960	
38	5 2 73	2.80	63.74	239	1,316	
39	6 2 73	2.79	60.22	204	1,061	
40	7 2 73	2.68	58.31	166	836	
41	9 2 73	2.53	47.58	114	469	
42	10 2 73	2.48	46.29	194	776	
43	12 2 73	2.40	40.56	292	1,023	
44	14 2 73	2.29	37.10	283	907	
45	16 2 73	3.49	92.06	243	1,933	

IH8 (2)						
No.	Date of Sampling day month year	Stage (m)	Discharge (m ³ /s)	Sedimentation (mg/l) (SA-t/d)		
46	19 2 73	3.27	77.92	184	1,239	
47	8 3 73	3.11	74.85	238	1,539	
48	28 3 73	-1.00	100.54	2,427	21,082	
49	5 4 73	-1.00	74.54	271	1,743	
50	11 8 73	-1.00	12.99	12	13	
51	23 4 74	-1.00	113.89	1,298	12,772	
52	24 4 74	-1.00	94.61	862	7,046	
53	29 4 74	-1.00	191.65	1,285	16,837	
54	30 4 74	-1.00	182.36	903	14,228	
55	1 5 74	-1.00	195.96	714	12,089	
56	4 5 74	2.01	300.24	1,303	33,805	
57	10 5 74	2.17	385.11	1,155	38,431	
58	11 5 74	-1.00	391.90	1,027	34,774	
59	13 5 74	6.71	280.00	1,097	26,539	
60	23 5 74	5.77	210.50	1,278	23,243	
61	24 5 74	5.56	200.00	899	15,535	
62	29 5 74	3.63	93.50	1,121	9,056	
63	30 5 74	3.63	91.00	464	3,948	
64	31 5 74	3.74	96.00	400	3,318	
65	1 6 74	3.94	100.08	664	5,742	
66	3 6 74	3.82	100.02	578	4,955	
67	20 6 74	1.48	16.74	14	20	
68	23 8 74	1.42	15.14	3	4	
69	24 5 75	5.24	174.84	252	3,802	
70	27 5 75	3.02	158.12	289	3,948	
71	5 4 76	3.96	105.36	270	2,458	
72	10 4 76	3.32	76.51	230	1,520	
73	27 4 76	5.14	154.12	130	1,730	
74	7 5 76	5.64	199.70	290	5,004	
75	17 5 76	-1.00	94.24	300	2,443	
76	24 5 76	3.68	87.26	300	2,262	
77	26 5 76	3.29	74.50	290	1,867	
78	1 6 76	2.72	50.86	250	1,098	
79	17 2 81	2.44	50.08	347	1,501	
80	24 2 81	2.40	45.81	347	1,373	
81	20 3 81	1.48	17.51	144	218	
82	25 3 81	2.61	52.57	148	668	
83	6 4 81	2.92	59.60	183	946	
84	21 4 81	4.75	176.92	291	4,448	
85	19 2 86	2.24	32.98	744	2,139	
86	20 2 86	2.06	27.08	175	410	
87	24 2 86	2.04	29.41	288	563	
88	25 2 86	1.92	23.59	257	525	
89	26 2 86	1.80	24.84	281	603	
90	27 2 86	1.70	23.59	177	361	

IH8 (3)						
No.	Date of Sampling day month year	Stage (m)	Discharge (m ³ /s)	Sedimentation (mg/l) (SA-t/d)		
91	28 2 86	1.68	24.21	270	564	
92	3 3 86	1.56	21.81	201	377	
93	5 3 86	1.48	20.70	133	238	
94	7 3 86	1.52	20.19	131	229	
95	1 4 86	3.90	91.09	327	4,199	
96	2 4 86	4.10	98.56	391	3,344	
97	3 4 86	4.04	95.97	497	4,119	
98	6 4 86	3.76	84.41	356	2,599	
99	9 4 86	5.06	137.27	392	4,648	
100	11 4 86	6.28	233.48	158	3,194	
101	12 4 86	6.68	258.65	201	4,492	
102	13 4 86	6.65	264.18	81	1,803	
103	13 4 86	6.65	264.18	164	3,753	
104	13 4 86	6.65	264.18	201	4,585	
105	14 4 86	6.56	210.99	60	1,094	
106	14 4 86	6.56	210.99	120	2,190	
107	14 4 86	6.56	210.99	144	2,627	
108	17 4 86	6.96	306.21	46	1,217	
109	17 4 86	6.96	306.21	102	2,703	
110	17 4 86	6.96	306.21	107	2,824	
111	21 4 86	6.44	223.99	72	1,399	
112	21 4 86	6.44	223.99	85	1,646	
113	21 4 86	6.44	223.99	79	1,527	
114	22 4 86	6.32	213.70	31	577	
115	22 4 86	6.32	213.70	68	1,258	
116	22 4 86	6.06	202.71	62	1,091	
117	23 4 86	6.06	202.71	89	1,599	
118	23 4 86	6.06	202.71	89	1,599	
119	23 4 86	6.06	202.71	89	1,599	
120	29 4 86	4.28	82.36	326	2,318	
121	2 5 86	3.82	73.32	308	1,948	
122	5 5 86	3.88	86.51	374	2,796	

SAMPLING DATA OF SEDIMENTATION

1H10 (1)

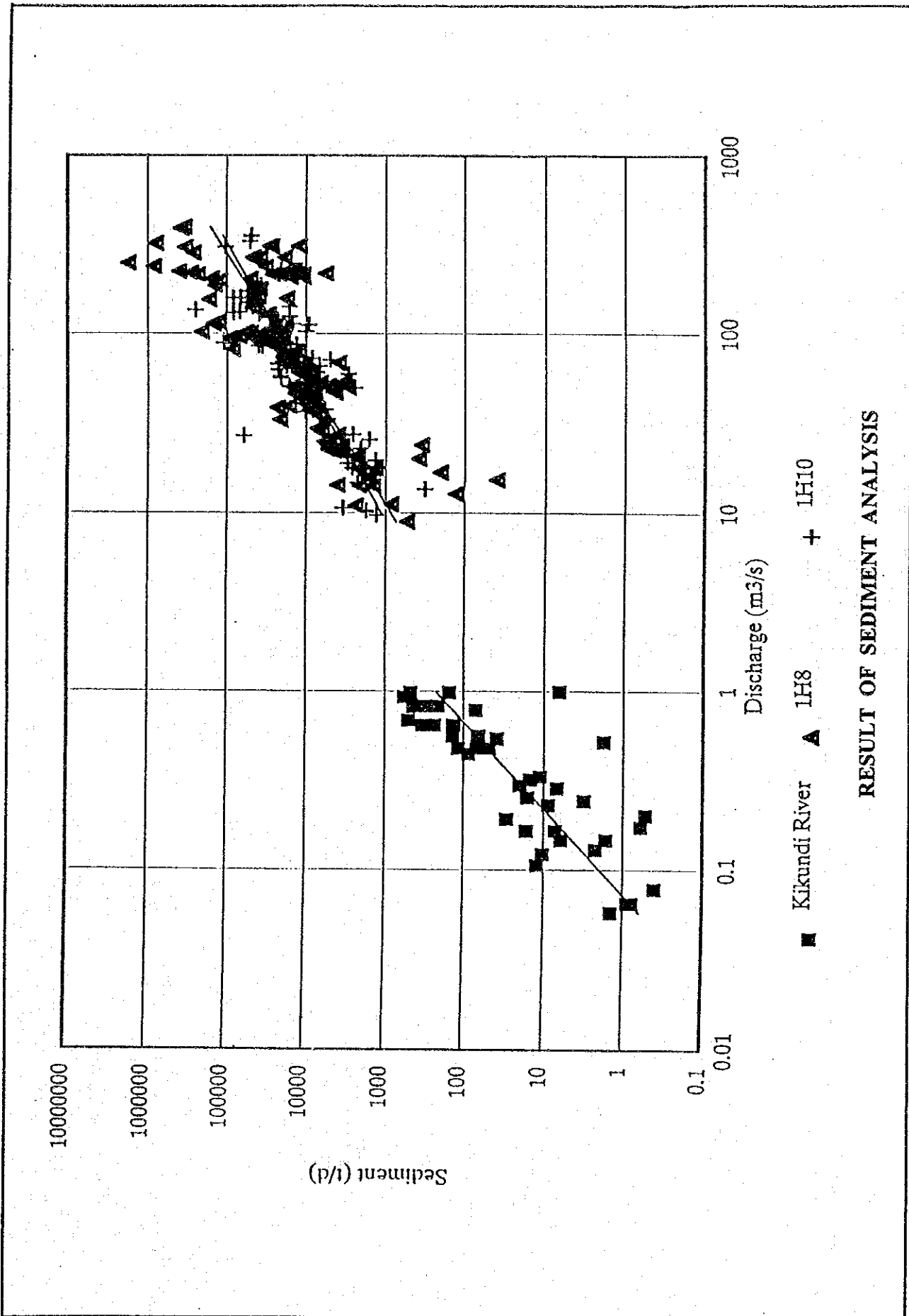
No.	Date of Sampling day month year	Stage (m)	Discharge (m ³ /s)	Sedimentation (mg/l) (SA-t/d)
1	25 10 70	1.00	10.57	386
2	4 4 71	1.81	26.96	2,619
3	28 7 71	1.49	17.91	83
4	29 7 71	1.41	19.63	80
5	31 8 71	1.00	9.62	159
6	7 2 72	1.26	14.66	181
7	7 3 72	1.50	23.55	73
8	8 3 72	1.56	27.41	110
9	26 3 72	2.30	58.78	185
10	29 3 72	2.16	52.67	158
11	30 3 72	3.07	103.78	237
12	31 3 72	3.17	118.50	222
13	3 4 72	2.98	98.69	223
14	6 4 72	1.95	42.66	252
15	8 4 72	1.83	32.12	202
16	10 4 72	2.69	86.20	178
17	12 4 72	3.34	123.60	149
18	16 4 72	4.89	226.39	104
19	20 4 72	5.90	327.02	178
20	21 4 72	6.18	352.24	157
21	8 5 72	3.28	112.13	147
22	9 5 72	3.11	101.94	113
23	10 5 72	3.78	139.46	134
24	7 6 72	2.59	60.45	142
25	12 6 72	2.21	55.22	184
26	1 9 72	1.06	10.18	202
27	13 12 72	2.20	59.28	58
28	14 12 72	2.17	53.77	70
29	15 12 72	2.04	49.65	57
30	23 2 73	2.92	92.52	487
31	24 2 73	2.87	98.25	648
32	23 3 73	2.40	65.80	307
33	4 4 73	3.58	139.32	387
34	23 4 73	3.50	131.11	322
35	26 4 73	3.48	127.58	348
36	28 4 73	5.76	305.09	387
37	7 6 73	2.92	44.12	216
38	8 6 73	2.00	43.55	282
39	21 8 73	1.93	17.81	176
40	22 8 73	1.61	22.89	106
41	24 8 73	1.40	18.39	125
42	19 4 74	2.93	110.72	97
43	24 4 74	2.42	70.79	83
44	8 8 74	1.24	17.78	120
45	9 8 74	1.24	16.21	100

1H10 (2)

No.	Date of Sampling day month year	Stage (m)	Discharge (m ³ /s)	Sedimentation (mg/l) (SA-t/d)
46	18 4 75	3.03	107.40	186
47	19 4 75	2.94	96	134
48	21 4 75	2.51	67.52	164
49	28 4 75	3.46	122.56	151
50	30 4 75	2.96	98.11	380
51	5 5 75	2.90	87.55	1,451
52	13 5 75	2.30	50.18	367
53	12 5 75	2.50	67.30	388
54	14 5 75	2.32	51.30	215
55	16 5 75	4.46	18.92	187
56	17 5 75	4.49	184.80	231
57	19 5 75	3.74	130.61	603
58	21 5 75	3.60	129.10	733
59	23 5 75	4.24	156.43	374
60	24 5 75	4.52	185.33	229
61	8 6 75	1.00	38.49	234
62	13 8 75	1.14	13.48	27
63	9 3 76	1.92	37.53	180
64	12 3 76	2.28	50.63	370
65	17 3 76	3.28	91.30	540
66	19 3 76	3.55	124.59	250
67	23 3 76	2.58	82.85	410
68	26 3 76	4.00	156.17	610
69	10 4 76	2.55	57.64	426
70	23 4 76	4.17	157.02	490
71	29 4 76	3.33	99.09	220
72	3 5 76	4.33	170.84	360
73	5 5 76	4.03	147.79	430
74	7 5 76	3.90	133.55	2,160
75	11 5 76	2.96	84.24	490
76	19 5 76	3.10	84.94	540
77	21 5 76	2.64	55.82	120
78	27 5 76	2.12	38.95	230
79	29 5 76	2.06	36.41	230
80	28 6 77	2.40	56.25	430
81	4 4 77	1.98	36.91	260
82	12 4 77	2.34	50.29	130
83	18 4 77	1.88	33.31	190
84	2 5 77	3.00	88.90	230
85	9 5 77	2.20	44.71	230
86	21 5 77	1.98	36.54	320
87	26 5 77	3.32	120.93	270
88	1 6 77	2.26	48.71	250

Kikundi River

No.	Date of Sampling day month year	Stage (m)	Discharge (m ³ /s)	Sedimentation (mg/l) (SA-t/d)
1	22 11 78	-1	0.534	820
2	22 11 78	-1	0.515	40
3	23 11 78	-1	0.329	390
4	23 11 78	-1	0.241	150
5	24 11 78	-1	0.201	30
6	25 11 78	-1	0.164	1,160
7	28 11 78	-1	0.131	1,730
8	28 11 78	-1	0.23	440
9	28 11 78	-1	0.252	730
10	28 11 78	-1	0.295	770
11	15 12 78	-1	0.129	200
12	15 12 78	-1	0.318	541
13	15 12 78	-1	0.917	7,160
14	15 12 78	-1	0.636	4,230
15	16 12 78	-1	0.164	510
16	22 12 78	-1	0.284	280
17	15 1 79	-1	0.98	77
18	15 1 79	-1	0.121	990
19	24 2 79	-1	0.146	480
20	24 2 79	-1	0.146	130
21	9 2 79	-1	0.064	140
22	10 2 79	-1	0.054	160
23	17 2 79	-1	0.969	1,810
24	17 2 79	-1	0.769	1,050
25	18 2 79	-1	0.173	40
26	10 3 79	-1	0.057	290
27	12 3 79	-1	0.105	1,340
28	12 3 79	-1	0.057	290
29	13 3 79	-1	0.817	4,310
30	13 3 79	-1	0.969	5,610
31	13 3 79	-1	0.817	2,990
32	13 3 79	-1	0.636	2,380
33	13 3 79	-1	0.636	2,390
34	13 3 79	-1	0.554	1,340
35	13 3 79	-1	0.554	1,380
36	13 3 79	-1	0.477	1,630
37	13 3 79	-1	0.477	1,150
38	14 3 79	-1	0.077	60
39	14 3 79	-1	0.679	8,510
40	14 3 79	-1	0.817	6,990
41	14 3 79	-1	0.636	5,350
42	14 3 79	-1	0.636	6,020
43	14 3 79	-1	0.554	2,870
44	14 3 79	-1	0.477	2,830
45	14 3 79	-1	0.442	2,250



SUMMARY OF ESTIMATED SEDIMENTATION (t/d)

(1) 1H8

YEAR	ITEM	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	ANNUAL
1958	MEAN	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10
	MAX.	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	11500
	MIN.	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	1259
1959	MEAN	2389	5617	8421	8390	20966	2660	1355	1261	1192	860	878	1599	4639
	MAX.	5106	16250	19475	24521	40312	4456	2127	4017	1935	1955	2387	3739	40312
	MIN.	1322	2235	2456	2587	4713	1574	894	675	630	618	603	763	603
1960	MEAN	7516	4321	13375	91378	51488	7710	3554	1653	886	605	836	275	15252
	MAX.	28796	20317	29114	171288	137013	10548	5365	2274	1110	1039	2353	402	171288
	MIN.	417	1419	1557	24665	9338	5479	2068	1110	675	421	421	210	210
1961	MEAN	277	11988	10703	8772	37274	4469	7022	3754	1827	9862	168422	83857	28974
	MAX.	740	29008	17700	33211	55541	8169	17157	8666	2274	46981	252487	126619	252487
	MIN.	158	809	4192	3056	8844	2925	2847	1777	1574	2252	70524	54442	158
1962	MEAN	127917	19872	52770	46485	52706	8930	3835	3764	3407	1622	2096	4638	27531
	MAX.	257416	34258	97179	93688	91385	15445	6111	6961	5253	2319	5033	9713	257416
	MIN.	40833	11726	21798	18254	16250	5328	2599	2274	1875	1290	1168	1453	1168
1963	MEAN	15573	10108	22592	129499	54391	8588	5231	2393	1243	700	46584	68104	30408
	MAX.	31177	12725	65344	274099	144994	12220	10237	3709	1574	907	242732	233915	274099
	MIN.	6699	7737	6527	66044	13048	6131	2977	1513	907	551	505	12126	505
1964	MEAN	34621	8311	27587	141877	32287	8688	3592	2158	1442	2207	1207	718	21955
	MAX.	68801	12983	80164	222083	73671	12629	4889	2709	2375	8024	2387	965	222083
	MIN.	13178	4801	7726	71258	12534	5069	2822	1677	1081	821	691	584	584
1965	MEAN	3877	2467	2457	45062	15932	9032	2102	1199	1142	2173	7005	10159	8524
	MAX.	12983	6720	9285	101305	66220	27804	2964	1526	3401	5537	15158	16102	101305
	MIN.	1081	827	1053	6895	5969	3083	1526	933	712	876	2068	5234	712
1966	MEAN	10397	14607	14288	81827	27181	8671	4292	2130	1554	1415	2660	2233	14165
	MAX.	22974	21709	45360	141650	47338	13892	7761	2951	3124	4507	5272	4017	141650
	MIN.	4678	6917	5365	42321	12629	5701	2690	1544	1168	866	1278	1298	866
1967	MEAN	902	3214	3180	29206	72283	31820	7399	6247	9983	5662	16810	94892	23650
	MAX.	1730	6785	8729	106092	104288	69071	13741	12757	18981	12502	40442	215864	215864
	MIN.	584	574	1530	1457	28586	7856	5069	4192	4112	3359	5272	29381	574
1968	MEAN	37006	8221	39455	207485	79486	34459	8248	3735	2275	1430	12492	31756	38728
	MAX.	122795	13977	133735	296360	193860	66705	14735	5809	2809	1860	53396	84873	296360
	MIN.	10662	5422	8024	-10	28115	12376	5253	2822	1739	1153	1102	5197	1102
1969	MEAN	3032	5732	10057	28505	77579	7792	3413	2367	1840	1551	2906	2793	12374
	MAX.	4943	21224	41030	63228	139656	12854	6688	3205	3003	3537	8157	4889	139656
	MIN.	2032	1739	2285	7761	11083	4456	2268	1826	1255	1053	907	1651	907
1970	MEAN	6295	24276	25377	38144	12847	4001	2192	1364	2079	1331	806	5770	10250
	MAX.	14560	36565	47661	51076	38837	5919	2841	1702	5197	2032	1088	17080	51076
	MIN.	1574	13674	10125	18981	6213	2847	1716	1164	1157	1032	589	574	574
1971	MEAN	6596	5256	2914	38083	30021	6384	4227	2454	1518	1307	1077	1679	8450
	MAX.	15546	8438	8561	90538	92503	11105	6900	3441	1811	2242	1654	4389	92503
	MIN.	2772	2963	1795	9895	12246	4641	3185	1763	1194	970	822	763	763
1972	MEAN	7076	1995	4729	50630	94638	24735	3794	1808	2401	3302	7432	8941	17669
	MAX.	17230	2798	12681	121498	121983	85009	5290	2623	6259	7363	15168	16364	121983
	MIN.	1718	1498	1830	9429	59577	5509	2672	1276	1288	1349	2647	3542	1276
1973	MEAN	22975	12925	15996	48710	102152	9562	4103	3137	1679	1282	2708	3550	19153
	MAX.	51977	22823	44585	80595	201350	15452	5822	5432	2549	2666	10801	8626	201350
	MIN.	5041	6228	5922	11993	16069	6043	2994	2549	1217	792	609	2378	609
1974	MEAN	2176	2358	1621	18917	88815	11359	4734	2104	1399	1304	945	644	11474
	MAX.	3911	7304	6863	53532	297068	24157	6756	2835	1960	3793	1324	992	297068
	MIN.	1182	970	636	5110	19330	5607	2941	1462	1015	782	653	522	522
1975	MEAN	2356	787	6979	40347	37803	12642	3992	1819	1533	1642	981	3011	9514
	MAX.	5607	1365	19668	78329	56691	55288	5899	2411	2985	3783	1338	9540	78329
	MIN.	492	449	449	4417	16938	5736	2450	1338	1120	884	763	842	449
1976	MEAN	3573	5129	12264	27615	36119	7735	3512	1795	1195	2010	999	1126	8599
	MAX.	11642	12094	33436	51688	71914	12711	5355	2392	1811	4040	1700	1893	71914
	MIN.	1715	1462	2856	11992	10121	5639	2469	1284	926	1133	707	653	653
1977	MEAN	4779	4516	7358	13551	21103	6152	2027	1332	3371	2260	6301	17111	7514
	MAX.	12607	8397	19600	42938	59298	16568	2668	1943	17125	4472	18468	52421	59298
	MIN.	1284	1779	2709	6756	5899	2772	1519	1015	782	1258	1519	4641	782
1978	MEAN	-10	6249	19248	66059	23728	5985	-10	-10	814	565	10882	76745	-10
	MAX.	69855	11892	86252	88651	69564	9021	4066	1563	1096	915	68839	186352	186352
	MIN.	24933	3988	3300	34475	9365	3885	2689	1120	636	429	422	39439	422
1979	MEAN	-10	-10	55465	186873	105868	35131	7936	3701	2777	1911	2531	-10	-10
	MAX.	-10	-10	109618	450763	367964	62383	11593	4843	4931	3585	8852	-10	450763
	MIN.	-10	-10	18207	95960	37605	11792	4727	2730	1593	1096	1061	-10	1061
1980	MEAN	4217	9105	6398	14690	35689	6608	2925	1960	1312	800	5099	15006	8667
	MAX.	8195	20216	10536	30170	61299	13186	3733	2411	1731	1061	17187	39027	61299
	MIN.	2608	4199	3684	4585	13401	3783	2242	1654	970	653	792	2608	653
1981	MEAN	5012	5924	4558	26229	-10	8429	3475	2169	1970	1329	1587	6029	-10
	MAX.	8076	10536	19533	51810	-10	14676	4556	2730	2920	2941	2489	12763	51810
	MIN.	3007	3347	1779	6439	-10	4843	2508	1843	1271	782	1061	970	782
1982	MEAN	1904	625	914	5875	9793	1855	1818	-10	-10	-10	11644	10215	-10
	MAX.	5186	937	1620	12861	22583	3150	4201	-10	-10	-10	22387	16987	22583
	MIN.	788	473	453	697	3014	1374	1006	-10	-10	-10	1186	4384	453
1983	MEAN	32923	5499	8020	28351	61192	28541	6254	4666	2536	1846	1496	2920	15436
	MAX.	92851	7699	21822	40037	70918	69045	9153	8492	6876	4443	1968	33314	92851
	MIN.	8110	4103	3135	9939	32624	8237	4131	2861	1603	1243	700	700	700
1984	MEAN	16486	6601	5255	17355	227717	87630	5075	-10	-10	-10	60085	16840	-10
	MAX.	47406	13373	11269	54204	320743	330261	6467	-10	-10	-10	3624	162933	43335
	MIN.	2687	3913	1986	7221	78384	7378	3423	-10	-10	-10	1089	6358	8449

SUMMARY OF ESTIMATED SEDIMENTATION (t/d)

(1) 1H8

YEAR	ITEM	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	ANNUAL
1985	MEAN	21263	5673	5306	60769	71571	5873	3445	1671	1197	1065	3961	7273	15814
	MAX.	43335	12758	10864	118920	149281	10226	5528	2243	1881	1747	9986	15702	149281
	MIN.	6322	2021	1986	10082	10964	3676	2149	1311	871	778	1243	2224	778
1986	MEAN	4305	-10	4617	54953	19631	-10	-10	-10	-10	-10	-10	-10	-10
	MAX.	11179	5813	15927	130185	61397	64776	-10	-10	-10	-10	-10	-10	130185
	MIN.	2060	1715	1350	15201	8444	8444	-10	-10	-10	-10	-10	-10	1350
1987	MEAN	-10	3766	-10	-10	-10	-10	1868	1490	829	1165	1254	2283	-10
	MAX.	26329	6102	7545	8161	46858	11783	2343	2443	1096	2060	2477	4444	46858
	MIN.	6769	1941	1941	3497	17836	2960	1532	1117	608	579	667	1292	579
1988	MEAN	1463	1999	2965	17122	5047	-10	-10	-10	-10	-10	-10	-10	-10
	MAX.	2121	3456	13425	32762	12406	-10	-10	-10	-10	-10	-10	-10	32762
	MIN.	1036	1016	1181	10759	2632	-10	-10	-10	-10	-10	-10	-10	1016
1989	MEAN	31599	5719	2940	23933	39033	-10	-10	-10	-10	-10	-10	-10	-10
	MAX.	55201	21609	6280	67624	72936	41000	-10	-10	-10	-10	-10	6738	72936
	MIN.	9329	2615	1941	5180	21230	8302	-10	-10	-10	-10	-10	3017	1941
1990	MEAN	-10	-10	-10	88951	-10	1233	-10	-10	-10	-10	-10	-10	-10
	MAX.	35957	14395	146863	219721	-10	2650	-10	-10	-10	-10	42134	8091	219721
	MIN.	3524	3094	23296	29439	-10	566	-10	-10	-10	-10	667	3017	566
1991	MEAN	3054	4344	1820	-10	16565	5094	2246	1496	959	943	-10	-10	-10
	MAX.	6161	10188	3539	-10	32599	11435	2941	2215	1138	2685	-10	-10	32599
	MIN.	1883	1826	1258	-10	12679	3056	1715	1096	857	675	-10	-10	675
1992	MEAN	2206	1850	-10	-10	42075	-10	2537	1376	959	681	4395	11021	-10
	MAX.	4690	2904	-10	-10	82192	-10	3414	1743	1138	958	17222	20856	82192
	MIN.	1036	977	-10	-10	11264	-10	1854	1138	830	525	499	4791	499
1993	MEAN	15198	15463	16890	62922	-10	-10	-10	-10	-10	-10	-10	-10	-10
	MAX.	20609	26761	23429	281324	-10	-10	-10	-10	-10	-10	-10	-10	281324
	MIN.	10594	9482	11179	11608	-10	-10	-10	-10	-10	-10	-10	-10	9482
TOTAL AVERAGE	MEAN	14135	7017	13016	54643	51719	13854	4016	2409	1976	1887	13313	17543	16294
	MEAN MAX.	32114	13880	33571	114899	108316	34691	6456	3870	3869	5000	34334	42328	36111
	MEAN MIN.	4738	3535	4383	21576	17391	5081	2629	1702	1202	1008	3703	6825	6148
	DATA No.	31	32	32	32	31	29	29	27	28	28	29	28	22
	AB. MAX.	257416	36565	133735	450763	367964	330261	17157	12757	18981	46981	252487	233915	450763
	AB. MIN.	158	449	449	697	2632	566	894	675	608	421	421	210	158

DATA BOOK

III. DATA ON FLOOD DAMAGE

III. DATA ON FLOOD DAMAGE

TABLE OF CONTENTS

1.	SUMMARY OF FLOOD SURVEY	
1.1	List of Flood Survey Interview Location	III - 1
1.2	Summary of Flood Survey	III - 2
2	FIELD INTERVIEW SHEETS	III - 7

DATA ON FLOOD DAMAGE

1. SUMMARY OF FLOOD SURVEY

List of Flood Survey Interview Location

No.	Banks	Location	Date	Page
1	R	Nunge Salt Works	Apr.20,'93	
2	R	Serengete, near Kivukoni ferry BIDP	Apr.22,'93	
3	R	Bagamoyo Irrigation Development JICA Farm	Apr.22,'93	
4	R	Kivkoni Ferry Terminal	Apr.22,'93	
5	R	Matimbwe, low land	Apr.30,'93	
6	R	Matimbwe, elevated area	Apr.30,'93	
7	R	Kongwa NUWA Lower Ruvu Intake farm	Apr.30,'93	
8	R	Kongwa NUWA Lower Ruvu Intake	Apr.30,'93	
9	R	Chasimba	Apr.30,'93	
10	R	Mbwara (Malandizi, village representative)	May 10,'83	
11	R	Mbwara	May 10,'83	
12	L	Kwalaza/Darjani	May 19,'83	
13	R	NUWA Upper Ruvu Intake	May 19,'83	
14	R	Kwalaza Agriculture Secondary School	May 19,'83	
15	R	Ruvu Railway station	Apr.28,'93	
16	R	Mafisi near Elementary School	May 19,'93	
17	R	Mwanamsekwa(Mafisi gauging station)	May 19,'93	
18	R	Kimara Masale (Mafisi, Old Morogoro Rd.)	Oct.26,'93	
19	L	Mikadini (Makurunge) Salt Works	Oct.25,'93	
20	L	Makurunge 1	Apr.23,'93	
21	L	Makurunge 2	Apr.23,'93	
22	L	Migude, village at the end of road from Kitonga	Oct.22,'93	
23	L	Kitonga	Apr.21,'93	
24	L	Nji Mbili, (Mbwawa) Kitonga - Msumbiji	Oct.22,'93	
25	L	NAFCO Ruvu Rice Farm	Apr.21,'93	
26	L	Kwala (R/W junction)	Apr.28,'93	
27	L	Kwala - NAFCO Ruvu Rice Farm	Apr.28,'93	
28	L	Kwala (Lake Wongomori)	Oct.26,'93	
29	L	Nwembengozi, Dutumi	Oct.26,'93	
30	L	Utari Bridge (Ngerengere R.)	May 13,'93	

THE STUDY OF WATER RESOURCES DEVELOPMENT IN THE RUVU RIVER BASIN

SUMMARY OF FLOOD SURVEY (1/5)

Sr.No.	1	2	3	4	5	6
Name of Interviewed	1 R	2 R	3 R	4 R	5 R	6 R
Date of Interview	Nunge Salt Works Apr.20,93	Ali Abdallah Apr.22,1993	BIDP (Tsuissu,JICA) Apr.22,1993	Kivkomi Ferry Apr.20,1993	Rajabu Ramadhani Apr.30,93	Ramadhani A. Pori Apr.30,93
Location	Ras Nunge, Bagamoyo	Screngete (Bagamoyo)	Kikongoni (Bagamoyo) 6-28-42S 38-50-10E	Kikongoni (Bagamoyo) 6-28-50S 38-49-56E	Matimbwe (Low land)	Matimbwe (Upland)
Main Activity of Interviewed	Salt producer	Farmer	Experimental Farms	Ferry Operation	Farmer	Farmer
Biggest Flood perceives		1979 Apr/May	1990 Apr.	1979 Apr/May, 1991	1979+1993Apr/May	1961/Apr.1993
Inundation	Depth (m)	1.01	0.50	-	1-2 m	2.00
Depth(m)/	Duration	1.01	1 month	-	1 month	2.00
Duration(days)		1.01	-	-	-	-
Cultivation	w/o flood	w/o flood	w/o flood	w/o flood	w/o flood	w/o flood
Area (ha)	w/ flood	w/ flood	w/ flood	w/ flood	w/ flood	w/ flood
Yield (t/ha)	-	1.01	8.00	-	0.81	0.61
without or	-	1.01	8.00	-	0.81	0.61
with Flood	-	1.01	8.00	-	0.81	1.62
	-	0.20	-	-	-	-
	-	3.76	0.00	-	2.23	0.00
	-	4.26	-	-	3.34	3.34
Flood Damage	Damage	983	7,788	0	789	591
or Benefit	Benefit	12,297	0	0	58,737	19,565
(in Tsh.)		6,000		0	18,000	15,000
Total Damage/Benefits		-5,313	7,788	0	-39,949	-3,974
Production increase by Flood	10 - 15 %	60 days	30 days	end April - mid. June	10 - 15 %	10 - 15 %
Blocked Duration by Floods	15 %	15 %	-	-	60	60 days
Prices Increase during Flood					15 %	15 %
Remarks	* no influence of Ruvu flood (out of Ruvu catchment)	* 50 peasants around in flood plain(40ha) * tractor tillage Tsh.22,240/ha	* established in 1988 * irrigation by pump (Q = 800 lit/min.) * future extend 1000ha	* inundation 1979-1.95 * inundation 1991-1.17 * inundation 1993-0.7 * Manual operation	* 300 peasants around	* 50 peasants around in flood plain(40ha) * tractor tillage Tsh.22,240/ha

Remarks :
 1. 1 acres = 0.4047 ha, 1 bag = 75 kg, 1 bag/acres = 0.1853 ton/ha
 2. Paddy cost up to transplanting; seed Tsh 760/ha, Tools Tsh.213/ha, and labor 65 man-day/ha
 3. Rice Tsh.30,000/ton, Maize Tsh.30,000/ton

THE STUDY OF WATER RESOURCES DEVELOPMENT IN THE RUVU RIVER BASIN
SUMMARY OF FLOOD SURVEY (2/5)

Sr.No.	7	8	9	10	11	12
Name of Interviewed	Bonifasi Kayombo	NUWA Lower Ruvu Inta	Mayangu	K. J. Matambo	Musa Mauldi	Abdallah Chanzi
Date of Interview	Apr.30.93	Apr.30.93	Apr.30.1993	May 10, 1993	May 10, 1993	May 19, 1993
Village Name	Kongwa, NUWA L. Ruv	Kongwa, Bagamoyo	Chasimba, Bagamoyo	Mbwawa (malandizi)	Mbwawa	Kwalaza (Darajani)
Coordinate						
Main Activity of Interviewed	Farmer/NUWA Worker	Water Supply Intake	Farmer	Farmer & officer	farmer	farmer
Biggest Flood perceives	1979+1993 Apr/May	1979/Apr.1993	1979+1993 Apr/May	1979+1993 Apr/May	Apr.79 & Apr/May'93	April 1986
Inundation Depth(m)/ Duration(days)	1 - 2 m / 1 month	- / -	1 - 2 m / 1 month	1 - 2 m / 1.5 months	- / -	1 - 2 m / > 1 month
Cultivation Area (ha)	1.01	w/o flood / 1.01	w/o flood / 1.01	w/o flood / 1.01	w/o flood / 0.61	w/o flood / 1.62
Yield (t/ha) without or with Flood	2.78	1.04	0.71	0.61	0.61	1.62
Flood Damage or Benefit (in Tsh.)	985	15,978	0	983	594	1,577
Total Damage/Benefits	15,000	0	0	15,000	0	0
Production increase by Flood	20 %	0 day	15 %	10 %	10 %	20 %
Blocked Duration by Floods	0 day	0 day	0 day	45 days	45 days	0 day
Prices Increase during Flood	10 - 15 %	-	15 - 50 %	15 %	15 %	0 %
Remarks	* peasant and NUWA lower Ruvu worker	* intake weir submerged by flood, pump st. submerged 65 cm by flood in 1979	* 675 peasants around * population 1,441	* 375 peasants around * avg. 1.62 ha * left bank upstream Morogoro Rd Bridge		

Remarks :
 1. 1 acres = 0.4047 ha, 1 bag = 75 kg, 1 bag/acres = 0.1853 ton/ha
 2. Paddy cost up to transplanting: seed Tsh 760/ha, Tools Tsh.213/ha, and labor 65 man-day/ha
 3. Rice Tsh.30,000/ton, Maize Tsh.30,000/ton

THE STUDY OF WATER RESOURCES DEVELOPMENT IN THE RUVU RIVER BASIN
SUMMARY OF FLOOD SURVEY (3/5)

Sr.No.	13	14	15	16	17	18
Name of Interviewed	13 R	14 R	15 R	16 R	17 R	18 R
Date of Interview	NUWA Upper Ruwu May 19, 1993	Agri. Sec. School May 19, 1993	Charles Matonya April 28, 1993	Juma M. Digogo May 19, 1993	Shabani Juma Mawine May 19, 1993	Selemani Kinukire October 26, 1993
Location	Kwalaza/Mlandezi	Kwalaza/Mlandezi	Ruvu Railway Station	Mafisi, near school	Mwanamsekwa (Mafisi)	Kimara Masale
Coordinate				6-58-59	7-01-03	8-34-25
Main Activity of Interviewed	Water supply intake	Agri. Sec. School	farmer	farmer & officer	farmer	farmer
Biggest Flood perceives	1971 Apr/1993 Apr/May	1985 + 1989 by Hizi	1989	Apr/May 1979	Apr/May 1979	Apr/May 1993
Inundation						
Depth(m)/						
Duration(days)						
Cultivation						
Area (ha)						
Yield (t/ha)						
without or						
with Flood						
Flood Damage						
or Benefit						
(in Tsh.)						
Total Damage/Benefits						
Production Increase by Flood						
Blocked Duration by Floods						
Prices Increase during Flood						
Remarks						

Remarks :
1. 1 acres = 0.4047 ha, 1 bag = 75 kg, 1 bag/acres = 0.1853 ton/ha
2. Paddy cost up to transplanting: seed Tsh 760/ha, Tools Tsh.213/ha, and labor 65 man-day/ha
3. Rice Tsh.30,000/ton, Maize Tsh.30,000/ton

**THE STUDY OF WATER RESOURCES DEVELOPMENT IN THE RUVU RIVER BASIN
SUMMARY OF FLOOD SURVEY (4/5)**

St.No.	19	20	21	22	23	24
Name of Interviewed	Mkadimi Salt Works	Kiegezo	Kiengez Mafumba	Kanomba W. Joseph	Saidi Mkwambi	Kichofi Rushil Ali
Date of Interview	Oct. 25, 1993	April 23, 1993	Ape. 23, 1993	Oct. 27, 1993	Apr. 21, 1993	Oct. 27, 1993
Location	Mkadimi (Makurunge)	Makurunge	Mikulunge	Migude (Kitonga)	Kitonga	Njia Mbili, (Mbwawa)
Coordinate		6-28-42 S	38-49-12 E	6-37-26 S	38-43-37 E	6-28-42 S
Main Activity of interviewed	abundant salt works	farmer	farmer	farmer	farmer	farmer
Biggest Flood perceives		1990	1990	Apr/May in 1992/93	1990/91	Apr/May 1993
Inundation	Depth (m)	Duration	Depth (m)	Duration	Depth (m)	Duration
Depth(m)/	-	>30days	1.2	1-2 m	1.2	1 < > 2
Duration(days)	-	-	1 month	> 7 days	1.2	> 7
Cultivation	w/o flood	w/ flood	w/o flood	w/ flood	w/ flood	w/ flood
Area (ha)	-	9.72	8.09	48.56	0.41	0.81
Yield (t/ha)	-	-	8.09	-	0.41	-
without or	-	-	-	-	-	-
with Flood	-	3.70	2.78	2.78	1.48	1.48
	-	2.78	3.71	0.74	0.96	1.85
Vegetables	-	-	cabbage, okura, onion	pinapple, vegetable	-	-
	-	-	Damage	Benefit	Damage	Benefit
Flood Damage	0	9,462	7,876	47,273	399	789
or Benefit	-	0	587,477	0	-	1,961
(in Tsh.)	-	30,000	-	-	-	-
Shelter/H.Holds	-	-	-	-	110,000	-
Total Damage/Benefits	0	-548,014	-155,697	47,273	108,438	789
Production increase by Flood	-	30 %	? %	20 %	? %	25 %
Blocked Duration by Floods	-	45 days	1 month	1.5 months	2 months	2 months
Prices Increase during Flood	-	50 %	no shop exist near by	15 %	10 %	20 %
Remarks	* no activities and no persons living		* ferry boat dose not operate 15Apr-15May	* 600 peasants around tractor, permanent building on the hill	* 60 peasants around	* comes down from Mbwawa to cultivate during rainy season

Remarks :
 1. 1 acres = 0.4047 ha, 1 bag = 75 kg, 1 bag/acres = 0.1853 ton/ha
 2. Paddy cost up to transplanting; seed Tsh.760/ha, Tools Tsh.213/ha, and labor 65 man-day/ha
 3. Rice Tsh.30,000/ton, Maize Tsh.30,000/ton

THE STUDY OF WATER RESOURCES DEVELOPMENT IN THE RUVU RIVER BASIN

SUMMARY OF FLOOD SURVEY (5/5)

Sr.No.	25	26	27	28	29	30
Name of Interviewed	NAFCO RUVU RICE FA	Ali Yahaya	Nasoro Ramdhani	Athuman Rajabu	Salehe Shindilia	Ngerengere Utari Bdg.
Date of Interview	Apr. 21, 1993	Apr. 28, 1993	Apr. 28, 1993	Oct. 26, 1993	Oct. 26, 1993	May 13, 1993
Village Name	Nguhi	Kwala	Kwala	Kwala	Nwembongozi, Dutumi	Nhgeze(Serengete B-Rutali
Coordinate						
Main Activity of Interviewed	national farm company	Farmer	Farmer	Farmer	Farmer	Farmer
Biggest Flood perceives	Apr/May 1979	1978/1979	1978/1979	Apr. 1993	Apr. 1993	Apr/May 1993
Inundation Depth(m)/ Duration(days)	0.00	< 2	< 2	1-2	1-2	> 1.0
Cultivation Area (ha)	w/o flood 725.00 w/ flood 725.00	w/o flood 3.71 w/ flood 5.56	w/o flood 0.81 w/ flood 0.81	w/o flood 0.81 w/ flood 0.81	w/o flood 0.81 w/ flood 0.81	w/o flood - w/ flood -
Yield (t/ha) without or with Flood	32.00 725.00	32.00 725.00	3.24	3.76	3.7	4.45
Flood Damage or Benefit (in Tsh.)	Damage 705,788 Benefit 0	Damage 5,413 Benefit 0	Damage 789 Benefit 0	Damage 789 Benefit 6,516	Damage 789 Benefit 30,000	Damage 0 Benefit 0
Total Damage/Benefits	705,788	5,413	10,000	10,789	8,000	5,000
Production increase by Flood	-	20 %	15 %	15 %	5 %	10 %
Blocked Duration by Floods	0 day	1 month	1 month	1 month	6 months	60 days
Prices Increase during Flood	-	40 %	50 - 10 %	20 %	15 %	20 %
Remarks	* protected by flood dike along the Ruvu * Chinese assistance	* 200 peasants around in flood plain(40ha)	* 300 peasants around	* 200 peasants around * pump for domestic water for Kwala / Mwembongozi	* 600 peasants around * tractor tillage Tsh. 19,800.-	* 300 peasants around * materials from Ngerengere/Chalinze

Remarks :
 1. 1 acres = 0.4047 ha, 1 bag = 75 kg, 1 bag/acres = 0.1853 ton/ha
 2. Paddy cost up to transplanting; seed Tsh 760/ha, Tools Tsh.213/ha, and labor 65 man-day/ha
 3. Rice Tsh.30,000/ton, Maize Tsh.30,000/ton

DATA ON FLOOD DAMAGE

2. FIELD INTERVIEW SHEETS

WATER RESOURCES DEVELOPMENT STUDY
IN THE RUVU RIVER BASIN

FLOOD DAMAGE SURVEY IN THE RUVU RIVER BASIN

Date of Interview Apr. 20, 1993
 Name of Answerer Nunge Salt Factory
 Name of Village/District Kas. Nunge, Bagdamoyo
 Location Longitude/Latitude S / E

A. Annual Recurrent Flood of Usual Scale

As you are living in a flood-prone area, we presume you have little damage to the property or stocks. Rather, if you are farmers, you are expecting better harvest by planting agro-produce on the new sediment brought by the flood.

- a. In that case, how much do you think you have benefitted from the flood ?

Ans. _____ percent more harvest than the ones without flood, on average.

- b. How many days during the rainy season are the roads to the main roads, school, hospital etc. blocked by the floods on average ?

Ans. _____ days on average.

- c. How much the price of daily necessities like salt, oil etc. go up during the road block by flood ?

Ans. _____ percent higher than usual.

B. Unexpected (Unprepared) Flood, e.g. either Unusually Big Scale or Unseasonal Flood.

- a. When did one take place ?

No.	Year	Month	Days	Q_{max} at 1H8
1.	1979	Apr/May		2,901 m ³ /s
2.	1984	May		604 m ³ /s
3.	1986	Apr.		515 m ³ /s
4.	1989			
5.				

- b. Damage to the properties, movables and stocks: Please fill in the attached FORMAT A. with ticks, words and figures.

- c. Damage to the agricultural crops growing in the fields: Please fill in the attached FORMAT B. with ticks, words and figures.

*No influence of Ruvu Flood!
 = out of catchment -
 Also no influence of abnormal tide!*

**WATER RESOURCES DEVELOPMENT STUDY
IN THE RUVU RIVER BASIN**

Dear Residents, *Ali Abdallah (peasant) of Serengele B. (Rutali)*

SUB: FLOOD DAMAGE SURVEY IN THE RUVU RIVER BASIN

*peasant pop 300
average acre per
2 1/2 - 3 acres.*

A. Annual Recurrent Flood of Usual Scale

As you are living in a flood-prone area, we presume you have little damage to the property or stocks. Rather, if you are farmers, you are expecting better harvest by planting agro-produce on the new sediment brought by the flood.

a. In that case, how much do you think you have benefitted from the flood?

Ans. 10-15% percent more harvest than the ones without flood, on average.

b. How many days during the rainy season are the roads to the main roads, school, hospital etc. blocked by the floods on average?

Ans. 60 days on average. *Transported by foot, bicycle & Boat*

c. How much the price of daily necessities like salt, oil etc. go up during the road block by flood?

Ans. 15% percent higher than usual.

B. Unexpected (Unprepared) Flood, e.g. either Unusually Big Scale or Unseasonal Flood.

a. When did one take place?

1979 Apr/May

No.	Year	Month	Days	Q _{max} at IHS
1.	1962			1,040 m ³ /s
2.	1963			1,177 m ³ /s
3.	1964			934 m ³ /s
4.	1968	Apr		975 m ³ /s
5.	1974	May		513 m ³ /s
6.	1979	Apr/May		2,901 m ³ /s
7.	1984	May		604 m ³ /s
8.	1986	Apr.		515 m ³ /s

b. Damage to the properties, movables and stocks: Please fill in the attached FORMAT A. with ticks, words and figures.

c. Damage to the agricultural crops growing in the fields: Please fill in the attached FORMAT B. with ticks, words and figures.

FORMAT - A

Item	Type	Area in (m ²)	Inundation (cm)					Sedimentation (cm)	
			-49	50-99	100-199	200-299	300-	-49	50-
House	F-Concrete								
	Block								
	Wooden ✓	3m			✓				
Household Articles (T.8hs)		Tsh. 6000/-							
Agricultural in T.8hs	Facilities								
	Implements	hoes, Bush knives							
	Stocks	millet, maize							
Fishing * in T.8hs	Facilities								
	Implements								
	Stocks								

* including fish culture

normally no household loss, because when there are signs of floods peasant shift to higher safer points.

FORMAT - B

Crops	Area (ha)	Depth (cm)	Inundation (day)				Buried in Sediments
			1-2	3-4	5-6	7-	
Paddy							
Cassava							
Beans							
Greens							
Pineapple							
Others							

maize 2 1/2 acres

✓ inundation for more than 2 days.

average yield: 70 bags/acre maize
20 " " " " millet

WATER RESOURCES DEVELOPMENT STUDY
IN THE RUVU RIVER BASIN

FLOOD DAMAGE SURVEY IN THE RUVU RIVER BASIN

Date of Interview Apr. 22, 1993
Name of Answerer Borandio Irrigation Development Project (Mr. Tsutsui)
Name of Village/District K. Borandio, Davao
Location Longitude/Latitude 6-28-42S / 125-50-10E
operation from 1988, mini-project of JICA from 1990

A. Annual Recurrent Flood of Usual Scale
As you are living in a flood-prone area, we presume you have little damage to the property or stocks. Rather, if you are farmers, you are expecting better harvest by planting agro-produce on the new sediment brought by the flood.

a. In that case, how much do you think you have benefitted from the flood ?

Ans. _____ percent more harvest than the ones without flood, on average.

b. How many days during the rainy season are the roads to the main roads, school, hospital etc. blocked by the floods on average ?

Ans. _____ days on average.

c. How much the price of daily necessities like salt, oil etc. go up during the road block by flood ?

Ans. _____ percent higher than usual.

B. Unexpected (Unprepared) Flood, e.g. either Unusually Big Scale or Unseasonal Flood.

a. When did one take place ?

No.	Year	Month	Days	Q _{max} at 1H8	Foundation
1.	1979	Apr/May		2,901 m ³ /s	
2.	1984	May		604 m ³ /s	
3.	1986	Apr.		515 m ³ /s	
4.	1989 1990	Apr.			→ ±50cm
5.	1992	April	10/9		→ ±100m

b. Damage to the properties, movables and stocks: Please fill in the attached FORMAT A. with ticks, words and figures.

c. Damage to the agricultural crops growing in the fields: Please fill in the attached FORMAT B. with ticks, words and figures.

FORMAT - A

Item	Type	Area In (m ²)	Inundation (cm) <i>1990 Apr.</i>					Sedimentation (cm)	
			-49	50-99	100-199	200-299	300-	-49	50-
House	F-Concrete								
	Block								
	Wooden								
Household Articles (T.Shs)									
Agricultural in T.Shs	Facilities								
	Implements								
	Stocks								
Fishing * in T.Shs	Facilities								
	Implements								
	Stocks								

* Including fish culture

Average yield without flood

Crop	Yield/acreage
<i>Paddy (Dry S.)</i>	<i>2.96 ton/ha.</i>
<i>" (Wet S.)</i>	<i>3.76 ton/ha.</i>

Average Yield after flood

<i>Paddy</i>	<i>5.8 (1990)</i>
--------------	-------------------

FORMAT - B

Crops	Area (ha)	Depth (cm)	Inundation (day)				Buried in Sediments
			1-2	3-4	5-6	7-	
Paddy	<i>8.0</i>	<i>50</i>					<i>1990</i>
Cassava	<i>0.2</i>						
Beans							
Greens							
Pineapple							
Others <i>Vegetables</i>	<i>0.2</i>						

- irrigated by pump *800 l/min.* =
 - future extension *1,000 ha.*

WATER RESOURCES DEVELOPMENT STUDY
IN THE RUVU RIVER BASIN

FLOOD DAMAGE SURVEY IN THE RUVU RIVER BASIN

Date of Interview Apr. 20, 1993
 Name of Answerer Kivkoni (Kikangoni) Ferry Operator
 Name of Village/District Kivkoni
 Location Longitude/Latitude 6-28-50 S / 38-49-56 E

A. Annual Recurrent Flood of Usual Scale

As you are living in a flood-prone area, we presume you have little damage to the property or stocks. Rather, if you are farmers, you are expecting better harvest by planting agro-produce on the new sediment brought by the flood.

- a. In that case, how much do you think you have benefitted from the flood ?

Ans. _____ percent more harvest than the ones without flood, on average.

- b. How many days during the rainy season are the roads to the main roads, school, hospital etc. blocked by the floods on average ? * Ferry operation suspended about 2 months

Ans. _____ days on average. *between April -- June*

- c. How much the price of daily necessities like salt, oil etc. go up during the road block by flood ? *because ferry operated by manual (rapid flow)*

Ans. _____ percent higher than usual.

B. Unexpected (Unprepared) Flood, e.g. either Unusually Big Scale or Unseasonal Flood.

- a. When did one take place ?

No.	Year	Month	Days	Q _{max} at 1H8	Inundation from road
①	1979	Apr/May		2,901 m ³ /s	1.95 m
2.	1984	May		604 m ³ /s	
3.	1986	Apr.		515 m ³ /s	
4.	1989			1991	1.17
⑤	1993	Apr/May		1992	0.70

- b. Damage to the properties, movables and stocks: Please fill in the attached FORMAT A. with ticks, words and figures.

- c. Damage to the agricultural crops growing in the fields: Please fill in the attached FORMAT B. with ticks, words and figures.

Fee: Tsh. 100.- per vehicle one way.

**WATER RESOURCES DEVELOPMENT STUDY
IN THE RUVU RIVER BASIN**

Dear Residents,

SUB: FLOOD DAMAGE SURVEY IN THE RUVU RIVER BASIN

Date of Interview Apr. 30, 1993
 Name of Answerer Peasant (Rajabu Ramadhani) [Total peasant pop 250]
 Name of Village/District Matimbwa / Baganico District
 Location Longitude/Altitude - S / - E

A. Annual Recurrent Flood of Usual Scale

As you are living in a flood-prone area, we presume you have little damage to the property or stocks. Rather, if you are farmers, you are expecting better harvest by planting agro-produce on the new sediment brought by the flood.

- a. In that case, how much do you think you have benefitted from the flood ?

Ans. 20% percent more harvest than the ones without flood, on average.

- b. How many days during the rainy season are the roads to the main roads, school, hospital etc. blocked by the floods on average ?

Ans. nil. *The villagers leave on elevated land and go to the lower river banks for farming. Connected with almost all weather road to Morogoro Highway on earth road however "inverted".*

- c. How much the price of daily necessities like salt, oil etc. go up during the road block by flood ?

Ans. 20 - 50% percent higher than usual.

B. Unexpected (Unprepared) Flood, e.g. either Unusually Big Scale or Unseasonal Flood.

- a. When did one take place ? 1979 + 1993 Apr/May.

No.	Year	Month	Days	Q _{max} at 1H8
1.	1979	Apr/May		2,901 m ³ /s
2.	1984	May		604 m ³ /s
3.	1986	Apr.		515 m ³ /s
4.	1989			
5.	1993	Apr		?

- b. Damage to the properties, movables and stocks: Please fill in the attached FORMAT A. with ticks, words and figures.

- c. Damage to the agricultural crops growing in the fields: Please fill in the attached FORMAT B. with ticks, words and figures.

FORMAT - A

Item	Type	Area in (m ²)	Inundation (cm)					Sedimentation (cm)	
			-49	50-99	100-199	200-299	300-	-49	50-
House	F-Concrete								
	Block								
	Wooden			✓					
Household Articles (T.Shs)			Buckets + cooking + eating utensils						
Agricultural in T.Shs	Facilities								
	Implements		hoes, Bush knife etc.						
	Stocks								
Fishing * in T.Shs	Facilities								
	Implements								
	Stocks								

est. at Tsh. 15,000
est. 15,000/- Tsh.

est. at 3,000 Tsh.

* including fish culture

Average yield without flood Crop Yield/acreage
 paddy 4-9 bags/acre

Average Yield after flood paddy 9-15 bags/acre.

FORMAT - B

Crops	Area acre (ha)	Depth (cm)	Inundation (day)				Buried in Sediments
			1-2	3-4	5-6	7-	
Paddy	2						
Cassava							
Beans	1						
Greens	1						
Pineapple							
Others							

For the long rain season Feb - July.

After flood crop.
May - August.

Maize

totally 100 acres

[6R]

WATER RESOURCES DEVELOPMENT STUDY IN THE RUVU RIVER BASIN

Dear Residents,

SUB: FLOOD DAMAGE SURVEY IN THE RUVU RIVER BASIN

Date of Interview Apr. 30 '93
Name of Answerer Ramadhani Ali Pari
Name of Village/District Matinjane
Location Longitude/Altitude S / _____ E

50 farmers people

Farm's - near the village only shelter for rest exist near the field

Near Ruve River Flood Plain

A. Annual-Recurrent Flood of Usual Scale

As you are living in a flood-prone area, we presume you have little damage to the property or stocks. Rather, if you are farmers, you are expecting better harvest by planting agro-produce on the new sediment brought by the flood.

a. In that case, how much do you think you have benefitted from the flood ?

Ans. _____ percent more harvest than the ones without flood, on average.

b. How many days during the rainy season are the roads to the main roads, school, hospital etc. blocked by the floods on average ?

Ans. _____ days on average.

c. How much the price of daily necessities like salt, oil etc. go up during the road block by flood ?

Ans. _____ percent higher than usual.

B. Unexpected (Unprepared) Flood, e.g. either Unusually Big Scale or Unseasonal Flood.

a. When did one take place ?

biggest and similar to flood 1993

No.	Year	Month	Days	Q _{max} at 1H8
1.	1979	Apr/May		2,901 m ³ /s
2.	1984	May		604 m ³ /s
3.	1986	Apr.		515 m ³ /s
4.	1989			
5.	1993	Apr.		

b. Damage to the properties, movables and stocks: Please fill in the attached FORMAT A. with ticks, words and figures.

c. Damage to the agricultural crops growing in the fields: Please fill in the attached FORMAT B. with ticks, words and figures.

FORMAT - A

Item	Type	Area in (m ²)	Inundation (cm)					Sedimentation (cm)	
			-49	50-99	100-199	200-299	300-	-49	50-
House	F-Concrete	4000 1000 1000 1000							
	Block								
	Wooden								
Household Articles (T.Shs)									
Agricultural in T.Shs	Facilities								
	Implements								
	Stocks								
Fishing * in T.Shs	Facilities								
	Implements								
	Stocks								

* including fish culture

Average yield without flood Crop paddy Yield/acreage 13 bags/acre
 " " 5 bags/acre → small drought year

Average Yield after flood No.
~~it depends on rain during growing period~~
~~if no rain no yield~~

FORMAT - B

4 acres normal | 1 1/2 acres this year

Crops	Area (ha)	Depth (cm)	Inundation (day)				Buried in Sediments
			1-2	3-4	5-6	7-	
Paddy	1.5 acre	2m					
Cassava							
Beans							
Greens							
Pineapple							
Others							

ploughed by tractor
 trouble a
 sh. 9,000/acre
 起 #11

maize is expected to plant after flood

②

**WATER RESOURCES DEVELOPMENT STUDY
IN THE RUVU RIVER BASIN**

Dear Residents,

SUB: FLOOD DAMAGE SURVEY IN THE RUVU RIVER BASIN

Date of Interview

30 Apr, 1993

Mr.

Name of Answerer

Peasant + NUWA worker

(Bonifasi Kayumbo)

Name of Village/District

Kongwa L. Ruvu W.S.

Location Longitude/Altitude

S /

E

A. Annual Recurrent Flood of Usual Scale

As you are living in a flood-prone area, we presume you have little damage to the property or stocks. Rather, if you are farmers, you are expecting better harvest by planting agro-produce on the new sediment brought by the flood.

- a. In that case, how much do you think you have benefitted from the flood ?

Ans. 26% percent more harvest than the ones without flood, on average.

- b. How many days during the rainy season are the roads to the main roads, school, hospital etc. blocked by the floods on average ?

Ans. nil. accessible throughout due to NUWA days on average.

- c. How much the price of daily necessities like salt, oil etc. go up during the road block by flood ?

Ans. 10 - 15% percent higher than usual. village business men pay higher for transport and shift the same to end consumers.

B. Unexpected (Unprepared) Flood, e.g. either Unusually Big Scale or Unseasonal Flood.

- a. When did one take place ? 1979 & 1993 Apr/May.

No.	Year	Month	Days	Q_{max} at LH8
1.	1979	Apr/May		2,901 m ³ /s
2.	1984	May		604 m ³ /s
3.	1986	Apr.		515 m ³ /s
4.	1989			
5.	1993	Apr.		

- b. Damage to the properties, movables and stocks: Please fill in the attached FORMAT A. with ticks, words and figures.

- c. Damage to the agricultural crops growing in the fields: Please fill in the attached FORMAT B. with ticks, words and figures.

(2)

FORMAT - A

Item	Type	Area in (m ²)	Inundation (cm)					Sedimentation (cm)	
			-49	50-99	100-199	200-299	300-	-49	50-
House	F-Concrete								
	Block								
	Wooden			✓					
Household Articles (T.Shs)									
Agricultural in T.Shs	Facilities								
	Implements								
	Stocks								
Fishing * in T.Shs	Facilities								
	Implements								
	Stocks								

storey huts valued at TSh 15,000

when there are signs that flood is coming peasants shift to permanent village with their belongings

* including fish culture

Average yield without flood	Crop	Yield/acreage
	<u>paddy.</u>	<u>75 bags/acre</u>
Average Yield after flood	_____	_____

FORMAT - B

Crops	Area (ha)	Depth (cm)	Inundation (day)				Buried in Sediments
			1-2	3-4	5-6	7-	
Paddy	2.5					✓	
Cassava							
Beans ✓							
Greens ✓							
Pineapple							
Others							

no yield then.

Maize, okra, yam short May-August rains.

Sept - Dec. second short rains, before start of circle.

NB cost of ploughing & harrowing is 7,000 + 2000 respectively, for most Bagamayo villages and Bagodpadi Tsh. 9000

WATER RESOURCES DEVELOPMENT STUDY
IN THE RUVU RIVER BASIN

FLOOD DAMAGE SURVEY IN THE RUVU RIVER BASIN

Date of Interview Apr. 30, 1993
 Name of Answerer MUNA Lower Run Intake
 Name of Village/District Kangwa, Bazombo
 Location Longitude/Latitude S / E
completed 1978,

A. Annual Recurrent Flood of Usual Scale

As you are living in a flood-prone area, we presume you have little damage to the property or stocks. Rather, if you are farmers, you are expecting better harvest by planting agro-produce on the new sediment brought by the flood.

a. In that case, how much do you think you have benefitted from the flood ?

Ans. _____ percent more harvest than the ones without flood, on average.

b. How many days during the rainy season are the roads to the main roads, school, hospital etc. blocked by the floods on average ?

Ans. _____ days on average.

c. How much the price of daily necessities like salt, oil etc. go up during the road block by flood ?

Ans. _____ percent higher than usual.

B. Unexpected (Unprepared) Flood, e.g. either Unusually Big Scale or Unseasonal Flood.

a. When did one take place ?

No.	Year	Month	Days	Q_{max} at 1H8	Water level at Intake Pumping Sta
1.	1979	Apr/May		2,901 m ³ /s	+ 65cm above floor
2.	1984	May		604 m ³ /s	
3.	1986	Apr.		515 m ³ /s	
4.	1989				
5.	1993	April 25			- 0.80m below floor

b. Damage to the properties, movables and stocks: Please fill in the attached FORMAT A. with ticks, words and figures.

c. Damage to the agricultural crops growing in the fields: Please fill in the attached FORMAT B. with ticks, words and figures.

- * Intake weir & intake structure was submerged by big flood.
- * no influence of intake pump operation during flood
- * prefirication plants locate at higher place.

WATER RESOURCES DEVELOPMENT STUDY IN THE RUVU RIVER BASIN

Dear Residents,

SUB: FLOOD DAMAGE SURVEY IN THE RUVU RIVER BASIN

Date of Interview 30 Apr. 1993.
 Name of Answerer Peasant (Mr. Mwanangwa)
 Name of Village/District Chasimba Bagamoyo Dist.
 Location Longitude/Altitude _____ S / _____ E

A. Annual Recurrent Flood of Usual Scale
 As you are living in a flood-prone area, we presume you have little damage to the property or stocks. Rather, if you are farmers, you are expecting better harvest by planting agro-produce on the new sediment brought by the flood.

a. In that case, how much do you think you have benefitted from the flood ?

Ans. 13% percent more harvest than the ones without flood, on average.

b. How many days during the rainy season are the roads to the main roads, school, hospital etc. blocked by the floods on average ?

Ans. nil. days on average. *Because of Kongwe Rd. otherwise the road within the river basin is inaccessible during rainy season.*

c. How much the price of daily necessities like salt, oil etc. go up during the road block by flood ?

Ans. 15-50% percent higher than usual. *due transport charges, mostly only 4 wheel vehicles are operated.*

B. Unexpected (Unprepared) Flood, e.g. either Unusually Big Scale or Unseasonal Flood.

a. When did one take place ? *1979 + 1993 Apr/May.*

No.	Year	Month	Days	Q _{max} at IH8
1.	1979	Apr/May		2,901 m ³ /s
2.	1984	May		604 m ³ /s
3.	1986	Apr.		515 m ³ /s
4.	1989			
5.	1993	Apr.		

b. Damage to the properties, movables and stocks: Please fill in the attached FORMAT A. with ticks, words and figures.

c. Damage to the agricultural crops growing in the fields: Please fill in the attached FORMAT B. with ticks, words and figures.

3

FORMAT - A

Item	Type	Area in (m ²)	Inundation (cm)					Sedimentation (cm)	
			-49	50-99	100-199	200-299	300-	-49	50-
House	F-Concrete								
	Block								
	Wooden								
Household Articles (T.Shs)									
Agricultural in T.Shs	Facilities								
	Implements								
	Stocks								
Fishing * in T.Shs	Facilities								
	Implements								
	Stocks								

* including fish culture

	Crop	Yield/acreage
Average yield without flood	_____	_____
	_____	_____
Average Yield after flood	_____	_____

FORMAT - B

Crops	Area (ha)	Depth (cm)	Inundation (day)				Buried in Sediments
			1-2	3-4	5-6	7-	
Paddy							
Cassava							
Beans							
Greens							
Pineapple							
Others							

**WATER RESOURCES DEVELOPMENT STUDY
IN THE RUVU RIVER BASIN**

Dear Residents,

SUB: FLOOD DAMAGE SURVEY IN THE RUVU RIVER BASIN

Date of Interview

10 May 1993

Name of Answerer

Mr. K.J. Matambo (Peasant & Village Secretary)

Name of Village/District

Mbwawa (Mlandizi)

Location Longitude/Altitude

- S / - E

Total pop: 7441

A. Annual Recurrent Flood of Usual Scale

As you are living in a flood-prone area, we presume you have little damage to the property or stocks. Rather, if you are farmers, you are expecting better harvest by planting agro-produce on the new sediment brought by the flood. *Peasants app. 675*

a. In that case, how much do you think you have benefitted from the flood ?

Ans. 10% percent more harvest than the ones without flood, on average.

b. How many days during the rainy season are the roads to the main roads, school, hospital etc. blocked by the floods on average ?

Ans. 1 1/2 months days on average. *peasants leave on higher land and move to the plains for cultivation during rainy season. When signs of flood are noted they normally shift to higher places.*

c. How much the price of daily necessities like salt, oil etc. go up during the road block by flood ?

Ans. 15% percent higher than usual. *Most supplies are carried by bicycle from Mlandizi etc.*

B. Unexpected (Unprepared) Flood, e.g. either Unusually Big Scale or Unseasonal Flood.

a. When did one take place ?

According to the village secretary nursery, large flood witnessed in 1971 April + this yr. (1993 Apr.)

No.	Year	Month	Days	Q _{max} at 1H8
1.	1979	Apr/May		2,901 m ³ /s
2.	1984	May		604 m ³ /s
3.	1986	Apr.		515 m ³ /s
4.	1989			
5.	1993	Apr.		

b. Damage to the properties, movables and stocks: Please fill in the attached FORMAT A. with ticks, words and figures.

c. Damage to the agricultural crops growing in the fields: Please fill in the attached FORMAT B. with ticks, words and figures.

FORMAT - A

Item	Type	Area in (m ²)	Inundation (cm)					Sedimentation (cm)	
			-49	50-99	100-199	200-299	300-	-49	50-
House	F-Concrete								
	Block								
	Wooden			✓					
Household Articles (T.Shs)		Buckets, cooking & eating utensils							
Agricultural in T.Shs	Facilities								
	Implements	hoes, bushknife							
	Stocks								
Fishing * in T.Shs	Facilities								
	Implements								
	Stocks								

of wooden & grass thatched
~~huts.~~
 when caught unaware loss of up to 75% of utensils and hut damage expected.
 Normally no loss

* including fish culture

Average yield without flood Crop Yield/acreage
paddy 25 bag/acre.

Average Yield after flood _____
 like for this yr. when floods are big no rice yield expected.

(maize 5 bags/acre during short rains Sept-Dec.)

FORMAT - B

Crops	Area acre (ha)	Depth (cm)	Inundation (day)				Buried in Sediments
			1-2	3-4	5-6	7-	
Paddy	2 1/2					✓	
Cassava							
Beans							
Greens							
Pineapple							
Others							

**WATER RESOURCES DEVELOPMENT STUDY
IN THE RUVU RIVER BASIN**

Dear Residents,

SUB: FLOOD DAMAGE SURVEY IN THE RUVU RIVER BASIN

Date of Interview 10th May 1993.
 Name of Answerer Musa Mwalidi (peasant)
 Name of Village/District Mbwawa
 Location Longitude/Altitude _____ S / _____ E

A. Annual Recurrent Flood of Usual Scale

As you are living in a flood-prone area, we presume you have little damage to the property or stocks. Rather, if you are farmers, you are expecting better harvest by planting agro-produce on the new sediment brought by the flood.

- a. In that case, how much do you think you have benefitted from the flood ?

Ans. 10²⁰ percent more harvest than the ones without flood, on average.

- b. How many days during the rainy season are the roads to the main roads, school, hospital etc. blocked by the floods on average ?

Ans. 1 1/2 months days on average.

- c. How much the price of daily necessities like salt, oil etc. go up during the road block by flood ?

Ans. 15²⁰ percent higher than usual.

B. Unexpected (Unprepared) Flood, e.g. either Unusually Big Scale or Unseasonal Flood.

- a. When did one take place ?

1971. Apr.

No.	Year	Month	Days	Q _{max} at 1H8
1.	1979	Apr/May		2,901 m ³ /s
2.	1984	May		604 m ³ /s
3.	1986	Apr.		515 m ³ /s
4.	1989			
5.	1993	Apr.		

- b. Damage to the properties, movables and stocks: Please fill in the attached FORMAT A. with ticks, words and figures.

- c. Damage to the agricultural crops growing in the fields: Please fill in the attached FORMAT B. with ticks, words and figures.

FORMAT - A

Item	Type	Area in (m ²)	Inundation (cm)					Sedimentation (cm)	
			-49	50-99	100-199	200-299	300-	-49	50-
House	F-Concrete								
	Block								
	Wooden								
Household Articles (T.Shs)									
Agricultural in T.Shs	Facilities		/						
	Implements								
	Stocks								
Fishing * in T.Shs	Facilities								
	Implements								
	Stocks								

* including fish culture

Average yield without flood Crop Yield/acreage

rice paddy 28 bags/acre

Average Yield after flood

maize 5 bags/acre

FORMAT - B

Crops	Area (ha)	Depth (cm)	Inundation (day)				Buried in Sediments
			1-2	3-4	5-6	7-	
Paddy						✓	
Cassava							
Beans							
Greens							
Pineapple							
Others							

up 1/2 m, inundation for weeks, no crop expected later.

WATER RESOURCES DEVELOPMENT STUDY
IN THE RUVU RIVER BASIN

[12L]

FLOOD DAMAGE SURVEY IN THE RUVU RIVER BASIN

Date of Interview May 19, 1993
 Name of Answerer Abdallah Chenzi
 Name of Village/District Kwalya (Darajani) (opposit of NUWA U/RUVU)
 Location Longitude/Latitude S 1 E

A. Annual Recurrent Flood of Usual Scale

As you are living in a flood-prone area, we presume you have little damage to the property or stocks. Rather, if you are farmers, you are expecting better harvest by planting agro-produce on the new sediment brought by the flood.

a. In that case, how much do you think you have benefitted from the flood ?

Ans. 70% percent more harvest than the ones without flood, on average.

b. How many days during the rainy season are the roads to the main roads, school, hospital etc. blocked by the floods on average ?

Ans. Nil * days on average. * because of they live along the Mungiro - Dar. Road.

c. How much the price of daily necessities like salt, oil etc. go up during the road block by flood ?

Ans. Nil * percent higher than usual.

B. Unexpected (Unprepared) Flood, e.g. either Unusually Big Scale or Unseasonal Flood.

a. When did one take place ?

No.	Year	Month	Days	Q _{max} at 1H8
1.	1979	Apr/May		2,901 m ³ /s
2.	1984	May		604 m ³ /s
3.	1986	Apr.		515 m ³ /s
4.	1989			
5.				

b. Damage to the properties, movables and stocks: Please fill in the attached FORMAT A. with ticks, words and figures.

c. Damage to the agricultural crops growing in the fields: Please fill in the attached FORMAT B. with ticks, words and figures.

around here, 375 farmers average area more than 4 acre (1.62ha)

FORMAT - A

Item	Type	Area in (m ²)	Inundation (cm)					Sedimentation (cm)	
			-49	50-99	100-199	200-299	300-	-49	50-
House	F-Concrete								
	Block								
	Wooden	4m ²			✓				
Household Articles (T.Shs)									
Agricultural in T.Shs	Facilities								
	Implements								
	Stocks								
Fishing * in T.Shs	Facilities								
	Implements								
	Stocks								

* including fish culture

no household/stock loss since peasant shift to higher points.

FORMAT - B

Crops	Area (ha)	Depth (cm)	Inundation (day)				Buried in Sediments
			1-2	3-4	5-6	7-	
Paddy	4acre						
Cassava							
Beans							
Greens							
Pineapple							
Others							

inundation for almost a month. more than 90% of crop spoiled.

Okra, maize, also cultivated.

seedling Bed for tomatoes flooded & spoiled by last flood i.e. Apr 1993 flood.

*When the interview was conducted 19/05/93 were clearing and planting tomatoe seedlings **

WATER RESOURCES DEVELOPMENT STUDY
IN THE RUVU RIVER BASIN

FLOOD DAMAGE SURVEY IN THE RUVU RIVER BASIN

Date of Interview May 19, 1993
 Name of Answerer NOVIA, Upper Ruvu lake
 Name of Village/District Kwatoza
 Location Longitude/Latitude _____ S / _____ E

A. Annual Recurrent Flood of Usual Scale

As you are living in a flood-prone area, we presume you have little damage to the property or stocks. Rather, if you are farmers, you are expecting better harvest by planting agro-produce on the new sediment brought by the flood.

- a. In that case, how much do you think you have benefitted from the flood?

Ans. percent more harvest than the ones without flood, on average.

- b. How many days during the rainy season are the roads to the main roads, school, hospital etc. blocked by the floods on average?

Ans. days on average.

- c. How much the price of daily necessities like salt, oil etc. go up during the road block by flood?

Ans. percent higher than usual.

B. Unexpected (Unprepared) Flood, e.g. either Unusually Big Scale or Unseasonal Flood.

- a. When did one take place?

No.	Year	Month	Days	Q_{max} at 1H8
1.	1979	Apr/May		2,901 m ³ /s
2.	1984	May		604 m ³ /s
3.	1986	Apr.		515 m ³ /s
4.	1989			
5.				

- b. Damage to the properties, movables and stocks: Please fill in the attached FORMAT A, with ticks, words and figures.

- c. Damage to the agricultural crops growing in the fields: Please fill in the attached FORMAT B, with ticks, words and figures.

* All intake / prefucation facilities were never submerged by previous floods.

EL of intake side wall crest is 21.7m which is higher than bridge.

WATER RESOURCES DEVELOPMENT STUDY
IN THE RUVU RIVER BASIN

FLOOD DAMAGE SURVEY IN THE RUVU RIVER BASIN

Date of Interview May 19, 1993
 Name of Answerer Head master of Ruvu Agr. Sec. School
 Name of Village/District Kwaleja / Kulandesi
 Location Longitude/Latitude S 7 E
Exp. farm has 50 acres but only 12 acres is cultivated because of machinery trouble. (established under assistance of Cuba)

A. Annual Recurrent Flood of Usual Scale
 As you are living in a flood-prone area, we presume you have little damage to the property or stocks. Rather, if you are farmers, you are expecting better harvest by planting agro-produce on the new sediment brought by the flood.

a. In that case, how much do you think you have benefitted from the flood ?

Ans. 15% percent more harvest than the ones without flood, on average.

b. How many days during the rainy season are the roads to the main roads, school, hospital etc. blocked by the floods on average ?

Ans. Ni/ * days on average. ** located along the Morogoro - Dar road.*

c. How much the price of daily necessities like salt, oil etc. go up during the road block by flood ?

Ans. Ni/ * percent higher than usual.

B. Unexpected (Unprepared) Flood, e.g. either Unusually Big Scale or Unseasonal Flood.

a. When did one take place ?

No.	Year	Month	Days	Q _{max} at 1H8
①	1979	Apr/May		2,901 m ³ /s
2.	1984	May		604 m ³ /s
3.	1986	Apr.		515 m ³ /s
4.	1989			
5.				

b. Damage to the properties, movables and stocks: Please fill in the attached FORMAT A. with ticks, words and figures.

c. Damage to the agricultural crops growing in the fields: Please fill in the attached FORMAT B. with ticks, words and figures.

FORMAT - A

Item	Type	Area in (m ²)	Inundation (cm)					Sedimentation (cm)	
			-49	50-99	100-199	200-299	300-	-49	50-
House	F-Concrete								
	Block			✓					
	Wooden								
Household Articles (T.Shs)									
Agricultural in T.Shs	Facilities								
	Implements								
	Stocks								
Fishing * in T.Shs	Facilities								
	Implements								
	Stocks								

* including fish culture

The school started around 1979. and since then there is no record of real damage from floods.

However in 1985 & 89 area flooded with flood caused by from the area around bar not from Mar. as this yr

FORMAT - B

Crops	Area (ha)	Depth (cm)	Inundation (day)				Buried in Sediments
			1-2	3-4	5-6	7-	
Paddy ✓	12acre.						
Cassava							
Beans							
Greens							
Pineapple							
Others							

citrus plants: orange etc.

no loss for this yr. since farm on higher area. No irrigation facilities, though such facilities could supplement rain fed cultivation

**WATER RESOURCES DEVELOPMENT STUDY
IN THE RUVU RIVER BASIN**

Dear Residents,

SUB: FLOOD DAMAGE SURVEY IN THE RUVU RIVER BASIN

Date of Interview 28 Apr / 1993
 Name of Answerer Peasant (Mr. Charles Matonya)
 Name of Village/District Ruvu Railway Station (pop 500)
 Location Longitude/Altitude S / E

A. Annual Recurrent Flood of Usual Scale

As you are living in a flood-prone area, we presume you have little damage to the property or stocks. Rather, if you are farmers, you are expecting better harvest by planting agro-produce on the new sediment brought by the flood.

- a. In that case, how much do you think you have benefitted from the flood ?

Ans. 1 percent more harvest than the ones without flood, on average.

- b. How many days during the rainy season are the roads to the main roads, school, hospital etc. blocked by the floods on average ?

Ans. 15 days on average.

- c. How much the price of daily necessities like salt, oil etc. go up during the road block by flood ?

Ans. 15% percent higher than usual.

B. Unexpected (Unprepared) Flood, e.g. either Unusually Big Scale or Unseasonal Flood.

- a. When did one take place ? 1989

No.	Year	Month	Days	Q_{max} at 1H8
1.	1979	Apr/May		2,901 m ³ /s
2.	1984	May		604 m ³ /s
3.	1986	Apr.		515 m ³ /s
4.	1989			
5.				

- b. Damage to the properties, movables and stocks: Please fill in the attached FORMAT A. with ticks, words and figures.

- c. Damage to the agricultural crops growing in the fields: Please fill in the attached FORMAT B. with ticks, words and figures.

FORMAT - A

Item	Type	Area in (m ²)	Inundation (cm)					Sedimentation (cm)	
			-49	50-99	100-199	200-299	300-	-49	50-
House	F-Concrete								
	Block								
	Wooden			✓					
Household Articles (T.Shs)									
Agricultural in T.Shs	Facilities								
	Implements								
	Stocks								
Fishing * in T.Shs	Facilities								
	Implements								
	Stocks								

no loss of
visibility.
Because
storey trees
& shifting
to elevated
points.

* including fish culture

Average yield without flood	Crop	Yield/acreage
	<u>paddy</u>	<u>20 bags/acre.</u>
Average Yield after flood	_____	_____

FORMAT - B

Crops	Area (acre/ha)	Depth (cm)	Inundation (day)				Buried in Sediments
			1-2	3-4	5-6	7-	
Paddy	1						
Cassava							
Beans							
Greens							
Pineapple							
Others							

okra, maize for short rains.

WATER RESOURCES DEVELOPMENT STUDY
IN THE RUVU RIVER BASIN

FLOOD DAMAGE SURVEY IN THE RUVU RIVER BASIN

Date of Interview MAY 19, 1993
 Name of Answerer Juma M. Digo farmer & local Government officer
 Name of Village/District Mafisi near elementary school
 Location Longitude/Latitude 6-58-59 S / 38-35-12 E

A. Annual Recurrent Flood of Usual Scale

As you are living in a flood-prone area, we presume you have little damage to the property or stocks. Rather, if you are farmers, you are expecting better harvest by planting agro-produce on the new sediment brought by the flood.

- a. In that case, how much do you think you have benefitted from the flood ?

Ans. 15 % percent more harvest than the ones without flood, on average.

- b. How many days during the rainy season are the roads to the main roads, school, hospital etc. blocked by the floods on average ?

Ans. 60* days on average. ** Road bridges to Mjenga broken, it shall be repaired and road itself shall improved.*

- c. How much the price of daily necessities like salt, oil etc. go up during the road block by flood ?

Ans. 20 %* percent higher than usual. ** Due to transportation problems, nobody to run shops.*

B. Unexpected (Unprepared) Flood, e.g. either Unusually Big Scale or Unseasonal Flood.

- a. When did one take place ?

No.	Year	Month	Days	Q _{max} at 1H8
①	1979	Apr/May		2,901 m ³ /s
2.	1984	May		604 m ³ /s
3.	1986	Apr.		515 m ³ /s
4.	1989			
5.				

- b. Damage to the properties, movables and stocks: Please fill in the attached FORMAT A. with ticks, words and figures.

- c. Damage to the agricultural crops growing in the fields: Please fill in the attached FORMAT B. with ticks, words and figures.

FORMAT - A

cost of hut (dungh)
Tsh. 3000/-

Item	Type	Area in (m ²)	Inundation (cm)					Sedimentation (cm)	
			-49	50-99	100-199	200-299	300-	-49	50-
House	F-Concrete								
	Block								
	Wooden ✓					✓			
Household Articles (T.Shs)									
Agricultural in T.Shs	Facilities								
	Implements								
	Stocks								
Fishing * in T.Shs	Facilities								
	Implements								
	Stocks								

peasants shift from small huts when floods are imminent hence no loss of household etc. other than small damage to hut

* including fish culture

FORMAT - B

Crops	Area (ha)	Depth (cm)	Inundation (day)				Buried in Sediments
			1-2	3-4	5-6	7-	
Paddy ✓						✓	
Cassava							
Beans							
Greens							
Pineapple							
Others							

up to 30 day

WATER RESOURCES DEVELOPMENT STUDY
IN THE RUVU RIVER BASIN

[17R]

FLOOD DAMAGE SURVEY IN THE RUVU RIVER BASIN

Date of Interview May 19, 1993
 Name of Answerer Shabani Juma Mowina
 Name of Village/District Mwananssekwa (Mafisi)
 Location Longitude/Latitude 7-01-03 S / 38-34-25 E

total peasant around is 180.-

A. Annual Recurrent Flood of Usual Scale

As you are living in a flood-prone area, we presume you have little damage to the property or stocks. Rather, if you are farmers, you are expecting better harvest by planting agro-produce on the new sediment brought by the flood.

a. In that case, how much do you think you have benefitted from the flood ?

Ans. 15% percent more harvest than the ones without flood, on average.

b. How many days during the rainy season are the roads to the main roads, school, hospital etc. blocked by the floods on average ?

Ans. 60% days on average.

c. How much the price of daily necessities like salt, oil etc. go up during the road block by flood ?

Ans. 20% percent higher than usual.

B. Unexpected (Unprepared) Flood, e.g. either Unusually Big Scale or Unseasonal Flood.

a. When did one take place ?

No.	Year	Month	Days	Q _{max} at 1H8
①	1979	Apr/May		2,901 m ³ /s
2.	1984	May		604 m ³ /s
3.	1986	Apr.		515 m ³ /s
4.	1989			
5.				

b. Damage to the properties, movables and stocks: Please fill in the attached FORMAT A. with ticks, words and figures.

c. Damage to the agricultural crops growing in the fields: Please fill in the attached FORMAT B. with ticks, words and figures.

FORMAT - A

Item	Type	Area in (m ²)	Inundation (cm)					Sedimentation (cm)	
			-49	50-99	100-199	200-299	300-	-49	50-
House	F-Concrete								
	Block								
	Wooden ✓				✓				
Household Articles (T.Shs)									
Agricultural in T.Shs	Facilities		/						
	Implements								
	Stocks								
Fishing * in T.Shs	Facilities								
	Implements								
	Stocks								

normal cost for hut Tsh4-5000.

no loss to property. however the mud and grass huts have to get minor mud & grass repair.

* including fish culture

Food crop for village use only since transport

FORMAT - B

to Mkt is far and at time inaccessible

Crops	Area (ha)	Depth (cm)	Inundation (day)				Buried in Sediments
			1-2	3-4	5-6	7-	
Paddy ✓						✓	
Cassava							
Beans							
Greens							
Pineapple							
Others							

Yield 5-6 bags/acre of paddy.

The former cultivated areas.

FORMAT - A

Item	Type	Area in (m ²)	Inundation (cm)					Sedimentation (cm)	
			-49	50-99	100-199	200-299	300-	-49	50-
House	F-Concrete								
	Block								
	Wooden			✓					
Household Articles (T.Shs)									
Agricultural in T.Shs	Facilities								
	Implements								
	Stocks								
Fishing in T.Shs	Facilities								
	Implements								
	Stocks								

* Including fish culture

	Crop	Yield/acreage
Average yield without flood	paddy maize	20 bags/acre
Average Yield after flood	Paddy	24 bags/acre

household articles moved to safer higher point where flood anticipated. Hence no damage to movable property & stock.

FORMAT - B

Crops	Area (ha)	Depth (cm)	Inundation (day)				Buried in Sediments
			1-2	3-4	5-6	7-	
Paddy	2 acre					✓	
Cassava							
Beans							
Greens							
Pineapple							
Others							

After the flood in July the fields were planted with other types of crops eg. maize, tomatoes, ~~potatoes~~ pumpkins, sugar cane. Harvesting 6-8 bags of maize per acre.

WATER RESOURCES DEVELOPMENT STUDY
IN THE RUVU RIVER BASIN

FLOOD DAMAGE SURVEY IN THE RUVU RIVER BASIN

Date of Interview Oct. 25, 1993
 Name of Answerer _____
 Name of Village/District Mkadini Salt Works
 Location Longitude/Latitude _____ S / _____ E

No activity at all, no person there!

- A. Annual Recurrent Flood of Usual Scale
 As you are living in a flood-prone area, we presume you have little damage to the property or stocks. Rather, if you are farmers, you are expecting better harvest by planting agro-produce on the new sediment brought by the flood.

only remain remain.

- a. In that case, how much do you think you have benefitted from the flood ?

Ans. _____ percent more harvest than the ones without flood, on average.

- b. How many days during the rainy season are the roads to the main roads, school, hospital etc. blocked by the floods on average ?

Ans. _____ days on average.

- c. How much the price of daily necessities like salt, oil etc. go up during the road block by flood ?

Ans. _____ percent higher than usual.

- B. Unexpected (Unprepared) Flood, e.g. either Unusually Big Scale or Unseasonal Flood.

- a. When did one take place ?

No.	Year	Month	Days	Q_{max} at 1H8
1.	1979	Apr/May		2,901 m ³ /s
2.	1984	May		604 m ³ /s
3.	1986	Apr.		515 m ³ /s
4.	1989			
5.				

- b. Damage to the properties, movables and stocks: Please fill in the attached FORMAT A. with ticks, words and figures.

- c. Damage to the agricultural crops growing in the fields: Please fill in the attached FORMAT B. with ticks, words and figures.

**WATER RESOURCES DEVELOPMENT STUDY
IN THE RUVU RIVER BASIN**

Dear Residents,

SUB: FLOOD DAMAGE SURVEY IN THE RUVU RIVER BASIN

Date of Interview 23 Apr / 1993
 Name of Answerer Peasant (Mr. Kiregezo)
 Name of Village/District Makurunge (Peasant pop: 150)
 Location Longitude/Altitude S / E

A. Annual Recurrent Flood of Usual Scale

As you are living in a flood-prone area, we presume you have little damage to the property or stocks. Rather, if you are farmers, you are expecting better harvest by planting agro-produce on the new sediment brought by the flood.

a. In that case, how much do you think you have benefitted from the flood ?

Ans. 30% percent more harvest than the ones without flood, on average.

b. How many days during the rainy season are the roads to the main roads, school, hospital etc. blocked by the floods on average ?

Ans. 45 days on average.

c. How much the price of daily necessities like salt, oil etc. go up during the road block by flood ?

Ans. 50% percent higher than usual.

B. Unexpected (Unprepared) Flood, e.g. either Unusually Big Scale or Unseasonal Flood.

a. When did one take place ? 1990 (No crop this season)
however good maize, vegetable yield during short of some year

No.	Year	Month	Days	Q _{max} at 1H8
1.	1979	Apr/May		2,901 m3/s
2.	1984	May		604 m3/s
3.	1986	Apr.		515 m3/s
4.	1989			
5.				

b. Damage to the properties, movables and stocks: Please fill in the attached FORMAT A. with ticks, words and figures.

c. Damage to the agricultural crops growing in the fields: Please fill in the attached FORMAT B. with ticks, words and figures.

FORMAT - A

Item	Type	Area in (m ²)	Inundation (cm)					Sedimentation (cm)	
			-49	50-99	100-199	200-299	300-	-49	50-
House	F-Concrete								
	Block								
	Wooden					✓			
Household Articles (T.Shs)									
Agricultural in T.Shs	Facilities		/						
	Implements								
	Stocks								
Fishing * in T.Shs	Facilities								
	Implements								
	Stocks								

* including fish culture

Just estimated at Tk. 30,000/-
 when flood is big. eg 1990
 loss of house hold article by shifting to higher points and use of storeyhuts.

Average yield without flood

Crop paddy Yield/acreage 0-20 Bags/acre.

Average Yield after flood

paddy 15-20 Bags/acre. (maize during Short Rain 15 bags/acre. Sept-Dec.)
 paddy 30 Bags/acre.

FORMAT - B

Crops	Area acre (ha)	Depth (cm)	Inundation (day)				Buried in Sediments
			1-2	3-4	5-6	7-	
Paddy	24					✓	
Cassava							
Beans							
Greens							
Pineapple							
Others							

maize
 Okra
 Cabbage
 Tomatoes
 pepper...

III-42 All cultivation done along the river Bank by Bed harvest.

WATER RESOURCES DEVELOPMENT STUDY
IN THE RUVU RIVER BASIN

FLOOD DAMAGE SURVEY IN THE RUVU RIVER BASIN

Date of Interview Apr. 23, 1993
 Name of Answerer Klengesi Mafumba
 Name of Village/District Makulunge (near ferry boom)
 Location Longitude/Latitude 6-28-42 S 138-49-12 E

** ferry closed the operation 15 April - 15 May normally*

A. Annual Recurrent Flood of Usual Scale

As you are living in a flood-prone area, we presume you have little damage to the property or stocks. Rather, if you are farmers, you are expecting better harvest by planting agro-produce on the new sediment brought by the flood.

** shelter is under construction for flood coming to higher place*

a. In that case, how much do you think you have benefitted from the flood ?

Ans. percent more harvest than the ones without flood, on average.

b. How many days during the rainy season are the roads to the main roads, school, hospital etc. blocked by the floods on average ?

Ans. 30 days on average. *(in 1990 flood)*

c. How much the price of daily necessities like salt, oil etc. go up during the road block by flood ?

Ans. NO SHOP exist near by percent higher than usual.

B. Unexpected (Unprepared) Flood, e.g. either Unusually Big Scale or Unseasonal Flood.

a. When did one take place ?

No.	Year	Month	Days	Q _{max} at 1H8
1.	1979	Apr/May		2,901 m ³ /s
2.	1984	May		604 m ³ /s
3.	1986	Apr.		515 m ³ /s
4.	1989			
5.	1990			

b. Damage to the properties, movables and stocks: Please fill in the attached FORMAT A. with ticks, words and figures.

c. Damage to the agricultural crops growing in the fields: Please fill in the attached FORMAT B. with ticks, words and figures.

1990 flood

~~20 ft~~ 30 x 10 ft = 300 sq. ft

FORMAT - A

Item	Type	Area in (m ²)	Inundation (cm)					Sedimentation (cm)	
			-49	50-99	100-199	200-299	300-	-49	50-
House	F-Concrete								
	Block								
	Wooden								
Household Articles (T.Shs)			NO						
Agricultural in T.Shs	Facilities		NO						
	Implements		NO						
	Stocks								
Fishing * in T.Shs	Facilities								
	Implements								
	Stocks								

* including fish culture

10 acre average/farmer

4 ft.

1 month

no crops

but good yield of maize after a week
20 bags/acre

FORMAT - B

20 acre

Crops	Area (ha)	Depth (cm)	Inundation (day)				Buried in Sediments
			1-2	3-4	5-6	7-	
Paddy ✓	20 acre	1.5 ft					
Cassava							
Beans Vegetable							
Greens							
Pineapple							
Others Maize							

cabbage
okuro
onion
papaya

15 bags/acre

- Feb-July rice
- if paddy damaged → maize & vegetable June & Sep.
- Sep - ~~1st~~ 2nd maize → Dec

This farmer has developed 120 acres of land and has

WATER RESOURCES DEVELOPMENT STUDY
IN THE RUVU RIVER BASIN

permanent
Building on the
upper part of the
bank, cultivates
by personal
TRACTOR.

Dear Residents,

SUB: FLOOD DAMAGE SURVEY IN THE RUVU RIVER BASIN

Date of Interview 27/10/93
Name of Answerer Kanombu W. Joseph.
Name of Village/District Migude
Location Longitude/Latitude S / E

(Migude - Kitonga)

A. Annual Recurrent Flood of Usual Scale

* Total farmer pop. 600

As you are living in a flood-prone area, we presume you have little damage to the property or stocks. Rather, if you are farmers, you are expecting better harvest by planting agro-produce on the new sediment brought by the flood.

a. In that case, how much do you think you have benefitted from the flood ?

Ans. 20% percent more harvest than the ones without flood, on average.

b. How many days during the rainy season are the roads to the main roads, school, hospital etc. blocked by the floods on average ?

Ans. 45 days on average.

c. How much the price of daily necessities like salt, oil etc. go up during the road block by flood ?

Ans. 15% percent higher than usual.

B. Unexpected (Unprepared) Flood, e.g. either Unusually Big Scale or Unseasonal Flood.

a. When did one take place ?

No.	Year	Month	Days	Q _{max} at 1H8
1.	1979	Apr/May		2,901 m3/s
2.	1984	May		604 m3/s
3.	1986	Apr.		515 m3/s
4.	1989			
5.	1992/93	Apr/May		

b. Damage to the properties, movables and stocks: Please fill in the attached FORMAT A. with ticks, words and figures.

FORMAT - A

Item	Type	Area in (m ²)	Inundation (cm)					Sedimentation (cm)	
			-49	50-99	100-199	200-299	300-	-49	50-
House	F-Concrete								
	Block			✓					
	Wooden			✓					
Household Articles (T.Shs)									
Agricultural in T.Shs	Facilities								
	Implements								
	Stocks								
Fishing * in T.Shs	Facilities								
	Implements								
	Stocks								

* including fish culture

negligible damage to property for it is shifted prior to flooding
 Crop Yield/acreage

Average yield without flood

Rice/paddy 15 bags/acre

Average Yield after flood

" 20 bags/acre

FORMAT - B

(proper record is not kept and this area is susceptible to alkalinity)

Crops	Area (ha)	Depth (cm)	Inundation (day)				Buried in Sediments
			1-2	3-4	5-6	7-	
Paddy							
Cassava							
Beans							
Greens							
Pineapple							
Others							

inundation is for more than 7 days. at times no any harvest^{at all} such as ~~cash~~ this yrs. flood 1993 'May flood.

**WATER RESOURCES DEVELOPMENT STUDY
IN THE RUVU RIVER BASIN**

Dear Residents,

SUB: FLOOD DAMAGE SURVEY IN THE RUVU RIVER BASIN

Date of Interview 21 June 1993
 Name of Answerer Peasants (Swiss/Hkacani)
 Name of Village/District Litanga Vol.
 Location Longitude/Altitude 6-37-26 S / 38-43-37 E
 * about 60 peasants around

A. Annual Recurrent Flood of Usual Scale

As you are living in a flood-prone area, we presume you have little damage to the property or stocks. Rather, if you are farmers, you are expecting better harvest by planting agro-produce on the new sediment brought by the flood.

- a. In that case, how much do you think you have benefitted from the flood ?

Ans. _____ percent more harvest than the ones without flood, on average.

- b. How many days during the rainy season are the roads to the main roads, school, hospital etc. blocked by the floods on average ?

Ans. ± 60 days on average. April - June also Oct - Jan. (every year)

- c. How much the price of daily necessities like salt, oil etc. go up during the road block by flood ?

Ans. 10 percent higher than usual. go on foot

B. Unexpected (Unprepared) Flood, e.g. either Unusually Big Scale or Unseasonal Flood.

- a. When did one take place ?

No.	Year	Month	Days	Q _{max} at LH8
1.	1979	Apr/May		2,901 m ³ /s
2.	1984	May		604 m ³ /s
3.	1986	Apr.		515 m ³ /s
4.	1989			

1990/91

- b. Damage to the properties, movables and stocks: Please fill in the attached FORMAT A. with ticks, words and figures.

- c. Damage to the agricultural crops growing in the fields: Please fill in the attached FORMAT B. with ticks, words and figures.

FORMAT - A

[maze paddy 1 ~~1~~ acre 4 bags of seed 8 bags

Item	Type	Area in (m ²)	Inundation (cm)					Sedimentation (cm)	
			-49	50-99	100-199	200-299	300-	-49	50-
House	F-Concrete								
	Block								
	Wooden/mud	6 MP			✓				
Household Articles (T.Shs)			= Tsh. 100,000						
Agricultural in T.Shs	Facilities		Tsh						
	Implements								
	Stocks		8 (including seed & consumption)						
Fishing * in T.Shs	Facilities								
	Implements								
	Stocks								

washed away

* including fish culture

FORMAT - B

Crops	Area (ha)	Depth (cm)	Inundation (day)				Buried in Sediments
			1-2	3-4	5-6	7-	
Paddy	1 acre	1.2 ^m	1. hr				1992 1991 21 days
Cassava							
Beans							1999
Greens							
Pineapple							
Others Maze	1 acre	1.2 ^m					

washed away
mix tree / root

**WATER RESOURCES DEVELOPMENT STUDY
IN THE RUVU RIVER BASIN**

Dear Residents,

SUB: FLOOD DAMAGE SURVEY IN THE RUVU RIVER BASIN

Date of Interview

27/10/93

Name of Answerer

Kichozi Rashid Ali

Name of Village/District

Njia Mbili - Mbawaa (Hizi)

Location Longitude/Latitude

S / E

A. Annual Recurrent Flood of Usual Scale

As you are living in a flood-prone area, we presume you have little damage to the property or stocks. Rather, if you are farmers, you are expecting better harvest, by planting agro-produce on the new sediment brought by the flood.

- a. In that case, how much do you think you have benefitted from the flood ?

Ans. 25% percent more harvest than the ones without flood, on average.

- b. How many days during the rainy season are the roads to the main roads, school, hospital etc. blocked by the floods on average ?

Ans. 60 days on average.

- c. How much the price of daily necessities like salt, oil etc. go up during the road block by flood ?

Ans. 20% percent higher than usual.

B. Unexpected (Unprepared) Flood, e.g. either Unusually Big Scale or Unseasonal Flood.

- a. When did one take place ?

No.	Year	Month	Days	Q_{max} at 1H8
1.	1979	Apr/May		2,901 m ³ /s
2.	1984	May		604 m ³ /s
3.	1986	Apr.		515 m ³ /s
4.	1989			
5.	1993	Apr/May		

- b. Damage to the properties, movables and stocks: Please fill in the attached FORMAT A. with ticks, words and figures.

FORMAT - A

Item	Type	Area in (m ²)	Inundation (cm)					Sedimentation (cm)	
			-49	50-99	100-199	200-299	300-	-49	50-
House	F-Concrete								
	Block			✓					
	Wooden			✓					
Household Articles (T.Shs)									
Agricultural in T.Shs	Facilities								
	Implements								
	Stocks								
Fishing * in T.Shs	Facilities								
	Implements								
	Stocks								

* including fish culture

farmers know how to predict flooding and shift important items to safer place

Average yield without flood

paddy 8 bags/acre

Average Yield after flood

paddy 10 bags/acre

FORMAT - B

Crops	Area (ha)	Depth (cm)	Inundation (day)				Buried in Sediments
			1-2	3-4	5-6	7-	
Paddy							
Cassava							
Beans							
Greens							
Pineapple							
Others							

inundation of more than 1 metre that being the case, total crop destruction, otherwise little yield depending on degree of flooding and the number of days it is on.

**WATER RESOURCES DEVELOPMENT STUDY
IN THE RUVU RIVER BASIN**

Dear Residents,

SUB: FLOOD DAMAGE SURVEY IN THE RUVU RIVER BASIN

Date of Interview Apr. 21, 1993
 Name of Answerer NAFCO RUVU RICE FARM Co. Ltd. (Mr. Hpesha)
 Name of Village/District NGUNI (no farmers around)
 Location Longitude/Altitude S / E

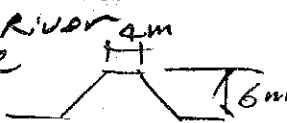
A. Annual Recurrent Flood of Usual Scale
 As you are living in a flood-prone area, we presume you have little damage to the property or stocks. Rather, if you are farmers, you are expecting better harvest by planting agro-produce on the new sediment brought by the flood.

a. In that case, how much do you think you have benefitted from the flood ?

Ans. 7 percent more harvest than the ones without flood, on average.

b. How many days during the rainy season are the roads to the main roads, school, hospital etc. blocked by the floods on average ?

Ans. days on average. *Protected by flood dyke along the RUVU RIVER almost no damage*



c. How much the price of daily necessities like salt, oil etc. go up during the road block by flood ?

Ans. percent higher than usual.

B. Unexpected (Unprepared) Flood, e.g. either Unusually Big Scale or Unseasonal Flood.

a. When did one take place ?

- Farm established 1974 & started

No.	Year	Month	Days	Q _{max} at 1H8
1.	1979	Apr/May		2 901 m ³ /s
2.	1984	May		604 m ³ /s
3.	1986	Apr.		515 m ³ /s
4.	1989			
5.				

Kiloneka River dyke was # overtopped citrus damaged partially

b. Damage to the properties, movables and stocks: Please fill in the attached FORMAT A. with ticks, words and figures.

c. Damage to the agricultural crops growing in the fields: Please fill in the attached FORMAT B. with ticks, words and figures.

FORMAT - A

Item	Type	Area in (m ²)	Inundation (cm)					Sedimentation (cm)	
			-49	50-99	100-199	200-299	300-	-49	50-
House	F-Concrete								
	Block								
	Wooden								
Household Articles (T.Shs)									
Agricultural in T.Shs	Facilities								
	Implements								
	Stocks								
Fishing * in T.Shs	Facilities								
	Implements								
	Stocks								

* including fish culture

Average yield without flood	Crop _____	Yield/acreage _____
	_____	_____
Average Yield after flood	_____	_____

FORMAT - B

Crops	Area (ha)	Depth (cm)	Inundation (day)				Buried in Sediments
			1-2	3-4	5-6	7-	
Paddy	72.5						
Cassava							
Beans <i>C. nuts</i>	23						
Greens							
Pineapple							
Others <i>Citrus</i>	5						
<i>Vegetable</i>	4						

No damage

**WATER RESOURCES DEVELOPMENT STUDY
IN THE RUVU RIVER BASIN**

Dear Residents,

SUB: FLOOD DAMAGE SURVEY IN THE RUVU RIVER BASIN

Date of Interview Apr. 28/1993
 Name of Answerer peasant (Ali Yahaya)
 Name of Village/District Kwala (Kwala)
 Location Longitude/Altitude _____ S / _____ E

A. Annual Recurrent Flood of Usual Scale

As you are living in a flood-prone area, we presume you have little damage to the property or stocks. Rather, if you are farmers, you are expecting better harvest by planting agro-produce on the new sediment brought by the flood.

- a. In that case, how much do you think you have benefitted from the flood ?

Ans. 20% percent more harvest than the ones without flood, on average.

- b. How many days during the rainy season are the roads to the main roads, school, hospital etc. blocked by the floods on average ?

Ans. 30 days on average.

- c. How much the price of daily necessities like salt, oil etc. go up during the road block by flood ?

Ans. 50 percent higher than usual.

B. Unexpected (Unprepared) Flood, e.g. either Unusually Big Scale or Unseasonal Flood.

- a. When did one take place ?

No.	Year	Month	Days	Q_{max} at IH8
1.	1979	Apr/May		2,901 m ³ /s
2.	1984	May		604 m ³ /s
3.	1986	Apr.		515 m ³ /s
4.	1989			
5.				

- b. Damage to the properties, movables and stocks: Please fill in the attached FORMAT A. with ticks, words and figures.

- c. Damage to the agricultural crops growing in the fields: Please fill in the attached FORMAT B. with ticks, words and figures.

FORMAT - A

Item	Type	Area in (m ²)	Inundation (cm)					Sedimentation (cm)	
			-49	50-99	100-199	200-299	300-	-49	50-
House	F-Concrete								
	Block								
	Wooden			✓					
Household Articles (T.Shs)			nil						
Agricultural in T.Shs	Facilities		"						
	Implements		"						
	Stocks		"						
Fishing * in T.Shs	Facilities		"						
	Implements		"						
	Stocks		"						

make temporary house (hut) when flood seen imminent

* including fish culture

Average yield without flood Crop Yield/acreage
paddy 0-20 bags/acre.
paddy 20 bags/acre.

Average Yield after flood paddy 30 bags/acre.

FORMAT - B

Crops	Area (ha)	Depth (cm)	Inundation (day)				Buried in Sediments
			1-2	3-4	5-6	7-	
Paddy	2					✓	
Cassava							
Beans							
Greens							
Pineapple							
Others							

**WATER RESOURCES DEVELOPMENT STUDY
IN THE RUVU RIVER BASIN**

Dear Residents,

SUB: FLOOD DAMAGE SURVEY IN THE RUVU RIVER BASIN

Date of Interview

Apr 28 / 1993

Name of Answerer

Periclit (P.A. Nagono Simanani)

Name of Village/District

Kwala of M.P. 3001

Location Longitude/Altitude

S / E

A. Annual Recurrent Flood of Usual Scale

As you are living in a flood-prone area, we presume you have little damage to the property or stocks. Rather, if you are farmers, you are expecting better harvest by planting agro-produce on the new sediment brought by the flood.

- a. In that case, how much do you think you have benefitted from the flood ?

Ans. 15% percent more harvest than the ones without flood, on average.

- b. How many days during the rainy season are the roads to the main roads, school, hospital etc. blocked by the floods on average ?

Ans. 30 days on average.

- c. How much the price of daily necessities like salt, oil etc. go up during the road block by flood ?

Ans. 50 - 100% percent higher than usual.

B. Unexpected (Unprepared) Flood, e.g. either Unusually Big Scale or Unseasonal Flood.

- a. When did one take place ?

1978/79.

No.	Year	Month	Days	Q _{max} at 1H8
1.	1979	Apr/May		2,901 m ³ /s
2.	1984	May		604 m ³ /s
3.	1986	Apr.		515 m ³ /s
4.	1989			
5.				

- b. Damage to the properties, movables and stocks: Please fill in the attached FORMAT A. with ticks, words and figures.

- c. Damage to the agricultural crops growing in the fields: Please fill in the attached FORMAT B. with ticks, words and figures.

FORMAT - A

Item	Type	Area in (m ²)	Inundation (cm)					Sedimentation (cm)	
			-49	50-99	100-199	200-299	300-	-49	50-
House	F-Concrete								
	Block								
	Wooden				✓				
Household Articles (T.Shs)		10,000 Tsh.							
Agricultural in T.Shs	Facilities								
	Implements								
	Stocks								
Fishing * in T.Shs	Facilities								
	Implements								
	Stocks								

bucket, mug, bowl & plate lost in the flood.

* including fish culture

Average yield without flood	Crop	Yield/acreage
	<u>paddy</u>	<u>15-20 bags/acre.</u>
Average Yield after flood	_____	_____

FORMAT - B

Crops	Area (ha)	Depth (cm)	Inundation (day)				Buried in Sediments
			1-2	3-4	5-6	7-	
Paddy	2					✓	
Cassava							
Beans							
Greens							
Pineapple							
Others							

Maize/okra done short Rain season

**WATER RESOURCES DEVELOPMENT STUDY
IN THE RUVU RIVER BASIN**

Dear Residents,

SUB: FLOOD DAMAGE SURVEY IN THE RUVU RIVER BASIN

Date of Interview

26th Oct. 1993

Name of Answerer

Athuman Rajatu (Farmer)

Name of Village/District

Kwala

Location Longitude/Altitude

° E

A. Annual Recurrent Flood of Usual Scale

As you are living in a flood-prone area, we presume you have little damage to the property or stocks. Rather, if you are farmers, you are expecting better harvest by planting agro-produce on the new sediment brought by the flood.

a. In that case, how much do you think you have benefitted from the flood ?

Ans. 15% percent more harvest than the ones without flood, on average.

b. How many days during the rainy season are the roads to the main roads, school, hospital etc. blocked by the floods on average ?

Ans. 30 days on average.

c. How much the price of daily necessities like salt, oil etc. go up during the road block by flood ?

Ans. 20% percent higher than usual.

B. Unexpected (Unprepared) Flood, e.g. either Unusually Big Scale or Unseasonal Flood.

a. When did one take place ?

No.	Year	Month	Days	Q _{max} at IHB
1.	1979	Apr/May		2,901 m ³ /s
2.	1984	May		604 m ³ /s
3.	1986	Apr.		515 m ³ /s
4.	1989			
5.	1993	Apr.		

b. Damage to the properties, movables and stocks: Please fill in the attached FORMAT A. with ticks, words and figures.

c. Damage to the agricultural crops growing in the fields: Please fill in the attached FORMAT B. with ticks, words and figures.

Av. farmer pop. 200.

FORMAT - A

Item	Type	Area in (m ²)	Inundation (cm)					Sedimentation (cm)	
			-49	50-99	100-199	200-299	300-	-49	50-
House	F-Concrete								
	Block								
	Wooden			✓					
Household Articles (T.Shs)									
Agricultural in T.Shs	Facilities								
	Implements								
	Stocks								
Fishing in T.Shs	Facilities								
	Implements								
	Stocks								

* including fish culture

House hold Articles are moved, shifted to safe higher points when flood is anticipated. (permanent village)

	Crop	Yield/acreage
Average yield without flood	20	bags/acre.
Average Yield after flood	24	bags/acre.

FORMAT - B

Crops	Area (ha)	Depth (cm)	Inundation (day)				Buried in Sediments
			1-2	3-4	5-6	7-	
Paddy	2 acres						
Cassava							
Beans							
Greens							
Pineapple							
Others							

more than 7 days.

For this yr. the long rain crop was damaged by flood, and the short rain crop did not get enough of it; therefore harvest of maize was on the average 2 bags of husked maize.

NB Pump at Monqamole operate for 8 hrs to serve Kwala Mwendu.

**WATER RESOURCES DEVELOPMENT STUDY
IN THE RUVU RIVER BASIN**

Dear Residents,

SUB: FLOOD DAMAGE SURVEY IN THE RUVU RIVER BASIN

Date of Interview

26th Oct. 1993

Name of Answerer

Satche Shindika

Name of Village/District

Mwenba 1902i Datumi

Location Longitude/Altitude

E

A. Annual Recurrent Flood of Usual Scale

As you are living in a flood-prone area, we presume you have little damage to the property or stocks. Rather, if you are farmers, you are expecting better harvest by planting agro-produce on the new sediment brought by the flood.

a. In that case, how much do you think you have benefitted from the flood ?

Ans. 5% percent more harvest than the ones without flood, on average.

b. How many days during the rainy season are the roads to the main roads, school, hospital etc. blocked by the floods on average ?

Ans. a month days on average.

c. How much the price of daily necessities like salt, oil etc. go up during the road block by flood ?

Ans. 15% percent higher than usual.

B. Unexpected (Unprepared) Flood, e.g. either Unusually Big Scale or Unseasonal Flood.

a. When did one take place ?

No.	Year	Month	Days	Q_{max} at IHB
1.	1979	Apr/May		2,901 m ³ /s
2.	1984	May		604 m ³ /s
3.	1986	Apr.		515 m ³ /s
4.	1989			
5.	1993	Apr.		

b. Damage to the properties, movables and stocks: Please fill in the attached FORMAT A. with ticks, words and figures.

c. Damage to the agricultural crops growing in the fields: Please fill in the attached FORMAT B. with ticks, words and figures.

Farmers cannot cultivate bigger farms because they cannot afford tractor service. It is Tsh. 8,000/- per acre.

FORMAT - A

Item	Type	Area in (m ²)	Inundation (cm)					Sedimentation (cm)	
			-49	50-99	100-199	200-299	300-	-49	50-
House	F-Concrete								
	Block								
	Wooden			✓					
Household Articles (T.Shs)									
Agricultural in T.Shs	Facilities								
	Implements								
	Stocks								
Fishing * in T.Shs	Facilities								
	Implements								
	Stocks								

no real loss of property during floods as it is moved to safer higher points.

* including fish culture

	Crop	Yield/acreage
Average yield without flood	<u>paddy</u>	<u>20 bags/acre.</u>
Average Yield after flood	<u>paddy</u>	<u>24 bags/acre.</u>

FORMAT - B

Crops	Area (ha)	Depth (cm)	Inundation (day)				Buried in Sediments
			1-2	3-4	5-6	7-	
Paddy	2 acres						
Cassava							
Beans							
Greens							
Pineapple							
Others							

all washed away by flood.

after the flood in July the farms were planted to other crops: maize - harvested 4 bags/acre (short rains not enough) tomatoes interplanted with maize, the farmer got Tsh 30,000/- this season.

Total farmer population is about 600 @ 2 acres by cultivating hand.

WATER RESOURCES DEVELOPMENT STUDY
IN THE RUVU RIVER BASIN

Average farmer pop:
300

Dear Residents,

SUB: FLOOD DAMAGE SURVEY IN THE RUVU RIVER BASIN

Date of Interview

13/05/93

Name of Answerer

Ali Abdallah. (farmer area 2 1/2 acres)

Name of Village/District

Nhgeze

(Serengete B - Rutali)

Location Longitude/Latitude

S / E

A. Annual Recurrent Flood of Usual Scale

As you are living in a flood-prone area, we presume you have little damage to property or stocks. Rather, if you are farmers, you are expecting better harvest planting agro-produce on the new sediment brought by the flood.

a. In that case, how much do you think you have benefitted from the flood?

Ans. 10% percent more harvest than the ones without flood, on average.

b. How many days during the rainy season are the roads to the main road, hospital etc. blocked by the floods on average?

Ans. 60 days on average. Supplies obtained from Ngerengele or Chalinze, By Bicycles mainly.

c. How much the price of daily necessities like salt, oil etc. go up during the season by flood?

Ans. 2% percent higher than usual.

B. Unexpected (Unprepared) Flood, e.g. either Unusually Big Scale or Unseasonal Flood.

a. When did one take place?

No.	Year	Month	Days	Q_{max} at 1H8
1.	1979	Apr/May		2,901 m ³ /s
2.	1984	May		604 m ³ /s
3.	1986	Apr.		515 m ³ /s
4.	1989			
5.	1993	Apr/May		

b. Damage to the properties, movables and stocks; Please fill in the attached form with ticks, words and figures.

FORMAT - A

Item	Type	Area in (m ²)	Inundation (cm)					Sedimentation (cm)	
			-49	50-99	100-199	200-299	300-	-49	50-
House	F-Concrete								
	Block			✓	✓				
	Wooden			✓	✓				
Household Articles (T.Shs)									
Agricultural in T.Shs	Facilities								
	Implements								
	Stocks								
Fishing * in T.Shs	Facilities								
	Implements								
	Stocks								

* including fish culture

Average yield without flood	Crop	Yield/acreage
	Maize	20 bags/acre.
Average Yield after flood	maize	25 bags/acre.

FORMAT - B *However some farmers were saying that a good crop of maize is up to 70 bags/acre.*

Crops	Area (ha)	Depth (cm)	Inundation (day)				Buried in Sediments
			1-2	3-4	5-6	7-	
Paddy							
Cassava							
Beans							
Greens							
Pineapple							
Others							

inundation is more than 10 metre and if for a long time damage to crop is serious. esp. to traditional farming hits. (average cost Tsh 5000). Cultivation is manual. that is why farmers have small fields 2 1/2 - 7 acres at most.

DATA BOOK

IV. DATA ON SOIL ANALYSIS

IV. DATA ON SOIL ANALYSIS

TABLE OF CONTENTS

1	SUMMARY OF SOIL ANALYSIS	
1.1	Location Map of Pits and Auger Holes for Soil Survey	IV - 1
1.2	Analytical Data for the Soil Samples.....	IV - 2
2	SOIL PROFILE DESCRIPTION FORM	IV - 25

