3. GROUNDWATER QUALITY ANALYSIS RESULTS

3. Groundwater Quality Analysis Results

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Note: For the coordinates of the wells, please refer to the Data Book 2. Well Inventory Sheets.

Water Quality Analysis Results of Existing Deep Wells (1)

Sampled and tested in May, 1996

Item	DW-2	DW-6	DW-8	DW-10	DW-12	DW-16	DW-17	DW-22	DW-37	DW-42	DW-46	DW-47	DW-35	Gotombo	E.O.J.
pH	7.0	6.9	6.7	5.2	6.5	6.6	4.7	4.6	5.4	7.2	6.8	7.6	5.7	5.3	6.4
Temp.(℃)	26.6	29.5	28.6	29.3	30.1	29.6	27.6	27.6	27.3	31.5	28.0	28.3	27.1	27.2	28.5
EC (μs/cm)	367	385	295	19	275	240	44	26	68	531	763	642	75	80	475
Hardness	50	100	100	5	50	60	5	5	10	100	20	50	20	15	20
NO_3 (mg/l)	0	1.8	2.2	2.2	1.8	0	14.1	3.1	1.8	1.80	0.9	0	0.4	0	0
NH_4 (mg/l)	0.3	0.3	0.2	0.3	0.2	0	0.5	0.3	0	0.3	0	0	0.3	0	0.5
SO_4 (mg/l)	1.0	0	0	0	1.0	0	0	1.0	0	0	5.0	0	0	0	9.0
Mn (mg/l)	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	0.5	<0.5	0.5	0.5	<0.5	<0.5	<0.5
Fe (mg/l)	0.14	0.11	0.01	0.01	0	0.12	0.01	0.03	3.7	0.01	0.09	0.80	0.64	2.83	2.65
Cl (mg/l)	2.0	1.3	1.8	1.3	1.3	1.9	3.0	1.6	5.3	1.1	4.8	3.8	5.1	1.7	6.6
Ca (mg/l)	40	93	95	4	45	52	4	4	7	80	18	40	15	10	10
Mg (mg/l)	10	7	5	1	5	8	1	1	1	20	2	10	5	5	10
K (mg/l)	1.3	1.4	1.5	0.4	1.3	1.4	2.6	1.5	1.0	1.2	0.9	1.5	1.2	1.5	1.6
Thermotol. Coli. (/100ml)	0	40	>300	160	40	>300	3	100	20	5	0	3	0	0	60
Coliforms (/100ml)	70	300	>300	200	200	>300	100	300	160	80	50	20	7	100	300
Strept. Fec. (/100ml)	0	6	100	5	8	200	0	8	0	0	0	0	0	0	0
Clst. Sul.-redc. (/100ml)	5	0	1	0	0	2	0	2	0	5	0	0	2	0	0
Staphylo. (/100ml)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T. Bact. Aero. (/100ml)	3.0×10^6	6.0×10^4	2.0×10^5	2.0×10^4	3.0×10^5	2.0×10^5	0	6.0×10^4	4.0×10^3	4.0×10^3	6.0×10^4	1.2×10^4	2.0×10^6	6.0×10^4	4.0×10^5

Thermotol. Coli. : Thermotolerant Coliform, Strept. Fec. : Streptococques Fecaux, Clst. Sul. - redc. : Clostridies Sulfito - reductrices, Staphylo. : Staphylococques, T. Bact. Aero. : Total Aerobic Bacteria,

E.O.J. : Embassy of JAPAN, 400 : Out of WHO Standard

Water Quality Analysis Results of Existing Deep Wells (2)

Sampled and tested in September, 1996

Item	DW-2	DW4	DW-6	DW-8	DW-12	DW-16	DW-22	DW31	DW-37	DW-42	DW-46	DW-47	Gotombo	E.O.J.
pH	7.3	6.3	7.0	6.9	6.5	6.5	**4.8**	**4.9**	**5.4**	7.3	6.8	7.1	5.8	6.5
RpH	-	6.4	-	-	6.7	6.7	4.9	4.9	5.8	-	-	-	6.0	6.6
Temp.(°C)	27.1	27.8	28.4	28.0	29.2	28.1	29.4	29.8	27.8	29.7	27.2	28.6	29.3	28.7
EC (μs/cm)	495	151	491	522	389	301	25	63	20	697	566	585	83	270
Hardness ($CaCO_3$ mg/l)	187	58	179	191	135	96	1.6	5.2	5	329	275	227	32	98
NO_3 (mg/l)	**52.8**	**55.0**	44.8	43.5	8.8	**51.0**	9.2	12.3	11.8	10.5	6.1	10.0	11.8	16.2
NH_4 (mg/l)	0.27	0.16	0.11	0.09	0.10	0.20	0.11	0.10	0.36	0.12	0.07	0.23	0.20	0.30
SO_4 (mg/l)	9	7	5	5	4	8	5	4	13	6	16	8	8	22
Mn (mg/l)	**3.0**	**1.2**	**1.2**	**1.4**	**0.8**	**3.4**	**0.8**	**0.8**	**2.3**	**0.8**	**1.0**	**1.4**	**2.2**	**2.0**
Fe (mg/l)	**0.68**	0.28	0.21	0.11	0.08	**0.36**	0.08	0.10	**1.61**	0.09	**0.91**	**0.90**	**0.89**	**1.68**
Cl (mg/l)	11.5	6.6	9.9	4.9	9.9	11.5	6.6	13.2	11.5	11.5	13.2	13.2	4.9	21.4
Ca (mg/l)	57.2	12.8	52.0	60.8	33.6	16.8	0.5	0.7	1.2	72.4	62.4	76.8	3.6	20.4
Mg (mg/l)	17.6	10.2	19.6	15.6	20.4	21.6	0.1	1.3	0.8	59.2	47.6	14.0	9.2	18.8
K (mg/l)	1.1	1.0	0.9	1.0	1.2	1.1	1.3	1.2	1.4	1.2	0.9	1.3	1.7	1.7
HCO_3 (mg/l)	223	50	173	286	150	113	1.7	2.0	2.4	280	223	260	30.3	84.4
Thermotol. Coli. (/100ml)	**7**	**8**	**40**	**10**	**10**	**30**	**20**	**5**	**1**	**20**	**4**	0	**30**	**2**
Coliforms (/100ml)	**60**	**200**	**300**	**60**	**40**	**300**	**200**	**15**	**200**	**300**	**200**	**40**	**300**	**20**
Strept. Fec. (/100ml)	1	6	7	6	0	3	0	0	0	0	0	0	0	0
Clst. Sul.-redc. (/100ml)	0	10	0	0	10	7	0	20	0	300	0	100	300	0
Staphylo. (/100ml)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T. Bact. Aero. (/100ml)	1.0×10^4	1.0×10^4	2.0×10^4	1.0×10^4	0	1.0×10^4	0	0	2.0×10^5	3.0×10^4	2.0×10^5	0	6.0×10^4	0

Thermotol. Coli. : Thermotolerant Coliform, Strept. Fec. : Streptococques Fecaux, Clst. Sul. - redc. : Clostridies Sulfito - reductrices, Staphylo. : Staphylocoques, T. Bact. Aero. : Total Aerobic Bacteria,

E.O.J. : Embassy of JAPAN, **400** : Out of WHO Standard,

Water Quality Analysis Results of Existing Deep Wells (3)

Sampled and tested in December, 1996

Item	DW-2	DW-8	DW-9	DW-10	DW-12	DW-16	DW-42
pH	7.2	6.8	6.8	**5.1**	6.6	6.6	7.3
Temp.(°C)	27	27	26	27	27	27	27
EC (μs/cm)	504	459	406	38	402	313	600
Hardness ($CaCO_3$,mg/l)	189	188	165	8	141	93	307
NO_3 (mg/l)	8.8	7.4	17.1	7.4	7.9	11.8	34.7
NH_4 (mg/l)	0	0	0.15	0.29	0	0	0.38
SO_4 (mg/l)	11	6	16	5	5	11	6
Mn (mg/l)	**3.6**	**1.7**	**6.0**	**1.0**	**1.0**	**4.7**	**1.0**
Fe (mg/l)	**0.4**	0.1	**2.6**	0.1	0	**0.6**	0.3
Cl (mg/l)	23.1	9.9	18.1	16.5	14.8	14.8	64.3
Ca (mg/l)	61.6	63.2	40.8	2.4	34	14.8	72
Mg (mg/l)	14.0	12.0	25.2	0.8	22.4	18.8	50.8
K (mg/l)	1.4	1.2	1.3	0.2	1.1	1.3	1.1
HCO_3 (mg/l)	183	176	141	4.9	146	107	243
Thermotol. Coli. (/100ml)	**100**	**100**	**25**	**50**	**100**	**100**	**40**
Coliforms (/100ml)	**16**	**100**	**20**	**34**	**70**	**50**	**5**
Strept. Fec. (/100ml)	12	0	0	0	40	15	0
Clst. Sul.-redc. (/100ml)	0	0	0	20	0	0	0
Staphylo. (/100ml)	0	0	0	0	0	0	0
T. Bact. Aero. (/100ml)	100	2	0	10	4	50	300

Thermotol. Coli. : Thermotolerant Coliform, Strept. Fec. : Streptococques Fecaux, Clst. Sul. - redc. : Clostridies Sulfito - reductrices, Staphylo. : Staphylococques, T. Bact. Aero. : Total Aerobic Bacteria,

E.O.J. : Embassy of JAPAN, **400** : Out of WHO Standard,

Water Quality Analysis Results of Existing Shallow Wells (1)

Sampled and tested in May, 1996

Item	SW 7	SW 28	SW 29	SW 32	SW 33	SW 39	SW 44	SW 45	SW 46	SW 47
pH	**5.3**	**5.0**	**5.5**	**5.4**	**4.3**	**4.9**	**4.8**	**4.4**	**5.0**	**4.9**
Temp.(°C)	26.6	29.8	29.2	31.7	26.6	29.3	27.9	28.5	28.5	28.3
EC (μs/cm)	196	95	348	107	65	23	53	105	20	18
Hardness	10	2	10	10	5	3	5	10	5	7
NO_3 (mg/l)	0	5.7	10.1	15.0	16.7	0	0	11.4	0	3.1
NH_4 (mg/l)	0.5	0.3	0.5	1.0	0.5	0.3	0.5	0.5	0.5	0.5
SO_4 (mg/l)	1.0	0	23.0	1.0	1.0	0	0	0	0	1.0
Mn (mg/l)	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	0.5	<0.5	<0.5
Fe (mg/l)	**0.60**	0.11	0.09	0.26	0.07	0.21	**1.14**	0.22	0.09	0.09
Cl (mg/l)	19.8	18.5	76.8	16.2	10.6	1.5	8.3	9.6	1.2	0.8
Ca (mg/l)	9	1.5	8	9	4	2.5	4	9	4.5	6
Mg (mg/l)	1	0.5	2	1	1	0.5	1	1	0.5	1
K (mg/l)	2.6	2.5	7.3	3.3	2.9	1.0	1.2	2.3	0.7	0.7
Thermotol. Coli. (/100ml)	**300**	**300**	**140**	**80**	**200**	**100**	**300**	**300**	**400**	**300**
Coliforms (/100ml)	**300**	**300**	**200**	**300**	**300**	**300**	**300**	**300**	**300**	**300**
Strept. Fec. (/100ml)	120	50	50	0	16	16	100	300	10	400
Clst. Sul.- redc. (/100ml)	2	2	2	2	5	5	5	1	5	5
Staphylo. (/100ml)	0	0	0	0	0	0	0	0	0	0
T. Bact. Aero. (/100ml)	4.0×10^5	1.2×10^5	*	1.2×10^5	1.6×10^5	1.2×10^5	2.0×10^5	6.0×10^4	2.0×10^5	4.0×10^3

Thermotol. Coli. : Thermotolerant Coliform, Strept. Fec. : Streptococques Fecaux, Clst. Sul. - redc. : Clostridies Sulfito - reductrices, Staphylo. : Staphylococques, T. Bact. Aero. : Total Aerobic Bacteria,

* : too abundant to count **400** : Out of WHO Standard

Water Quality Analysis Results of Existing Shallow Wells (2)

Sampled and tested in September, 1996

Item	SW 7	SW 28	SW 29	SW 32	SW 33	SW 36	SW 39	SW 44	SW 45	SW46	SW 47
pH	**5.6**	**4.9**	**5.2**	**5.2**	**5.0**	**4.8**	**4.8**	**4.9**	**4.9**	**4.9**	**4.8**
RpH	5.9	5.0	5.2	5.2	5.2	4.9	5.1	5.2	5.2	5.2	5.2
Temp.(℃)	27.5	27.7	27.8	27.9	26.4	27.0	26.5	27.6	26.9	27.0	27.3
EC (μs/cm)	130	185	477	313	89	20	30	41	50	20	20
Hardness ($CaCO_3$ mg/l)	16	36	18	75	5	1.7	5.1	5.2	5.5	3.8	3.5
NO_3 (mg/l)	26.4	11.4	34.3	43.1	**65.5**	11.8	14.9	6.1	8.3	7.4	11.8
NH_4 (mg/l)	0.23	0.12	0.14	0.15	0.56	0.12	0.15	0.12	0.19	0.11	0.20
SO_4 (mg/l)	10	6	24	7	15	5	5	5	7	4	8
Mn (mg/l)	**1.2**	**1.0**	**1.4**	**1.2**	**3.4**	**0.8**	0	**1.0**	**1.2**	**0.6**	0
Fe (mg/l)	**0.44**	0.11	0.22	0.14	**0.92**	0.22	0.17	**0.53**	**0.46**	0.12	**0.30**
Cl (mg/l)	36.3	54.4	93.0	122	26.4	13.2	9.9	24.7	23.1	18.1	4.9
Ca (mg/l)	4.4	5.2	6.4	16.8	0.9	0.6	0.7	1.6	1.1	0.6	0.8
Mg (mg/l)	2.0	9.2	0.8	13.2	1.1	0	1.3	0.4	1.1	0.9	0.6
K (mg/l)	1.5	3.6	>8.0	4.8	3.1	1.0	1.2	1.0	1.0	1.2	1.1
HCO3 (mg/l)	9.8	2.7	7.0	20.4	2.4	1.0	1.6	1.1	2.4	1.9	1.4
Thermotol. Coli. (/100ml)	**25**	**10**	**10**	-	**40**	**15**	**15**	**30**	**40**	0	**3**
Coliforms (/100ml)	**200**	**200**	**200**	-	**400**	**100**	**400**	**200**	**300**	**50**	**60**
Strept. Fec. (/100ml)	0	0	1	-	25	2	18	0	0	0	0
Clst. Sul.-redc. (/100ml)	0	0	0	-	0	0	0	0	0	0	0
Staphylo. (/100ml)	0	0	0	-	0	0	0	0	0	0	0
T. Bact. Aero. (/100ml)	$3.0x10^5$	$2.0x10^4$	$1.0x10^4$	-	$2.0x10^4$	$1.0x10^4$	$2.0x10^5$	$1.0x10^5$	$1.0x10^5$	$1.2x10^5$	$2.0x10^5$

Thermotol. Coli. : Thermotolerant Coliform, Strept. Fec. : Streptococques Fecaux, Clst. Sul. - redc. : Clostridies Sulfito - reductrices, Staphylo. : Staphylococques, T. Bact. Aero. : Total Aerobic Bacteria,

* : too abundant to count **400** : Out of WHO Standard

Water Quality Analysis Results of Existing Shallow Wells (3)

Sampled and tested in December, 1996

Item	SW 28	SW 29	SW32	SW 33	SW 36	SW 39	SW 44	SW 45	SW 46	SW47
pH	4.9	5.3	5.2	4.9	4.8	4.8	5.0	4.7	4.8	4.7
Temp.(°C)	26	27	26	28	27	26	26	26	27	27
EC (μs/cm)	121	468	163	62	21	27	37	55	18	22
Hardness ($CaCO_3$ mg/l)	15	30	34	1.9	1.8	3.6	4.0	9.1	1.1	4.1
NO_3 (mg/l)	11.8	7.9	9.2	11.4	8.3	8.3	10.1	10.5	9.6	10.1
NH_4 (mg/l)	0.38	0.43	1.5	0.51	0.29	0.43	0.59	0.65	0.47	0.50
SO_4 (mg/l)	5	38	14	8	5	8	8	8	7	7
Mn (mg/l)	1.0	2.3	3.8	1.7	0.8	1.5	1.5	1.9	1.2	1.0
Fe (mg/l)	0.1	1.1	0.8	0.4	0.1	0.2	1.0	0.3	0.2	0.2
Cl (mg/l)	11.5	150	6.6	26.4	19.8	57.7	19.8	33.0	13.2	8.2
Ca (mg/l)	3.6	5.6	7.2	0.8	0.1	1.2	0.6	1.8	0.7	0.8
Mg (mg/l)	2.4	6.4	6.4	1.1	0.6	0.2	1.0	1.8	0.4	0.8
K (mg/l)	2.4	>8.0	3.2	1.9	0	0.6	1.0	0.9	0.4	0.6
HCO3 (mg/l)	4.9	20.4	13.9	4.0	2.4	2.9	4.0	2.4	3.2	2.1
Thermotol. Coli. (/100ml)	27	200	300	150	50	30	200	120	20	100
Coliforms (/100ml)	40	150	40	60	20	45	100	200	50	80
Strept. Fec. (/100ml)	0	3	0	0	2	0	50	3	0	0
Clst. Sul.-redc. (/100ml)	0	0	0	5	20	0	2	2	5	5
Staphylo. (/100ml)	0	0	0	0	0	0	0	0	0	0
T. Bact. Aero. (/100ml)	$1.0x10^3$	$2.0x10^3$	$3.0x10^3$	300	100	$1.5x10^3$	800	300	200	$1.4x10^3$

Thermotol. Coli. : Thermotolerant Coliform, Strept. Fec. : Streptococques Fecaux, Clst. Sul. - redc. : Clostridies Sulfito - reductrices, Staphylo. : Staphylocoques, T. Bact. Aero. : Total Aerobic Bacteria,

* : too abundant to count 400 : Out of WHO Standard

4. STUDY ON SURFACE WATER DISCHARGE

4. Study on Surface Water Discharge

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1.Hydrological Observation Conducted by the Study Team

(1) Observation

The OUBANGUI river and the M'POKO river have the potential to supply water as the potable water source for BANGUI city area. On the OUBANGUI river, there exists a discharge measurement point controlled by the "Direction de la Meteorologie", where water level is observed almost every day. The water level data hereof are available. Also, water level gauging staffs have been functional at the existing intake pumping station for the SNE's water treatment plant, which is located on the right bank of the OUBANGUI river at about 1.2 km east from the center of the city. Daily water level of the OUBANGUI river is observed by the SODECA's pumping station operator. The water level was utilized for supplement of those of the "Direction de la Meteorologie".

Among four observation points operated by the "Direction de la Meteorologie" in the M'POKO river basin, only BOALI-ICOT has considerable amount of available data. Reliable data are insufficient in the basin. On the other hand no gauging stations have been established in the downstream reach of the M'POKO river after confluence with the MBALI river. In consideration of the road access condition, river reach conditions, stability of the flow, availability of personnel for the daily observations and so on, two gauging points were selected. The water level gauging staffs were installed by the Study team and the RCA's counter parts on April 30, 1996 at the river crossing point, Nzongo, which is located about 11.5 km west from the center of the city, 5 km downstream of the confluence with the MBALI. The water level observation started on the same day. The other gauging point, Zana, was selected at about 18 km upstream point from the confluence with the MBALI river. The location is approximately middle point between the confluence point and the existing gauging station of the "Direction de la Meteorologie", BOSSELE-BALI, which is located at the bridge of Route No.1 on the M'POKO river. The water level gauging staffs were installed by the Study team and the RCA's counter parts on May 3, 1996. The water level observation started on the same day. The locations of each gauging station are shown in the Fig. 1. The cross sections of each gauging point on the M'POKO river are shown in the Fig.2.

Gauging Items at each Station

River	OUBANGUI	M'POKO	M'POKO
Station Name	SNE intake	Nzongo	Zana
Observation	Water level	Water level	Water level
Measurement	-	Discharge	Discharge

The flow discharge measurement by using current meter was carried out at the two gauging stations of the M'POKO river six times in total from March 1996 to January 1997. And rating curves or H-Q curves are decided as seen in Fig.3. Though the regular site measurement once a

month was requested to the counterparts of RCA, the measurement could not be conducted due to influence of the riot caused by the national army of RCA on May 18, 1996. The measurement was started in September 1996 again and conducted once a month until January 1997. The daily water level measurement at NZONGO and ZANA was conducted from May 1996 until January 1997.

(2) Results

The daily water level and converted discharge at NZONGO and ZANA on the MPOKO river are shown in Table 1 and Table 2. The observation period is from May to next January, excluding February to April or a period when the dam discharge adjustment effect is predominant. The result shows that the minimum discharge was 59.5 m3/sec of May 2, 1996 at NZONGO and 16.9 m3/sec of May 16, 1996 at ZANA. Using available daily discharge data of 210 days, correlation between two sets of data at the stations is obtained by the least square method as shown in Fig.4 and below.

$$Q_{NZONGO} = 2.4005 \times Q_{ZANA} + 20.184$$

where, Q_{NZONGO} : discharge at NZONGO (m^3/sec)

Q_{ZANA} : discharge at ZANA (m^3/sec)

This means that discharge at NZONGO is about 2.4 times of that at ZANA and the rate is nearly equal to the ratio of catchment area or 2.34. Specific discharge is almost the same in the basin.

Basin name	Catchment area	Ratio of area
ZANA	10,950 km2	1.00
NZONGO	25,650 km2	2.34

2. Discharge of MBALI River at Proposed Intake Site

From above results, discharge of the MBALI river at confluence with the MPOKO river, which is the proposed intake site in the Master Plan II, is calculated as the followings.

1) Case with Dam

The discharge at the site is calculated by the dam outflow in addition to runoff from the remaining catchment area except the dam cachment. The catchment area of the dam, being almost equal to that of BOALI-ICOT, is set 4,560 km2. The runoff discharge from the residual area excluding the dam catchment area is obtained from the discharge at BOALI-ICOT multiplied by 2.19 or the area ratio with residual area.

Basin name	Catchment area	Ratio of area

Dam basin	4,560 km2	1.00
MBALI river basin	14,550 km2	3.19
Residual area	9,990 km2	2.19

2) Case without Dam

The discharge at the site is gained from the discharge at BOALI-ICOT multiplied by 3.19 or the area ratio with the MBALI basin. In other words, specific discharge at BOALI-ICOT is used for the whole Basin of the MBALI river.

Basin name	Catchment area	Ratio of area
BOALI-ICOT	4,560 km2	1.00
MBALI river basin	14,550 km2	3.19

On the basis of simulated dam inflow (ICOT discharge in case without dam) in the water balance in the report of "BOALI Dam Water Balance Calculation", annual minimum discharge at the proposed intake site is computed as presented in Table 12 in main report.

Table 1(1) Water Level Measurement Record at NZONGO and ZANA

Station : NZONGO, MPOKO river Unit : m

	1996									1997
Date	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
1	-	1.39	2.36	3.16	3.98	5.02	5.42	5.48	3.23	2.46
2	-	1.31	2.42	3.24	3.99	5.09	5.53	5.42	3.22	2.44
3	-	1.58	2.38	3.28	4.10	5.15	5.63	5.40	3.21	2.37
4	-	1.49	2.29	3.29	4.30	5.15	5.68	5.39	2.90	2.35
5	-	1.54	2.84	3.42	4.50	5.16	5.67	5.39	2.98	2.29
6	-	1.58	2.89	3.43	4.26	5.13	5.66	5.24	2.97	2.26
7	-	1.62	2.92	3.46	4.21	5.12	5.66	4.29	2.95	2.21
8	-	1.48	2.95	3.45	3.97	5.12	5.68	4.88	2.89	2.18
9	-	1.53	2.75	3.47	3.94	5.00	5.68	4.74	2.87	2.17
10	-	1.55	2.63	3.49	3.94	5.06	5.10	4.67	2.83	2.14
11	-	1.49	2.68	3.62	3.92	5.12	5.69	4.43	2.79	2.24
12	-	1.45	2.52	3.62	3.90	5.18	5.69	4.27	2.78	2.22
13	-	1.48	2.49	3.65	3.95	5.25	5.66	4.20	2.78	2.21
14	-	1.36	2.43	3.65	3.98	5.20	5.68	3.98	2.77	2.20
15	-	1.74	2.68	3.68	3.96	5.26	5.78	3.89	2.76	2.19
16	-	1.82	2.74	3.70	4.21	5.29	5.89	3.78	2.75	2.18
17	-	1.53	2.52	3.70	4.26	5.31	5.87	3.76	2.73	2.16
18	-	1.52	2.38	3.72	4.26	5.38	5.82	3.74	2.72	2.15
19	-	1.78	2.34	3.75	4.28	5.27	5.76	3.63	2.72	2.13
20	-	1.55	2.58	3.78	4.27	5.18	5.79	3.52	2.62	2.10
21	-	1.46	2.73	3.81	4.32	5.14	5.68	3.56	2.64	2.00
22	-	1.49	2.49	3.81	4.82	5.10	5.64	3.43	2.63	1.99
23	-	1.53	2.62	3.84	4.84	5.00	5.64	3.42	2.62	1.99
24	-	1.61	2.84	3.83	4.36	5.02	5.68	3.40	2.61	1.98
25	-	1.42	2.74	3.88	4.93	5.04	5.69	3.32	2.64	1.95
26	-	1.39	2.81	3.86	4.95	5.12	5.72	3.21	2.60	1.94
27	-	1.62	2.92	3.89	4.95	5.19	5.74	3.28	2.59	1.89
28	-	1.86	2.89	3.90	4.95	5.23	5.62	3.25	2.59	1.88
29	-	2.26	3.12	3.92	4.90	5.28	5.48	3.24	2.57	1.87
30	1.42	2.29	3.16	3.94	5.00	5.34	5.43	3.24	2.49	1.87
31		2.36		3.97	5.03		5.40		2.48	1.86
Total	1.42	50.08	80.11	113.21	135.23	154.90	175.06	123.45	85.93	65.87

Table 1(2) Water Level Measurement Record at NZONGO and ZANA

Station : ZANA, MPOKO river Unit : m

	1996								1997
Date	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
1	-	2.02	3.55	-	-	5.94	-	3.38	2.58
2	-	2.00	3.76	-	-	5.98	-	3.34	2.56
3	1.65	2.33	3.46	-	5.90	-	-	3.29	2.55
4	1.49	2.40	3.19	-	5.76	-	-	3.26	2.53
5	1.51	4.20	3.46	-	5.90	6.11	-	3.22	2.50
6	1.56	4.30	3.36	-	5.66	5.92	-	3.19	2.46
7	1.52	3.13	3.48	-	5.54	5.84	-	3.16	2.45
8	1.43	3.58	3.21	-	5.48	5.72	-	3.14	2.43
9	1.39	3.62	3.18	-	5.31	5.66	-	3.12	2.42
10	1.42	3.54	3.58	-	5.18	5.72	-	-	2.40
11	1.58	3.32	3.70	-	5.12	5.82	-	-	2.38
12	1.52	3.24	3.55	-	5.28	5.96	-	-	2.40
13	1.83	2.98	3.48	-	5.48	5.98	-	-	2.38
14	1.67	2.76	4.60	-	5.52	5.88	3.95	2.90	2.48
15	1.46	2.56	4.88	-	5.74	5.71	3.91	2.98	2.45
16	1.38	2.32	-	-	5.84	5.90	3.86	2.96	2.43
17	1.47	2.26	-	-	5.88	5.86	3.80	2.94	2.40
18	1.71	2.32	-	-	5.70	5.72	3.72	2.92	2.38
19	1.90	2.20	-	-	5.48	5.69	3.70	2.90	2.34
20	1.61	3.46	-	-	5.34	5.56	3.69	2.88	2.32
21	1.56	3.42	-	-	5.28	5.24	3.66	2.86	2.30
22	1.52	3.62	-	-	5.21	5.16	3.64	2.82	2.28
23	1.49	3.70	-	-	5.18	5.22	3.58	2.79	2.26
24	1.48	3.92	-	-	5.16	5.21	3.56	2.77	2.22
25	1.48	3.92	-	-	5.24	5.22	3.54	2.74	2.20
26	1.50	3.71	-	-	5.36	5.44	3.48	2.72	2.18
27	1.68	4.20	-	5.80	5.60	5.39	3.44	2.70	2.16
28	2.51	3.94	-	5.82	5.48	5.34	3.38	2.69	2.14
29	2.11	3.70	-	5.96	5.52	5.32	3.36	2.67	2.13
30	3.25	3.76	-	5.98	5.74	5.29	3.42	2.64	2.14
31	2.11		-	6.00		-		2.60	2.12
Total	48.79	96.43	54.44	29.56	153.88	157.80	61.69	79.58	72.97

Table 2(1) Discharge Record at NZONGO and ZANA

Station : NZONGO, MPOKO river Unit : m³/sec

	1996									1997
Date	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
1	n.a.	64.6	143.0	230.8	342.4	515.6	591.6	603.5	239.4	152.8
2	n.a.	59.5	148.8	240.7	343.9	528.5	613.5	591.6	238.2	150.8
3	n.a.	77.5	144.9	245.7	360.6	539.8	633.7	587.7	236.9	144.0
4	n.a.	71.3	136.3	247.0	391.9	539.8	643.9	585.8	199.9	142.0
5	n.a.	74.7	193.1	263.8	424.6	541.6	641.8	585.8	209.2	136.3
6	n.a.	77.5	198.8	265.1	385.6	536.0	639.8	556.8	208.0	133.5
7	n.a.	80.4	202.2	269.1	377.7	534.1	639.8	390.3	205.7	128.9
8	n.a.	70.6	205.7	267.7	340.9	534.1	643.9	490.2	198.8	126.1
9	n.a.	74.0	183.2	270.4	336.5	512.0	643.9	465.5	196.5	125.2
10	n.a.	75.4	170.3	273.1	336.5	523.0	530.4	453.4	192.0	122.5
11	n.a.	71.3	175.6	290.7	333.5	534.1	645.9	413.0	187.6	131.6
12	n.a.	68.6	158.9	290.7	330.6	545.4	645.9	387.2	186.5	129.8
13	n.a.	70.6	155.8	294.8	337.9	558.7	639.8	376.1	186.5	128.9
14	n.a.	62.7	149.8	294.8	342.4	549.2	643.9	342.4	185.4	127.9
15	n.a.	89.3	175.6	299.0	339.4	560.6	664.5	329.1	184.3	127.0
16	n.a.	95.6	182.1	301.8	377.7	566.4	687.7	313.2	183.2	126.1
17	n.a.	74.0	158.9	301.8	385.6	570.2	683.4	310.3	181.0	124.3
18	n.a.	73.3	144.9	304.6	385.6	583.8	672.9	307.5	179.9	123.4
19	n.a.	92.4	141.1	308.9	388.8	562.5	660.4	292.1	179.9	121.6
20	n.a.	75.4	165.0	313.2	387.2	545.4	666.6	277.1	169.2	119.0
21	n.a.	69.2	181.0	317.5	395.2	537.9	643.9	282.5	171.3	110.3
22	n.a.	71.3	155.8	317.5	479.6	530.4	635.7	265.1	170.3	109.5
23	n.a.	74.0	169.2	321.8	483.1	512.0	635.7	263.8	169.2	109.5
24	n.a.	79.7	193.1	320.3	401.6	515.6	643.9	261.2	168.2	108.6
25	n.a.	66.6	182.1	327.6	499.2	519.3	645.9	250.8	171.3	106.1
26	n.a.	64.6	189.8	324.7	502.9	534.1	652.1	236.9	167.1	105.3
27	n.a.	80.4	202.2	329.1	502.9	547.3	656.2	245.7	166.1	101.2
28	n.a.	98.7	198.8	330.6	502.9	554.9	631.6	241.9	166.1	100.4
29	n.a.	133.5	225.9	333.5	493.8	564.4	603.5	240.7	164.0	99.6
30	66.6	136.3	230.8	336.5	512.0	576.0	593.6	240.7	155.8	99.6
31		143.0		340.9	517.5		587.7		154.8	98.7
Total	n.a.	2516.2	5262.8	9173.6	12539.7	16272.8	19762.9	11187.9	5772.3	3770.4
Mean	n.a.	81.2	175.4	295.9	404.5	542.4	637.5	372.9	186.2	121.6

Table 2(2) Discharge Record at NZONGO and ZANA

Station : ZANA, MPOKO river Unit : m³/sec

	1996								1997
Date	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
1	n.a.	33.4	95.6	n.a.	n.a.	256.4	n.a.	87.1	52.5
2	n.a.	32.8	106.6	n.a.	n.a.	259.8	n.a.	85.1	51.7
3	23.2	43.5	91.0	n.a.	253.1	n.a.	n.a.	82.8	51.4
4	19.4	45.9	78.1	n.a.	241.6	n.a.	n.a.	81.3	50.6
5	19.8	131.6	91.0	n.a.	253.1	270.8	n.a.	79.5	49.5
6	21.0	137.7	86.1	n.a.	233.5	254.7	n.a.	78.1	48.0
7	20.1	75.3	92.0	n.a.	224.1	248.1	n.a.	76.7	47.7
8	18.0	97.1	79.0	n.a.	219.4	238.3	n.a.	75.8	47.0
9	17.1	99.2	77.6	n.a.	206.5	233.5	n.a.	74.9	46.6
10	17.8	95.1	97.1	n.a.	196.8	238.3	n.a.	n.a.	45.9
11	21.5	84.2	103.4	n.a.	192.4	246.5	n.a.	n.a.	45.2
12	20.1	80.4	95.6	n.a.	204.2	258.1	n.a.	n.a.	45.9
13	28.0	68.7	92.0	n.a.	219.4	259.8	n.a.	n.a.	45.2
14	23.7	59.5	156.6	n.a.	222.5	251.4	117.1	65.3	48.8
15	18.7	51.7	175.5	n.a.	240.0	237.5	114.8	68.7	47.7
16	16.9	43.1	n.a.	n.a.	248.1	253.1	112.0	67.8	47.0
17	18.9	41.1	n.a.	n.a.	251.4	249.8	108.7	67.0	45.9
18	24.7	43.1	n.a.	n.a.	236.7	238.3	104.4	66.1	45.2
19	29.9	39.1	n.a.	n.a.	219.4	235.9	103.4	65.3	43.8
20	22.2	91.0	n.a.	n.a.	208.7	225.6	102.8	64.4	43.1
21	21.0	89.0	n.a.	n.a.	204.2	201.2	101.3	63.6	42.4
22	20.1	99.2	n.a.	n.a.	199.0	195.4	100.2	61.9	41.7
23	19.4	103.4	n.a.	n.a.	196.8	199.8	97.1	60.7	41.1
24	19.1	115.4	n.a.	n.a.	195.4	199.0	96.1	59.9	39.8
25	19.1	115.4	n.a.	n.a.	201.2	199.8	95.1	58.7	39.1
26	19.6	103.9	n.a.	n.a.	210.2	216.3	92.0	57.9	38.4
27	24.0	131.6	n.a.	244.8	228.8	212.5	90.0	57.1	37.8
28	49.9	116.5	n.a.	246.5	219.4	208.7	87.1	56.7	37.2
29	36.2	103.4	n.a.	258.1	222.5	207.2	86.1	55.9	36.8
30	80.9	106.6	n.a.	259.8	240.0	205.0	89.0	54.8	37.2
31	36.2		n.a.	261.4		n.a.		53.2	36.5
Total	726.3	2477.7	1517.2	1270.6	6188.3	6500.8	1697.3	1826.4	1376.5
Mean	25.0	82.6	101.1	254.1	221.0	232.2	99.8	67.6	44.4

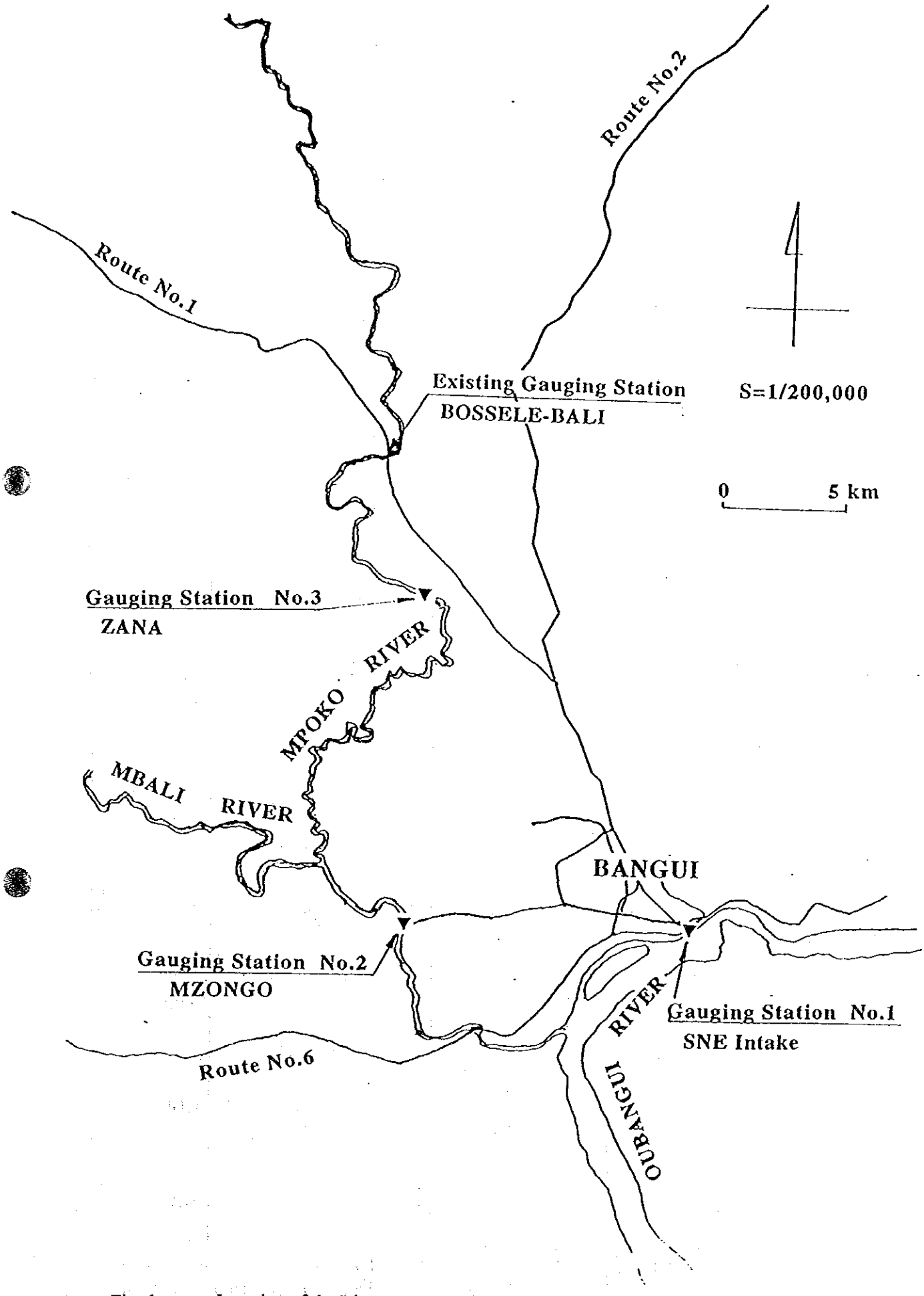

Fig. 1 Location of the River Flow Gauging Stations

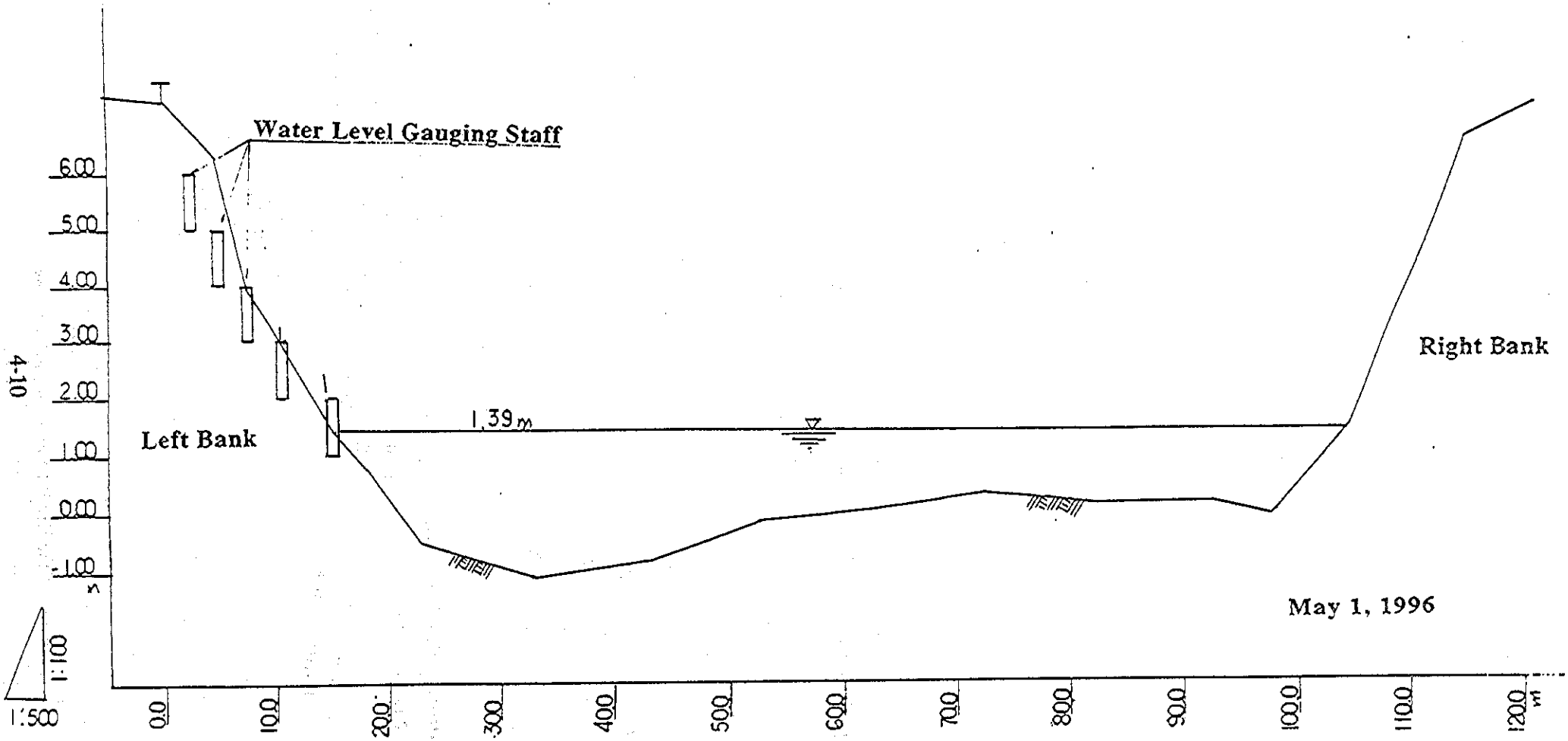

Fig. 2(1) Cross Section of the M'POKO River at NZONGO and ZANA

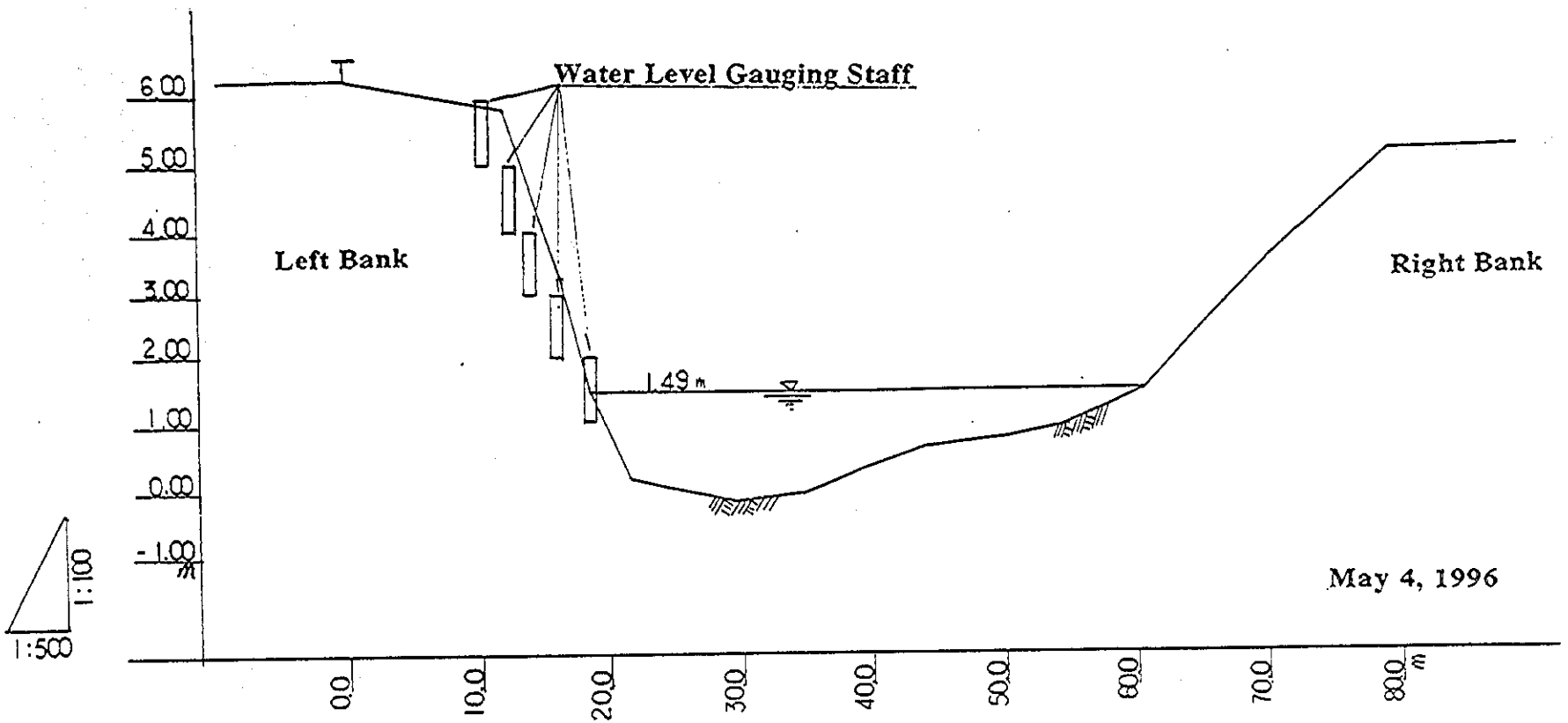

Fig. 2(2) Cross Section of the M'POKO River at NZONGO and ZANA

Gauging Station : NZONGO

Date	WL(m)	Q(m³/sec)
May 1, 1996	1.39	55.8
Sept. 4, 1996	5.15	547.0
Oct. 17, 1996	5.85	662.0
Nov. 12, 1996	4.28	394.0
Jan. 13, 1997	2.20	142.0

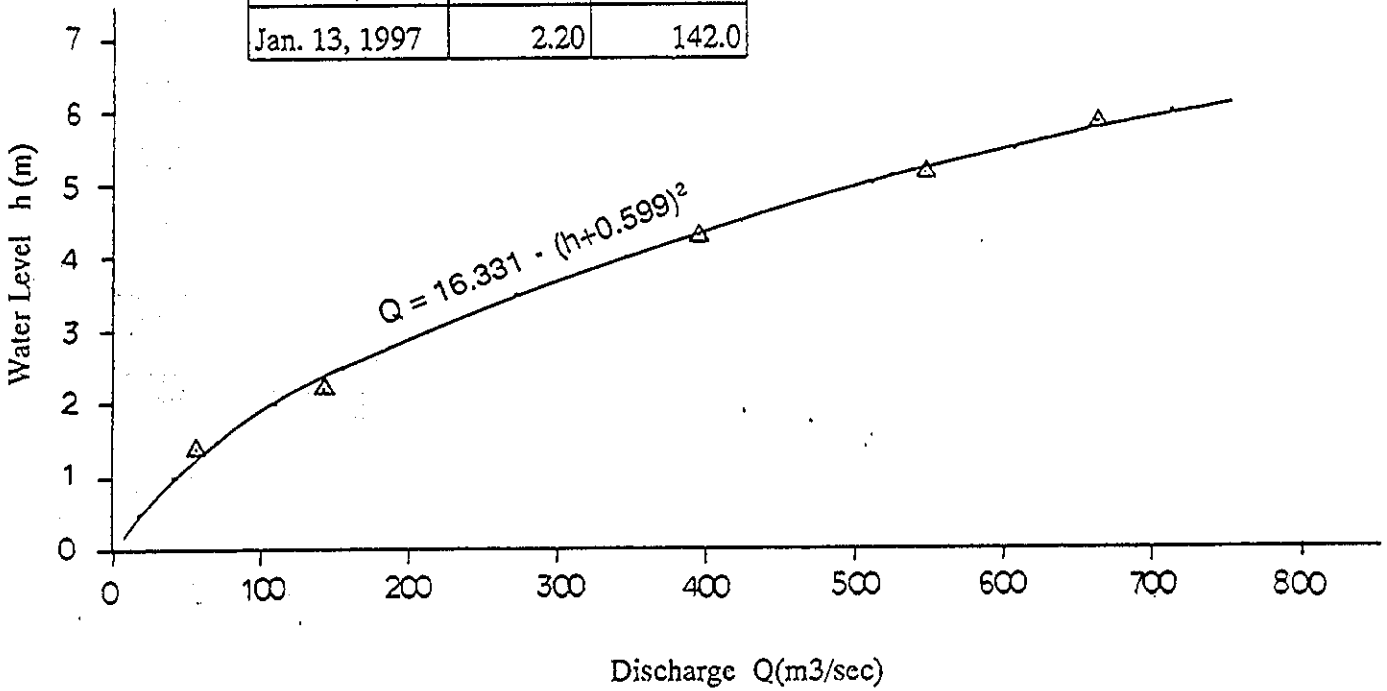

Fig. 3(1) Rating Curve of the M'POKO River at NZONGO and ZANA

Gauging Station : ZANA

Date	WL(m)	Q(m³/sec)
May 4, 1996	1.49	15.7
Sept. 5, 1996	5.70	226.0
Oct. 18, 1996	5.70	241.0
Nov. 13, 1996	3.96	119.0
Dec. 17, 1996	2.94	72.5
Jan. 14, 1997	2.48	52.3

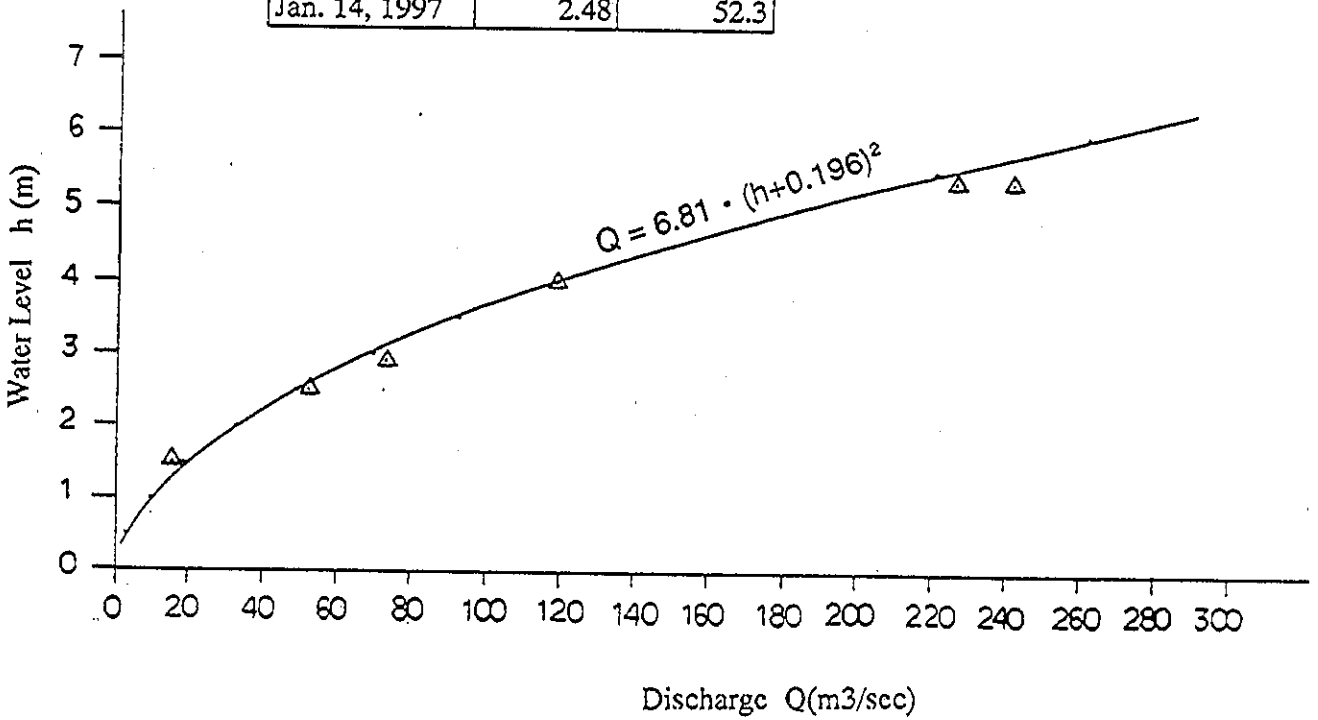

Fig. 3(2) Rating Curve of the M'POKO River at NZONGO and ZANA

b = 2.4005

a = 20.1838

r = 0.9657

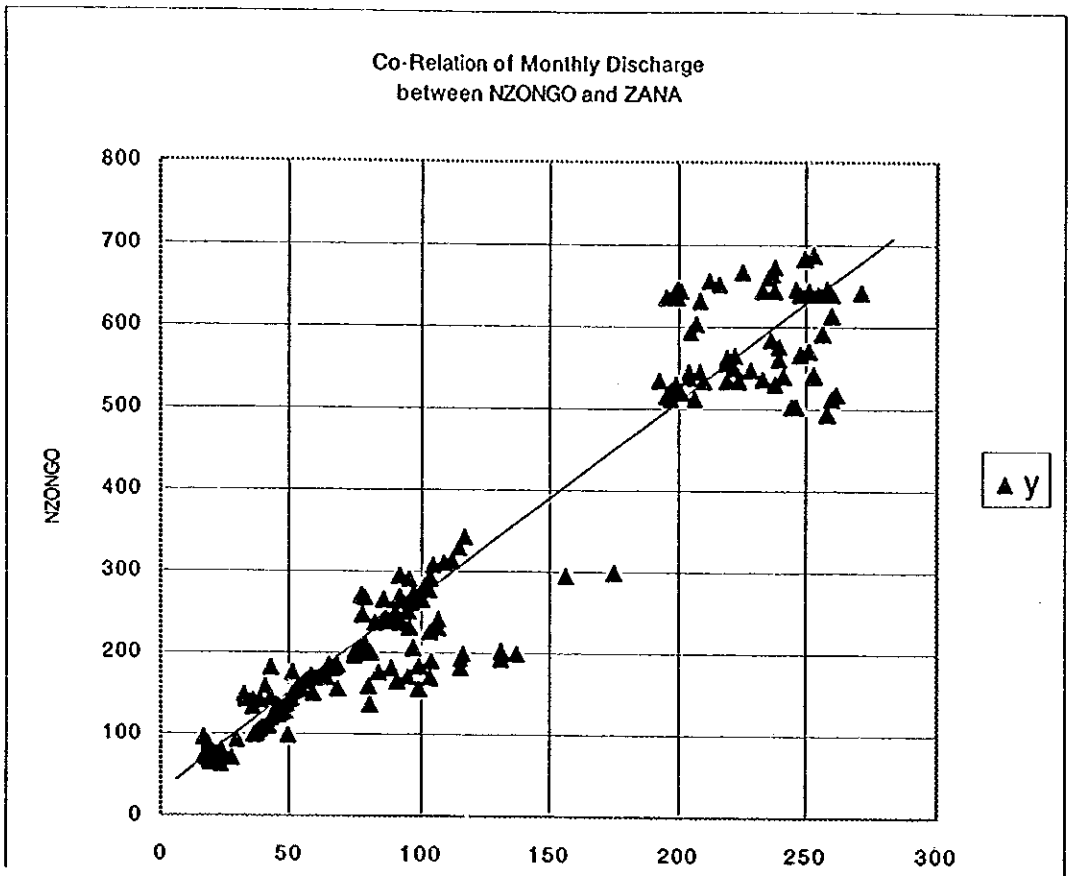

Fig. 4 Correlation of Monthly Discharge between NZONGO and ZANA

5. BOALI DAM

WATER BALANCE CALCULATION

5. BOALI Dam Water Balance Calculation

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1. Objectives

The objectives herein are to simulate inflow discharge to the BOALI Dam constructed at BOALI on the MBALI river, to study the dam water balance for 35 years from 1964 to 1998, to analyze frequency of shortage occurrence in water supply from the dam, and to prepare basic data for estimation of probable drought discharge of the MBALI river. The basic discharge to be released from the Dam is decided to be the minimum required discharge for electric power generation or 20 m3/sec and 25 m3/sec.

2. River Basin

Location	:	Latitude N 4 ° 50' – N 5 ° 50', Longitude E 17 ° 00' – E 18 ° 05'
Altitude	:	approximately 550 m – 700 m
Catchment Area	:	4,560 km2 (BOALI, MBALI river)
Annual Rainfall	:	about 1,540 mm (BOSSEMBELE, average of 1964 - 1998)

In the river basin, the tropical savanna climate is predominant (the dry season: December – January, the rainy season: March - November). There exists no steep mountainous area but comparatively gentle slope hilly areas in topography. The Precambrian metamorphic rocks are regarded as the main base rocks over the region including the basin from geological viewpoint. Laterite and lateritic soil cover mainly the region. From morphological point of view, the river system is considered in natural condition. Large scale water intake is not seen. The BOALI dam, which was completed in November 1990, made it possible to supply 20m3/s to the BOALI Power Plant I and II even in the dry season after August 1991.

3. Analysis Method

(1) BOALI Dam Water Balance

On condition that required water released from the BOALI dam for power generation be 20m3/s and 25m3/s, frequency of shortage in water source is studied. Related data process is as below.

a. Inflow to the dam as input data or daily discharge Qin (Qi)

1964 – 1984 :

MUBALI monthly mean discharge is assumed daily discharge of the month.

(Daily discharge data are not available.)

1985 – Oct. 1990 :

MUBALI-ICOT observed daily discharge is employed when available, and

calculated discharge by the Tank Model is used for periods without observed data.

Nov. 1990 – Oct. 1992 :

The dam operation being performed, ICOT discharge herein is outflow from the dam. The dam water level record is not existing or is not available, so Qin cannot be calculated by

method in the following (3). From above, simulated value by the Tank Model is utilized as Qin.

Nov. 1992 – 1998 :

Qin derived from the dam water level and ICOT discharge (ref. to (3) below) is selected.

b. To estimate rainfall over the reservoir water surface, monthly rainfall (1964 - 1984) and daily rainfall (1985 - 1998) at BOSSEMBELE are used. For periods of no observation, daily rainfall is supplemented through correlation with that at BANGUI-MPOKO.

c. Evaporation from the reservoir water surface is calculated from mean monthly evaporation (1991, 1992 and 1994) at BOSSEMBELE multiplied by the evaporation factor.

d. Infiltration is neglected in the study. The ICOT discharge includes surface water coming out from underground and dam body. Underground water originating from the reservoir storage water is considered negligible small (The following method in (3) does not require infiltration item.).

Basic formula of the Water Balance

$Vj = Vj\text{-}1 + Vin - Vout + P - E - I$

where,

Vj	: reserved water volume on j day (m^3)
Vin	: inflow discharge to the reservoir (m^3/d), Vin = Qin * 86400
Vout	: outflow discharge from the reservoir (m^3/d), Vout = Qout * 86400
P	: precipitation over the reservoir (m^3/d), P = P (mm) * A/1000
E	: evaporation from the reservoir (m^3/d), E = Ke * E (mm) * A/1000
I	: infiltration from the reservoir, neglected in the study
Qin, Qi	: inflow discharge to the reservoir (m^3/s)
Qout, Qo	: outflow discharge from the reservoir (m^3/s)
S	: reservoir water surface area (m^2), A = f (H)
Ke	: evaporation factor, 0.8 in the study
WL	: reservoir water level (m), WL = H + 548.50
H	: reservoir water depth above EL.548.50 m (m), H = f (V)

H – A and H – V relations are presented below and in Fig.1.

$A = f(H) = 58727 * H\text{^}1.98569$

$V = f(H) = 68163 * H\text{^}2.59972$

$H = f(V) = (V / 68163)\text{^}(1 / 2.59972)$

In the water balance computation, input data are Qin, P and E, and outputs are Qout and WL.

$Qout = Qof + Qv$

Qof = 120 * Hof^1.5 (WL > 572.00 or Hof > 0)
Qof = 0 (WL < = 572.00)
Qg = 0 (Qof >= Qb)
Qg = Qb – Qof (Qof < Qb)

However, when WL < LWL + 1.00 、 Qg = Qin

where,

Qof :overflow from spillway (m^3/s)
Qg :released flow through control gate (m^3/s)
Hof :overflow water depth above spillway crest (m), Hof = WL – 572.00
Qb :basic outflow discharge, 2 cases of $20m^3/s$ and $25m^3/s$
LWL : required lowest water level for power generation : 552.00m

In the dam inflow calculation, Qin is derived from the reservoir water level record WL, Qout (ICOT observed discharge), P and E.

(2) MBALI River Runoff Analysis

In order to obtain daily discharge at BOALI, long term low-flow runoff analysis on daily basis is performed for a period from 1985 to 1998.

Supplement of data before the dam completion :

January - June, 1985, February, March and August, 1986, December, 1988

Estimation of the dam inflow :

November 1990 – October 1992

Selected is the Tank Model method, which has many experiences and fine performance both in Japan and abroad with good reputation. According to the manuals by Dr. Sugawara, good result can be obtained by 4 tanks in wet region like in Japan and 4 zones x 4 strata tanks is useful and recommendable for semi-arid region and such region that have the dry season. The structure of 4 x 4 tanks is selected in the study. Parameters decided through trial and error method are shown in Fig.2. Daily rainfall as input data is weighted average of BOSSEMBELE rainfall and BANGUI-M'POKO rainfall. The results of calculation by the Tank Model are illustrated in Fig.3.

(3) Dam Inflow Calculation

In use of the dam water level data for the period from November 1992 to the end of 1998, stored water volume and reservoir water surface can be calculated. The dam inflow Qin is computed from the dam water level together with the dam outflow Qout or ICOT observed value for the period. Though it is also possible to use discharge record at the dam outlet as Qout, ICOT discharge is judged more reliable (for example, in comparison of 1993 values). The dam inflow calculated first is smoothed as 5-day moving average. A sample of the calculation sheet is seen in Table 1 and its

result is presented in Table 2.

4. Results of Analysis

As for the BOALI dam water balance for 35 years from 1964 to 1998, a sample calculation sheet is shown in Table 3, and the results are illustrated in Fig.4 and Fig.5 and are summarized in Table 4, Fig.6 and Fig.7. There occur no water shortage in case of basic release discharge Qb of 20 m^3/s. The water shortage happens in two years of 1988 and 1990 in case of Qb of 25 m^3/s. For Qb of 20 m^3/s, return period of the event is estimated more than 20 – 30 years or safety rate more than 95 % (risk rate less than 5 %). For Qb of 20 m^3/s, recurrence interval of the water shortage is considered around 15 – 20 years or 94 % of safety rate more or less (risk rate : about 6 %).

5. Consideration

In view of the 35 years water balance simulation from 1964 to 1998, the followings are known. The first period of late 1960s is an ample water period comparatively with less dependability on the dam. In the 1970s, Qin is often lower than Qb but the reservoir water level does not go down so much. In the 1980s, runoff as well as rainfall of the basin decreases considerably, resulting in remarkable trend of water shortage and droughts. The dam water level often goes down to quite low level. The drought condition is recovered to certain extent in the 1990s.

In calibration of the Tank Model, both good fitting years and less fitting years are found. This is considered an inevitable matter, because only one rainfall station exists in the broad basin and one station locates far outside of the basin among such rainfall stations as have useful and available data. In the course to decide model structure and parameter, stress was placed on the fitting of hydrograph in drought period, of which influence to the dam water level depression is more serious.

Table 1 Sample of BOALI Dam Inflow Calculation (1993)

Boali Dam Inflow (Qin) derived from Reservoir Water Level and Outflow (Q-ICOT)

Year : 1993

Month	Date	WL	V	dV	Q-ICOT	Vout	A	P	E	Vin	Qin	Qin(mv.av.)
		m	10^3m^3	10^3m^3	m^3/s	10^3m^3	10^3m^3	10^3m^3	10^3m^3	10^3m^3	m^3/s	m^3/s
		572.40	261,215				32,056				Qi-c	
Jan.	1	572.39	260,930	-284	30.9	2,670	32,029	0	128	2,514	29.1	28.2
	2	572.39	260,930	0	30.8	2,661	32,029	0	128	2,789	32.3	29.3
	3	572.39	260,930	0	30.3	2,618	32,029	0	128	2,746	31.8	31.3
	4	572.39	260,930	0	30.2	2,609	32,029	0	128	2,737	31.7	31.7
	5	572.39	260,930	0	30.1	2,601	32,029	0	128	2,729	31.6	30.7
	6	572.39	260,930	0	29.6	2,557	32,029	0	128	2,686	31.1	29.6
	7	572.38	260,647	-284	29.4	2,540	32,003	0	128	2,384	27.6	28.8
	8	572.37	260,363	-284	27.7	2,393	31,976	0	128	2,238	25.9	27.3
	9	572.37	260,363	0	26.5	2,290	31,976	0	128	2,418	28.0	26.4
	10	572.36	260,079	-283	25.8	2,229	31,950	0	128	2,074	24.0	25.4
	11	572.36	260,079	0	25.1	2,169	31,950	0	128	2,296	26.6	24.8
	12	572.35	259,796	-283	24.5	2,117	31,923	0	128	1,961	22.7	24.3
	13	572.34	259,513	-283	24.4	2,108	31,896	0	128	1,953	22.6	24.6
	14	572.34	259,513	0	24.3	2,100	31,896	0	128	2,227	25.8	24.3
	15	572.34	259,513	0	23.8	2,056	31,896	0	128	2,184	25.3	24.1
	16	572.34	259,513	0	23.7	2,048	31,896	0	128	2,175	25.2	24.5
	17	572.33	259,230	-283	23.6	2,039	31,870	0	128	1,884	21.8	24.3
	18	572.33	259,230	0	23.1	1,996	31,870	0	127	2,123	24.6	24.0
	19	572.33	259,230	0	23.0	1,987	31,870	0	127	2,115	24.5	23.7
	20	572.33	259,230	0	22.4	1,935	31,870	0	127	2,063	23.9	23.3
	21	572.33	259,230	0	22.3	1,927	31,870	0	127	2,054	23.8	23.0
	22	572.32	258,947	-283	21.8	1,884	31,843	0	127	1,728	20.0	22.0
	23	572.32	258,947	0	21.6	1,866	31,843	0	127	1,994	23.1	21.7
	24	572.31	258,665	-283	21.1	1,823	31,817	0	127	1,668	19.3	20.3
	25	572.31	258,665	0	20.8	1,797	31,817	0	127	1,924	22.3	20.1
	26	572.30	258,383	-282	18.5	1,598	31,790	0	127	1,443	16.7	19.5
	27	572.30	258,383	0	17.8	1,538	31,790	0	127	1,665	19.3	19.6
	28	572.30	258,383	0	18.3	1,581	31,790	0	127	1,708	19.8	18.3
	29	572.30	258,383	0	18.3	1,581	31,790	0	127	1,708	19.8	18.8
	30	572.29	258,101	-282	17.7	1,529	31,764	0	127	1,374	15.9	16.5
	31	572.29	258,101	0	17.7	1,529	31,764	0	127	1,656	19.2	17.0
Feb.	1	572.29	258,101	0	17.7	1,529	31,764	978	127	678	7.8	18.4
	2	572.29	258,101	0	23.1	1,996	31,764	178	127	1,945	22.5	18.9
	3	572.30	258,383	282	21.7	1,875	31,790	0	127	2,284	26.4	19.6
	4	572.29	258,101	-282	21.1	1,823	31,764	57	127	1,611	18.6	22.5
	5	572.29	258,101	0	21.0	1,814	31,764	0	127	1,941	22.5	21.8
	6	572.29	258,101	0	21.0	1,814	31,764	0	127	1,941	22.5	20.2
	7	572.28	257,819	-282	20.9	1,806	31,737	0	127	1,651	19.1	20.7
	8	572.27	257,537	-282	20.3	1,754	31,711	0	127	1,599	18.5	19.7
	9	572.27	257,537	0	19.6	1,693	31,711	0	127	1,820	21.1	19.1
	10	572.26	257,255	-282	18.9	1,633	31,684	0	127	1,478	17.1	18.6
	11	572.26	257,255	0	18.3	1,581	31,684	0	127	1,708	19.8	19.1
	12	572.25	256,974	-281	18.3	1,581	31,658	0	127	1,426	16.5	18.0
	13	572.25	257,086	113	18.3	1,581	31,668	0	127	1,820	21.1	17.9
	14	572.24	256,693	-394	18.8	1,624	31,631	0	127	1,357	15.7	17.9
	15	572.23	256,412	-281	18.3	1,581	31,605	0	127	1,427	16.5	17.8
	16	572.23	256,412	0	18.3	1,581	31,605	0	126	1,708	19.8	16.4
	17	572.22	256,131	-281	17.6	1,521	31,578	0	126	1,366	15.8	19.0
	18	572.20	255,570	-561	19.2	1,659	31,525	0	126	1,224	14.2	19.3
	19	572.22	256,131	561	20.8	1,797	31,578	0	126	2,484	28.8	18.8
	20	572.21	255,850	-281	19.7	1,702	31,552	0	126	1,548	17.9	19.4
	21	572.20	255,570	-280	18.9	1,633	31,525	0	126	1,479	17.1	19.9
	22	572.20	255,570	0	17.7	1,529	31,525	0	126	1,655	19.2	17.5
	23	572.19	255,290	-280	18.3	1,581	31,499	0	126	1,427	16.5	16.6
	24	572.18	255,009	-280	18.7	1,616	31,473	0	126	1,462	16.9	17.1
	25	572.16	254,450	-560	18.3	1,581	31,420	0	126	1,147	13.3	16.4
	26	572.16	254,450	0	18.0	1,555	31,420	0	126	1,681	19.5	16.2
	27	572.15	254,170	-279	17.7	1,529	31,394	0	126	1,375	15.9	15.2
	28	572.14	253,891	-279	17.2	1,486	31,367	0	126	1,332	15.4	15.5
Mar.	1	572.12	253,333	-558	17.0	1,469	31,315	0	125	1,036	12.0	15.6
	2	572.11	253,054	-279	18.6	1,607	31,288	191	125	1,263	14.6	15.0
	3	572.11	253,054	0	18.6	1,607	31,288	0	125	1,732	20.0	14.7
	4	572.09	252,497	-557	18.0	1,555	31,236	0	125	1,123	13.0	15.4
	5	572.07	251,941	-556	19.0	1,642	31,183	0	125	1,210	14.0	15.2
	6	572.05	251,386	-555	20.2	1,745	31,131	0	125	1,315	15.2	7.8
	7	572.03	250,831	-555	18.7	1,616	31,078	0	125	1,186	13.7	9.2
	8	572.02	250,554	-277	18.1	1,564	31,052	2,859	124	-1,448	-16.8	9.8
	9	572.02	250,554	0	18.6	1,607	31,052	0	124	1,731	20.0	10.0
	10	572.01	250,277	-277	18.5	1,598	31,026	0	124	1,446	16.7	11.0
	11	572.00	250,001	-277	18.0	1,555	30,999	0	124	1,403	16.2	17.0
	12	572.00	250,001	0	17.2	1,486	30,999	0	124	1,610	18.6	14.6
	13	571.99	249,724	-276	15.2	1,313	30,973	0	124	1,161	13.4	13.9

Year : 1993

Month	Date	WL	V	dV	Q-ICOT	Vout	A	P	E	Vin	Qin	Qin(mv.av.)
		m	10^3m^3	10^3m^3	m^3/s	10^3m^3	10^3m^2	10^3m^3	10^3m^3	10^3m^3	m^3/s	m^3/s
	14	571.97	249,172	-552	13.1	1,132	30,921	0	124	703	8.1	13.4
	15	571.97	249,172	0	11.7	1,011	30,921	0	124	1,135	13.1	13.5
	16	571.96	248,896	-276	15.7	1,356	30,895	37	124	1,167	13.5	12.6
	17	571.96	248,896	0	17.8	1,538	30,895	0	124	1,661	19.2	14.7
	18	571.93	248,069	-827	17.0	1,469	30,816	0	124	766	8.9	14.8
	19	571.93	248,069	0	17.1	1,477	30,816	0	123	1,601	18.5	15.4
	20	571.91	247,519	-550	18.6	1,607	30,764	0	123	1,180	13.7	14.0
	21	571.90	247,244	-275	18.3	1,581	30,738	0	123	1,429	16.5	14.7
	22	571.88	246,695	-549	17.3	1,495	30,686	0	123	1,069	12.4	14.8
	23	571.86	246,147	-548	17.1	1,477	30,634	0	123	1,052	12.2	13.9
	24	571.86	246,147	0	17.9	1,547	30,634	0	123	1,669	19.3	13.9
	25	571.83	245,326	-821	17.0	1,469	30,556	0	123	770	8.9	13.6
	26	571.82	245,053	-273	18.5	1,598	30,530	0	122	1,447	16.8	14.0
	27	571.79	244,234	-819	18.9	1,633	30,452	0	122	936	10.8	12.9
	28	571.78	243,962	-273	15.9	1,374	30,426	0	122	1,223	14.2	13.1
	29	571.76	243,417	-544	18.8	1,624	30,374	0	122	1,202	13.9	12.2
	30	571.74	242,873	-544	17.6	1,521	30,322	231	121	868	10.0	12.2
	31	571.72	242,330	-543	17.0	1,469	30,270	0	121	1,047	12.1	11.5
Apr.	1	571.70	241,788	-542	16.0	1,382	30,219	0	97	937	10.8	9.7
	2	571.68	241,247	-542	15.5	1,339	30,167	0	97	894	10.4	9.4
	3	571.65	240,436	-811	17.5	1,512	30,089	338	97	460	5.3	9.7
	4	571.63	239,896	-540	13.6	1,175	30,038	0	96	732	8.5	9.4
	5	571.62	239,627	-270	15.7	1,356	30,012	0	96	1,183	13.7	11.3
	6	571.61	239,357	-269	19.3	1,668	29,986	723	96	771	8.9	12.2
	7	571.61	239,357	0	19.5	1,685	29,986	42	96	1,739	20.1	15.0
	8	571.58	238,550	-807	18.2	1,572	29,909	21	96	841	9.7	16.1
	9	571.59	238,819	269	19.8	1,711	29,935	108	96	1,968	22.8	17.2
	10	571.58	238,550	-269	21.0	1,814	29,909	0	96	1,641	19.0	15.5
	11	571.58	238,550	0	20.8	1,797	29,909	661	96	1,232	14.3	17.4
	12	571.55	237,745	-805	19.9	1,719	29,832	0	96	1,010	11.7	16.1
	13	571.54	237,477	-268	21.4	1,849	29,806	0	95	1,676	19.4	15.5
	14	571.52	236,942	-536	21.1	1,823	29,755	0	95	1,383	16.0	15.2
	15	571.50	236,407	-535	21.0	1,814	29,703	0	95	1,375	15.9	16.6
	16	571.47	235,606	-801	21.0	1,814	29,627	6	95	1,103	12.8	13.9
	17	571.46	235,339	-267	21.0	1,814	29,601	0	95	1,643	19.0	16.5
	18	571.42	234,275	-1,064	20.8	1,797	29,499	343	95	484	5.6	17.4
	19	571.45	235,073	798	19.1	1,650	29,575	0	94	2,543	29.4	17.0
	20	571.45	235,073	0	18.9	1,633	29,575	0	95	1,728	20.0	15.9
	21	571.42	234,275	-798	18.9	1,633	29,499	0	95	930	10.8	18.2
	22	571.40	233,744	-531	18.9	1,633	29,448	0	94	1,196	13.8	14.9
	23	571.39	233,479	-265	18.9	1,633	29,422	0	94	1,462	16.9	15.4
	24	571.38	233,214	-265	18.6	1,607	29,397	327	94	1,110	12.8	15.9
	25	571.40	233,744	530	15.4	1,331	29,448	0	94	1,955	22.6	15.9
	26	571.38	233,214	-530	18.1	1,564	29,397	0	94	1,128	13.1	15.1
	27	571.36	232,684	-530	19.0	1,642	29,346	0	94	1,206	14.0	17.0
	28	571.34	232,155	-529	20.8	1,797	29,295	232	94	1,130	13.1	15.6
	29	571.34	232,155	0	21.0	1,814	29,295	0	94	1,908	22.1	16.8
	30	571.32	231,627	-528	21.0	1,814	29,244	0	94	1,380	16.0	16.6
May	1	571.31	231,363	-264	21.0	1,814	29,218	0	94	1,644	19.0	17.1
	2	571.28	230,573	-790	21.0	1,814	29,142	0	93	1,118	12.9	16.1
	3	571.27	230,310	-263	20.0	1,728	29,117	239	93	1,319	15.3	16.5
	4	571.26	230,047	-263	19.5	1,685	29,091	0	93	1,515	17.5	15.0
	5	571.25	229,784	-263	19.6	1,693	29,066	0	93	1,524	17.6	14.7
	6	571.22	228,997	-787	19.6	1,693	28,990	0	93	1,000	11.6	21.3
	7	571.19	228,212	-785	19.6	1,693	28,914	0	93	1,001	11.6	14.0
	8	571.28	230,573	2,361	19.6	1,693	29,142	0	93	4,147	48.0	10.3
	9	571.15	227,168	-3,405	19.5	1,685	28,813	0	93	-1,627	-18.8	11.4
	10	571.13	226,647	-521	19.0	1,642	28,762	1,282	92	-69	-0.8	11.3
	11	571.12	226,386	-260	18.9	1,633	28,737	0	92	1,465	17.0	4.4
	12	571.09	225,607	-780	18.9	1,633	28,661	0	92	945	10.9	11.6
	13	571.07	225,088	-519	18.9	1,633	28,611	0	92	1,206	14.0	13.3
	14	571.06	224,829	-259	18.9	1,633	28,586	0	92	1,465	17.0	14.5
	15	571.02	223,794	-1,035	18.9	1,633	28,485	26	91	664	7.7	15.1
	16	571.03	224,052	258	18.9	1,633	28,510	0	91	1,983	22.9	15.1
	17	571.01	223,535	-517	18.7	1,616	28,460	0	91	1,190	13.8	14.9
	18	570.99	223,019	-516	20.2	1,745	28,410	85	91	1,235	14.3	16.3
	19	570.97	222,504	-515	20.9	1,806	28,360	0	91	1,381	16.0	14.4
	20	570.95	221,990	-514	21.0	1,814	28,310	122	91	1,269	14.7	14.8
	21	570.92	221,219	-770	21.0	1,814	28,235	0	91	1,135	13.1	14.6
	22	570.90	220,707	-513	21.0	1,814	28,185	0	90	1,392	16.1	14.9
	23	570.87	219,939	-768	21.0	1,814	28,110	25	90	1,112	12.9	14.4
	24	570.86	219,684	-256	20.9	1,806	28,085	124	90	1,517	17.6	14.9
	25	570.83	218,918	-765	20.4	1,763	28,010	0	90	1,087	12.6	14.5
	26	570.81	218,409	-509	20.3	1,754	27,960	0	90	1,334	15.4	15.5
	27	570.79	217,900	-509	20.3	1,754	27,910	137	89	1,198	13.9	14.6

Year : 1993

Month	Date	WL	V	dV	Q=(dV/dT)	Vout	A	P	E	Vin	Qin	Qin(mv.av.)
		m	10^3m^3	10^3m^3	m^3/s	10^3m^3	10^3m^2	10^3m^3	10^3m^3	10^3m^3	m^3/s	m^3/s
	28	570.78	217,646	-254	20.3	1,754	27,886	17	89	1,572	18.2	15.7
	29	570.76	217,138	-508	20.3	1,754	27,836	237	89	1,099	12.7	17.2
	30	570.75	216,885	-254	20.3	1,754	27,811	8	89	1,581	18.3	17.3
	31	570.76	217,138	254	20.3	1,754	27,836	136	89	1,960	22.7	18.3
June	1	570.74	216,632	-507	20.2	1,745	27,786	50	89	1,277	14.8	20.6
	2	570.75	216,885	253	20.2	1,745	27,811	83	89	2,004	23.2	21.8
	3	570.76	217,138	254	20.2	1,745	27,836	0	89	2,088	24.2	19.8
	4	570.77	217,392	254	20.2	1,745	27,861	0	89	2,088	24.2	19.9
	5	570.77	217,392	0	20.2	1,745	27,861	744	89	1,091	12.6	19.3
	6	570.76	217,138	-254	20.2	1,745	27,836	242	89	1,338	15.5	18.6
	7	570.76	217,138	0	20.2	1,745	27,836	100	89	1,734	20.1	17.7
	8	570.76	217,138	0	19.9	1,719	27,836	39	89	1,769	20.5	19.1
	9	570.76	217,138	0	19.0	1,642	27,836	22	89	1,708	19.8	21.2
	10	570.76	217,138	0	18.9	1,633	27,836	42	89	1,680	19.4	23.4
	11	570.79	217,900	762	18.9	1,633	27,910	231	89	2,253	26.1	22.7
	12	570.83	218,918	1,018	18.9	1,633	28,010	25	89	2,715	31.4	20.0
	13	570.82	218,663	-255	18.9	1,633	27,985	0	90	1,468	17.0	20.9
	14	570.81	218,409	-255	18.9	1,633	27,960	957	90	511	5.9	20.0
	15	570.83	218,918	509	18.9	1,633	28,010	159	89	2,072	24.0	18.9
	16	570.85	219,428	510	18.3	1,581	28,060	300	90	1,881	21.8	21.7
	17	570.87	219,939	511	19.7	1,702	28,110	56	90	2,247	26.0	26.2
	18	570.90	220,707	768	21.1	1,823	28,185	0	90	2,681	31.0	28.8
	19	570.93	221,476	769	21.6	1,866	28,260	268	90	2,458	28.4	31.1
	20	570.98	222,762	1,286	21.0	1,814	28,385	0	90	3,191	36.9	33.2
	21	571.02	223,794	1,032	21.0	1,814	28,485	94	91	2,843	32.9	33.2
	22	571.07	225,088	1,294	21.7	1,875	28,611	71	91	3,189	36.9	34.5
	23	571.12	226,386	1,299	14.8	1,279	28,737	0	92	2,669	30.9	32.9
	24	571.16	227,429	1,042	21.5	1,858	28,838	0	92	2,992	34.6	32.0
	25	571.19	228,212	784	19.1	1,650	28,914	0	92	2,526	29.2	30.4
	26	571.22	228,997	785	18.3	1,581	28,990	0	93	2,459	28.5	28.8
	27	571.25	229,784	787	18.9	1,633	29,066	17	93	2,495	28.9	25.8
	28	571.26	230,047	263	18.9	1,633	29,091	29	93	1,960	22.7	21.1
	29	571.26	230,047	0	18.9	1,633	29,091	0	93	1,726	20.0	19.9
	30	571.26	230,047	0	18.9	1,633	29,091	1,260	93	466	5.4	17.9
Jul.	1	571.27	230,310	263	18.9	1,633	29,117	0	70	1,966	22.8	19.7
	2	571.27	230,310	0	18.9	1,633	29,117	96	70	1,607	18.6	19.1
	3	571.31	231,363	1,053	18.9	1,633	29,218	0	70	2,756	31.9	26.2
	4	571.31	231,363	0	18.9	1,633	29,218	245	70	1,458	16.9	26.8
	5	571.36	233,214	1,850	18.9	1,633	29,397	12	70	3,542	41.0	30.1
	6	571.40	233,744	530	18.9	1,633	29,448	0	71	2,234	25.9	27.5
	7	571.45	235,073	1,329	18.9	1,633	29,575	0	71	3,033	35.1	31.8
	8	571.50	236,407	1,334	18.9	1,633	29,703	1,417	71	1,621	18.8	27.0
	9	571.56	238,013	1,607	18.9	1,633	29,858	3	71	3,308	38.3	28.2
	10	571.59	238,819	806	18.9	1,633	29,935	1,063	72	1,448	16.8	29.5
	11	571.63	239,896	1,077	18.9	1,633	30,038	0	72	2,782	32.2	31.7
	12	571.70	241,788	1,892	18.9	1,633	30,219	18	72	3,579	41.4	27.8
	13	571.76	243,417	1,629	18.9	1,633	30,374	768	73	2,567	29.7	32.8
	14	571.83	245,326	1,909	18.9	1,633	30,556	1,989	73	1,625	18.8	36.2
	15	571.90	247,244	1,918	18.9	1,633	30,738	0	73	3,625	42.0	35.7
	16	571.99	249,724	2,480	19.7	1,702	30,973	0	74	4,256	49.3	40.8
	17	572.06	251,663	1,939	22.1	1,909	31,157	579	74	3,344	38.7	53.0
	18	572.15	254,170	2,507	26.9	2,324	31,394	128	75	4,778	55.3	48.5
	19	572.33	259,230	5,060	20.3	1,754	31,870	0	75	6,889	79.7	47.9
	20	572.32	258,947	-283	22.1	1,909	31,843	16	76	1,687	19.5	54.7
	21	572.37	260,363	1,415	31.2	2,696	31,976	210	76	3,977	46.0	57.1
	22	572.47	263,208	2,845	39.6	3,421	32,243	42	77	6,302	72.9	56.9
	23	572.53	264,924	1,716	49.2	4,251	32,403	222	77	5,822	67.4	66.4
	24	572.60	266,935	2,011	56.5	4,882	32,591	188	78	6,782	78.5	71.5
	25	572.63	267,800	865	61.4	5,305	32,671	430	78	5,818	67.3	70.3
	26	572.65	268,377	577	64.3	5,556	32,725	65	78	6,146	71.1	69.7
	27	572.65	268,377	0	66.3	5,728	32,725	0	79	5,807	67.2	66.3
	28	572.65	268,377	0	65.5	5,659	32,725	177	79	5,561	64.4	67.5
	29	572.65	268,377	0	65.0	5,616	32,725	399	79	5,295	61.3	66.6
	30	572.67	268,956	578	66.0	5,702	32,779	0	79	6,359	73.6	67.1
	31	572.68	269,245	289	67.7	5,849	32,806	456	79	5,762	66.7	71.1
Aug.	1	572.68	269,245	0	69.0	5,962	32,806	16	79	6,024	69.7	73.2
	2	572.71	270,114	869	73.2	6,324	32,887	0	79	7,273	84.2	77.3
	3	572.72	270,404	290	76.5	6,610	32,914	779	79	6,199	71.8	80.9
	4	572.75	271,276	872	83.0	7,171	32,995	3	79	8,119	94.0	82.5
	5	572.76	271,567	291	80.8	6,981	33,022	0	79	7,351	85.1	78.4
	6	572.75	271,276	-291	79.9	6,903	32,995	0	79	6,692	77.5	75.5
	7	572.75	271,276	0	79.5	6,869	32,995	1,458	79	5,490	63.5	72.8
	8	572.75	271,276	0	69.7	6,022	32,995	1,128	79	4,973	57.6	72.1
	9	572.75	271,276	0	80.8	6,981	32,995	102	79	6,958	80.5	72.3
	10	572.75	271,276	0	81.0	6,998	32,995	43	79	7,035	81.4	74.9

Year : 1993

Month	Date	WL	V	dV	Q-IGOT	Vout	A	P	E	Vin	Qin	Qin(mv.av.)
		m	10^3m^3	10^3m^3	m^3/s	10^3m^3	10^3m^2	10^3m^3	10^3m^2	10^3m^3	m^3/s	m^3/s
	11	572.75	271,276	0	77.5	6,696	32,995	0	79	6,775	78.4	76.4
	12	572.74	270,985	-291	75.6	6,532	32,968	0	79	6,320	73.2	74.3
	13	572.72	270,404	-581	74.3	6,420	32,914	0	79	5,918	68.5	71.2
	14	572.71	270,114	-290	72.4	6,255	32,887	0	79	6,044	70.0	70.5
	15	572.69	269,535	-580	72.0	6,221	32,833	16	79	5,704	66.0	75.0
	16	572.70	269,824	290	70.7	6,108	32,860	20	79	6,457	74.7	75.2
	17	572.75	271,276	1,452	78.0	6,739	32,995	0	79	8,270	95.7	75.7
	18	572.75	271,276	0	76.8	6,636	32,995	703	79	6,012	69.6	78.0
	19	572.74	270,985	-291	75.2	6,497	32,968	30	79	6,256	72.4	77.0
	20	572.74	270,985	0	76.5	6,610	32,968	0	79	6,689	77.4	72.4
	21	572.72	270,404	-581	75.7	6,540	32,914	0	79	6,039	69.9	69.9
	22	572.71	270,114	-290	75.2	6,497	32,887	0	79	6,286	72.8	68.1
	23	572.69	269,535	-580	70.2	6,065	32,833	645	79	4,920	56.9	66.6
	24	572.67	268,956	-579	70.4	6,083	32,779	92	79	5,490	63.5	63.3
	25	572.67	268,956	0	68.9	5,953	32,779	0	79	6,032	69.8	63.3
	26	572.66	268,666	-289	65.0	5,616	32,752	793	79	4,612	53.4	67.2
	27	572.67	268,956	289	68.4	5,910	32,779	3	79	6,274	72.6	72.8
	28	572.69	269,535	579	69.8	6,031	32,833	59	79	6,629	76.7	78.4
	29	572.73	270,695	1,160	76.9	6,644	32,941	0	79	7,883	91.2	87.7
	30	572.77	271,858	1,163	85.3	7,370	33,049	142	79	8,471	98.0	91.9
	31	572.80	272,733	874	90.8	7,845	33,130	172	79	8,627	99.9	97.1
Sept.	1	572.83	273,609	876	94.8	8,191	33,211	1,067	106	8,106	93.8	103.0
	2	572.85	274,194	585	97.2	8,398	33,266	242	106	8,847	102.4	110.2
	3	572.90	275,660	1,466	109.0	9,418	33,401	549	106	10,441	120.8	114.6
	4	572.95	277,131	1,471	116.0	10,022	33,537	0	107	11,600	134.3	123.3
	5	572.98	278,016	885	120.0	10,368	33,619	828	107	10,532	121.9	128.6
	6	573.00	278,607	591	129.0	11,146	33,674	0	108	11,844	137.1	130.7
	7	573.02	279,198	592	129.0	11,146	33,728	704	108	11,141	128.9	128.8
	8	573.02	279,198	0	130.0	11,232	33,728	3	108	11,337	131.2	130.3
	9	573.01	278,902	-296	130.0	11,232	33,701	263	108	10,781	124.8	128.5
	10	573.01	278,902	0	128.0	11,059	33,701	0	108	11,167	129.2	127.2
	11	573.01	278,902	0	127.0	10,973	33,701	0	108	11,081	128.2	126.5
	12	573.00	278,607	-296	125.0	10,800	33,674	13	108	10,599	122.7	125.7
	13	573.01	278,902	296	126.0	10,886	33,701	263	108	11,027	127.6	123.9
	14	573.00	278,607	-296	123.0	10,627	33,674	0	108	10,439	120.8	118.5
	15	573.00	278,607	0	120.0	10,368	33,674	88	108	10,388	120.2	115.0
	16	572.97	277,721	-886	116.0	10,022	33,592	502	108	8,742	101.2	110.2
	17	572.95	277,131	-590	111.0	9,590	33,537	17	107	9,091	105.2	103.4
	18	572.93	276,542	-589	109.0	9,418	33,483	0	107	8,936	103.4	99.1
	19	572.90	275,660	-882	106.0	9,158	33,401	871	107	7,513	87.0	97.5
	20	572.89	275,366	-294	102.0	8,813	33,374	77	107	8,549	98.9	95.1
	21	572.87	274,780	-587	98.4	8,502	33,320	0	107	8,022	92.8	92.3
	22	572.86	274,487	-293	95.5	8,251	33,293	17	107	8,048	93.1	89.9
	23	572.85	274,194	-293	91.6	7,914	33,266	0	107	7,728	89.4	85.3
	24	572.81	273,024	-1,169	88.1	7,612	33,157	73	106	6,476	74.9	82.9
	25	572.79	272,441	-584	84.7	7,318	33,103	285	106	6,555	75.9	80.6
	26	572.79	272,441	0	84.4	7,292	33,103	391	106	7,007	81.1	77.6
	27	572.78	272,149	-291	83.7	7,232	33,076	0	106	7,046	81.6	77.3
	28	572.77	271,858	-291	81.2	7,016	33,049	377	106	6,453	74.7	76.1
	29	572.75	271,276	-582	78.6	6,791	32,995	0	106	6,315	73.1	72.7
	30	572.73	270,695	-581	75.5	6,523	32,941	0	106	6,048	70.0	70.8
Oct.	1	572.72	270,404	-290	72.4	6,255	32,914	527	105	5,543	64.2	69.5
	2	572.72	270,404	0	71.1	6,143	32,914	0	105	6,248	72.3	66.9
	3	572.71	270,114	-290	69.9	6,039	32,887	3	105	5,851	67.7	66.4
	4	572.69	269,535	-580	68.7	5,936	32,833	263	105	5,198	60.2	64.9
	5	572.69	269,535	0	66.6	5,754	32,833	0	105	5,859	67.8	66.9
	6	572.68	269,245	-290	67.3	5,815	32,806	755	105	4,875	56.4	68.7
	7	572.71	270,114	869	71.0	6,134	32,887	0	105	7,109	82.3	71.1
	8	572.72	270,404	290	72.0	6,221	32,914	0	105	6,616	76.6	71.1
	9	572.72	270,404	0	71.2	6,152	32,914	0	105	6,257	72.4	71.6
	10	572.71	270,114	-290	71.1	6,143	32,887	92	105	5,866	67.9	69.9
	11	572.71	270,114	0	71.2	6,152	32,887	1,191	105	5,066	58.6	72.8
	12	572.71	270,114	0	73.5	6,350	32,887	69	105	6,387	73.9	73.7
	13	572.75	271,276	1,162	78.4	6,774	32,995	184	105	7,857	90.9	76.9
	14	572.74	270,985	-291	79.3	6,852	32,968	0	106	6,666	77.2	81.9
	15	572.75	271,276	291	79.2	6,843	32,995	0	105	7,239	83.8	77.3
	16	572.76	271,567	291	79.3	6,852	33,022	0	106	7,248	83.9	79.0
	17	572.75	271,276	-291	80.5	6,955	32,995	2,391	106	4,379	50.7	84.1
	18	572.79	272,441	1,165	85.8	7,413	33,103	106	106	8,578	99.3	86.8
	19	572.82	273,317	876	92.2	7,966	33,184	73	106	8,875	102.7	88.7
	20	572.83	273,609	292	93.5	8,078	33,211	46	106	8,430	97.6	99.1
	21	572.83	273,609	0	93.7	8,096	33,211	126	106	8,076	93.5	96.6
	22	572.85	274,194	585	94.7	8,182	33,266	0	106	8,873	102.7	94.2
	23	572.83	273,609	-585	93.6	8,087	33,211	140	106	7,469	86.4	92.2

Year : 1993

Month	Date	WL	V	dV	Q-ICOT	Vout	A	P	E	Vin	Qin	Qin(mv.av.)
		m	10^3m^3	10^3m^3	m^3/s	10^3m^3	10^3m^2	10^3m^3	10^3m^3	10^3m^3	m^3/s	m^3/s
	24	572.83	273,609	0	92.2	7,966	33,211	206	106	7,866	91.0	89.4
	25	572.82	273,317	-292	89.5	7,733	33,184	0	106	7,547	87.3	85.1
	26	572.80	272,733	-584	85.1	7,353	33,130	0	106	6,875	79.6	83.6
	27	572.79	272,441	-292	83.2	7,188	33,103	0	106	7,003	81.1	81.6
	28	572.78	272,149	-291	82.4	7,119	33,076	89	106	6,844	79.2	77.7
	29	572.78	272,149	0	79.8	6,895	33,076	0	106	7,001	81.0	75.7
	30	572.75	271,276	-873	76.3	6,592	32,995	0	106	5,825	67.4	73.5
	31	572.73	270,695	-581	75.4	6,515	32,941	0	106	6,039	69.9	70.0
Nov.	1	572.72	270,404	-290	72.3	6,247	32,914	0	105	6,062	70.2	67.4
	2	572.70	269,824	-580	69.8	6,031	32,860	237	105	5,319	61.6	65.4
	3	572.70	269,824	0	66.7	5,763	32,860	0	105	5,868	67.9	63.9
	4	572.68	269,245	-579	65.4	5,651	32,806	197	105	4,979	57.6	62.3
	5	572.67	268,956	-289	64.5	5,573	32,779	0	105	5,388	62.4	61.8
	6	572.66	268,666	-289	64.3	5,556	32,752	0	105	5,371	62.2	59.2
	7	572.65	268,377	-289	62.5	5,400	32,725	144	105	5,072	58.7	58.8
	8	572.63	267,800	-577	60.6	5,236	32,671	0	105	4,763	55.1	58.4
	9	572.62	267,512	-288	59.5	5,141	32,645	144	105	4,813	55.7	57.1
	10	572.62	267,512	0	59.0	5,098	32,645	0	104	5,202	60.2	56.2
	11	572.61	267,223	-288	57.7	4,985	32,618	0	104	4,802	55.6	55.8
	12	572.60	266,935	-288	56.6	4,890	32,591	0	104	4,707	54.5	54.1
	13	572.59	266,647	-288	55.0	4,752	32,564	0	104	4,568	52.9	51.8
	14	572.57	266,072	-575	52.7	4,553	32,510	0	104	4,082	47.2	50.2
	15	572.56	265,785	-287	50.8	4,389	32,483	0	104	4,206	48.7	48.6
	16	572.55	265,498	-287	49.8	4,303	32,457	0	104	4,120	47.7	46.9
	17	572.54	265,211	-287	48.7	4,208	32,430	0	104	4,025	46.6	45.8
	18	572.53	264,924	-287	46.4	4,009	32,403	0	104	3,826	44.3	44.1
	19	572.52	264,638	-287	44.0	3,802	32,376	0	104	3,619	41.9	42.5
	20	572.51	264,352	-286	42.2	3,646	32,350	0	104	3,463	40.1	40.2
	21	572.50	264,065	-286	42.0	3,629	32,323	0	104	3,446	39.9	39.7
	22	572.49	263,779	-286	40.8	3,525	32,296	323	103	3,019	34.9	39.6
	23	572.49	263,779	0	40.3	3,482	32,296	0	103	3,585	41.5	39.1
	24	572.49	263,779	0	40.3	3,482	32,296	0	103	3,585	41.5	38.6
	25	572.48	263,494	-286	39.9	3,447	32,269	0	103	3,265	37.8	39.5
	26	572.47	263,208	-286	39.3	3,396	32,243	0	103	3,213	37.2	38.4
	27	572.47	263,208	0	38.5	3,326	32,243	0	103	3,430	39.7	37.8
	28	572.46	262,923	-285	37.7	3,257	32,216	0	103	3,075	35.6	35.8
	29	572.46	262,923	0	37.5	3,240	32,216	0	103	3,343	38.7	36.7
	30	572.45	262,638	-285	37.2	3,214	32,189	615	103	2,417	28.0	35.8
Dec.	1	572.46	262,923	285	36.8	3,180	32,216	0	129	3,593	41.6	37.2
	2	572.46	262,923	0	37.2	3,214	32,216	309	129	3,034	35.1	36.6
	3	572.47	263,208	285	37.6	3,249	32,243	0	129	3,663	42.4	38.8
	4	572.46	262,923	-285	37.6	3,249	32,216	0	129	3,092	35.8	38.3
	5	572.46	262,923	0	37.6	3,249	32,216	0	129	3,378	39.1	38.5
	6	572.46	262,923	0	37.5	3,240	32,216	0	129	3,369	39.0	37.0
	7	572.46	262,923	0	36.8	3,180	32,216	168	129	3,141	36.4	38.4
	8	572.46	262,923	0	36.4	3,145	32,216	274	129	3,000	34.7	38.5
	9	572.47	263,208	285	37.9	3,275	32,243	0	129	3,689	42.7	38.6
	10	572.47	263,208	0	38.4	3,318	32,243	0	129	3,447	39.9	37.6
	11	572.47	263,208	0	37.6	3,249	32,243	0	129	3,378	39.1	37.5
	12	572.45	262,638	-571	36.7	3,171	32,189	0	129	2,729	31.6	35.5
	13	572.44	262,353	-285	35.8	3,093	32,163	0	129	2,937	34.0	34.6
	14	572.43	262,068	-285	34.9	3,015	32,136	0	129	2,859	33.1	32.9
	15	572.43	262,068	0	33.6	2,903	32,136	0	129	3,032	35.1	32.6
	16	572.42	261,783	-285	32.7	2,825	32,109	0	129	2,669	30.9	31.6
	17	572.41	261,499	-284	31.6	2,730	32,083	0	128	2,574	29.8	31.3
	18	572.40	261,215	-284	30.9	2,670	32,056	0	128	2,514	29.1	29.7
	19	572.40	261,215	0	30.1	2,601	32,056	0	128	2,729	31.6	28.9
	20	572.39	260,930	-284	28.8	2,488	32,029	0	128	2,333	27.0	28.2
	21	572.38	260,647	-284	28.7	2,480	32,003	0	128	2,324	26.9	28.3
	22	572.37	260,363	-284	28.4	2,454	31,976	0	128	2,298	26.6	26.9
	23	572.37	260,363	0	27.9	2,411	31,976	0	128	2,538	29.4	26.5
	24	572.36	260,079	-283	26.6	2,298	31,950	0	128	2,143	24.8	26.7
	25	572.35	259,796	-283	26.5	2,290	31,923	0	128	2,134	24.7	26.0
	26	572.35	259,796	0	26.4	2,281	31,923	0	128	2,409	27.9	25.2
	27	572.34	259,513	-283	25.1	2,169	31,896	0	128	2,013	23.3	24.6
	28	572.34	259,513	0	23.8	2,056	31,896	0	128	2,184	25.3	24.6
	29	572.33	259,230	-283	23.6	2,039	31,870	0	128	1,884	21.8	23.2
	30	572.33	259,230	0	23.1	1,996	31,870	0	127	2,123	24.6	23.0
	31	572.32	258,947	-283	23.0	1,987	31,843	0	127	1,832	21.2	23.3
Total			92,536,598	-2,267		1,310,628	########	44,591	38,059	1,301,829		
Mean		572.11	253,525	-6	41.6	3,591	31,318	122	104	3,567	41.3	41.3
Max.		573.02	279,198.3	5,059.8	130.0	11,232.0	33,728.3	2,859.2	129.0	11,844.1	137.1	130.7
Min.		570.74	216,631.7	-3,405.2	11.7	1,010.9	27,786.2	0.0	69.8	-1,627.1	-18.8	4.4

Table 2 Sample of BOALI Dam Inflow Calculation Result

STATION : BOALI DAM ESTIMATED INFLOW

RIVER : MBALI

YEAR : 1985 Unit : m3/sec

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	32.8	22.7	14.2	10.4	8.6	7.9	19.0	41.4	75.6	83.8	85.6	37.5
2	32.4	22.4	14.0	14.1	8.6	7.9	21.0	43.3	77.9	77.7	84.4	35.9
3	32.0	22.0	13.8	10.6	8.5	7.8	18.7	51.4	89.9	72.5	83.4	34.9
4	31.8	21.7	13.6	10.2	8.3	7.8	14.6	64.9	88.9	69.9	86.6	34.0
5	31.4	21.4	13.3	10.2	18.7	7.8	23.1	73.9	94.2	66.7	86.9	33.1
6	31.0	21.0	13.1	10.2	16.4	7.8	25.9	79.6	95.3	64.5	86.8	32.4
7	30.8	20.7	12.9	10.8	12.0	7.8	28.2	84.8	100.0	62.0	86.4	31.5
8	30.4	20.4	12.7	10.0	8.2	7.8	28.8	84.5	94.7	57.8	86.3	29.7
9	30.0	20.1	12.5	10.0	8.2	9.0	28.4	84.4	85.2	54.4	84.5	30.1
10	29.7	19.7	12.3	9.9	8.2	7.7	23.3	84.5	81.0	55.3	84.6	29.5
11	29.4	19.4	12.1	9.9	8.2	7.7	19.1	85.7	71.1	67.7	87.8	28.7
12	29.0	19.1	12.0	9.8	8.2	7.7	18.4	88.1	67.7	72.5	87.0	28.1
13	28.7	18.8	11.9	9.7	8.2	7.7	18.3	89.5	87.7	72.2	87.1	28.0
14	28.3	18.5	19.2	9.6	8.2	7.7	17.6	90.9	120.0	70.4	88.4	28.0
15	28.1	18.2	14.5	9.5	12.6	15.2	14.8	92.7	108.0	65.6	84.6	27.4
16	27.8	17.9	11.6	9.4	9.2	17.7	14.3	91.5	101.0	61.4	81.7	27.3
17	27.6	17.5	11.6	9.4	13.5	13.4	18.4	89.1	90.3	62.3	76.9	27.3
18	27.3	17.2	11.5	9.3	9.8	9.8	30.1	89.6	86.9	62.3	72.3	27.9
19	27.1	17.0	11.4	9.2	8.1	8.1	38.4	90.1	84.5	59.9	65.8	27.9
20	26.8	16.7	11.3	9.1	8.1	8.0	41.0	89.7	82.4	62.4	59.7	26.6
21	26.4	16.4	11.2	14.5	8.1	7.8	54.7	90.8	78.3	64.2	55.9	26.5
22	26.1	16.1	11.2	10.8	8.1	24.9	66.1	91.0	77.3	64.2	50.3	25.8
23	25.7	15.8	11.1	9.7	8.1	22.0	69.2	92.1	90.1	60.3	46.0	25.1
24	25.4	15.5	11.0	9.0	8.2	19.6	68.0	91.8	90.5	57.5	42.4	24.4
25	25.1	15.3	10.9	8.9	8.1	17.1	64.5	93.3	84.1	60.3	40.8	23.8
26	24.7	15.0	11.0	8.9	8.1	14.5	61.5	92.9	77.6	62.3	39.4	23.4
27	24.4	14.7	10.8	8.8	8.1	16.1	54.3	92.2	73.1	62.7	38.6	23.0
28	24.0	14.5	10.7	8.8	8.1	14.0	47.4	76.6	72.1	66.3	38.4	22.5
29	23.7	-	10.7	8.7	8.0	13.5	45.7	62.8	71.8	69.4	37.7	22.4
30	23.4	-	10.6	8.7	8.0	13.5	47.5	63.2	80.4	82.0	37.6	21.7
31	23.0	-	10.5	-	8.0	-	44.2	75.0	-	85.6	-	21.1
Total	864.3	515.7	379.4	298.2	288.9	345.4	1,084.5	2,511.3	2,577.6	2,056.1	2,073.9	865.5
Mean	27.9	18.4	12.2	9.9	9.3	11.5	35.0	81.0	85.9	66.3	69.1	27.9
Max.	120.0	Q356=	7.8	Q186=	25.4							
Min.	7.7	Q276=	12.0	Q96=	64.2							

*** River Daily Discharge Data ***

STATION : BOALI DAM ESTIMATED INFLOW

RIVER : MBALI

YEAR : 1986 Unit : m3/sec

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	20.3	15.9	10.4	6.8	4.5	6.8	10.7	70.3	66.8	151.0	65.4	25.1
2	20.3	15.6	10.3	6.3	4.0	6.1	20.7	68.3	72.7	144.0	64.9	25.1
3	19.7	15.4	10.2	6.1	5.0	6.7	20.7	66.2	73.7	141.0	55.4	25.1
4	19.6	15.1	10.1	6.4	6.8	10.2	26.3	65.7	78.5	147.0	49.6	24.7
5	19.0	14.9	10.0	6.2	7.4	9.4	31.8	64.0	83.2	156.0	48.8	23.0
6	18.9	14.6	9.8	5.4	6.5	8.0	36.1	61.7	78.3	160.0	48.4	21.8
7	18.9	14.3	9.7	5.0	9.4	7.5	41.4	60.3	77.8	158.0	45.9	21.3
8	18.4	14.1	9.5	4.8	6.9	12.8	46.1	59.9	75.3	144.0	41.4	20.0
9	18.0	21.0	9.4	4.3	6.1	17.8	50.0	63.6	75.6	133.0	39.4	19.6
10	17.7	16.0	9.3	4.3	5.3	16.0	37.7	62.6	76.0	126.0	36.9	18.9
11	17.7	14.0	9.2	4.1	4.5	13.8	24.7	61.1	82.3	115.0	34.5	18.4
12	17.2	13.6	9.2	4.0	6.0	14.7	23.2	58.7	91.0	98.5	32.8	18.3
13	16.8	13.5	9.1	4.0	12.2	13.7	31.8	56.8	96.2	86.8	32.0	18.3
14	16.5	13.4	8.9	3.7	11.4	13.9	35.8	54.9	102.0	78.1	30.9	17.8
15	16.0	13.2	8.9	3.5	7.9	10.9	45.1	57.6	107.0	70.5	29.9	17.7
16	15.7	13.0	8.8	3.2	6.3	9.3	47.0	57.0	112.0	65.6	29.4	17.2
17	15.4	12.7	8.8	2.9	11.6	11.4	52.7	54.5	114.0	62.5	27.8	17.1
18	15.1	12.5	8.7	2.6	14.5	11.9	63.1	60.4	116.0	59.3	27.3	17.4
19	14.8	12.4	8.6	2.4	13.4	9.2	73.3	65.0	125.0	58.7	27.3	17.6
20	14.3	12.2	8.6	2.4	16.6	8.7	76.5	62.6	112.0	60.1	26.5	16.6
21	14.2	12.0	8.4	2.2	14.3	9.5	77.9	60.4	104.0	56.0	25.8	16.0
22	14.2	11.8	8.3	2.1	14.8	11.8	79.3	58.0	102.0	54.8	25.2	16.0
23	14.2	11.6	8.2	2.2	16.2	9.2	79.9	56.2	97.9	58.0	25.1	16.0
24	13.7	11.3	8.1	3.8	15.0	7.3	84.1	55.3	96.6	61.3	25.1	15.5
25	13.6	11.1	8.0	5.1	15.3	6.4	94.0	53.1	101.0	62.6	24.8	15.1
26	13.6	10.9	7.9	6.7	15.9	5.7	93.6	53.3	107.0	65.2	25.7	14.5
27	13.1	10.7	7.9	6.7	13.1	5.2	92.4	60.9	109.0	66.4	25.2	14.2
28	13.0	10.5	7.8	5.4	10.7	4.7	98.4	59.3	112.0	65.6	25.4	14.2
29	12.5	-	7.8	4.7	8.8	4.3	104.0	57.7	135.0	66.4	25.8	14.7
30	12.3	-	7.7	4.5	7.5	4.2	100.0	55.4	151.0	67.5	25.2	15.1
31	12.1	-	7.7	-	6.5	-	95.1	53.1	-	65.6	-	15.9
Total	496.8	377.3	275.2	131.7	304.4	287.1	1,793.4	1,853.7	2,930.9	2,904.5	1,047.8	568.2
Mean	16.0	13.5	8.9	4.4	9.8	9.6	57.9	59.8	97.7	93.7	34.9	18.3
Max.	160.0	Q356=	3.7	Q186=	16.8							
Min.	2.1	Q276=	9.7	Q96=	57.6							

*** River Daily Discharge Data ***

STATION : BOALI DAM ESTIMATED INFLOW

RIVER : MBALI

YEAR : 1987

Unit : m3/sec

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	15.9	7.9	6.2	22.0	5.4	8.2	52.8	41.9	52.7	48.3	21.7	11.0
2	14.9	7.9	7.6	19.5	4.6	16.3	69.9	30.5	63.4	42.7	19.4	17.5
3	14.2	7.9	8.0	14.5	4.1	14.9	47.1	36.5	64.4	43.8	18.0	15.3
4	13.1	7.7	6.8	12.2	3.8	8.0	31.7	37.5	59.5	45.8	17.1	15.2
5	13.0	7.5	5.6	10.4	3.2	7.8	27.5	34.4	56.6	50.9	16.5	14.3
6	13.0	7.5	5.0	12.2	3.0	13.0	25.7	29.3	56.6	54.6	16.0	14.1
7	12.5	7.5	4.6	24.1	4.0	14.2	21.7	25.8	67.7	52.9	16.0	12.8
8	12.5	7.5	4.6	22.1	4.0	22.2	16.9	20.5	74.4	57.4	15.5	13.2
9	12.1	7.2	4.6	15.9	3.5	28.8	15.0	15.1	69.9	55.0	15.1	12.5
10	12.1	7.1	4.1	9.2	3.2	31.9	15.9	13.7	59.5	50.8	14.5	12.4
11	11.6	6.8	3.9	7.9	4.1	33.3	16.0	13.2	56.6	45.2	13.9	11.2
12	11.6	6.8	3.8	7.2	4.0	30.8	16.5	15.9	51.7	40.8	13.3	10.2
13	11.6	6.6	3.8	6.1	3.6	24.6	16.6	18.1	47.9	35.6	12.8	10.1
14	11.6	6.4	3.7	5.6	3.3	19.0	19.3	16.6	45.9	38.4	12.5	8.9
15	11.6	6.5	3.5	5.3	3.7	15.3	28.1	14.6	45.0	43.3	12.1	9.0
16	11.6	6.8	3.5	5.4	2.6	15.3	31.1	21.8	44.0	43.0	11.6	8.5
17	11.6	6.8	3.4	7.1	2.3	24.8	27.4	36.3	38.5	39.0	11.7	7.9
18	11.6	6.5	3.2	8.2	2.1	28.4	23.3	44.7	30.2	36.6	12.7	8.1
19	11.1	6.4	3.2	7.4	1.8	26.4	22.9	45.0	28.0	33.3	13.5	7.6
20	11.1	6.4	3.2	6.2	2.4	27.5	20.6	55.8	29.5	31.6	13.7	7.5
21	10.6	6.4	3.1	7.6	6.7	21.7	17.7	57.2	37.6	29.7	15.3	7.4
22	10.6	6.1	2.9	8.0	5.5	21.9	23.4	63.9	44.0	30.8	16.9	7.0
23	10.2	5.9	3.1	7.3	4.8	22.1	22.7	71.3	69.9	33.8	15.8	6.4
24	10.2	5.9	3.2	6.2	6.0	28.4	17.2	71.4	58.6	39.1	14.8	6.4
25	9.7	6.1	3.3	6.9	7.2	27.6	17.2	68.1	57.6	42.2	14.2	6.1
26	9.7	6.4	5.4	12.7	5.6	24.6	20.0	62.5	58.6	47.0	14.2	6.1
27	9.0	6.0	11.0	11.7	4.3	24.0	20.1	60.6	51.7	41.4	13.9	6.1
28	8.7	6.0	37.1	9.3	3.5	23.8	27.0	62.0	45.9	34.7	12.8	6.7
29	8.7	-	31.1	7.1	7.4	34.9	29.1	57.7	51.7	29.7	10.9	5.8
30	8.5	-	20.9	6.1	9.5	45.3	31.8	50.3	45.9	25.9	9.8	5.5
31	8.2	-	19.8	-	5.9	-	40.8	48.9	-	23.4	-	5.2
Total	352.5	190.6	232.9	311.2	135.1	685.0	813.0	1,241.1	1,563.5	1,266.7	436.2	295.8
Mean	11.4	6.8	7.5	10.4	4.4	22.8	26.2	40.0	52.1	40.9	14.5	9.5
Max.	74.4	Q356=	3.2	Q186=	13.5							
Min.	1.8	Q276=	7.1	Q96=	28.4							

*** River Daily Discharge Data ***

STATION : BOALI DAM ESTIMATED INFLOW

RIVER : MBALI

YEAR : 1988

Unit : m3/sec

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	5.0	2.7	1.4	1.3	6.9	6.8	118.0	23.1	100.0	183.0	94.8	44.9
2	5.5	3.0	0.9	1.0	5.6	6.2	122.0	22.9	106.0	199.0	90.4	43.1
3	5.4	2.9	1.3	1.3	8.1	17.3	122.0	21.6	121.0	188.0	86.6	41.4
4	6.1	2.8	1.0	1.0	9.4	21.0	124.0	22.0	132.0	177.0	86.7	39.8
5	8.1	2.6	0.7	0.7	9.3	28.1	121.0	24.6	132.0	162.0	85.3	39.3
6	7.1	2.6	1.1	1.0	5.6	29.8	119.0	35.5	133.0	154.0	78.2	39.1
7	5.8	2.4	0.8	1.0	4.9	34.7	113.0	32.2	133.0	148.0	69.8	38.9
8	5.7	2.4	0.7	0.9	4.2	34.9	108.0	37.6	135.0	143.0	64.1	38.6
9	7.8	4.2	3.4	0.3	4.7	20.6	104.0	56.9	137.0	136.0	60.1	38.4
10	7.1	3.5	6.3	0.1	16.6	21.4	103.0	72.4	141.0	131.0	56.7	38.1
11	6.7	2.9	4.9	0.3	17.9	35.1	85.6	68.4	156.0	128.0	54.2	37.8
12	5.9	3.8	4.6	0.1	13.6	38.5	73.2	59.3	199.0	132.0	51.8	37.5
13	5.0	3.3	4.1	0.1	8.5	31.7	61.9	42.3	145.0	124.0	49.9	37.2
14	4.1	3.2	3.8	0.4	6.3	26.8	46.6	49.0	137.0	110.0	47.5	36.9
15	4.2	3.6	3.5	0.6	4.7	29.5	42.5	50.3	144.0	102.0	45.9	36.5
16	4.3	3.3	4.5	0.6	3.9	29.5	38.3	47.7	161.0	97.4	43.7	36.2
17	4.3	3.2	5.3	1.5	3.8	29.4	35.7	46.7	168.0	97.5	42.6	35.9
18	4.4	2.9	4.2	2.2	3.8	33.7	31.1	39.3	163.0	98.0	41.4	35.5
19	4.1	2.9	3.3	3.4	3.9	36.2	26.0	33.6	144.0	105.0	41.1	35.2
20	4.0	2.9	2.8	6.1	6.1	52.4	22.5	31.1	130.0	116.0	40.2	34.9
21	3.8	2.9	3.3	5.7	12.0	62.2	20.7	40.8	122.0	119.0	38.7	34.5
22	3.7	2.3	3.9	12.8	13.8	76.2	19.0	39.8	119.0	113.0	39.3	34.2
23	3.5	1.8	3.4	13.2	11.0	79.2	18.5	44.7	117.0	110.0	38.5	33.9
24	3.5	1.6	3.6	9.1	15.4	79.5	29.5	74.5	119.0	110.0	37.6	33.7
25	3.5	1.5	3.1	7.4	16.6	83.0	26.3	88.7	120.0	103.0	36.7	33.4
26	3.4	1.4	2.6	7.1	17.9	87.2	26.1	92.4	119.0	96.3	35.8	33.1
27	3.1	1.4	2.7	6.3	20.9	89.0	34.3	90.9	121.0	98.4	35.0	32.7
28	2.9	1.4	2.2	6.0	24.5	103.0	36.7	88.5	126.0	104.0	34.8	32.4
29	2.9	1.4	2.0	5.5	19.1	113.0	33.5	90.3	130.0	99.3	34.1	32.1
30	2.7	-	1.9	5.0	12.1	114.0	29.5	95.9	140.0	97.6	34.0	31.7
31	2.6	-	1.2	-	8.8	-	24.2	98.9	-	96.3	-	25.0
Total	146.1	76.8	88.2	102.0	319.8	1,449.9	1,915.7	1,661.9	4,050.0	3,877.8	1,595.5	1,121.6
Mean	4.7	2.6	2.8	3.4	10.3	48.3	61.8	53.6	135.0	125.1	53.2	36.2
Max.	199.0	Q356=	0.7	Q186=	31.1							
Min.	0.1	Q276=	4.2	Q96=	73.2							

*** River Daily Discharge Data ***

STATION : BOALI DAM ESTIMATED INFLOW

RIVER : MBALI

YEAR : 1989

Unit : m3/sec

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	20.3	10.6	5.7	6.7	4.6	35.1	32.7	46.6	216.0	110.0	50.7	32.8
2	20.7	10.2	5.4	6.1	4.6	34.9	26.3	40.1	209.0	122.0	49.8	32.5
3	20.3	10.2	5.5	5.2	5.0	35.2	23.8	35.2	202.0	125.0	49.3	32.4
4	19.6	10.2	7.9	5.0	6.1	39.7	26.1	33.2	189.0	125.0	49.8	31.6
5	18.9	10.2	8.4	4.5	5.9	31.0	25.4	33.3	181.0	129.0	48.1	30.9
6	18.3	10.0	6.6	4.3	4.9	20.5	22.1	37.3	183.0	123.0	48.4	29.6
7	17.8	9.5	6.1	4.1	5.0	14.2	24.0	51.2	187.0	122.0	49.6	29.1
8	17.7	9.2	6.0	4.0	5.3	12.1	44.4	57.2	185.0	118.0	47.5	28.4
9	17.1	8.7	5.7	3.8	5.6	12.1	45.5	60.0	181.0	110.0	45.2	34.0
10	16.5	8.3	5.7	3.6	6.0	22.5	38.1	65.0	152.0	104.0	44.9	32.2
11	16.0	8.2	5.7	4.4	9.4	15.3	35.5	65.8	146.0	100.0	44.0	34.3
12	16.0	7.9	5.7	4.6	12.7	12.4	35.9	70.7	146.0	95.6	43.1	35.3
13	15.4	7.9	5.7	4.1	20.9	17.0	28.2	72.1	141.0	91.7	42.2	36.1
14	14.9	7.9	5.7	3.8	21.6	20.4	26.5	72.2	141.0	88.8	42.4	34.1
15	14.8	7.9	5.4	3.8	18.7	38.5	26.5	73.7	123.0	94.2	40.0	32.4
16	14.5	7.7	5.2	4.1	13.9	35.1	26.5	89.5	113.0	92.4	38.6	32.3
17	13.9	7.5	5.0	3.5	13.5	36.6	36.6	89.5	106.0	91.1	38.1	31.6
18	13.6	7.5	5.0	3.5	13.5	31.0	31.0	97.2	104.0	92.2	37.5	30.2
19	13.6	7.2	4.6	3.2	11.0	31.9	27.7	104.0	97.6	93.2	36.7	28.2
20	13.1	6.8	4.6	3.2	15.7	33.0	21.0	109.0	88.2	89.1	35.0	26.9
21	13.0	6.3	5.2	3.9	15.8	32.9	16.7	110.0	130.0	89.6	34.0	25.5
22	12.5	6.1	5.0	4.5	14.3	31.0	17.8	121.0	109.0	85.1	32.5	24.5
23	12.3	6.1	4.8	5.9	11.2	29.1	23.1	124.0	99.0	84.1	31.8	24.4
24	12.1	6.0	4.6	6.1	14.7	25.9	32.4	123.0	99.0	78.4	33.3	24.8
25	12.1	5.7	4.6	5.4	19.0	22.4	44.1	141.0	106.0	73.4	33.1	25.0
26	12.1	5.7	4.9	6.3	24.9	18.8	47.9	153.0	100.0	69.4	32.4	24.5
27	12.1	5.7	5.0	6.2	34.4	28.5	52.0	159.0	102.0	66.6	31.6	24.4
28	11.6	5.7	6.1	7.4	53.9	29.2	55.5	156.0	104.0	64.4	30.9	23.8
29	11.6	-	14.4	6.0	44.9	30.5	51.8	156.0	106.0	60.6	30.2	23.7
30	11.1	-	13.6	5.0	41.1	32.7	59.1	193.0	109.0	57.7	30.1	22.7
31	11.1	-	8.9	-	37.7	-	52.2	223.0	-	53.3	-	21.8
Total	464.6	220.9	192.6	142.0	515.8	809.5	1,056.4	2,961.8	4,154.8	2,898.9	1,200.8	900.0
Mean	15.0	7.9	6.2	4.7	16.6	27.0	34.1	95.5	138.5	93.5	40.0	29.0
Max.	223.0	Q356=	4.0	Q186=	26.5							
Min.	3.2	Q276=	9.2	Q96=	49.6							

*** River Daily Discharge Data ***

STATION : BOALI DAM ESTIMATED INFLOW

RIVER : MBALI

YEAR : 1990

Unit : m3/sec

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	16.5	12.1	5.4	2.6	4.9	45.8	5.7	17.3	81.8	57.9	39.2	40.3
2	16.5	12.1	5.2	2.5	4.1	36.8	5.8	23.9	78.3	59.9	38.4	38.9
3	16.0	12.1	5.3	2.2	4.2	31.1	13.9	14.3	77.1	59.8	58.9	37.3
4	16.0	12.1	5.0	2.2	5.6	27.5	17.0	11.6	81.0	55.5	56.4	35.6
5	16.0	11.6	5.0	2.2	4.9	17.1	9.4	10.7	82.9	49.4	54.2	34.8
6	15.5	10.4	5.0	2.2	4.6	13.1	6.9	10.6	81.1	45.4	51.7	33.1
7	15.5	9.5	5.0	2.1	4.3	11.9	7.1	9.2	77.4	41.1	50.5	32.1
8	15.5	9.2	4.6	1.8	4.1	13.0	6.6	7.2	74.9	35.2	48.0	30.6
9	15.5	8.8	4.6	1.8	4.7	14.1	5.6	8.2	71.3	34.3	45.4	28.9
10	15.5	8.3	4.6	1.8	6.4	13.0	5.0	18.2	54.0	37.1	48.5	32.7
11	15.5	8.2	4.5	1.8	8.0	11.8	4.8	21.9	44.2	35.0	45.9	28.4
12	15.5	7.9	4.2	1.8	8.2	9.5	4.9	22.6	42.7	33.4	59.7	26.7
13	15.5	7.9	4.0	1.8	6.7	7.9	5.4	33.1	61.2	34.6	58.0	26.0
14	15.4	7.9	4.0	1.8	5.6	7.7	7.1	33.0	55.5	32.1	55.7	25.1
15	14.8	7.4	3.8	1.8	8.1	8.1	7.1	25.8	44.7	34.9	53.3	23.8
16	14.2	7.3	3.8	1.8	8.7	7.5	6.2	30.5	52.6	38.3	50.9	22.5
17	13.6	7.2	3.8	1.7	8.4	6.6	7.8	43.6	72.8	36.1	53.8	21.2
18	12.8	7.1	3.8	1.7	7.8	9.4	8.0	54.6	65.8	43.8	57.5	20.0
19	12.5	6.8	3.7	1.7	13.3	15.0	8.0	61.2	64.4	47.5	55.1	19.8
20	12.5	6.5	3.5	1.7	12.5	22.6	9.2	61.2	65.7	45.6	52.8	19.7
21	12.1	6.4	3.5	1.7	9.7	23.4	12.3	55.8	72.3	41.3	51.6	19.6
22	12.1	6.4	3.5	1.7	7.2	13.8	20.9	54.6	83.8	44.5	49.1	19.5
23	12.1	6.1	3.5	1.7	9.2	13.3	14.1	60.5	73.7	42.3	48.1	19.3
24	12.1	6.0	3.5	1.7	23.9	11.9	9.1	67.9	67.5	40.4	47.4	19.1
25	12.1	5.7	3.5	1.7	28.9	8.5	7.1	71.0	72.6	41.5	46.6	18.9
26	12.1	5.7	3.5	1.7	30.5	7.8	7.1	71.7	69.9	46.0	45.6	18.6
27	12.4	5.7	3.5	1.9	35.3	8.4	7.6	81.3	64.0	44.3	44.7	18.4
28	14.7	5.7	3.2	3.5	39.9	7.9	7.7	84.9	58.6	39.6	43.6	18.3
29	15.5	-	3.2	3.3	43.6	6.6	8.0	82.5	54.8	37.1	42.5	18.1
30	13.2	-	2.9	5.7	48.8	5.7	8.7	80.5	54.8	33.9	41.4	17.9
31	12.1	-	2.7	-	52.1	-	12.9	79.0	-	35.0	-	17.7
Total	441.3	228.1	125.0	64.1	464.0	436.9	266.9	1,308.4	2,001.4	1,302.8	1,494.4	782.9
Mean	14.2	8.1	4.0	2.1	15.0	14.6	8.6	42.2	66.7	42.0	49.8	25.3
Max.	84.9	Q356=	1.7	Q186=	13.9							
Min.	1.7	Q276=	6.5	Q96=	39.9							

*** River Daily Discharge Data ***

STATION : BOALI DAM ESTIMATED INFLOW

RIVER : MBALI

YEAR : 1991

Unit : m3/sec

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	17.5	10.4	7.3	6.9	16.1	12.0	32.8	87.6	143.2	113.8	97.6	59.6
2	17.3	10.2	7.2	7.1	15.5	11.8	33.3	85.8	141.1	122.8	98.6	57.4
3	17.0	10.0	7.2	6.9	14.9	11.6	37.5	84.7	139.0	131.1	109.4	55.0
4	16.8	9.8	7.2	17.4	14.3	11.3	35.6	91.7	148.2	129.6	106.3	52.7
5	16.6	9.6	7.2	14.9	14.4	10.9	35.6	89.9	146.5	126.5	108.3	50.4
6	16.3	9.5	7.2	11.3	14.7	10.6	33.7	97.3	144.2	124.4	113.3	48.1
7	16.1	9.3	7.2	8.3	12.9	10.2	31.7	102.0	141.7	121.7	110.0	46.0
8	15.9	9.1	7.2	7.7	12.5	9.7	30.6	100.1	139.5	120.1	106.8	44.0
9	15.7	8.9	7.1	16.6	12.0	9.5	32.5	98.0	136.7	126.3	105.0	42.1
10	15.4	8.8	7.1	26.4	11.4	9.1	33.3	100.0	133.8	123.6	101.7	40.4
11	15.2	8.6	7.1	24.0	11.1	8.6	42.0	97.9	132.1	127.4	98.3	38.8
12	15.0	8.4	7.1	27.3	10.1	8.1	49.5	96.8	129.0	124.1	95.0	37.7
13	14.7	8.2	7.1	28.2	9.8	19.7	49.1	96.6	127.2	120.8	92.2	37.5
14	14.5	8.0	7.1	26.0	9.5	29.3	47.6	94.0	128.8	117.7	90.6	37.4
15	14.3	7.9	7.1	24.6	9.0	28.5	46.6	91.6	126.6	114.2	89.0	37.1
16	14.0	7.7	7.1	22.5	10.9	26.4	45.0	96.7	123.1	111.2	87.2	36.8
17	13.8	7.5	7.1	20.3	8.5	26.2	54.3	94.0	122.3	120.1	85.4	36.4
18	13.5	7.3	7.0	19.7	8.3	40.9	54.9	91.4	118.7	120.3	83.5	36.1
19	13.3	7.3	7.0	19.8	8.1	38.9	62.0	94.5	115.0	119.8	81.6	35.8
20	13.1	7.3	7.3	19.6	7.9	36.8	62.5	103.1	112.4	116.8	79.7	35.4
21	12.8	7.3	7.0	19.4	10.5	35.2	61.0	100.9	112.0	113.3	78.7	35.1
22	12.6	11.7	7.0	19.1	7.9	33.2	66.2	99.5	108.3	110.7	76.6	34.8
23	12.4	7.3	7.0	18.7	21.0	31.0	64.6	98.1	105.3	120.1	74.4	34.4
24	12.1	7.3	7.0	18.3	17.8	28.7	75.9	118.7	108.3	119.4	72.7	34.1
25	11.9	8.5	7.0	17.7	15.1	28.7	76.2	117.8	106.9	115.9	70.9	33.8
26	11.7	7.3	6.9	18.1	17.0	31.2	77.4	117.9	103.1	112.9	69.0	33.4
27	11.5	8.5	6.9	20.6	14.5	29.0	77.1	121.9	105.0	109.3	67.1	33.1
28	11.3	7.3	12.9	20.0	14.6	28.9	75.5	125.0	101.3	107.1	65.1	32.8
29	11.0	-	9.5	17.0	12.1	28.8	77.1	126.8	120.4	103.4	63.2	32.4
30	10.8	-	6.9	16.5	12.7	33.8	89.9	124.5	117.0	104.5	61.6	32.1
31	10.6	-	6.9	-	12.5	-	89.0	129.4	-	101.3	-	31.7
Total	434.6	238.9	227.9	541.1	387.4	678.4	1,679.9	3,174.3	3,736.6	3,650.0	2,638.9	1,232.5
Mean	14.0	8.5	7.4	18.0	12.5	22.6	54.2	102.4	124.6	117.7	88.0	39.8
Max.	148.2	Q356=	7.0	Q186=	32.4							
Min.	6.9	Q276=	11.5	Q96=	94.0							

*** River Daily Discharge Data ***

STATION : BOALI DAM ESTIMATED INFLOW

RIVER : MBALI

YEAR : 1992 Unit : m3/sec

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	31.4	21.0	12.7	9.4	7.4	24.4	46.9	80.5	102.1	80.9	85.7	41.1
2	31.1	20.7	12.5	8.6	11.2	30.4	49.5	84.1	98.6	77.5	87.0	39.3
3	30.7	20.4	12.3	8.6	13.7	29.0	55.1	82.3	109.4	77.3	88.7	35.7
4	30.4	20.1	12.0	8.6	9.7	31.3	53.4	96.3	106.2	83.6	89.3	35.2
5	30.1	19.7	11.8	8.5	7.3	29.1	51.5	99.8	102.9	80.4	93.5	34.2
6	29.7	19.4	11.7	8.5	7.3	26.9	49.5	99.7	101.1	77.1	91.2	33.4
7	29.4	19.1	11.5	8.4	7.3	27.0	54.0	108.5	97.8	74.4	93.4	32.7
8	29.0	18.8	11.3	8.3	7.3	25.6	57.9	107.2	103.6	71.1	100.2	32.7
9	28.7	18.5	11.1	8.2	7.3	25.3	56.0	105.6	103.9	68.5	102.2	31.7
10	28.4	18.2	10.9	8.1	7.9	27.9	54.4	104.2	103.6	67.2	103.1	32.0
11	28.0	17.9	10.7	8.0	13.0	25.6	54.5	113.8	104.1	67.3	104.1	32.1
12	27.7	17.6	10.5	7.9	9.2	31.8	53.2	118.4	105.4	64.8	102.6	30.8
13	27.3	17.3	10.4	7.8	7.3	29.4	52.2	117.0	107.3	64.1	96.2	30.2
14	27.0	16.9	10.3	7.7	7.3	34.0	60.0	115.6	106.0	62.0	94.8	30.3
15	26.7	16.6	10.2	7.6	19.6	33.6	63.5	115.3	103.0	60.7	92.8	29.6
16	26.3	16.4	10.1	7.5	16.2	51.7	61.9	122.0	100.5	59.4	90.5	28.8
17	26.0	16.1	10.0	7.5	14.3	49.8	61.9	119.9	98.5	66.3	87.5	28.0
18	25.6	15.8	9.9	7.5	13.2	48.2	61.4	117.7	98.3	63.2	82.7	27.8
19	25.3	15.5	9.8	7.5	13.4	46.3	59.4	115.3	95.2	61.0	77.9	26.2
20	25.0	15.2	9.7	7.4	28.9	50.9	57.3	112.8	92.1	62.7	74.0	24.7
21	24.6	14.9	13.9	8.9	29.7	49.0	56.7	110.1	89.2	60.2	70.0	24.1
22	24.3	14.7	10.3	7.4	27.5	46.9	61.4	107.2	86.9	58.1	65.9	23.5
23	24.0	14.4	9.5	7.4	29.9	50.7	61.9	115.4	84.9	68.4	62.8	23.0
24	23.6	14.1	9.4	7.4	27.8	48.6	67.6	117.7	83.0	65.6	59.7	23.2
25	23.3	13.9	9.4	7.4	29.9	47.5	65.9	115.3	81.3	68.8	57.1	22.8
26	23.0	13.6	9.2	7.4	27.8	45.3	64.8	113.3	80.5	66.7	55.3	22.4
27	22.7	13.4	9.1	7.9	25.7	42.9	68.1	114.0	77.7	64.1	53.2	22.1
28	22.3	13.1	9.0	7.4	28.9	42.2	66.0	111.0	76.2	62.0	51.6	21.9
29	22.0	12.9	8.9	7.4	28.4	42.0	71.1	108.0	85.5	68.7	48.2	21.6
30	21.7	-	8.8	7.4	26.2	41.3	83.2	107.6	83.0	66.6	44.8	22.4
31	21.4	-	8.7	-	24.5	-	82.3	104.4	-	65.8	-	22.8
Total	816.7	486.2	325.5	237.6	535.3	1,134.6	1,862.4	3,360.0	2,867.5	2,104.7	2,406.3	886.0
Mean	26.3	16.8	10.5	7.9	17.3	37.8	60.1	108.4	95.6	67.9	80.2	28.6
Max.	122.0	Q356=	7.4	Q186=	30.8							
Min.	7.3	Q276=	16.1	Q96=	68.5							

*** River Daily Discharge Data ***

STATION : BOALI DAM ESTIMATED INFLOW

RIVER : MBALI

YEAR : 1993 Unit : m3/sec

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	28.2	18.4	15.6	9.7	17.1	20.6	19.7	73.2	103.0	69.5	67.4	37.2
2	29.3	18.9	15.0	9.4	16.1	21.8	19.1	77.3	110.2	66.9	65.4	36.6
3	31.3	19.6	14.7	9.7	16.5	19.8	26.2	80.9	114.6	66.4	63.9	38.8
4	31.7	22.5	15.4	9.4	15.0	19.9	26.8	82.5	123.3	64.9	62.3	38.3
5	30.7	21.8	15.2	11.3	14.7	19.3	30.1	78.4	128.6	66.9	61.8	38.5
6	29.6	20.2	7.8	12.2	21.3	18.6	27.5	75.5	130.7	68.7	59.2	37.0
7	28.8	20.7	9.2	15.0	14.0	17.7	31.8	72.8	128.8	71.1	58.8	38.4
8	27.3	19.7	9.8	16.1	10.3	19.1	27.0	72.1	130.3	71.1	58.4	38.5
9	26.4	19.1	10.0	17.2	11.4	21.2	28.2	72.3	128.5	71.6	57.1	38.6
10	25.4	18.6	11.0	15.5	11.3	23.4	29.5	74.2	127.2	69.9	56.2	37.6
11	24.8	19.1	17.0	17.4	4.4	22.7	31.7	76.4	126.5	72.8	55.8	37.5
12	24.3	18.0	14.6	16.1	11.6	20.0	27.8	74.3	125.7	73.7	54.1	35.5
13	24.6	17.9	13.9	15.5	13.3	20.9	32.8	71.2	123.9	76.9	51.8	34.6
14	24.3	17.9	13.4	15.2	14.5	20.0	36.2	70.5	118.5	81.9	50.2	32.9
15	24.1	17.8	13.5	16.6	15.1	18.9	35.7	75.0	115.0	77.3	48.6	32.6
16	24.5	16.4	12.6	13.9	15.1	21.7	40.8	75.2	110.2	79.0	46.9	31.6
17	24.3	19.0	14.7	16.5	14.9	26.2	53.0	75.7	103.4	84.1	45.8	31.3
18	24.0	19.3	14.8	17.4	16.3	28.8	48.5	78.0	99.1	86.8	44.1	29.7
19	23.7	18.8	15.4	17.0	14.4	31.1	47.9	77.0	97.5	88.7	42.5	28.9
20	23.3	19.4	14.0	15.9	14.8	33.2	54.7	72.4	95.1	99.1	40.2	28.2
21	23.0	19.9	14.7	18.2	14.6	33.2	57.1	69.9	92.3	96.6	39.7	28.3
22	22.0	17.5	14.8	14.9	14.9	34.5	56.9	68.1	89.9	94.2	39.6	26.9
23	21.7	16.6	13.9	15.4	14.4	32.9	66.4	66.6	85.3	92.2	39.1	26.5
24	20.3	17.1	13.9	15.9	14.9	32.0	71.5	63.3	82.9	89.4	38.6	26.7
25	20.1	16.4	13.6	15.9	14.5	30.4	70.3	63.3	80.6	85.1	39.5	26.0
26	19.5	16.2	14.0	15.1	15.5	28.8	69.7	67.2	77.6	83.6	38.4	25.2
27	19.6	15.2	12.9	17.0	14.6	25.8	66.3	72.8	77.3	81.6	37.8	24.6
28	18.3	15.5	13.1	15.6	15.7	21.1	67.5	78.4	76.1	77.7	35.8	24.6
29	18.8	-	12.2	16.8	17.2	19.9	66.6	87.7	72.7	75.7	36.7	23.2
30	16.5	-	12.2	16.6	17.3	17.9	67.1	91.9	70.8	73.5	35.8	23.0
31	17.0	-	11.5	-	18.3	-	71.1	97.1	-	70.0	-	23.3
Total	747.5	517.5	414.3	448.3	454.0	721.6	1,405.6	2,331.0	3,145.6	2,427.0	1,471.5	980.4
Mean	24.1	18.5	13.4	14.9	14.6	24.1	45.3	75.2	104.9	78.3	49.0	31.6
Max.	130.7	Q356=	10.3	Q186=	27.3							
Min.	4.4	Q276=	17.0	Q96=	66.6							

*** River Daily Discharge Data ***

STATION : BOALI DAM ESTIMATED INFLOW

RIVER : MBALI

YEAR : 1994

Unit : m3/sec

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	22.9	17.5	12.6	11.3	14.0	12.9	21.0	61.1	161.8	100.3	78.6	45.2
2	22.3	18.1	12.3	12.2	15.2	15.2	22.3	61.9	153.9	102.0	82.3	44.0
3	21.7	17.3	12.3	11.4	24.2	19.9	22.6	60.6	150.2	105.1	83.4	42.5
4	21.4	17.0	12.1	9.0	23.7	18.4	28.1	61.0	147.1	108.8	83.2	41.0
5	20.4	16.6	13.2	10.4	26.0	20.4	30.6	60.5	147.6	111.7	84.1	38.9
6	20.7	15.8	13.0	10.4	29.4	22.7	32.0	57.9	142.2	112.9	81.7	38.6
7	20.3	15.3	14.0	10.8	34.1	23.0	32.7	54.3	141.5	107.9	81.3	38.4
8	20.6	15.6	13.8	14.3	33.2	24.4	33.2	56.7	139.8	107.3	80.6	37.7
9	21.1	15.9	13.9	16.5	34.8	28.7	34.2	53.6	137.7	108.2	80.6	36.9
10	21.7	16.2	12.4	16.4	32.9	28.2	34.1	56.9	132.1	109.3	78.9	36.2
11	22.2	17.1	13.0	19.9	32.3	26.4	32.6	61.4	132.2	110.7	76.3	35.3
12	22.0	17.8	12.6	19.1	27.7	28.5	32.7	67.0	131.6	120.7	74.4	33.8
13	21.9	18.0	12.6	18.8	24.3	26.0	32.4	68.5	131.9	126.4	71.7	33.7
14	20.6	17.3	12.4	17.2	20.7	23.7	30.0	75.4	136.1	126.6	69.4	33.0
15	20.4	16.2	13.8	17.1	20.4	24.0	31.4	71.6	140.9	128.1	66.7	32.4
16	19.5	13.7	13.4	13.7	17.4	25.8	32.7	78.2	145.1	129.3	65.5	31.9
17	19.2	11.1	12.8	13.0	17.4	22.1	36.2	79.8	146.7	123.1	62.2	31.9
18	18.2	8.9	12.9	11.4	17.4	25.2	37.3	87.6	143.4	119.2	60.4	30.7
19	18.6	8.2	13.8	11.1	16.8	28.6	37.9	93.6	139.3	116.0	58.1	30.8
20	18.7	8.8	13.2	10.3	15.2	28.0	38.3	108.0	136.5	114.7	56.3	30.9
21	18.1	10.9	12.7	10.9	15.0	29.0	36.2	110.4	124.7	112.5	55.0	30.3
22	17.7	12.0	13.5	10.7	15.0	32.2	34.2	125.2	122.4	114.8	53.9	29.8
23	18.0	13.8	13.2	10.3	14.2	29.8	35.8	140.4	117.9	111.6	53.5	28.9
24	17.9	13.6	11.4	10.2	14.2	28.7	36.5	155.6	114.8	111.4	52.6	28.7
25	17.9	13.6	11.7	10.8	13.1	29.4	35.7	163.7	110.6	106.6	51.9	28.5
26	18.5	13.3	12.3	10.0	12.4	28.3	41.3	180.6	109.1	102.9	50.1	28.3
27	18.2	13.2	11.1	9.9	12.9	26.9	46.0	181.4	105.8	92.1	49.1	28.2
28	18.4	12.2	11.1	6.5	12.0	26.1	50.2	179.4	104.0	85.0	47.7	29.3
29	18.4	-	11.2	10.7	10.4	23.0	54.9	175.6	100.6	79.2	46.8	28.2
30	17.8	-	12.6	12.8	11.4	21.1	60.1	174.4	97.7	76.8	46.5	26.8
31	17.1	-	11.5	-	13.3	-	60.8	162.8	-	74.7	-	26.3
Total	612.4	404.9	392.6	377.3	621.0	746.5	1,123.9	3,125.3	3,945.2	3,355.8	1,982.5	1,037.1
Mean	19.8	14.5	12.7	12.6	20.0	24.9	36.3	100.8	131.5	108.3	66.1	33.5
Max.	181.4	Q356=	10.3	Q186=	28.7							
Min.	6.5	Q276=	16.4	Q96=	66.7							

*** River Daily Discharge Data ***

STATION : BOALI DAM ESTIMATED INFLOW

RIVER : MBALI

YEAR : 1995 Unit : m3/sec

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	25.6	18.2	14.6	18.5	13.8	15.2	20.7	55.4	60.2	84.8	89.3	41.3
2	25.1	17.4	14.4	18.9	15.8	14.6	21.3	60.5	63.1	90.7	89.0	40.9
3	25.9	17.8	16.8	19.5	16.6	15.1	23.6	53.8	64.0	96.1	85.0	41.2
4	25.6	17.0	16.8	16.9	16.8	14.2	22.7	54.2	66.2	100.2	86.4	40.6
5	24.8	16.3	17.1	16.3	14.9	15.5	20.2	57.4	66.4	106.6	85.4	39.8
6	24.6	16.3	15.5	16.6	15.8	14.6	15.0	54.8	68.1	105.6	84.3	40.3
7	24.9	16.1	14.9	15.2	16.0	17.0	15.2	53.1	66.0	111.0	80.4	38.3
8	24.0	16.2	13.3	13.2	16.9	16.9	14.0	52.6	76.8	108.2	78.1	38.4
9	23.7	16.4	12.7	15.1	16.6	16.6	12.9	54.8	77.3	106.3	77.0	37.8
10	24.1	16.4	12.2	14.1	18.7	14.9	20.9	53.2	77.8	103.3	75.1	37.2
11	23.2	15.9	14.3	13.7	18.8	15.9	22.0	52.0	80.0	106.1	73.8	36.2
12	22.8	17.0	17.5	14.3	17.9	16.0	21.8	51.0	85.9	108.1	71.3	35.7
13	23.2	16.3	18.1	10.2	17.0	16.5	24.6	50.4	77.9	111.4	70.9	35.1
14	22.9	16.3	18.5	11.9	16.4	13.4	26.4	53.4	77.5	108.3	68.2	35.4
15	22.5	16.4	18.6	13.1	17.2	13.6	19.8	58.1	73.4	109.4	66.9	35.1
16	22.1	17.0	15.0	13.7	16.6	12.5	21.2	58.5	76.5	107.8	64.4	35.4
17	21.8	16.9	16.5	13.9	14.5	11.7	21.7	62.3	80.4	105.2	63.4	35.5
18	21.5	16.3	17.3	14.7	14.6	10.8	22.2	61.4	85.0	106.9	59.5	34.5
19	21.2	16.0	17.3	13.1	15.6	14.0	22.1	57.4	88.7	110.0	57.8	34.0
20	21.0	15.2	17.8	13.4	15.6	13.1	29.0	52.5	96.6	111.0	54.9	33.7
21	20.8	14.7	21.7	13.7	15.2	15.3	30.0	46.9	95.7	111.6	53.0	33.4
22	21.0	14.4	18.4	12.9	15.7	15.1	34.4	40.8	90.9	112.5	51.2	32.5
23	20.3	14.7	18.0	16.8	15.4	16.3	37.3	40.1	86.0	108.4	49.9	32.2
24	19.4	14.6	19.3	16.9	14.6	16.5	40.1	40.3	81.4	104.7	48.8	31.9
25	18.7	14.1	20.6	16.9	14.5	16.5	38.4	39.7	77.9	103.3	47.1	30.7
26	18.7	14.0	20.9	16.3	14.1	16.4	41.1	45.7	73.6	102.7	47.1	30.1
27	17.5	14.5	22.6	16.9	13.9	17.0	41.8	48.8	68.0	101.2	46.6	30.1
28	17.4	14.3	21.8	15.8	12.9	13.9	40.8	49.6	70.4	100.5	45.0	28.8
29	17.7	-	21.2	15.6	12.9	15.0	52.4	51.0	77.3	102.0	43.9	28.1
30	17.6	-	20.8	13.8	14.7	16.9	52.7	54.8	78.9	96.0	43.6	26.6
31	18.1	-	20.4	-	15.0	-	51.3	58.0	-	93.5	-	26.2
Total	678.1	446.7	544.9	451.8	485.1	451.0	877.5	1,622.2	2,308.0	3,233.3	1,957.6	1,077.1
Mean	21.9	16.0	17.6	15.1	15.6	15.0	28.3	52.3	76.9	104.3	65.3	34.7
Max.	112.5	Q356=	12.9	Q186=	22.2							
Min.	10.2	Q276=	16.3	Q96=	53.4							

*** River Daily Discharge Data ***

STATION : BOALI DAM ESTIMATED INFLOW

RIVER : MBALI

YEAR : 1996

Unit : m3/sec

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	26.5	21.4	14.8	16.4	15.6	24.2	77.2	114.3	190.8	139.4	128.1	62.1
2	26.1	20.4	16.4	16.1	16.2	30.4	80.8	113.3	195.6	140.3	125.3	61.8
3	27.2	20.1	18.7	15.1	18.2	34.8	83.8	115.0	195.6	142.5	120.8	61.0
4	26.7	19.0	18.7	14.5	21.5	37.8	88.2	118.1	187.2	142.3	117.2	61.0
5	26.1	18.4	19.4	14.5	22.0	41.5	88.4	116.6	184.0	143.5	113.1	59.5
6	25.8	17.9	19.6	14.4	20.0	47.5	90.5	107.0	175.6	145.7	109.5	60.1
7	25.5	18.6	17.4	13.6	20.2	42.4	89.6	115.3	167.7	148.0	104.3	59.1
8	24.5	18.6	16.0	12.9	18.0	42.2	86.8	117.1	161.6	155.5	100.3	58.3
9	23.5	18.6	16.2	13.6	15.8	43.3	79.1	121.8	153.4	161.3	95.8	57.4
10	23.3	18.5	16.4	13.8	16.7	44.5	78.1	127.4	154.4	168.9	92.5	56.6
11	23.0	18.2	16.7	13.4	15.4	44.5	78.2	135.2	158.9	169.2	88.5	56.0
12	23.4	17.5	17.5	15.1	15.1	43.1	78.2	138.1	162.2	174.8	84.7	55.4
13	23.8	16.4	16.4	16.4	19.7	38.9	75.8	141.1	165.5	171.4	81.0	54.0
14	24.4	16.0	13.4	15.9	17.3	34.7	81.2	143.4	168.7	169.5	79.1	54.0
15	24.3	15.9	11.8	15.9	14.6	30.0	86.2	137.7	168.2	165.6	77.6	53.3
16	23.5	15.8	12.3	16.4	15.6	24.5	89.1	142.3	165.0	165.0	75.3	52.7
17	23.2	16.2	11.8	14.8	14.6	19.4	88.9	137.1	162.3	161.8	76.8	51.4
18	22.7	16.1	12.2	11.4	11.2	20.9	94.2	135.7	157.9	157.5	75.2	50.8
19	22.1	16.2	15.8	11.3	13.5	23.4	98.9	134.3	159.1	154.3	74.6	49.4
20	21.9	15.2	16.7	11.4	15.2	31.1	91.9	139.4	154.6	150.2	72.1	49.5
21	21.8	14.1	16.7	12.8	10.1	33.2	91.9	137.8	154.9	148.2	71.7	48.1
22	20.9	13.9	17.2	12.6	12.9	34.3	94.9	141.0	152.8	143.4	69.3	48.1
23	15.9	15.0	18.0	17.3	14.3	38.4	96.2	138.8	153.4	144.3	68.2	47.4
24	18.5	15.1	15.6	14.6	15.7	44.6	96.3	144.1	152.6	145.2	67.1	47.4
25	18.8	16.2	18.1	15.4	21.8	45.7	105.4	155.2	154.9	143.2	67.8	46.7
26	19.7	16.9	17.5	13.8	28.1	54.5	106.7	161.6	148.4	143.1	67.9	46.6
27	20.8	16.0	17.9	15.1	31.3	65.2	109.7	163.6	144.6	144.8	66.6	45.0
28	25.4	15.6	18.3	12.2	34.7	70.9	110.3	174.2	141.8	140.9	67.3	45.0
29	23.0	15.5	19.6	14.0	35.8	70.4	111.9	177.4	141.0	139.0	65.4	44.1
30	22.5	-	16.9	13.0	31.0	75.5	106.9	181.2	136.9	137.6	64.6	38.3
31	21.9	-	16.8	-	30.9	-	108.5	182.3	-	133.2	-	35.5
Total	716.7	493.3	510.8	427.7	602.7	1,231.9	2,843.7	4,307.2	4,870.0	4,689.6	2,567.7	1,615.6
Mean	23.1	17.0	16.5	14.3	19.4	41.1	91.7	138.9	162.3	151.3	85.6	52.1
Max.	195.6	Q356=	12.6	Q186=	45.7							
Min.	10.1	Q276=	18.0	Q96=	113.1							

*** River Daily Discharge Data ***

STATION : BOALI DAM ESTIMATED INFLOW

RIVER : MBALI

YEAR : 1997

Unit : m3/sec

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	34.7	27.3	17.8	21.9	28.0	20.4	54.9	48.9	108.2	62.8	69.6	37.3
2	37.2	26.0	18.3	23.4	24.7	21.8	55.8	49.6	105.1	63.0	69.8	37.3
3	40.8	26.0	18.1	23.4	22.8	24.7	55.1	51.5	99.0	61.5	68.0	37.0
4	40.0	24.8	17.4	27.5	22.6	21.7	55.1	55.0	95.7	61.9	68.6	36.4
5	39.5	25.0	17.4	22.4	22.1	23.3	51.5	61.2	92.5	62.1	70.2	35.2
6	38.9	23.8	17.7	22.3	21.8	24.2	45.5	64.0	90.2	65.6	68.7	34.5
7	39.2	24.0	17.0	22.2	22.4	23.0	42.6	71.3	88.5	65.9	67.2	34.5
8	38.6	23.6	17.1	21.5	22.3	23.6	37.8	76.7	87.3	67.4	70.2	33.2
9	40.2	23.7	17.2	21.7	20.1	23.6	34.8	81.2	81.6	66.5	67.2	32.8
10	40.5	22.4	18.1	20.9	20.5	22.3	29.6	81.4	82.5	65.9	65.1	32.3
11	40.5	21.9	17.7	18.7	20.8	20.4	33.6	80.6	79.4	66.0	62.5	32.0
12	39.9	21.3	18.6	14.2	21.0	24.8	33.9	79.4	75.7	69.2	61.3	31.0
13	40.3	20.1	17.6	15.6	20.5	27.9	34.2	77.9	72.0	67.6	56.0	31.2
14	39.3	20.1	12.7	15.7	24.1	29.8	35.7	80.9	72.6	68.1	52.1	29.8
15	38.8	20.1	13.9	11.1	23.5	26.9	42.7	79.6	68.8	66.9	48.1	29.1
16	37.6	20.1	15.3	13.2	25.4	35.4	42.3	83.3	63.3	65.5	47.2	27.6
17	37.6	20.2	15.3	18.3	22.7	34.3	41.6	84.4	63.8	59.7	41.7	27.6
18	36.3	20.3	16.0	17.7	22.8	31.0	41.9	83.8	63.9	58.9	43.5	26.3
19	35.6	19.3	20.3	18.3	20.3	33.6	39.9	81.7	64.6	54.1	45.7	26.6
20	33.4	19.7	18.5	23.5	20.0	40.5	37.3	84.1	65.1	52.2	46.0	26.7
21	33.3	20.1	18.9	22.4	15.6	33.2	35.1	79.9	67.8	49.9	45.8	26.9
22	31.1	18.7	18.7	22.5	17.6	37.2	34.2	74.5	68.9	50.1	48.1	25.6
23	30.8	19.1	20.0	21.9	18.2	34.1	35.3	75.8	71.1	49.2	47.1	25.9
24	29.9	18.6	20.8	20.9	17.3	34.7	37.8	75.1	71.7	50.5	45.8	25.7
25	29.1	17.8	18.1	21.6	17.0	38.0	38.1	75.2	73.4	53.1	45.3	25.5
26	28.4	17.6	18.7	20.8	19.6	44.2	40.0	77.8	74.6	56.1	42.7	25.4
27	29.2	19.2	19.8	23.2	19.2	45.1	41.8	82.4	73.2	56.6	40.5	26.2
28	28.8	18.3	17.8	24.9	17.2	54.3	42.8	86.5	70.8	61.6	39.1	26.1
29	27.8	-	18.3	25.8	16.6	54.8	44.9	94.6	70.3	64.0	37.8	25.2
30	28.8	-	17.4	26.5	19.5	54.6	44.7	99.0	68.6	65.9	36.8	24.7
31	27.7	-	21.4	-	19.3	-	45.1	101.0	-	66.2	-	24.6
Total	1,093.7	599.3	551.9	624.1	645.5	963.5	1,285.5	2,378.3	2,329.9	1,894.0	1,617.7	920.4
Mean	35.3	21.4	17.8	20.8	20.8	32.1	41.5	76.7	77.7	61.1	53.9	29.7
Max.	108.2	Q356=	15.7	Q186=	34.2							
Min.	11.1	Q276=	22.1	Q96=	55.1							

*** River Daily Discharge Data ***

STATION : BOALI DAM ESTIMATED INFLOW

RIVER : MBALI

YEAR : 1998 Unit : m3/sec

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	22.8	21.4	15.0	12.5	14.8	15.9	20.7	37.1	132.0	140.1	137.4	62.3
2	22.5	20.5	16.2	13.9	16.7	13.5	19.9	41.9	136.8	143.1	133.9	60.3
3	22.5	18.8	18.1	13.0	16.2	13.6	21.3	39.5	139.7	143.0	132.1	59.0
4	21.2	19.0	19.5	12.2	16.3	14.0	22.0	39.6	129.4	139.4	131.8	58.5
5	21.2	19.3	20.3	13.5	15.9	13.2	21.1	40.3	120.9	135.1	132.5	57.2
6	22.6	19.0	21.9	11.6	17.9	13.7	19.7	45.4	123.4	133.3	131.6	55.9
7	22.8	20.9	20.4	10.6	17.1	16.3	21.3	47.9	122.9	135.4	130.3	55.8
8	22.6	19.1	17.9	10.5	20.4	15.3	17.4	57.0	126.6	137.6	129.5	55.0
9	23.3	19.8	15.4	9.3	25.0	21.7	21.8	65.4	125.7	138.4	128.0	54.6
10	23.3	19.1	12.9	8.1	32.0	27.1	25.7	71.3	133.7	143.9	126.4	55.9
11	22.0	19.0	8.2	7.2	33.0	34.2	28.7	71.2	130.0	149.6	125.5	55.9
12	20.5	17.6	6.5	8.3	35.7	39.4	38.0	74.6	125.0	150.7	123.5	54.9
13	19.7	18.7	9.0	9.5	34.6	47.2	43.9	77.8	126.4	148.6	119.6	55.1
14	20.3	16.8	9.7	11.1	31.2	45.7	40.7	77.1	132.1	148.9	113.0	54.2
15	19.1	15.7	10.2	11.5	29.6	45.5	41.1	81.4	137.9	146.1	107.5	52.6
16	20.4	14.5	12.5	13.9	27.8	42.8	43.6	82.6	146.9	143.1	99.8	51.5
17	20.3	14.6	14.4	11.6	25.4	39.6	41.3	75.0	155.5	142.2	91.8	51.3
18	20.1	14.3	11.2	12.1	22.7	36.9	45.7	74.6	157.3	145.0	85.5	49.2
19	18.7	15.1	10.9	11.9	20.5	33.5	54.9	71.7	159.6	146.5	81.9	48.2
20	19.8	15.3	11.8	12.4	17.7	31.6	57.6	73.2	156.8	150.6	78.7	48.0
21	17.4	16.0	12.6	13.2	16.1	27.6	59.2	78.4	149.0	151.2	76.3	47.2
22	19.3	15.4	11.6	13.8	15.0	28.1	59.7	89.4	146.1	152.0	76.1	46.4
23	19.9	15.2	12.4	13.4	14.0	25.9	61.9	91.4	142.7	152.5	74.6	46.3
24	20.6	15.8	13.2	13.0	13.9	26.9	58.3	98.4	140.0	150.3	72.5	45.7
25	19.9	16.1	13.5	11.0	13.4	21.0	59.3	98.0	135.7	145.8	69.6	45.2
26	22.9	16.0	13.8	10.0	11.7	21.6	56.8	99.3	135.2	145.1	68.1	44.5
27	21.1	15.3	14.1	10.4	13.3	18.9	55.4	100.0	131.5	142.8	66.9	43.7
28	21.5	15.4	13.8	12.1	14.6	17.4	47.6	104.2	131.7	141.6	65.3	43.7
29	22.8	-	13.1	13.6	14.8	14.8	43.7	105.3	134.4	142.4	64.7	42.5
30	21.8	-	13.5	13.8	15.3	19.1	40.2	119.2	138.8	141.8	63.5	41.9
31	20.6	-	12.0	-	17.6	-	39.2	125.6	-	138.5	-	41.4
Total	653.9	483.9	425.6	349.0	630.2	782.1	1,228.0	2,353.5	4,103.5	4,464.8	3,037.8	1,583.9
Mean	21.1	17.3	13.7	11.6	20.3	26.1	39.6	75.9	136.8	144.0	101.3	51.1
Max.	159.6	Q356=	10.0	Q186=	32.0							
Min.	6.5	Q276=	16.2	Q96=	77.1							

Table 3 Sample of BOALI Dam Water Balance Calculation (1988)

Spill Way 572.00 m
LWL : 552.00 m
548.50 m

Year : 1988 Outflow discha: 25.00 m^3/s

Month	Day	WL	Wd	V	A	P	Evap	Qin	Qof	Qv	Qout	Pv	Evapv	Qinv	Qoutv
		m	m	x1000 m^3	x1000 m^2	mm	mm	m^3/s	m^3/s	m^3/s	m^3/s	x1000m^3	x1000m^3	x1000 m^3	x1000 m^3
		564.63	16.13	94,014	14,687										
Jan.	1	564.51	16.01	92,226	14,473	0.0	5.0	5.0	0.0	25.0	25.0	0.0	58.7	431.1	2160.0
	2	564.40	15.90	90,479	14,263	0.0	5.0	5.5	0.0	25.0	25.0	0.0	57.9	470.9	2160.0
	3	564.33	15.83	89,524	14,148	56.0	5.0	5.4	0.0	25.0	25.0	798.7	57.1	463.1	2160.0
	4	564.22	15.72	87,832	13,943	0.0	5.0	6.1	0.0	25.0	25.0	0.0	56.6	524.4	2160.0
	5	564.11	15.61	86,320	13,759	0.0	5.0	8.1	0.0	25.0	25.0	0.0	55.8	703.3	2160.0
	6	564.00	15.50	84,721	13,564	0.0	5.0	7.1	0.0	25.0	25.0	0.0	55.0	616.0	2160.0
	7	563.88	15.38	83,006	13,354	0.0	5.0	5.8	0.0	25.0	25.0	0.0	54.3	499.4	2160.0
	8	563.75	15.25	81,281	13,142	0.0	5.0	5.7	0.0	25.0	25.0	0.0	53.4	489.0	2160.0
	9	563.64	15.14	79,746	12,952	0.0	5.0	7.8	0.0	25.0	25.0	0.0	52.6	677.4	2160.0
	10	563.52	15.02	78,144	12,753	0.0	5.0	7.1	0.0	25.0	25.0	0.0	51.8	610.0	2160.0
	11	563.40	14.90	76,514	12,549	0.0	5.0	6.7	0.0	25.0	25.0	0.0	51.0	580.6	2160.0
	12	563.28	14.78	74,816	12,336	0.0	5.0	5.9	0.0	25.0	25.0	0.0	50.2	512.4	2160.0
	13	563.14	14.64	73,037	12,111	0.0	5.0	5.0	0.0	25.0	25.0	0.0	49.3	430.3	2160.0
	14	562.99	14.49	71,182	11,875	0.0	5.0	4.1	0.0	25.0	25.0	0.0	48.4	353.4	2160.0
	15	562.85	14.35	69,335	11,639	0.0	5.0	4.2	0.0	25.0	25.0	0.0	47.5	360.3	2160.0
	16	562.70	14.20	67,501	11,403	0.0	5.0	4.3	0.0	25.0	25.0	0.0	46.6	373.2	2160.0
	17	562.55	14.05	65,671	11,166	0.0	5.0	4.3	0.0	25.0	25.0	0.0	45.6	375.0	2160.0
	18	562.40	13.90	63,849	10,929	0.0	5.0	4.4	0.0	25.0	25.0	0.0	44.7	382.8	2160.0
	19	562.24	13.74	61,996	10,686	0.0	5.0	4.1	0.0	25.0	25.0	0.0	43.7	350.8	2160.0
	20	562.08	13.58	60,140	10,441	0.0	5.0	4.0	0.0	25.0	25.0	0.0	42.7	347.3	2160.0
	21	561.92	13.42	58,265	10,191	0.0	5.0	3.8	0.0	25.0	25.0	0.0	41.8	326.6	2160.0
	22	561.75	13.25	56,388	9,939	0.0	5.0	3.7	0.0	25.0	25.0	0.0	40.8	323.1	2160.0
	23	561.58	13.08	54,490	9,683	0.0	5.0	3.5	0.0	25.0	25.0	0.0	39.8	302.4	2160.0
	24	561.40	12.90	52,592	9,424	0.0	5.0	3.5	0.0	25.0	25.0	0.0	38.7	300.7	2160.0
	25	561.22	12.72	50,695	9,163	0.0	5.0	3.5	0.0	25.0	25.0	0.0	37.7	300.7	2160.0
	26	561.03	12.53	48,785	8,899	0.0	5.0	3.4	0.0	25.0	25.0	0.0	36.7	289.4	2160.0
	27	560.84	12.34	46,858	8,629	0.0	5.0	3.1	0.0	25.0	25.0	0.0	35.6	265.2	2160.0
	28	560.64	12.14	44,915	8,354	0.0	5.0	2.9	0.0	25.0	25.0	0.0	34.5	252.3	2160.0
	29	560.44	11.94	42,973	8,077	0.0	5.0	2.9	0.0	25.0	25.0	0.0	33.4	250.6	2160.0
	30	560.22	11.72	41,010	7,793	0.0	5.0	2.7	0.0	25.0	25.0	0.0	32.3	229.8	2160.0
	31	560.01	11.51	39,047	7,507	0.0	5.0	2.6	0.0	25.0	25.0	0.0	31.2	228.1	2160.0
Feb.	1	559.78	11.28	37,088	7,217	0.0	5.0	2.7	0.0	25.0	25.0	0.0	30.0	230.7	2160.0
	2	559.55	11.05	35,160	6,929	0.0	5.0	3.0	0.0	25.0	25.0	0.0	28.9	260.9	2160.0
	3	559.31	10.81	33,224	6,636	0.0	5.0	2.9	0.0	25.0	25.0	0.0	27.7	252.3	2160.0
	4	559.06	10.56	31,279	6,337	0.0	5.0	2.8	0.0	25.0	25.0	0.0	26.5	241.1	2160.0
	5	558.82	10.32	29,435	6,049	17.9	5.0	2.6	0.0	25.0	25.0	113.4	25.3	228.1	2160.0
	6	558.55	10.05	27,477	5,740	0.0	5.0	2.6	0.0	25.0	25.0	0.0	24.2	226.4	2160.0
	7	558.27	9.77	25,500	5,421	0.0	5.0	2.4	0.0	25.0	25.0	0.0	23.0	205.6	2160.0
	8	557.97	9.47	23,524	5,097	0.0	5.0	2.4	0.0	25.0	25.0	0.0	21.7	205.6	2160.0
	9	557.68	9.18	21,707	4,794	0.0	5.0	4.2	0.0	25.0	25.0	0.0	20.4	363.7	2160.0
	10	557.37	8.87	19,837	4,475	1.5	5.0	3.5	0.0	25.0	25.0	7.2	19.2	301.5	2160.0
	11	557.04	8.54	17,995	4,154	19.6	5.0	2.9	0.0	25.0	25.0	87.7	17.9	248.8	2160.0
	12	556.69	8.19	16,147	3,824	0.0	5.0	3.8	0.0	25.0	25.0	0.0	16.6	328.3	2160.0
	13	556.31	7.81	14,253	3,476	0.0	5.0	3.3	0.0	25.0	25.0	0.0	15.3	280.8	2160.0
	14	555.89	7.39	12,357	3,117	0.0	5.0	3.2	0.0	25.0	25.0	0.0	13.9	278.2	2160.0
	15	555.44	6.94	10,491	2,751	0.0	5.0	3.6	0.0	25.0	25.0	0.0	12.5	306.7	2160.0
	16	554.93	6.43	8,601	2,364	0.0	5.0	3.3	0.0	25.0	25.0	0.0	11.0	280.8	2160.0
	17	554.34	5.84	6,706	1,955	0.0	5.0	3.2	0.0	25.0	25.0	0.0	9.5	274.8	2160.0
	18	553.63	5.13	4,792	1,512	0.0	5.0	2.9	0.0	25.0	25.0	0.0	7.8	254.0	2160.0
	19	552.72	4.22	2,879	1,024	0.0	5.0	2.9	0.0	25.0	25.0	0.0	6.0	252.3	2160.0
	20	552.72	4.22	2,875	1,023	0.0	5.0	2.9	0.0	2.9	2.9	0.0	4.1	252.3	252.3
	21	552.72	4.22	2,870	1,022	0.0	5.0	2.9	0.0	2.9	2.9	0.0	4.1	249.7	249.7
	22	552.71	4.21	2,866	1,021	0.0	5.0	2.3	0.0	2.3	2.3	0.0	4.1	195.3	195.3
	23	552.71	4.21	2,862	1,020	0.0	5.0	1.8	0.0	1.8	1.8	0.0	4.1	156.4	156.4
	24	552.71	4.21	2,858	1,019	0.0	5.0	1.6	0.0	1.6	1.6	0.0	4.1	140.8	140.8
	25	552.71	4.21	2,854	1,018	0.0	5.0	1.5	0.0	1.5	1.5	0.0	4.1	126.1	126.1
	26	552.70	4.20	2,850	1,017	0.0	5.0	1.4	0.0	1.4	1.4	0.0	4.1	124.4	124.4
	27	552.70	4.20	2,846	1,016	0.0	5.0	1.4	0.0	1.4	1.4	0.0	4.1	124.4	124.4
	28	552.70	4.20	2,842	1,015	0.0	5.0	1.4	0.0	1.4	1.4	0.0	4.1	124.4	124.4
	29	552.70	4.20	2,838	1,013	0.0	5.0	1.4	0.0	1.4	1.4	0.0	4.1	123.6	123.6
Mar.	1	552.69	4.19	2,834	1,012	0.0	5.0	1.4	0.0	1.4	1.4	0.0	4.1	119.2	119.2
	2	552.69	4.19	2,830	1,011	0.0	5.0	0.9	0.0	0.9	0.9	0.0	4.0	75.9	75.9
	3	552.69	4.19	2,826	1,010	0.0	5.0	1.3	0.0	1.3	1.3	0.0	4.0	108.0	108.0
	4	552.70	4.20	2,840	1,014	18.3	5.0	1.0	0.0	1.0	1.0	18.5	4.0	84.9	84.9
	5	552.70	4.20	2,836	1,013	0.0	5.0	0.7	0.0	0.7	0.7	0.0	4.1	58.7	58.7
	6	552.69	4.19	2,832	1,012	0.0	5.0	1.1	0.0	1.1	1.1	0.0	4.1	95.9	95.9
	7	552.69	4.19	2,828	1,011	0.0	5.0	0.8	0.0	0.8	0.8	0.0	4.0	70.2	70.2
	8	552.69	4.19	2,824	1,010	0.0	5.0	0.7	0.0	0.7	0.7	0.0	4.0	64.5	64.5
	9	552.69	4.19	2,820	1,008	0.0	5.0	3.4	0.0	3.4	3.4	0.0	4.0	290.3	290.3
	10	552.69	4.19	2,820	1,008	4.0	5.0	6.3	0.0	6.3	6.3	4.0	4.0	540.0	540.0
	11	552.68	4.18	2,816	1,007	0.0	5.0	4.9	0.0	4.9	4.9	0.0	4.0	426.0	426.0
	12	552.69	4.19	2,829	1,011	16.8	5.0	4.6	0.0	4.6	4.6	16.9	4.0	399.2	399.2

Year : 1988 Outflow discha: 25.00 m³/s

Month	Day	WL	Hd	V	A	P	Evap	Qin	Qof	Qv	Qout	Pv	Evapv	Qinv	Qoutv
		m	m	x1000 m³	x1000 m²	mm	mm	m³/s	m³/s	m³/s	m³/s	x1000m³	x1000m³	x1000 m³	x1000 m³
	13	552.69	4.19	2,828	1,011	3.5	5.0	4.1	0.0	4.1	4.1	3.5	4.0	352.5	352.5
	14	552.69	4.19	2,824	1,010	0.0	5.0	3.8	0.0	3.8	3.8	0.0	4.0	328.3	328.3
	15	552.69	4.19	2,820	1,009	0.0	5.0	3.5	0.0	3.5	3.5	0.0	4.0	303.3	303.3
	16	552.68	4.18	2,816	1,007	0.0	5.0	4.5	0.0	4.5	4.5	0.0	4.0	385.3	385.3
	17	552.69	4.19	2,830	1,011	17.6	5.0	5.3	0.0	5.3	5.3	17.7	4.0	455.3	455.3
	18	552.69	4.19	2,826	1,010	0.0	5.0	4.2	0.0	4.2	4.2	0.0	4.0	359.4	359.4
	19	552.69	4.19	2,822	1,009	0.0	5.0	3.3	0.0	3.3	3.3	0.0	4.0	287.7	287.7
	20	552.69	4.19	2,818	1,008	0.0	5.0	2.8	0.0	2.8	2.8	0.0	4.0	244.5	244.5
	21	552.68	4.18	2,814	1,007	0.0	5.0	3.3	0.0	3.3	3.3	0.0	4.0	288.6	288.6
	22	552.69	4.19	2,827	1,011	17.6	5.0	3.9	0.0	3.9	3.9	17.7	4.0	332.6	332.6
	23	552.69	4.19	2,823	1,009	0.0	5.0	3.4	0.0	3.4	3.4	0.0	4.0	292.9	292.9
	24	552.69	4.19	2,820	1,009	0.6	5.0	3.6	0.0	3.6	3.6	0.6	4.0	308.4	308.4
	25	552.68	4.18	2,816	1,007	0.0	5.0	3.1	0.0	3.1	3.1	0.0	4.0	264.4	264.4
	26	552.68	4.18	2,812	1,006	0.0	5.0	2.6	0.0	2.6	2.6	0.0	4.0	220.3	220.3
	27	552.68	4.18	2,808	1,005	0.5	5.0	2.7	0.0	2.7	2.7	0.5	4.0	235.0	235.0
	28	552.68	4.18	2,804	1,004	0.0	5.0	2.2	0.0	2.2	2.2	0.0	4.0	190.9	190.9
	29	552.68	4.18	2,800	1,003	0.0	5.0	2.0	0.0	2.0	2.0	0.0	4.0	171.1	171.1
	30	552.67	4.17	2,797	1,002	0.3	5.0	1.9	0.0	1.9	1.9	0.3	4.0	159.8	159.8
	31	552.67	4.17	2,793	1,001	0.0	5.0	1.2	0.0	1.2	1.2	0.0	4.0	102.8	102.8
Apr.	1	552.67	4.17	2,789	1,000	0.0	4.0	1.3	0.0	1.3	1.3	0.0	3.2	114.0	114.0
	2	552.68	4.18	2,802	1,004	15.8	4.0	1.0	0.0	1.0	1.0	15.8	3.2	89.9	89.9
	3	552.67	4.17	2,799	1,003	0.0	4.0	1.3	0.0	1.3	1.3	0.0	3.2	112.3	112.3
	4	552.67	4.17	2,796	1,002	0.0	4.0	1.0	0.0	1.0	1.0	0.0	3.2	85.8	85.8
	5	552.67	4.17	2,792	1,001	0.0	4.0	0.7	0.0	0.7	0.7	0.0	3.2	57.5	57.5
	6	552.67	4.17	2,789	1,000	0.0	4.0	1.0	0.0	1.0	1.0	0.0	3.2	84.1	84.1
	7	552.67	4.17	2,786	999	0.0	4.0	1.0	0.0	1.0	1.0	0.0	3.2	84.0	84.0
	8	552.67	4.17	2,783	998	0.0	4.0	0.9	0.0	0.9	0.9	0.0	3.2	81.3	81.3
	9	552.67	4.17	2,791	1,001	11.3	4.0	0.3	0.0	0.3	0.3	11.3	3.2	26.3	26.3
	10	552.67	4.17	2,788	1,000	0.0	4.0	0.1	0.0	0.1	0.1	0.0	3.2	10.2	10.2
	11	552.67	4.17	2,784	999	0.0	4.0	0.3	0.0	0.3	0.3	0.0	3.2	28.9	28.9
	12	552.67	4.17	2,793	1,001	12.0	4.0	0.1	0.0	0.1	0.1	12.0	3.2	9.6	9.6
	13	552.70	4.20	2,841	1,014	51.2	4.0	0.1	0.0	0.1	0.1	51.3	3.2	9.0	9.0
	14	552.70	4.20	2,838	1,013	0.0	4.0	0.4	0.0	0.4	0.4	0.0	3.2	38.6	38.6
	15	552.70	4.20	2,835	1,013	0.0	4.0	0.6	0.0	0.6	0.6	0.0	3.2	52.0	52.0
	16	552.70	4.20	2,851	1,017	18.8	4.0	0.6	0.0	0.6	0.6	19.0	3.2	51.8	51.8
	17	552.70	4.20	2,850	1,017	2.8	4.0	1.5	0.0	1.5	1.5	2.8	3.3	127.0	127.0
	18	552.70	4.20	2,847	1,016	0.3	4.0	2.2	0.0	2.2	2.2	0.3	3.3	191.8	191.8
	19	552.70	4.20	2,847	1,016	3.2	4.0	3.4	0.0	3.4	3.4	3.3	3.3	291.2	291.2
	20	552.70	4.20	2,844	1,015	0.0	4.0	6.1	0.0	6.1	6.1	0.0	3.3	528.8	528.8
	21	552.70	4.20	2,843	1,015	1.9	4.0	5.7	0.0	5.7	5.7	1.9	3.2	488.2	488.2
	22	552.70	4.20	2,839	1,014	0.0	4.0	12.8	0.0	12.8	12.8	0.0	3.2	1105.9	1105.9
	23	552.70	4.20	2,840	1,014	3.7	4.0	13.2	0.0	13.2	13.2	3.8	3.2	1140.5	1140.5
	24	552.70	4.20	2,837	1,013	0.0	4.0	9.1	0.0	9.1	9.1	0.0	3.2	782.8	782.8
	25	552.69	4.19	2,833	1,012	0.0	4.0	7.4	0.0	7.4	7.4	0.0	3.2	637.6	637.6
	26	552.69	4.19	2,830	1,011	0.0	4.0	7.1	0.0	7.1	7.1	0.0	3.2	614.3	614.3
	27	552.69	4.19	2,827	1,010	0.0	4.0	6.3	0.0	6.3	6.3	0.0	3.2	541.7	541.7
	28	552.69	4.19	2,824	1,010	0.0	4.0	6.0	0.0	6.0	6.0	0.0	3.2	519.3	519.3
	29	552.69	4.19	2,820	1,009	0.0	4.0	5.5	0.0	5.5	5.5	0.0	3.2	477.8	477.8
	30	552.69	4.19	2,817	1,008	0.0	4.0	5.0	0.0	5.0	5.0	0.0	3.2	433.7	433.7
May	1	552.69	4.19	2,831	1,011	16.5	4.0	6.9	0.0	6.9	6.9	16.6	3.2	591.8	591.8
	2	552.70	4.20	2,842	1,014	14.2	4.0	5.6	0.0	5.6	5.6	14.4	3.2	484.7	484.7
	3	552.70	4.20	2,839	1,014	0.0	4.0	8.1	0.0	8.1	8.1	0.0	3.2	699.0	699.0
	4	552.70	4.20	2,835	1,013	0.0	4.0	9.4	0.0	9.4	9.4	0.0	3.2	811.3	811.3
	5	552.70	4.20	2,848	1,016	15.4	4.0	9.3	0.0	9.3	9.3	15.6	3.2	799.2	799.2
	6	552.70	4.20	2,844	1,015	0.0	4.0	5.6	0.0	5.6	5.6	0.0	3.3	487.3	487.3
	7	552.70	4.20	2,841	1,014	0.0	4.0	4.9	0.0	4.9	4.9	0.0	3.2	426.0	426.0
	8	552.70	4.20	2,838	1,013	0.0	4.0	4.2	0.0	4.2	4.2	0.0	3.2	360.3	360.3
	9	552.70	4.20	2,835	1,013	0.0	4.0	4.7	0.0	4.7	4.7	0.0	3.2	406.1	406.1
	10	552.69	4.19	2,831	1,012	0.0	4.0	16.6	0.0	16.6	16.6	0.0	3.2	1434.2	1434.2
	11	552.69	4.19	2,828	1,011	0.0	4.0	17.9	0.0	17.9	17.9	0.0	3.2	1546.6	1546.6
	12	552.69	4.19	2,825	1,010	0.0	4.0	13.6	0.0	13.6	13.6	0.0	3.2	1175.0	1175.0
	13	552.69	4.19	2,830	1,011	8.2	4.0	8.5	0.0	8.5	8.5	8.3	3.2	731.8	731.8
	14	552.69	4.19	2,827	1,010	0.0	4.0	6.3	0.0	6.3	6.3	0.0	3.2	546.0	546.0
	15	552.69	4.19	2,824	1,009	0.0	4.0	4.7	0.0	4.7	4.7	0.0	3.2	409.5	409.5
	16	552.70	4.20	2,845	1,015	24.8	4.0	3.9	0.0	3.9	3.9	25.0	3.2	339.6	339.6
	17	552.70	4.20	2,842	1,015	0.0	4.0	3.8	0.0	3.8	3.8	0.0	3.2	324.9	324.9
	18	552.70	4.20	2,839	1,014	0.0	4.0	3.8	0.0	3.8	3.8	0.0	3.2	324.9	324.9
	19	552.70	4.20	2,836	1,013	0.0	4.0	3.9	0.0	3.9	3.9	0.0	3.2	337.0	337.0
	20	552.70	4.20	2,841	1,014	8.4	4.0	6.1	0.0	6.1	6.1	8.5	3.2	527.9	527.9
	21	552.70	4.20	2,848	1,016	10.7	4.0	12.0	0.0	12.0	12.0	10.9	3.2	1036.8	1036.8
	22	552.71	4.21	2,854	1,018	9.1	4.0	13.8	0.0	13.8	13.8	9.2	3.3	1192.3	1192.3
	23	552.72	4.22	2,876	1,024	24.1	4.0	11.0	0.0	11.0	11.0	24.5	3.3	950.4	950.4
	24	552.72	4.22	2,873	1,023	0.5	4.0	15.4	0.0	15.4	15.4	0.5	3.3	1330.6	1330.6
	25	552.72	4.22	2,870	1,022	0.2	4.0	16.6	0.0	16.6	16.6	0.2	3.3	1434.2	1434.2
	26	552.71	4.21	2,867	1,021	0.0	4.0	17.9	0.0	17.9	17.9	0.0	3.3	1546.6	1546.6
	27	552.71	4.21	2,863	1,020	0.0	4.0	20.9	0.0	20.9	20.9	0.0	3.3	1805.8	1805.8
	28	552.71	4.21	2,860	1,019	0.0	4.0	24.5	0.0	24.5	24.5	0.0	3.3	2116.8	2116.8
	29	552.71	4.21	2,858	1,019	1.5	4.0	19.1	0.0	19.1	19.1	1.5	3.3	1650.2	1650.2

Year : 1988 Outflow discha 25.00 m³/s

Month	Day	WL	Hd	V	A	P	Evap	Qin	Qof	Qv	Qout	Pv	Evapv	Qinv	Qoutv
		m	m	x1000 m³	x1000 m²	mm	mm	m³/s	m³/s	m³/s	m³/s	x1000m³	x1000m³	x1000 m³	x1000 m³
	30	552.71	4.21	2,858	1,019	3.1	4.0	12.1	0.0	12.1	12.1	3.2	3.3	1045.4	1045.4
	31	552.72	4.22	2,881	1,025	26.0	4.0	8.8	0.0	8.8	8.8	26.5	3.3	762.0	762.0
June	1	552.72	4.22	2,881	1,025	2.5	4.0	6.8	0.0	6.8	6.8	2.6	3.3	584.9	584.9
	2	552.72	4.22	2,877	1,024	0.0	4.0	6.2	0.0	6.2	6.2	0.0	3.3	538.3	538.3
	3	552.72	4.22	2,875	1,023	0.5	4.0	17.3	0.0	17.3	17.3	0.5	3.3	1494.7	1494.7
	4	552.72	4.22	2,872	1,023	0.2	4.0	21.0	0.0	21.0	21.0	0.2	3.3	1814.4	1814.4
	5	552.86	4.36	3,140	1,095	3.7	4.0	28.1	0.0	25.0	25.0	3.8	3.3	2427.8	2160.0
	6	553.09	4.59	3,572	1,208	19.1	4.0	29.8	0.0	25.0	25.0	20.9	3.5	2574.7	2160.0
	7	553.47	4.97	4,406	1,418	0.0	4.0	34.7	0.0	25.0	25.0	0.0	3.9	2998.1	2160.0
	8	553.82	5.32	5,266	1,625	6.4	4.0	34.9	0.0	25.0	25.0	9.1	4.5	3015.4	2160.0
	9	553.68	5.18	4,910	1,540	18.1	4.0	20.6	0.0	25.0	25.0	29.4	5.2	1779.8	2160.0
	10	553.57	5.07	4,641	1,476	30.4	4.0	21.4	0.0	25.0	25.0	46.8	4.9	1849.0	2160.0
	11	553.92	5.42	5,509	1,682	0.0	4.0	35.1	0.0	25.0	25.0	0.0	4.7	3032.6	2160.0
	12	554.33	5.83	6,670	1,947	0.0	4.0	38.5	0.0	25.0	25.0	0.0	5.4	3326.4	2160.0
	13	554.52	6.02	7,264	2,078	10.9	4.0	31.7	0.0	25.0	25.0	21.2	6.2	2738.9	2160.0
	14	554.58	6.08	7,453	2,119	19.1	4.0	26.8	0.0	25.0	25.0	39.7	6.6	2315.5	2160.0
	15	554.70	6.20	7,840	2,202	2.8	4.0	29.5	0.0	25.0	25.0	5.9	6.8	2548.8	2160.0
	16	554.82	6.32	8,222	2,284	0.0	4.0	29.5	0.0	25.0	25.0	0.0	7.0	2548.8	2160.0
	17	554.93	6.43	8,609	2,365	6.0	4.0	29.4	0.0	25.0	25.0	13.7	7.3	2540.2	2160.0
	18	555.17	6.67	9,447	2,539	39.7	4.0	33.7	0.0	25.0	25.0	93.9	7.6	2911.7	2160.0
	19	555.42	6.92	10,406	2,734	0.0	4.0	36.2	0.0	25.0	25.0	0.0	8.1	3127.7	2160.0
	20	556.01	7.51	12,902	3,222	50.2	4.0	52.4	0.0	25.0	25.0	137.2	8.7	4527.4	2160.0
	21	556.70	8.20	16,173	3,829	20.9	4.0	62.2	0.0	25.0	25.0	67.3	10.3	5374.1	2160.0
	22	557.49	8.99	20,585	4,603	0.0	4.0	76.2	0.0	25.0	25.0	0.0	12.3	6583.7	2160.0
	23	558.25	9.75	25,369	5,400	25.3	4.0	79.2	0.0	25.0	25.0	116.5	14.7	6842.9	2160.0
	24	558.91	10.41	30,101	6,154	7.4	4.0	79.5	0.0	25.0	25.0	40.0	17.3	6868.8	2160.0
	25	559.54	11.04	35,092	6,919	0.0	4.0	83.0	0.0	25.0	25.0	0.0	19.7	7171.2	2160.0
	26	560.18	11.68	40,638	7,739	28.0	4.0	87.2	0.0	25.0	25.0	193.7	22.1	7534.1	2160.0
	27	560.80	12.30	46,425	8,568	36.4	4.0	89.0	0.0	25.0	25.0	281.7	24.8	7689.6	2160.0
	28	561.45	12.95	53,136	9,498	0.0	4.0	103.0	0.0	25.0	25.0	0.0	27.4	8899.2	2160.0
	29	562.14	13.64	60,729	10,519	2.1	4.0	113.0	0.0	25.0	25.0	19.9	30.4	9763.2	2160.0
	30	562.79	14.29	68,611	11,546	21.5	4.0	114.0	0.0	25.0	25.0	226.2	33.7	9849.6	2160.0
Jul.	1	563.44	14.94	76,954	12,604	29.0	3.0	118.0	0.0	25.0	25.0	334.8	27.7	10195.2	2160.0
	2	564.04	15.54	85,304	13,636	0.0	3.0	122.0	0.0	25.0	25.0	0.0	30.2	10540.8	2160.0
	3	564.61	16.11	93,655	14,644	0.2	3.0	122.0	0.0	25.0	25.0	2.7	32.7	10540.8	2160.0
	4	565.16	16.66	102,195	15,653	1.5	3.0	124.0	0.0	25.0	25.0	22.0	35.1	10713.6	2160.0
	5	565.66	17.16	110,471	16,613	1.2	3.0	121.0	0.0	25.0	25.0	18.8	37.6	10454.4	2160.0
	6	566.14	17.64	118,553	17,533	0.0	3.0	119.0	0.0	25.0	25.0	0.0	39.9	10281.6	2160.0
	7	566.56	18.06	126,114	18,381	0.0	3.0	113.0	0.0	25.0	25.0	0.0	42.1	9763.2	2160.0
	8	566.96	18.46	133,421	19,189	9.8	3.0	108.0	0.0	25.0	25.0	180.1	44.1	9331.2	2160.0
	9	567.31	18.81	140,201	19,929	0.0	3.0	104.0	0.0	25.0	25.0	0.0	46.1	8985.6	2160.0
	10	567.66	19.16	146,942	20,657	2.5	3.0	103.0	0.0	25.0	25.0	49.8	47.8	8899.2	2160.0
	11	567.91	19.41	152,128	21,212	0.0	3.0	85.6	0.0	25.0	25.0	0.0	49.6	7395.8	2160.0
	12	568.12	19.62	156,443	21,670	9.5	3.0	73.2	0.0	25.0	25.0	201.5	50.9	6324.5	2160.0
	13	568.27	19.77	159,594	22,002	0.7	3.0	61.9	0.0	25.0	25.0	15.2	52.0	5348.2	2160.0
	14	568.36	19.86	161,408	22,193	0.0	3.0	46.6	0.0	25.0	25.0	0.0	52.8	4026.2	2160.0
	15	568.43	19.93	162,867	22,346	0.0	3.0	42.5	0.0	25.0	25.0	0.0	53.3	3672.0	2160.0
	16	568.48	19.98	163,962	22,461	0.0	3.0	38.3	0.0	25.0	25.0	0.0	53.6	3309.1	2160.0
	17	568.52	20.02	164,833	22,552	0.0	3.0	35.7	0.0	25.0	25.0	0.0	53.9	3084.5	2160.0
	18	568.54	20.04	165,306	22,601	0.0	3.0	31.1	0.0	25.0	25.0	0.0	54.1	2687.0	2160.0
	19	568.54	20.04	165,338	22,605	0.0	3.0	26.0	0.0	25.0	25.0	0.0	54.2	2246.4	2160.0
	20	568.53	20.03	165,067	22,576	0.0	3.0	22.5	0.0	25.0	25.0	0.0	54.3	1944.0	2160.0
	21	568.51	20.01	164,642	22,532	0.0	3.0	20.7	0.0	25.0	25.0	0.0	54.2	1788.5	2160.0
	22	568.50	20.00	164,421	22,509	15.6	3.0	19.0	0.0	25.0	25.0	351.5	54.1	1641.6	2160.0
	23	568.48	19.98	163,893	22,454	3.9	3.0	18.5	0.0	25.0	25.0	87.8	54.0	1598.4	2160.0
	24	568.53	20.03	165,047	22,574	36.5	3.0	29.5	0.0	25.0	25.0	819.6	53.9	2548.8	2160.0
	25	568.53	20.03	165,106	22,580	0.0	3.0	26.3	0.0	25.0	25.0	0.0	54.2	2272.3	2160.0
	26	568.55	20.05	165,368	22,608	9.8	3.0	26.1	0.0	25.0	25.0	221.3	54.2	2255.0	2160.0
	27	568.58	20.08	166,133	22,688	0.7	3.0	34.3	0.0	25.0	25.0	15.8	54.3	2963.5	2160.0
	28	568.63	20.13	167,089	22,787	0.0	3.0	36.7	0.0	25.0	25.0	0.0	54.3	3170.9	2160.0
	29	568.66	20.16	167,769	22,858	0.0	3.0	33.5	0.0	25.0	25.0	0.0	54.7	2894.4	2160.0
	30	568.67	20.17	168,103	22,893	0.0	3.0	29.5	0.0	25.0	25.0	0.0	54.9	2548.8	2160.0
	31	568.67	20.17	167,997	22,882	0.8	3.0	24.2	0.0	25.0	25.0	18.3	54.9	2090.9	2160.0
Aug.	1	568.66	20.16	167,799	22,861	0.9	3.0	23.1	0.0	25.0	25.0	20.6	54.9	1995.8	2160.0
	2	568.65	20.15	167,613	22,842	2.2	3.0	22.9	0.0	25.0	25.0	50.3	54.9	1978.6	2160.0
	3	568.64	20.14	167,349	22,814	3.7	3.0	21.6	0.0	25.0	25.0	84.5	54.8	1866.2	2160.0
	4	568.63	20.13	167,135	22,792	4.4	3.0	22.0	0.0	25.0	25.0	100.4	54.8	1900.8	2160.0
	5	568.63	20.13	167,242	22,803	8.6	3.0	24.6	0.0	25.0	25.0	196.0	54.7	2125.4	2160.0
	6	568.68	20.18	168,311	22,914	9.5	3.0	35.5	0.0	25.0	25.0	216.6	54.7	3067.2	2160.0
	7	568.72	20.22	169,219	23,009	14.9	3.0	32.2	0.0	25.0	25.0	341.4	55.0	2782.1	2160.0
	8	568.77	20.27	170,253	23,116	0.0	3.0	37.6	0.0	25.0	25.0	0.0	55.2	3248.6	2160.0
	9	568.90	20.40	173,000	23,400	2.0	3.0	56.9	0.0	25.0	25.0	46.2	55.5	4916.2	2160.0
	10	569.11	20.61	177,643	23,879	25.8	3.0	72.4	0.0	25.0	25.0	603.7	56.2	6255.4	2160.0
	11	569.27	20.77	181,340	24,257	0.2	3.0	68.4	0.0	25.0	25.0	4.8	57.3	5909.8	2160.0
	12	569.40	20.90	184,245	24,554	0.0	3.0	59.3	0.0	25.0	25.0	0.0	58.2	5123.5	2160.0
	13	569.47	20.97	185,895	24,721	8.7	3.0	42.3	0.0	25.0	25.0	213.6	58.9	3654.7	2160.0
	14	569.56	21.06	187,956	24,930	1.9	3.0	49.0	0.0	25.0	25.0	47.0	59.3	4233.6	2160.0
	15	569.65	21.15	190,117	25,149	1.4	3.0	50.3	0.0	25.0	25.0	34.9	59.8	4345.9	2160.0

Year : 1988 Outflow discha: 25.00 m³/s

Month	Day	WL	Wd	V	A	P	Evap	Qin	Qof	Qv	Qout	Pv	Evapv	Qinv	Qoutv
		m	m	x1000 m³	x1000 m³	mm	mm	m³/s	m³/s	m³/s	m³/s	x1000m³	x1000m³	x1000 m³	x1000 m³
	16	569.74	21.24	192,284	25,368	10.6	3.0	47.7	0.0	25.0	25.0	266.6	60.4	4121.3	2160.0
	17	569.82	21.32	194,131	25,554	1.3	3.0	46.7	0.0	25.0	25.0	33.0	60.9	4034.9	2160.0
	18	569.87	21.37	195,305	25,672	0.0	3.0	39.3	0.0	25.0	25.0	0.0	61.3	3395.5	2160.0
	19	569.90	21.40	196,059	25,747	2.8	3.0	33.6	0.0	25.0	25.0	71.9	61.6	2903.0	2160.0
	20	569.93	21.43	196,774	25,819	9.7	3.0	31.1	0.0	25.0	25.0	249.7	61.8	2687.0	2160.0
	21	569.99	21.49	198,077	25,949	0.0	3.0	40.8	0.0	25.0	25.0	0.0	62.0	3525.1	2160.0
	22	570.04	21.54	199,293	26,071	0.0	3.0	39.8	0.0	25.0	25.0	0.0	62.3	3438.7	2160.0
	23	570.16	21.66	202,223	26,363	49.5	3.0	44.7	0.0	25.0	25.0	1290.5	62.6	3862.1	2160.0
	24	570.33	21.83	206,516	26,790	3.0	3.0	74.5	0.0	25.0	25.0	79.1	63.3	6436.8	2160.0
	25	570.58	22.08	212,507	27,381	20.6	3.0	88.7	0.0	25.0	25.0	551.9	64.3	7663.7	2160.0
	26	570.80	22.30	218,265	27,946	0.0	3.0	92.4	0.0	25.0	25.0	0.0	65.7	7983.4	2160.0
	27	571.03	22.53	223,984	28,504	3.3	3.0	90.9	0.0	25.0	25.0	92.2	67.1	7853.8	2160.0
	28	571.24	22.74	229,544	29,043	5.0	3.0	88.5	0.0	25.0	25.0	142.5	68.4	7646.4	2160.0
	29	571.45	22.95	235,131	29,581	0.5	3.0	90.3	0.0	25.0	25.0	14.5	69.7	7801.9	2160.0
	30	571.68	23.18	241,218	30,164	1.1	3.0	95.9	0.0	25.0	25.0	32.5	71.0	8285.8	2160.0
	31	571.91	23.41	247,531	30,765	0.0	3.0	98.9	0.0	25.0	25.0	0.0	72.4	8545.0	2160.0
Sept.	1	572.21	23.71	255,854	31,552	63.1	4.0	100.0	0.0	25.0	25.0	1941.3	98.4	8640.0	2160.0
	2	572.45	23.95	262,751	32,200	0.0	4.0	106.0	11.6	13.4	25.0	0.0	101.0	9158.4	2160.0
	3	572.71	24.21	270,012	32,877	2.5	4.0	121.0	36.7	0.0	36.7	80.5	103.0	10454.4	3171.4
	4	572.94	24.44	276,700	33,498	47.0	4.0	132.0	71.3	0.0	71.3	1545.2	105.2	11404.8	6156.4
	5	573.00	24.50	278,618	33,675	0.0	4.0	132.0	108.6	0.0	108.6	0.0	107.2	11404.8	9379.3
	6	573.04	24.54	279,873	33,791	7.3	4.0	133.0	120.1	0.0	120.1	245.8	107.8	11491.2	10374.1
	7	573.06	24.56	280,351	33,835	4.0	4.0	133.0	127.8	0.0	127.8	135.2	108.1	11491.2	11040.5
	8	573.08	24.58	280,840	33,880	6.8	4.0	135.0	130.8	0.0	130.8	230.1	108.3	11664.0	11297.3
	9	573.09	24.59	281,227	33,915	6.5	4.0	137.0	133.8	0.0	133.8	220.2	108.4	11836.8	11561.6
	10	573.10	24.60	281,579	33,948	1.5	4.0	141.0	136.3	0.0	136.3	50.9	108.5	12182.4	11772.2
	11	573.16	24.66	283,459	34,121	14.0	4.0	156.0	138.5	0.0	138.5	475.3	108.6	13478.4	11965.0
	12	573.32	24.82	288,098	34,546	16.5	4.0	199.0	150.6	0.0	150.6	563.0	109.2	17193.6	13008.1
	13	573.21	24.71	284,856	34,249	0.7	4.0	145.0	181.5	0.0	181.5	24.2	110.5	12528.0	15603.8
	14	573.14	24.64	282,856	34,065	2.1	4.0	137.0	159.7	0.0	159.7	71.9	109.6	11836.8	13799.1
	15	573.16	24.66	283,308	34,107	23.2	4.0	144.0	146.7	0.0	146.7	790.3	109.0	12441.6	12671.0
	16	573.19	24.69	284,189	34,188	0.1	4.0	161.0	149.6	0.0	149.6	3.4	109.1	13910.4	12923.5
	17	573.23	24.73	285,398	34,299	6.5	4.0	168.0	155.3	0.0	155.3	222.2	109.4	14515.2	13419.9
	18	573.22	24.72	285,262	34,286	0.0	4.0	163.0	163.3	0.0	163.3	0.0	109.8	14083.2	14109.0
	19	573.17	24.67	283,563	34,130	0.0	4.0	144.0	162.4	0.0	162.4	0.0	109.7	12441.6	14031.2
	20	573.11	24.61	281,759	33,964	4.1	4.0	130.0	151.2	0.0	151.2	139.9	109.2	11232.0	13066.3
	21	573.06	24.56	280,243	33,825	3.4	4.0	122.0	139.6	0.0	139.6	115.5	108.7	10540.8	12063.8
	22	573.02	24.52	279,177	33,726	0.0	4.0	119.0	130.1	0.0	130.1	0.0	108.2	10281.6	11239.0
	23	573.00	24.50	278,559	33,669	1.5	4.0	117.0	123.5	0.0	123.5	50.6	107.9	10108.8	10669.4
	24	573.00	24.50	278,481	33,662	2.7	4.0	119.0	119.7	0.0	119.7	90.9	107.7	10281.6	10343.1
	25	573.00	24.50	278,507	33,664	2.0	4.0	120.0	119.2	0.0	119.2	67.3	107.7	10368.0	10301.9
	26	573.00	24.50	278,500	33,664	4.0	4.0	119.0	119.4	0.0	119.4	134.7	107.7	10281.6	10315.4
	27	573.03	24.53	279,612	33,766	32.0	4.0	121.0	119.3	0.0	119.3	1077.2	107.7	10454.4	10311.8
	28	573.04	24.54	279,881	33,791	11.6	4.0	126.0	126.2	0.0	126.2	391.7	108.1	10886.4	10900.7
	29	573.07	24.57	280,538	33,852	17.1	4.0	130.0	127.8	0.0	127.8	577.8	108.1	11232.0	11044.7
	30	573.09	24.59	281,378	33,929	7.4	4.0	140.0	131.9	0.0	131.9	250.5	108.3	12096.0	11398.3
Oct.	1	573.23	24.73	285,552	34,313	9.6	4.0	183.0	137.2	0.0	137.2	325.7	108.6	15811.2	11854.9
	2	573.34	24.84	288,719	34,603	8.2	4.0	199.0	164.3	0.0	164.3	281.4	109.8	17193.6	14197.5
	3	573.34	24.84	288,824	34,613	0.7	4.0	188.0	185.8	0.0	185.8	24.2	110.7	16243.2	16052.1
	4	573.31	24.81	287,916	34,530	0.7	4.0	177.0	186.5	0.0	186.5	24.2	110.8	15292.8	16114.4
	5	573.26	24.76	286,226	34,375	0.0	4.0	162.0	180.3	0.0	180.3	0.0	110.5	13996.8	15575.7
	6	573.21	24.71	284,835	34,247	0.0	4.0	154.0	168.8	0.0	168.8	0.0	110.0	13305.6	14587.2
	7	573.17	24.67	283,726	34,145	0.0	4.0	148.0	159.6	0.0	159.6	0.0	109.6	12787.2	13786.7
	8	573.15	24.65	283,193	34,096	11.1	4.0	143.0	152.3	0.0	152.3	379.0	109.3	12355.2	13157.9
	9	573.12	24.62	282,026	33,989	1.5	4.0	136.0	148.8	0.0	148.8	51.1	109.1	11750.4	12858.7
	10	573.08	24.58	281,079	33,902	1.6	4.0	131.0	141.3	0.0	141.3	54.4	108.8	11318.4	12210.9
	11	573.06	24.56	280,504	33,849	4.9	4.0	128.0	135.3	0.0	135.3	166.1	108.5	11059.2	11692.0
	12	573.06	24.56	280,448	33,844	0.8	4.0	132.0	131.7	0.0	131.7	27.1	108.3	11404.8	11380.0
	13	573.05	24.55	280,062	33,808	10.6	4.0	124.0	131.4	0.0	131.4	358.7	108.3	10713.6	11349.5
	14	572.99	24.49	278,337	33,649	0.6	4.0	110.0	129.0	0.0	129.0	20.3	108.2	9504.0	11141.9
	15	572.95	24.45	277,048	33,530	6.9	4.0	102.0	118.4	0.0	118.4	232.2	107.7	8812.8	10226.2
	16	572.91	24.41	275,916	33,425	3.5	4.0	97.4	110.6	0.0	110.6	117.4	107.3	8415.4	9557.4
	17	572.89	24.39	275,252	33,364	0.0	4.0	97.5	103.9	0.0	103.9	0.0	107.0	8424.0	8981.1
	18	572.90	24.40	275,682	33,403	21.5	4.0	98.0	100.1	0.0	100.1	717.3	106.8	8467.2	8647.9
	19	572.92	24.42	276,371	33,467	17.6	4.0	105.0	102.6	0.0	102.6	587.9	106.9	9072.0	8863.1
	20	572.95	24.45	277,075	33,532	0.0	4.0	116.0	106.6	0.0	106.6	0.0	107.1	10022.4	9211.8
	21	572.97	24.47	277,678	33,588	0.0	4.0	119.0	110.8	0.0	110.8	0.0	107.3	10281.6	9571.4
	22	572.97	24.47	277,726	33,592	8.2	4.0	113.0	114.4	0.0	114.4	275.4	107.5	9763.2	9882.7
	23	572.96	24.46	277,289	33,552	2.2	4.0	110.0	114.7	0.0	114.7	73.9	107.5	9504.0	9907.8
	24	572.95	24.45	277,175	33,541	5.1	4.0	110.0	112.1	0.0	112.1	171.1	107.4	9504.0	9681.5
	25	572.96	24.46	277,367	33,559	30.5	4.0	103.0	111.4	0.0	111.4	1023.0	107.3	8899.2	9622.9
	26	572.91	24.41	276,016	33,434	4.7	4.0	96.3	112.5	0.0	112.5	157.7	107.4	8320.3	9721.9
	27	572.89	24.39	275,503	33,387	3.7	4.0	98.4	104.5	0.0	104.5	123.7	107.0	8501.8	9031.6
	28	572.90	24.40	275,608	33,397	0.0	4.0	104.0	101.5	0.0	101.5	0.0	106.8	8985.6	8773.4
	29	572.89	24.39	275,254	33,364	0.0	4.0	99.3	102.2	0.0	102.2	0.0	106.9	8579.5	8826.2
	30	572.88	24.38	274,931	33,334	0.0	4.0	97.6	100.1	0.0	100.1	0.0	106.8	8432.6	8649.3
	31	572.87	24.37	274,656	33,308	0.0	4.0	96.3	98.2	0.0	98.2	0.0	106.7	8320.3	8488.4
Nov.	1	572.86	24.36	274,388	33,284	0.0	4.0	94.8	96.7	0.0	96.7	0.0	106.6	8190.7	8352.4

Year : 1988 Outflow discha: 25.00 m^3/s

Month	Day	WL	Wd	V	A	P	Evap	Qin	Qof	Qv	Qout	Pv	Evapv	Qinv	Qoutv
		m	m	x1000 m^3	x1000 m^2	mm	mm	m^3/s	m^3/s	m^3/s	m^3/s	x1000m^3	x1000m^3	x1000 m^3	x1000 m^3
	2	572.85	24.35	274,175	33,264	9.1	4.0	90.4	95.1	0.0	95.1	302.9	106.5	7810.6	8220.2
	3	572.85	24.35	274,243	33,270	24.3	4.0	86.6	93.9	0.0	93.9	808.3	106.4	7482.2	8115.6
	4	572.83	24.33	273,478	33,199	0.0	4.0	86.7	94.3	0.0	94.3	0.0	106.5	7490.9	8149.2
	5	572.81	24.31	272,965	33,152	0.0	4.0	85.3	90.0	0.0	90.0	0.0	106.2	7369.9	7776.8
	6	572.78	24.28	272,086	33,070	0.0	4.0	78.2	87.2	0.0	87.2	0.0	106.1	6756.5	7529.9
	7	572.74	24.24	270,898	32,960	0.0	4.0	69.8	82.3	0.0	82.3	0.0	105.8	6030.7	7112.3
	8	572.70	24.20	269,771	32,855	0.0	4.0	64.1	75.9	0.0	75.9	0.0	105.5	5538.2	6560.0
	9	572.66	24.16	268,810	32,766	0.0	4.0	60.1	70.0	0.0	70.0	0.0	105.1	5192.6	6048.3
	10	572.64	24.14	267,982	32,688	0.0	4.0	56.7	65.1	0.0	65.1	0.0	104.8	4898.9	5622.2
	11	572.61	24.11	267,298	32,625	0.0	4.0	54.2	60.9	0.0	60.9	0.0	104.6	4682.9	5262.6
	12	572.59	24.09	266,698	32,569	0.0	4.0	51.8	57.5	0.0	57.5	0.0	104.4	4475.5	4971.0
	13	572.57	24.07	266,185	32,521	0.0	4.0	49.9	54.6	0.0	54.6	0.0	104.2	4311.4	4719.6
	14	572.56	24.06	265,677	32,473	0.0	4.0	47.5	52.2	0.0	52.2	0.0	104.1	4104.0	4508.1
	15	572.54	24.04	265,238	32,432	0.0	4.0	45.9	49.8	0.0	49.8	0.0	103.9	3965.8	4301.3
	16	572.53	24.03	264,785	32,390	0.0	4.0	43.7	47.7	0.0	47.7	0.0	103.8	3775.7	4124.9
	17	572.51	24.01	264,416	32,356	0.0	4.0	42.6	45.7	0.0	45.7	0.0	103.6	3680.6	3945.5
	18	572.50	24.00	264,088	32,325	0.0	4.0	41.4	44.0	0.0	44.0	0.0	103.5	3577.0	3801.4
	19	572.49	23.99	263,862	32,304	0.0	4.0	41.1	42.5	0.0	42.5	0.0	103.4	3551.0	3674.5
	20	572.49	23.99	263,644	32,283	0.0	4.0	40.2	41.5	0.0	41.5	0.0	103.4	3473.3	3587.5
	21	572.48	23.98	263,380	32,259	0.0	4.0	38.7	40.6	0.0	40.6	0.0	103.3	3343.7	3504.7
	22	572.47	23.97	263,267	32,248	0.0	4.0	39.3	39.4	0.0	39.4	0.0	103.2	3395.5	3405.0
	23	572.47	23.97	263,127	32,235	0.0	4.0	38.5	38.9	0.0	38.9	0.0	103.2	3326.4	3362.7
	24	572.46	23.96	262,962	32,220	0.0	4.0	37.6	38.3	0.0	38.3	0.0	103.2	3248.6	3310.6
	25	572.46	23.96	262,781	32,203	0.0	4.0	36.7	37.6	0.0	37.6	0.0	103.1	3170.9	3249.3
	26	572.45	23.95	262,588	32,185	0.0	4.0	35.8	36.8	0.0	36.8	0.0	103.0	3093.1	3182.3
	27	572.44	23.94	262,398	32,167	0.0	4.0	35.0	36.0	0.0	36.0	0.0	103.0	3024.0	3111.8
	28	572.44	23.94	262,259	32,154	0.0	4.0	34.8	35.2	0.0	35.2	0.0	102.9	3006.7	3042.4
	29	572.43	23.93	262,110	32,140	0.0	4.0	34.1	34.6	0.0	34.6	0.0	102.9	2946.2	2992.2
	30	572.43	23.93	262,006	32,130	0.0	4.0	34.0	34.0	0.0	34.0	0.0	102.8	2937.6	2938.7
Dec.	1	572.46	23.96	262,853	32,209	0.0	5.0	44.9	33.6	0.0	33.6	0.0	128.5	3877.0	2901.5
	2	572.47	23.97	263,235	32,245	0.0	5.0	43.1	37.1	0.0	37.1	0.0	128.8	3719.5	3209.0
	3	572.47	23.97	263,329	32,254	0.0	5.0	41.4	38.8	0.0	38.8	0.0	129.0	3573.9	3350.8
	4	572.47	23.97	263,253	32,247	0.0	5.0	39.8	39.2	0.0	39.2	0.0	129.0	3439.1	3386.0
	5	572.47	23.97	263,159	32,238	0.0	5.0	39.3	38.9	0.0	38.9	0.0	128.0	3392.0	3357.6
	6	572.47	23.97	263,084	32,231	0.0	5.0	39.1	38.5	0.0	38.5	0.0	129.0	3376.7	3322.2
	7	572.48	23.98	263,491	32,269	14.7	5.0	38.9	38.1	0.0	38.1	473.8	128.9	3357.0	3294.5
	8	572.47	23.97	263,349	32,256	3.0	5.0	38.6	39.9	0.0	39.9	96.8	129.1	3336.7	3447.1
	9	572.47	23.97	263,143	32,237	0.0	5.0	38.4	39.3	0.0	39.3	0.0	129.0	3316.5	3393.4
	10	572.46	23.96	262,992	32,222	0.0	5.0	38.1	38.4	0.0	38.4	0.0	128.9	3294.1	3316.4
	11	572.46	23.96	262,869	32,211	0.0	5.0	37.8	37.7	0.0	37.7	0.0	128.9	3266.5	3260.2
	12	572.45	23.95	262,770	32,202	0.2	5.0	37.5	37.2	0.0	37.2	6.4	128.8	3238.4	3214.9
	13	572.45	23.95	262,676	32,193	0.0	5.0	37.2	36.8	0.0	36.8	0.0	128.8	3213.3	3178.5
	14	572.45	23.95	262,588	32,185	0.0	5.0	36.9	36.4	0.0	36.4	0.0	128.8	3184.9	3144.0
	15	572.45	23.95	262,504	32,177	0.0	5.0	36.5	36.0	0.0	36.0	0.0	128.7	3156.2	3111.8
	16	572.44	23.94	262,422	32,169	0.0	5.0	36.2	35.7	0.0	35.7	0.0	128.7	3127.4	3081.1
	17	572.44	23.94	262,341	32,161	0.0	5.0	35.9	35.3	0.0	35.3	0.0	128.7	3098.5	3051.1
	18	572.44	23.94	262,260	32,154	0.0	5.0	35.5	35.0	0.0	35.0	0.0	128.6	3069.5	3021.7
	19	572.43	23.93	262,179	32,146	0.0	5.0	35.2	34.6	0.0	34.6	0.0	128.6	3040.4	2992.5
	20	572.43	23.93	262,098	32,139	0.0	5.0	34.9	34.3	0.0	34.3	0.0	128.6	3011.1	2963.4
	21	572.43	23.93	262,017	32,131	0.0	5.0	34.5	34.0	0.0	34.0	0.0	128.6	2981.8	2934.3
	22	572.44	23.94	262,427	32,170	15.3	5.0	34.2	33.6	0.0	33.6	491.6	128.5	2952.4	2905.3
	23	572.43	23.93	262,178	32,146	0.0	5.0	33.9	35.3	0.0	35.3	0.0	128.7	2932.2	3053.1
	24	572.43	23.93	261,998	32,129	0.0	5.0	33.7	34.3	0.0	34.3	0.0	128.6	2912.0	2962.9
	25	572.42	23.92	261,856	32,116	0.0	5.0	33.4	33.5	0.0	33.5	0.0	128.5	2885.3	2898.6
	26	572.42	23.92	261,737	32,105	0.0	5.0	33.1	33.0	0.0	33.0	0.0	128.5	2856.8	2848.0
	27	572.41	23.91	261,631	32,095	0.0	5.0	32.7	32.5	0.0	32.5	0.0	128.4	2828.1	2805.6
	28	572.41	23.91	261,533	32,086	0.0	5.0	32.4	32.0	0.0	32.0	0.0	128.4	2799.3	2768.3
	29	572.41	23.91	261,441	32,077	0.0	5.0	32.1	31.6	0.0	31.6	0.0	128.3	2770.4	2734.1
	30	572.40	23.90	261,353	32,069	0.0	5.0	31.7	31.3	0.0	31.3	0.0	128.3	2741.4	2701.9
	31	572.38	23.88	260,713	32,009	0.0	5.0	25.0	30.9	0.0	30.9	0.0	128.3	2159.2	2670.9
Total						1,631	1,524					26,735	19,555	########	1,257,902
Mean		563.42	14.92	128,513	16,695	4.5	4.2	44.8	28.7	11.1	39.8	73.0	53.4	3,872.7	3,436.9
Max.		573.34	24.84	288,824	34,613	63.1		199.0	186.5	25.0	186.5	1,941.3	129.1	17,193.6	16,114.4
Min.		552.67	4.17	2,783	998			0.1	0.0	0.0	0.1	0.0	3.2	9.0	9.0

WL : Water level
Wd : Water depth
V : Storage volume
A : Water surface area

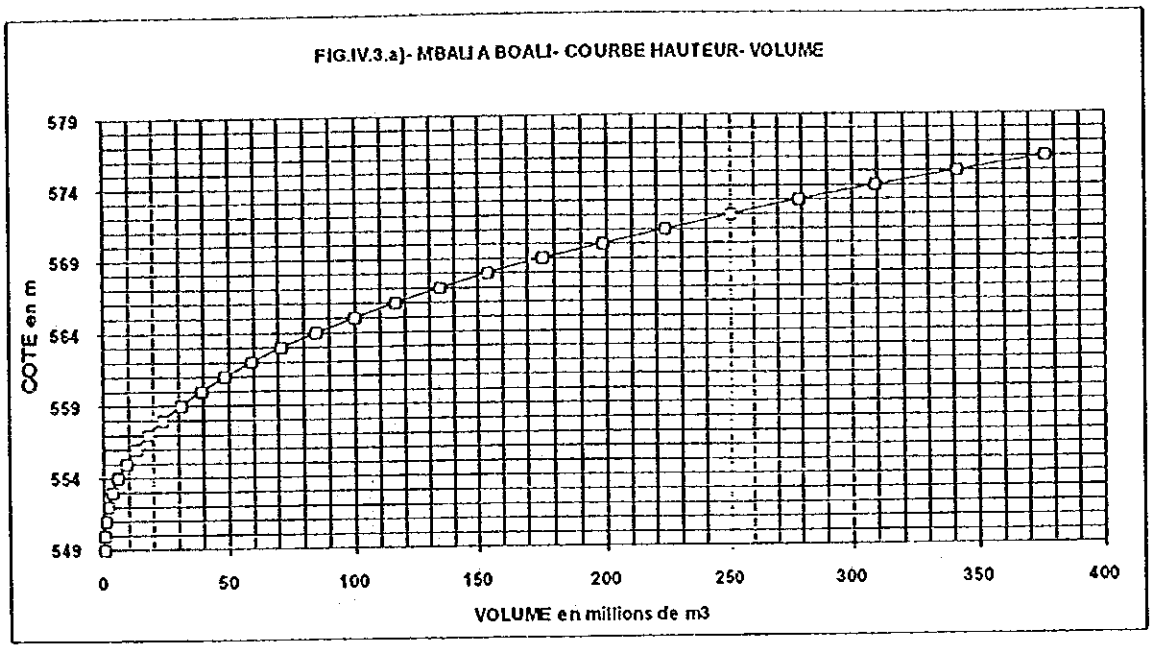
P : Precipitation
Evap : Evaporation
Qin : Inflow
Qof : Overflow

Qv : Valve flow
Qout : Out flow
Pv : Precipitation volume
Evapov : Evaporation volume

Qinv : Inflow volume
Qoutv : Outflow volume

Table 4 Summary of BOALI Dam Water Balance

Year	Qb = 25 m3/s						Qb = 20 m3/s			
	Vmin	WLmin	Vmin-r	Qo-min	Period when Qo<Qb	Insuffi-cient V	Vmin	WLmin	Vmin-r	Qo-min
	(MCM)	(m)	(%)	(m3/s)	(day)	(MCM)	(MCM)	(m)	(%)	(m3/s)
1964	216	570.72	84	25.0			240	571.64	93	20.0
1965	254	572.16	99	25.0			259	572.33	101	23.0
1966	249	571.96	96	25.0			259	572.31	100	20.9
1967	251	572.04	97	25.0			259	572.33	100	22.3
1968	260	572.36	101	26.1			260	572.36	101	26.1
1969	260	572.36	101	25.5			260	572.36	101	25.5
1970	262	572.42	101	32.3			262	572.42	101	32.3
1971	212	570.55	82	25.0			242	571.72	94	20.0
1972	165	568.52	64	25.0			216	570.72	84	20.0
1973	51	561.22	20	25.0			135	567.06	52	20.0
1974	68	562.74	26	25.0			160	568.27	62	20.0
1975	137	567.13	53	25.0			199	570.03	77	20.0
1976	249	571.95	96	25.0			259	572.31	100	20.7
1977	205	570.26	79	25.0			244	571.77	94	20.0
1978	154	567.99	60	25.0			214	570.63	83	20.0
1979	155	568.08	60	25.0			216	570.73	84	20.0
1980	145	567.57	56	25.0			199	570.04	77	20.0
1981	172	568.87	67	25.0			218	570.78	84	20.0
1982	171	568.81	66	25.0			218	570.78	84	20.0
1983	57	561.82	22	25.0			121	566.29	47	20.0
1984	63	562.35	25	25.0			141	567.36	55	20.0
1985	76	563.34	29	25.0			152	567.89	59	20.0
1986	19	557.17	7	25.0			100	565.01	39	20.0
1987	3	552.61	1	25.0			83	563.87	32	20.0
1988	3	552.67	1	0.1	106	179	6	554.15	2	20.0
1989	51	561.21	20	25.0			111	565.70	43	20.0
1990	3	552.80	1	4.8	37	47	53	561.45	21	20.0
1991	62	562.23	24	25.0			138	567.22	54	20.0
1992	125	566.47	48	25.0			174	568.93	67	20.0
1993	141	567.36	55	25.0			205	570.26	79	20.0
1994	129	566.70	50	25.0			195	569.85	76	20.0
1995	125	566.47	48	25.0			204	570.24	79	20.0
1996	162	568.40	63	25.0			217	570.75	84	20.0
1997	210	570.46	81	25.0			249	571.95	96	20.0
1998	138	567.19	53	25.0			205	570.27	79	20.0
average	143	566.20	55	24.0			191	569.19	74	20.9
min.	3	552.61	1	0.1			6	554.15	2	20.0



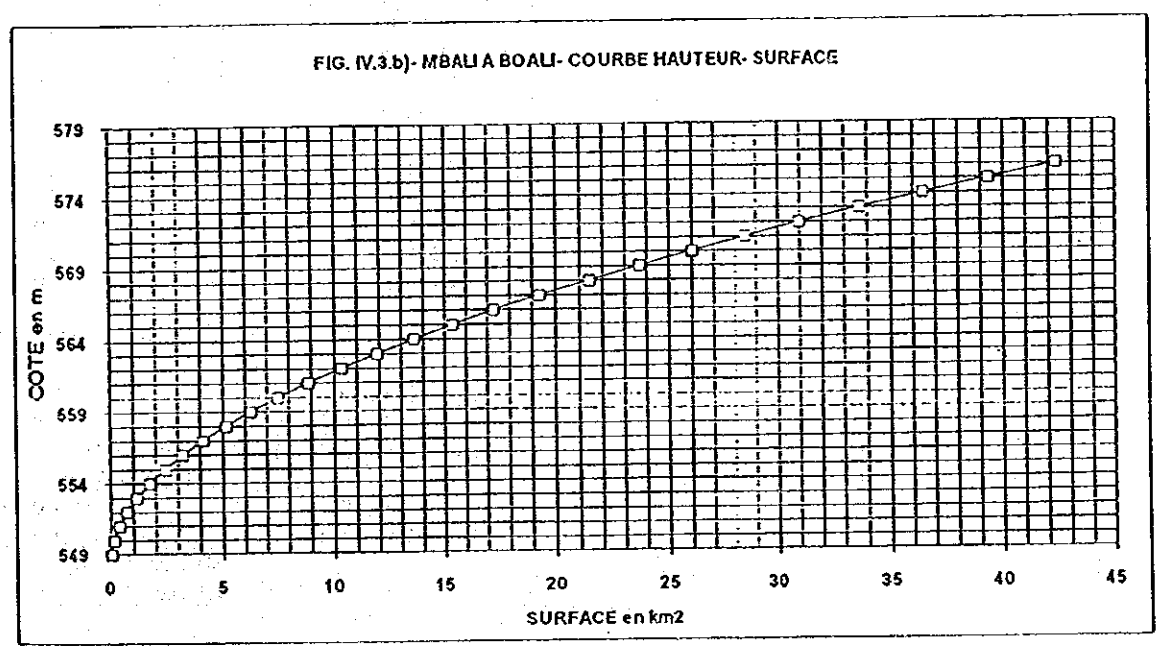
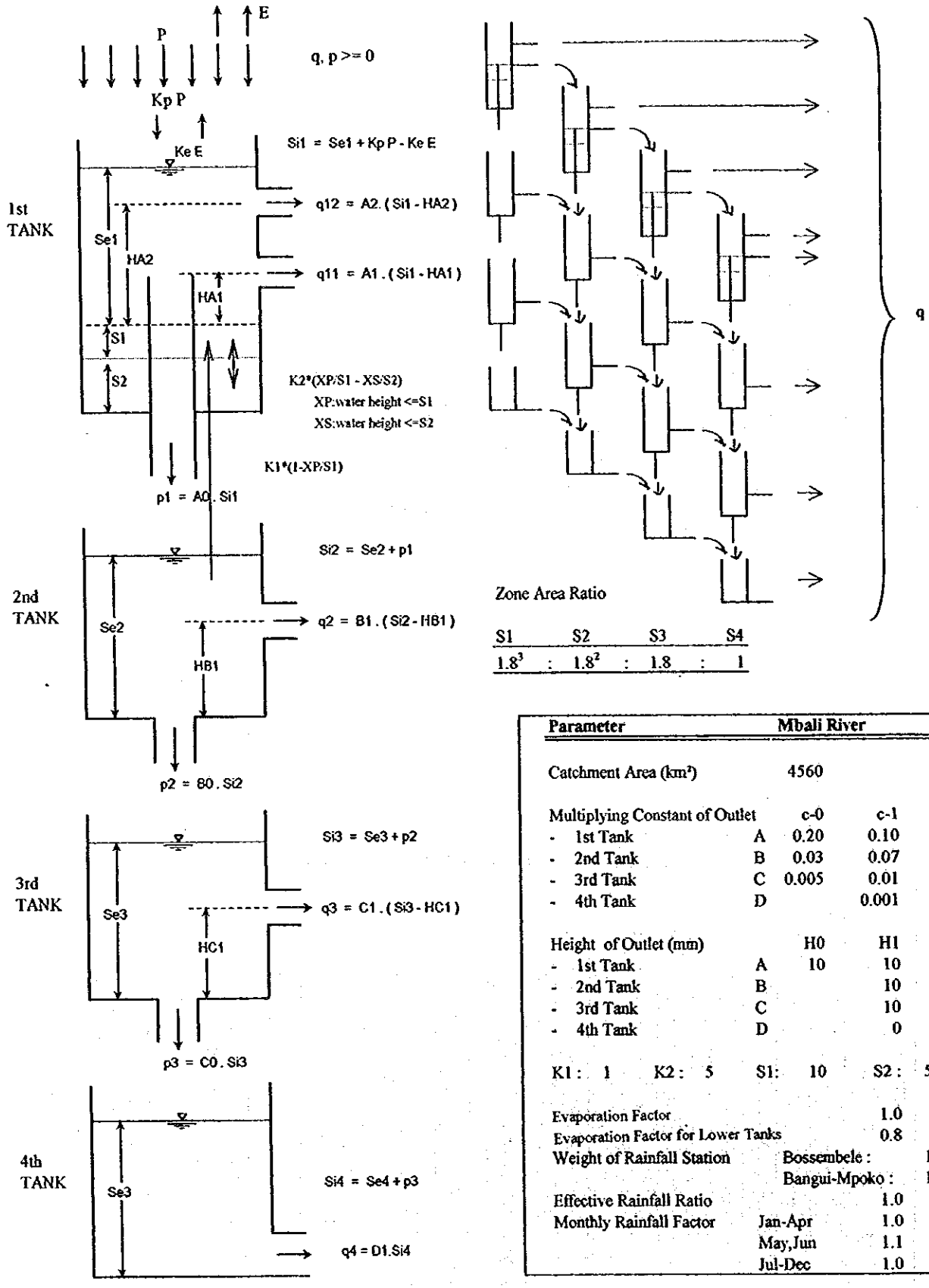


Fig. 1 H – V and H – A Curves of BOALI Dam



Parameter		Mbali River		
Catchment Area (km²)		4560		
Multiplying Constant of Outlet		c-0	c-1	c-2
- 1st Tank	A	0.20	0.10	0.12
- 2nd Tank	B	0.03	0.07	
- 3rd Tank	C	0.005	0.01	
- 4th Tank	D		0.001	
Height of Outlet (mm)		H0	H1	H2
- 1st Tank	A	10	10	120
- 2nd Tank	B		10	
- 3rd Tank	C		10	
- 4th Tank	D		0	
K1 : 1	K2 : 5	S1: 10	S2 : 50	
Evaporation Factor			1.0	
Evaporation Factor for Lower Tanks			0.8	
Weight of Rainfall Station		Bossembele :	1	
		Bangui-Mpoko :	1/4	
Effective Rainfall Ratio			1.0	
Monthly Rainfall Factor		Jan-Apr	1.0	
		May,Jun	1.1	
		Jul-Dec	1.0	

Fig, 2 Structure and Parameter of Selected Tank Model