6.4 Other Relevant Data

Table A6.4.1 Monthly Average Discharge at the Colo Weir

Observed Monthly Average Intake Discharge at Colo Weir Right Canal

(m^3/sec)

Month	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Average
Jan	17.0	17.0	*	17.0	9.9	10.8	23.5	22.3	20.0	13.0	19.6	18.0	7.0	12.1	17.0	16.0
Feb	11.0	11.0	15.2	11.0	14.2	10.9	18.8	16.8	13.6	9.7	19.0	18.0	7.7	9.8	12.5	13.3
Mar	17.5	17.5	16.4	17.5	15.6	14.2	18.8	18.5	17.1	11.1	19.5	11.5	11.4	19.7	16.2	16.2
Apr	16.6	16.6	16.2	16.6	18.0	16.1	16.1	19.0	18.9	18.3	18.2	14.4	12.5	19.6	15.5	16.9
May	17.9	17.9	16.1	17.9	16.6	18.6	16.4	19.3	17.6	15.1	16.3	16.1	14.8	17.6	16.9	17.0
Jun	13.7	13.7	15.1	13.7	15.6	21.4	19.2	19.3	15.0	10.7	12.0	8.5	16.1	17.2	16.3	15.2
Jul	17.4	17.4	18.1	17.4	15.1	20.0	19.3	18.9	15.0	9.0	10.0	5.1	16.7	17.7	14.4	15.4
Aug	17.1	17.1	24.6	17.1	17.0	19.3	21.2	19.4	8.9	10.2	8.2	7.3	11.0	17.9	18.3	15.7
Sep	21.5	21.5	23.2	21.5	19.1	23.4	21.1	19.6	14.8	16.1	14.1	7.2	16.2	18.0	16.0	18.2
Oct	19.9	19.9	26.5	19.9	18.3	23.5	18.4	16.1	16.5	16.5	17.4	11.1	11.9	17.2	8.9	17.5
Nov	17.1	17.1	20.6	17.1	19.2	23.5	20.5	18.4	17.3	15.6	16.3	6.3	17.9	17.2	12.5	17.1
Dec	20.9	20.9	17.4	20.9	16.9	23.5	21.9	19.2	11.4	17.9	18.3	5.8	21.4	17.8	14.2	17.9
Avg.	17.3	17.3	*	17.3	16.3	18.8	19.6	18.9	15.5	13.6	15.8	10.8	13.7	16.8	14.9	16.2

Observed Monthly Average Intake Discharge at Colo Weir Left Canal

(m^3/sec)

Month	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Average
Jan	*	*	*	*	*	0.5	3.2	2.9	3.4	0.5	2.5	2.1	2.9	2.5	2.6	2.3
Feb	4.0	4.0	3.9	4.0	*	0.4	3.5	2.3	3.0	2.3	2.4	2.4	2.3	1.9	2.5	2.8
Mar	2.8	2.8	2.8	2.8	*	1.5	2.9	2.0	2.1	3.0	1.6	2.2	3.4	4.1	1.4	2.5
Apr	3.0	3.0	3.0	3.0	*	2.5	2.5	2.0	4.5	1.7	4.0	2.9	1.9	4.1	2.9	2.9
May	3.2	3.2	3.2	3.2	1.1	2.5	3.2	2.2	4.2	1.5	3.1	3.3	2.4	3.4	3.8	2.9
Jun	3.2	3.2	3.2	3.2	0.8	2.9	2.5	2.0	3.1	3.6	2.0	2.2	2.9	4.7	4.5	2.9
Jul	3.2	3.2	3.2	3.2	0.6	2.7	3.2	2.5	3.0	2.7	2.0	3.2	3.5	3.7	5.5	3.0
Aug	2.1	2.1	2.1	2.1	0.5	2.1	3.0	3.9	2.4	2.3	3.0	2.7	5.1	4.8	5.5	2.9
Sep	2.9	2.9	2.9	2.9	0.7	3.5	2.7	4.2	2.8	4.1	2.5	3.1	6.0	4.6	4.0	3.3
Oct	2.3	2.3	2.2	2.3	0.8	3.4	3.0	3.9	2.8	4.3	2.5	3.0	3.7	4.5	3.1	2.9
Nov	*	*	*	*	0.9	3.8	3.1	3.0	2.9	4.8	2.5	2.0	2.6	2.0	3.5	2.8
Dec	*	*	*	*	0.8	3.5	3.0	1.8	2.0	2.5	2.5	1.8	4.4	2.9	3.4	2.6
Avg.	*	*	*	*	*	2.5	3.0	2.7	3.0	2.8	2.6	2.6	3.4	3.6	3.5	3.0

Observed Monthly Average Released Discharge

(m^3/sec)

Month	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Average
Jan	64.2	64.2	45.6	48.4	30.3	18.7	24.0	75.5	39.2	6.8	32.7	19.6	0.3	68.3	24.0	37.4
Feb	63.6	86.6	52.9	31.3	27.5	127.3	64.5	37.9	50.1	66.0	47.8	29.8	3.8	95.5	66.4	56.7
Mar	43.9	60.9	11.4	55.0	96.9	25.5	128.2	33.7	143.6	108.7	23.9	10.5	36.6	93.6	117.6	66.0
Apr	46.9	2.4	3.5	25.8	17.7	13.3	127.6	83.9	21.7	25.7	2.4	3.5	47.7	15.4	79.9	34.5
May	14.8	0.2	6.2	6.2	1.1	10.2	5.9	3.8	0.2	4.1	0.2	1.5	22.2	2.2	3.0	5.5
Jun	14.6	1.4	1.2	10.0	0.3	2.7	1.8	0.7	0.6	3.7	2.0	1.4	5.5	0.5	2.1	3.2
Jul	11.9	0.1	0.6	0.8	0.3	0.3	0.5	0.1	0.0	3.4	1.8	1.9	13.4	0.4	11.0	3.1
Aug	11.4	0.0	0.0	1.1	3.4	0.0	3.9	1.8	1.1	4.6	2.5	3.0	8.1	0.0	8.3	3.3
Sep	9.6	0.0	1.0	0.0	0.0	0.0	15.6	4.8	1.9	3.1	4.4	3.8	7.2	2.3	7.0	4.0
Oct	13.1	0.0	0.5	3.7	0.8	0.0	16.2	7.4	2.7	5.7	11.5	4.5	28.9	4.5	7.4	7.1
Nov	30.3	0.0	31.9	14.9	1.8	3.2	10.1	15.2	4.7	16.1	17.5	0.4	36.6	1.5	6.8	12.7
Dec	9.5	39.9	43.5	16.5	6.6	7.6	50.5	27.0	2.1	71.2	19.3	0.1	8.9	2.3	8.7	20.9
Avg.	27.8	21.3	16.5	17.8	15.6	17.4	37.4	24.3	22.3	26.6	13.8	6.7	18.3	23.9	28.5	21.2

Release Discharge = (overflow from crest) + (river maintenance flow) + (sediment flushing gate outflow)

Estimated Monthly Average Inflow

(m^3/sec)

Month	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Average
Jan.	81.2	81.2	45.6	65.4	40.2	29.9	48.1	100.0	54.4	28.5	47.1	57.9	4.9	139.5	43.6	57.8
Feb.	78.7	101.7	71.9	46.4	38.2	138.3	86.8	55.8	64.2	83.1	63.4	72.9	13.7	191.0	81.3	79.2
Mar	64.2	81.2	44.2	75.3	105.7	40.7	149.5	54.2	162.7	122.8	43.8	38.0	65.1	164.7	135.2	89.8
Apr	66.6	26.9	22.7	45.4	25.5	31.9	146.3	103.5	43.1	43.7	26.5	26.5	132.3	56.1	98.3	59.7
May	35.9	21.4	25.5	27.3	18.6	31.3	25.9	26.0	22.2	20.7	21.4	23.7	58.3	26.7	23.6	27.2
Jun	31.5	18.3	19.5	26.9	16.7	29.1	23.5	23.3	20.7	18.9	19.9	15.0	29.2	24.7	22.9	22.7
Jul	32.5	21.5	22.0	21.4	15.7	25.2	23.0	23.4	21.0	17.1	16.7	12.8	52.5	23.2	30.8	23.9
Aug	30.7	19.3	26.6	20.3	20.9	23.9	27.6	26.9	18.9	18.7	18.6	16.3	32.1	25.6	32.1	23.9
Sep	34.0	24.4	27.0	24.4	19.8	29.5	38.3	27.1	27.2	25.0	26.6	19.8	38.7	31.5	27.0	28.0
Oct	34.8	21.7	28.7	25.4	19.9	29.5	37.4	26.5	27.8	28.5	42.4	20.9	67.5	26.3	19.4	30.5
Nov	47.3	17.1	52.4	32.0	23.2	32.9	33.7	30.4	31.5	29.1	54.3	7.2	91.8	20.9	22.8	35.1
Dec	30.4	60.8	61.0	37.4	22.6	35.9	75.3	39.9	18.3	84.5	60.5	3.7	43.2	26.9	26.3	41.8
Avg.	47.3	41.3	37.3	37.3	30.6	39.8	59.6	44.8	42.7	43.4	36.8	26.2	52.4	63.1	46.9	43.3

Estimated Inflow = (Released discharge) + (Intake discharge at Right Canal) + (Intake discharge at Left Canal)

Note : * Not available data record

Table A6.4.2 Guide Table for Spillway Gate Operation

(unit: m)

Qspill	100	150	200	250	300	350	400	>400
RWL	(m^3/s)	(m^3/s)	(m^3/s)	(m^3/s)	(m^3/s)	(m^3/s)	(m^3/s)	(m^3/s)
134.5	Closed	Closed	Closed	Closed	Closed	Closed	Closed	
134.6	1.25	2.07	3.40	F+0.63	F+1.33	F+2.31	F+F	
134.7	1.21	2.03	3.30	F+0.53	F+1.23	F+2.10	F+3.33	
134.8	1.18	1.99	3.20	F+0.43	F+1.13	F+1.90	F+3.05	
134.9	1.15	1.96	3.10	F+0.33	F+1.04	F+1.70	F+2.77	
135.0	1.12	1.93	3.00	F+0.24	F+0.86	F+1.50	F+2.52	
135.1	1.11	1.90	2.91	F+0.12	F+0.72	F+1.35	F+2.30	
135.2	1.10	1.87	2.82	4.23+C	F+0.60	F+1.20	F+2.08	
135.3	1.09	1.84	2.74	4.09	F+0.48	F+1.05	F+1.86	all gates are in full open position when R.W.L. exceeds EL.138.20m
135.4	1.08	1.81	2.66	3.95	F+0.36	F+0.91	F+1.64	
135.5	1.07	1.78	2.58	3.82	F+0.25	F+0.77	F+1.42	
135.6	1.06	1.75	2.52	3.70	F+0.12	F+0.65	F+1.28	
135.7	1.06	1.73	2.47	3.58	4.70+C	F+0.53	F+1.14	
135.8	1.05	1.70	2.42	3.46	4.55	F+0.41	F+1.01	
135.9	1.05	1.68	2.37	3.35	4.40	F+0.29	F+0.88	
136.0	1.04	1.65	2.32	3.24	4.25	F+0.18	F+0.75	
136.1	1.03	1.63	2.27	3.16	4.15	F+00.8	F+0.64	
136.2	1.02	1.61	2.22	3.08	4.05	5.22+C	F+0.53	
136.3	1.02	1.59	2.17	3.00	3.95	5.09	F+0.42	
136.4	1.01	1.57	2.12	2.92	3.85	4.96	F+0.31	
136.5	1.00	1.55	2.08	2.85	3.75	4.84	F+0.21	
136.6	0.99	1.53	2.05	2.80	3.66	4.71	F+0.10	
136.7	0.98	1.51	2.02	2.75	3.57	4.59	5.70+C	
136.8	0.97	1.49	1.99	2.71	3.48	4.47	5.68	
136.9	0.96	1.47	1.96	2.67	3.40	4.35	5.67	
137.0	0.95	1.45	1.93	2.63	3.33	4.23	5.66	
137.1	0.94	1.43	1.91	2.60	3.27	4.14	5.49	
137.2	0.93	1.41	1.89	2.57	3.21	4.05	5.31	
137.3	0.92	1.39	1.87	2.54	3.16	3.96	5.14	
137.4	0.91	1.38	1.85	2.51	3.11	3.88	4.97	
137.5	0.91	1.37	1.83	2.48	3.06	3.80	4.80	
137.6	0.90	1.35	1.81	2.45	3.02	3.74	4.69	
137.7	0.89	1.33	1.80	2.42	2.98	3.68	4.58	
137.8	0.89	1.32	1.79	2.39	2.94	3.62	4.47	
137.9	0.88	1.31	1.78	2.37	2.90	3.56	4.36	
138.0	0.87	1.30	1.77	2.35	2.87	3.50	4.25	
138.1	0.86	1.29	1.76	2.32	2.83	3.44	4.15	
138.2	0.85	1.28	1.75	2.30	2.80	3.38	4.05	
Gate Combination	No.1+No.4 or No.2+No.3	No.1+No.4 or No.2+No.3	No.1+No.4 or No.2+No.3	(No.1+No.4) +(No.2+No.3) or vice versa	(No.1+No.4) +(No.2+No.3) or vice versa	(No.1+No.4) +(No.2+No.3) or vice versa	(No.1+No.4) +(No.2+No.3) or vice versa	No.1-No.4

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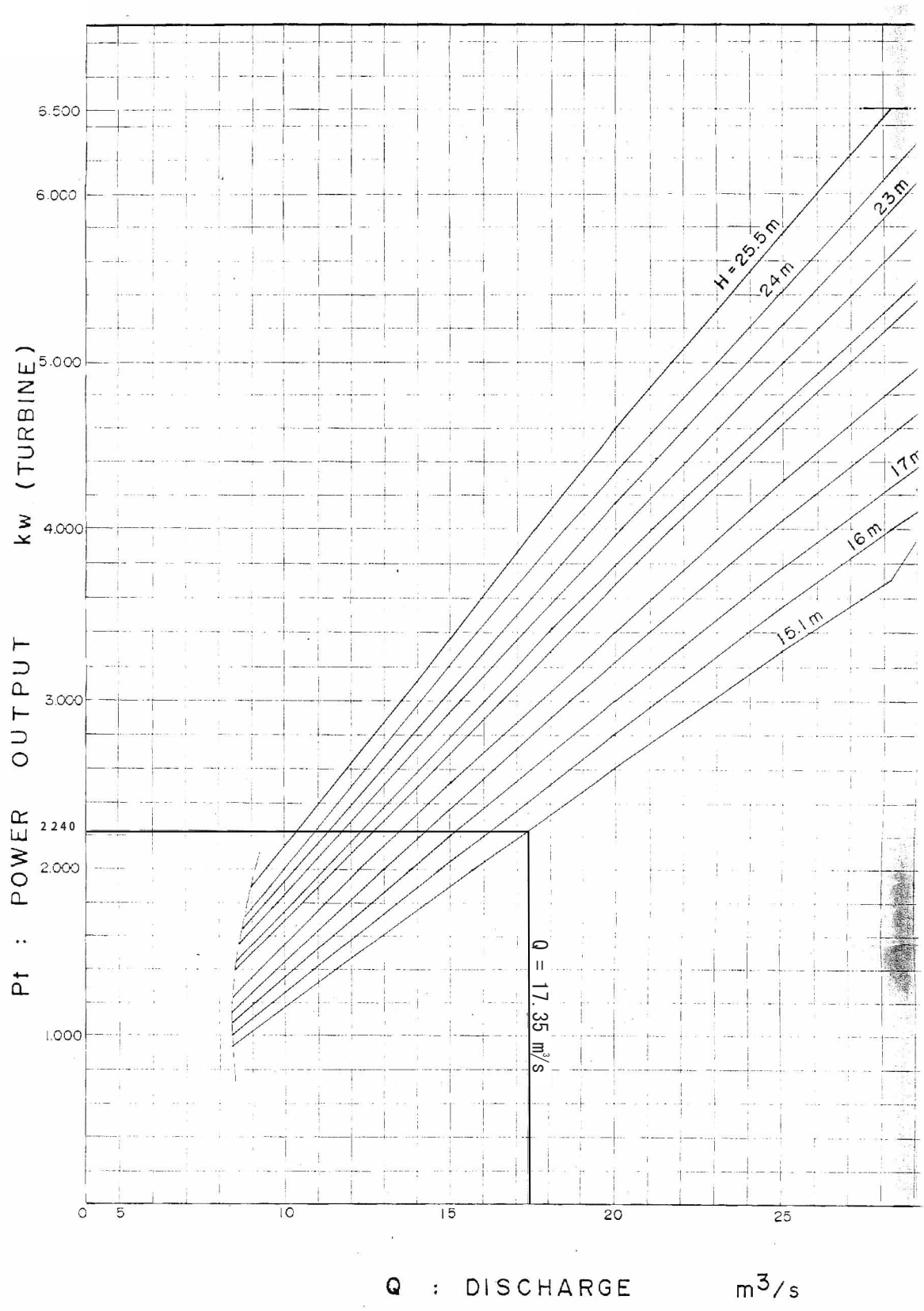
Fig. A6.4.1

Rule Curve for Reservoir Operation
approved by Central Goverment



出典：Wonogiri Hydropower Project Wonogiri Power Station
Operation & Maintenance Manual Feb. 1983, NK

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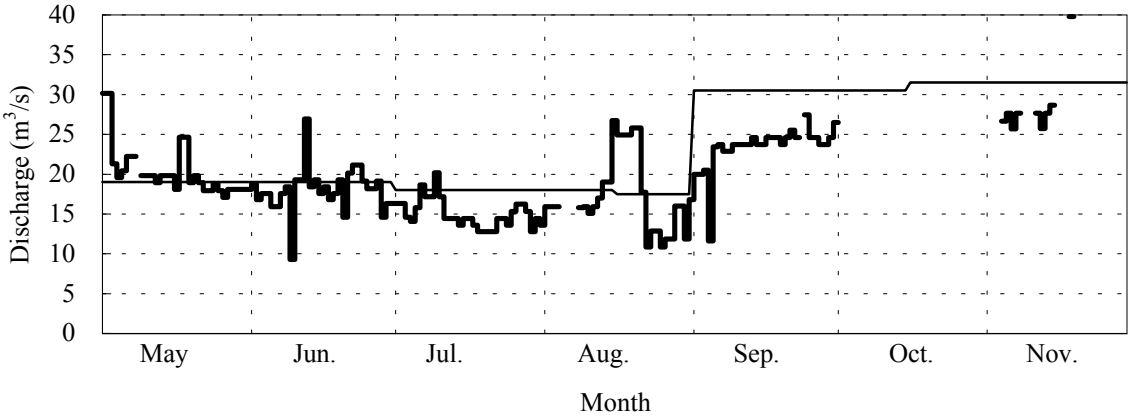
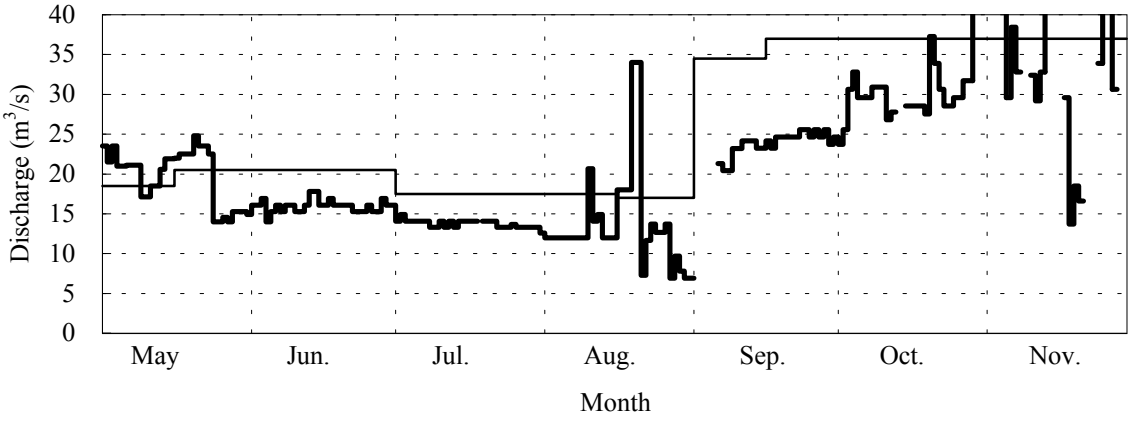
Fig. A6.4.2

Relations amont Power Output, Discharge and Water Head for the Wonogiri Hydropower Station

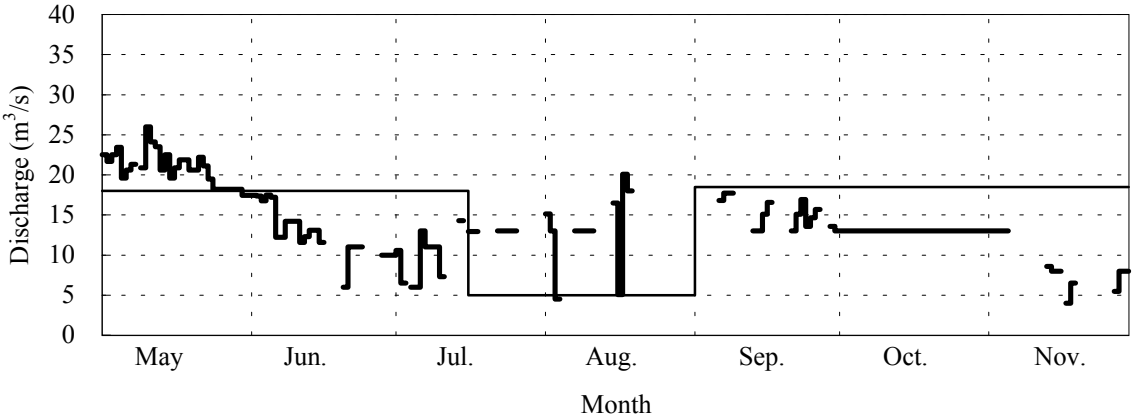
1995



1996



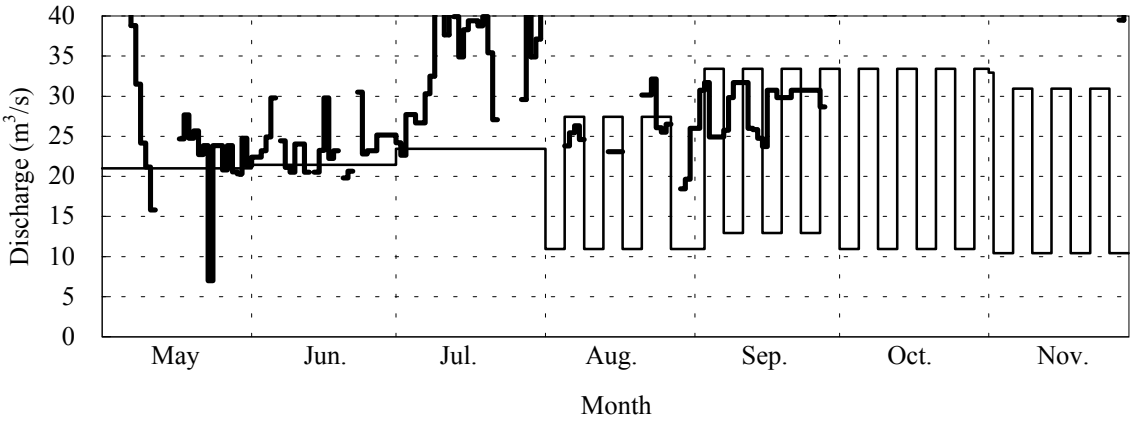
1997



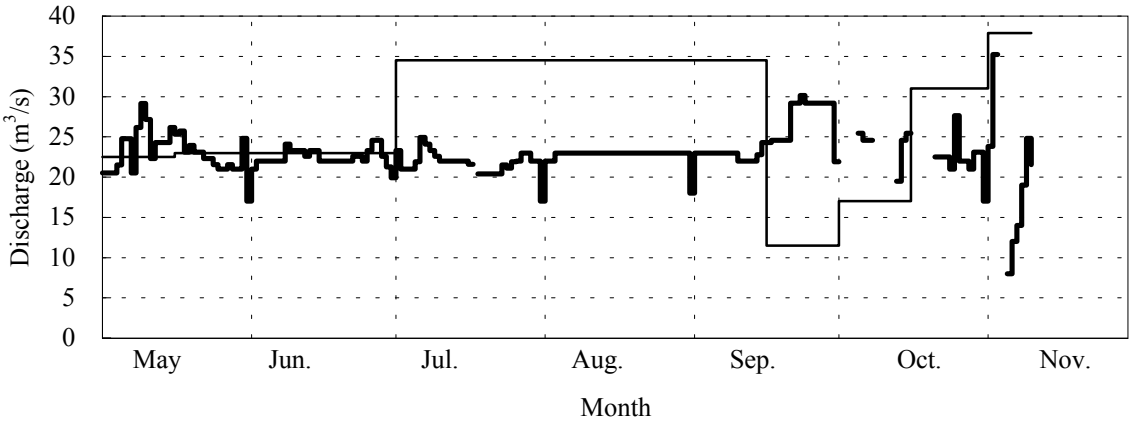
Requirement　　Actual

BASIC DESIGN STUDY ON URGENT COUNTERMEASURES FOR SEDIMENTATION IN WONOGIRI MULTIPURPOSE DAM RESERVOIR IN THE REPUBRIC OF INDONESIA	Fig. A6.4.3 Irrigation Water Requirement and Actual Irrigation Water Supply at the Colo Weir (1/2)
JAPAN INTERNATIONAL COOPERATION AGENCY	

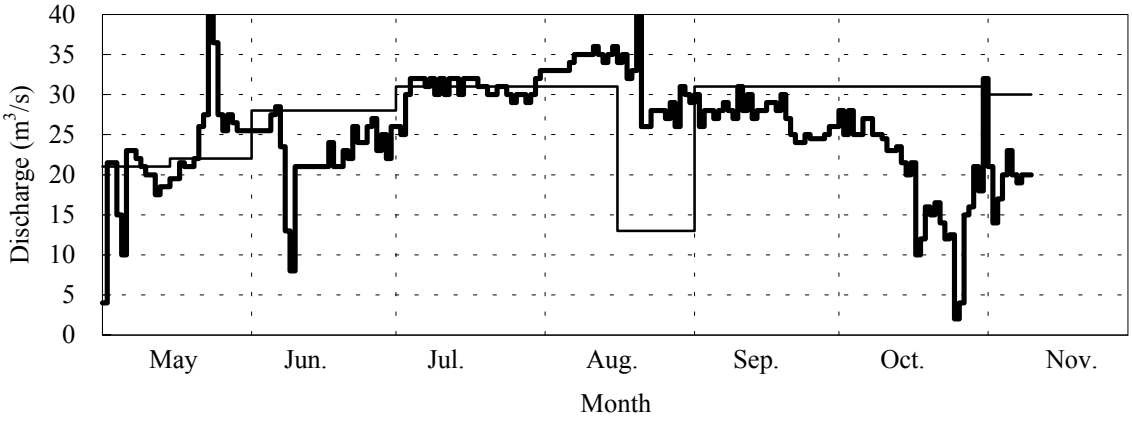
1998



1999



2000



Requirement　　Actual

BASIC DESIGN STUDY ON URGENT COUNTERMEASURES FOR SEDIMENTATION IN WONOGIRI MULTIPURPOSE DAM RESERVOIR IN THE REPUBRIC OF INDONESIA	Fig. A6.4.3 Irrigation Water Requirement and Actual Irrigation Water Supply at the Colo Weir (2/2)
JAPAN INTERNATIONAL COOPERATION AGENCY	

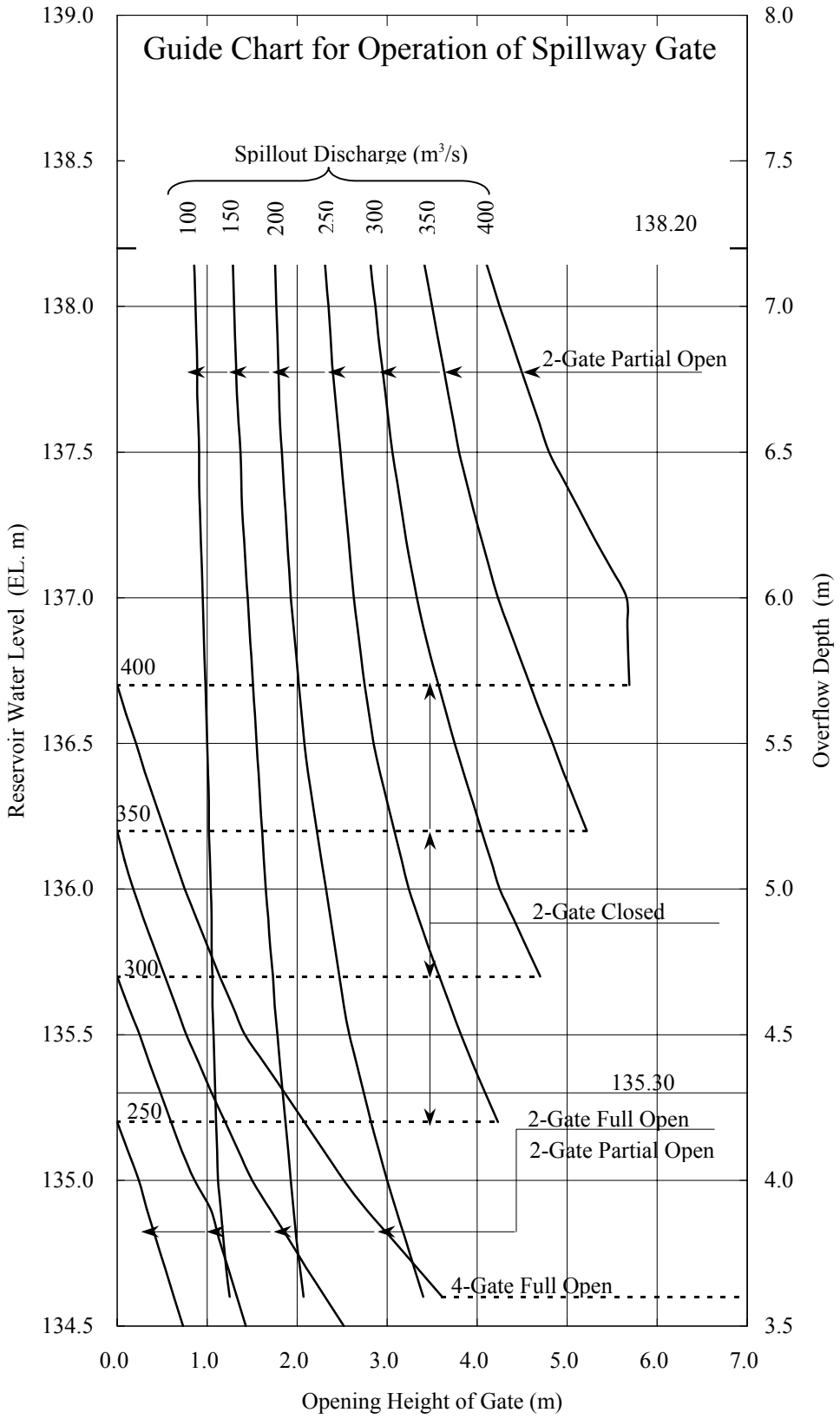


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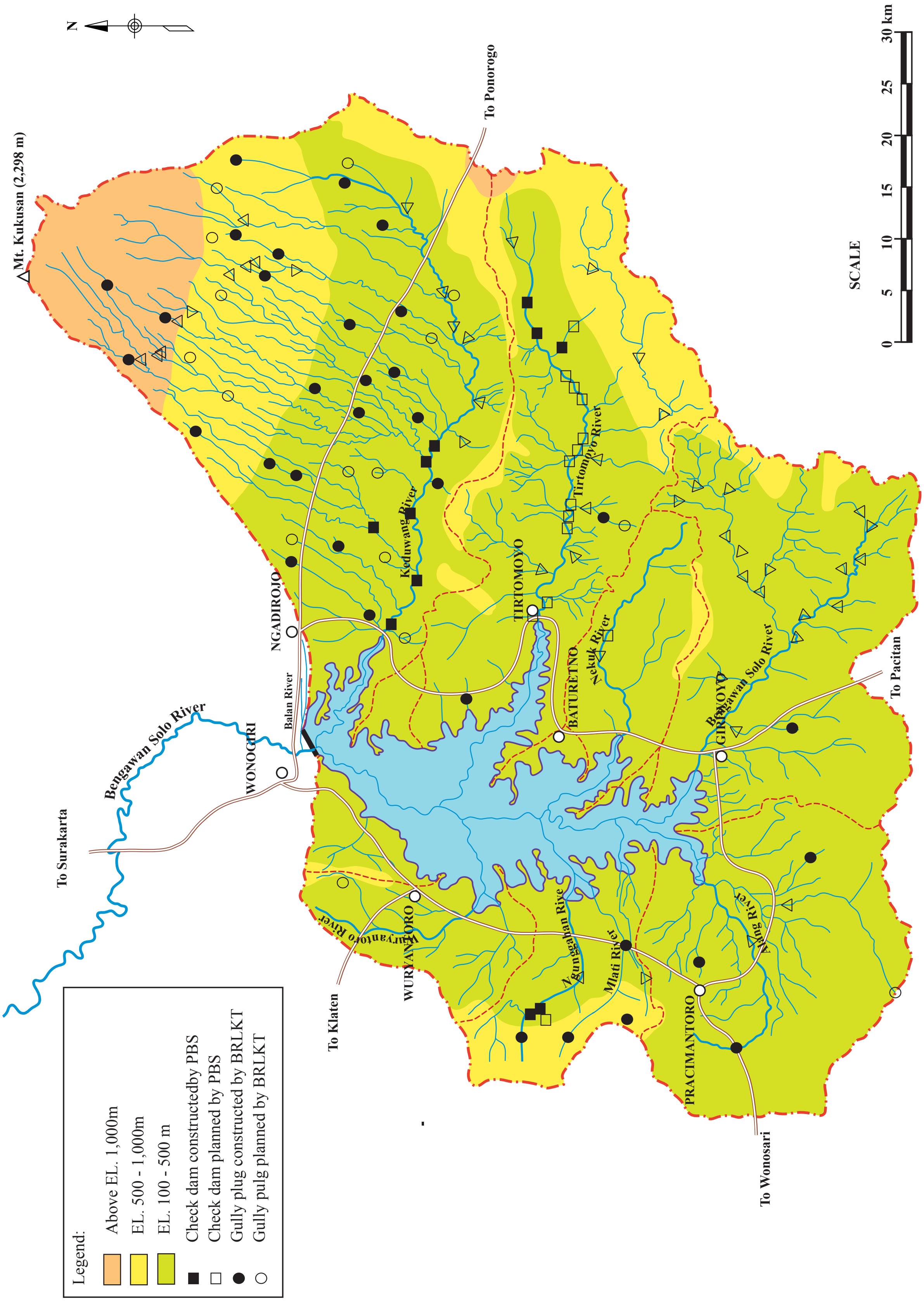
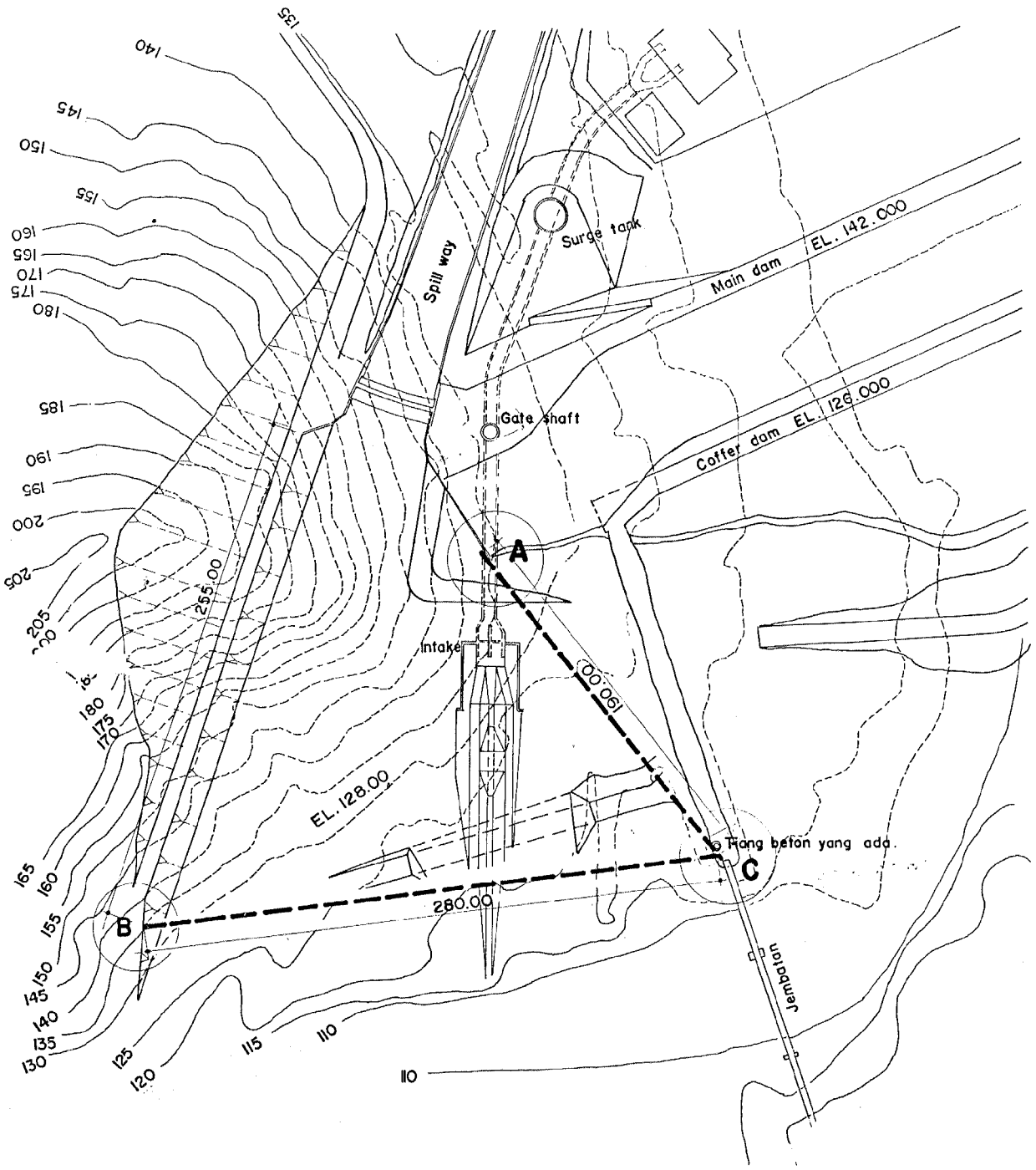
Fig. A6.4.4
Gate Operation Chart



BASIC DESIGN STUDY ON URGENT COUNTERMEASURES FOR SEDIMENTATION IN WONOGIRI MULTIPURPOSE DAM RESERVOIR IN THE REPUBRIC OF INDONESIA	Fig. A6.4.5 Sabo Facilities in the Wonogiri Watershed
JAPAN INTERNATIONAL COOPERATION AGENCY	



BASIC DESIGN STUDY ON
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IN THE REPUBRIC OF INDONESIA

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. A6.4.6

Floating Log Boom originally set

PT. INDONESIA POWER
UNIT BISNIS PEMBANGKITAN MRICA
SUB UNIT PLTA WONOGIRI

DATA KERUGIAN KWH
AKIBAT INTAKE TERSUMBAT SAMPAH DAN LUMPUR
PLTA WONOGIRI

I. Tahun 1999.

- Bulan	Januari	=	Nihil		MWH
- Bulan	Pebruari	=	Nihil		MWH
- Bulan	Maret	=	Nihil		MWH
- Bulan	April	=		2.840,00	MWH
- Bulan	Mei	=		4.958,00	MWH

II. Tahun 2000.

- Bulan	Januari	=		1.298,00	MWH
- Bulan	Pebruari	=	Nihil		MWH
- Bulan	Maret	=		1.496,00	MWH
- Bulan	April	=		2.318,00	MWH
- Bulan	Mei	=	Nihil		MWH

III. Tahun 2001.

- Bulan	Januari	=	Nihil		MWH
- Bulan	Pebruari	=		3.513,00	MWH
- Bulan	Maret	=		4.597,00	MWH
- Bulan	April	=	Nihil		MWH
- Bulan	Mei	=		5.208,00	MWH

IV. Stop mesin untuk pemeliharaan Trush rack

a	Th. 1999	Bulan	Oktober	= 64	Jam	=	794,00	MWH
b	Th. 2000	Bulan	Januari	= 54	Jam	=	670,00	MWH
		Bulan	Maret	= 32	Jam	=	397,00	MWH
		Bulan	Nopember	= 35	Jam	=	434,00	MWH
		Bulan	Desember	= 28	Jam	=	347,00	MWH
c	Th. 2001	Bulan	Januari	= 35	Jam	=	434,00	MWH
		Bulan	April	= 26	Jam	=	322,00	MWH

Total per Tahun :

Th. 1999 = 8.592 MWH
Th. 2000 = 6.960 MWH
Th. 2001 = 14.074 MWH

Wonogiri, 30 Agustus 2001
Supervisor

Moch Sarmo, ST

PEMERINTAH PROPINSI JAWA TENGAH
DINAS PENGELOLAAN SUMBER DAYA AIR
BALAI PENGELOLAAN SUMBER DAYA AIR BENGAWAN SOLO
Jl. Solo - Karanganyar Km. 7 PO Box 127/SLO
Telp. (0271) 825361, 821414 Facs. (0271) 825361 Sukoharjo 57554

Nomor : 611.1/26 **Sukoharjo,** 30 Agustus 2001
Lampiran : -
Perihal : **Akibat Sedimentasi Waduk Wonogiri**

Kepada Yth :

Pemimpin Proyek Induk PWS Bengawan Solo

di **SURAKARTA**

Sehubungan sedimentasi Waduk Wonogiri, diperkirakan musim kemarau tahun 2001 air waduk tidak dapat dioperasikan sampai dengan EL + 127.000, akan tetapi diperkirakan hanya sampai dengan EL. +130.000. Kondisi tersebut mengakibatkan berkurangnya Daerah Irigasi Colo dari ± 30.000 ha menjadi ± 26.000 ha pada MT III tahun 2001. Dengan demikian berkurangnya lahan sebesar ± 4.000 ha.

Perhitungan kerugian akibat berkuranganya lahan tersebut diatas adalah sebagai berikut :

1 ha lahan menghasilkan 7.000 Kg gabah dengan harga Rp. 800/kg.

Kerugian sebesar : 4.000 x 7000 x Rp. 800 = ± Rp. 22.400.000.000 (Dua puluh dua milyard empat ratus juta rupiah)

Demikian untuk menjadikan periksa atas perhatiannya diucapkan terima kasih.

Kepala Balai PSDA Bengawan Solo

PEMERINTAH PROPINSI JAWA TENGAH ★ BALAI - PSDA BENGAWAN SOLO ★ DINAS PEKERJAAN UMUM PENGAIRAN

Ir. Meiyanto, Dipl. HE
NIP. 140 023 306

Tembusan Kepada Yth :

1. Pemimpin Proyek PKSA Bengawan Solo
2. Arsip

File : Sedimen Wd. Wonogiri /Word.

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From

Pemerintah Propinsi Jawa Tengah

DINAS PENGELOLAAN SUMBER DAYA AIR

BALAI PENGELOLAAN SUMBER DAYA AIR BENGAWAN SOLO

(Regional Office of Water Resources Management)

To Pemimpin Proyek Induk PWS Bengawan Solo SURAKARTA

(Project Manager Bengawan Solo River Basin Development Office)

Number : 611. 1/26/2000 Sukoharjo, 30 August 2001

Subject: Impact of Wonogiri Reservoir Sedimentation

The irrigation water can not be supplied from the Wonogiri reservoir below about EL. 130.0 m due to sedimentation problem in the reservoir. Cropping area for MT III is decreased from about 30,000 ha to 26,000 ha at the Colo irrigation area in dry season in 2001. It means that decreasing of irrigation area about 4,000 ha.

Estimation loss production cause by decrease is:

- 1 ha area production 7,000 kg
- price Rp. 800/kg
- Loss : 4,000 ha x 7,000 kg x Rp. 800/kg = Rp. 22,400,000

Kepala Balai PSDA Bengawan Solo

Ir. Meiyanto, Dipl. HE

NIP 110 023 306

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1. Peminipin Proyek PKSA Bengawan Solo
2. Arsip