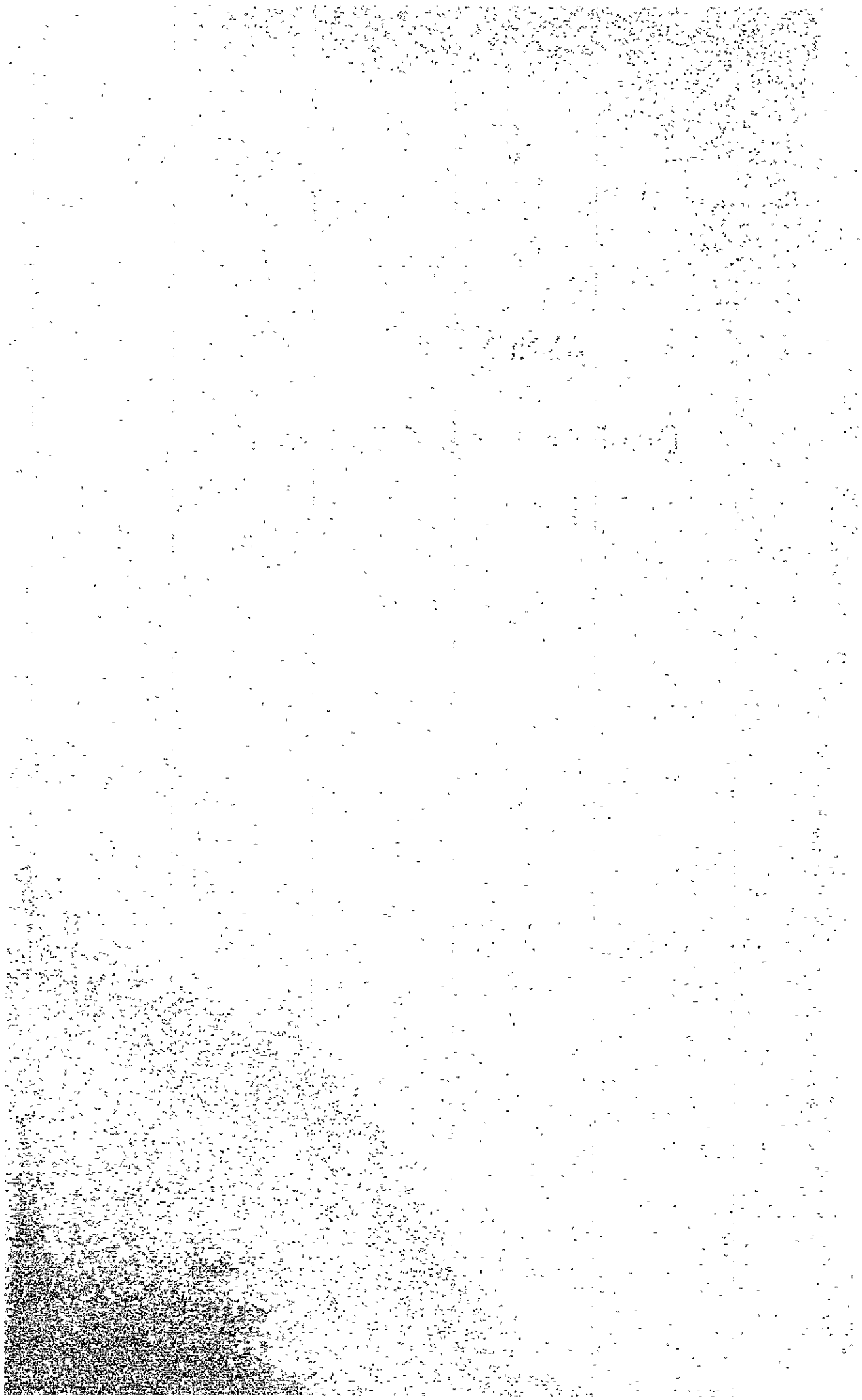
ANNEX III

DAM AND RESERVOIR



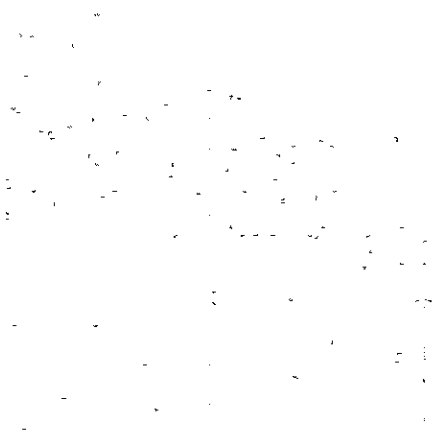
ANNEX III DAM AND RESERVOIR

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF DRAWINGS



3.1 SELECTION OF DAM SITE

To exploit the water resources endowed in the watershed to the maximum extent, the dam site is proposed to be selected close to the debouchment of the tributary so far as the topography and the geology of foundation are allowable, so as to get the largest reservoir capacity.

Among four proposed storage dams i.e. Huai Saduang Yai, Huai Khon Kaen, Huai Yai and Khlong Chaliang Lab, the Huai Yai dam site is proposed to be shifted to about 450 m upstream from the original site in due consideration of topography, geology and reservoir planning. The original site is located at the debouchment of the Huai Yai and geologically, is unfavourable for dam construction, since stable foundation is not obtainable unless an enormous expenditure is practiced for the foundation improvement. In addition, the embankment volume at the original site is roughly estimated at about 5 times larger than the alternative site on the condition of same reservoir capacity. No drilling data is available at the alternative site at the present stage. The geological conditions in this site are roughly studied through the site inspection as mentioned in Annex I "Geology".

3.2 TOPOGRAPHY OF PROPOSED DAM SITE

(1) Huai Saduang Yai Dam

The proposed Huai Saduang Yai dam is located at about 17 km northeastward of the Lom Sak municipality, in latitude 16°53'37" north and longitude 101°20'53" east. The Huai Saduang Yai, small tributary of the Pasak river, originates in the Mt. Phykok, Pnu and Bukpaen of about 700 m or so in altitude, and drifts down from east to west to join the main reach of the Pasak river.

The total watershed of this tributary extends over about 96 km^2 at the proposed dam site which is located at about 1.5 km upstream from the confluence of the mainstream of the Pasak river. The river is relatively meandering and river channel totals about 35 km stretching from its origin to dam site. The mean basin width is estimated at about 2.7 km.

The gorge at the proposed dam site is relatively symmetric, having a steep slope of 25°C at its right abutment and 20°C at its left abutment. The lowest altitude of riverbed at the dam axis is about 164.0 m above MSL. At this dam site, there extend a relatively lower saddle from the left abutment with an altitude of about 195.0 m above MSL. The altitude of this saddle constitutes a decisive factor in determining the proposed dam crest. The proposed dam site has about 16 of the width-to-height ratio of dam and is blessed with much favourable topographic condition for construction of fill dam.

(2) Huai Khon Kaen Dam

The Huai Khon Kaen dam is proposed to be constructed at about 1.5 km eastward of the Wang Khon Du village in the Lom Sak district, in latitude 16°49'31" north and longitude 101°22'11" east. The Huai Khon Kaen, the largest tributary among the four selected water sources, originates in the ranges of Mt. Huai Koh, Huai Hi, Pu Mok, Pu Nam Rin, Pa Lob, etc.

The watershed of the tributary is located at due south of the Huai Saduang Yai watershed, extending to about 322 km^2 at the proposed dam site which is proposed at about 19.5 km upstream from the confluence of the Pasak river. The river channel totals about 53 km stretching out from its origin to the proposed dam site. The altitude in the watershed ranges from 1,110 m to 170 m above MSL.

The topography of the proposed dam site comprises one dale and two saddles by two humps. The existing river channel is meandering toward the left-hand dale. The left and right-hand saddles are likely to be created by the fluvial action of the old river channels. The altitude of the left and right saddle is 212.0 m 213.0 m above MSL, respectively. In addition, there exist a small saddle with the altitude of 214.0 m above MSL connecting with the right abutment. A small rivulet is located adjacent to the right abutment. The proposed dam site gives about 9 of the width-to-hight ratio of dam at the main dale.

(3) Huai Yai Dam

The proposed dam site is located at about 25 km upstream of the Huai Yai from the confluence of the Pasak river, in latitude 16°28'57" north and longitude 101°19'09" east. The Huai Yai originates in the ranges of Mt. Hingumn, Ponthong, Suiroi, Saliang Tatard, etc. of about 1,200 m above MSL in altitude and drifts down about 47 km from northeast to southward joining many small tributaries, and debouches into the main reach of the Pasak river in the vicinity of the Phetchabun municipality.

The watershed of the tributary is estimated at about 78.0 km^2 at the dam site. The river channel totals about 22 km stretching from its origin to dam site. The lowest altitude of riverbed at the dam axis is about 185 m above MSL.

The dam site is proposed to be shifted to about 450 m upstream from the original site which is located at the debouchment of the Huai Yai. The shifted dam site has the narrowest gorge in the Huai Yai valley. The right abutment is relatively gently slanting with a slope of 15° and the left abutment is steeply slanting with a slope steeper than 25°. At the dam site, there exist a saddle of about 250 m upstream from the right abutment of dam axis. The gorge at the proposed site is about 100 m wide at the riverbed including lower terraces, and gives about 10 of the width-to-height ratio of dam which is blessed with much favourable topographic condition for construction of fill dam.

(4) Khlong Chaliang Lab Dam

The Khlong Chaliang Lab dam is proposed at about 12 km due east of the Phetchabun municipality, in latitude 16°24'35" north and longitude 101°17'24" east. The Khlong Chaliang Lab originates in the ranges of Mt. None Yang, Huai Rong, None Sra, Ta Boh, etc. of about 1,300 m in altitude.

The watershed of this tributary is located in due south of the Huai Yai watershed, extending to about 77 km^2 at the dam site. The river channel of about 54 km stretches out its origin to the confluence with the Pasak river; about 26 km from its origin to the proposed dam site.

The dam site is proposed close to the debouchment of the Khlong Chaliang Lab. The gorge at the proposed dam site is relatively V-shaped. Its right abutment is slanting with a slope of about 25° and the left abutment is more steeply slanting with a slope of about 30°. The maximum altitude of ridge extending from the right abutment is about 200 m above MSL. The altitude of this ridge constitutes a decisive factor for determining the height of dam. The riverbed is about 20 m wide and the lowest altitude of riverbed is about 180 m above MSL at the dam axis. The gorge at the proposed dam site gives about 10 of the width-to-height ratio of dam which is much favourable for construction of fill dam.

3.3 OPTIMUM DEVELOPMENT OF SCALE

The optimum scale of the storage dam is determined in due consideration of the following conditions at the dam site;

(i) Topography,
(ii) Geology,
(iii) Storage capacity,
(iv) Stability of dam body based on the embankment materials available in the vicinity of dam site, and
(v) Disposition of appurtenant structures.

(1) Huai Saduang Yai Dam

As described in the previous paragraph, there exist a lower saddle with an altitude of about 195.0 m above MSL at the left abutment of the dam site. This saddle constitutes a decisive factor in determining the proposed dam crest in due consideration of the stability of dam embankment and the storage efficiency of

the reservoir. The relation between the dam height, and embankment volume and reservoir capacity is roughly estimated based on the topographic maps of the scale 1:4,000 and 1:50,000, and the result indicates that the dam crest elevation is to be 191.0 m above MSL having the best storage efficiency as shown below.

1 Dam Height (m)	2 Crest Elevation (m)	3 Embankment Volume ($x10^3m^3$)	4 Storage Capacity ($x10^3m^3$)	5 Storage Efficiency 4 / 3
30.50	191.00	668	15,000	22.5
34.50	195.00	943	21,000	22.3
39.50	200.00	1,503	32,000	21.3
44.50	205.00	2,286	46,500	20.3
49.50	210.00	3,243	62,000	19.1

From the viewpoint of dam stability, it is recommended that the toe of upstream embankment is put in the convex saddle extending over about 60 m upstream from the left abutment at the dam site.

Based on the above reasons, the dam crest elevation is proposed to be 191.0 m above MSL. The storage capacity of the reservoir is calculated as shown in Table 3.1 and the elevation-storage and elevation-area curves are developed as given in Fig. 3.1. The total storage capacity at the full water level is estimated at about 15 MCM and the useful storage capacity is calculated to be about 14.04 MCM by deducting the dead storage capacity from the total storage capacity. The dead storage capacity is estimated on the assumption that the sedimentation volume of the watershed is 200 m^3/km^2/year and the project life is 50 years.

(2) Huai Khon Kaen Dam

The topography of the proposed dam site comprises one dale and two saddles by two humps. For the stability of dam, it would be better that the embankment is separated by two humps in due consideration of the unequal settlement of the dam body, but in

this case the storage capacity becomes to be decreased. The proposed dam crest is determined to be 216.0 m above MSL based on the following considerations.

(i) The dam height is proposed to be high as far as possible so as to have large storage capacity in the reservoir,

(ii) No rock materials for construction of high dam can be obtained in the vicinity of the dam site,

(iii) The appurtenant structures must be disposed safely and economically, and

(iv) The relation between dam height and storage efficiency is roughly estimated as follows.

1 Dam Height (m)	2 Crest Elevation (m)	3 Embankment Volume ($x10^3m^3$)	4 Storage Capacity ($x10^3m^3$)	5 Storage Efficiency 4 / 3
52.00	216.00	2,729	28,000	10.3
56.00	220.00	4,473	35,000	7.8
61.00	225.00	7,171	44,000	6.1
66.00	230.00	10,491	52,000	5.0
71.00	235.00	14,494	63,000	4.3

The calculation sheet of the storage capacity of the reservoir is shown in Table 3.2, and Fig. 3.2 presents the elevation-storage and elevation-area curves. The total storage capacity is estimated at about 28 MCM at the full water level and the useful storage capacity is calculated to be 24.78 MCM by deducting the dead storage capacity of 3.22 MCM.

(3) Huai Yai Dam

The proposed dam site is shifted to about 450 m upstream from the original site located at the debouchment of the Huai Yai in due consideration of topographic and geological conditions. No topographic and geological data are available at this proposed site at present. According to the site inspection, a saddle can be found at about 250 m upstream from the right abutment of dam axis and this saddle constitutes a decisive factor for determining the height of dam. An emergency spillway can be easily constructed on this saddle.

The dam crest elevation is determined to be 212.50 m above MSL based on the above reasons. The total storage capacity of the reservoir is estimated at about 7.9 MCM at the full water level and the useful storage capacity is calculated to be about 7.12 MCM by deducting the dead storage capacity of 0.78 MCM. Table 3.3 shows the storage capacity of the reservoir and Fig. 3.3 presents the elevation-storage and elevation-area curves.

(4) Khlong Chaliang Lab Dam

At the dam site, there exist a ridge extending from the right abutment. The altitude of this ridge is about 200.0 m above MSL. In view of the dam stability and storage efficiency, the dam crest elevation is proposed to be 200.0 m above MSL. The relation between dam height and storage efficiency is roughly estimated as follows.

1 Dam Height (m)	2 Crest Elevation (m)	3 Embankment Volume ($x10^3m^3$)	4 Storage Capacity ($x10^3m^3$)	5 Storage Efficiency 4 / 3
25.30	200.00	151	2,300	15.2
30.30	205.00	252	3,800	15.1
35.30	210.00	385	5,700	14.8
40.30	215.00	553	7,800	14.1
45.30	220.00	1,364	10,000	7.3

The total storage capacity at the full water level is estimated at about 2.3 MCM and the useful storage capacity be at about 1.53 MCM by deducting the dead storage capacity of 0.77 MCM as shown in Table 3.4 and Fig. 3.4.

3.4 PRELIMINARY DESIGN

3.4.1 Dam Type

Various dams might be technically eligible at four proposed dam sites. But concrete dam would be left out of consideration in view of project economy. The rockfill dam type which offer relatively less embankment compared with earthfill dam, seems to be suitable for each dam site. Actually however, it is unfavourable since the informations obtained from field investigations clarify that no quarry for the rockfill dam can be found within the economic hauling distance.

Afterall, earthfill dam would be proposed for each site. According to the outcomes of material survey, top soils in and around sites comprise various fine soils, such as silty sand, clayey sand, sandy clay, silty clay, etc. These materials are much suitable for the impervious core. Coarse materials, essential for semi-pervious or pervious zone, are insufficient in the vicinity of each site from the result of field investigations at present but these materials might be obtainable in hillside and/or layer under the topsoils.

In the view of the embankment materials available in and around dam sites mentioned above, zoned type of earthfill dam which is mechanically more stable than homogeneous type, would be recommended in this study. The proposed zone type would be composed of four zones i.e. impervious zone, semi-pervious or pervious zone, fillter zone provided behind impervious zone and rip-rap for protection of upstream slope. The rip-rap materials are obtainable from the lime stone quarry site being located at Tham Kao Phra about 15 km southwest of the Lom Sak Municipality. However, this quarry site is far from each dam site. Further investigations should be made at the next stage to quarry out rip-rap materials in the vicinity of each dam site.

3.4.2 Preliminary Design of Dam

The dam crest elevation is determined by adding overflow depth of the spillway plus freeboard to the full water level in the reservoir as shown below.

Name of Dam	Full Water Level	Overflow Depth of Spillway	Freeboard	Dam Crest
Huai Saduang Yai	187.50^{m}	2.15^{m}	1.35^{m}	191.00^{m}
Huai Khon Kaen	211.50	3.00	1.50	216.00
Huai Yai	209.00	2.00	1.50	212.50
Khlong Chaliang Lab	196.50	2.00	1.50	200.00

The width of the dam crest is proposed to be 7.0 to 10.0 m to provide a function of inspection road according to the dam height.

Name of Dam	Dam Height	Crest Width
Huai Saduang Yai	30.5^{m}	8.0^{m}
Huai Khon Kaen	52.0	10.0
Huai Yai	32.5	8.0
Khlong Chaliang Lab	25.3	7.0

The slope of the upstream face is designed to be 1.0 vertical to 3.0 horizontal, the downstream face be 1.0 vertical to 2.5 horizontal. The central impervious core is placed with the upstream and downstream slopes of 1.0 vertical to 0.25 horizontal, having the top width of 6.0 m. The filter for releasing the seepage water through the central impervious core is proposed to be placed along the downstream slope of the impervious zone with 2.0 m width and be connected with the downstream toe drain. Sand and river gravel would be used for the filter materials. Rip-rap is provided on the surface of upstream slope with 1.0 m width to prevent the upstream face from eroding due to variation of the reservoir water level. Behind the rip-rap, the filter is proposed to be set above the dead water level with 0.5 m in width as the transition zone between rip-rap and semi-pervious or pervious zone.

The key trench is provided at the center of the dam with the cut slope of 1.0 to 1.0 on both sides down to the bed rock, and it must be replaced with the impervious core. The foundation treatment by grouting would be made as required according to rock quality, permeability and height of dam. Based on the result of field investigations at this stage, the proposed depth of curtain grouting from the bottom of key trench is shown as follows.

Name of Dam	Depth of Curtain Grouting
Huai Saduang Yai	11.0^{m} - 18.0^{m}
Huai Khon Kaen	7.0 - 20.0
Huai Yai	10.0 - 15.0
Khlong Chaliang Lab	6.0 - 11.0

3.4.3 Preliminary Design of Appurtenant Structures

(1) Service Spillway

The service spillway is designed accounting for the flood discharge with the return period of 100 years. The side channel spillway would be proposed without any control gate in due consideration of the topographic condition at each dam site.

(a) Huai Saduang Yai Dam

The service spillway is proposed to be aligned at the right abutment. The crest length of the spillway is determined considering the flood control, even though its effect is a little, for reducing inflow peak discharge. Based on the graphic solution shown in Fig. 3.5, the outflow peak discharge is estimated as follow.

Inflow Peak Discharge	Crest Length of Spillway	Outflow Peak Discharge	Overflow Depth
268.4 m^3/sec	70.0 m	251.0 m^3/sec	1.56 m
"	60.0	245.0	1.70
"	50.0	241.0	1.90

The proposed crest length of spillway is determined to be 60.0 m in due consideration of the above result and the topographic condition at the dam site.

(b) Huai Khon Kaen Dam

The alignment of service spillway is proposed at the left abutment. In Huai Khon Kaen reservoir, the ratio of reservoir area to drainage basin is small, so the effect of flood control can not be expected. The crest length of spillway is estimated at 96.0 m as shown below.

$$B = \frac{Q}{C \cdot h^{3/2}}$$

where, B : Crest length (m)

Q : Design discharge = 697.4 m^3/sec

C : Coefficient of overflow = 1.84

h : Overflow depth = 2.5 m

$$\therefore B = \frac{697.4}{1.84 \times 2.5^{3/2}} = 96.0 \text{ m}$$

(c) Huai Yai Dam

The service spillway is proposed to be aligned at the left abutment. The crest length of spillway is determined to be 40.0 m based on the graphic solution of flood control shown in Fig. 3.6 and the topographic condition at the dam site.

Inflow Peak Discharge	Crest Length of Spillway	Outflow Peak Discharge	Overflow Depth
168.4 m^3/sec	60.0 m	154.3 m^3/sec	1.25 m
"	50.0	152.4	1.40
"	40.0	149.0	1.60

(d) Khlong Chaliang Lab Dam

The alignment of service spillway is proposed at the right abutment from the topographic condition at the dam site. The effect of flood control can not be expected as the ratio of reservoir area to drainage basin is small. The crest length of spillway is estimated at 40.0 m as shown below.

$$B = \frac{Q}{C \cdot h^{3/2}} = \frac{150.0}{1.84 \times 1.60^{3/2}} = 40.0 \text{ m}$$

(2) Emergency Spillway

The emergency spillway is designed with flood discharge of the return period of 500 years in order to protect the dam from extra-ordinary floods. Two types of the emergency spillway are considered structurally according to the topographic conditions. One is the side channel spillway which can be used together with the service spillway, and the other is the overflow type to be provided independently at the saddle extending from abutments.

(a) Huai Saduang Yai Dam

The saddle at the left abutment is suitable for the emergency spillway but the valley adjacent to the saddle is close to the toe of downstream embankment. The construction of emergency spillway on this saddle seems to be in danger of eroding due to overflow from the saddle. Therefore, the side channel spillway is proposed using together with the service spillway. The crest length is estimated at 30.0 m with the crest elevation of 189.2 m above MSL as shown below.

$$Q = CB_1h_1^{3/2} + CB_2h_2^{3/2}$$

where, Q : Design discharge = 354.0 m^3/sec

C : Coefficient of overflow = 1.84

B_1: Crest length of service spillway = 60.0 m

h_1: Overflow depth at service spillway = 2.15 m

B_2: Crest length of emergency spillway = 30.0 m

h_2: Overflow depth at emergency spillway = 0.45 m

$$\therefore Q = 1.84 \times 60.0(0.45 + 1.70)^{3/2} + 1.84 \times 30.0 \times 0.45^{3/2}$$

$$= 364.7 \text{ m}^3/\text{sec} > 354.0 \text{ m}^3/\text{sec}$$

(b) Huai Khon Kaen Dam

The location of emergency spillway is determined at the left abutment apart from the service spillway. The overflow type is proposed according to the topographic condition. The design discharge of 940.0 m^3/sec must be released by use of both service and emergency spillways. The crest length of emergency spillway is calculated to be 34.0 m as follows.

$$Q = CB_1h_1^{3/2} + CB_2h_2^{3/2}$$

where, Q : Design discharge = 940.0 m^3/sec

C : Coefficient of overflow = 1.84

B_1: Crest length of service spillway = 96.0 m

h_1: Overflow depth at service spillway = 3.0 m

B_2: Crest length of emergency spillway = 34.0 m

h_2: Overflow depth at emergency spillway = 0.50 m

$$\therefore Q = 1.84 \times 96.0 \times (0.50+2.50)^{3/2} + 1.84 \times 34.0 \times 0.50^{3/2}$$

$$= 940.0 \text{ m}^3/\text{sec}$$

(c) Huai Yai Dam

The overflow type of emergency spillway is proposed at the saddle extending over about 250 m upstream from the right abutment. The crest length of emergency spillway is estimated at 25.0 m in due consideration of use together with the service spillway. The crest elevation is proposed to be 210.60 m above MSL.

$$Q = CB_1h_1^{3/2} + CB_2h_2^{3/2}$$

where, Q : Design discharge = 218.0 m^3/sec

C : Coefficient of overflow = 1.84

B_1: Crest length of service spillway = 40.0 m

h_1: Overflow depth at service spillway = 2.0 m

B_2: Crest length of emergency spillway = 25.0 m

h_2: Overflow depth of emergency spillway = 0.4 m

$$\therefore Q = 1.84 \times 40.0 \times (0.4+1.6)^{3/2} + 1.84 \times 25.0 \times 0.4^{3/2}$$

$$= 219.8 \text{ m}^3/\text{sec} > 218.0 \text{ m}^3/\text{sec}$$

(d) Khlong Chaliang Lab Dam

As favourable site for emergency spillway can not be found at the dam site, the service spillway would be utilized also as the emergency one. The hydraulic calculation is shown as follows.

$$Q = CBh^{3/2}$$

where, Q : Design discharge = 193.0 m^3/sec

C : Coefficient of overflow = 1.84

B : Crest length of spillway = 40.0 m

h : Overflow depth at spillway = 2.0 m

$$\therefore Q = 1.84 \times 40.0 \times 2.0^{3/2} = 208.2 \text{ m}^3/\text{sec} > 193.0 \text{ m}^3/\text{sec}$$

(3) Outlet Structure

The outlet structure comprises intake tower, water way and access bridge. The intake tower of reinforced concrete would be proposed, installed with the control gates. Water taken from the regulating gate is conveyed to the downstream through the water way. The section of water way is proposed to be circular one which is strong structurally, with the diameter of 2.0 m for operation and maintenance. The access bridge is provided to the intake tower in order to operate regulating gates. This bridge would be made by steel. The pier of bridge must be constructed on the natural ground but not on the embankment.

Based on the above descriptions, main features of four proposed dams and reservoirs are summarized in Table 3.5. General layout of each dam is shown in Dwg. No. 1 - 5.

3.5 WORK QUANTITY

The work quantity of each dam is summarized as shown below based on the preliminary design mentioned in the previous paragraph.

Description	Name of Dam			
	Huai Saduang Yai	Huai Khon Kaen	Huai Yai	Khlong Chaliang Lab
I. Dam				
(1) Excavation (m^3)	81,000	288,000	45,000	18,000
(2) Embankment (m^3)	667,700	2,728,600	327,700	151,200
Impervious zone (m^3)	118,000	428,000	56,000	26,000
Pervious or semi-pervious zone (m^3)	503,000	2,137,000	244,000	111,000
Rip-rap (Rock) (m^3)	20,000	76,000	11,000	5,000
Filter (m^3)	24,000	79,000	14,000	7,000
Sand and gravel at river bed (m^3)	800	3,300	1,200	1,000
Rock at end of toe of downstream (m^3)	200	700	300	400
Laterite on crest(m^3)	1,700	4,600	1,200	800
(3) Sodding (m^2)	24,000	69,000	13,000	7,000
(4) Curtain grouting (m)	450	1,000	300	250
II. Spillway				
(1) Excavation (m^3)	130,000	159,000	72,000	41,000
(2) Backfill (m^3)	18,000	39,000	17,000	15,000
(3) Concrete (m^3)	10,000	20,000	6,000	6,000
III. Outlet Structure				
(1) Height of intake tower (m)	28	43	28.5	24.5
(2) Length of water way (m)	155	300	220	135
(3) Length of access bridge (m)	75	105	105	87

3.6 CONSTRUCTION TIME SCHEDULE

The construction time schedule for each dam is determined according to the following assumptions.

(1) Workable Days

(a) Embankment works - 170 days per year

(i) Saturday, Sunday and national holidays are excluded from the workable days.

(ii) Rate of workable days except item (i) is as follows.

Wet season - 50%

Dry season - 80%

(b) Excavation and concrete works - 210 days per year

(i) Saturday, Sunday and national holidays are excluded from the workable days.

(ii) Rate of workable days except item (i) is assumed to be 80% through a year.

(2) Workable Capacity

In due consideration of dam scale and site condition, the workable capacity is roughly decided as shown below.

Embankment works	-	1,500 - 2,000 m^3/day
Excavation works	-	800 - 1,000 m^3/day
Concrete works	-	80 - 100 m^3/day

Based on the above assumptions, the construction time schedules for respective dams are proposed as follows.

(1) Huai Saduang Yai Dam

Work Item	Construction Year			
	1st	2nd	3rd	4th
Temporary Diversion Work				
Dam				
Excavation				
Curtain grouting				
Embankment				
Spillway				
Excavation				
Backfill				
Concrete works				
Outlet Structure				

(2) Huai Khon Kaen Dam

Work Item	Construction Year				
	1st	2nd	3rd	4th	5th
Temporary Diversion Work					
Dam					
Excavation					
Curtain grouting					
Embankment					
Spillway					
Excavation					
Backfill					
Concrete works					
Outlet Structure					

(3) Huai Yai Dam

Work Item	Construction Year		
	1st	2nd	3rd
Temporary Diversion Work			
Dam			
Excavation			
Curtain grouting			
Embankment			
Spillway			
Excavation			
Backfill			
Concrete works			
Outlet Structure			

(4) Khlong Chaliang Lab Dam

Work Item	Construction Year		
	1st	2nd	3rd
Temporary Diversion Work			
Dam			
Excavation			
Curtain grouting			
Embankment			
Spillway			
Excavation			
Backfill			
Concrete works			
Outlet Structure			

Table 3.1 Storage Capacity of Huai Saduang Yai Dam

Elevation	Area (m^2)	Mean Area (m^2)	Capacity (m^3)	Total Capacity (m^3)	Remark
EL 164.0	0				
170.0	64,500	32,250	193,500	193,500	by topographic map of scale 1:4,000
173.0	196,200	130,350	391,050	584,550	
175.0	403,200	299,700	599,400	1,183,950	
178.0	691,100	547,150	1,641,450	2,825,400	
180.0	883,000	787,050	1,574,100	4,399,500	calculated by proportion
190.0	1,842,500	1,362,750	13,627,500	18,027,000	

Table 3.2 Storage Capacity of Huai Khon Kaen Dam

Elevation	Area (m^2)	Mean Area (m^2)	Capacity (m^3)	Total Capacity (m^3)	Remark
EL 171.5	0				by topographic map of scale 1:4,000
175.0	41,600	20,800	72,800	72,800	
180.0	288,000	164,800	824,000	896,800	
185.0	487,100	387,550	1,937,750	2,834,550	
190.0	671,800	579,450	2,897,250	5,731,880	
195.0	830,900	751,350	3,756,750	9,488,550	
200.0	1,006,500	918,700	4,593,500	14,082,050	
205.0	1,158,900	1,082,700	5,413,500	19,495,550	
210.0	1,385,600	1,272,250	6,361,250	25,856,800	
215.0	1,555,200	1,470,400	7,352,000	33,208,800	
220.0	1,744,000	1,649,600	8,248,000	41,456,800	

Table 3.3 Storage Capacity of Huai Yai Dam

Elevation	Area (m^2)	Mean Area (m^2)	Capacity (m^3)	Total Capacity (m^3)	Remark
EL 185.5	0				by topographic map of scale 1:4,000
188.0	24,200	12,100	30,250	30,250	
190.0	41,600	32,900	65,800	96,050	
193.0	115,200	78,400	235,200	331,250	
195.0	190,700	152,950	305,900	637,150	
198.0	321,900	256,300	768,900	1,406,050	
200.0	418,900	370,400	740,800	2,146,850	
203.0	558,400	488,650	1,465,950	3,612,800	
205.0	688,000	623,200	1,246,400	4,859,200	
208.0	882,400	785,200	2,335,600	7,214,800	calculated by proportion
210.0	1,012,000	947,200	1,894,400	9,109,200	
213.0	1,206,400	1,109,200	3,327,600	12,436,800	
215.0	1,336,000	1,271,200	2,542,400	14,979,200	
218.0	1,530,400	1,433,200	4,299,600	19,278,800	

Table 3.4 Storage Capacity of Khlong Chaliang Lab Dam

Elevation	Area (m^2)	Mean Area (m^2)	Capacity (m^3)	Total Capacity (m^3)	Remark
EL 180.0	0				
183.0	25,300	12,650	37,950	37,950	by topographic map of scale 1:4,000
185.0	75,600	50,450	100,900	138,850	
188.0	145,600	110,600	331,800	470,650	
190.0	161,600	153,600	307,200	777,850	
193.0	225,800	193,700	581,100	1,358,950	
195.0	280,000	252,900	505,800	1,864,750	
200.0	362,600	321,300	1,606,500	3,471,250	

Table 3.5 Main Features of Four Storage Dams

Description	Name of Dam			
	Huai Saduang Yai	Huai Khon Kaen	Huai Yai	Khlong Chaliang Lab
I. Reservoir				
(1) Drainage Area (km^2)	96	322	78	77
(2) Total Storage Capacity ($x10^3m^3$)	15,000	28,000	7,900	2,300
(3) Dead Storage Capacity ($x10^3m^3$)	960	3,220	780	770
(4) Useful Storage Capacity ($x10^3m^3$)	14,040	24,780	7,120	1,530
(5) High Water Level (m)	189.65	214.50	211.00	198.50
(6) Full Water Level (m)	187.50	211.50	209.00	196.50
(7) Dead Water Level (m)	174.50	186.50	196.00	190.00
(8) Reservoir Area at Full Water Level (km^2)	1.60	1.44	0.95	0.31
II. Dam				
(1) Dam Type	zone earth-fill dam	zone earth-fill dam	zone earth-fill dam	zone earth-fill dam
(2) Dam Crest Elevation (m)	191.00	216.00	212.50	200.00
(3) Freeboard (m)	1.35	1.50	1.50	1.50
(4) Dam Height (m)	30.0	52.0	32.5	25.3
(5) Dam Crest Length (m)	413.0	912.0	280.0	207.0
(6) Dam Crest Width (m)	8.0	10.0	8.0	7.0
(7) Embankment Slope				
Upstream	1:3.0	1:3.0	1:3.0	1:3.0
Downstream	1:2.5	1:2.5	1:2.5	1:2.5
(8) Embankment Volume ($x10^3m^3$)	667.7	2,728.6	327.7	151.2
III. Spillway				
III-1. Service Spillway				
(1) Design Discharge (m^3/s)	245.0	698.0	149.0	150.0
(2) Type	side channel	side channel	side channel	side channel
(3) Crest Length (m)	60.0	96.0	40.0	40.0
(4) Overflow Depth (m)	1.70	2.50	1.60	1.60
III-2. Emergency Spillway				
(1) Design Discharge (m^3/s)	354.0	940.0	218.0	193.0
(2) Type	side channel	overflow	overflow	side channel
(3) Crest Length (m)	30.0	34.0	25.0	40.0
(4) Overflow Depth (m)	0.45	0.50	0.40	0.40
IV. Intake Structure				
(1) Design Discharge (m^3/s)	2.0	6.0	1.8	0.6
(2) Type	Reinforced concrete tower	reinforced concrete tower	reinforced concrete tower	reinforced concrete tower

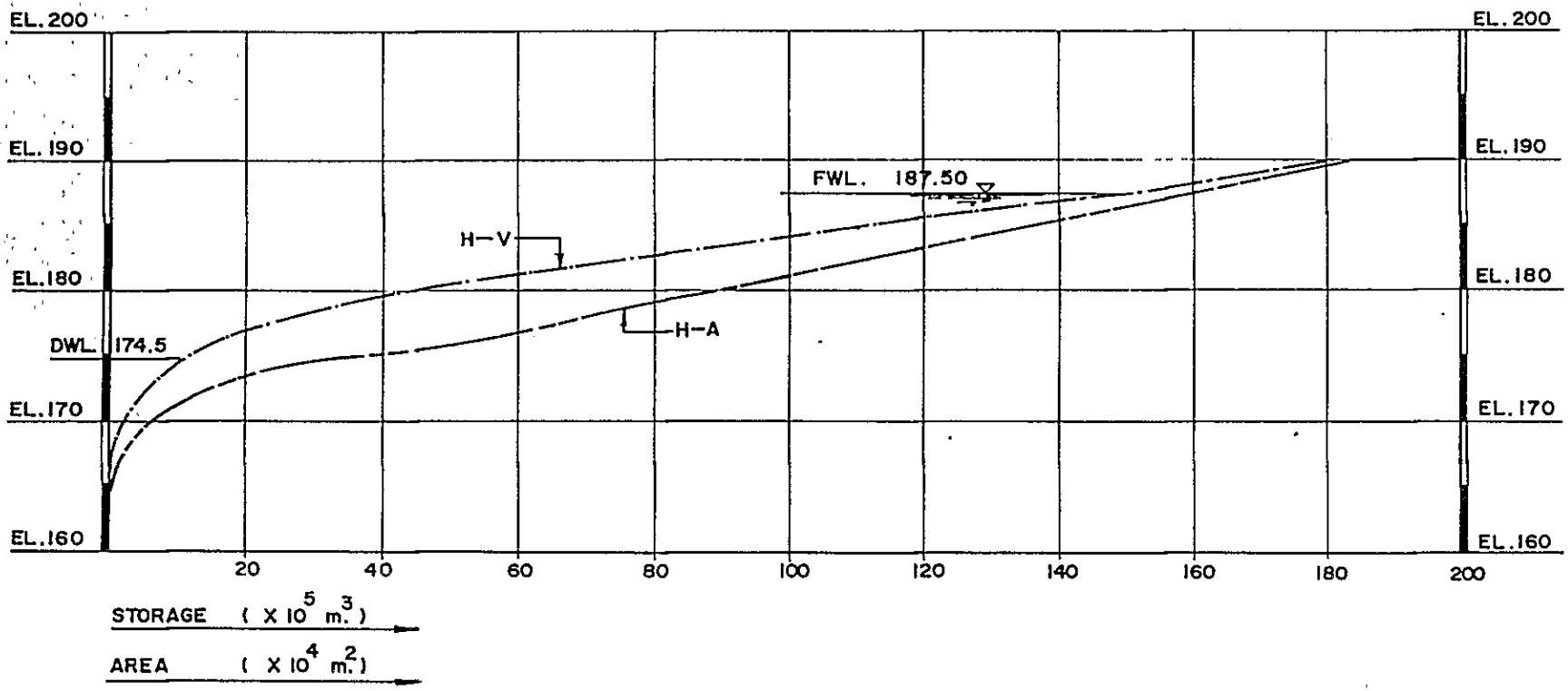


Fig. 3.1 ELEVATION-STORAGE, ELEVATION-AREA CURVE OF HUAI SADUANG YAI RESERVOIR

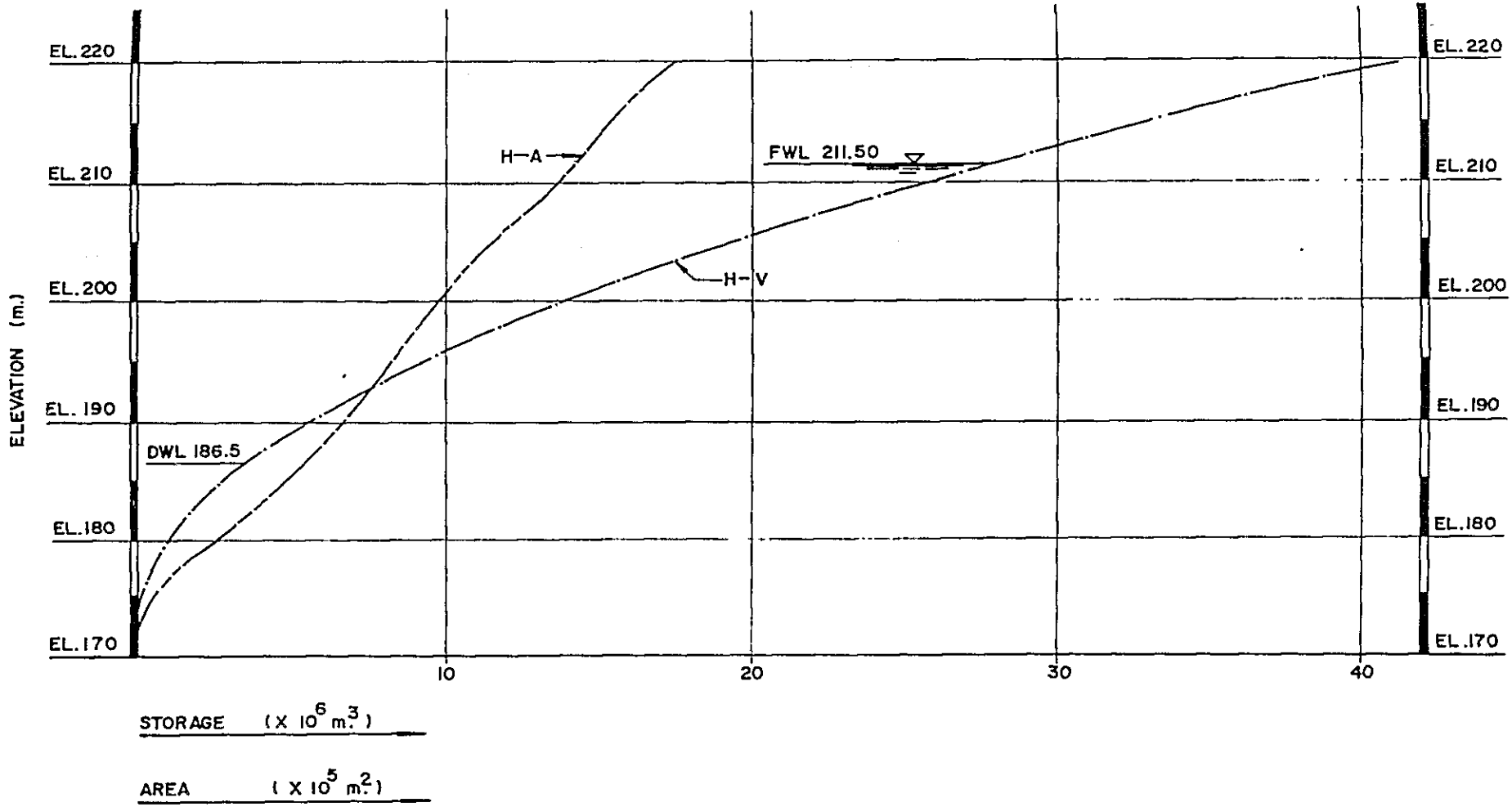


Fig. 3.2 ELEVATION – STORAGE, ELEVATION – AREA CURVE OF HUAI KHON KAEN RESERVOIR

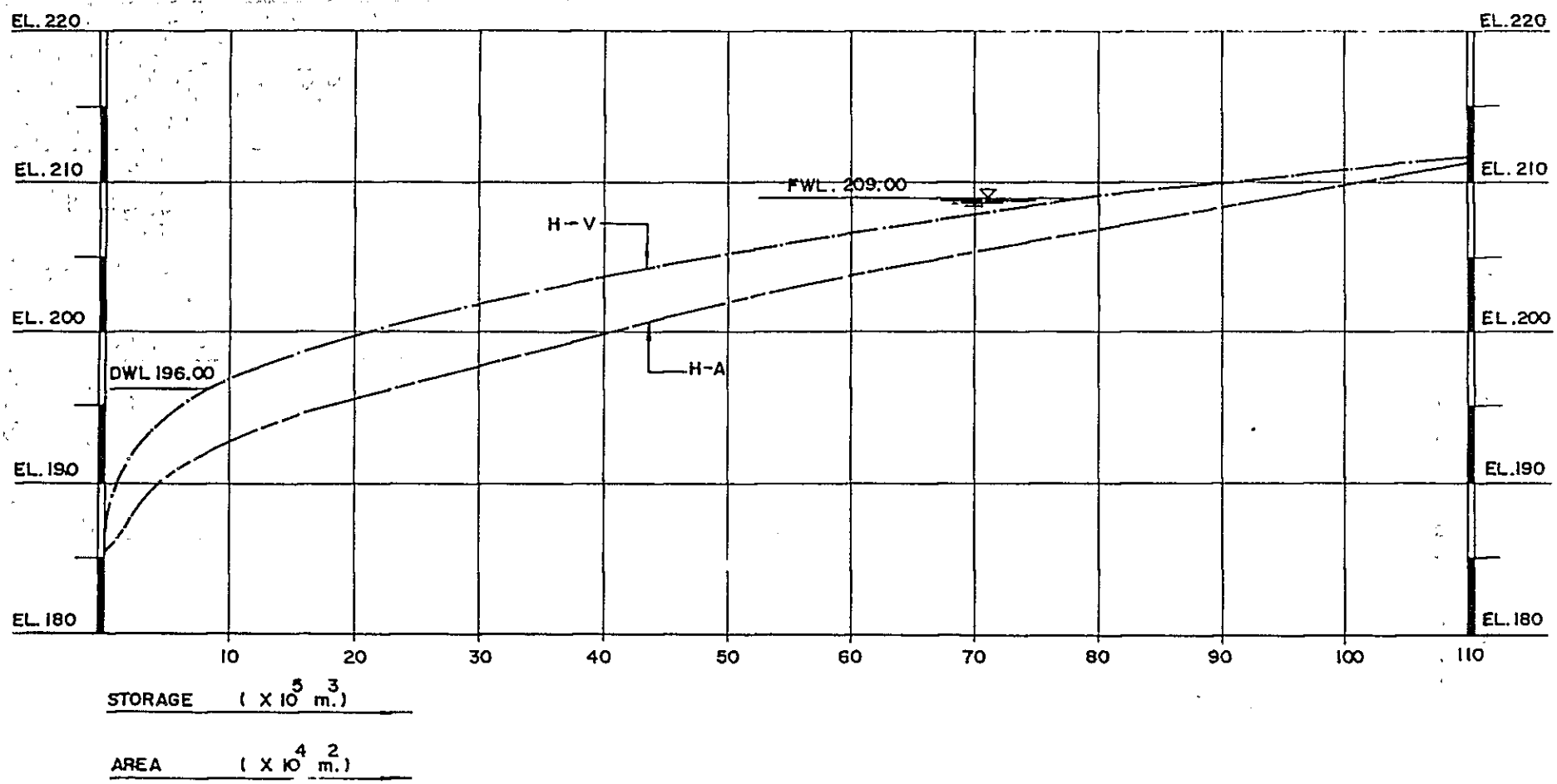


Fig. 3.3 ELEVATION – STORAGE, ELEVATION – AREA CURVE OF HUAI YAI RESERVOIR

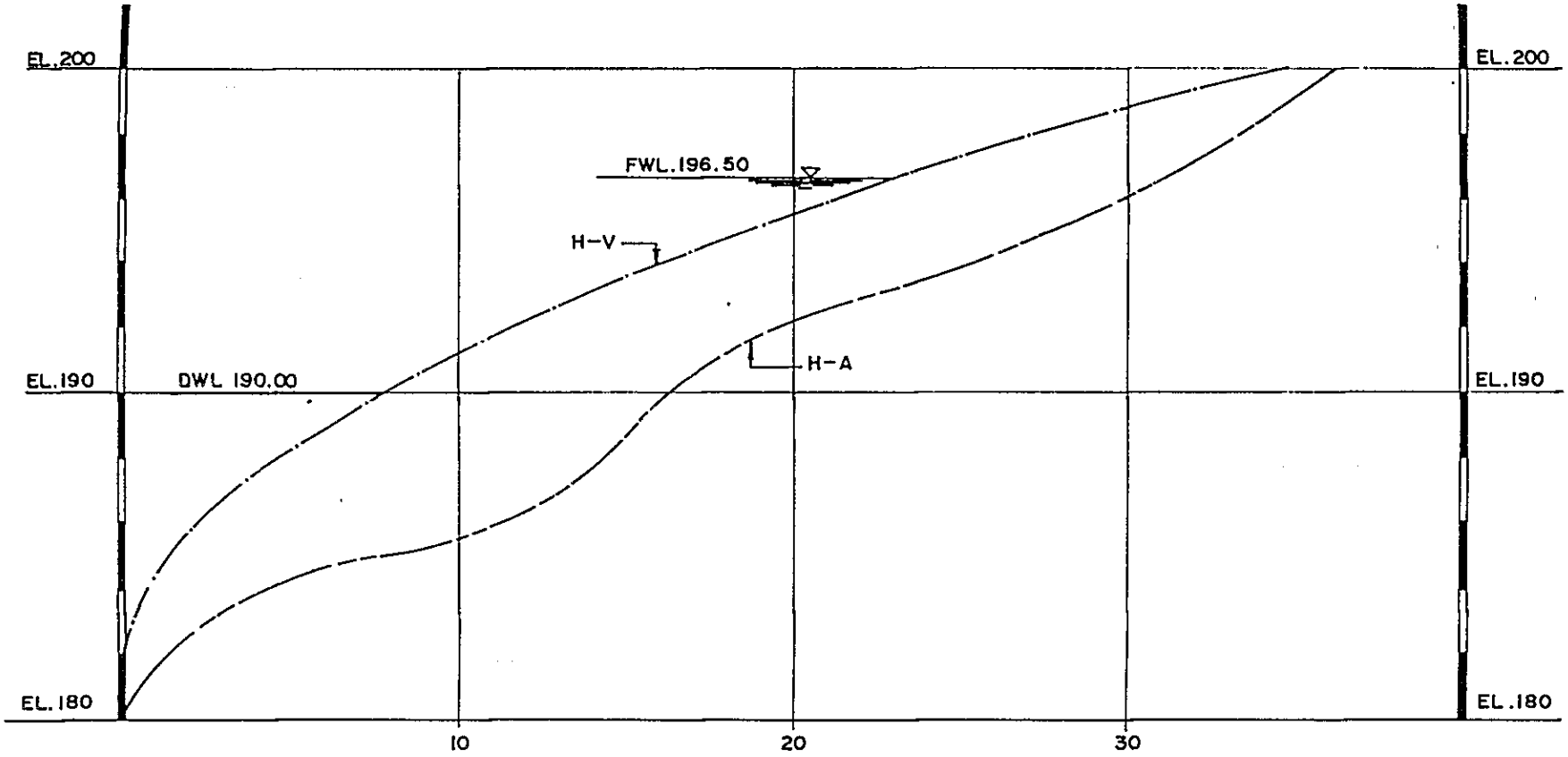
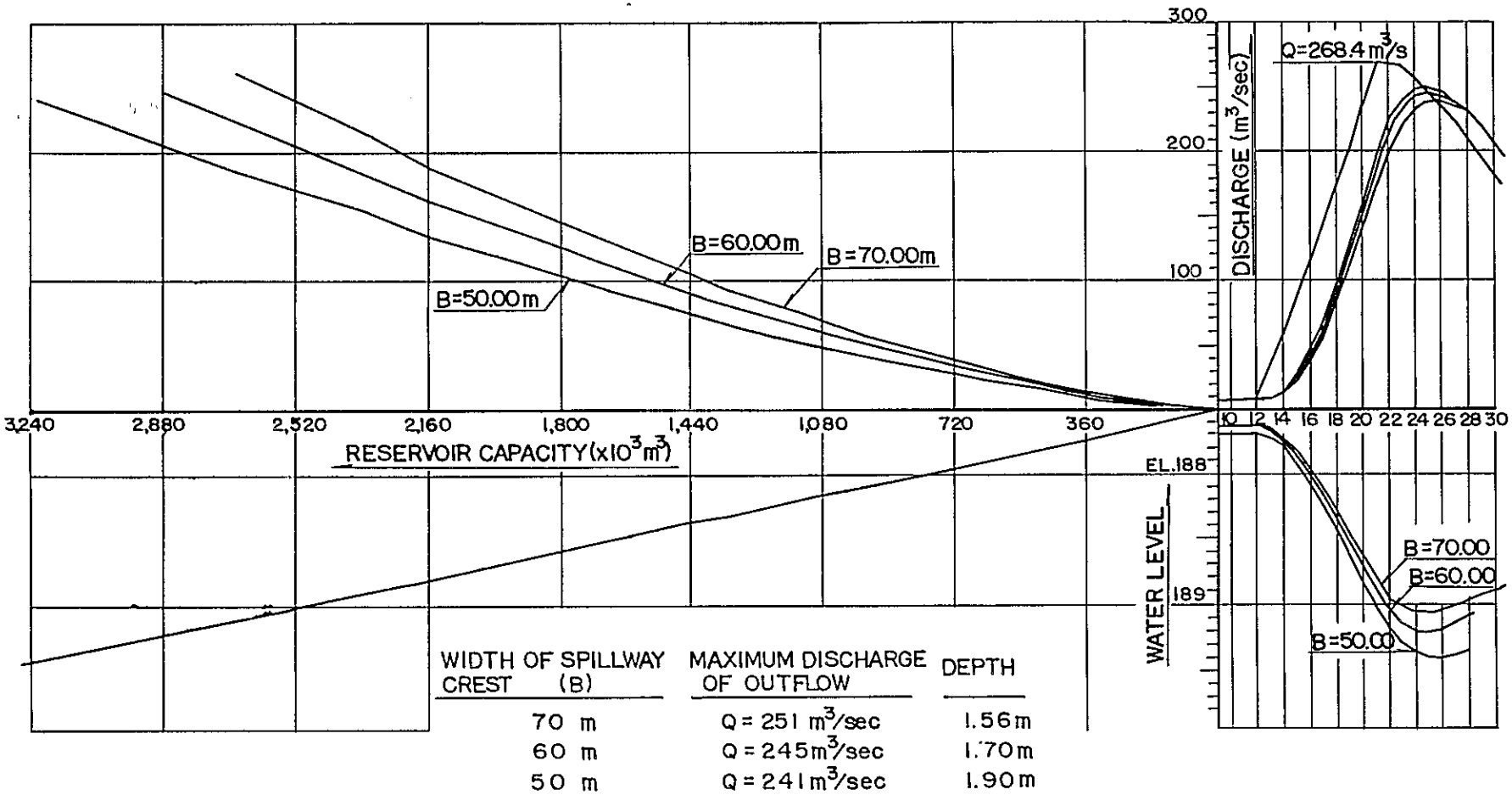
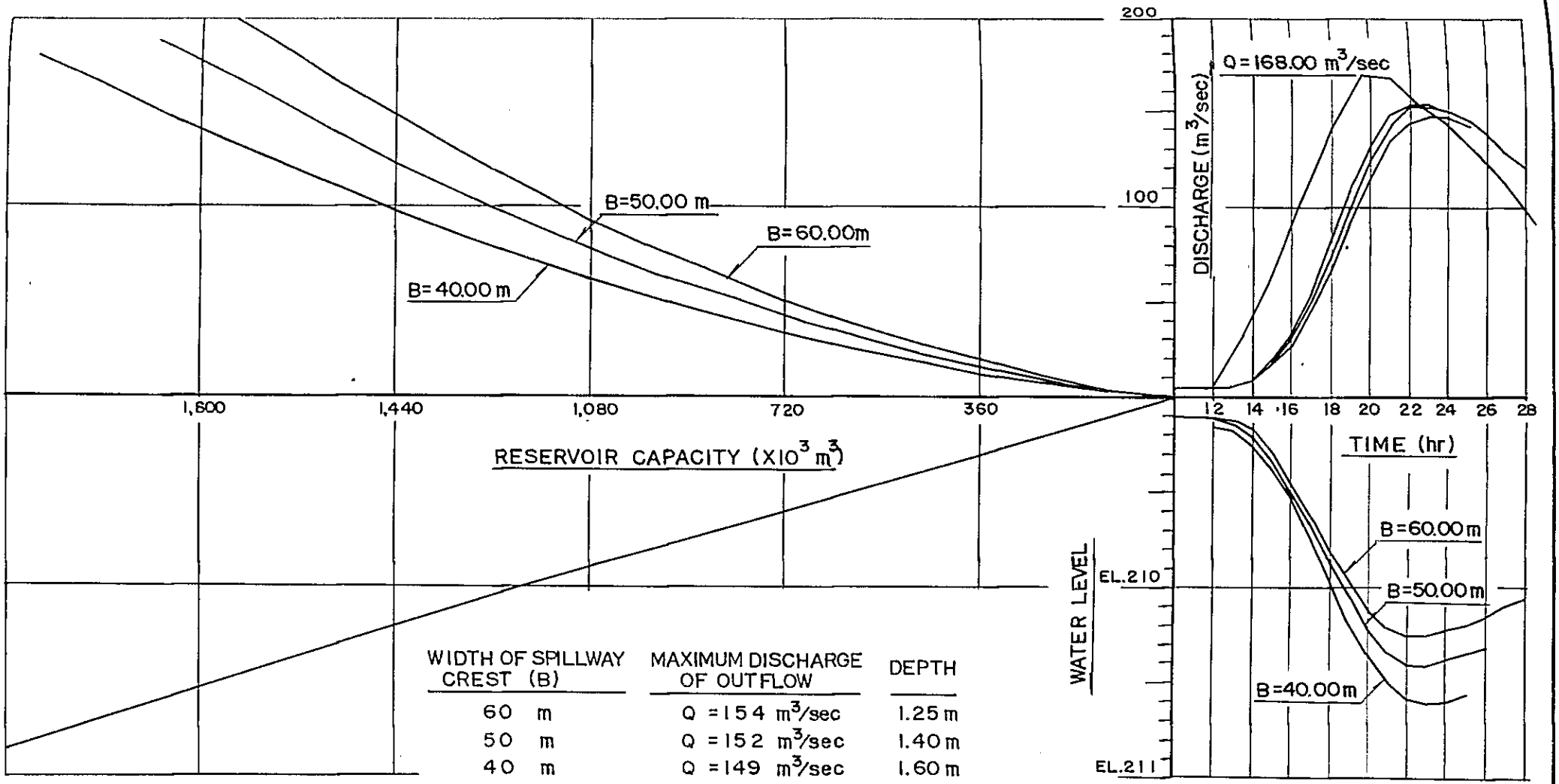


Fig. 3.4 ELEVATION – STORAGE, ELEVATION – AREA CURVE OF KHLONG CHALIANG LAB RESERVOIR



WIDTH OF SPILLWAY CREST (B)	MAXIMUM DISCHARGE OF OUTFLOW	DEPTH
70 m	Q = 251 m³/sec	1.56m
60 m	Q = 245m³/sec	1.70m
50 m	Q = 241m³/sec	1.90m

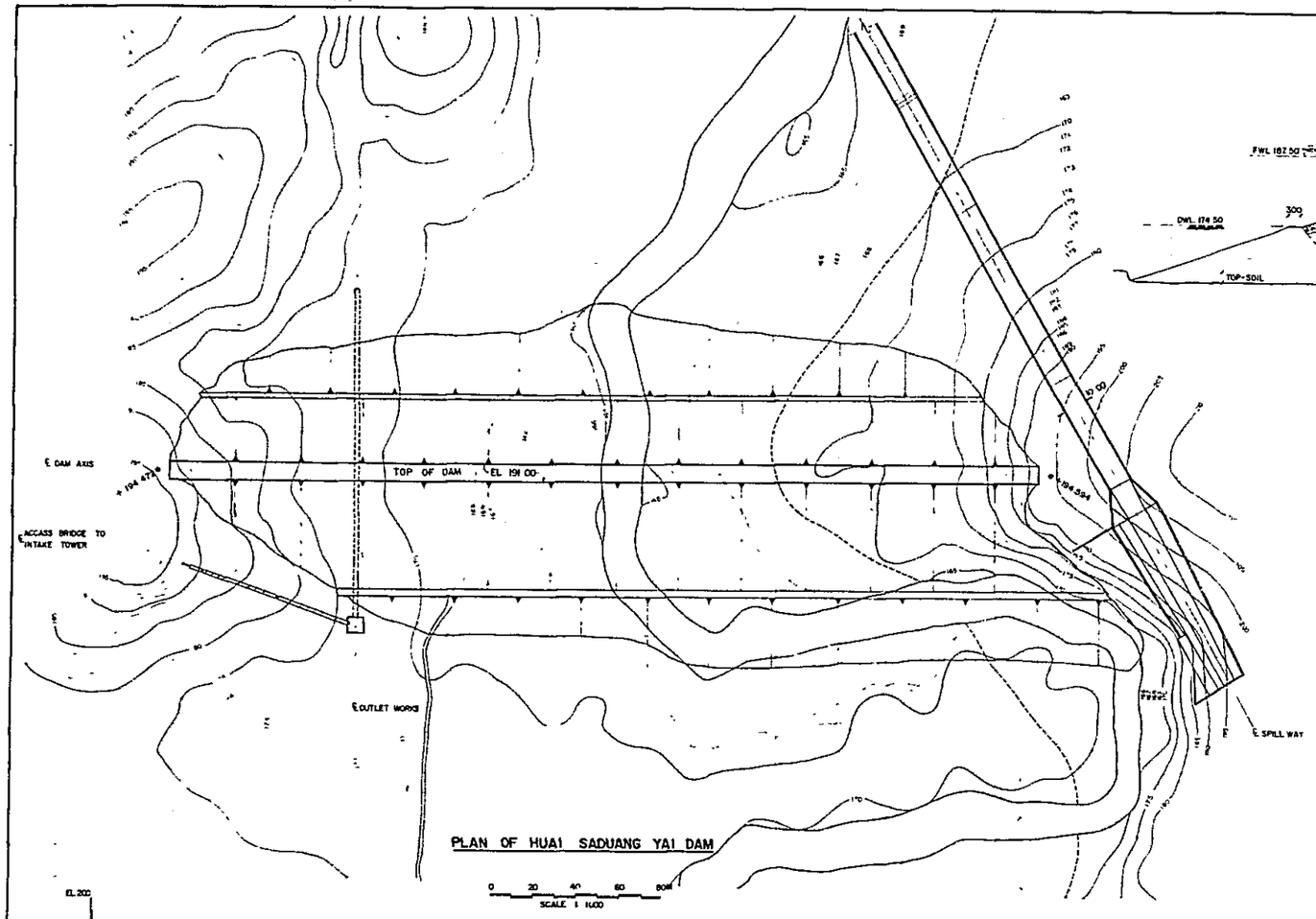
Fig. 3.5 GRAPHIC SOLUTION OF FLOOD CONTROL OF HUAI SADUANG YAI DAM



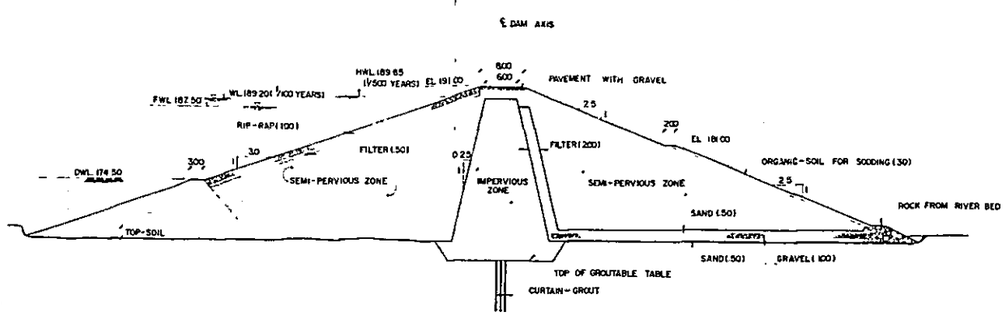
WIDTH OF SPILLWAY CREST (B)	MAXIMUM DISCHARGE OF OUTFLOW	DEPTH
60 m	Q = 154 m³/sec	1.25 m
50 m	Q = 152 m³/sec	1.40 m
40 m	Q = 149 m³/sec	1.60 m

Fig. 3.6 GRAPHIC SOLUTION OF FLOOD CONTROL OF HUAI YAI DAM

PLATE NO.

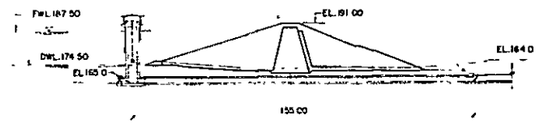


PLAN OF HUAI SADUANG YAI DAM

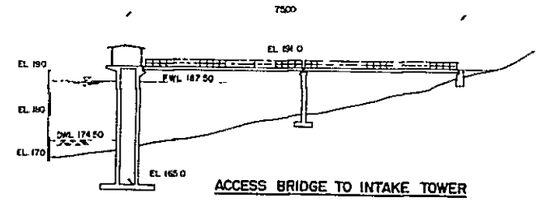


TYPICAL CROSS SECTION OF DAM

SCALE 1 400
0 10 20M

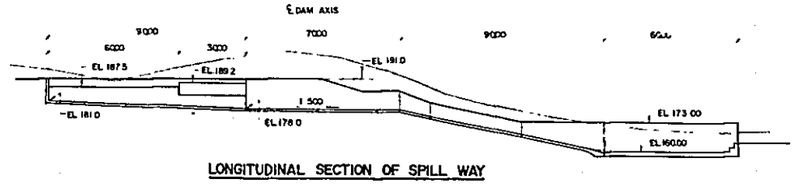


LONGITUDINAL SECTION OF OUTLET WORKS
SCALE 1 1000



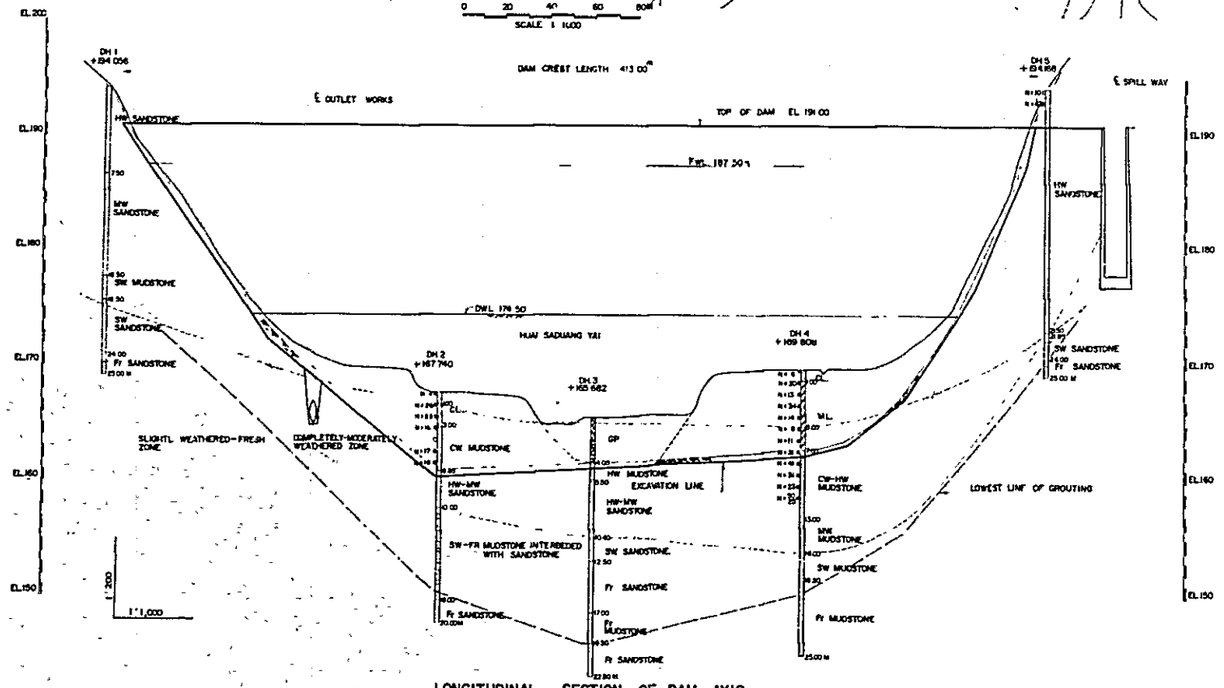
ACCESS BRIDGE TO INTAKE TOWER

SCALE 1 500
0 10 20 30M



LONGITUDINAL SECTION OF SPILL WAY

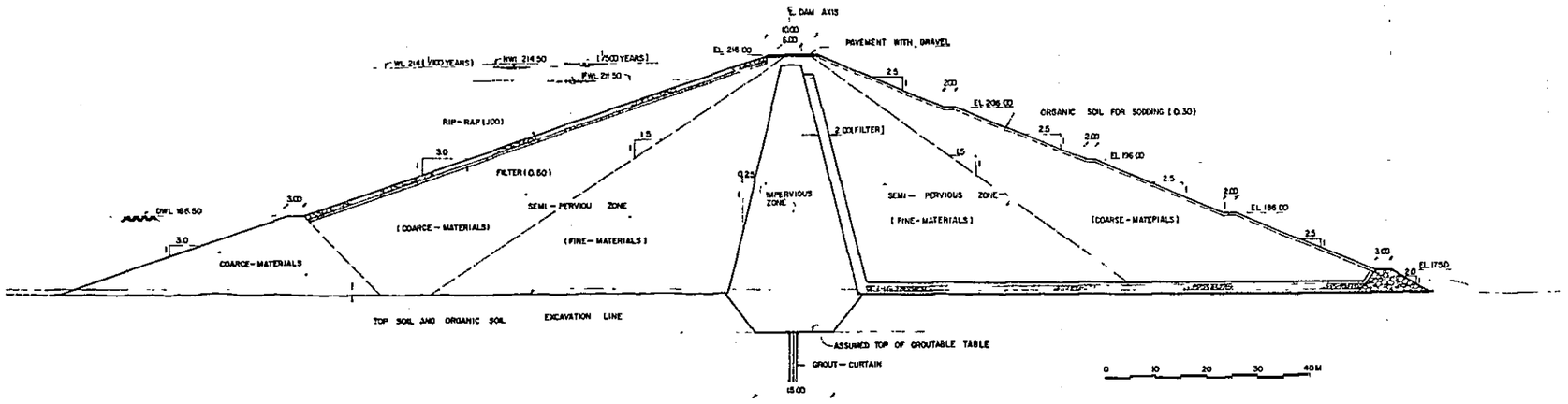
0 20 40 60 M
SCALE 1:1000



LONGITUDINAL SECTION OF DAM AXIS

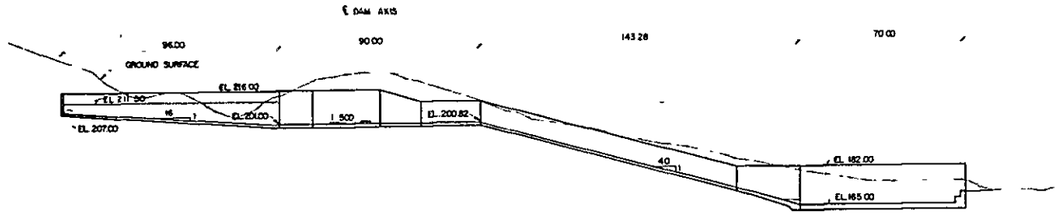
JAPAN INTERNATION COOPERATION AGENCY	
THE UPPER PASAK MEDIUM SCALE IRRIGATION PROJECT	
TITLE OF DRAWINGS GENERAL LAYOUT OF HUAI SADUANG YAI DAM (1/1)	
PREPARED BY	DWG NO 01
CHECKED BY	

PLATE NO



TYPICAL CROSS SECTION OF DAM

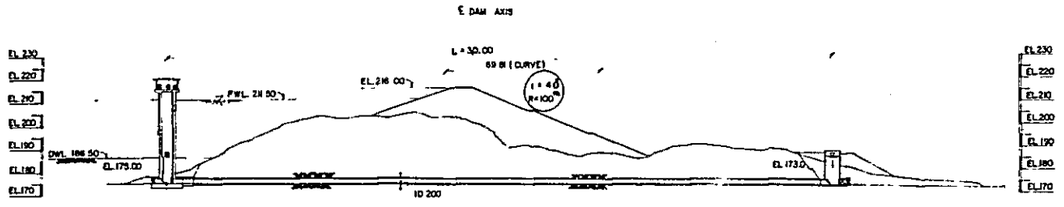
SCALE 1 400



LONGITUDINAL SECTION OF SPILL WAY

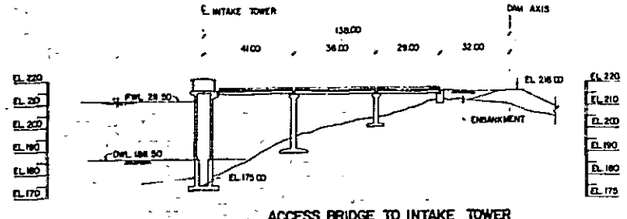
SCALE 1:1000

0 20 40 60 80



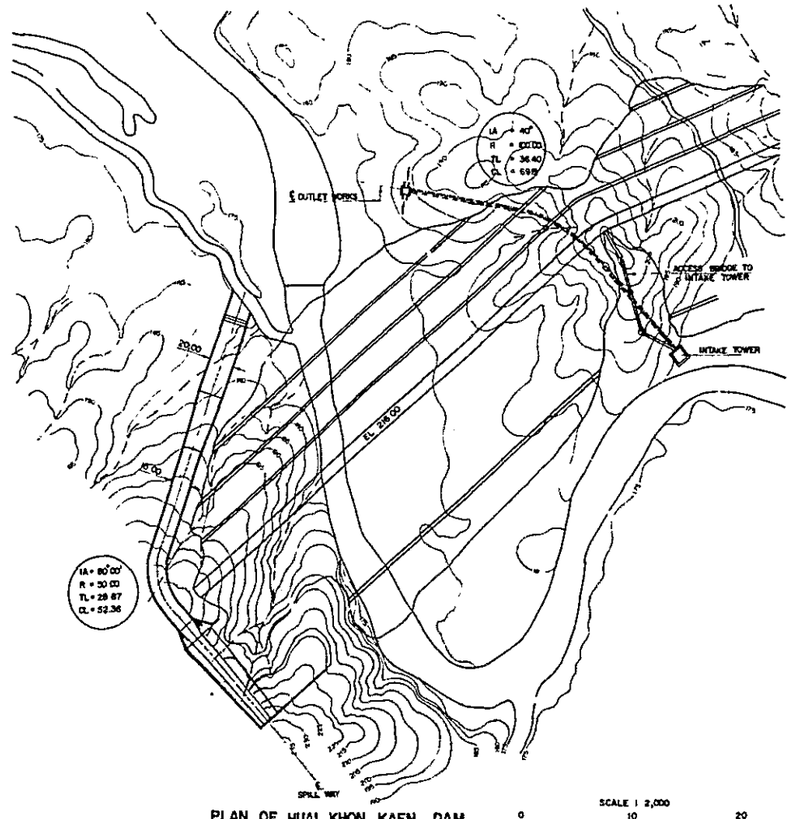
LONGITUDINAL SECTION OF OUTLET WORKS

SCALE 1:1000



ACCESS BRIDGE TO INTAKE TOWER

SCALE 1:1,000



PLAN OF HUAI KHON KAEN DAM

SCALE 1 2,000

0 10 20

JAPAN INTERNATION COOPERATION AGENCY

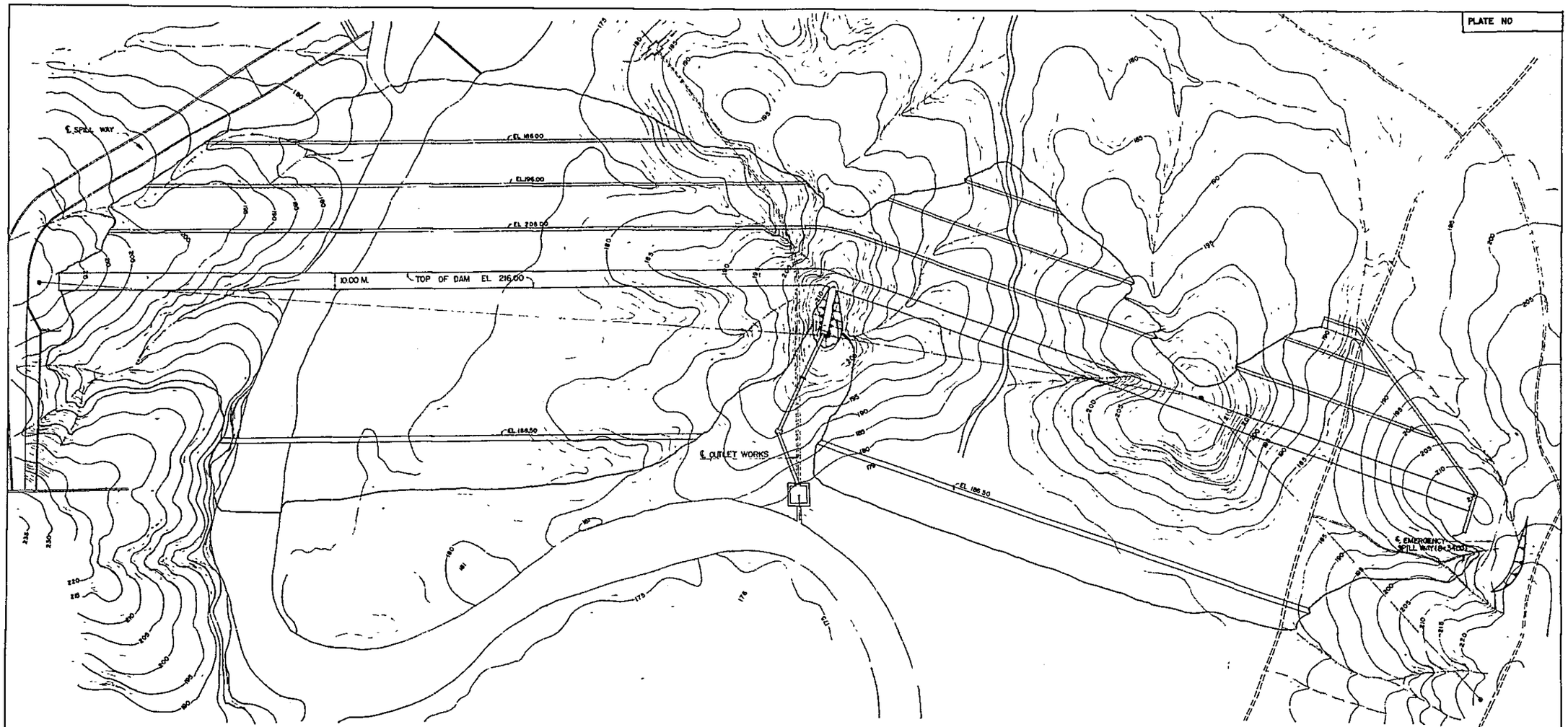
THE UPPER PASAK MEDIUM SCALE IRRIGATION PROJECT

TITLE OF DRAWINGS

GENERAL LAYOUT OF HUAI KHON KAEN DAM (1/2)

PREPARED BY :	DWG NO 02
CHECKED BY :	

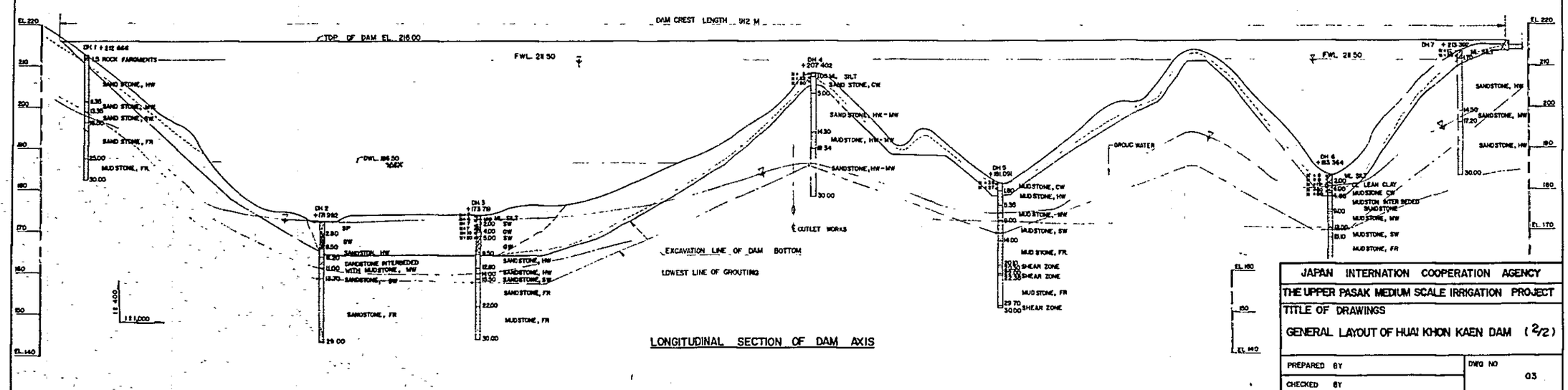
PLATE NO



PLAN OF HUAI KHON KAEN DAM

SCALE 1 : 1,000

0 20 40 60 80 100 M.

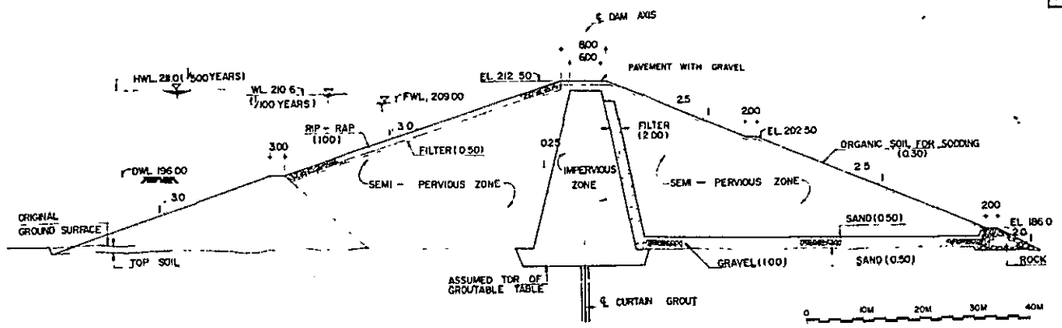


LONGITUDINAL SECTION OF DAM AXIS

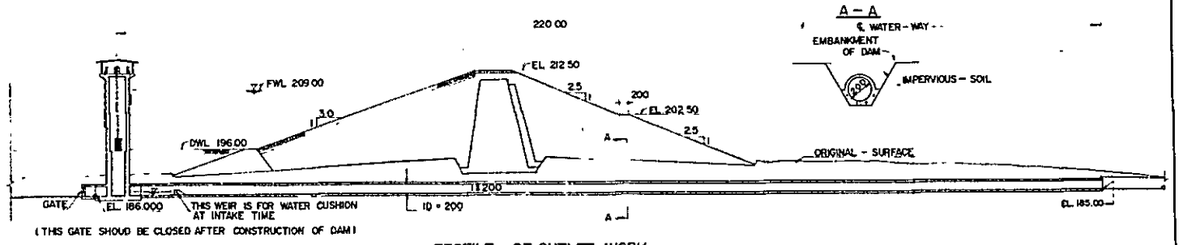
JAPAN INTERNATION COOPERATION AGENCY	
THE UPPER PASAK MEDIUM SCALE IRRIGATION PROJECT	
TITLE OF DRAWINGS	
GENERAL LAYOUT OF HUAI KHON KAEN DAM (2/2)	
PREPARED BY	DWG NO 03
CHECKED BY	

PLATE NO. -

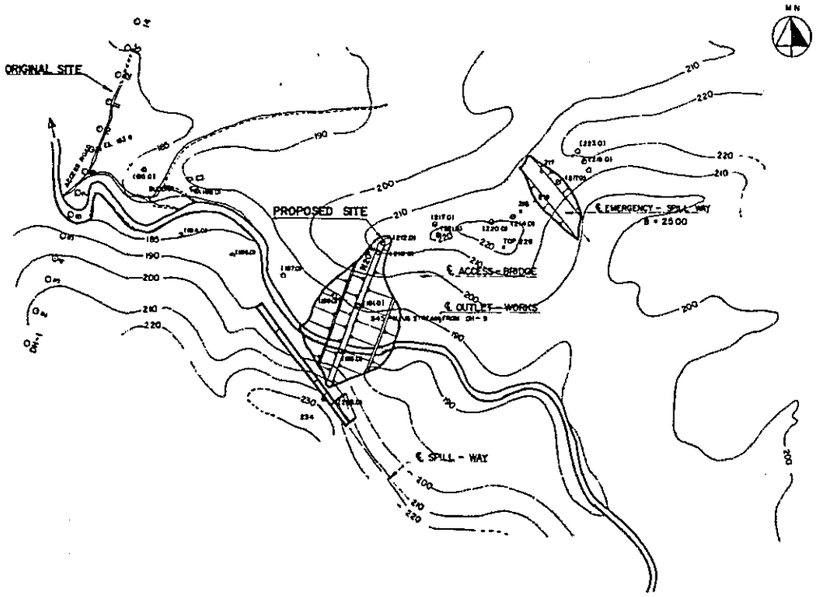
RESERVOIR AREA
SCALE 1 : 8000
0 100 600 M



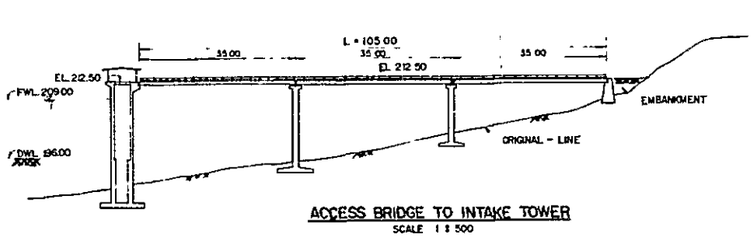
TYPICAL CROSS SECTION OF DAM
SCALE 1 : 400



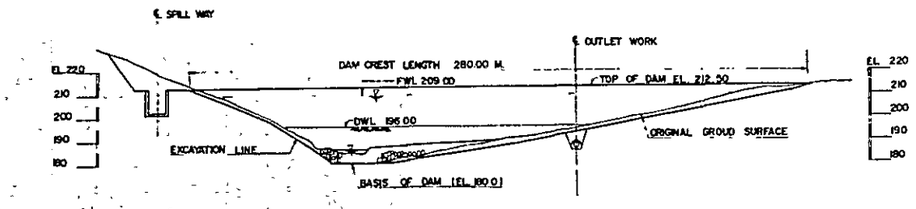
PROFILE OF OUTLET WORK
SCALE 1 : 500
0 10 20 30 M



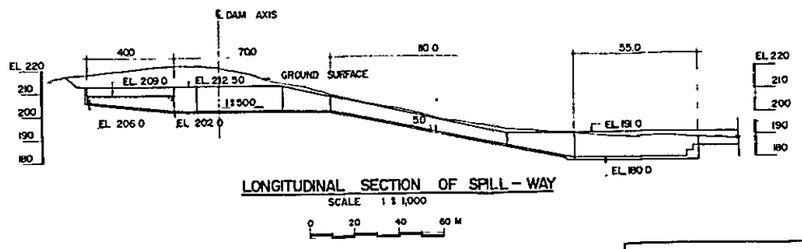
HUAI YAI LOCATION MAP OF PROPOSED DAM SITE
0 100M 200M 300M 400M



ACCESS BRIDGE TO INTAKE TOWER
SCALE 1 : 500



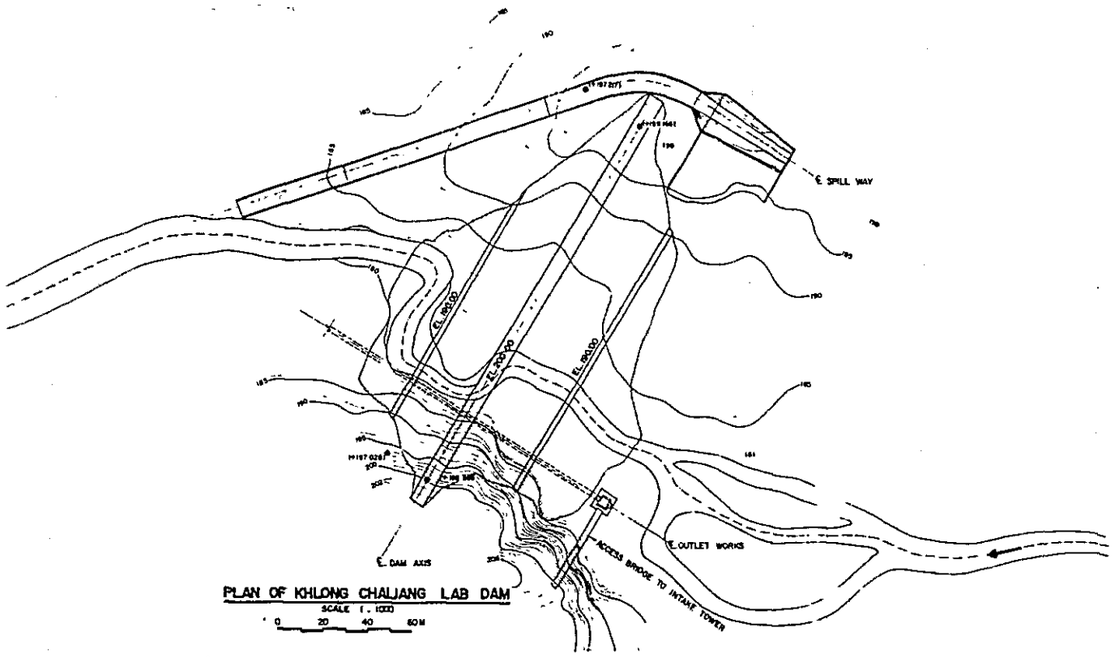
LONGITUDINAL SECTION OF DAM
SCALE 1 : 1000



LONGITUDINAL SECTION OF SPILL - WAY
SCALE 1 : 1,000
0 20 40 60 M

JAPAN INTERNATION COOPERATION AGENCY	
THE UPPER PASAK MEDIUM SCALE IRRIGATION PROJECT	
TITLE OF DRAWINGS GENERAL LAYOUT OF HUAI YAI DAM (1/1)	
PREPARED BY	DWG NO. 04
CHECKED BY	

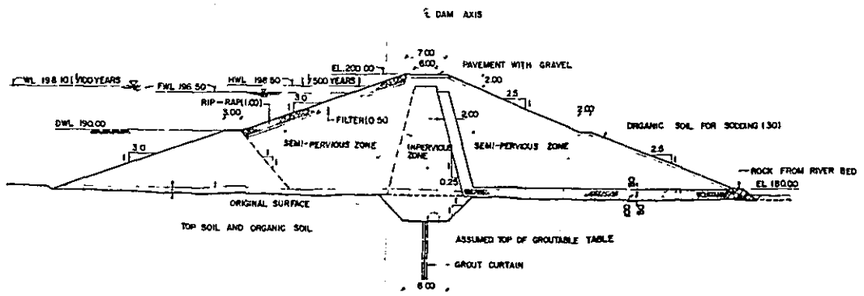
PLATE NO.



PLAN OF KHLONG CHALIANG LAB DAM

SCALE 1 : 1000

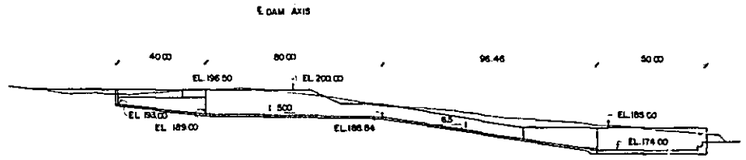
0 20 40 60 M



TYPICAL CROSS SECTION OF DAM

SCALE 1 400

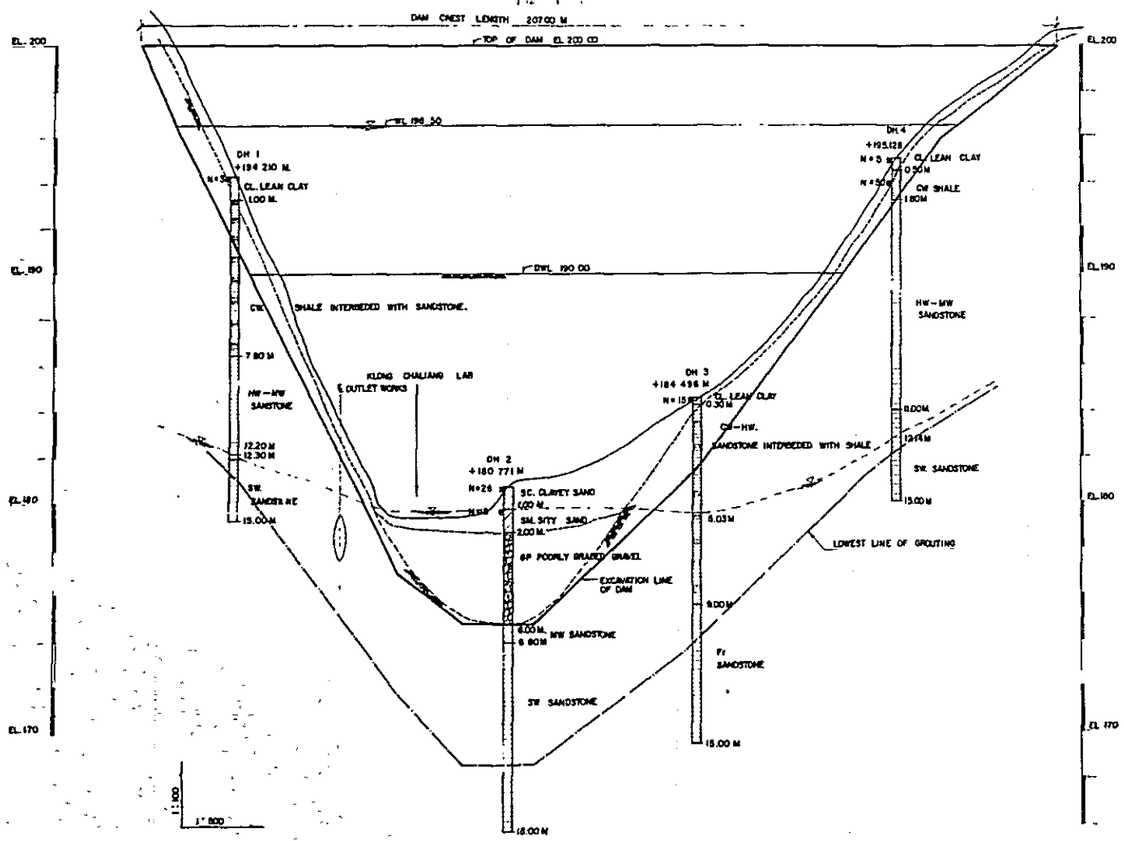
0 10 20 30 M



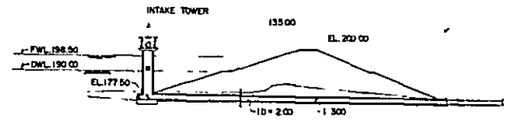
LONGITUDINAL SECTION OF SPILL WAY

SCALE 1 : 1,000

0 20 40 60 M

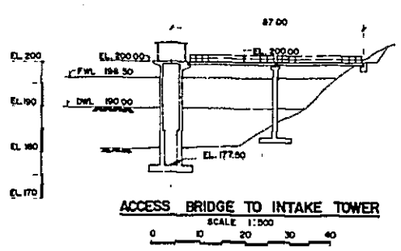


LONGITUDINAL SECTION OF DAM AXIS



LONGITUDINAL SECTION OF OUTLET WORKS

SCALE 1 : 1,000



ACCESS BRIDGE TO INTAKE TOWER

SCALE 1:500

0 10 20 30 40

JAPAN INTERNATIONAL COOPERATION AGENCY	
THE UPPER PASAK MEDIUM SCALE IRRIGATION PROJECT	
TITLE OF DRAWINGS GENERAL LAYOUT OF KHLONG CHALIANG LAB DAM (1/1)	
PREPARED BY :	DWG NO 05
CHECKED BY :	

ANNEX IV

RESERVOIR OPERATION

ANNEX IV RESERVOIR OPERATION

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

4.1 GENERAL

To clarify the efficient use of the installed capacity of reservoir, the operation study is made for 26 years from 1952 to 1977 in according with the presumed set of operation rules as described below.

The storage capacity in the reservoir would be adjusted by evaporation and precipitation in the reservoir site. Natural inflow would be balanced with total demand to clarify surplus or deficit of water resources in the current month. The surplus water would be stored for the subsequent month. In case of the deficit of water resources, the storage water in the reservoir would be released to meet the deficit. Total amount of water exceeding the maximum storage capacity of reservoir would be unavailingly outspilled.

Since the exploited water in the Huai Saduang Yai reservoir would be used as the supplementary supply for the Sri Chan Irrigation Project area and the Pasak Left Bank Irrigation Project area, the Huai Saduang Yai reservoir would be operated accounting for non-regulated runoff in the mainstream of the Pasak river. Special operation rules are set forth for the Huai Saduang Yai reservoir as mentioned below.

The initial operation condition is presumed so same as the other reservoirs. Where the runoff in the Pasak river exceeds irrigation demand for the service areas of 37,500 rai (6,000 ha), no storage water in the Huai Saduang Yai reservoir would be released. Otherwise, in case of the deficit of irrigation water demand for the service areas of 37,500 rai (6,000 ha), the storage water in the reservoir would be supplied to meet the deficit. As regards balance of supply and demand, and spilling out of reservoir, the same rules for other three reservoirs would be also applied for the Huai Saduang Yai reservoir.

4.2 SUPPLY AND DEMAND

4.2.1 Supply

The monthly runoff of the tributary is produced by multiplying monthly rainfall by the runoff coefficient which is read on the line B in the estimated chart of runoff coefficient authorized in RID. The estimated runoffs in respective tributaries for 26 years from 1952 to 1977 are shown in Table 4.1(1) and (2). These values are used for the supply data of the operation study.

4.2.2 Demand

The demand of water resources comprises irrigation requirement, municipal water and downstream maintenance flow.

(1) Irrigation Requirement

The irrigation requirement is calculated on the monthly basis of meteorological data, recommendable cropping pattern and proposed crop intensity. As discussed in Annex VI, the crop intensity of 135% and 125% is applied for the Lom Sak area and the Phetchabun area, respectively. The estimated irrigation requirement is summarized as follows.

Month	Huai Saduang Yai C.I = 135% I.A = 37,500 rai	Huai Khon Kaen C.I = 135% I.A = 27,500 rai	Huai Yai C.I = 125% I.A = 9,380 rai	Khlong Chaliang Lab C.I = 125% I.A = 1,440 rai
	($x10^3m^3$)	($x10^3m^3$)	($x10^3m^3$)	($x10^3m^3$)
Jan.	2,934	2,152	524	80
Feb.	3,972	2,913	695	106
Mar.	4,020	2,948	780	120
Apr.	1,686	1,236	348	53
May	330	242	65	10
Jun.	2,880	2,112	908	139
Jul.	9,546	7,000	1,674	257
Aug.	1,998	1,465	756	116
Sep.	3,288	2,411	501	77
Oct.	12,018	8,813	2,907	446
Nov.	5,520	4,048	1,526	234
Dec.	0	0	0	0

(2) Municipal Water

The municipal water of 5,000 m^3/day, about 270 liter per day per capita equivalence, including conveyance losses of 20% would be daily supplied for the Lom Sak municipality during dry season, Nov. to Apr., from the Huai Saduang Yai and the Huai Khon Kaen reservoir, respectively.

(3) Downstream Maintenance Flow

The river channel maintenance flow of 100 ℓ/sec/100 km^2 would be released to downstream through a year in due consideration of riparian right of downstream population.

4.3 OPERATION STUDY

The operation study on the respective proposed reservoirs is made by use of the estimated supply and demand according to the operation rules abovementioned. The calculation sheets are shown in Table 4.2(1) to (4) and the results are summarized in Fig. 4.1(1) to (4).

The outcomes of the study show that all of the proposed reservoirs are efficiently operated even in the 20% recurrence of droughty year.

Table 4.1 Estimated Runoff

(1) Huai Saduang Yai and Huai Khon Kaen Reservoir

Year : 1952

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Saduang Yai (96 Km2)	Runoff (m3) Huai Khon Kaen (322 Km2)
Apr	36.1	6.3	2.2	211200.	708400.
May	89.4	13.2	11.8	1132800.	3799600.
Jun	147.1	20.7	30.4	2918400.	9788800.
Jul	177.4	28.6	50.7	4867200.	16325400.
Aug	183.6	29.4	53.9	5174400.	17355800.
Sep	300.2	49.5	148.5	14256000.	47817000.
Oct	124.9	26.8	33.4	3206400.	10754800.
Nov	2.0	5.8	.1	9600.	32200.
Dec	0.0	----	0.0	0.	0.
Jan	28.5	9.3	2.6	249600.	837200.
Feb	67.7	14.4	9.7	931200.	3123400.
Mar	16.8	7.7	1.2	115200.	386400.
Total	1173.7	29.4	344.5	33072000.	110929000.

Huai Saduang Yai and Huai Khon Kaen

Year : 1953

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Saduang Yai (96 Km2)	Runoff (m3) Huai Khon Kaen (322 Km2)
Apr	105.8	15.3	16.1	1545600.	5184200.
May	203.0	27.9	56.6	5433600.	18225200.
Jun	211.5	29.0	61.3	5884800.	19738600.
Jul	166.7	27.2	45.3	4348800.	14586600.
Aug	136.2	23.2	31.5	3024000.	10143000.
Sep	272.8	46.0	125.4	12038400.	40378800.
Oct	51.8	17.3	8.9	854400.	2865800.
Nov	45.9	11.5	5.2	499200.	1674400.
Dec	0.0	----	0.0	0.	0.
Jan	0.0	----	0.0	0.	0.
Feb	0.0	----	0.0	0.	0.
Mar	20.7	8.3	1.7	163200.	547400.
Total	1214.4	29.0	352.0	33792000.	113344000.

Huai Saduang Yai and Huai Khon Kaen

Year : 1954

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Saduang Yai (96 Km2)	Runoff (m3) Huai Khon Kaen (322 Km2)
Apr	3.8	2.1	0.0	0.	0.
May	18.8	4.0	.7	67200.	225400.
Jun	211.1	29.0	61.2	5875200.	19706400.
Jul	126.8	22.0	27.8	2668800.	8951600.
Aug	181.1	29.1	52.7	5059200.	16969400.
Sep	450.1	69.0	310.5	29803000.	99981000.
Oct	83.8	21.4	17.9	1718400.	5763800.
Nov	3.6	6.0	.2	19200.	64400.
Dec	11.5	7.1	.8	76800.	257600.
Jan	0.0	----	0.0	0.	0.
Feb	12.3	7.2	.8	76800.	257600.
Mar	30.4	9.5	2.8	268800.	901600.
Total	1133.3	41.9	475.4	45638400.	153078800.

Huai Saduang Yai and Huai Khon Kaen

Year : 1955

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Saduang Yai (96 Km2)	Runoff (m3) Huai Khon Kaen (322 Km2)
Apr	151.8	21.3	32.3	3100800.	10400600.
May	113.2	16.3	18.4	1766400.	5924800.
Jun	478.6	63.7	304.8	29260800.	98145600.
Jul	89.0	17.1	15.2	1459200.	4894400.
Aug	325.9	47.9	156.1	14985600.	50264200.
Sep	244.1	42.2	103.0	9888000.	33166000.
Oct	14.9	12.5	1.8	172800.	579600.
Nov	0.0	----	0.0	0.	0.
Dec	0.0	----	0.0	0.	0.
Jan	0.0	----	0.0	0.	0.
Feb	65.6	14.1	9.2	883200.	2962400.
Mar	63.5	13.8	8.7	835200.	2801400.
Total	1546.6	42.0	649.5	62352000.	209139000.

Huai Saduang Yai and Huai Khon Kaen

Year : 1956

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Saduang Yai (96 Km2)	Runoff (m3) Huai Khon Kaen (322 Km2)
Apr	171.9	23.9	41.0	3936000.	13202000.
May	235.0	32.1	75.4	7238400.	24278800.
Jun	101.0	14.7	14.8	1420800.	4765600.
Jul	200.3	31.6	63.2	6067200.	20350400.
Aug	230.7	35.5	81.8	7852800.	26339600.
Sep	310.9	50.9	158.2	15187200.	50940400.
Oct	75.6	20.4	15.4	1478400.	4958800.
Nov	0.0	----	0.0	0.	0.
Dec	0.0	----	0.0	0.	0.
Jan	0.0	----	0.0	0.	0.
Feb	20.3	8.2	1.6	153600.	515200.
Mar	186.1	29.7	55.2	5299200.	17774400.
Total	1531.8	33.1	506.6	48633600.	163125200.

Huai Saduang Yai and Huai Khon Kaen

Year : 1957

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Saduang Yai (96 Km2)	Runoff (m3) Huai Khon Kaen (322 Km2)
Apr	78.1	11.7	9.1	873600.	2930200.
May	125.9	17.9	22.5	2160000.	7245000.
Jun	245.8	33.5	82.3	7900800.	26500600.
Jul	263.6	39.8	104.9	10070400.	33777800.
Aug	223.8	34.6	77.4	7430400.	24922800.
Sep	431.7	66.6	287.5	27600000.	92575000.
Oct	81.1	21.1	17.1	1641600.	5506200.
Nov	0.0	----	0.0	0.	0.
Dec	0.0	----	0.0	0.	0.
Jan	31.1	9.6	2.9	278400.	933800.
Feb	3.5	6.0	.2	19200.	64400.
Mar	0.0	----	0.0	0.	0.
Total	1484.6	40.7	603.9	57974400.	194455800.

Year : 1958

Huai Saduang Yai and Huai Khon Kaen

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Saduang Yai (96 Km2)	Runoff (m3) Huai Khon Kaen (322 Km2)
Apr	76.4	11.5	8.7	835200.	2801400.
May	63.1	9.3	6.1	585600.	1964200.
Jun	192.7	26.6	51.2	4915200.	16486400.
Jul	164.1	26.9	44.1	4233600.	14200200.
Aug	305.6	45.2	138.1	13257600.	44468200.
Sep	235.3	41.1	96.7	9283200.	31137400.
Oct	100.0	23.5	23.5	2256000.	7567000.
Nov	0.0	----	0.0	0.	0.
Dec	0.0	----	0.0	0.	0.
Jan	0.0	----	0.0	0.	0.
Feb	10.3	6.9	.7	67200.	225400.
Mar	43.4	11.2	4.8	460800.	1545600.
Total	1190.9	31.4	373.9	35894400.	120395800.

Year : 1959

Huai Saduang Yai and Huai Khon Kaen

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Saduang Yai (96 Km2)	Runoff (m3) Huai Khon Kaen (322 Km2)
Apr	87.7	12.9	11.3	1084800.	3638600.
May	105.6	15.3	16.1	1545600.	5184200.
Jun	96.1	14.0	13.4	1286400.	4314800.
Jul	197.2	31.2	61.5	5904000.	19803000.
Aug	176.2	28.4	50.0	4800000.	16100000.
Sep	483.2	73.3	354.1	33993600.	114020200.
Oct	0.0	----	0.0	0.	0.
Nov	0.0	----	0.0	0.	0.
Dec	0.0	----	0.0	0.	0.
Jan	2.9	5.9	.1	9600.	32200.
Feb	9.8	6.8	.6	57600.	193200.
Mar	43.3	11.2	4.8	460800.	1545600.
Total	1202.0	42.6	511.9	49142400.	164831800.

Huai Saduang Yai and Huai Khon Kaen

Year : 1960

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Saduang Yai (96 Km2)	Runoff (m3) Huai Khon Kaen (322 Km2)
Apr	14.4	3.4	.4	38400.	128800.
May	269.4	36.5	98.3	9436800.	31652600.
Jun	156.0	21.8	34.0	3264000.	10948000.
Jul	84.9	16.6	14.0	1344000.	4508000.
Aug	269.6	40.6	109.4	10502400.	35226800.
Sep	182.5	34.3	62.5	6000000.	20125000.
Oct	81.8	21.2	17.3	1660800.	5570600.
Nov	0.0	----	0.0	0.	0.
Dec	0.0	----	0.0	0.	0.
Jan	0.0	----	0.0	0.	0.
Feb	23.8	8.7	2.0	192000.	644000.
Mar	64.4	13.9	8.9	854400.	2865800.
Total	1146.8	30.2	346.8	33292800.	111669600.

Huai Saduang Yai and Huai Khon Kaen

Year : 1961

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Saduang Yai (96 Km2)	Runoff (m3) Huai Khon Kaen (322 Km2)
Apr	91.2	13.4	12.2	1171200.	3928400.
May	177.9	24.7	43.9	4214400.	14135800.
Jun	155.7	21.8	33.9	3254400.	10915800.
Jul	219.0	34.0	74.4	7142400.	23956800.
Aug	158.2	26.1	41.2	3955200.	13266400.
Sep	327.4	53.1	173.8	16684800.	55963600.
Oct	120.1	26.2	31.4	3014400.	10110800.
Nov	0.0	----	0.0	0.	0.
Dec	3.8	6.1	.2	19200.	64400.
Jan	0.0	----	0.0	0.	0.
Feb	0.0	----	0.0	0.	0.
Mar	1.1	5.7	0.0	0.	0.
Total	1254.4	32.8	411.0	39456000.	132342000.

Huai Saduang Yai and Huai Khon Kaen

Year : 1962

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Saduang Yai (96 Km2)	Runoff (m3) Huai Khon Kaen (322 Km2)
Apr	87.0	12.9	11.2	1075200.	3606400.
May	95.5	14.0	13.3	1276800.	4282600.
Jun	122.2	17.4	21.2	2035200.	6826400.
Jul	191.5	30.4	58.2	5587200.	18740400.
Aug	150.2	25.1	37.7	3619200.	12139400.
Sep	371.3	58.8	218.3	20956800.	70292600.
Oct	64.6	19.0	12.2	1171200.	3928400.
Nov	0.0	----	0.0	0.	0.
Dec	0.0	----	0.0	0.	0.
Jan	0.0	----	0.0	0.	0.
Feb	11.8	7.1	.8	76800.	257600.
Mar	133.0	22.8	30.3	2908800.	9756600.
Total	1227.1	32.9	403.2	38707200.	129830400.

Huai Saduang Yai and Huai Khon Kaen

Year : 1963

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Saduang Yai (96 Km2)	Runoff (m3) Huai Khon Kaen (322 Km2)
Apr	57.0	9.0	5.1	489600.	1642200.
May	59.4	9.3	5.5	528000.	1771000.
Jun	268.7	36.4	97.8	9388800.	31491600.
Jul	220.6	34.2	75.4	7238400.	24278800.
Aug	202.1	31.8	64.2	6163200.	20672400.
Sep	212.5	33.1	80.9	7766400.	26049800.
Oct	198.8	36.4	72.3	6940800.	23280600.
Nov	43.3	11.2	4.8	460800.	1545600.
Dec	21.2	8.3	1.7	163200.	547400.
Jan	0.0	----	0.0	0.	0.
Feb	0.0	----	0.0	0.	0.
Mar	0.0	----	0.0	0.	0.
Total	1283.6	31.8	407.7	39139200.	131279400.

Huai Saduang Yai and Huai Khon Kaen

Year : 1964

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Saduang Yai (96 Km2)	Runoff (m3) Huai Khon Kaen (322 Km2)
Apr	82.7	12.3	10.1	969600.	3252200.
May	313.5	42.3	132.6	12729600.	42697200.
Jun	98.9	14.4	14.2	1363200.	4572400.
Jul	157.8	26.0	41.0	3936000.	13202000.
Aug	184.0	29.4	54.0	5184000.	17388000.
Sep	244.1	42.2	103.0	9888000.	33166000.
Oct	194.4	35.8	69.5	6672000.	22379000.
Nov	7.3	6.5	.4	38400.	128800.
Dec	0.0	----	0.0	0.	0.
Jan	0.0	----	0.0	0.	0.
Feb	32.0	9.7	3.1	297600.	998200.
Mar	16.7	7.7	1.2	115200.	386400.
Total	1331.4	32.2	429.1	41193600.	138170200.

Huai Saduang Yai and Huai Khon Kaen

Year : 1965

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Saduang Yai (96 Km2)	Runoff (m3) Huai Khon Kaen (322 Km2)
Apr	0.0	----	0.0	0.	0.
May	165.8	23.1	38.2	3667200.	12300400.
Jun	173.9	24.1	41.9	4022400.	13491800.
Jul	66.8	14.2	9.4	902400.	3026800.
Aug	244.4	37.3	91.1	8745600.	29334200.
Sep	193.0	35.6	68.7	6595200.	22121400.
Oct	52.7	17.4	9.1	873600.	2930200.
Nov	0.0	----	0.0	0.	0.
Dec	0.0	----	0.0	0.	0.
Jan	0.0	----	0.0	0.	0.
Feb	0.0	----	0.0	0.	0.
Mar	7.6	6.6	.5	48000.	161000.
Total	904.2	28.6	258.9	24854400.	83365800.

Year : 1966

Huai Saduang Yai and Huai Khon Kaen

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Saduang Yai (96 Km2)	Runoff (m3) Huai Khon Kaen (322 Km2)
Apr	22.1	4.4	.9	86400.	289800.
May	131.7	18.7	24.6	2361600.	7921200.
Jun	64.0	9.9	6.3	604800.	2028600.
Jul	49.8	12.0	5.9	566400.	1899800.
Aug	104.2	19.1	19.9	1910400.	6407800.
Sep	52.9	17.4	9.2	883200.	2962400.
Oct	82.2	21.2	17.4	1670400.	5602800.
Nov	15.9	7.6	1.2	115200.	386400.
Dec	26.0	8.9	2.3	220800.	740600.
Jan	.5	5.6	0.0	0.	0.
Feb	0.0	----	0.0	0.	0.
Mar	3.0	6.0	.1	9600.	32200.
Total	552.3	15.9	87.8	8428800.	28271600.

Huai Saduang Yai and Huai Khon Kaen

Year : 1967

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Saduang Yai (96 Km2)	Runoff (m3) Huai Khon Kaen (322 Km2)
Apr	100.4	14.6	14.6	1401600.	4701200.
May	68.7	10.5	7.2	691200.	2318400.
Jun	86.2	12.8	11.0	1056000.	3542000.
Jul	115.6	20.6	23.8	2284800.	7663600.
Aug	114.4	20.4	23.3	2236800.	7502600.
Sep	0.0	----	0.0	0.	0.
Oct	0.0	----	0.0	0.	0.
Nov	0.0	----	0.0	0.	0.
Dec	0.0	----	0.0	0.	0.
Jan	0.0	----	0.0	0.	0.
Feb	0.0	----	0.0	0.	0.
Mar	34.7	10.1	3.5	336000.	1127000.
Total	520.0	16.0	83.4	8006400.	26854800.

Huai Saduang Yai and Huai Khon Kaen

. Year : 1968

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Saduang Yai (96 Km2)	Runoff (m3) Huai Khon Kaen (322 Km2)
Apr	115.0	16.5	18.9	1814400.	6085800.
May	300.5	40.6	122.0	11712000.	39284000.
Jun	163.4	22.8	37.2	3571200.	11978400.
Jul	177.9	28.7	51.0	4896000.	16422000.
Aug	115.5	20.6	23.7	2275200.	7631400.
Sep	73.2	20.1	14.7	1411200.	4733400.
Oct	70.0	19.7	13.7	1315200.	4411400.
Nov	.4	5.6	0.0	0.	0.
Dec	0.0	----	0.0	0.	0.
Jan	28.3	9.2	2.6	249600.	837200.
Feb	3.6	6.0	.2	19200.	64400.
Mar	100.4	18.6	18.6	1785600.	5989200.
Total	1148.2	26.4	302.6	29049600.	97437200.

Huai Saduang Yai and Huai Khon Kaen

Year : 1969

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Saduang Yai (96 Km2)	Runoff (m3) Huai Khon Kaen (322 Km2)
Apr	50.3	8.1	4.0	384000.	1288000.
May	130.1	18.5	24.0	2304000.	7728000.
Jun	69.2	10.5	7.2	691200.	2318400.
Jul	91.2	17.4	15.8	1516800.	5087600.
Aug	96.5	18.1	17.4	1670400.	5602800.
Sep	296.8	49.1	145.7	13987200.	46915400.
Oct	55.7	17.8	9.9	950400.	3187800.
Nov	17.7	7.9	1.3	124800.	418600.
Dec	0.0	----	0.0	0.	0.
Jan	.3	5.6	0.0	0.	0.
Feb	1.0	5.7	0.0	0.	0.
Mar	126.0	21.9	27.5	2640000.	8855000.
Total	934.8	27.0	252.8	24268800.	81401600.

Huai Saduang Yai and Huai Khon Kaen

Year : 1970

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Saduang Yai (96 Km2)	Runoff (m3) Huai Khon Kaen (322 Km2)
Apr	35.1	6.1	2.1	201600.	676200.
May	108.3	15.6	16.8	1612800.	5409600.
Jun	245.3	33.4	81.9	7862400.	26371800.
Jul	40.5	10.8	4.3	412800.	1384600.
Aug	245.4	37.4	91.7	8803200.	29527400.
Sep	184.2	34.5	63.5	6096000.	20447000.
Oct	92.9	22.6	20.9	2006400.	6729800.
Nov	2.8	5.9	.1	9600.	32200.
Dec	18.2	7.9	1.4	134400.	450800.
Jan	.4	5.6	0.0	0.	0.
Feb	25.7	8.9	2.2	211200.	708400.
Mar	43.0	11.1	4.7	451200.	1513400.
Total	1041.8	27.8	289.6	27801600.	93251200.

Huai Saduang Yai and Huai Khon Kaen

Year : 1971

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Saduang Yai (96 Km2)	Runoff (m3) Huai Khon Kaen (322 Km2)
Apr	6.6	2.4	.1	9600.	32200.
May	169.5	23.6	40.0	3840000.	12880000.
Jun	167.0	23.2	38.7	3715200.	12461400.
Jul	108.5	19.6	21.2	2035200.	6826400.
Aug	217.5	33.8	73.5	7056000.	23667000.
Sep	148.2	29.8	44.1	4233600.	14200200.
Oct	84.6	21.5	18.1	1737600.	5828200.
Nov	.3	5.6	0.0	0.	0.
Dec	3.0	6.0	.1	9600.	32200.
Jan	0.0	----	0.0	0.	0.
Feb	31.6	9.7	3.0	288000.	966000.
Mar	41.7	11.0	4.5	432000.	1449000.
Total	978.5	24.9	243.3	23356800.	78342600.

Huai Saduang Yai and Huai Khon Kaen

Year : 1972

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Saduang Yai (96 Km2)	Runoff (m3) Huai Khon Kaen (322 Km2)
Apr	57.5	9.0	5.1	489600.	1642200.
May	81.3	12.1	9.8	940800.	3155600.
Jun	161.4	22.5	36.3	3484800.	11688600.
Jul	80.5	16.0	12.8	1228800.	4121600.
Aug	211.2	33.0	69.6	6681600.	22411200.
Sep	170.8	32.7	55.8	5356800.	17967600.
Oct	83.8	21.4	17.9	1718400.	5763800.
Nov	16.5	7.7	1.2	115200.	386400.
Dec	6.7	6.4	.4	38400.	128800.
Jan	0.0	----	0.0	0.	0.
Feb	.9	5.7	0.0	0.	0.
Mar	55.2	12.7	7.0	672000.	2254000.
Total	925.8	23.3	215.9	20726400.	69519800.

Huai Saduang Yai and Huai Khon Kaen

Year : 1973

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Saduang Yai (96 Km2)	Runoff (m3) Huai Khon Kaen (322 Km2)
Apr	64.1	9.9	6.3	604800.	2028600.
May	135.6	19.2	26.0	2496000.	8372000.
Jun	136.4	19.3	26.3	2524800.	8468600.
Jul	141.8	24.0	34.0	3264000.	10948000.
Aug	96.6	18.1	17.4	1670400.	5602800.
Sep	138.2	28.5	39.3	3772800.	12654600.
Oct	10.1	11.9	1.2	115200.	386400.
Nov	8.4	6.7	.5	48000.	161000.
Dec	0.0	----	0.0	0.	0.
Jan	1.0	5.7	0.0	0.	0.
Feb	2.5	5.9	.1	9600.	32200.
Mar	57.3	13.0	7.4	710400.	2382800.
Total	792.0	20.0	158.5	15216000.	51037000.

Huai Saduang Yai and Huai Khon Kaen

Year : 1974

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Saduang Yai (96 Km2)	Runoff (m3) Huai Khon Kaen (322 Km2)
Apr	74.8	11.3	8.4	806400.	2704800.
May	184.4	25.5	47.0	4512000.	15134000.
Jun	137.8	19.5	26.8	2572800.	8629600.
Jul	132.1	22.7	29.9	2870400.	9627800.
Aug	180.8	29.0	52.4	5030400.	16872800.
Sep	101.6	23.8	24.1	2313600.	7760200.
Oct	87.3	21.9	19.1	1833600.	6150200.
Nov	40.1	10.8	4.3	412800.	1384600.
Dec	0.0	----	0.0	0.	0.
Jan	51.9	12.3	6.3	604800.	2028600.
Feb	51.7	12.3	6.3	604800.	2028600.
Mar	39.3	10.7	4.2	403200.	1352400.
Total	1081.8	21.1	228.8	21964800.	73673600.

Huai Saduang Yai and Huai Khon Kaen

Year : 1975

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Saduang Yai (96 Km2)	Runoff (m3) Huai Khon Kaen (322 Km2)
Apr	1.9	1.8	0.0	0.	0.
May	101.2	14.7	14.8	1420800.	4765600.
Jun	124.9	17.8	22.2	2131200.	7148400.
Jul	159.9	26.3	42.0	4032000.	13524000.
Aug	187.0	29.8	55.7	5347200.	17935400.
Sep	178.1	33.7	60.0	5760000.	19320000.
Oct	110.8	24.9	27.5	2640000.	8855000.
Nov	54.8	12.7	6.9	662400.	2221800.
Dec	0.0	----	0.0	0.	0.
Jan	0.0	----	0.0	0.	0.
Feb	77.0	15.6	12.0	1152000.	3864000.
Mar	4.8	6.2	.2	19200.	64400.
Total	1000.4	24.1	241.3	23164800.	77693600.

Year : 1976

Huai Saduang Yai and Huai Khon Kaen

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Saduang Yai (96 Km2)	Runoff (m3) Huai Khon Kaen (322 Km2)
Apr	46.6	7.6	3.5	336000.	1127000.
May	194.1	26.8	52.0	4992000.	16744000.
Jun	135.3	19.1	25.8	2476800.	8307600.
Jul	215.3	33.5	72.1	6921600.	23216200.
Aug	229.5	35.4	81.2	7795200.	26146400.
Sep	183.9	34.4	63.2	6067200.	20350400.
Oct	126.5	27.0	34.1	3273600.	10980200.
Nov	7.0	6.5	.4	38400.	128800.
Dec	0.0	----	0.0	0.	0.
Jan	.4	5.6	0.0	0.	0.
Feb	0.0	----	0.0	0.	0.
Mar	57.6	13.0	7.4	710400.	2382800.
Total	1196.2	28.4	339.7	32611200.	109383400.

Year : 1977

Huai Saduang Yai and Huai Khon Kaen

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Saduang Yai (96 Km2)	Runoff (m3) Huai Khon Kaen (322 Km2)
Apr	66.7	10.2	6.8	652800.	2189600.
May	134.8	19.1	25.7	2467200.	8275400.
Jun	70.0	10.7	7.4	710400.	2382800.
Jul	127.4	22.1	28.1	2697600.	9046200.
Aug	126.9	22.0	27.9	2678400.	8983800.
Sep	180.6	34.0	61.4	5894400.	19770800.
Oct	43.9	16.3	7.1	681600.	2286200.
Nov	2.6	5.9	.1	9600.	32200.
Dec	43.9	11.3	4.9	470400.	1577800.
Jan	2.5	5.9	.1	9600.	32200.
Feb	28.0	9.2	2.5	240000.	805000.
Mar	7.4	6.5	.4	38400.	128800.
Total	834.7	20.7	172.4	16550400.	55512800.

Table 4.1 Estimated Runoff

(2) Huai Yai and Khlong Chaliang Lab Reservoir

Year : 1952

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Yai (78 Km2)	Runoff (m3) Khlong Chaliang Lab (77 Km2)
Apr	18.2	3.9	.7	54600.	53900.
May	192.3	26.5	50.9	3970200.	3919300.
Jun	237.2	32.4	76.8	5990400.	5913600.
Jul	77.0	15.6	12.0	936000.	924000.
Aug	172.1	27.9	48.0	3744000.	3696000.
Sep	128.4	27.2	34.9	2722200.	2687300.
Oct	70.0	19.7	13.7	1068600.	1054900.
Nov	2.0	5.8	.1	7800.	7700.
Dec	0.0	----	0.0	0.	0.
Jan	21.1	8.3	1.7	132600.	130900.
Feb	77.2	15.6	12.0	936000.	924000.
Mar	30.9	9.6	2.9	226200.	223300.
Total	1026.4	24.7	253.7	19788600.	19534900.

Huai Yai and Khlong Chaliang Lab

Year : 1953

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Yai (78 Km2)	Runoff (m3) Khlong Chaliang Lab (77 Km2)
Apr	93.4	13.7	12.7	990600.	977900.
May	96.5	14.1	13.6	1060800.	1047200.
Jun	175.9	24.4	42.9	3346200.	3303300.
Jul	173.1	28.0	48.4	3775200.	3726800.
Aug	77.0	15.6	12.0	936000.	924000.
Sep	161.3	31.5	50.8	3962400.	3911600.
Oct	114.2	25.4	29.0	2262000.	2233000.
Nov	24.1	8.7	2.0	156000.	154000.
Dec	0.0	----	0.0	0.	0.
Jan	.7	5.7	0.0	0.	0.
Feb	0.0	----	0.0	0.	0.
Mar	39.2	10.7	4.1	319800.	315700.
Total	955.4	22.6	215.5	16809000.	16593500.

Huai Yai and Khlong Chaliang Lab

Year : 1954

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Yai (78 Km2)	Runoff (m3) Khlong Chaliang Lab (77 Km2)
Apr	25.0	4.8	1.1	85800.	84700.
May	217.3	29.8	64.7	5046600.	4981900.
Jun	143.2	20.2	28.9	2254200.	2225300.
Jul	64.5	13.9	8.9	694200.	685300.
Aug	348.9	50.9	177.5	13845000.	13667500.
Sep	324.1	52.6	170.4	13291200.	13120800.
Oct	81.8	21.2	17.3	1349400.	1332100.
Nov	17.6	7.8	1.3	101400.	100100.
Dec	0.0	----	0.0	0.	0.
Jan	0.0	----	0.0	0.	0.
Feb	10.4	6.9	.7	54600.	53900.
Mar	48.4	11.8	5.7	444600.	438900.
Total	1281.2	37.2	476.5	37167000.	36690500.

Huai Yai and Khlong Chaliang Lab

Year : 1955

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Yai (78 Km2)	Runoff (m3) Khlong Chaliang Lab (77 Km2)
Apr	67.1	10.3	6.9	538200.	531300.
May	85.4	12.6	10.7	834600.	823900.
Jun	113.0	16.2	18.3	1427400.	1409100.
Jul	78.6	15.8	12.4	967200.	954800.
Aug	127.5	22.1	28.1	2191800.	2163700.
Sep	288.8	48.1	138.9	10834200.	10695300.
Oct	15.1	12.5	1.8	140400.	138600.
Nov	0.0	----	0.0	0.	0.
Dec	0.0	----	0.0	0.	0.
Jan	0.0	----	0.0	0.	0.
Feb	37.1	10.4	3.8	296400.	292600.
Mar	2.8	5.9	.1	7800.	7700.
Total	815.4	27.1	221.0	17238000.	17017000.

Year : 1956

Huai Yai and Khlong Chaliang Lab

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Yai (78 Km2)	Runoff (m3) Khlong Chaliang Lab (77 Km2)
Apr	38.8	6.6	2.5	195000.	192500.
May	152.7	21.4	32.6	2542800.	2510200.
Jun	141.5	19.9	28.1	2191800.	2163700.
Jul	219.7	34.1	74.9	5842200.	5767300.
Aug	154.5	25.6	39.5	3081000.	3041500.
Sep	291.5	48.4	141.0	10998000.	10857000.
Oct	52.5	17.4	9.1	709800.	700700.
Nov	2.5	5.9	.1	7800.	7700.
Dec	0.0	----	0.0	0.	0.
Jan	0.0	----	0.0	0.	0.
Feb	12.9	7.2	.9	70200.	69300.
Mar	125.3	21.8	27.3	2129400.	2102100.
Total	1191.9	29.9	356.0	27768000.	27412000.

Huai Yai and Khlong Chaliang Lab

Year : 1957

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Yai (78 Km2)	Runoff (m3) Khlong Chaliang Lab (77 Km2)
Apr	74.1	11.2	8.2	639600.	631400.
May	91.6	13.5	12.3	959400.	947100.
Jun	144.2	20.3	29.2	2277600.	2248400.
Jul	96.2	18.1	17.4	1357200.	1339800.
Aug	215.1	33.5	72.0	5616000.	5544000.
Sep	227.1	40.0	90.8	7082400.	6991600.
Oct	112.1	25.1	28.1	2191800.	2163700.
Nov	0.0	----	0.0	0.	0.
Dec	0.0	----	0.0	0.	0.
Jan	102.9	18.9	19.4	1513200.	1493800.
Feb	23.6	8.6	2.0	156000.	154000.
Mar	43.7	11.2	4.8	374400.	369600.
Total	1130.6	25.1	284.2	22167600.	21883400.

Year : 1958

Huai Yai and Khlong Chaliang Lab

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Yai (78 Km2)	Runoff (m3) Khlong Chaliang Lab (77 Km2)
Apr	36.4	6.3	2.2	171600.	169400.
May	86.3	12.8	11.0	858000.	847000.
Jun	156.3	21.9	34.2	2667600.	2633400.
Jul	255.7	38.8	99.2	7737600.	7638400.
Aug	186.7	29.8	55.6	4336800.	4281200.
Sep	209.3	37.7	78.9	6154200.	6075300.
Oct	55.4	17.8	9.8	764400.	754600.
Nov	0.0	----	0.0	0.	0.
Dec	0.0	----	0.0	0.	0.
Jan	0.0	----	0.0	0.	0.
Feb	33.1	9.9	3.2	249600.	246400.
Mar	78.3	15.7	12.2	951600.	939400.
Total	1097.5	27.9	306.3	23891400.	23585100.

Year : 1959

Huai Yai and Khlong Chaliang Lab

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Yai (78 Km2)	Runoff (m3) Khlong Chaliang Lab (77 Km2)
Apr	83.0	12.3	10.2	795600.	785400.
May	239.8	32.7	78.4	6115200.	6036800.
Jun	109.3	15.8	17.2	1341600.	1324400.
Jul	220.4	34.2	75.3	5873400.	5798100.
Aug	108.2	19.6	21.2	1653600.	1632400.
Sep	442.3	68.0	300.7	23454600.	23153900.
Oct	34.4	15.0	5.1	397800.	392700.
Nov	23.4	8.6	2.0	156000.	154000.
Dec	0.0	----	0.0	0.	0.
Jan	3.0	6.0	.1	7800.	7700.
Feb	.3	5.6	0.0	0.	0.
Mar	42.7	11.1	4.7	366600.	361900.
Total	1306.8	39.4	514.9	40162200.	39647300.

Huai Yai and Khlong Chaliang Lab

Year : 1960

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Yai (78 Km2)	Runoff (m3) Khlong Chaliang Lab (77 Km2)
Apr	9.0	2.7	.2	15600.	15400.
May	130.4	18.5	24.1	1879800.	1855700.
Jun	63.7	9.8	6.2	483600.	477400.
Jul	134.9	23.1	31.1	2425800.	2394700.
Aug	187.3	29.9	56.0	4368000.	4312000.
Sep	105.5	24.3	25.6	1996800.	1971200.
Oct	109.3	24.8	27.1	2113800.	2086700.
Nov	8.6	6.7	.5	39000.	38500.
Dec	0.0	----	0.0	0.	0.
Jan	8.1	6.6	.5	39000.	38500.
Feb	23.0	8.6	1.9	148200.	146300.
Mar	28.4	9.3	2.6	202800.	200200.
Total	808.2	21.8	175.8	13712400.	13536600.

Huai Yai and Khlong Chaliang Lab

Year : 1961

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Yai (78 Km2)	Runoff (m3) Khlong Chaliang Lab (77 Km2)
Apr	62.5	9.7	6.0	468000.	462000.
May	197.6	27.2	53.7	4188600.	4134900.
Jun	177.5	24.6	43.6	3400800.	3357200.
Jul	251.8	38.2	96.1	7495800.	7399700.
Aug	243.1	37.1	90.1	7027800.	6937700.
Sep	152.9	30.4	46.4	3619200.	3572800.
Oct	67.0	19.3	12.9	1006200.	993300.
Nov	0.0	----	0.0	0.	0.
Dec	0.0	----	0.0	0.	0.
Jan	6.6	6.4	.4	31200.	30800.
Feb	0.0	----	0.0	0.	0.
Mar	21.0	8.3	1.7	132600.	130900.
Total	1180.0	29.7	350.9	27370200.	27019300.

Huai Yai and Khlong Chaliang Lab

Year : 1962

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Yai (78 Km2)	Runoff (m3) Khlong Chaliang Lab (77 Km2)
Apr	124.6	17.7	22.0	1716000.	1694000.
May	124.3	17.7	22.0	1716000.	1694000.
Jun	61.7	9.6	5.9	460200.	454300.
Jul	190.6	30.3	57.7	4500600.	4442900.
Aug	248.4	37.8	93.8	7316400.	7222600.
Sep	276.3	46.4	128.2	9999600.	9871400.
Oct	54.0	17.6	9.5	741000.	731500.
Nov	23.1	8.6	1.9	148200.	146300.
Dec	2.1	5.8	.1	7800.	7700.
Jan	0.0	----	0.0	0.	0.
Feb	7.4	6.5	.4	31200.	30800.
Mar	40.8	10.9	4.4	343200.	338800.
Total	1153.3	30.0	345.9	26930200.	26634300.

Huai Yai and Khlong Chaliang Lab

Year : 1963

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Yai (78 Km2)	Runoff (m3) Khlong Chaliang Lab (77 Km2)
Apr	142.4	20.0	28.4	2215200.	2186800.
May	142.6	20.1	28.6	2230800.	2202200.
Jun	159.5	22.3	35.5	2769000.	2733500.
Jul	290.9	43.3	125.9	9820200.	9694300.
Aug	343.0	50.1	171.8	13400400.	13228600.
Sep	276.9	46.5	128.7	10038600.	9909900.
Oct	257.7	44.0	113.3	8837400.	8724100.
Nov	63.5	13.8	8.7	678600.	669900.
Dec	19.1	8.0	1.5	117000.	115500.
Jan	.7	5.7	0.0	0.	0.
Feb	.2	5.6	0.0	0.	0.
Mar	12.9	7.2	.9	70200.	69300.
Total	1709.4	37.6	643.3	50177400.	49534100.

Huai Yai and Khlong Chaliang Lab

Year : 1964

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Yai (78 Km2)	Runoff (m3) Khlong Chaliang Lab (77 Km2)
Apr	47.9	7.8	3.7	288600.	284900.
May	284.4	38.5	109.4	8533200.	8423800.
Jun	157.0	21.9	34.3	2675400.	2641100.
Jul	200.3	31.6	63.2	4929600.	4866400.
Aug	282.5	42.2	119.2	9297600.	9178400.
Sep	367.3	58.2	213.7	16668600.	16454900.
Oct	123.4	26.6	32.8	2558400.	2525600.
Nov	12.0	7.1	.8	62400.	61600.
Dec	2.0	5.8	.1	7800.	7700.
Jan	0.0	----	0.0	0.	0.
Feb	25.8	8.9	2.2	171600.	169400.
Mar	86.2	16.8	14.4	1123200.	1108800.
Total	1588.8	37.4	593.8	46316400.	45722600.

Huai Yai and Khlong Chaliang Lab

Year : 1965

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Yai (78 Km2)	Runoff (m3) Khlong Chaliang Lab (77 Km2)
Apr	67.9	10.4	7.0	546000.	539000.
May	83.9	12.5	10.4	811200.	800800.
Jun	226.6	31.0	70.2	5475600.	5405400.
Jul	99.3	18.5	18.3	1427400.	1409100.
Aug	255.4	38.7	98.8	7706400.	7607600.
Sep	234.4	41.0	96.1	7495800.	7399700.
Oct	37.4	15.4	5.7	444600.	438900.
Nov	19.5	8.1	1.5	117000.	115500.
Dec	3.4	6.0	.2	15600.	15400.
Jan	9.4	6.8	.6	46800.	46200.
Feb	13.2	7.3	.9	70200.	69300.
Mar	14.0	7.4	1.0	78000.	77000.
Total	1064.4	29.2	310.7	24234600.	23923900.

Huai Yai and Khlong Chaliang Lab

Year : 1966

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Yai (78 Km2)	Runoff (m3) Khlong Chaliang Lab (77 Km2)
Apr	45.1	7.4	3.3	257400.	254100.
May	214.4	29.4	63.0	4914000.	4851000.
Jun	82.6	12.3	10.1	787800.	777700.
Jul	268.7	40.4	108.5	8463000.	8354500.
Aug	260.3	39.4	102.5	7995000.	7892500.
Sep	117.7	25.8	30.3	2363400.	2333100.
Oct	106.7	24.4	26.0	2028000.	2002000.
Nov	26.9	9.1	2.4	187200.	184800.
Dec	10.4	6.9	.7	54600.	53900.
Jan	.5	5.6	0.0	0.	0.
Feb	5.1	6.2	.3	23400.	23100.
Mar	.3	5.6	0.0	0.	0.
Total	1138.7	30.5	347.1	27073800.	26726700.

Huai Yai and Khlong Chaliang Lab

Year : 1967

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Yai (78 Km2)	Runoff (m3) Khlong Chaliang Lab (77 Km2)
Apr	185.0	25.6	47.3	3689400.	3642100.
May	199.9	27.5	54.9	4282200.	4227300.
Jun	74.4	11.2	8.3	647400.	639100.
Jul	151.9	25.3	38.4	2995200.	2956800.
Aug	149.0	24.9	37.1	2893800.	2856700.
Sep	226.5	40.0	90.6	7066800.	6976200.
Oct	17.1	12.8	2.1	163800.	161700.
Nov	16.4	7.7	1.2	93600.	92400.
Dec	0.0	----	0.0	0.	0.
Jan	0.0	----	0.0	0.	0.
Feb	10.2	6.9	.7	54600.	53900.
Mar	18.3	7.9	1.4	109200.	107800.
Total	1043.7	26.9	282.0	21996000.	21714000.

Huai Yai and Khlong Chaliang Lab

Year : 1968

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Yai (78 Km2)	Runoff (m3) Khlong Chaliang Lab (77 Km2)
Apr	113.0	16.2	18.3	1427400.	1409100.
May	182.3	25.2	45.9	3580200.	3534300.
Jun	134.1	19.0	25.4	1981200.	1955800.
Jul	215.4	33.5	72.1	5623800.	5551700.
Aug	55.9	12.8	7.1	553800.	546700.
Sep	178.9	33.8	60.4	4711200.	4650800.
Oct	62.1	18.6	11.5	897000.	885500.
Nov	17.8	7.9	1.4	109200.	107800.
Dec	0.0	----	0.0	0.	0.
Jan	66.9	14.2	9.4	733200.	723800.
Feb	0.0	----	0.0	0.	0.
Mar	24.7	8.8	2.1	163300.	161700.
Total	1051.1	24.1	253.6	19780800.	19527200.

Huai Yai and Khlong Chaliang Lab

Year : 1969

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Yai (78 Km2)	Runoff (m3) Khlong Chaliang Lab (77 Km2)
Apr	58.5	9.2	5.3	413400.	408100.
May	92.0	13.5	12.4	967200.	954800.
Jun	145.0	20.4	29.5	2301000.	2271500.
Jul	123.6	21.6	26.6	2074800.	2048200.
Aug	165.6	27.1	44.8	3494400.	3449600.
Sep	280.7	47.0	131.9	10288200.	10156300.
Oct	179.6	33.9	60.8	4742400.	4681600.
Nov	.8	5.7	0.0	0.	0.
Dec	0.0	----	0.0	0.	0.
Jan	0.0	----	0.0	0.	0.
Feb	.2	5.6	0.0	0.	0.
Mar	60.1	13.4	8.0	624000.	616000.
Total	1106.1	28.9	319.3	24905400.	24586100.

Huai Yai and Khlong Chaliang Lab

Year : 1970

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Yai (78 Km2)	Runoff (m3) Khlong Chaliang Lab (77 Km2)
Apr	80.6	12.0	9.6	748800.	739200.
May	142.8	20.1	28.7	2238600.	2209900.
Jun	274.1	37.1	101.6	7924800.	7823200.
Jul	213.4	33.3	71.0	5538000.	5467000.
Aug	252.3	38.3	96.6	7534800.	7438200.
Sep	231.8	40.7	94.3	7355400.	7261100.
Oct	50.3	17.1	8.6	670800.	662200.
Nov	3.0	6.0	.1	7800.	7700.
Dec	13.0	7.3	.9	70200.	69300.
Jan	.9	5.7	0.0	0.	0.
Feb	24.7	8.8	2.1	163800.	161700.
Mar	12.3	7.2	.8	62400.	61600.
Total	1299.2	31.9	414.3	32315400.	31901100.

Huai Yai and Khlong Chaliang Lab

Year : 1971

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Yai (78 Km2)	Runoff (m3) Khlong Chaliang Lab (77 Km2)
Apr	108.2	15.6	16.8	1310400.	1293600.
May	210.3	28.9	60.7	4734600.	4673900.
Jun	65.8	10.1	6.6	514800.	508200.
Jul	117.0	20.8	24.3	1895400.	1871100.
Aug	180.5	29.0	52.3	4079400.	4027100.
Sep	123.0	26.5	32.5	2535000.	2502500.
Oct	27.7	14.2	3.9	304200.	300300.
Nov	2.4	5.9	.1	7800.	7700.
Dec	2.7	5.9	.1	7800.	7700.
Jan	0.0	----	0.0	0.	0.
Feb	30.2	9.5	2.8	218400.	215600.
Mar	18.3	7.9	1.4	109200.	107800.
Total	886.1	22.7	201.5	15717000.	15515500.

Huai Yai and Khlong Chaliang Lab

Year : 1972

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Yai (78 Km2)	Runoff (m3) Khlong Chaliang Lab (77 Km2)
Apr	63.3	9.8	6.2	483600.	477400.
May	60.0	9.4	5.6	436800.	431200.
Jun	228.3	31.2	71.2	5553600.	5482400.
Jul	165.5	27.0	44.6	3478800.	3434200.
Aug	192.4	30.5	58.6	4570800.	4512200.
Sep	115.1	25.5	29.3	2285400.	2256100.
Oct	109.4	24.8	27.1	2113800.	2086700.
Nov	22.6	8.5	1.9	148200.	146300.
Dec	3.3	6.0	.1	7800.	7700.
Jan	0.0	----	0.0	0.	0.
Feb	6.1	6.4	.3	23400.	23100.
Mar	65.0	14.0	9.1	709800.	700700.
Total	1031.0	24.6	254.0	19812000.	19558000.

Huai Yai and Khlong Chaliang Lab

Year : 1973

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Yai (78 Km2)	Runoff (m3) Khlong Chaliang Lab (77 Km2)
Apr	37.7	6.5	2.4	187200.	184800.
May	127.9	18.2	23.2	1809600.	1786400.
Jun	139.7	19.7	27.5	2145000.	2117500.
Jul	155.8	25.8	40.1	3127800.	3087700.
Aug	154.0	25.6	39.4	3073200.	3033800.
Sep	331.5	53.6	177.6	13852800.	13675200.
Oct	34.1	15.0	5.1	397800.	392700.
Nov	.2	5.6	0.0	0.	0.
Dec	0.0	----	0.0	0.	0.
Jan	.3	5.6	0.0	0.	0.
Feb	28.7	9.3	2.6	202800.	200200.
Mar	2.6	5.9	.1	7800.	7700.
Total	1012.5	31.4	318.0	24804000.	24486000.

Huai Yai and Khlong Chaliang Lab

Year : 1974

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Yai (78 Km2)	Runoff (m3) Khlong Chaliang Lab (77 Km2)
Apr	57.9	9.1	5.2	405600.	400400.
May	79.2	11.8	9.3	725400.	716100.
Jun	76.7	11.5	8.8	686400.	677600.
Jul	136.8	23.3	31.8	2480400.	2448600.
Aug	157.0	25.9	40.6	3166800.	3126200.
Sep	108.7	24.7	26.8	2090400.	2063600.
Oct	135.3	28.1	38.0	2964000.	2926000.
Nov	11.5	7.1	.8	62400.	61600.
Dec	0.0	----	0.0	0.	0.
Jan	58.7	13.2	7.7	600600.	592900.
Feb	43.7	11.2	4.8	374400.	369600.
Mar	116.2	20.6	23.9	1864200.	1840300.
Total	981.7	20.1	197.7	15420600.	15222900.

Huai Yai and Khlong Chaliang Lab

Year : 1975

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Yai (78 Km2)	Runoff (m3) Khlong Chaliang Lab (77 Km2)
Apr	.1	1.6	0.0	0.	0.
May	152.0	21.3	32.3	2519400.	2487100.
Jun	87.9	13.0	11.4	889200.	877800.
Jul	118.9	21.0	24.9	1942200.	1917300.
Aug	213.3	33.3	71.0	5538000.	5467000.
Sep	187.2	34.9	65.3	5093400.	5028100.
Oct	107.7	24.5	26.3	2051400.	2025100.
Nov	6.4	6.4	.4	31200.	30800.
Dec	0.0	----	0.0	0.	0.
Jan	0.0	----	0.0	0.	0.
Feb	17.2	7.8	1.3	101400.	100100.
Mar	36.3	10.3	3.7	288600.	284900.
Total	927.0	25.5	236.6	18454800.	18213200.

Year : 1976

Huai Yai and Khlong Chaliang Lab

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Yai (78 Km2)	Runoff (m3) Khlong Chaliang Lab (77 Km2)
Apr	37.4	6.4	2.3	179400.	177100.
May	230.7	31.5	72.6	5662800.	5590200.
Jun	110.3	15.9	17.5	1365000.	1347500.
Jul	236.6	36.3	85.8	6692400.	6606600.
Aug	300.1	44.5	133.5	10413000.	10279500.
Sep	309.0	50.7	156.6	12214800.	12058200.
Oct	173.9	33.1	57.5	4485000.	4427500.
Nov	16.9	7.8	1.3	101400.	100100.
Dec	0.0	----	0.0	0.	0.
Jan	.2	5.6	0.0	0.	0.
Feb	0.0	----	0.0	0.	0.
Mar	3.2	6.0	.1	7800.	7700.
Total	1418.3	37.2	527.2	41121600.	40594400.

Year : 1977

Huai Yai and Khlong Chaliang Lab

Month	Rainfall (mm)	Runoff Coefficient (%)	Runoff (mm)	Runoff (m3) Huai Yai (78 Km2)	Runoff (m3) Khlong Chaliang Lab (77 Km2)
Apr	36.6	6.3	2.3	179400.	177100.
May	160.8	22.4	36.0	2808000.	2772000.
Jun	108.8	15.7	17.0	1326000.	1309000.
Jul	133.1	22.8	30.3	2363400.	2333100.
Aug	167.0	27.2	45.4	3541200.	3495800.
Sep	189.0	35.1	66.3	5171400.	5105100.
Oct	90.4	22.3	20.1	1567800.	1547700.
Nov	.3	5.6	0.0	0.	0.
Dec	17.3	7.8	1.3	101400.	100100.
Jan	0.0	----	0.0	0.	0.
Feb	2.3	5.9	.1	7800.	7700.
Mar	38.0	10.5	3.9	304200.	300300.
Total	943.6	23.6	222.7	17370600.	17147900.

Table 4.2 Calculation Sheet of Operation Study

(1) Huai Saduang Yai Reservoir

1970

MONTH	1 CAPACITY	2 EVAPORATION	3 PRECIPITATION	4 INFLOW OF HUAI S.YAI	5 WATER SUPPLY	6 DOWNSTREAM REQUIREMENT	7 SUPLEMENTARY WATER SUPPLY	8 INFLOW OF R.PASAK	9 IRRIGATION WATER DEMAND	10 SPILL-OUT VOLUME
JAN.	0.	0.	0.	0.	155.	257.	2934.	0.	2934.	0.
FEB.	0.	0.	0.	0.	140.	232.	3972.	0.	3972.	0.
MAR.	0.	0.	0.	0.	155.	257.	4020.	0.	4020.	0.
APR.	0.	0.	0.	0.	150.	249.	1686.	0.	1686.	0.
MAY	1356.	0.	0.	1613.	0.	257.	0.	489.	330.	0.
JUN.	8990.	17.	38.	7862.	0.	249.	0.	7737.	2880.	0.
JUL.	9094.	93.	41.	413.	0.	257.	0.	30842.	9546.	0.
AUG.	14040.	89.	254.	8803.	0.	257.	0.	182779.	1998.	3766.
SEP.	14040.	127.	295.	6096.	0.	249.	0.	115928.	3288.	6015.
OCT.	14040.	155.	149.	2006.	0.	257.	0.	29990.	12018.	1743.
NOV.	13505.	150.	4.	10.	150.	249.	0.	9708.	5520.	0.
DEC.	13110.	145.	28.	134.	155.	257.	0.	0.	0.	0.

1971

MONTH	1 CAPACITY	2 EVAPORATION	3 PRECIPITATION	4 INFLOW OF HUAI S.YAI	5 WATER SUPPLY	6 DOWNSTREAM REQUIREMENT	7 SUPLEMENTARY WATER SUPPLY	8 INFLOW OF R.PASAK	9 IRRIGATION WATER DEMAND	10 SPILL-OUT VOLUME
JAN.	11260.	143.	1.	0.	155.	257.	1795.	1639.	2934.	0.
FEB.	8436.	134.	33.	211.	140.	232.	2562.	1410.	3972.	0.
MAR.	4363.	134.	41.	451.	155.	257.	4020.	0.	4020.	0.
APR.	2680.	76.	5.	10.	150.	249.	1221.	465.	1686.	0.
MAY	6278.	37.	52.	3840.	0.	257.	0.	596.	330.	0.
JUN.	9783.	80.	119.	3715.	0.	249.	0.	21085.	2880.	0.
JUL.	11581.	101.	121.	2035.	0.	257.	0.	32334.	9546.	0.
AUG.	14040.	113.	287.	7056.	0.	257.	0.	37239.	1998.	4514.
SEP.	14040.	127.	237.	4234.	0.	249.	0.	116203.	3288.	4096.
OCT.	14040.	155.	135.	1738.	0.	257.	0.	76055.	12018.	1462.
NOV.	13491.	150.	0.	0.	150.	249.	0.	9994.	5520.	0.
DEC.	12949.	145.	5.	10.	155.	257.	0.	5736.	0.	0.

Huai Saduang Yai

1972

MONTH	1 CAPACITY	2 EVAPORATION	3 PRECIPI-TATION	4 INFLOW OF HUAI S.YAI	5 WATER SUPPLY	6 DOWNSTREAM REQUIREMENT	7 SUPLEMENTARY WATER SUPPLY	8 INFLOW OF R.PASAK	9 IRRIGATION WATER DEMAND	10 SPILL-OUT VOLUME
JAN.	12212.	142.	0.	0.	155.	257.	183.	2751.	2934.	0.
FEB.	8349.	145.	44.	288.	140.	232.	3678.	294.	3972.	0.
MAR.	4806.	133.	40.	432.	155.	257.	3470.	550.	4020.	0.
APR.	4845.	84.	31.	490.	150.	249.	0.	3461.	1686.	0.
MAY	5429.	66.	45.	941.	0.	257.	78.	252.	330.	0.
JUN.	8696.	69.	100.	3485.	0.	249.	0.	18421.	2880.	0.
JUL.	9657.	90.	80.	1229.	0.	257.	0.	11675.	9546.	0.
AUG.	14040.	94.	232.	6682.	0.	257.	0.	36565.	1998.	2181.
SEP.	14040.	127.	273.	5357.	0.	249.	0.	53606.	3288.	5255.
OCT.	14040.	155.	134.	1718.	0.	257.	0.	85629.	12018.	1441.
NOV.	13632.	150.	26.	115.	150.	249.	0.	9021.	5520.	0.
DEC.	13122.	147.	10.	38.	155.	257.	0.	4262.	0.	0.

1973

MONTH	1 CAPACITY	2 EVAPORATION	3 PRECIPI-TATION	4 INFLOW OF HUAI S.YAI	5 WATER SUPPLY	6 DOWNSTREAM REQUIREMENT	7 SUPLEMENTARY WATER SUPPLY	8 INFLOW OF R.PASAK	9 IRRIGATION WATER DEMAND	10 SPILL-OUT VOLUME
JAN.	12567.	143.	0.	0.	155.	257.	0.	7772.	2934.	0.
FEB.	9401.	149.	1.	0.	140.	232.	2645.	1327.	3972.	0.
MAR.	8389.	149.	59.	672.	155.	257.	1182.	2638.	4020.	0.
APR.	7358.	147.	61.	605.	150.	249.	1152.	534.	1686.	0.
MAY	9610.	101.	114.	2496.	0.	257.	0.	3757.	330.	0.
JUN.	11913.	125.	149.	2525.	0.	249.	0.	15287.	2880.	0.
JUL.	14040.	124.	195.	3264.	0.	257.	0.	22066.	9546.	948.
AUG.	14040.	137.	155.	1670.	0.	257.	0.	15226.	1998.	1431.
SEP.	14040.	127.	221.	3773.	0.	249.	0.	53767.	3288.	3619.
OCT.	13760.	155.	16.	115.	0.	257.	0.	22090.	12018.	0.
NOV.	13275.	147.	13.	48.	150.	249.	0.	6446.	5520.	0.
DEC.	12720.	143.	0.	0.	155.	257.	0.	1441.	0.	0.

Huai Saduang Yai

1974

MONTH	1 CAPACITY	2 EVAPORATION	3 PRECIPITATION	4 INFLOW OF HUAI S.YAI	5 WATER SUPPLY	6 DOWNSTREAM REQUIREMENT	7 SUPLEMENTARY WATER SUPPLY	8 INFLOW OF R.PASAK	9 IRRIGATION WATER DEMAND	10 SPILL-OUT VOLUME
JAN.	10560.	139.	1.	0.	155.	257.	1610.	1324.	2934.	0.
FEB.	6563.	126.	3.	10.	140.	232.	3513.	459.	3972.	0.
MAR.	2779.	104.	43.	710.	155.	257.	4020.	0.	4020.	0.
APR.	2162.	49.	24.	806.	150.	249.	999.	687.	1686.	0.
MAY	6433.	30.	45.	4512.	0.	257.	0.	10038.	330.	0.
JUN.	6849.	82.	101.	2573.	0.	249.	1927.	953.	2880.	0.
JUL.	1790.	71.	103.	2870.	0.	257.	7704.	1842.	9546.	0.
AUG.	6583.	17.	37.	5030.	0.	257.	0.	56708.	1998.	0.
SEP.	8664.	59.	76.	2314.	0.	249.	0.	51138.	3288.	0.
OCT.	10252.	95.	86.	1834.	0.	257.	0.	25464.	12018.	0.
NOV.	10184.	109.	47.	413.	150.	249.	0.	9367.	5520.	0.
DEC.	9662.	110.	0.	0.	155.	257.	0.	0.	0.	0.

1975

MONTH	1 CAPACITY	2 EVAPORATION	3 PRECIPITATION	4 INFLOW OF HUAI S.YAI	5 WATER SUPPLY	6 DOWNSTREAM REQUIREMENT	7 SUPLEMENTARY WATER SUPPLY	8 INFLOW OF R.PASAK	9 IRRIGATION WATER DEMAND	10 SPILL-OUT VOLUME
JAN.	8302.	106.	57.	605.	155.	257.	1504.	1430.	2934.	0.
FEB.	4626.	99.	49.	605.	140.	232.	3860.	112.	3972.	0.
MAR.	544.	73.	21.	403.	155.	257.	4020.	0.	4020.	0.
APR.	0.	10.	0.	0.	150.	249.	1686.	0.	1686.	0.
MAY	834.	0.	0.	1421.	0.	257.	330.	0.	330.	0.
JUN.	2717.	11.	12.	2131.	0.	249.	0.	22254.	2880.	0.
JUL.	6514.	28.	50.	4032.	0.	257.	0.	29554.	9546.	0.
AUG.	11679.	65.	139.	5347.	0.	257.	0.	128120.	1998.	0.
SEP.	14040.	105.	237.	5760.	0.	249.	0.	168702.	3288.	3282.
OCT.	14040.	155.	177.	2640.	0.	257.	0.	61788.	12018.	2406.
NOV.	14040.	150.	88.	662.	150.	249.	0.	-8272.	5520.	201.
DEC.	13477.	151.	0.	0.	155.	257.	0.	0.	0.	0.

Huai Saduang Yai

1976

MONTH	1 CAPACITY	2 EVAPORATION	3 PRECIPITATION	4 INFLOW OF HUAI S.YAI	5 WATER SUPPLY	6 DOWNSTREAM REQUIREMENT	7 SUPLEMENTARY WATER SUPPLY	8 INFLOW OF R.PASAK	9 IRRIGATION WATER DEMAND	10 SPILL-OUT VOLUME
JAN.	12918.	147.	0.	0.	155.	257.	0.	5688.	2934.	0.
FEB.	13341.	154.	113.	1152.	140.	232.	316.	3656.	3972.	0.
MAR.	8724.	212.	7.	19.	155.	257.	4020.	0.	4020.	0.
APR.	6869.	152.	46.	336.	150.	249.	1686.	0.	1686.	0.
MAY	11661.	94.	152.	4992.	0.	257.	0.	9196.	330.	0.
JUN.	13920.	149.	180.	2477.	0.	249.	0.	18188.	2880.	0.
JUL.	14040.	144.	342.	6922.	0.	257.	0.	11253.	9546.	6743.
AUG.	14040.	137.	367.	7795.	0.	257.	0.	144028.	1998.	7769.
SEP.	14040.	127.	294.	6067.	0.	249.	0.	211632.	3288.	5986.
OCT.	14040.	155.	207.	3274.	0.	257.	0.	124241.	12018.	3065.
NOV.	13540.	150.	11.	38.	150.	249.	0.	24258.	5520.	0.
DEC.	12982.	146.	0.	0.	155.	257.	0.	0.	0.	0.

1977

MONTH	1 CAPACITY	2 EVAPORATION	3 PRECIPITATION	4 INFLOW OF HUAI S.YAI	5 WATER SUPPLY	6 DOWNSTREAM REQUIREMENT	7 SUPLEMENTARY WATER SUPPLY	8 INFLOW OF R.PASAK	9 IRRIGATION WATER DEMAND	10 SPILL-OUT VOLUME
JAN.	9495.	142.	1.	0.	155.	257.	2934.	0.	2934.	0.
FEB.	5038.	113.	0.	0.	140.	232.	3972.	0.	3972.	0.
MAR.	1269.	80.	33.	710.	155.	257.	4020.	0.	4020.	0.
APR.	1516.	72.	10.	658.	150.	249.	0.	3343.	1686.	0.
MAY	3734.	71.	23.	2473.	0.	257.	0.	5287.	330.	0.
JUN.	4186.	48.	30.	719.	0.	249.	0.	5711.	2880.	0.
JUL.	2329.	43.	61.	2709.	0.	257.	4327.	5219.	9546.	0.
AUG.	4774.	23.	34.	2691.	0.	257.	0.	26928.	1998.	0.
SEP.	10485.	43.	98.	5905.	0.	249.	0.	297406.	3288.	0.
OCT.	10853.	115.	52.	688.	0.	257.	0.	12925.	12018.	0.
NOV.	4836.	116.	3.	15.	150.	249.	5520.	0.	5520.	0.
DEC.	4873.	52.	24.	477.	155.	257.	0.	0.	0.	0.

Huai Saduang Yai

1978

MONTH	1 CAPACITY	2 EVAPORATION	3 PRECIPITATION	4 INFLOW OF HUAI S.YAI	5 WATER SUPPLY	6 DOWNSTREAM REQUIREMENT	7 SUPLEMENTARY WATER SUPPLY	8 INFLOW OF R.PASAK	9 IRRIGATION WATER DEMAND	10 SPILL-OUT VOLUME
JAN.	1489.	53.	1.	14.	155.	257.	2954.	0.	2934.	0.
FEB.	0.	18.	5.	249.	140.	232.	3972.	0.	3972.	0.
MAR.	0.	0.	0.	47.	155.	257.	4020.	0.	4020.	0.
APR.	0.	0.	0.	0.	150.	249.	1686.	0.	1686.	0.
MAY	0.	0.	0.	0.	0.	257.	330.	0.	330.	0.
JUN.	0.	0.	0.	0.	0.	249.	2880.	0.	2880.	0.
JUL.	0.	0.	0.	0.	0.	257.	9546.	0.	9546.	0.
AUG.	0.	0.	0.	0.	0.	257.	1998.	0.	1998.	0.
SEP.	0.	0.	0.	0.	0.	249.	3288.	0.	3288.	0.
OCT.	0.	0.	0.	0.	0.	257.	12018.	0.	12018.	0.
NOV.	0.	0.	0.	0.	150.	249.	5520.	0.	5570.	0.
DEC.	0.	0.	0.	0.	155.	257.	0.	0.	0.	0.

Table 4.2 Calculation Sheet of Operation Study

(2) Huai Khon Kaen Reservoir

1952

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	0.	0.	0.	0.	0.	0.	2152.	155.	862.	3169.	-3169.	0.	0.
FEB.	0.	0.	0.	0.	0.	0.	2913.	140.	779.	3832.	-3832.	0.	0.
MAR.	0.	0.	0.	0.	0.	0.	2948.	155.	862.	3965.	-3965.	0.	0.
APR.	0.	0.	0.	0.	0.	708.	1236.	150.	835.	2221.	-1513.	0.	0.
MAY	2696.	0.	0.	0.	0.	3800.	242.	0.	862.	1104.	2696.	0.	0.
JUN.	9543.	18.	23.	2701.	0.	9789.	2112.	0.	835.	2947.	6842.	0.	0.
JUL.	18054.	50.	98.	9591.	0.	16325.	7000.	0.	862.	7862.	8463.	0.	0.
AUG.	24780.	90.	193.	18157.	0.	17356.	1465.	0.	862.	2327.	15029.	8406.	8406.
SEP.	24780.	114.	432.	24780.	318.	47817.	2411.	0.	835.	3246.	44571.	44571.	44889.
OCT.	24780.	159.	180.	24780.	41.	10755.	8813.	0.	862.	9675.	1080.	1080.	1121.
NOV.	19647.	135.	3.	24648.	0.	37.	4048.	150.	835.	5033.	-5001.	0.	0.
DEC.	18522.	108.	0.	19539.	0.	0.	0.	155.	862.	1017.	-1017.	0.	0.

1953

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	16118.	105.	31.	18449.	0.	837.	2152.	155.	862.	3169.	-2332.	0.	0.
FEB.	15375.	98.	63.	16083.	0.	3123.	2913.	140.	779.	3832.	-709.	0.	0.
MAR.	11686.	124.	15.	15265.	0.	386.	2948.	155.	862.	3965.	-3579.	0.	0.
APR.	14617.	104.	22.	11654.	0.	5194.	1236.	150.	835.	2221.	2963.	0.	0.
MAY	24780.	107.	172.	14687.	0.	18725.	242.	0.	862.	1104.	17121.	7028.	7028.
JUN.	24780.	161.	305.	24780.	143.	19739.	2112.	0.	835.	2947.	16792.	16792.	16935.
JUL.	24780.	131.	240.	24780.	109.	14587.	7000.	0.	862.	7862.	6725.	6725.	6834.
AUG.	24780.	123.	196.	24780.	73.	10143.	1465.	0.	862.	2327.	7816.	7816.	7889.
SEP.	24780.	114.	393.	24780.	279.	40379.	2411.	0.	835.	3246.	37133.	37133.	37412.
OCT.	17906.	139.	75.	24715.	0.	2866.	8813.	0.	862.	9675.	-6809.	0.	0.
NOV.	14497.	98.	48.	17856.	0.	1674.	4048.	150.	835.	5033.	-3359.	0.	0.
DEC.	13401.	80.	0.	14418.	0.	0.	0.	155.	862.	1017.	-1017.	0.	0.

Huai Khon Kaen

1954

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	10158.	75.	0.	13326.	0.	0.	2157.	155.	862.	3169.	-3169.	0.	0.
FEB.	6264.	62.	0.	10096.	0.	0.	2913.	140.	779.	3832.	-3832.	0.	0.
MAR.	2825.	51.	29.	6243.	0.	547.	2948.	155.	862.	3965.	-3418.	0.	0.
APR.	579.	25.	1.	2800.	0.	0.	1236.	150.	835.	2221.	-2221.	0.	0.
MAY	0.	4.	5.	578.	0.	225.	242.	0.	862.	1104.	-879.	0.	0.
JUN.	16759.	0.	0.	0.	0.	19706.	2112.	0.	835.	2947.	16759.	0.	0.
JUL.	17883.	89.	123.	16794.	0.	8972.	7000.	0.	862.	7862.	1090.	0.	0.
AUG.	24780.	89.	188.	17983.	0.	16969.	1465.	0.	862.	2327.	14642.	7845.	7845.
SEP.	24780.	114.	648.	24780.	534.	99981.	2411.	0.	835.	3246.	96735.	96735.	97269.
OCT.	20850.	139.	121.	24762.	0.	5764.	8813.	0.	862.	9675.	-3911.	0.	0.
NOV.	15772.	114.	4.	20741.	0.	64.	4048.	150.	835.	5033.	-4969.	0.	0.
DEC.	15032.	87.	105.	15791.	0.	258.	0.	155.	862.	1017.	-759.	0.	0.

1955

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	11779.	84.	0.	14948.	0.	0.	2152.	155.	862.	3169.	-3169.	0.	0.
FEB.	8143.	71.	8.	11717.	0.	258.	2913.	140.	779.	3832.	-3574.	0.	0.
MAR.	5028.	66.	14.	8091.	0.	907.	2948.	155.	862.	3965.	-3063.	0.	0.
APR.	13207.	45.	44.	5028.	0.	10401.	1236.	150.	835.	2221.	8180.	0.	0.
MAY	18023.	92.	87.	13202.	0.	5925.	242.	0.	862.	1104.	4821.	0.	0.
JUN.	24780.	117.	501.	18407.	0.	98146.	2112.	0.	835.	2947.	95199.	88826.	88826.
JUL.	21809.	131.	128.	24777.	0.	4894.	7000.	0.	862.	7862.	-2968.	0.	0.
AUG.	24780.	108.	413.	22114.	0.	50264.	1465.	0.	862.	2327.	47937.	45270.	45270.
SEP.	24780.	114.	352.	24780.	238.	33166.	2411.	0.	835.	3246.	29920.	29920.	30157.
OCT.	15567.	139.	21.	24662.	0.	580.	8813.	0.	862.	9675.	-9095.	0.	0.
NOV.	10449.	85.	0.	15482.	0.	0.	4048.	150.	835.	5033.	-5033.	0.	0.
DEC.	9575.	57.	0.	10592.	0.	0.	0.	155.	862.	1017.	-1017.	0.	0.

Huai Khon Kaen

1956

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	6154.	52.	0.	9323.	0.	0.	2152.	155.	862.	3169.	-3169.	0.	0.
FEB.	5270.	57.	23.	6140.	0.	2962.	2913.	140.	779.	3832.	-870.	0.	0.
MAR.	4093.	43.	19.	5247.	0.	2801.	2948.	155.	862.	3965.	-1164.	0.	0.
APR.	15068.	36.	41.	4088.	0.	13202.	1236.	150.	835.	2221.	10981.	0.	0.
MAY	24780.	105.	206.	15169.	0.	24279.	242.	0.	862.	1104.	23175.	13564.	13564.
JUN.	24780.	161.	145.	24764.	0.	4766.	2112.	0.	835.	2947.	1819.	1803.	1803.
JUL.	24780.	131.	288.	24780.	157.	20350.	7000.	0.	862.	7862.	12488.	12488.	12645.
AUG.	24780.	123.	332.	24780.	209.	26340.	1465.	0.	862.	2327.	24013.	24013.	24222.
SEP.	24780.	114.	448.	24780.	334.	50940.	2411.	0.	835.	3246.	47694.	47694.	48028.
OCT.	20054.	159.	109.	24750.	0.	4959.	8813.	0.	862.	9675.	-4716.	0.	0.
NOV.	14891.	109.	0.	19924.	0.	0.	4048.	150.	835.	5033.	-5033.	0.	0.
DEC.	13793.	82.	0.	14810.	0.	0.	0.	155.	862.	1017.	-1017.	0.	0.

1957

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	10547.	77.	0.	13716.	0.	0.	2152.	155.	862.	3169.	-3169.	0.	0.
FEB.	7179.	64.	12.	10496.	0.	515.	2913.	140.	779.	3832.	-3317.	0.	0.
MAR.	21007.	58.	78.	7198.	0.	17774.	2948.	155.	862.	3965.	13809.	0.	0.
APR.	21624.	187.	95.	20914.	0.	2930.	1236.	150.	835.	2221.	709.	0.	0.
MAY	24780.	151.	158.	21631.	0.	7245.	242.	0.	862.	1104.	6141.	2992.	2992.
JUN.	24780.	161.	554.	24780.	193.	26501.	2112.	0.	835.	2947.	23554.	23554.	23747.
JUL.	24780.	131.	380.	24780.	249.	33778.	7000.	0.	862.	7862.	25916.	25916.	26164.
AUG.	24780.	123.	522.	24780.	199.	24923.	1465.	0.	862.	2327.	22596.	22596.	22795.
SEP.	24780.	114.	622.	24780.	508.	92575.	2411.	0.	835.	3246.	89329.	89329.	89837.
OCT.	20588.	159.	117.	24758.	0.	5506.	8813.	0.	862.	9675.	-4169.	0.	0.
NOV.	15443.	117.	0.	20476.	0.	0.	4048.	150.	835.	5033.	-5033.	0.	0.
DEC.	14441.	85.	0.	15358.	0.	0.	0.	155.	862.	1017.	-1017.	0.	0.

Huai Khon Kaen

1958

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	12053.	80.	26.	14287.	0.	934.	2152.	155.	862.	3169.	-2235.	0.	0.
FEB.	8214.	73.	2.	11982.	0.	64.	2913.	140.	779.	3832.	-3768.	0.	0.
MAR.	4183.	66.	0.	8148.	0.	0.	2948.	155.	862.	3965.	-3965.	0.	0.
APR.	4744.	57.	19.	4164.	0.	2801.	1236.	150.	835.	2221.	580.	0.	0.
MAY	5588.	33.	17.	4728.	0.	1964.	242.	0.	862.	1104.	860.	0.	0.
JUN.	19153.	36.	63.	5614.	0.	16486.	2112.	0.	835.	2947.	13539.	0.	0.
JUL.	24780.	101.	183.	19235.	0.	14200.	7000.	0.	862.	7862.	6338.	792.	792.
AUG.	24780.	123.	440.	24780.	317.	44468.	1465.	0.	862.	2327.	42141.	42141.	42458.
SEP.	24780.	114.	339.	24780.	275.	31137.	2411.	0.	835.	3246.	27891.	27891.	28116.
OCT.	22672.	139.	144.	24780.	5.	7567.	8813.	0.	862.	9675.	-2108.	0.	5.
NOV.	17515.	124.	0.	22548.	0.	0.	4048.	150.	835.	5033.	-5033.	0.	0.
DEC.	16402.	96.	0.	17419.	0.	0.	0.	155.	862.	1017.	-1017.	0.	0.

1959

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	13142.	91.	0.	16311.	0.	0.	2152.	155.	862.	3169.	-3169.	0.	0.
FEB.	9463.	80.	8.	13070.	0.	225.	2913.	140.	779.	3832.	-3607.	0.	0.
MAR.	6992.	77.	24.	9411.	0.	1546.	2948.	155.	862.	3965.	-2419.	0.	0.
APR.	8383.	62.	36.	6965.	0.	3639.	1236.	150.	835.	2221.	1418.	0.	0.
MAY	12455.	59.	51.	8375.	0.	5184.	242.	0.	862.	1104.	4080.	0.	0.
JUN.	13812.	81.	70.	12444.	0.	4315.	2112.	0.	835.	2947.	1368.	0.	0.
JUL.	24780.	75.	158.	13897.	0.	19805.	7000.	0.	862.	7862.	11941.	1058.	1058.
AUG.	24780.	123.	254.	24780.	131.	16100.	1465.	0.	862.	2327.	13773.	13773.	13904.
SEP.	24780.	114.	696.	24780.	582.	114020.	2411.	0.	835.	3246.	110774.	110774.	111356.
OCT.	14966.	139.	0.	24641.	0.	0.	8813.	0.	862.	9675.	-9675.	0.	0.
NOV.	9851.	82.	0.	14984.	0.	0.	4048.	150.	835.	5033.	-5033.	0.	0.
DEC.	8780.	54.	0.	9797.	0.	0.	0.	155.	862.	1017.	-1017.	0.	0.

Huai Khon Kaen

1960

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	5596.	49.	1.	8733.	0.	32.	2152.	155.	862.	3169.	-3137.	0.	0.
FEB.	1926.	34.	3.	5565.	0.	193.	2913.	140.	779.	3832.	-3639.	0.	0.
MAR.	0.	16.	5.	1916.	0.	1546.	2948.	155.	862.	3965.	-2419.	0.	0.
APR.	0.	0.	0.	0.	0.	129.	1236.	150.	835.	2221.	-2092.	0.	0.
MAY	24780.	0.	0.	0.	0.	31653.	242.	0.	862.	1104.	30549.	5769.	5769.
JUN.	24780.	161.	225.	24780.	63.	10948.	2112.	0.	835.	2947.	8001.	8001.	8064.
JUL.	21417.	131.	122.	24771.	0.	4508.	7000.	0.	862.	7862.	-3354.	0.	0.
AUG.	24780.	106.	336.	21646.	0.	35227.	1465.	0.	862.	2327.	32900.	29766.	29766.
SEP.	24780.	114.	263.	24780.	149.	20125.	2411.	0.	835.	3246.	16879.	16879.	17028.
OCT.	20654.	139.	118.	24759.	0.	5571.	8813.	0.	862.	9675.	-4104.	0.	0.
NOV.	15509.	113.	0.	20542.	0.	0.	4048.	150.	835.	5033.	-5033.	0.	0.
DEC.	14407.	85.	0.	15424.	0.	0.	0.	155.	862.	1017.	-1017.	0.	0.

1961

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	11158.	80.	0.	14326.	0.	0.	2152.	155.	862.	3169.	-3169.	0.	0.
FEB.	7918.	68.	15.	11106.	0.	644.	2913.	140.	779.	3832.	-3188.	0.	0.
MAR.	6784.	64.	30.	7683.	0.	2866.	2948.	155.	862.	3965.	-1099.	0.	0.
APR.	8467.	60.	36.	6760.	0.	3928.	1236.	150.	835.	2221.	1707.	0.	0.
MAY	21527.	59.	88.	8495.	0.	14136.	242.	0.	862.	1104.	13032.	0.	0.
JUN.	24780.	140.	195.	21581.	0.	10916.	2112.	0.	835.	2947.	7969.	4770.	4770.
JUL.	24780.	131.	315.	24780.	184.	23957.	7000.	0.	862.	7862.	16095.	16095.	16279.
AUG.	24780.	125.	228.	24780.	105.	13266.	1465.	0.	862.	2327.	10939.	10939.	11044.
SEP.	24780.	114.	471.	24780.	359.	55964.	2411.	0.	835.	3246.	52718.	52718.	53075.
OCT.	24780.	139.	173.	24780.	54.	10111.	8813.	0.	862.	9675.	436.	436.	470.
NOV.	19612.	135.	0.	24645.	0.	0.	4048.	150.	835.	5033.	-5033.	0.	0.
DEC.	18556.	109.	4.	19509.	0.	64.	0.	155.	862.	1017.	-953.	0.	0.

Huai Khon Kaen

1962

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	15284.	103.	0.	18452.	0.	0.	2152.	155.	862.	3169.	-3169.	0.	0.
FEB.	11359.	93.	0.	15191.	0.	0.	2913.	140.	779.	3832.	-3832.	0.	0.
MAR.	7303.	92.	1.	11268.	0.	0.	2948.	155.	862.	3965.	-3965.	0.	0.
APR.	8659.	65.	37.	7275.	0.	5406.	1236.	150.	835.	2221.	1385.	0.	0.
MAY	11826.	61.	48.	8647.	0.	4283.	242.	0.	862.	1104.	3179.	0.	0.
JUN.	15712.	77.	84.	11833.	0.	6826.	2112.	0.	835.	2947.	3879.	0.	0.
JUL.	24780.	83.	175.	15804.	0.	18740.	7000.	0.	862.	7862.	10878.	1901.	1901.
AUG.	24780.	123.	216.	24780.	93.	12139.	1465.	0.	862.	2327.	9812.	9812.	9905.
SEP.	24780.	114.	535.	24780.	421.	70295.	2411.	0.	835.	3246.	67047.	67047.	67468.
OCT.	18987.	139.	93.	24754.	0.	3928.	8813.	0.	862.	9675.	-5747.	0.	0.
NOV.	13850.	103.	0.	18883.	0.	0.	4048.	150.	835.	5033.	-5033.	0.	0.
DEC.	12757.	76.	0.	13774.	0.	0.	0.	155.	862.	1017.	-1017.	0.	0.

1963

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	9517.	71.	0.	12686.	0.	0.	2152.	155.	862.	3169.	-3169.	0.	0.
FEB.	5893.	58.	7.	9466.	0.	258.	2913.	140.	779.	3832.	-3574.	0.	0.
MAR.	11682.	48.	46.	5890.	0.	9757.	2948.	155.	862.	3965.	5792.	0.	0.
APR.	11038.	104.	39.	11617.	0.	1642.	1236.	150.	835.	2221.	-579.	0.	0.
MAY	11665.	77.	38.	10998.	0.	1771.	242.	0.	862.	1104.	667.	0.	0.
JUN.	24780.	76.	182.	11772.	0.	31492.	2112.	0.	835.	2947.	28545.	15537.	15537.
JUL.	24780.	131.	318.	24780.	187.	24279.	7000.	0.	862.	7862.	16417.	16417.	16603.
AUG.	24780.	123.	291.	24780.	168.	20677.	1465.	0.	862.	2327.	18345.	18345.	18513.
SEP.	24780.	114.	306.	24780.	192.	26050.	2411.	0.	835.	3246.	22804.	22804.	22996.
OCT.	24780.	139.	286.	24780.	147.	23281.	8813.	0.	862.	9675.	13606.	13606.	13753.
NOV.	21220.	135.	62.	24787.	0.	1546.	4048.	150.	835.	5033.	-3487.	0.	0.
DEC.	20660.	117.	26.	21130.	0.	547.	0.	155.	862.	1017.	-470.	0.	0.

Huai Khon Kaen

1964

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	17376.	115.	0.	20545.	0.	0.	2152.	155.	862.	3169.	-3169.	0.	0.
FEB.	13439.	105.	0.	17271.	0.	0.	2913.	140.	779.	3832.	-3832.	0.	0.
MAR.	9365.	109.	0.	13330.	0.	0.	2948.	155.	862.	3965.	-3965.	0.	0.
APR.	10357.	83.	45.	9327.	0.	3257.	1236.	150.	835.	2221.	1031.	0.	0.
MAY	24780.	72.	189.	10474.	0.	42697.	242.	0.	862.	1104.	41593.	27287.	27287.
JUN.	24780.	161.	142.	24761.	0.	4572.	2112.	0.	835.	2947.	1625.	1606.	1606.
JUL.	24780.	131.	230.	24780.	99.	13202.	7000.	0.	862.	7862.	5340.	5340.	5439.
AUG.	24780.	123.	265.	24780.	142.	17388.	1465.	0.	862.	2327.	15061.	15061.	15203.
SEP.	24780.	114.	352.	24780.	238.	33166.	2411.	0.	835.	3246.	29920.	29920.	30157.
OCT.	24780.	139.	280.	24780.	141.	22379.	8813.	0.	862.	9675.	12704.	12704.	12845.
NOV.	19751.	139.	11.	24655.	0.	129.	4048.	150.	835.	5033.	-4904.	0.	0.
DEC.	18626.	108.	0.	19643.	0.	0.	0.	155.	862.	1017.	-1017.	0.	0.

1965

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	15354.	104.	0.	18522.	0.	0.	2152.	155.	862.	3169.	-3169.	0.	0.
FEB.	12455.	93.	29.	15289.	0.	998.	2913.	140.	779.	3832.	-2834.	0.	0.
MAR.	8788.	101.	12.	12367.	0.	386.	2948.	155.	862.	3965.	-3579.	0.	0.
APR.	6488.	78.	0.	8709.	0.	0.	1236.	150.	835.	2221.	-2221.	0.	0.
MAY	17701.	45.	63.	6505.	0.	12300.	242.	0.	862.	1104.	11196.	0.	0.
JUN.	24780.	115.	179.	17765.	0.	13492.	2112.	0.	835.	2947.	10545.	3530.	3530.
JUL.	19910.	131.	96.	24745.	0.	3027.	7000.	0.	862.	7862.	-4835.	0.	0.
AUG.	24780.	99.	283.	20094.	0.	29334.	1465.	0.	862.	2327.	27007.	22321.	22321.
SEP.	24780.	114.	278.	24780.	144.	22121.	2411.	0.	835.	3246.	18875.	18875.	19039.
OCT.	15042.	139.	76.	24717.	0.	0.	8813.	0.	862.	9675.	-9675.	0.	0.
NOV.	9927.	82.	0.	14960.	0.	0.	4048.	150.	835.	5033.	-5033.	0.	0.
DEC.	8855.	55.	0.	9872.	0.	0.	0.	155.	862.	1017.	-1017.	0.	0.

Huai Khon Kaen

1966

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	5637.	49.	0.	8806.	0.	0.	2152.	155.	862.	3169.	-3169.	0.	0.
FEB.	1771.	34.	0.	5603.	0.	0.	2913.	140.	779.	3832.	-3832.	0.	0.
MAR.	0.	14.	1.	1758.	0.	161.	2948.	155.	862.	3965.	-3804.	0.	0.
APR.	0.	0.	0.	0.	0.	290.	1736.	150.	835.	2221.	-1931.	0.	0.
MAY	6817.	0.	0.	0.	0.	7921.	242.	0.	862.	1104.	6817.	0.	0.
JUN.	5880.	44.	25.	4798.	0.	2079.	2112.	0.	835.	2947.	-918.	0.	0.
JUL.	0.	31.	17.	5866.	0.	1900.	7000.	0.	862.	7862.	-5962.	0.	0.
AUG.	4081.	0.	0.	0.	0.	6408.	1465.	0.	862.	2327.	4081.	0.	0.
SEP.	3790.	19.	13.	4075.	0.	2967.	2411.	0.	835.	3246.	-284.	0.	0.
OCT.	0.	21.	18.	3787.	0.	5601.	8813.	0.	862.	9675.	-4072.	0.	0.
NOV.	0.	0.	0.	0.	0.	286.	4048.	150.	835.	5033.	-4747.	0.	0.
DEC.	0.	0.	0.	0.	0.	741.	0.	155.	862.	1017.	-276.	0.	0.

1967

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	0.	0.	0.	0.	0.	0.	2152.	155.	862.	3169.	-3169.	0.	0.
FEB.	0.	0.	0.	0.	0.	0.	2913.	140.	779.	3832.	-3832.	0.	0.
MAR.	0.	0.	0.	0.	0.	32.	2948.	155.	862.	3965.	-3933.	0.	0.
APR.	2480.	0.	0.	0.	0.	4701.	1736.	150.	835.	2221.	2480.	0.	0.
MAY	3686.	17.	10.	2472.	0.	2318.	242.	0.	862.	1104.	1214.	0.	0.
JUN.	4276.	24.	18.	3681.	0.	3542.	2112.	0.	835.	2947.	595.	0.	0.
JUL.	4083.	23.	29.	4282.	0.	7664.	7000.	0.	862.	7862.	-198.	0.	0.
AUG.	9266.	20.	27.	4090.	0.	7503.	1465.	0.	862.	2327.	5176.	0.	0.
SEP.	5977.	43.	0.	9223.	0.	0.	2411.	0.	835.	3246.	-3246.	0.	0.
OCT.	0.	34.	0.	5944.	0.	0.	8813.	0.	862.	9675.	-9675.	0.	0.
NOV.	0.	0.	0.	0.	0.	0.	4048.	150.	835.	5033.	-5033.	0.	0.
DEC.	0.	0.	0.	0.	0.	0.	0.	155.	862.	1017.	-1017.	0.	0.

Huai Khon Kaen

1968

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	0.	0.	0.	0.	0.	0.	2152.	155.	862.	3169.	-3169.	0.	0.
FEB.	0.	0.	0.	0.	0.	0.	2913.	140.	779.	3832.	-3832.	0.	0.
MAR.	0.	0.	0.	0.	0.	1127.	2948.	155.	862.	3965.	-2838.	0.	0.
APR.	3865.	0.	0.	0.	0.	6086.	1236.	150.	835.	2221.	3865.	0.	0.
MAY	24780.	27.	67.	3905.	0.	39284.	242.	0.	862.	1104.	38180.	17305.	17305.
JUN.	24780.	141.	235.	24780.	74.	11978.	2112.	0.	835.	2947.	9031.	9031.	9105.
JUL.	24780.	131.	256.	24780.	125.	16422.	7000.	0.	862.	7862.	8560.	8560.	8685.
AUG.	24780.	123.	166.	24780.	43.	7631.	1465.	0.	862.	2327.	5304.	5304.	5347.
SEP.	24780.	114.	105.	24772.	0.	4733.	2411.	0.	835.	3246.	1487.	1478.	1478.
OCT.	19477.	139.	101.	24742.	0.	4411.	8815.	0.	862.	9675.	-5264.	0.	0.
NOV.	14339.	106.	0.	19372.	0.	0.	4048.	150.	835.	5033.	-5033.	0.	0.
DEC.	13243.	79.	0.	14260.	0.	0.	0.	155.	862.	1017.	-1017.	0.	0.

1969

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	10859.	74.	22.	13191.	0.	837.	2152.	155.	862.	3169.	-2332.	0.	0.
FEB.	7028.	66.	2.	10796.	0.	64.	2913.	140.	779.	3832.	-3768.	0.	0.
MAR.	9036.	57.	41.	7012.	0.	5989.	2948.	155.	862.	3965.	2024.	0.	0.
APR.	8049.	80.	26.	8982.	0.	1288.	1236.	150.	835.	2221.	-933.	0.	0.
MAY	14677.	56.	61.	8053.	0.	7728.	242.	0.	862.	1104.	6624.	0.	0.
JUN.	14012.	96.	59.	14641.	0.	2318.	2112.	0.	835.	2947.	-629.	0.	0.
JUL.	11237.	74.	74.	14012.	0.	5088.	7000.	0.	862.	7862.	-2774.	0.	0.
AUG.	14521.	56.	63.	11245.	0.	5603.	1465.	0.	862.	2327.	3276.	0.	0.
SEP.	24780.	67.	250.	14704.	0.	46915.	2411.	0.	835.	3246.	43669.	33593.	33593.
OCT.	18234.	139.	80.	24771.	0.	3188.	8813.	0.	862.	9675.	-6487.	0.	0.
NOV.	13533.	99.	12.	18147.	0.	419.	4048.	150.	835.	5033.	-4614.	0.	0.
DEC.	12442.	74.	0.	13459.	0.	0.	0.	155.	862.	1017.	-1017.	0.	0.

Huai Khon Kaen

1970

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	9204.	69.	0.	12372.	0.	0.	2152.	155.	862.	3169.	-3169.	0.	0.
FEB.	5317.	56.	1.	9149.	0.	0.	2913.	140.	779.	3832.	-3832.	0.	0.
MAR.	10203.	43.	39.	5313.	0.	8855.	2948.	155.	862.	3965.	4890.	0.	0.
APR.	8587.	91.	21.	10133.	0.	676.	1236.	150.	835.	2221.	-1545.	0.	0.
MAY	12887.	60.	54.	8581.	0.	5410.	242.	0.	862.	1104.	4306.	0.	0.
JUN.	24780.	84.	184.	17987.	0.	26377.	2112.	0.	835.	2947.	23425.	11632.	11632.
JUL.	18230.	131.	58.	24707.	0.	1385.	7000.	0.	862.	7862.	-6477.	0.	0.
AUG.	24780.	90.	260.	18399.	0.	29527.	1465.	0.	862.	2327.	27200.	20819.	20819.
SEP.	24780.	114.	265.	24780.	151.	20447.	2411.	0.	835.	3246.	17201.	17201.	17352.
OCT.	21829.	139.	134.	24775.	0.	6730.	8813.	0.	862.	9675.	-2945.	0.	0.
NOV.	16713.	119.	4.	21714.	0.	37.	4048.	150.	835.	5033.	-5001.	0.	0.
DEC.	16073.	92.	18.	16639.	0.	451.	0.	155.	862.	1017.	-566.	0.	0.

1971

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	12815.	90.	0.	15984.	0.	0.	2152.	155.	862.	3169.	-3169.	0.	0.
FEB.	9633.	78.	19.	12757.	0.	708.	2913.	140.	779.	3832.	-3124.	0.	0.
MAR.	7127.	78.	24.	9579.	0.	1513.	2948.	155.	862.	3965.	-2452.	0.	0.
APR.	4877.	63.	3.	7066.	0.	32.	1236.	150.	835.	2221.	-2189.	0.	0.
MAY	16667.	54.	48.	4891.	0.	12880.	242.	0.	862.	1104.	11776.	0.	0.
JUN.	24780.	108.	162.	16720.	0.	12461.	2112.	0.	835.	2947.	9514.	1454.	1454.
JUL.	23744.	131.	156.	24780.	25.	6826.	7000.	0.	862.	7862.	-1036.	0.	25.
AUG.	24780.	118.	300.	23926.	0.	23667.	1465.	0.	862.	2327.	21340.	20486.	20486.
SEP.	24780.	114.	215.	24780.	100.	14200.	2411.	0.	835.	3246.	10954.	10954.	11053.
OCT.	20916.	139.	122.	24763.	0.	5828.	8813.	0.	862.	9675.	-5847.	0.	0.
NOV.	15769.	114.	0.	20802.	0.	0.	4048.	150.	835.	5033.	-5053.	0.	0.
DEC.	14700.	87.	3.	15695.	0.	52.	0.	155.	862.	1017.	-985.	0.	0.

Huai Khon Kaen

1972

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	11450.	82.	0.	14618.	0.	0.	2152.	155.	862.	3169.	-3169.	0.	0.
FEB.	8535.	69.	21.	11401.	0.	966.	2913.	140.	779.	3832.	-2866.	0.	0.
MAR.	5971.	69.	21.	8487.	0.	1449.	2948.	155.	862.	3965.	-2516.	0.	0.
APR.	5358.	53.	20.	5938.	0.	1642.	1236.	150.	835.	2221.	-579.	0.	0.
MAY	7398.	37.	25.	5546.	0.	3156.	242.	0.	862.	1104.	2052.	0.	0.
JUN.	16161.	48.	69.	7419.	0.	11689.	2112.	0.	835.	2947.	8742.	0.	0.
JUL.	12411.	85.	76.	16151.	0.	4122.	7000.	0.	862.	7862.	-3740.	0.	0.
AUG.	24780.	67.	152.	12502.	0.	22411.	1465.	0.	862.	2327.	20084.	7806.	7806.
SEP.	24780.	114.	246.	24780.	152.	17968.	2411.	0.	835.	3246.	14722.	14722.	14854.
OCT.	20850.	139.	121.	24762.	0.	5764.	8813.	0.	862.	9675.	-3911.	0.	0.
NOV.	16110.	114.	20.	20757.	0.	386.	4048.	150.	835.	5033.	-4647.	0.	0.
DEC.	15140.	88.	6.	16028.	0.	129.	0.	155.	862.	1017.	-888.	0.	0.

1973

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	11887.	84.	0.	15055.	0.	0.	2152.	155.	862.	3169.	-3169.	0.	0.
FEB.	7983.	72.	1.	11815.	0.	0.	2913.	140.	779.	3832.	-3832.	0.	0.
MAR.	6233.	65.	26.	7944.	0.	2254.	2948.	155.	862.	3965.	-1711.	0.	0.
APR.	6009.	56.	23.	6201.	0.	2029.	1236.	150.	835.	2221.	-192.	0.	0.
MAY	13282.	42.	47.	6014.	0.	8372.	242.	0.	862.	1104.	7268.	0.	0.
JUN.	18823.	86.	105.	13301.	0.	8469.	2112.	0.	835.	2947.	5522.	0.	0.
JUL.	21964.	100.	155.	18878.	0.	10948.	7000.	0.	862.	7862.	3086.	0.	0.
AUG.	24780.	109.	123.	21978.	0.	5603.	1465.	0.	862.	2327.	3276.	474.	474.
SEP.	24780.	114.	199.	24780.	85.	12655.	2411.	0.	835.	3246.	9409.	9409.	9494.
OCT.	15366.	139.	15.	24655.	0.	386.	8813.	0.	862.	9675.	-9289.	0.	0.
NOV.	10418.	84.	8.	15290.	0.	161.	4048.	150.	835.	5033.	-4872.	0.	0.
DEC.	9344.	57.	0.	10361.	0.	0.	0.	155.	862.	1017.	-1017.	0.	0.

Huai Khon Kaen

1974

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	6124.	52.	1.	9292.	0.	0.	2152.	155.	862.	3169.	-3169.	0.	0.
FEB.	2288.	37.	1.	6087.	0.	32.	2913.	140.	779.	3832.	-3800.	0.	0.
MAR.	695.	19.	8.	7277.	0.	2383.	2948.	155.	862.	3965.	-1582.	0.	0.
APR.	1175.	6.	3.	692.	0.	2705.	1236.	150.	835.	2221.	484.	0.	0.
MAY	15209.	8.	13.	1179.	0.	15134.	242.	0.	862.	1104.	14030.	0.	0.
JUN.	20915.	99.	122.	15232.	0.	8630.	2112.	0.	835.	2947.	5683.	0.	0.
JUL.	22731.	111.	161.	20965.	0.	9628.	7000.	0.	862.	7862.	1766.	0.	0.
AUG.	24780.	113.	239.	22857.	0.	16873.	1465.	0.	862.	2327.	14546.	12623.	12623.
SEP.	24780.	114.	146.	24780.	32.	7760.	2411.	0.	835.	3246.	4514.	4514.	4546.
OCT.	21241.	139.	126.	24767.	0.	6150.	8813.	0.	862.	9675.	-3525.	0.	0.
NOV.	17527.	116.	49.	21175.	0.	1385.	4048.	150.	835.	5033.	-3648.	0.	0.
DEC.	16414.	96.	0.	17431.	0.	0.	0.	155.	862.	1017.	-1017.	0.	0.

1975

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	15252.	91.	50.	16372.	0.	2029.	2152.	155.	862.	3169.	-1140.	0.	0.
FEB.	13383.	92.	46.	15186.	0.	2029.	2913.	140.	779.	3832.	-1803.	0.	0.
MAR.	10692.	108.	31.	13305.	0.	1552.	2948.	155.	862.	3965.	-2613.	0.	0.
APR.	8377.	95.	1.	10598.	0.	0.	1236.	150.	835.	2221.	-2221.	0.	0.
MAY	12029.	59.	49.	8367.	0.	4766.	242.	0.	862.	1104.	3662.	0.	0.
JUN.	16239.	78.	87.	12038.	0.	7148.	2112.	0.	835.	2947.	4201.	0.	0.
JUL.	21966.	86.	151.	16304.	0.	13524.	7000.	0.	862.	7862.	5662.	0.	0.
AUG.	24780.	109.	239.	22096.	0.	17955.	1465.	0.	862.	2327.	15608.	12923.	12923.
SEP.	24780.	114.	256.	24780.	143.	19320.	2411.	0.	835.	3246.	16074.	16074.	16216.
OCT.	23960.	139.	160.	24780.	20.	8855.	8813.	0.	862.	9675.	-820.	0.	20.
NOV.	21094.	131.	76.	23905.	0.	2222.	4048.	150.	835.	5033.	-2811.	0.	0.
DEC.	19962.	116.	0.	20979.	0.	0.	0.	155.	862.	1017.	-1017.	0.	0.

Huai Khon Kaen

1976

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	16682.	111.	0.	19850.	0.	0.	2152.	155.	862.	3169.	-3169.	0.	0.
FEB.	16648.	101.	75.	16655.	0.	3864.	2913.	140.	779.	3832.	32.	0.	0.
MAR.	17656.	135.	5.	16557.	0.	64.	2948.	155.	862.	3965.	-3901.	0.	0.
APR.	11443.	113.	34.	12578.	0.	1127.	1236.	150.	835.	2221.	-1094.	0.	0.
MAY	24780.	80.	150.	11532.	0.	16744.	242.	0.	862.	1104.	15640.	2392.	2392.
JUN.	24780.	161.	195.	24780.	34.	8308.	2112.	0.	835.	2947.	5361.	5361.	5395.
JUL.	24780.	151.	310.	24780.	179.	23216.	7000.	0.	862.	7862.	15354.	15354.	15533.
AUG.	24780.	125.	330.	24780.	208.	26146.	1465.	0.	862.	2327.	23819.	23819.	24026.
SEP.	24780.	114.	265.	24780.	151.	20350.	2411.	0.	835.	3246.	17104.	17104.	17255.
OCT.	24780.	139.	182.	24780.	43.	10980.	8813.	0.	862.	9675.	1305.	1305.	1348.
NOV.	19751.	155.	10.	24655.	0.	129.	4048.	150.	835.	5033.	-4904.	0.	0.
DEC.	18626.	108.	0.	19643.	0.	0.	0.	155.	862.	1017.	-1017.	0.	0.

1977

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	15354.	104.	0.	18522.	0.	0.	2152.	155.	862.	3169.	-3169.	0.	0.
FEB.	11429.	93.	0.	15261.	0.	0.	2913.	140.	779.	3832.	-3832.	0.	0.
MAR.	9792.	93.	38.	11374.	0.	2383.	2948.	155.	862.	3965.	-1582.	0.	0.
APR.	7522.	87.	38.	9743.	0.	0.	1236.	150.	835.	2221.	-2221.	0.	0.
MAY	6424.	55.	59.	7528.	0.	0.	242.	0.	862.	1104.	-1104.	0.	0.
JUN.	5461.	42.	26.	6408.	0.	0.	2112.	0.	835.	2947.	-2947.	0.	0.
JUL.	0.	18.	26.	3469.	0.	0.	7000.	0.	862.	7862.	-7862.	0.	0.
AUG.	0.	0.	0.	0.	0.	0.	1465.	0.	862.	2327.	-2327.	0.	0.
SEP.	0.	0.	0.	0.	0.	0.	2411.	0.	835.	3246.	-3246.	0.	0.
OCT.	0.	0.	0.	0.	0.	0.	8813.	0.	862.	9675.	-9675.	0.	0.
NOV.	0.	0.	0.	0.	0.	0.	4048.	150.	835.	5033.	-5033.	0.	0.
DEC.	0.	0.	0.	0.	0.	0.	0.	155.	862.	1017.	-1017.	0.	0.

Huai Khon Kaen

1978

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	0.	0.	0.	0.	0.	0.	2152.	155.	862.	3169.	-3169.	0.	0.
FEB.	0.	0.	0.	0.	0.	0.	2913.	140.	779.	3832.	-3832.	0.	0.
MAR.	0.	0.	0.	0.	0.	0.	2948.	155.	862.	3965.	-3965.	0.	0.
APR.	0.	0.	0.	0.	0.	0.	1236.	150.	835.	2221.	-2221.	0.	0.
MAY	0.	0.	0.	0.	0.	0.	242.	0.	862.	1104.	-1104.	0.	0.
JUN.	0.	0.	0.	0.	0.	0.	2112.	0.	835.	2947.	-2947.	0.	0.
JUL.	0.	0.	0.	0.	0.	0.	7000.	0.	862.	7862.	-7862.	0.	0.
AUG.	0.	0.	0.	0.	0.	0.	1465.	0.	862.	2327.	-2327.	0.	0.
SEP.	0.	0.	0.	0.	0.	0.	2411.	0.	835.	3246.	-3246.	0.	0.
OCT.	0.	0.	0.	0.	0.	0.	8813.	0.	862.	9675.	-9675.	0.	0.
NOV.	0.	0.	0.	0.	0.	0.	4048.	150.	835.	5033.	-5033.	0.	0.
DEC.	0.	0.	0.	0.	0.	0.	0.	155.	862.	1017.	-1017.	0.	0.

Table 4.2 Calculation Sheet of Operation Study

(3) Huai Yai Reservoir

1952

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	0.	0.	0.	0.	0.	0.	524.	0.	209.	733.	-733.	0.	0.
FEB.	0.	0.	0.	0.	0.	0.	695.	0.	189.	884.	-884.	0.	0.
MAR.	0.	0.	0.	0.	0.	0.	780.	0.	209.	989.	-989.	0.	0.
APR.	0.	0.	0.	0.	0.	55.	348.	0.	202.	550.	-495.	0.	0.
MAY	3697.	0.	0.	0.	0.	3970.	65.	0.	209.	274.	3697.	0.	0.
JUN.	7120.	55.	117.	3758.	0.	5990.	908.	0.	202.	1110.	4881.	1519.	1519.
JUL.	6160.	96.	73.	7107.	0.	936.	1674.	0.	209.	1883.	-947.	0.	0.
AUG.	7120.	70.	141.	6231.	0.	3744.	756.	0.	209.	965.	2779.	1890.	1890.
SEP.	7120.	75.	122.	7120.	47.	7722.	501.	0.	202.	703.	2019.	2019.	2066.
OCT.	5068.	92.	67.	7095.	0.	1069.	2907.	0.	209.	3116.	-2047.	0.	0.
NOV.	3266.	63.	1.	4986.	0.	8.	1526.	0.	202.	1728.	-1720.	0.	0.
DEC.	3016.	41.	0.	3225.	6.	0.	0.	0.	209.	209.	-209.	0.	0.

1953

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	2387.	39.	8.	2966.	0.	153.	524.	0.	209.	733.	-600.	0.	0.
FEB.	2450.	33.	25.	2578.	0.	936.	695.	0.	189.	884.	53.	0.	0.
MAR.	1632.	45.	10.	2595.	0.	226.	780.	0.	209.	989.	-763.	0.	0.
APR.	2060.	35.	20.	1619.	0.	991.	348.	0.	202.	550.	441.	0.	0.
MAY	2841.	33.	27.	2054.	0.	1061.	65.	0.	209.	274.	788.	0.	0.
JUN.	5102.	42.	67.	2865.	0.	3546.	908.	0.	202.	1110.	2237.	0.	0.
JUL.	7050.	62.	118.	5158.	0.	3775.	1674.	0.	209.	1883.	1892.	0.	0.
AUG.	7013.	80.	77.	7042.	0.	936.	756.	0.	209.	965.	-29.	0.	0.
SEP.	7120.	74.	151.	7090.	0.	3962.	501.	0.	202.	703.	3259.	3229.	3229.
OCT.	6266.	92.	108.	7120.	17.	2262.	2907.	0.	209.	3116.	-854.	0.	17.
NOV.	4656.	78.	20.	6208.	0.	156.	1526.	0.	202.	1728.	-1572.	0.	0.
DEC.	4369.	54.	0.	4478.	0.	0.	0.	0.	209.	209.	-209.	0.	0.

Huai Yai

1954

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	3581.	56.	0.	4313.	0.	0.	524.	0.	209.	733.	-733.	0.	0.
FEB.	2647.	50.	0.	3551.	0.	0.	695.	0.	189.	884.	-884.	0.	0.
MAR.	1943.	49.	14.	2612.	0.	320.	780.	0.	209.	989.	-669.	0.	0.
APR.	1446.	40.	6.	1910.	0.	86.	348.	0.	202.	550.	-464.	0.	0.
MAY	6238.	25.	42.	1465.	0.	5047.	65.	0.	209.	274.	4774.	0.	0.
JUN.	7120.	93.	119.	6764.	0.	2254.	908.	0.	202.	1110.	1145.	288.	288.
JUL.	5906.	86.	61.	7095.	0.	694.	1674.	0.	209.	1883.	-1189.	0.	0.
AUG.	7120.	67.	275.	6113.	0.	13845.	756.	0.	209.	965.	12880.	11873.	11873.
SEP.	7120.	75.	508.	7120.	253.	13291.	501.	0.	202.	703.	12588.	12588.	12821.
OCT.	5339.	92.	78.	7106.	0.	1349.	2907.	0.	209.	3116.	-1767.	0.	0.
NOV.	3658.	67.	13.	5285.	0.	101.	1526.	0.	202.	1728.	-1627.	0.	0.
DEC.	3403.	46.	0.	3612.	0.	0.	0.	0.	209.	209.	-209.	0.	0.

1955

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	2627.	44.	0.	3559.	0.	0.	524.	0.	209.	733.	-733.	0.	0.
FEB.	1766.	37.	4.	2594.	0.	55.	695.	0.	189.	884.	-829.	0.	0.
MAR.	1200.	33.	11.	1744.	0.	445.	780.	0.	209.	989.	-544.	0.	0.
APR.	1174.	25.	11.	1186.	0.	558.	348.	0.	202.	550.	-12.	0.	0.
MAY	1730.	19.	13.	1169.	0.	835.	65.	0.	209.	274.	562.	0.	0.
JUN.	2048.	26.	26.	1731.	0.	1427.	908.	0.	202.	1110.	318.	0.	0.
JUL.	1129.	25.	21.	2045.	0.	967.	1674.	0.	209.	1883.	-916.	0.	0.
AUG.	7362.	13.	19.	1135.	0.	2192.	756.	0.	209.	965.	1227.	0.	0.
SEP.	7120.	25.	91.	2428.	0.	10834.	501.	0.	202.	703.	10131.	5439.	5439.
OCT.	4062.	92.	14.	7045.	0.	140.	2907.	0.	209.	3116.	-2976.	0.	0.
NOV.	2298.	51.	0.	4016.	0.	0.	1526.	0.	202.	1728.	-1728.	0.	0.
DEC.	2050.	29.	0.	2259.	0.	0.	0.	0.	209.	209.	-209.	0.	0.

1956

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	1292.	26.	0.	2024.	0.	0.	524.	0.	209.	733.	-733.	0.	0.
FEB.	693.	18.	6.	1280.	0.	296.	695.	0.	189.	884.	-586.	0.	0.
MAR.	0.	13.	0.	680.	0.	8.	780.	0.	209.	989.	-981.	0.	0.
APR.	0.	0.	0.	0.	0.	195.	348.	0.	202.	550.	-355.	0.	0.
MAY	2270.	0.	0.	0.	0.	2543.	65.	0.	209.	274.	2270.	0.	0.
JUN.	3361.	34.	43.	2278.	0.	2192.	908.	0.	202.	1110.	1083.	0.	0.
JUL.	7120.	41.	99.	3419.	0.	5842.	1674.	0.	209.	1883.	3959.	258.	258.
AUG.	7120.	81.	147.	7120.	66.	3081.	756.	0.	209.	965.	2116.	2116.	2182.
SEP.	7120.	75.	277.	7120.	202.	10998.	501.	0.	202.	703.	10295.	10295.	10497.
OCT.	4672.	92.	50.	7078.	0.	710.	2907.	0.	209.	3116.	-2406.	0.	0.
NOV.	2896.	58.	2.	4615.	0.	8.	1526.	0.	202.	1728.	-1720.	0.	0.
DEC.	2650.	37.	0.	2859.	0.	0.	0.	0.	209.	209.	-209.	0.	0.

1957

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	1884.	34.	0.	2616.	0.	0.	524.	0.	209.	733.	-733.	0.	0.
FEB.	1047.	26.	5.	1861.	0.	70.	695.	0.	189.	884.	-814.	0.	0.
MAR.	2185.	19.	18.	1045.	0.	2129.	780.	0.	209.	989.	1140.	0.	0.
APR.	2252.	45.	22.	2162.	0.	640.	348.	0.	202.	550.	90.	0.	0.
MAY	2930.	56.	28.	2244.	0.	960.	65.	0.	209.	274.	687.	0.	0.
JUN.	4111.	44.	56.	2943.	0.	2278.	908.	0.	202.	1110.	1169.	0.	0.
JUL.	3588.	50.	53.	4114.	0.	1357.	1674.	0.	209.	1883.	-526.	0.	0.
AUG.	7120.	41.	103.	3650.	0.	5616.	756.	0.	209.	965.	4651.	1181.	1181.
SEP.	7120.	75.	216.	7120.	141.	7052.	501.	0.	202.	703.	6329.	6329.	6470.
OCT.	6196.	92.	106.	7120.	15.	2192.	2907.	0.	209.	3116.	-924.	0.	15.
NOV.	4391.	28.	0.	4118.	0.	0.	1526.	0.	202.	1728.	-1728.	0.	0.
DEC.	4127.	55.	0.	4336.	0.	0.	0.	0.	209.	209.	-209.	0.	0.

Huai Yai

1958

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	4911.	53.	57.	4130.	0.	1513.	524.	0.	209.	733.	781.	0.	0.
FEB.	4131.	68.	15.	4056.	0.	156.	695.	0.	189.	884.	-728.	0.	0.
MAR.	3463.	77.	24.	4078.	0.	374.	780.	0.	209.	989.	-615.	0.	0.
APR.	5051.	71.	17.	3409.	0.	172.	348.	0.	202.	550.	-378.	0.	0.
MAY	3602.	49.	55.	3017.	0.	858.	65.	0.	209.	274.	585.	0.	0.
JUN.	5141.	54.	75.	3623.	0.	2668.	908.	0.	202.	1110.	1559.	0.	0.
JUL.	7120.	65.	177.	5295.	0.	7758.	1674.	0.	209.	1883.	5855.	4030.	4030.
AUG.	7120.	81.	177.	7120.	96.	4337.	756.	0.	209.	965.	3372.	3372.	3468.
SEP.	7120.	75.	199.	7120.	124.	6154.	501.	0.	202.	703.	5451.	5451.	5575.
OCT.	4729.	92.	55.	7081.	0.	764.	2907.	0.	209.	3116.	-2352.	0.	0.
NOV.	2942.	59.	0.	4670.	0.	0.	1526.	0.	202.	1728.	-1728.	0.	0.
DEC.	2696.	37.	0.	2905.	0.	0.	0.	0.	209.	209.	-209.	0.	0.

1959

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	1929.	34.	0.	2662.	0.	0.	524.	0.	209.	733.	-733.	0.	0.
FEB.	1277.	27.	9.	1911.	0.	250.	695.	0.	189.	884.	-634.	0.	0.
MAR.	1230.	24.	13.	1267.	0.	952.	780.	0.	209.	989.	-37.	0.	0.
APR.	1464.	25.	14.	1218.	0.	796.	348.	0.	202.	550.	246.	0.	0.
MAY	7120.	24.	47.	1488.	0.	6115.	65.	0.	209.	274.	5842.	209.	209.
JUN.	7120.	106.	104.	7117.	0.	1342.	908.	0.	202.	1110.	253.	230.	230.
JUL.	7120.	86.	209.	7120.	123.	5875.	1674.	0.	209.	1883.	3990.	3990.	4113.
AUG.	7120.	81.	103.	7120.	22.	1654.	756.	0.	209.	965.	689.	689.	711.
SEP.	7120.	75.	420.	7120.	345.	23455.	501.	0.	202.	703.	22752.	22752.	23097.
OCT.	4343.	92.	55.	7061.	0.	398.	2907.	0.	209.	3116.	-2718.	0.	0.
NOV.	2751.	54.	14.	4502.	0.	156.	1526.	0.	202.	1728.	-1572.	0.	0.
DEC.	2487.	34.	0.	2696.	0.	0.	0.	0.	209.	209.	-209.	0.	0.

Huai Yai

1960

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	1732.	52.	1.	2456.	0.	8.	524.	0.	209.	733.	-725.	0.	0.
FEB.	824.	24.	0.	1708.	0.	0.	695.	0.	189.	884.	-884.	0.	0.
MAR.	192.	15.	5.	814.	0.	367.	780.	0.	209.	989.	-622.	0.	0.
APR.	0.	4.	0.	188.	0.	16.	348.	0.	202.	550.	-534.	0.	0.
MAY	1607.	0.	0.	0.	0.	1880.	65.	0.	209.	274.	1607.	0.	0.
JUN.	971.	24.	14.	1596.	0.	484.	908.	0.	202.	1110.	-626.	0.	0.
JUL.	1519.	12.	17.	976.	0.	2426.	1674.	0.	209.	1883.	543.	0.	0.
AUG.	4943.	17.	38.	1540.	0.	4368.	756.	0.	209.	965.	3403.	0.	0.
SEP.	6254.	52.	70.	4960.	0.	1997.	501.	0.	202.	703.	1294.	0.	0.
OCT.	5263.	81.	91.	6265.	0.	2114.	2907.	0.	209.	3116.	-1002.	0.	0.
NOV.	1515.	66.	6.	5203.	0.	39.	1526.	0.	202.	1728.	-1689.	0.	0.
DEC.	3261.	44.	0.	3470.	0.	0.	0.	0.	209.	209.	-209.	0.	0.

1961

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	2550.	42.	4.	3273.	0.	39.	524.	0.	209.	733.	-694.	0.	0.
FEB.	1767.	35.	8.	2502.	0.	148.	695.	0.	189.	884.	-736.	0.	0.
MAR.	955.	33.	7.	1741.	0.	203.	780.	0.	209.	989.	-786.	0.	0.
APR.	861.	20.	8.	943.	0.	468.	348.	0.	202.	550.	-82.	0.	0.
MAY	4785.	14.	23.	870.	0.	4189.	65.	0.	209.	274.	3916.	0.	0.
JUN.	7119.	72.	113.	4827.	0.	3401.	908.	0.	202.	1110.	2292.	0.	0.
JUL.	7120.	86.	239.	7120.	151.	7496.	1674.	0.	209.	1883.	5613.	5613.	5764.
AUG.	7120.	81.	251.	7120.	150.	7028.	756.	0.	209.	965.	6063.	6063.	6213.
SEP.	7120.	75.	145.	7120.	70.	3619.	501.	0.	202.	703.	2916.	2916.	2986.
OCT.	4982.	92.	64.	7092.	0.	1006.	2907.	0.	209.	3116.	-2110.	0.	0.
NOV.	3192.	62.	0.	4920.	0.	0.	1526.	0.	202.	1728.	-1728.	0.	0.
DEC.	2943.	40.	0.	3152.	0.	0.	0.	0.	209.	209.	-209.	0.	0.

Huai Yai

1962

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	2206.	38.	5.	2908.	0.	51.	524.	0.	209.	733.	-702.	0.	0.
FEB.	1292.	31.	0.	2176.	0.	0.	695.	0.	189.	884.	-884.	0.	0.
MAR.	414.	24.	4.	1272.	0.	133.	780.	0.	209.	989.	-856.	0.	0.
APR.	1580.	9.	7.	414.	0.	1716.	348.	0.	202.	550.	1166.	0.	0.
MAY	3023.	25.	26.	1581.	0.	1716.	65.	0.	209.	274.	1443.	0.	0.
JUN.	2354.	45.	25.	3003.	0.	460.	908.	0.	202.	1110.	-650.	0.	0.
JUL.	5003.	29.	40.	2385.	0.	4501.	1674.	0.	209.	1883.	2618.	0.	0.
AUG.	7120.	57.	166.	5112.	0.	7316.	756.	0.	209.	965.	6351.	4343.	4343.
SEP.	7120.	75.	262.	7120.	187.	10000.	501.	0.	202.	703.	9297.	9297.	9484.
OCT.	4705.	92.	51.	7080.	0.	741.	2907.	0.	209.	3116.	-2375.	0.	0.
NOV.	3081.	59.	15.	4660.	0.	148.	1526.	0.	202.	1728.	-1580.	0.	0.
DEC.	2842.	39.	1.	3043.	0.	8.	0.	0.	209.	209.	-201.	0.	0.

1963

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	2073.	56.	0.	2805.	0.	0.	524.	0.	209.	733.	-733.	0.	0.
FEB.	1196.	29.	2.	2046.	0.	31.	695.	0.	189.	884.	-853.	0.	0.
MAR.	532.	22.	6.	1178.	0.	343.	780.	0.	209.	989.	-646.	0.	0.
APR.	2196.	11.	10.	531.	0.	2215.	348.	0.	202.	550.	1665.	0.	0.
MAY	4160.	55.	42.	2203.	0.	2231.	65.	0.	209.	274.	1958.	0.	0.
JUN.	5866.	62.	89.	4186.	0.	2769.	908.	0.	202.	1110.	1660.	0.	0.
JUL.	7120.	71.	227.	6007.	0.	9820.	1674.	0.	209.	1883.	7937.	6819.	6819.
AUG.	7120.	81.	326.	7120.	245.	13400.	756.	0.	209.	965.	12435.	12435.	12680.
SEP.	7120.	75.	263.	7120.	188.	10039.	501.	0.	202.	703.	9336.	9336.	9524.
OCT.	7120.	92.	245.	7120.	153.	8837.	2907.	0.	209.	3116.	5721.	5721.	5874.
NOV.	6043.	89.	60.	7091.	0.	679.	1526.	0.	202.	1728.	-1049.	0.	0.
DEC.	5890.	76.	15.	5982.	0.	117.	0.	0.	209.	209.	-92.	0.	0.

1964

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	5083.	75.	1.	5815.	0.	0.	524.	0.	209.	733.	-733.	0.	0.
FEB.	4129.	71.	0.	5012.	0.	0.	695.	0.	189.	884.	-884.	0.	0.
MAR.	3140.	77.	7.	4059.	0.	70.	780.	0.	209.	989.	-919.	0.	0.
APR.	2835.	64.	20.	3096.	0.	289.	348.	0.	202.	550.	-261.	0.	0.
MAY	7120.	46.	108.	2997.	0.	8535.	65.	0.	209.	274.	8260.	4036.	4036.
JUN.	7120.	106.	149.	7120.	43.	2675.	908.	0.	202.	1110.	1566.	1566.	1608.
JUL.	7120.	86.	190.	7120.	104.	4930.	1674.	0.	209.	1883.	3047.	3047.	3151.
AUG.	7120.	81.	268.	7120.	167.	9298.	756.	0.	209.	965.	8333.	8333.	8520.
SEP.	7120.	75.	349.	7120.	274.	16669.	501.	0.	202.	703.	15966.	15966.	16240.
OCT.	6562.	92.	117.	7120.	25.	2558.	2907.	0.	209.	3116.	-558.	0.	25.
NOV.	4825.	82.	11.	6499.	0.	62.	1526.	0.	202.	1728.	-1666.	0.	0.
DEC.	4564.	61.	1.	4765.	0.	8.	0.	0.	209.	209.	-201.	0.	0.

1965

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	3773.	58.	0.	4506.	0.	0.	524.	0.	209.	733.	-733.	0.	0.
FEB.	3022.	53.	13.	3734.	0.	172.	695.	0.	189.	884.	-712.	0.	0.
MAR.	3135.	56.	55.	3001.	0.	1123.	780.	0.	209.	989.	134.	0.	0.
APR.	3095.	44.	28.	3099.	0.	546.	348.	0.	202.	550.	-4.	0.	0.
MAY	3618.	50.	55.	3080.	0.	811.	65.	0.	209.	274.	538.	0.	0.
JUN.	7120.	54.	109.	3673.	0.	5476.	908.	0.	202.	1110.	4367.	920.	920.
JUL.	6664.	86.	94.	7120.	8.	1427.	1674.	0.	209.	1883.	-456.	0.	8.
AUG.	7120.	76.	227.	6815.	0.	7706.	756.	0.	209.	965.	6741.	6436.	6436.
SEP.	7120.	75.	223.	7120.	148.	7496.	501.	0.	202.	703.	6793.	6793.	6941.
OCT.	4393.	92.	56.	7064.	0.	445.	2907.	0.	209.	3116.	-2671.	0.	0.
NOV.	2739.	55.	11.	4449.	0.	117.	1526.	0.	202.	1728.	-1611.	0.	0.
DEC.	2512.	35.	1.	2705.	0.	16.	0.	0.	209.	209.	-193.	0.	0.

Huai Yai

1966

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	1798.	32.	3.	2483.	0.	47.	524.	0.	209.	733.	-686.	0.	0.
FEB.	965.	25.	5.	1776.	0.	70.	695.	0.	189.	884.	-814.	0.	0.
MAR.	35.	18.	2.	946.	0.	78.	780.	0.	209.	989.	-911.	0.	0.
APR.	0.	1.	0.	35.	0.	257.	348.	0.	202.	550.	-295.	0.	0.
MAY	4641.	0.	0.	0.	0.	4914.	65.	0.	209.	274.	4641.	0.	0.
JUN.	4301.	69.	51.	4622.	0.	788.	908.	0.	202.	1110.	-322.	0.	0.
JUL.	7120.	52.	154.	4403.	0.	8461.	1674.	0.	209.	1883.	6580.	3863.	3863.
AUG.	7120.	81.	247.	7120.	166.	7995.	756.	0.	209.	965.	7030.	7030.	7196.
SEP.	7120.	75.	112.	7120.	37.	2363.	501.	0.	202.	703.	1660.	1660.	1697.
OCT.	6032.	92.	101.	7120.	10.	2028.	2907.	0.	209.	3116.	-1088.	0.	10.
NOV.	4438.	75.	22.	5978.	0.	187.	1526.	0.	202.	1728.	-1541.	0.	0.
DEC.	4234.	56.	6.	4388.	0.	55.	0.	0.	209.	209.	-154.	0.	0.

1967

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	3447.	54.	0.	4180.	0.	0.	524.	0.	209.	733.	-733.	0.	0.
FEB.	2541.	48.	2.	3402.	0.	23.	695.	0.	189.	884.	-861.	0.	0.
MAR.	1505.	47.	0.	2494.	0.	0.	780.	0.	209.	989.	-989.	0.	0.
APR.	4651.	31.	57.	1512.	0.	3689.	348.	0.	202.	550.	3139.	0.	0.
MAY	7120.	75.	124.	4700.	0.	4287.	65.	0.	209.	274.	4009.	1588.	1588.
JUN.	6622.	106.	71.	7084.	0.	647.	908.	0.	202.	1110.	-463.	0.	0.
JUL.	7120.	80.	134.	6676.	0.	2995.	1674.	0.	209.	1883.	1112.	668.	668.
AUG.	7120.	81.	142.	7120.	60.	2894.	756.	0.	209.	965.	1929.	1929.	1989.
SEP.	7120.	75.	215.	7120.	140.	7067.	501.	0.	202.	703.	6364.	6364.	6504.
OCT.	4092.	92.	16.	7044.	0.	164.	2907.	0.	209.	3116.	-2957.	0.	0.
NOV.	2417.	51.	9.	4050.	0.	94.	1526.	0.	202.	1728.	-1634.	0.	0.
DEC.	2177.	50.	0.	2386.	0.	0.	0.	0.	209.	209.	-209.	0.	0.

Huai Yai

1968

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	1417.	28.	0.	2149.	0.	0.	524.	0.	209.	733.	-733.	0.	0.
FEB.	571.	20.	2.	1399.	0.	55.	695.	0.	189.	884.	-829.	0.	0.
MAR.	0.	11.	1.	561.	0.	109.	780.	0.	209.	989.	-880.	0.	0.
APR.	877.	0.	0.	0.	0.	1427.	348.	0.	202.	550.	877.	0.	0.
MAY	4191.	14.	21.	884.	0.	3580.	65.	0.	209.	274.	3307.	0.	0.
JUN.	5075.	63.	75.	4203.	0.	1981.	908.	0.	202.	1110.	872.	0.	0.
JUL.	7120.	62.	146.	5159.	0.	5624.	1674.	0.	209.	1883.	3741.	1780.	1780.
AUG.	6681.	81.	53.	7092.	0.	554.	756.	0.	209.	965.	-411.	0.	0.
SEP.	7120.	71.	159.	6770.	0.	4711.	501.	0.	202.	703.	4008.	3658.	5658.
OCT.	4868.	92.	59.	7087.	0.	897.	2907.	0.	209.	3116.	-2219.	0.	0.
NOV.	5200.	61.	12.	4819.	0.	109.	1526.	0.	202.	1728.	-1619.	0.	0.
DEC.	2951.	40.	0.	3160.	0.	0.	0.	0.	209.	209.	-709.	0.	0.

1969

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	2940.	38.	26.	2940.	0.	733.	524.	0.	209.	733.	1.	0.	0.
FEB.	2016.	41.	0.	2899.	0.	0.	695.	0.	189.	884.	-884.	0.	0.
MAR.	1160.	37.	7.	1985.	0.	164.	780.	0.	209.	989.	-825.	0.	0.
APR.	1008.	24.	9.	1145.	0.	415.	348.	0.	202.	550.	-137.	0.	0.
MAY	1698.	16.	12.	1004.	0.	967.	65.	0.	209.	274.	694.	0.	0.
JUN.	2897.	25.	33.	1705.	0.	2301.	908.	0.	202.	1110.	1192.	0.	0.
JUL.	3101.	35.	48.	2909.	0.	2075.	1674.	0.	209.	1883.	192.	0.	0.
AUG.	5664.	35.	69.	3135.	0.	3494.	756.	0.	209.	965.	2529.	0.	0.
SEP.	7120.	60.	212.	5816.	0.	10288.	501.	0.	202.	703.	9585.	8281.	8281.
OCT.	7120.	92.	171.	7120.	79.	4742.	2907.	0.	209.	3116.	1626.	1626.	1705.
NOV.	5304.	89.	1.	7052.	0.	0.	1526.	0.	202.	1728.	-1728.	0.	0.
DEC.	5028.	67.	0.	5237.	0.	0.	0.	0.	209.	209.	-209.	0.	0.

Huai Yai

1970

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	4231.	64.	0.	4964.	0.	0.	524.	0.	209.	733.	-733.	0.	0.
FEB.	3289.	59.	0.	4173.	0.	0.	695.	0.	189.	884.	-884.	0.	0.
MAR.	2849.	61.	26.	3254.	0.	624.	780.	0.	209.	989.	-365.	0.	0.
APR.	3060.	59.	31.	2861.	0.	749.	348.	0.	202.	550.	199.	0.	0.
MAY	5035.	49.	58.	3870.	0.	2239.	65.	0.	209.	274.	1966.	0.	0.
JUN.	7120.	75.	184.	5144.	0.	7925.	908.	0.	202.	1110.	6816.	4839.	4839.
JUL.	7120.	86.	203.	7120.	116.	5538.	1674.	0.	209.	1883.	3655.	3655.	3771.
AUG.	7120.	81.	240.	7120.	159.	7535.	756.	0.	209.	965.	6570.	6570.	6729.
SEP.	7120.	75.	220.	7120.	145.	7355.	501.	0.	202.	703.	6652.	6652.	6797.
OCT.	4631.	92.	48.	7076.	0.	671.	2907.	0.	209.	3116.	-2445.	0.	0.
NOV.	2855.	58.	2.	4575.	0.	8.	1526.	0.	202.	1728.	-1720.	0.	0.
DEC.	2685.	36.	5.	2824.	0.	70.	0.	0.	209.	209.	-139.	0.	0.

1971

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	1919.	34.	0.	2651.	0.	0.	524.	0.	209.	733.	-733.	0.	0.
FEB.	1179.	27.	6.	1898.	0.	164.	695.	0.	189.	884.	-720.	0.	0.
MAR.	252.	22.	2.	1159.	0.	62.	780.	0.	209.	989.	-927.	0.	0.
APR.	991.	5.	3.	231.	0.	1310.	348.	0.	202.	550.	760.	0.	0.
MAY	5464.	16.	28.	1002.	0.	4735.	65.	0.	209.	274.	4462.	0.	0.
JUN.	4856.	82.	48.	5430.	0.	515.	908.	0.	202.	1110.	-595.	0.	0.
JUL.	4865.	59.	75.	4853.	0.	1895.	1674.	0.	209.	1883.	12.	0.	0.
AUG.	7120.	55.	117.	4926.	0.	4079.	756.	0.	209.	965.	3114.	920.	920.
SEP.	7120.	75.	117.	7120.	42.	2535.	501.	0.	202.	703.	1832.	1832.	1874.
OCT.	4243.	92.	26.	7055.	0.	304.	2907.	0.	209.	3116.	-2812.	0.	0.
NOV.	2471.	55.	1.	4191.	0.	8.	1526.	0.	202.	1728.	-1720.	0.	0.
DEC.	2240.	41.	1.	2441.	0.	8.	0.	0.	209.	209.	-201.	0.	0.

1972

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	1479.	29.	0.	2211.	0.	0.	524.	0.	209.	733.	-733.	0.	0.
FEB.	799.	21.	6.	1464.	0.	218.	695.	0.	189.	884.	-666.	0.	0.
MAR.	0.	15.	2.	786.	0.	109.	780.	0.	209.	989.	-880.	0.	0.
APR.	0.	0.	0.	0.	0.	484.	348.	0.	202.	550.	-66.	0.	0.
MAY	164.	0.	0.	0.	0.	437.	65.	0.	209.	274.	164.	0.	0.
JUN.	4611.	2.	5.	166.	0.	5554.	908.	0.	202.	1110.	4445.	0.	0.
JUL.	6252.	56.	102.	4656.	0.	3479.	1674.	0.	209.	1883.	1596.	0.	0.
AUG.	7120.	71.	161.	6342.	0.	4571.	756.	0.	209.	965.	3606.	2878.	2878.
SEP.	7120.	75.	109.	7120.	34.	2285.	501.	0.	202.	703.	1582.	1582.	1616.
OCT.	6118.	92.	104.	7120.	12.	2114.	2907.	0.	209.	3116.	-1002.	0.	12.
NOV.	4480.	77.	18.	6060.	0.	148.	1526.	0.	202.	1728.	-1580.	0.	0.
DEC.	4225.	56.	2.	4426.	0.	8.	0.	0.	209.	209.	-201.	0.	0.

1973

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	3438.	54.	0.	4171.	0.	0.	524.	0.	209.	733.	-733.	0.	0.
FEB.	2533.	48.	3.	3593.	0.	25.	695.	0.	189.	884.	-861.	0.	0.
MAR.	2229.	47.	22.	2508.	0.	710.	780.	0.	209.	989.	-279.	0.	0.
APR.	1931.	44.	11.	2194.	0.	187.	348.	0.	202.	550.	-363.	0.	0.
MAY	3370.	29.	51.	1833.	0.	1810.	65.	0.	209.	274.	1537.	0.	0.
JUN.	4418.	50.	63.	3382.	0.	2145.	908.	0.	202.	1110.	1036.	0.	0.
JUL.	5701.	54.	97.	4456.	0.	3128.	1674.	0.	209.	1883.	1245.	0.	0.
AUG.	7120.	65.	117.	5753.	0.	3073.	756.	0.	209.	965.	2108.	741.	741.
SEP.	7120.	75.	315.	7120.	240.	13853.	501.	0.	202.	703.	13150.	13150.	13390.
OCT.	4343.	92.	32.	7061.	0.	598.	2907.	0.	209.	3116.	-2718.	0.	0.
NOV.	2561.	54.	0.	4288.	0.	0.	1526.	0.	202.	1728.	-1728.	0.	0.
DEC.	2320.	52.	0.	2529.	0.	0.	0.	0.	209.	209.	-209.	0.	0.

Huai Yai

1974

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	1558.	30.	0.	2290.	0.	0.	524.	0.	209.	733.	-733.	0.	0.
FEB.	861.	22.	6.	1542.	0.	203.	695.	0.	189.	884.	-681.	0.	0.
MAR.	0.	16.	0.	846.	0.	8.	780.	0.	209.	989.	-981.	0.	0.
APR.	0.	0.	0.	0.	0.	406.	348.	0.	202.	550.	-144.	0.	0.
MAY	452.	0.	0.	0.	0.	725.	65.	0.	209.	274.	452.	0.	0.
JUN.	26.	7.	5.	449.	0.	686.	908.	0.	202.	1110.	-424.	0.	0.
JUL.	623.	0.	0.	26.	0.	2480.	1674.	0.	209.	1883.	597.	0.	0.
AUG.	2831.	7.	13.	629.	0.	3167.	756.	0.	209.	965.	2202.	0.	0.
SEP.	4229.	30.	41.	2842.	0.	2090.	501.	0.	202.	703.	1387.	0.	0.
OCT.	4099.	55.	76.	4251.	0.	2964.	2907.	0.	209.	3116.	-152.	0.	0.
NOV.	2388.	51.	6.	4054.	0.	62.	1526.	0.	202.	1728.	-1666.	0.	0.
DEC.	2149.	30.	0.	2358.	0.	0.	0.	0.	209.	209.	-209.	0.	0.

1975

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	2007.	28.	17.	2139.	0.	601.	524.	0.	209.	733.	-132.	0.	0.
FEB.	1481.	28.	12.	1991.	0.	374.	695.	0.	189.	884.	-510.	0.	0.
MAR.	2352.	29.	23.	1477.	0.	1864.	780.	0.	209.	989.	875.	0.	0.
APR.	1754.	48.	0.	2304.	0.	0.	348.	0.	202.	550.	-550.	0.	0.
MAY	4007.	28.	56.	1761.	0.	2519.	65.	0.	209.	274.	2246.	0.	0.
JUN.	3773.	60.	47.	3994.	0.	889.	908.	0.	202.	1110.	-221.	0.	0.
JUL.	5846.	46.	60.	3787.	0.	1942.	1674.	0.	209.	1883.	59.	0.	0.
AUG.	7120.	44.	109.	3912.	0.	5538.	756.	0.	209.	965.	4573.	1365.	1365.
SEP.	7120.	75.	178.	7120.	103.	5093.	501.	0.	202.	703.	4390.	4390.	4493.
OCT.	6055.	92.	102.	7120.	11.	2051.	2907.	0.	209.	3116.	-1065.	0.	11.
NOV.	4288.	76.	5.	5984.	0.	31.	1526.	0.	202.	1728.	-1697.	0.	0.
DEC.	4025.	54.	0.	4234.	0.	0.	0.	0.	209.	209.	-209.	0.	0.

Huai Yai

1976

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	3241.	52.	0.	3973.	0.	0.	524.	0.	209.	733.	-733.	0.	0.
FEB.	2421.	45.	7.	3203.	0.	101.	695.	0.	189.	884.	-783.	0.	0.
MAR.	1687.	45.	12.	2387.	0.	289.	780.	0.	209.	989.	-700.	0.	0.
APR.	1290.	35.	8.	1661.	0.	179.	548.	0.	202.	550.	-371.	0.	0.
MAY	6699.	21.	40.	1309.	0.	5663.	65.	0.	209.	274.	5390.	0.	0.
JUN.	6953.	100.	99.	6697.	0.	1365.	908.	0.	202.	1110.	256.	0.	0.
JUL.	7120.	84.	219.	7088.	0.	6692.	1674.	0.	209.	1883.	4809.	4777.	4777.
AUG.	7120.	81.	285.	7120.	204.	10413.	756.	0.	209.	965.	9448.	9448.	9652.
SEP.	7120.	75.	294.	7120.	218.	12215.	501.	0.	202.	703.	11512.	11512.	11730.
OCT.	7120.	92.	165.	7120.	73.	4485.	2907.	0.	209.	3116.	1369.	1369.	1442.
NOV.	5470.	89.	16.	7047.	0.	101.	1526.	0.	202.	1728.	-1627.	0.	0.
DEC.	5143.	68.	0.	5552.	0.	0.	0.	0.	209.	209.	-209.	0.	0.

1977

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	4345.	66.	0.	5077.	0.	0.	524.	0.	209.	733.	-733.	0.	0.
FEB.	3401.	60.	0.	4284.	0.	0.	695.	0.	189.	884.	-884.	0.	0.
MAR.	2358.	63.	1.	3339.	0.	8.	780.	0.	209.	989.	-981.	0.	0.
APR.	1950.	48.	12.	2321.	0.	179.	348.	0.	202.	550.	-371.	0.	0.
MAY	6495.	51.	42.	1961.	0.	2808.	65.	0.	209.	274.	2535.	0.	0.
JUN.	4710.	67.	65.	4494.	0.	1326.	908.	0.	202.	1110.	217.	0.	0.
JUL.	5217.	57.	84.	4737.	0.	2363.	1674.	0.	209.	1883.	480.	0.	0.
AUG.	7120.	59.	116.	5273.	0.	3541.	756.	0.	209.	965.	2576.	729.	729.
SEP.	7120.	75.	160.	7120.	104.	5171.	501.	0.	202.	703.	4468.	4468.	4572.
OCT.	5566.	92.	86.	7114.	0.	1568.	2907.	0.	209.	3116.	-1548.	0.	0.
NOV.	3769.	70.	0.	5497.	0.	0.	1526.	0.	202.	1728.	-1728.	0.	0.
DEC.	3522.	48.	9.	3750.	0.	101.	0.	0.	209.	209.	-108.	0.	0.

Huai Yai

1978

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	2845.	44.	0.	3576.	0.	0.	524.	0.	209.	733.	-733.	0.	0.
FEB.	1929.	40.	1.	2805.	0.	8.	695.	0.	189.	884.	-876.	0.	0.
MAR.	1218.	36.	10.	1903.	0.	304.	780.	0.	209.	989.	-685.	0.	0.
APR.	643.	25.	0.	1193.	0.	0.	348.	0.	202.	550.	-550.	0.	0.
MAY	359.	10.	0.	633.	0.	0.	65.	0.	209.	274.	-274.	0.	0.
JUN.	0.	5.	0.	554.	0.	0.	908.	0.	202.	1110.	-1110.	0.	0.
JUL.	0.	0.	0.	0.	0.	0.	1674.	0.	209.	1883.	-1883.	0.	0.
AUG.	0.	0.	0.	0.	0.	0.	756.	0.	209.	965.	-965.	0.	0.
SEP.	0.	0.	0.	0.	0.	0.	501.	0.	202.	703.	-703.	0.	0.
OCT.	0.	0.	0.	0.	0.	0.	2907.	0.	209.	3116.	-3116.	0.	0.
NOV.	0.	0.	0.	0.	0.	0.	1526.	0.	202.	1728.	-1728.	0.	0.
DEC.	0.	0.	0.	0.	0.	0.	0.	0.	209.	209.	-209.	0.	0.

Table 4.2 Calculation Sheet of Operation Study

(4) Khlong Chaliang Lab Reservoir

1952

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	0.	0.	0.	0.	0.	0.	80.	0.	206.	286.	-286.	0.	0.
FEB.	0.	0.	0.	0.	0.	0.	106.	0.	186.	292.	-292.	0.	0.
MAR.	0.	0.	0.	0.	0.	0.	120.	0.	206.	326.	-326.	0.	0.
APR.	0.	0.	0.	0.	0.	54.	53.	0.	200.	253.	-199.	0.	0.
MAY	1530.	0.	0.	0.	0.	3919.	10.	0.	206.	216.	3703.	2173.	2173.
JUN.	1530.	35.	74.	1530.	39.	5914.	139.	0.	200.	339.	5575.	5575.	5614.
JUL.	1530.	28.	24.	1526.	0.	924.	257.	0.	206.	463.	461.	457.	457.
AUG.	1530.	26.	53.	1530.	27.	3696.	116.	0.	206.	322.	3374.	3374.	3401.
SEP.	1530.	25.	40.	1530.	15.	2687.	77.	0.	200.	277.	2410.	2410.	2425.
OCT.	1530.	30.	22.	1522.	0.	1055.	446.	0.	206.	652.	403.	395.	395.
NOV.	1076.	29.	1.	1502.	0.	8.	234.	0.	200.	434.	-426.	0.	0.
DEC.	849.	21.	0.	1055.	0.	0.	0.	0.	206.	206.	-206.	0.	0.

1953

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	681.	16.	4.	656.	0.	131.	80.	0.	206.	286.	-155.	0.	0.
FEB.	1309.	14.	11.	677.	0.	924.	106.	0.	186.	292.	632.	0.	0.
MAR.	1177.	37.	8.	1280.	0.	223.	120.	0.	206.	326.	-103.	0.	0.
APR.	1530.	37.	22.	1165.	0.	978.	53.	0.	200.	255.	725.	358.	358.
MAY	1530.	37.	30.	1523.	0.	1047.	10.	0.	206.	216.	831.	824.	824.
JUN.	1530.	35.	55.	1530.	20.	3303.	139.	0.	200.	339.	2964.	2964.	2984.
JUL.	1530.	28.	54.	1530.	25.	3727.	257.	0.	206.	463.	3264.	3264.	3290.
AUG.	1530.	26.	24.	1527.	0.	924.	116.	0.	206.	322.	602.	599.	599.
SEP.	1530.	25.	50.	1530.	25.	3912.	77.	0.	200.	277.	3635.	3635.	3661.
OCT.	1530.	30.	35.	1530.	5.	2233.	446.	0.	206.	652.	1581.	1581.	1587.
NOV.	1228.	29.	7.	1508.	0.	154.	234.	0.	200.	434.	-280.	0.	0.
DEC.	999.	24.	0.	1205.	0.	0.	0.	0.	206.	206.	-206.	0.	0.

Khlong Chaliang Lab

1954

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	693.	19.	0.	980.	0.	0.	80.	0.	206.	286.	-286.	0.	0.
FEB.	386.	15.	0.	679.	0.	0.	106.	0.	186.	292.	-292.	0.	0.
MAR.	369.	11.	3.	578.	0.	316.	120.	0.	206.	326.	-10.	0.	0.
APR.	191.	11.	2.	359.	0.	85.	53.	0.	200.	253.	-168.	0.	0.
MAY	1530.	5.	8.	195.	0.	4982.	10.	0.	206.	216.	4766.	3431.	3431.
JUN.	1530.	35.	44.	1530.	10.	2225.	139.	0.	200.	339.	1886.	1886.	1896.
JUL.	1530.	28.	20.	1522.	0.	685.	257.	0.	206.	463.	222.	214.	214.
AUG.	1530.	26.	108.	1530.	82.	13668.	116.	0.	206.	322.	13346.	13346.	13428.
SEP.	1530.	25.	100.	1530.	76.	13121.	77.	0.	200.	277.	12844.	12844.	12920.
OCT.	1530.	30.	25.	1525.	0.	1332.	446.	0.	206.	652.	680.	676.	676.
NOV.	1172.	29.	5.	1506.	0.	100.	234.	0.	200.	434.	-334.	0.	0.
DEC.	944.	22.	0.	1150.	0.	0.	0.	0.	206.	206.	-206.	0.	0.

1955

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	639.	16.	0.	926.	0.	0.	80.	0.	206.	286.	-286.	0.	0.
FEB.	389.	14.	1.	627.	0.	54.	106.	0.	186.	292.	-238.	0.	0.
MAR.	495.	11.	4.	382.	0.	439.	120.	0.	206.	326.	113.	0.	0.
APR.	764.	15.	7.	486.	0.	531.	53.	0.	200.	253.	278.	0.	0.
MAY	1367.	19.	13.	759.	0.	824.	10.	0.	206.	216.	608.	0.	0.
JUN.	1530.	31.	31.	1367.	0.	1409.	139.	0.	200.	339.	1070.	907.	907.
JUL.	1530.	28.	24.	1526.	0.	955.	257.	0.	206.	463.	492.	488.	488.
AUG.	1530.	26.	40.	1530.	13.	2164.	116.	0.	206.	322.	1842.	1842.	1855.
SEP.	1530.	25.	90.	1530.	65.	10695.	77.	0.	200.	277.	10418.	10418.	10483.
OCT.	992.	30.	5.	1505.	0.	139.	446.	0.	206.	652.	-513.	0.	0.
NOV.	539.	19.	0.	975.	0.	0.	234.	0.	200.	434.	-434.	0.	0.
DEC.	323.	10.	0.	529.	0.	0.	0.	0.	206.	206.	-206.	0.	0.

Khlong Chaliang Lab

1956

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	50.	6.	0.	517.	0.	0.	80.	0.	206.	286.	-286.	0.	0.
FEB.	30.	1.	0.	30.	0.	293.	106.	0.	186.	292.	1.	0.	0.
MAR.	0.	1.	0.	30.	0.	8.	120.	0.	206.	326.	-318.	0.	0.
APR.	0.	0.	0.	0.	0.	193.	53.	0.	200.	253.	-60.	0.	0.
MAY	1530.	0.	0.	0.	0.	2510.	10.	0.	206.	216.	2294.	764.	764.
JUN.	1530.	55.	44.	1530.	9.	2164.	139.	0.	200.	339.	1825.	1825.	1834.
JUL.	1530.	28.	68.	1530.	40.	5767.	257.	0.	206.	463.	5304.	5304.	5344.
AUG.	1530.	26.	48.	1530.	21.	3042.	116.	0.	206.	322.	2720.	2720.	2742.
SEP.	1530.	25.	90.	1530.	66.	10857.	77.	0.	200.	277.	10580.	10580.	10646.
OCT.	1530.	30.	16.	1516.	0.	701.	446.	0.	206.	652.	49.	36.	36.
NOV.	1076.	29.	1.	1502.	0.	8.	234.	0.	200.	434.	-426.	0.	0.
DEC.	849.	21.	0.	1055.	0.	0.	0.	0.	206.	206.	-206.	0.	0.

1957

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIPE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	546.	17.	0.	833.	0.	0.	80.	0.	206.	286.	-286.	0.	0.
FEB.	313.	12.	1.	536.	0.	69.	106.	0.	186.	292.	-223.	0.	0.
MAR.	1530.	9.	8.	312.	0.	2102.	120.	0.	206.	326.	1776.	558.	558.
APR.	1530.	48.	23.	1505.	0.	631.	53.	0.	200.	253.	378.	353.	353.
MAY	1530.	37.	28.	1521.	0.	947.	10.	0.	206.	216.	731.	722.	722.
JUN.	1530.	35.	45.	1530.	10.	2248.	139.	0.	200.	339.	1909.	1909.	1919.
JUL.	1530.	28.	50.	1530.	2.	1340.	257.	0.	206.	463.	877.	877.	879.
AUG.	1530.	26.	67.	1530.	40.	5544.	116.	0.	206.	322.	5222.	5222.	5262.
SEP.	1530.	29.	71.	1530.	46.	6992.	77.	0.	200.	277.	6715.	6715.	6761.
OCT.	1530.	30.	35.	1530.	5.	2164.	446.	0.	206.	652.	1512.	1512.	1517.
NOV.	1067.	29.	0.	1501.	0.	0.	234.	0.	200.	434.	-434.	0.	0.
DEC.	841.	20.	0.	1047.	0.	0.	0.	0.	206.	206.	-206.	0.	0.

Khlong Chaliang Lab

1958

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	1530.	16.	18.	842.	0.	1494.	80.	0.	206.	286.	1208.	520.	520.
FEB.	1366.	32.	7.	1505.	0.	154.	106.	0.	186.	292.	-138.	0.	0.
MAR.	1384.	39.	12.	1340.	0.	570.	120.	0.	206.	326.	44.	0.	0.
APR.	1267.	43.	10.	1352.	0.	169.	53.	0.	200.	253.	-84.	0.	0.
MAY	1530.	31.	22.	1259.	0.	847.	10.	0.	206.	216.	631.	360.	360.
JUN.	1530.	35.	48.	1530.	14.	7033.	139.	0.	200.	339.	2294.	2294.	2308.
JUL.	1530.	28.	79.	1530.	51.	7638.	257.	0.	206.	463.	7175.	7175.	7226.
AUG.	1530.	26.	58.	1530.	31.	4281.	116.	0.	206.	322.	3959.	3959.	3990.
SEP.	1530.	25.	65.	1530.	40.	6075.	77.	0.	200.	277.	5798.	5798.	5839.
OCT.	1530.	30.	17.	1517.	0.	755.	446.	0.	206.	652.	103.	90.	90.
NOV.	1067.	29.	0.	1501.	0.	0.	234.	0.	200.	434.	-434.	0.	0.
DEC.	841.	20.	0.	1047.	0.	0.	0.	0.	206.	206.	-206.	0.	0.

1959

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	538.	16.	0.	824.	0.	0.	80.	0.	206.	286.	-286.	0.	0.
FEB.	484.	11.	4.	530.	0.	246.	106.	0.	186.	292.	-46.	0.	0.
MAR.	1091.	14.	8.	478.	0.	939.	120.	0.	206.	326.	613.	0.	0.
APR.	1530.	34.	18.	1076.	0.	785.	53.	0.	200.	253.	532.	77.	77.
MAY	1530.	37.	74.	1550.	57.	6037.	10.	0.	206.	216.	5821.	5821.	5858.
JUN.	1530.	35.	34.	1529.	0.	1324.	139.	0.	200.	339.	985.	984.	984.
JUL.	1530.	28.	68.	1530.	40.	5798.	257.	0.	206.	463.	5335.	5335.	5375.
AUG.	1530.	26.	34.	1550.	7.	1632.	116.	0.	206.	322.	1310.	1310.	1317.
SEP.	1530.	25.	137.	1530.	113.	23154.	77.	0.	200.	277.	22877.	22877.	22990.
OCT.	1252.	30.	11.	1511.	0.	393.	446.	0.	206.	652.	-259.	0.	0.
NOV.	954.	24.	6.	1234.	0.	154.	234.	0.	200.	434.	-280.	0.	0.
DEC.	730.	18.	0.	936.	0.	0.	0.	0.	206.	206.	-206.	0.	0.

Khlong Chaliang Lab

1960

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	438.	14.	0.	716.	0.	8.	80.	0.	206.	286.	-278.	0.	0.
FEB.	136.	9.	0.	429.	0.	0.	106.	0.	186.	292.	-292.	0.	0.
MAR.	170.	4.	1.	134.	0.	362.	120.	0.	206.	326.	36.	0.	0.
APR.	0.	5.	0.	165.	0.	15.	53.	0.	200.	253.	-238.	0.	0.
MAY	1550.	0.	0.	0.	0.	1856.	10.	0.	206.	216.	1640.	110.	110.
JUN.	1530.	35.	20.	1515.	0.	477.	139.	0.	200.	339.	138.	123.	123.
JUL.	1530.	28.	42.	1530.	14.	2395.	257.	0.	206.	463.	1932.	1932.	1946.
AUG.	1530.	26.	58.	1530.	32.	4312.	116.	0.	206.	322.	3990.	3990.	4022.
SEP.	1530.	25.	33.	1550.	8.	1971.	77.	0.	200.	277.	1694.	1694.	1702.
OCT.	1530.	30.	34.	1530.	4.	2087.	446.	0.	206.	652.	1435.	1435.	1439.
NOV.	1109.	29.	3.	1504.	0.	39.	234.	0.	200.	434.	-395.	0.	0.
DEC.	881.	21.	0.	1087.	0.	0.	0.	0.	206.	206.	-206.	0.	0.

1961

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	618.	17.	1.	866.	0.	39.	80.	0.	206.	286.	-247.	0.	0.
FEB.	462.	13.	3.	608.	0.	146.	106.	0.	186.	292.	-146.	0.	0.
MAR.	326.	13.	3.	451.	0.	200.	120.	0.	206.	326.	-126.	0.	0.
APR.	528.	10.	4.	320.	0.	462.	53.	0.	200.	253.	209.	0.	0.
MAY	1530.	13.	21.	537.	0.	4135.	10.	0.	206.	216.	3919.	2926.	2926.
JUN.	1550.	35.	55.	1550.	20.	3357.	139.	0.	200.	339.	3018.	3018.	3038.
JUL.	1530.	28.	78.	1550.	50.	7400.	257.	0.	206.	463.	6937.	6937.	6987.
AUG.	1530.	26.	75.	1530.	49.	6938.	116.	0.	206.	322.	6616.	6616.	6665.
SEP.	1530.	25.	47.	1530.	23.	3573.	77.	0.	200.	277.	3296.	3296.	3319.
OCT.	1530.	30.	21.	1521.	0.	993.	446.	0.	206.	652.	341.	332.	332.
NOV.	1067.	29.	0.	1501.	0.	0.	234.	0.	200.	434.	-434.	0.	0.
DEC.	841.	20.	0.	1047.	0.	0.	0.	0.	206.	206.	-206.	0.	0.

Khlong Chaliang Lab

1962

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	570.	16.	1.	825.	0.	31.	80.	0.	206.	286.	-255.	0.	0.
FEB.	266.	12.	0.	558.	0.	0.	106.	0.	186.	292.	-292.	0.	0.
MAR.	65.	7.	1.	259.	0.	131.	120.	0.	206.	326.	-195.	0.	0.
APR.	1505.	2.	2.	64.	0.	1694.	53.	0.	200.	253.	1441.	0.	0.
MAY	1530.	37.	38.	1506.	0.	1694.	10.	0.	206.	216.	1478.	1454.	1454.
JUN.	1530.	35.	19.	1514.	0.	454.	139.	0.	200.	339.	115.	99.	99.
JUL.	1530.	28.	59.	1530.	31.	4443.	257.	0.	206.	463.	3980.	3980.	4011.
AUG.	1530.	26.	77.	1530.	51.	7223.	116.	0.	206.	322.	6901.	6901.	6952.
SEP.	1530.	25.	86.	1530.	61.	9871.	77.	0.	200.	277.	9594.	9594.	9655.
OCT.	1530.	30.	17.	1517.	0.	732.	446.	0.	206.	652.	80.	67.	67.
NOV.	1220.	29.	7.	1508.	0.	146.	234.	0.	200.	434.	-288.	0.	0.
DEC.	999.	23.	1.	1197.	0.	8.	0.	0.	206.	206.	-198.	0.	0.

1963

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	694.	19.	0.	980.	0.	0.	80.	0.	206.	286.	-286.	0.	0.
FEB.	419.	15.	1.	680.	0.	31.	106.	0.	186.	292.	-261.	0.	0.
MAR.	424.	12.	3.	410.	0.	339.	120.	0.	206.	326.	13.	0.	0.
APR.	1530.	15.	12.	423.	0.	2187.	55.	0.	200.	253.	1934.	826.	826.
MAY	1530.	37.	44.	1530.	7.	2202.	10.	0.	206.	216.	1986.	1986.	1993.
JUN.	1530.	35.	49.	1530.	15.	2734.	159.	0.	200.	339.	2395.	2395.	2410.
JUL.	1530.	28.	90.	1530.	62.	9694.	257.	0.	206.	463.	9231.	9231.	9293.
AUG.	1530.	26.	106.	1530.	80.	13229.	116.	0.	206.	322.	12907.	12907.	12987.
SEP.	1530.	25.	86.	1530.	61.	9910.	77.	0.	200.	277.	9633.	9633.	9694.
OCT.	1530.	30.	80.	1530.	50.	8724.	446.	0.	206.	652.	8072.	8072.	8122.
NOV.	1530.	29.	20.	1521.	0.	670.	234.	0.	200.	434.	236.	227.	227.
DEC.	1417.	29.	6.	1507.	0.	116.	0.	0.	206.	206.	-90.	0.	0.

Khlong Chaliang Lab

1964

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	1103.	29.	0.	1549.	0.	0.	80.	0.	206.	286.	-286.	0.	0.
FEB.	787.	23.	0.	1080.	0.	0.	106.	0.	186.	292.	-292.	0.	0.
MAR.	511.	22.	2.	767.	0.	69.	120.	0.	206.	326.	-257.	0.	0.
APR.	531.	16.	5.	500.	0.	285.	53.	0.	200.	253.	32.	0.	0.
MAY	1530.	13.	31.	549.	0.	8424.	10.	0.	206.	216.	8208.	7227.	7227.
JUN.	1530.	55.	49.	1530.	14.	2641.	139.	0.	200.	339.	2302.	2302.	2316.
JUL.	1530.	29.	62.	1530.	34.	4366.	257.	0.	206.	463.	3903.	3903.	3937.
AUG.	1530.	24.	88.	1530.	61.	9178.	116.	0.	206.	322.	8856.	8856.	8917.
SEP.	1530.	25.	114.	1530.	89.	16455.	77.	0.	200.	277.	16178.	16178.	16268.
OCT.	1530.	30.	38.	1530.	8.	2526.	446.	0.	206.	652.	1874.	1874.	1883.
NOV.	1135.	29.	4.	1505.	0.	62.	234.	0.	200.	434.	-372.	0.	0.
DEC.	914.	22.	0.	1112.	0.	8.	0.	0.	206.	206.	-198.	0.	0.

1965

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	609.	18.	0.	896.	0.	0.	80.	0.	206.	286.	-286.	0.	0.
FEB.	476.	15.	3.	600.	0.	169.	106.	0.	186.	292.	-123.	0.	0.
MAR.	1255.	13.	8.	471.	0.	1109.	120.	0.	206.	326.	783.	0.	0.
APR.	1519.	59.	17.	1235.	0.	539.	53.	0.	200.	253.	286.	0.	0.
MAY	1530.	37.	26.	1507.	0.	801.	10.	0.	206.	216.	585.	562.	562.
JUN.	1530.	35.	70.	1530.	36.	5405.	139.	0.	200.	339.	5066.	5066.	5101.
JUL.	1530.	28.	51.	1530.	3.	1409.	257.	0.	206.	463.	946.	946.	949.
AUG.	1530.	26.	79.	1530.	53.	7608.	116.	0.	206.	322.	7286.	7286.	7339.
SEP.	1530.	25.	73.	1530.	48.	7400.	77.	0.	200.	277.	7123.	7123.	7171.
OCT.	1299.	30.	12.	1512.	0.	439.	446.	0.	206.	652.	-213.	0.	0.
NOV.	961.	25.	5.	1279.	0.	116.	234.	0.	200.	434.	-318.	0.	0.
DEC.	754.	18.	1.	944.	0.	15.	0.	0.	206.	206.	-191.	0.	0.

Khlong Chaliang Lab

1966

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	499.	15.	1.	740.	0.	46.	80.	0.	206.	286.	-240.	0.	0.
FEB.	267.	11.	1.	490.	0.	69.	106.	0.	186.	292.	-223.	0.	0.
MAR.	11.	8.	1.	260.	0.	77.	120.	0.	206.	326.	-249.	0.	0.
APR.	12.	0.	0.	11.	0.	754.	53.	0.	200.	253.	1.	0.	0.
MAY	1530.	0.	1.	12.	0.	4851.	10.	0.	206.	216.	4635.	3117.	3117.
JUN.	1530.	35.	26.	1521.	0.	778.	139.	0.	200.	339.	439.	430.	430.
JUL.	1530.	28.	83.	1530.	55.	8355.	257.	0.	206.	463.	7892.	7892.	7947.
AUG.	1530.	26.	81.	1530.	54.	7893.	116.	0.	206.	322.	7571.	7571.	7625.
SEP.	1530.	25.	36.	1530.	12.	2333.	77.	0.	200.	277.	2056.	2056.	2068.
OCT.	1530.	30.	33.	1530.	3.	2002.	446.	0.	206.	652.	1350.	1350.	1353.
NOV.	1260.	29.	8.	1509.	0.	185.	234.	0.	200.	434.	-249.	0.	0.
DEC.	1087.	24.	3.	1269.	0.	54.	0.	0.	206.	206.	-152.	0.	0.

1967

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	780.	21.	0.	1066.	0.	0.	80.	0.	206.	286.	-286.	0.	0.
FEB.	494.	16.	1.	764.	0.	23.	106.	0.	186.	292.	-269.	0.	0.
MAR.	155.	14.	0.	481.	0.	0.	120.	0.	206.	326.	-326.	0.	0.
APR.	1530.	5.	6.	156.	0.	3642.	53.	0.	200.	253.	3389.	2015.	2015.
MAY	1530.	37.	62.	1530.	25.	4277.	10.	0.	206.	216.	4011.	4011.	4036.
JUN.	1530.	35.	23.	1519.	0.	639.	139.	0.	200.	339.	300.	288.	288.
JUL.	1530.	28.	47.	1530.	19.	2957.	257.	0.	206.	463.	2494.	2494.	2513.
AUG.	1530.	26.	46.	1530.	20.	2857.	116.	0.	206.	322.	2535.	2535.	2555.
SEP.	1530.	25.	70.	1530.	44.	6976.	77.	0.	200.	277.	6699.	6699.	6745.
OCT.	1016.	30.	5.	1505.	0.	162.	446.	0.	206.	652.	-490.	0.	0.
NOV.	658.	19.	5.	1000.	0.	92.	234.	0.	200.	434.	-342.	0.	0.
DEC.	439.	15.	0.	645.	0.	0.	0.	0.	206.	206.	-206.	0.	0.

Khlong Chaliang Lab

1968

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	144.	9.	0.	431.	0.	0.	80.	0.	206.	286.	-286.	0.	0.
FEB.	0.	5.	0.	142.	0.	54.	106.	0.	186.	292.	-238.	0.	0.
MAR.	0.	0.	0.	0.	0.	108.	120.	0.	206.	326.	-218.	0.	0.
APR.	1156.	0.	0.	0.	0.	1409.	53.	0.	200.	253.	1156.	0.	0.
MAY	1530.	28.	43.	1170.	0.	3534.	10.	0.	206.	216.	3318.	2958.	2958.
JUN.	1530.	35.	42.	1530.	7.	1956.	139.	0.	200.	339.	1617.	1617.	1624.
JUL.	1530.	28.	67.	1530.	59.	5552.	257.	0.	206.	463.	5089.	5089.	5128.
AUG.	1530.	26.	17.	1521.	0.	547.	116.	0.	206.	322.	225.	216.	216.
SEP.	1530.	25.	55.	1530.	31.	4651.	77.	0.	200.	277.	4374.	4374.	4405.
OCT.	1530.	30.	19.	1519.	0.	886.	446.	0.	206.	652.	234.	224.	224.
NOV.	1181.	29.	6.	1506.	0.	108.	234.	0.	200.	434.	-326.	0.	0.
DEC.	952.	23.	0.	1158.	0.	0.	0.	0.	206.	206.	-206.	0.	0.

1969

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	1384.	18.	13.	946.	0.	724.	80.	0.	206.	286.	438.	0.	0.
FEB.	1062.	29.	0.	1355.	0.	0.	106.	0.	186.	292.	-292.	0.	0.
MAR.	874.	30.	5.	1058.	0.	162.	120.	0.	206.	326.	-164.	0.	0.
APR.	1012.	27.	10.	857.	0.	408.	53.	0.	200.	253.	155.	0.	0.
MAY	1530.	25.	19.	1006.	0.	955.	10.	0.	206.	216.	739.	215.	215.
JUN.	1530.	35.	45.	1530.	10.	2272.	139.	0.	200.	339.	1933.	1933.	1943.
JUL.	1530.	28.	38.	1530.	10.	2048.	257.	0.	206.	463.	1585.	1585.	1595.
AUG.	1530.	26.	51.	1530.	25.	3450.	116.	0.	206.	322.	3128.	3128.	3155.
SEP.	1530.	25.	87.	1530.	62.	10156.	77.	0.	200.	277.	9879.	9879.	9942.
OCT.	1530.	30.	56.	1530.	26.	4682.	446.	0.	206.	652.	4050.	4030.	4056.
NOV.	1067.	29.	0.	1501.	0.	0.	234.	0.	200.	434.	-434.	0.	0.
DEC.	841.	20.	0.	1047.	0.	0.	0.	0.	206.	206.	-206.	0.	0.

Khlong Chaliang Lab

1970

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	538.	16.	0.	824.	0.	0.	80.	0.	206.	286.	-286.	0.	0.
FEB.	234.	11.	0.	527.	0.	0.	106.	0.	186.	292.	-292.	0.	0.
MAR.	521.	7.	3.	251.	0.	616.	120.	0.	206.	326.	290.	0.	0.
APR.	999.	16.	9.	513.	0.	739.	53.	0.	200.	253.	486.	0.	0.
MAY	1530.	24.	29.	1004.	0.	2210.	10.	0.	206.	216.	1994.	1468.	1468.
JUN.	1530.	35.	85.	1530.	50.	7823.	139.	0.	200.	339.	7484.	7484.	7534.
JUL.	1530.	28.	66.	1530.	38.	5467.	257.	0.	206.	463.	5004.	5004.	5042.
AUG.	1530.	26.	78.	1530.	52.	7438.	116.	0.	206.	322.	7116.	7116.	7168.
SEP.	1530.	25.	72.	1530.	47.	7261.	77.	0.	200.	277.	6984.	6984.	7032.
OCT.	1526.	30.	16.	1516.	0.	662.	446.	0.	206.	652.	10.	0.	0.
NOV.	1072.	29.	1.	1498.	0.	8.	234.	0.	200.	434.	-426.	0.	0.
DEC.	917.	21.	3.	1054.	0.	69.	0.	0.	206.	206.	-137.	0.	0.

1971

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	613.	18.	0.	900.	0.	0.	80.	0.	206.	286.	-286.	0.	0.
FEB.	473.	13.	3.	603.	0.	162.	106.	0.	186.	292.	-130.	0.	0.
MAR.	197.	13.	1.	461.	0.	62.	120.	0.	206.	326.	-264.	0.	0.
APR.	1236.	6.	4.	195.	0.	1294.	53.	0.	200.	253.	1041.	0.	0.
MAY	1530.	30.	53.	1259.	0.	4674.	10.	0.	206.	216.	4458.	4187.	4187.
JUN.	1530.	35.	20.	1516.	0.	508.	139.	0.	200.	339.	169.	155.	155.
JUL.	1530.	28.	36.	1530.	8.	1871.	257.	0.	206.	463.	1408.	1408.	1416.
AUG.	1530.	26.	56.	1530.	29.	4027.	116.	0.	206.	322.	3705.	3705.	3735.
SEP.	1530.	25.	38.	1530.	14.	2503.	77.	0.	200.	277.	2226.	2226.	2240.
OCT.	1157.	30.	9.	1509.	0.	300.	446.	0.	206.	652.	-352.	0.	0.
NOV.	710.	22.	1.	1135.	0.	8.	234.	0.	200.	434.	-426.	0.	0.
DEC.	498.	14.	0.	696.	0.	4.	0.	0.	206.	206.	-198.	0.	0.

Khlong Chaliang Lab

1972

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	202.	10.	0.	489.	0.	0.	80.	0.	206.	286.	-286.	0.	0.
FEB.	123.	4.	1.	199.	0.	216.	106.	0.	186.	292.	-76.	0.	0.
MAR.	0.	3.	0.	120.	0.	108.	120.	0.	206.	326.	-218.	0.	0.
APR.	224.	0.	0.	0.	0.	477.	53.	0.	200.	253.	224.	0.	0.
MAY	436.	5.	3.	221.	0.	431.	10.	0.	206.	216.	215.	0.	0.
JUN.	1530.	10.	20.	446.	0.	5482.	139.	0.	200.	339.	5143.	4059.	4059.
JUL.	1530.	28.	51.	1530.	23.	3434.	257.	0.	206.	463.	2971.	2971.	2994.
AUG.	1530.	26.	60.	1530.	33.	4512.	116.	0.	206.	322.	4190.	4190.	4223.
SEP.	1530.	25.	36.	1530.	11.	2256.	77.	0.	200.	277.	1979.	1979.	1990.
OCT.	1530.	30.	54.	1530.	4.	2087.	446.	0.	206.	652.	1435.	1435.	1439.
NOV.	1220.	29.	7.	1508.	0.	146.	234.	0.	200.	434.	-288.	0.	0.
DEC.	999.	23.	1.	1197.	0.	8.	0.	0.	206.	206.	-198.	0.	0.

1973

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	694.	19.	0.	980.	0.	0.	80.	0.	206.	286.	-286.	0.	0.
FEB.	410.	15.	1.	680.	0.	23.	106.	0.	186.	292.	-769.	0.	0.
MAR.	780.	12.	5.	404.	0.	701.	120.	0.	206.	326.	375.	0.	0.
APR.	693.	24.	6.	761.	0.	185.	53.	0.	200.	253.	-68.	0.	0.
MAY	1530.	17.	18.	694.	0.	1786.	10.	0.	206.	216.	1570.	734.	734.
JUN.	1530.	35.	43.	1530.	9.	2118.	139.	0.	200.	339.	1779.	1779.	1787.
JUL.	1530.	28.	48.	1530.	20.	3088.	257.	0.	206.	463.	2625.	2625.	2645.
AUG.	1530.	26.	48.	1530.	21.	3034.	116.	0.	206.	322.	2712.	2712.	2733.
SEP.	1530.	25.	103.	1530.	78.	13675.	77.	0.	200.	277.	13398.	13398.	13476.
OCT.	1252.	30.	11.	1511.	0.	393.	446.	0.	206.	652.	-259.	0.	0.
NOV.	794.	24.	0.	1228.	0.	0.	234.	0.	200.	434.	-434.	0.	0.
DEC.	573.	15.	0.	779.	0.	0.	0.	0.	206.	206.	-206.	0.	0.

Khlong Chaliang Lab

1974

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	276.	11.	0.	562.	0.	0.	80.	0.	206.	286.	-286.	0.	0.
FEB.	179.	6.	2.	271.	0.	200.	106.	0.	186.	292.	-92.	0.	0.
MAR.	0.	5.	0.	174.	0.	8.	120.	0.	206.	326.	-318.	0.	0.
APR.	147.	0.	0.	0.	0.	400.	53.	0.	200.	253.	147.	0.	0.
MAY	646.	4.	2.	145.	0.	716.	10.	0.	206.	216.	500.	0.	0.
JUN.	980.	15.	10.	641.	0.	678.	139.	0.	200.	339.	339.	0.	0.
JUL.	1530.	18.	27.	989.	0.	2449.	257.	0.	206.	463.	1986.	1445.	1445.
AUG.	1530.	26.	49.	1530.	22.	3126.	116.	0.	206.	322.	2804.	2804.	2826.
SEP.	1530.	25.	34.	1530.	9.	2064.	77.	0.	200.	277.	1787.	1787.	1796.
OCT.	1530.	30.	42.	1530.	12.	2926.	446.	0.	206.	652.	2274.	2274.	2286.
NOV.	1133.	29.	4.	1504.	0.	62.	234.	0.	200.	434.	-372.	0.	0.
DEC.	905.	22.	0.	1111.	0.	0.	0.	0.	206.	206.	-206.	0.	0.

1975

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	1205.	18.	11.	898.	0.	593.	80.	0.	206.	286.	307.	0.	0.
FEB.	1268.	25.	11.	1190.	0.	370.	106.	0.	186.	292.	78.	0.	0.
MAR.	1530.	36.	30.	1762.	0.	1840.	120.	0.	206.	326.	1514.	1246.	1246.
APR.	1279.	48.	0.	1483.	0.	0.	53.	0.	200.	253.	-253.	0.	0.
MAY	1530.	30.	38.	1737.	0.	2487.	10.	0.	206.	216.	2271.	1978.	1978.
JUN.	1530.	55.	27.	1523.	0.	878.	139.	0.	200.	339.	539.	531.	531.
JUL.	1530.	28.	37.	1530.	9.	1917.	257.	0.	206.	463.	1454.	1454.	1463.
AUG.	1530.	26.	66.	1530.	40.	5467.	116.	0.	206.	322.	5145.	5145.	5185.
SEP.	1530.	25.	58.	1530.	34.	5028.	77.	0.	200.	277.	4751.	4751.	4785.
OCT.	1530.	30.	53.	1530.	3.	2025.	446.	0.	206.	652.	1373.	1373.	1377.
NOV.	1100.	29.	2.	1503.	0.	31.	234.	0.	200.	434.	-403.	0.	0.
DEC.	873.	21.	0.	1079.	0.	0.	0.	0.	206.	206.	-206.	0.	0.

Khlong Chaliang Lab

1976

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	570.	17.	0.	856.	0.	0.	80.	0.	206.	286.	-286.	0.	0.
FEB.	367.	12.	2.	560.	0.	100.	106.	0.	186.	292.	-192.	0.	0.
MAR.	319.	10.	3.	359.	0.	285.	120.	0.	206.	326.	-41.	0.	0.
APR.	235.	10.	2.	311.	0.	177.	53.	0.	200.	253.	-76.	0.	0.
MAY	1530.	6.	11.	240.	0.	5590.	10.	0.	206.	216.	5374.	4084.	4084.
JUN.	1530.	35.	34.	1529.	0.	1348.	139.	0.	200.	339.	1009.	1008.	1008.
JUL.	1530.	28.	73.	1530.	45.	6607.	257.	0.	206.	463.	6144.	6144.	6189.
AUG.	1530.	26.	93.	1530.	67.	10280.	116.	0.	206.	322.	9958.	9958.	10025.
SEP.	1530.	25.	96.	1530.	71.	12059.	77.	0.	200.	277.	11781.	11781.	11852.
OCT.	1530.	30.	54.	1530.	24.	4428.	446.	0.	206.	652.	3776.	3776.	3800.
NOV.	1172.	29.	5.	1506.	0.	100.	234.	0.	200.	434.	-334.	0.	0.
DEC.	944.	22.	0.	1150.	0.	0.	0.	0.	206.	206.	-206.	0.	0.

1977

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	639.	18.	0.	926.	0.	0.	80.	0.	206.	286.	-286.	0.	0.
FEB.	333.	14.	0.	626.	0.	0.	106.	0.	186.	292.	-292.	0.	0.
MAR.	6.	9.	0.	324.	0.	8.	120.	0.	206.	326.	-318.	0.	0.
APR.	0.	0.	0.	6.	0.	177.	53.	0.	200.	253.	-76.	0.	0.
MAY	1530.	0.	0.	0.	0.	2772.	10.	0.	206.	216.	2556.	1026.	1026.
JUN.	1530.	35.	34.	1529.	0.	1309.	139.	0.	200.	339.	970.	969.	969.
JUL.	1530.	26.	41.	1530.	13.	2333.	257.	0.	206.	463.	1870.	1870.	1883.
AUG.	1530.	26.	52.	1530.	25.	3496.	116.	0.	206.	322.	3174.	3174.	3199.
SEP.	1530.	25.	59.	1530.	34.	5105.	77.	0.	200.	277.	4828.	4828.	4862.
OCT.	1530.	30.	28.	1528.	0.	1548.	446.	0.	206.	652.	896.	894.	894.
NOV.	1067.	29.	0.	1501.	0.	0.	234.	0.	200.	434.	-434.	0.	0.
DEC.	944.	20.	4.	1050.	0.	100.	0.	0.	206.	206.	-106.	0.	0.

Khlong Chaliang Lab

1978

MONTH	1 CAPACITY	2 EVAPO-RATION	3 PRECIPI-TATION	4 ADJUSTED CAPACITY	5 DIRECT SPILL-OUT VOLUME	6 INFLOW	7 IRRIGATION WATER REQ.	8 WATER SUPPLY	9 DOWNSTREAM REQUIRE-MENT	10 TOTAL DEMAND	11 SURPLUS OR DEFICIT	12 SPILL-OUT VOL. AFTER REGULATED	13 TOTAL SPILL-OUT VOLUME
JAN.	640.	18.	0.	926.	0.	0.	80.	0.	206.	286.	-286.	0.	0.
FEB.	342.	14.	0.	627.	0.	8.	106.	0.	186.	292.	-284.	0.	0.
MAR.	309.	10.	3.	335.	0.	300.	120.	0.	206.	326.	-26.	0.	0.
APR.	46.	10.	0.	300.	0.	0.	53.	0.	200.	253.	-253.	0.	0.
MAY	0.	1.	0.	45.	0.	0.	10.	0.	206.	216.	-216.	0.	0.
JUN.	0.	0.	0.	0.	0.	0.	139.	0.	200.	339.	-339.	0.	0.
JUL.	0.	0.	0.	0.	0.	0.	257.	0.	206.	463.	-463.	0.	0.
AUG.	0.	0.	0.	0.	0.	0.	116.	0.	206.	322.	-322.	0.	0.
SEP.	0.	0.	0.	0.	0.	0.	77.	0.	200.	277.	-277.	0.	0.
OCT.	0.	0.	0.	0.	0.	0.	446.	0.	206.	652.	-652.	0.	0.
NOV.	0.	0.	0.	0.	0.	0.	234.	0.	200.	434.	-434.	0.	0.
DEC.	0.	0.	0.	0.	0.	0.	0.	0.	206.	206.	-206.	0.	0.

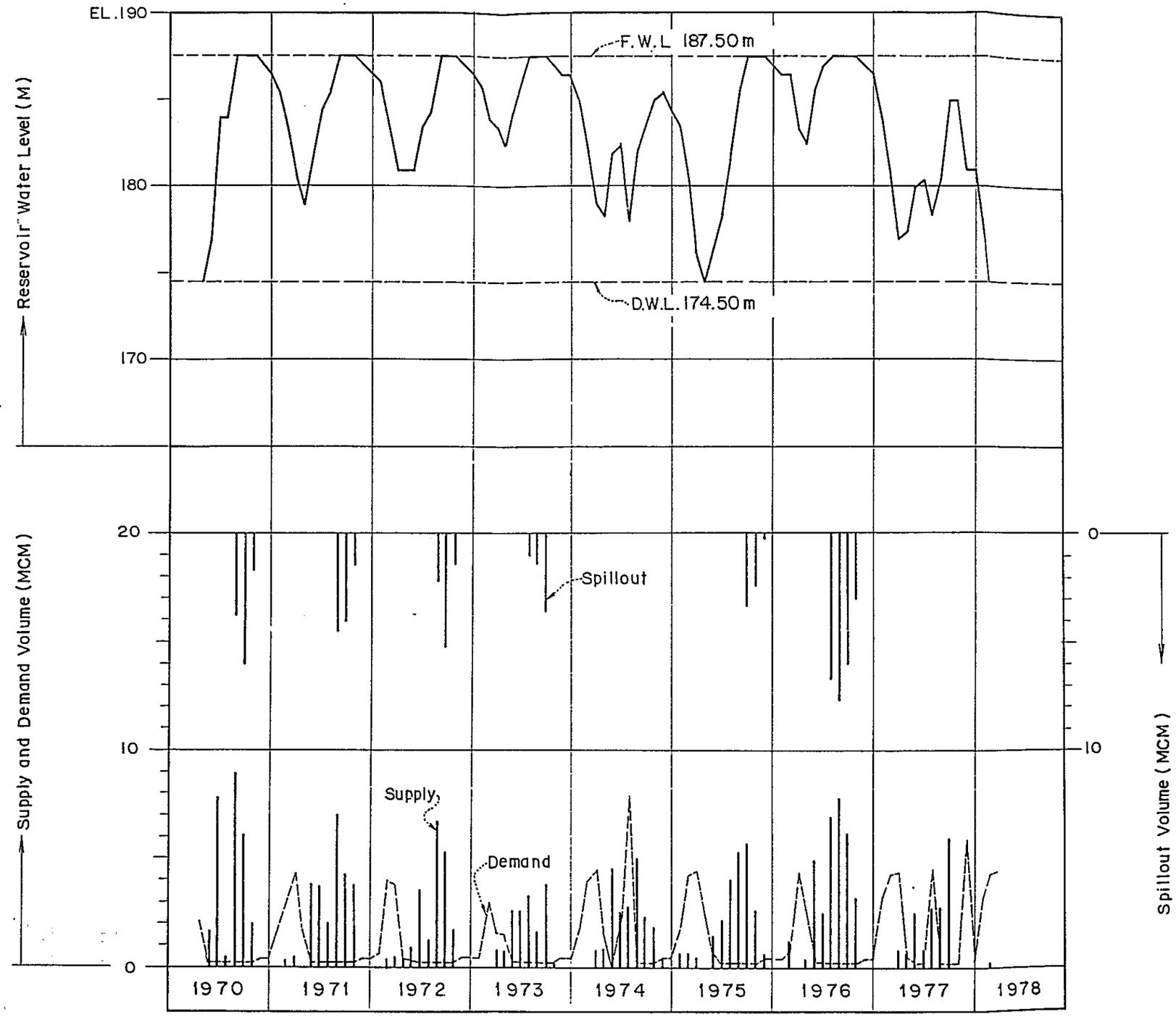


Fig. 4.1 OPERATION STUDY RESULT
(1) Huai Saduang Yai Reservoir

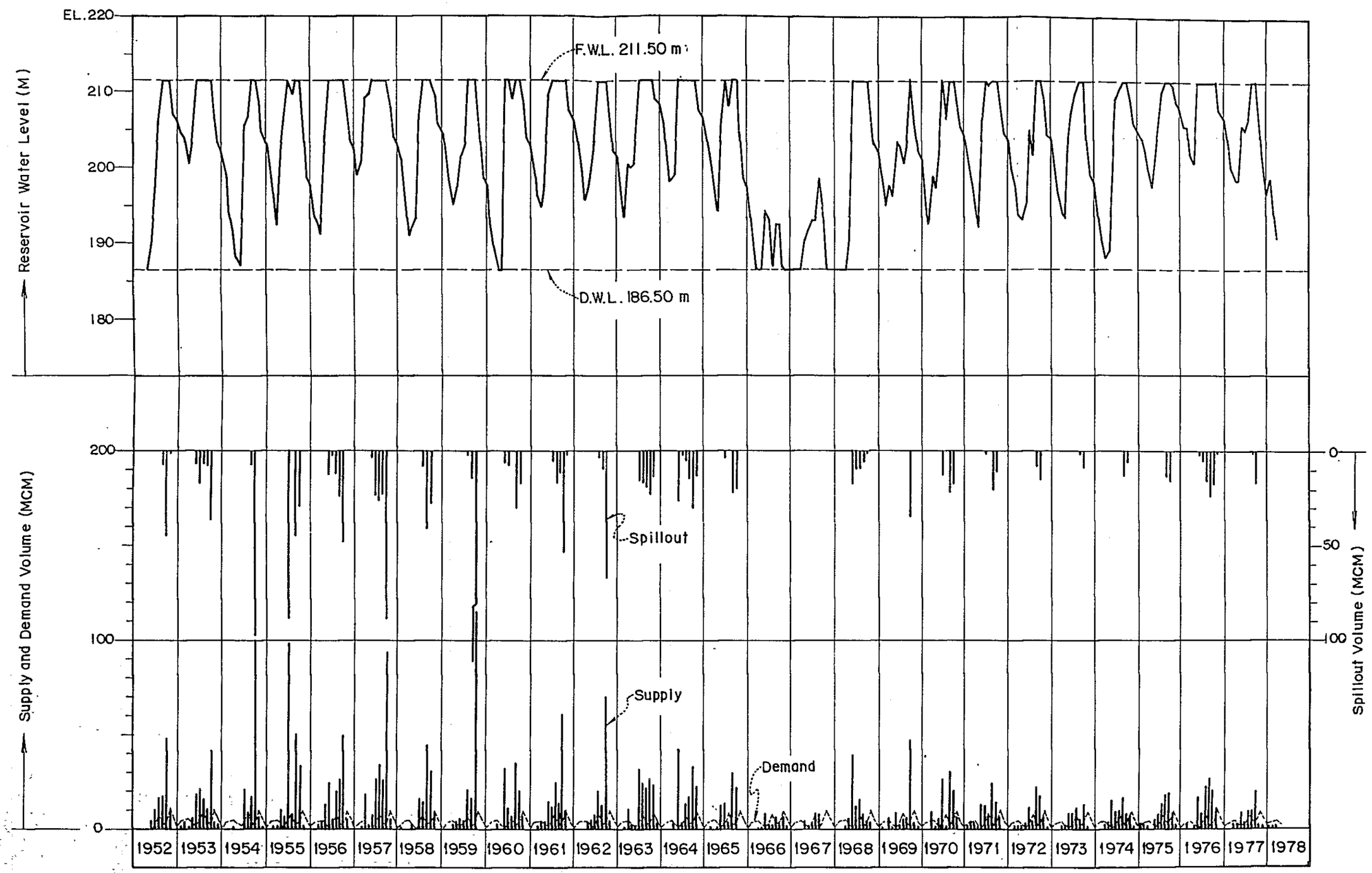


Fig. 4.1 OPERATION STUDY RESULT
(2) Huai Khon Kaen Reservoir

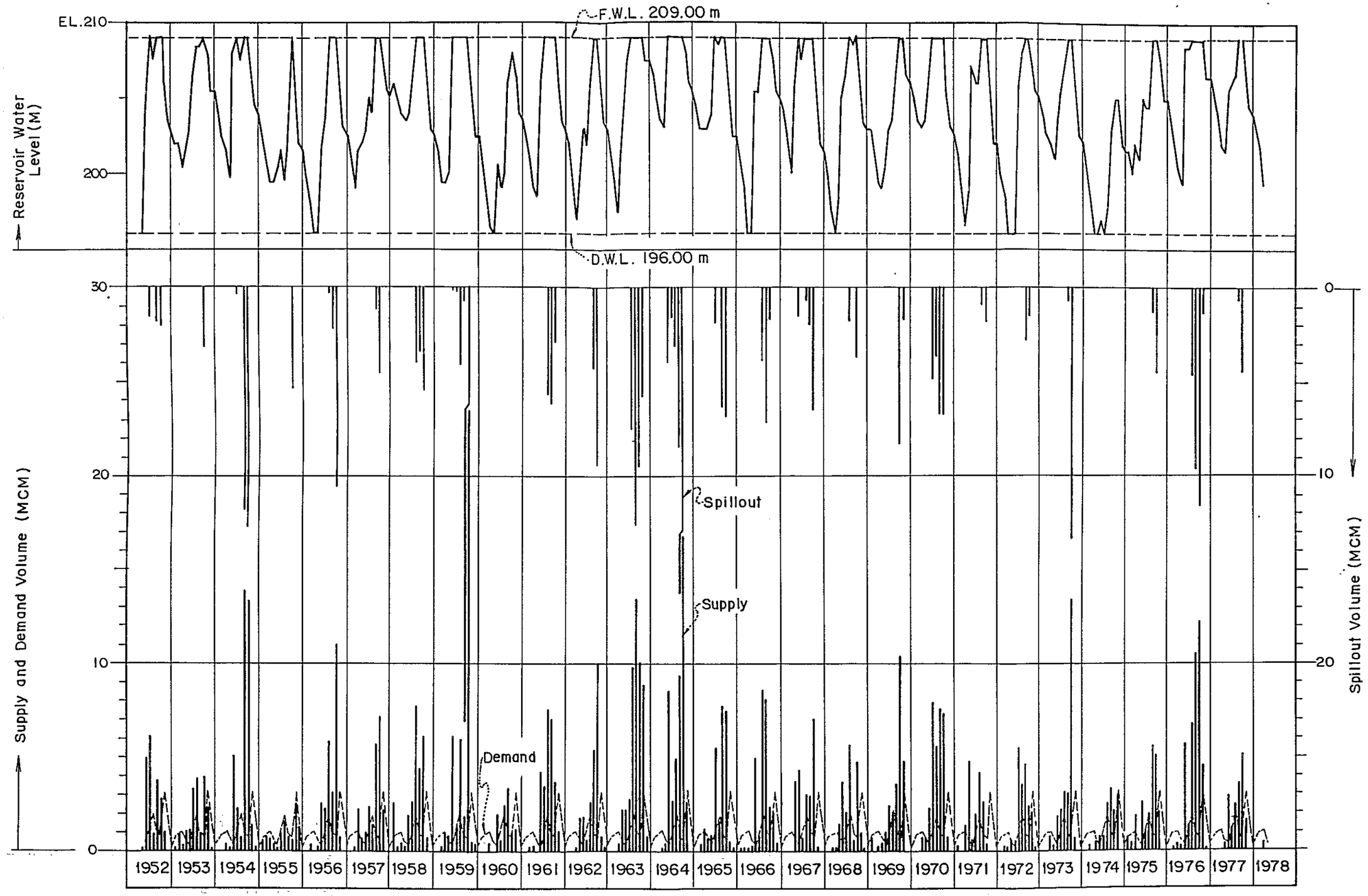


Fig. 4.1 OPERATION STUDY RESULT

(3) Huai Yai Reservoir

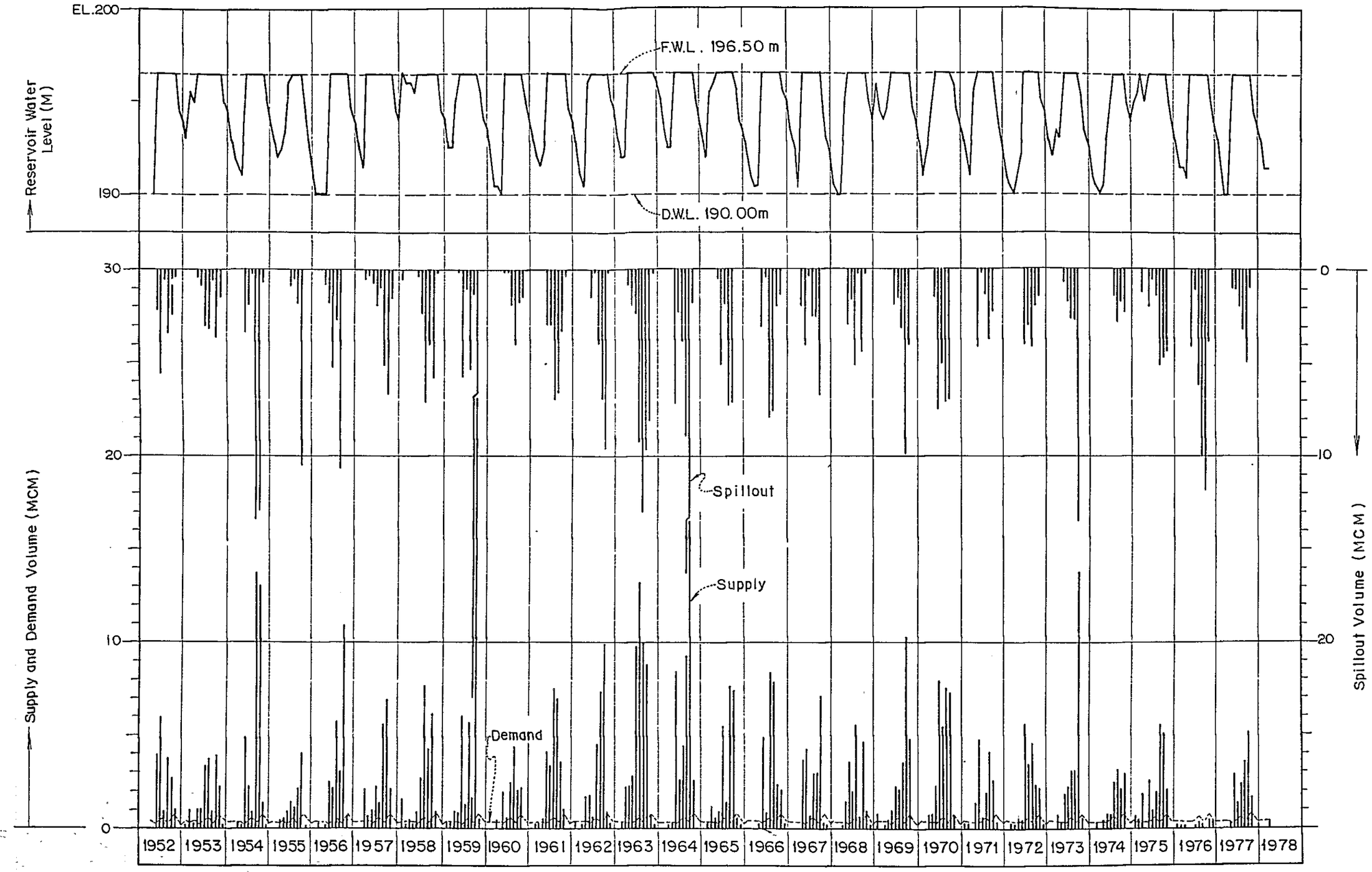


Fig. 4.1 OPERATION STUDY RESULT
(4) Khlong Chaliang Lab Reservoir

JICA