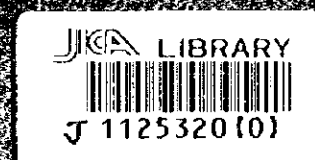


JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

DEPARTMENT OF IRRIGATION AND DRAINAGE
MINISTRY OF AGRICULTURE
MALAYSIA

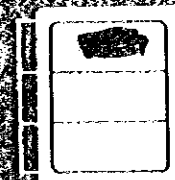
COMPREHENSIVE MANAGEMENT PLAN
OF MUDA RIVER BASIN

VOLUME 4
DATA BOOK
(FINAL REPORT)



DECEMBER 1995

CTI ENGINEERING CO., LTD.
IN ASSOCIATION WITH
INA CORPORATION



JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

**DEPARTMENT OF IRRIGATION AND DRAINAGE
MINISTRY OF AGRICULTURE
MALAYSIA**

**COMPREHENSIVE MANAGEMENT PLAN
OF MUDA RIVER BASIN**

**VOLUME 4
DATA BOOK
(FINAL REPORT)**

DECEMBER 1995

**CTI ENGINEERING CO., LTD.
IN ASSOCIATION WITH
INA CORPORATION**

1997-1998

1998-1999

1999-2000

2000-2001

2001-2002

2002-2003



1125320(0)

2003-2004

2004-2005

CONTENTS

I. HYDROLOGY

II. FLOOD MITIGATION PLAN

III. WATER RESOURCES MANAGEMENT PLAN

IV. RIVER ENVIRONMENTAL MANAGEMENT PLAN

DATA BOOK I
HYDROLOGY

**DATA BOOK I
HYDROLOGY**

TABLE OF CONTENTS

I. LOW FLOW ANALYSIS: GENERATED DAILY RUNOFF TABLE

1. Nami	I-1
2. Jeniang	I-19
3. Ldg. Victoria	I-37
4. Kuala Pegang	I-55
5. Lengkuas	I-73

**II. FLOOD RUNOFF ANALYSIS: CALCULATION OF PROBABLE
FLOOD RUNOFF DISCHARGE FOR 50-YEAR RETURN PERIOD**

1. Jeniang	I-91
2. Jam. Syed Omar	I-97
3. Ldg. Victoria	I-108
4. Kuala Pegang	I-128
5. Sik	I-131

**III. FLOOD RUNOFF ANALYSIS: CALCULATION OF NATURAL
FLOOD REGULATION EFFECTS BY MUDA DAM FOR 50-YEAR
RETURN PERIOD**

1. Jeniang	I-133
2. Jam. Syed Omar	I-139
3. Ldg. Victoria	I-150

*LOW FLOW ANALYSIS:
GENERATED DAILY RUNOFF TABLE*

NAMI

Generated Daily Runoff Table/ Gauging Station: Nami/ Year: 1961 - 1962 (Unit m3/s)

Table with 13 columns representing days of the month (0-12) and 30 rows representing days of the year (1-30). Includes '5-Day Total' and '5-Day Avc.' rows. Values range from 0 to 408.66.

Generated Daily Runoff Table/ Gauging Station: Nami/ Year: 1962 - 1963 (Unit m3/s)

Table with 13 columns representing days of the month (0-12) and 30 rows representing days of the year (1-30). Includes '5-Day Total' and '5-Day Avc.' rows. Values range from 0 to 1148.63.

Generated Daily Runoff Table/ Gauging Station: Namu/ Year: 1979 - 1980 (Unit m3/s)

Table with 31 rows (0-30) and 14 columns (0-13). Contains daily runoff data for 1979-1980. Includes 5-Day Total, 5-Day Ave., and Monthly Total/Ave.

Generated Daily Runoff Table/ Gauging Station: Namu/ Year: 1980 - 1981 (Unit m3/s)

Table with 31 rows (0-30) and 14 columns (0-13). Contains daily runoff data for 1980-1981. Includes 5-Day Total, 5-Day Ave., and Monthly Total/Ave.

Generated Daily Runoff Table/ Gauging Station: Nam/ Year: 1989 - 1990 (Unit m³/s)

Table with 13 columns (0-12) and 32 rows (1-32). Rows include daily runoff values and 5-day/5-day average averages. Values range from approximately 7.694 to 31.436.

Generated Daily Runoff Table/ Gauging Station: Nam/ Year: 1990 - 1991 (Unit m³/s)

Table with 13 columns (0-12) and 32 rows (1-32). Rows include daily runoff values and 5-day/5-day average averages. Values range from approximately 21.800 to 834.458.

Generated Daily Runoff Table/ Gauging Station: Nami/ Year: 1991 - 1992 (Unit m³/s)

0	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
6.023	36.178	66.328	32.569	48.610	45.187	30.830	58.872	29.779	14.050	5.602	5.262	5.262	14.050	5.602	5.262
5.433	33.912	66.301	30.584	42.485	40.118	32.538	48.466	28.883	13.485	5.565	5.229	5.229	13.485	5.565	5.229
4.883	28.862	392.807	30.657	46.386	37.027	31.212	42.233	27.163	12.356	5.492	5.158	5.158	12.356	5.492	5.158
4.284	29.799	106.891	29.515	44.054	38.174	31.212	38.801	26.329	11.659	5.455	5.123	5.123	11.659	5.455	5.123
8.487	26.156	94.992	29.080	44.668	35.174	29.346	38.801	26.329	11.659	5.455	5.123	5.123	11.659	5.455	5.123
29.080	154.908	730.019	152.675	229.308	199.971	156.488	228.135	140.193	64.607	27.643	25.966	25.966	64.607	27.643	25.966
5.816	30.982	146.004	30.535	45.861	39.994	31.298	45.827	28.039	12.921	5.529	5.193	5.193	12.921	5.529	5.193
11.944	44.107	84.482	49.396	42.844	32.297	27.561	37.754	25.504	11.586	5.419	5.088	5.088	11.586	5.419	5.088
12.207	39.389	76.213	45.908	41.181	28.648	27.967	36.155	24.689	11.329	5.416	5.052	5.052	11.329	5.416	5.052
12.923	35.644	69.553	52.429	39.725	34.786	27.260	44.163	23.397	10.632	5.414	5.017	5.017	10.632	5.414	5.017
24.780	31.302	64.139	51.867	37.035	32.324	25.256	57.622	23.115	9.988	5.383	5.068	5.068	9.988	5.383	5.068
24.508	43.878	58.157	46.621	34.195	37.730	24.050	55.268	22.816	9.335	5.349	5.011	5.011	9.335	5.349	5.011
86.382	194.321	352.544	246.216	194.980	166.736	132.094	230.962	120.025	52.890	26.382	25.136	25.136	52.890	26.382	25.136
17.272	38.864	70.509	49.243	38.995	30.747	26.419	46.192	24.005	10.578	5.386	5.027	5.027	10.578	5.386	5.027
20.041	40.065	53.122	43.225	32.297	34.378	23.591	76.401	22.697	8.693	32.034	12.726	12.726	8.693	32.034	12.726
20.053	41.209	48.858	41.959	32.137	33.175	23.591	73.909	26.757	8.063	29.935	11.325	11.325	8.063	29.935	11.325
18.090	36.720	45.920	41.010	32.011	30.839	55.095	70.239	31.833	7.443	24.326	8.099	8.099	7.443	24.326	8.099
15.740	33.718	42.033	39.119	31.016	28.685	49.244	62.959	29.514	6.894	20.113	6.197	6.197	6.894	20.113	6.197
12.365	37.715	39.334	36.150	30.202	28.491	43.480	56.953	28.060	6.344	18.999	5.557	5.557	6.344	18.999	5.557
86.289	188.927	228.677	201.464	157.663	153.558	232.555	340.471	138.985	37.377	125.407	43.904	43.904	37.377	125.407	43.904
17.258	37.785	45.735	40.293	31.533	30.712	46.511	63.094	27.797	7.475	25.081	8.781	8.781	7.475	25.081	8.781
9.527	36.544	38.108	40.005	29.314	28.477	41.386	53.255	26.230	6.138	16.413	5.002	5.002	6.138	16.413	5.002
8.167	33.261	37.091	37.358	28.609	30.141	39.243	43.939	28.524	6.106	13.358	4.969	4.969	6.106	13.358	4.969
7.540	31.246	36.092	36.680	31.822	33.008	37.352	44.734	21.923	6.071	10.090	4.934	4.934	6.071	10.090	4.934
6.923	29.094	35.110	35.146	36.015	33.595	41.339	51.325	21.253	6.038	8.486	4.898	4.898	6.038	8.486	4.898
6.876	27.652	34.145	43.111	33.690	32.297	40.332	47.088	20.518	6.004	8.486	4.863	4.863	6.004	8.486	4.863
39.083	157.797	180.577	192.300	159.451	157.517	200.151	245.302	113.432	30.356	56.813	24.667	24.667	30.356	56.813	24.667
7.807	31.559	36.109	38.460	31.890	31.503	40.030	49.060	22.680	6.071	11.363	4.933	4.933	6.071	11.363	4.933
6.848	43.197	33.199	39.135	32.524	31.211	45.299	45.034	19.785	5.970	8.603	4.828	4.828	5.970	8.603	4.828
12.462	58.536	44.565	40.403	30.774	33.577	40.930	42.984	19.086	5.937	8.129	4.793	4.793	5.937	8.129	4.793
10.727	54.629	46.849	49.365	29.165	31.861	41.216	40.095	18.388	5.903	7.432	4.758	4.758	5.903	7.432	4.758
12.795	67.257	42.922	79.921	27.145	31.744	40.527	38.015	17.763	5.870	6.747	4.722	4.722	5.870	6.747	4.722
11.792	63.229	40.553	72.401	26.421	31.285	38.586	36.845	17.222	5.836	6.074	4.706	4.706	5.836	6.074	4.706
54.623	286.853	207.089	281.225	146.028	159.678	206.559	203.972	92.195	29.517	36.986	23.806	23.806	29.517	36.986	23.806
10.925	57.371	41.418	56.245	29.206	31.936	41.312	40.794	18.439	5.903	7.397	4.761	4.761	5.903	7.397	4.761
10.271	65.808	38.608	64.841	25.960	31.802	37.748	34.486	16.557	5.803	5.413	4.704	4.704	5.803	5.413	4.704
15.173	68.027	35.556	57.936	41.937	31.205	41.439	38.239	15.904	5.770	5.303	5.431	5.431	5.770	5.303	5.431
12.820	68.168	32.877	53.282	42.184	33.908	45.842	32.404	15.263	5.736	5.267	8.660	8.660	5.736	5.267	8.660
18.134	64.829	32.610	49.514	54.265	32.081	53.537	31.535	14.630	5.703	5.254	7.524	7.524	5.703	5.254	7.524
39.629	60.611	33.193	44.866	49.595	30.816	49.219	30.680	14.264	5.669	5.714	5.714	5.714	5.669	5.714	5.714
---	53.809	---	46.589	50.191	47.769	47.769	47.769	14.288	5.686	---	4.756	4.756	5.686	---	4.756
96.023	361.251	172.844	317.088	284.230	159.812	275.554	162.393	90.996	34.317	21.247	36.787	36.787	34.317	21.247	36.787
19.206	63.542	34.569	52.845	44.038	31.962	45.926	32.479	15.159	5.719	5.312	6.131	6.131	5.719	5.312	6.131
391.415	1364.056	1871.721	1930.949	1151.656	997.272	1203.400	1411.235	695.807	249.064	295.078	205.266	205.266	249.064	295.078	205.266
13.047	44.002	62.391	44.869	37.150	33.242	38.819	47.041	22.445	8.034	10.175	6.621	6.621	8.034	10.175	6.621