

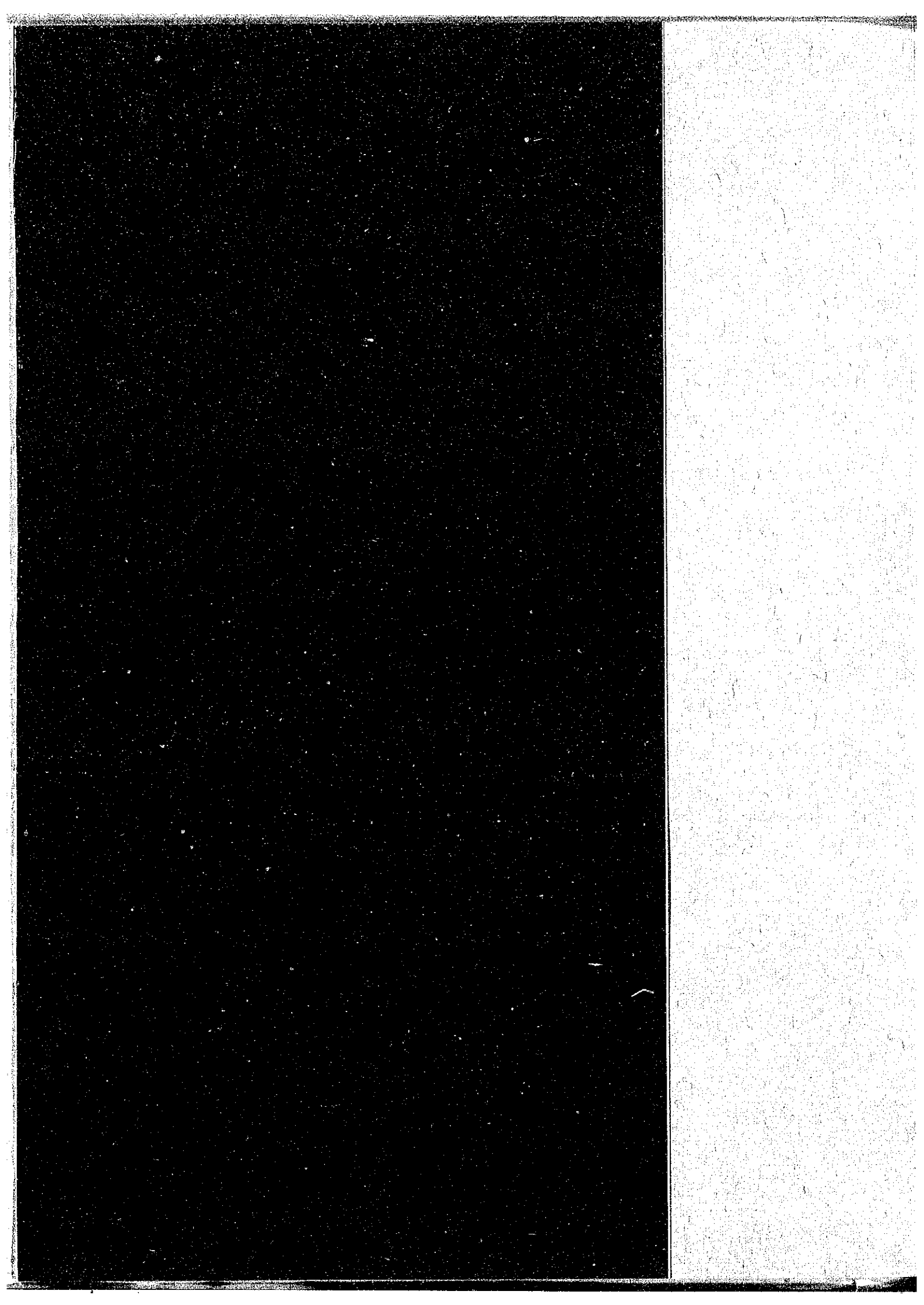
GOVERNMENT OF MALAYSIA

NATIONAL WATER RESOURCES

STUDY MALAYSIA

PERIODIC REPORT

FOR THE YEAR 1960



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GOVERNMENT OF MALAYSIA

**NATIONAL WATER RESOURCES
STUDY, MALAYSIA**

SECTORAL REPORT

VOL. 2

METEOROLOGY AND HYDROLOGY

OCTOBER 1982

JAPAN INTERNATIONAL COOPERATION AGENCY

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COMPOSITION OF THIS VOLUME

This Volume consists of two parts: Part 1 deals with the subject matters of Peninsular Malaysia and Part 2 is devoted to the States of Sabah and Sarawak.

ABBREVIATIONS

(1) Plan

FMP	:	First Malaysia Plan
SMP	:	Second Malaysia Plan
TMP	:	Third Malaysia Plan
4MP	:	Fourth Malaysia Plan
5MP	:	Fifth Malaysia Plan
6MP	:	Sixth Malaysia Plan
7MP	:	Seventh Malaysia Plan
NEP	:	New Economic Policy
OPP	:	Outline Perspective Plan
RESP	:	Rural Environmental Sanitation Program

(2) Domestic Organization

DID (JPT)	:	Drainage and Irrigation Department
DOA	:	Department of Agriculture
DOE	:	Division of Environment
DOF	:	Department of Forestry
DOFS	:	Department of Fishery
DOM	:	Department of Mines
DOS	:	Department of Statistics
EPU	:	Economic Planning Unit
FAMA	:	Federal Agricultural Marketing Authority
FELCRA	:	Federal Land Consolidation and Rehabilitation Authority
FELDA	:	Federal Land Development Authority
ICU	:	Implementation and Coordination Unit
MARDI	:	Malaysian Agricultural Research and Development Institute
MIDA	:	Malaysian Industrial Development Authority
MLRD	:	Ministry of Land and Regional Development
MMS	:	Malaysian Meteorological Service
MOA	:	Ministry of Agriculture
MOF	:	Ministry of Finance

MOH : Ministry of Health
 MOPI : Ministry of Primary Industries
 MRRDB : Malaysia Rubber Research and Development Board
 NDPC : National Development Planning Committee
 NEB (LLN) : National Electricity Board
 PORIM : Palm Oil Research Institute of Malaysia
 PWD (JKR) : Public Works Department
 RDA : Regional Development Authority
 RISDA : Rubber Industry Small-holders Development Authority
 RRIM : Rubber Research Institute of Malaysia
 SEB : Sabah Electricity Board
 SEBC : State Economic Development Corporation
 S(E)PU : State (Economic) Planning Unit
 SESCO : Sarawak Electricity Supply Corporation
 UDA : Urban Development Authority

(3) International or Foreign Organization

ADAA : Australian Development Assistance Agency
 ADB : Asian Development Bank
 ASCE : American Society of Civil Engineers
 FAO : Food and Agriculture Organization of the United Nations
 IBRD : International Bank for Reconstruction and Development
 ILO : International Labour Organization
 IMF : International Monetary Fund
 IRRI : International Rice Research Institute
 JICA : Japan International Cooperation Agency
 JSCE : Japan Society of Civil Engineers
 MOC : Ministry of Construction, Japan
 OECD : Organization for Economic Cooperation and Development
 OECF : Overseas Economic Cooperation Fund, Japan
 UK : United Kingdom
 UNDP : United Nations Development Program

UNSF : United Nations Special Fund
US or USA: United States of America
US/AID : United States Agency for International
Development
USBR : United States Bureau of Reclamation
WHO : World Health Organization
WMO : World Meteorological Organization

(4) Others

B : Benefit
BOD : Biochemical Oxygen Demand
C : Cost
CIF : Cost, Insurance and Freight
COD : Chemical Oxygen Demand
D&I : Domestic and Industrial
dia : Diameter
EIRR : Economic Internal Rate of Return
El. : Elevation above mean sea level
Eq. : Equation
Fig. : Figure
FOB : Free on Board
FSL : Full Supply Level
GDP : Gross Domestic Product
GNP : Gross National Product
H : Height, or Water Head
HWL : Reservoir High Water Level
LWL : Reservoir Low Water Level
O&M : Operation and Maintenance
Q : Discharge
Ref. : Reference
SITC : Standard International Trade Classification
SS : Suspended Solid
V : Volume
W : Width

ABBREVIATIONS OF MEASUREMENT

Length

mm = millimeter
cm = centimeter
m = meter
km = kilometer
ft = foot
yd = yard

Area

cm² = square centimeter
m² = square meter
ha = hectare
km² = square kilometer

Volume

cm³ = cubic centimeter
l = lit = liter
kl = kiloliter
m³ = cubic meter
gal. = gallon

Weight

mg = milligram
g = gram
kg = kilogram
ton = metric ton
lb = pound

Time

s = second
min = minute
h = hour
d = day
y = year

Electrical Measures

V = Volt
A = Ampere
Hz = Hertz (cycle)
W = Watt
kW = Kilowatt
MW = Megawatt
GW = Gigawatt

Other Measures

% = percent
PS = horsepower
° = degree
' = minute
" = second
°C = degree in centigrade
10³ = thousand
10⁶ = million
10⁹ = billion (milliard)

Derived Measures

m³/s = cubic meter per second
cusec = cubic feet per second
mgd = million gallon per day
kWh = kilowatt hour
MWh = Megawatt hour
GWh = Gigawatt hour
kWh/y = kilowatt hour per year
kVA = kilovolt ampere
BTU = British thermal unit
psi = pound per square inch

Money

M\$ = Malaysian ringgit
US\$ = US dollar
¥ = Japanese Yen

CONVERSION FACTORS

	<u>From Metric System</u>	<u>To Metric System</u>
<u>Length</u>	1 cm = 0.394 inch 1 m = 3.28 ft = 1.094 yd 1 km = 0.621 mile	1 inch = 2.54 cm 1 ft = 30.48 cm 1 yd = 91.44 cm 1 mile = 1.609 km
<u>Area</u>	1 cm ² = 0.155 sq.in 1 m ² = 10.76 sq.ft 1 ha = 2.471 acres 1 km ² = 0.386 sq.mile	1 sq.ft = 0.0929 m ² 1 sq.yd = 0.835 m ² 1 acre = 0.4047 ha 1 sq.mile = 2.59 km ²
<u>Volume</u>	1 cm ³ = 0.0610 cu.in 1 lit = 0.220 gal.(imp.) 1 kl = 6.29 barrels 1 m ³ = 35.3 cu.ft 10 ⁶ m ³ = 811 acre-ft	1 cu.ft = 28.32 lit 1 cu.yd = 0.765 m ³ 1 gal.(imp.) = 4.55 lit 1 gal.(US) = 3.79 lit 1 acre-ft = 1,233.5 m ³
<u>Weight</u>	1 g = 0.0353 ounce 1 kg = 2.20 lb 1 ton = 0.984 long ton = 1.102 short ton	1 ounce = 28.35 g 1 lb = 0.4536 kg 1 long ton = 1.016 ton 1 short ton = 0.907 ton
<u>Energy</u>	1 kWh = 3,413 BTU	1 BTU = 0.293 Wh
<u>Temperature</u>	°C = (°F - 32) · 5/9	°F = 1.8°C + 32
<u>Derived Measures</u>	1 m ³ /s = 35.3 cusec 1 kg/cm ² = 14.2 psi 1 ton/ha = 891 lb/acre 10 ⁶ m ³ = 810.7 acre-ft 1 m ³ /s = 19.0 mgd	1 cusec = 0.0283 m ³ /s 1 psi = 0.703 kg/cm ² 1 lb/acre = 1.12 kg/ha 1 acre-ft = 1,233.5 m ³ 1 mgd = 0.0526 m ³ /s
<u>Local Measures</u>	1 lit = 0.220 gantang 1 kg = 1.65 kati 1 ton = 16.5 pikul	1 gantang = 4.55 lit 1 kati = 0.606 kg 1 pikul = 60.6 kg

Exchange Rate
(as average between July and December 1980)

\$1 = M\$2.22
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PENINSULAR
MALAYSIA

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1. INTRODUCTION

The objective of meteorological and hydrological study is the compilation of meteorological and hydrological data and assessment of surface water resources for the use in the agricultural study, irrigation water demand study, flood damage study, water supply and demand balance analysis and other engineering studies.

In Chapter 2, general climate of Peninsular Malaysia was discussed in relation with surface water resources.

Rainfall characteristics in Peninsular Malaysia were analysed in Chapter 3. Basin mean rainfall was estimated for all the river basins for 19 years from 1961 to 1979.

In Chapter 4, the reliability of river run-off records was examined. Among 52 stations used for the study, 11 stations were selected as key stations for further study. The water balance in 41 basins and run-off duration curves at the key stations are available.

As a flood analysis, some existing studies were reviewed in Chapter 5. These studies were judged to be applicable for the further study in planning. Flood frequency of regional floods was also prepared on the basis of flood peak observations.

Chapter 6 dealt with sediment load analysis on the basis of the observation of the suspended load in Peninsular Malaysia.

In Chapter 7, a case study was conducted to examine the effect of land use change in Kuala Lumpur and its surroundings on the flood run-off characteristics of the Kelang river.

2. CLIMATE

2.1 General

The climate of Peninsular Malaysia is generally characterized by the north-east monsoon and the south-west monsoon.

The north-east monsoon brings moisture from the South China Sea usually in November to January, striking the north-eastern parts of Peninsular Malaysia first and then covers almost whole Peninsular Malaysia. All places exposed to the north-east monsoon receive heavy rainfall, especially in the northern part of west coast. More than 1,000 mm of monthly rainfall was experienced in Kuala Trengganu region in the northern part of east coast. On the other hand, the northern part of west coast where is sheltered from the monsoon receives a little rain in this season. Sunshine hour in this season is shortest in the year and air temperature is lowest in December and January all over Peninsular Malaysia. On the other hand relative humidity is the highest in this season.

February and March are the driest of the year over Peninsular Malaysia. Relative humidity is the lowest and sunshine hours are the longest in these months.

Generally in April or May, the south-west monsoon reaches to the west coast from across the Indian Ocean. The monsoon is prevailing over Peninsular Malaysia in May and June and causes fairly heavy rainfall in the west coast while it is not significant in the east coast area. Due to shelter effect of Smatra, rainfall in this season is less than in the north-east monsoon season except for the northern part of west coast. Maximum temperature usually occurs in April in west coast and in May in south and east coasts.

In the period between the monsoons, from August to October, the northern part of west coast has a peak in rainfall brought by western winds.

2.2 Meteorological Observations

There are 14 principal meteorological stations in Peninsular Malaysia operated by MMS and air temperature, relative humidity, wind and sunshine hours are observed. In addition, 68 secondary stations are in operation observing rainfall, temperature and relative humidity.

The location of these principal stations are shown in Fig. 1 in which elevation, recorded period are included. Most of these stations are located in the coastal low land except for the Cameron Highlands station (EL 1,472 m).

Out of these 14 principal stations, more than 10 years of continuous records are available at 11 stations and the other 3 stations have more than 5 years records.

2.3 Air Temperature

Table 1 shows the monthly mean air temperature at the 14 principal stations, in which daily maximum and minimum air temperature recorded at these stations are included.

Air temperature in Peninsular Malaysia is generally uniform throughout the year. Monthly mean air temperature varies from 24.4°C to 27.9°C in the coastal low lands and from 16.9°C to 18.4°C at the Cameron Highlands station.

The highest air temperature usually occurs in April in the north west area or in May in the south and east area of Peninsular Malaysia. The lowest is recorded in December in the west and south coasts and in January in the east coast.

2.4 Relative Humidity

Monthly average relative humidity is summarized in Table 2 for the 14 stations.

Relative humidity is uniformly high throughout Peninsular Malaysia, higher than 80% in annual mean. The seasonal variation of relative humidity is almost conformable to rainfall pattern of the area concerned. Usually the highest occurs in November and the lowest is in February.

In the northern part of west coast, the seasonal variation is relatively large; 15% of variation between 71% and 86% while it is only 6 to 8% in the south and east coasts in monthly mean.

2.5 Wind

Average wind velocity ranges between 2.6 m/sec, recorded at Mersing in the east coast and 0.7 m/sec at Temerloh in the west coast (Ref. 1).

2.6 Sunshine Hours

Daily sunshine hour records are available at 11 stations as shown in Table 3. The annual mean daily sunshine hours are about 6 to 7 hours in the coastal low lands while it is as short as 4.7 hours at the Cameron Highlands station. The sunshine hours in the dry season of February to April are 7 to 9 hours. It ranges between 4 and 5 hours in the rainy season of September and October in the north west coast and November and December in the south and east coasts.

2.7 Evaporation

There are 26 pan evaporimeter stations in Peninsular Malaysia other than meteorological stations. Daily evaporation is measured by the U.S. Class A pan at these stations.

The observation records are compiled in the study report "Evaporation in Peninsular Malaysia" (Ref. 1) in which potential open-water evaporation is estimated by using the Penman's method for principal stations and the Hargreaves method for secondary stations. Table 4 shows the potential open water evaporation at principal stations. According to Ref. 2, "all stations exhibit a similar evaporation pattern throughout the year, with a maximum occurring in March and a minimum during the monsoon months of November and December".

3. RAINFALL

3.1 Observations

There are 1,035 rain gauges in Peninsular Malaysia of which 636 gauges are operated by DID and the others are by MMS as shown in Table 5. Most of these gauges are of manual type and automatic rain gauges are installed at 225 stations. These stations are located densely in the coastal low lands while they are dispersed in the central mountainous area.

Rainfall observation was started in 1879 at Tanglin in the west coast and more than 20 gauges were installed before 1900 in Peninsular Malaysia. The first automatic rain gauge was installed in 1952 at JPT Ampang.

Daily rainfall data are compiled and stored in the Data Bank of DID.

3.2 General Rainfall Characteristics

The rainfall in Peninsular Malaysia was firstly studied by Dale (Ref. 2). He divided Peninsular Malaysia into five Rainfall Regions as shown in Fig. 2 and distinguished the characteristics of rainfall in each Region as follows:

- " (1) North West Region, which has peaks in rainfall during both the post-equinoctial transition periods between monsoons, low rainfall during the northeast Monsoon, and moderate precipitation during the southwest Monsoon. The northern plain of Kedah and Perlis receives less rain than the Kedah Peak, as well as the mountainous parts of Penang and south Kedah;
- (2) West Region, which has peaks in rainfall during the transitional periods: often the first (April) is more intense but of shorter duration than the second (October and November) during which there is more rain in total. Fair amounts of rain are received during the northeast Monsoon except in February. The period of the southwest Monsoon has least rain, especially in July;
- (3) Port Dickson-Muar Coast Region, which sometimes has rain during the first transitional period. Usually there is a steady buildup during the southwest Monsoon to a maximum during the second transitional period, followed by little rain during the northeast Monsoon;
- (4) South West Region, which has a rather equitable distribution of rain throughout the year. Rainfall is low inland, and increase towards the coast; and

- (5) East Region, which has heavy rainfall during the northeast Monsoon and light rain during the rest of the year (Ref. 2). "

Fig. 3 shows the typical seasonal rainfall pattern of each region.

3.3 Basin Rainfall

For the study of areal distribution of rainfall, 194 raingauges were selected based on the following criteria:

- (1) Continuous record for the 19-year period of 1961-1979, allowing short interruption.
- (2) Approximate density of 1 gauge/100 km².

The selected gauges were distributed among the Rainfall Regions as shown in Table 6. Interrupted record, if found at some gauge, was supplemented with the record at a nearby gauge.

An isohyetal map of average annual rainfall was prepared as shown in Fig. 4, based on the 1961-1979 records of the 194 raingauges.

Thiessens' polygon network based on the 194 raingauge was as shown in Fig. 5. Based on this, the average annual rainfall in 1961 to 1979 in Peninsular Malaysia was calculated to be 2,362 mm. The average monthly and annual rainfalls in the above-mentioned period in each Basin were estimated as shown in Table 7.

4. RUN-OFF

4.1 Observations

In Peninsular Malaysia, there are 152 hydrological stations operated by DID, of which 127 stations are provided with automatic gauges.

DID data bank has daily water level and daily mean discharge of these stations for the period of 1961 to 1979.

4.2 Definitions

- (1) 5-day run-off: For the convenience of analysis, each calendar month was divided into six periods; 1st-5th, 6th-10th, 11th-15th, 16th-20th, 21st-25th and the remainder of the month. Each period was called the 5-day period and the arithmetic mean of daily discharges in each 5-day period was named the 5-day run-off which might be expressed in m^3/s or $10^6 m^3$. This definition was applied if there are daily discharge records in two or more days in a 5-day period but such 5-day period as having daily discharge records in less than two days was regarded as no data was available.
- (2) Water withdrawal: Water use such as domestic and industrial water supply takes water from a river and certain part of used water returns to the river. The net water consumed by the water use was estimated to be the difference between water taken and return flow and it was called the water withdrawal. There may be variation of discharge due existing reservoir operation but it was not taken into account. The water withdrawal in the catchment area of each hydrological station was calculated on monthly basis for 1961-1979.
- (3) Natural run-off: The run-off discharge measured at a hydrological station and water withdrawal in the catchment area of the station was named the natural run-off.
- (4) Rainfall loss: Rainfall loss is evapotranspiration, increase in soil moisture and ground water recharge. Annual rainfall loss is calculated as the difference between rainfall and natural run-off and therein the increase in soil moisture is negligible.
- (5) Key station: Hydrological station of 1-3 in number were selected for each Rainfall Region after the evaluation of discharge records. These stations were named the key stations and they were regarded as representing the hydrological conditions in the nearby basins in the same Rainfall Region.

- (6) Supplemental station: All key stations except one have interruptions of discharge records within 1961-1979. For the purpose of supplementing the lacking records at each of these key stations, another hydrological station was selected within the same Rainfall Region and it was called the supplemental station.

4.3 Evaluation of Run-off Record

In consultation with DID hydrologists, daily discharge records at 52 hydrological stations as shown in Tables 8, 9 and 10 were extracted from DID data bank for their evaluation in terms of the duration of record and rainfall loss.

A certain long duration of record is necessary for the evaluation of the reliability of records and water supply and demand balance study. By this reason, the records shorter than 10 years were avoided and 28 stations remained for further evaluation.

It is herein assumed that annual rainfall loss remains within a range of 500 mm and 2,000 mm. Annual natural run-off was plotted against annual rainfall for the 28 hydrological stations with the above-mentioned range of annual rainfall loss as shown in Figs. 6 to 10. Data distributed within the range of rainfall loss for 12 stations. These stations were regarded as more reliable than the other 16 stations which have data stretching out of the range.

Among 12 more reliable stations, No. 3015431 in the Kelang river system is avoided for further study, because the seasonal flow pattern at this station is substantially affected by the Kelang Gate Dam. There is no large storage in the catchment area of the other more reliable stations.

The hydrological station No. 5130432 in the Trengganu river is only the station located in a particularly heavy rainfall area. This station was employed for further study, though it was among the less reliable stations. The data scattered out of the range of rainfall loss were all excluded.

In consequence, 11 more reliable stations and No. 5130432 excluding unreliable records were used for further study.

4.4 Key Stations and Supplemental Stations

The proposed correlation among the Rainfall Regions, key stations, supplemental stations and basins is as shown in Table 11. The key stations are 11 in number. The supplemental station includes 56 key stations and one other station. The relationship among the key stations supplemental stations and basins is illustrated in Fig. 11.

4.5 Supplement of Key Station Record

Five-day natural runoff was calculated for the continuous period of 1961-1979 at each key station, by supplementing data in the interrupted periods based on the records at the corresponding supplemental station. The record period differs station by station. The methods of supplement were as follows:

- (1) The runoff in the corresponding interrupted period of a supplemental station or a key station in the same rainfall region was converted from the key stations or supplemental stations by multiplying the ratio of annual runoff in the year in which the interrupted period was included. Therein the annual runoff at the key station was calculated as the difference between the annual rainfall in the year and average rainfall loss in the recorded period in the catchment area of the key station; and
- (2) If a certain period of less than one month of a key station could not be supplemented by the other stations in the same rainfall region or if supplement from the other stations was considered to be seemingly unreliable, the runoff in the interrupted period was assumed to be linear between the runoff in the last day of the antecedent period and that in the first day of the subsequent period.

The method of interpolation of missing data from the other stations is expressed by the following equation:

$$Q_j = Q_i \times \frac{A_j}{A_i} \times \frac{R_j}{R_i} \times \frac{f_j}{f_i}$$

where, Q_j : Discharge to be interpolated at j-station
 Q_i : Discharge record at i-station
 A : Catchment area at i or j-station
 R : Annual rainfall in the year to be interpolated at i or j-station
 f : Mean run-off coefficient at i or j-station
 i and j : Suffix (i) indicates respective recorded station and suffix (j) indicates the station to be interpolated.

4.6 Natural Flow Records at Key Stations

The estimated natural run-off at the 11 key stations are shown in Tables 12 to 14 on monthly basis and Tables 15 to 47 on 5-day basis.

The rainfall, natural run-off and rainfall loss at the key stations are shown on annual basis for 1961-1979 in Tables 48 to 53.

4.7 Basin Water Balance

Natural runoff records at the key stations were converted into those in the corresponding basin by being multiplied by the ratio of average basin runoff in 1961 - 1979 in the same way as described in Section 4.5. The basin 5-day runoff data were generated from the 5-day natural runoff records of key stations by multiplying the conversion ratios which were shown in Table 54. Therein the annual rainfall loss of Basins was assumed to be the same as that of the original key station of which discharge record was converted.

The water balance in the 41 basins were calculated as shown in Table 55, in which groundwater recharge was reproduced from Sectoral Report.

4.8 Flow Duration Curve

Non-dimensional duration curves of natural flow were constructed for the 11 key stations based on the daily discharge records which were not supplemented as shown in Fig. 12. Some details of the duration curves including the coefficients of river regime are shown in Tables 56 to 61. The coefficient of river regime is the ratio of the maximum discharge to the minimum discharge.

5. FLOOD

5.1 Flood Frequency Analysis

Flood frequency analysis is to predict the magnitude of flood flows of given return period. The results are used (i) for assessing the recurrence probability of the past flood event selected for flood damage survey (Sectoral Report River Conditions) and also (ii) for constructing the envelope curve of regional flood (See 5.2 below).

Annual maximum discharges at 46 gauging stations having a comparatively long recording period (13 to 54 years) were analysed by using 4 frequency distributions (normal distribution, Gumbel extreme and other two) and the calculated values showing a good correlation were adopted. The calculated values of 50 and 100-year flood were then cross-checked with the DID's regional flood discharge values derived from Ref. 11. The records showing more than 100% difference from the DID's regional values were discarded in mind that there should be an uncertainty in accuracy of the recorded data and rating curves. For stations where a detailed probability analysis is available in the previous basin studies (Ref. 7, 8, 9 and 10), those studied values were adopted. The records apparently inconsistent to the result of the previous basin study were also discarded.

Tables 62 to 65 show the result of flood frequency analysis at the selected 38 stations.

5.2 Regional Flood Curves

The magnitude of peak discharge at given location is usually affected by many factors. For instance, probable discharges at some stations in Tables 62 to 65 show relatively low specific discharges, which are most presumably due to large flood plain storage in the upper reaches.

For purposing to determine the project design flood (e.g for river improvement) by eliminating such erroneous factors, a concept of regional flood is introduced. Probable flood discharges (50 and 100-year) in Tables 62 to 65 were plotted against catchment area and envelope curves drawn as illustrated on Fig. 14. To supplement the scarcity of discharge data (particularly for east coast area), the DID's regional flood curves (F1 to F11, Ref. 11) are also referred on the figure.

Reviewing the distribution of the plotted discharge points, it was found that Peninsular Malaysia could broadly be divided into 4 areas from viewpoint of flood magnitude. The area division almost agrees the distribution of storm isoline contours shown in Ref. 3. The area division (I to IV) is illustrated on Fig. 13.

5.3 Envelope Curve for Design Flood for Dams

A plot of design flood discharges (for dam design) which have been adopted in other projects is shown on Fig. 15, and 4 envelope curves have been drawn to represent the 4 divided areas (see 5.2) respectively. The curves will give a preliminary indication of the order of the probable maximum floods.

5.4 Flood Analysis Based on Storm Data

5.4.1 Storm analysis

A storm rainfall study over Peninsular Malaysia has been carried out by Heiler (Ref. 3). The study was based on relatively short term data (5 to 13 years) of 59 recording raingauges (48 gauges of DID and 11 gauges of MMS) and also 30 daily rainfall gauges.

The study constructed the depth-duration relation of point rainfall for 2 and 20 year return periods by applying the Gumbel method. Isohyetal maps were prepared for key storms of 2 and 20 year return periods with 1/2, 2, 24 and 72 hours of duration. A depth-duration-frequency for any location within Peninsular Malaysia is given by using the maps of key storms and interpolation assuming a straight-line relationship between key values. Tables 66 and 67 show the depth-duration-frequency for some selected stations.

The conversion of point rainfall to areal average rainfall was given as shown in Table 68 on the basis of the U.S. Weather Bureau recommendations (Ref. 4), since only a limited study of rainfall variation with area was available in Peninsular Malaysia.

For examining the reliability of the above study results, a frequency analysis was reviewed on the basis of the up-dated data. Fig. 16 shows the relation of the rainfall depth of some selected gauges for 5 and 50-year of return period between the results of the Heiler's study and the review study. They have a relatively good correlation and it could be judged that the depth-duration-frequency relation in the Heiler's study is reliable and is able to be applied for the further study.

5.4.2 Flood analysis

A method of design flood analysis based on storm data is compiled by Taylor and Toh Yuan Kiat (Ref. 5). The study prepares a procedure for estimating the design flood hydrograph as well as the peak discharge.

(1) Design storm

The study recommends to use the depth-duration-frequency relation given by Heiler (Ref. 3) and the areal reduction factor of U.S.W.B. as discussed in the previous section.

(2) Rainfall-runoff relation

On the basis of 97 storm records from 19 catchments in Peninsular Malaysia, the ratio of the volume of direct run-off against the volume of the corresponding storm rainfall was examined. The study developed the ratio to be averagely 33% for the storm rainfall less than 75 mm and equal to $P/(P+150)$, in which P is storm rainfall in mm, for larger storms.

(3) Time distribution of run-off

The Dimensionless hydrograph method developed by the U.S. Bureau of Reclamation (Ref. 6) was applied for distributing the direct run-off Volume with time. A procedure to construct a triangular dimensionless hydrograph was prepared for ungauged catchments on the basis of flood hydrographs recorded in 19 catchments.

As a reference, the 50-year flood peak was calculated by using the above procedure for some selected river basins as shown in Table 69, in which the peak discharge given by the flood frequency analysis (see 5.1) is also listed for comparison. The flood peak calculated by this procedure seems to give a generally larger value than that of the frequency analysis (presumably smaller value of the latter is due to flood routing effect).

In determining the design flood for the subsequent planning study, this procedure will principally be applied. The results will be cross-checked with the flood discharge envelope curves shown on Figs. 14 and 15.

6. SEDIMENTATION

6.1 Observations

Suspended load measurement is being carried out at more than 30 hydrological stations operated by DID. Out of these stations, sediment rating curve showing the relation between discharge and suspended load content is available at 17 stations. Table 70 shows the list of these 17 stations.

Bed load observation has not been measured in Peninsular Malaysia.

6.2 Sediment Concentration

The analysis of suspended load concentration shows that there are no significant relation between the concentration and corresponding discharge at most of the stations. Table 71 shows the arithmetic mean of recorded concentration of the stations. They are grouped into five Rainfall Regions.

The sediment concentration was almost constant within a region except for the West region. It was about 50 to 90 ppm in the North-West, the Port Dickson-Muar Coast and the South-West regions and about 150 ppm in the East region.

In the West region, however, the concentration was remarkably fluctuated from 70 to 2600 ppm. The extremely high concentration of 2600 ppm was recorded at No. 4212467 in the Kinta river basin, whose catchment area is only 119 km² and tin mining is active in the basin. No. 4809443 and No. 3813411 show relatively small rate of concentration, because they are located downstream of Chenderoh reservoir and Bernam Power Station, respectively. Consequently the average concentration in the West region was estimated at 700 to 900 ppm on the basis of the records of No. 3414421 and No. 2816411 stations which were considered as representative in the region.

7. KELANG RIVER FLOOD RUN-OFF STUDY

A case study was conducted to examine the effect of land use change (urbanization) in Kuala Lumpur and its surroundings on the flood run-off characteristics of the Kelang river. By using a flood simulation model based on "storage function method", flood run-off characteristic for the following cases was analysed:

- (a) flood run-off at the condition in year 1971,
- (b) flood run-off after the river improvement - 1971 condition, and
- (c) flood run-off after the land development (urbanization) - 2000 year condition.

Figures 17 and 18 show flood run-off hydrographs and Table 72 shows peak flood discharges. The result indicates a considerable change of flood run-off characteristics due to urbanization, especially in terms of peak discharge.

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TABLES

Table 1 MONTHLY MEAN AIR TEMPERATURE

Unit: °C

	El.-m	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean	Daily	
															Max.	Min.
1. Alor Star	4.6	26.2	27.1	27.6	<u>27.9</u>	27.5	27.2	27.0	26.9	26.5	26.3	26.1	<u>26.1</u>	26.9	37.6	17.4
2. Bayan Lepas	33.0	26.8	27.3	27.6	<u>27.7</u>	27.4	27.2	27.0	26.9	<u>26.4</u>	26.4	26.5	26.5	27.0	35.7	18.7
3. Ipoh	39.0	26.2	26.7	27.1	<u>27.1</u>	27.1	27.0	26.7	26.6	26.3	26.2	25.9	<u>25.9</u>	26.6	36.7	17.8
4. Camron Highlands	1471.6	16.9	17.3	17.8	<u>18.4</u>	18.3	18.0	17.6	17.6	17.5	17.7	17.5	17.2	17.7	26.4	8.1
5. Sitiawan	7.0	25.9	26.4	26.8	<u>27.1</u>	27.0	26.9	26.5	26.5	26.3	26.2	26.0	<u>25.8</u>	26.5	35.7	17.7
6. Subang	16.5	25.9	26.3	26.6	26.7	<u>27.0</u>	26.7	26.3	26.4	26.2	26.2	25.9	<u>25.8</u>	26.3	36.0	18.1
7. Met. Head.qu.	46	26.5	26.9	27.3	27.2	27.5	<u>27.8</u>	27.0	27.2	26.8	26.8	26.4	<u>25.9</u>	26.9	36.3	19.9
8. Malacca	8.5	26.0	26.6	26.7	26.9	<u>26.9</u>	26.6	26.3	26.1	26.2	26.3	25.9	<u>25.8</u>	26.3	36.0	19.6
9. Johore Baru	38	25.0	25.1	25.5	25.8	<u>26.0</u>	25.6	25.3	25.5	25.4	25.4	25.2	<u>25.0</u>	25.4	35.0	18.2
10. Keluang	88	25.2	25.4	26.1	26.3	<u>26.3</u>	26.0	25.5	25.8	25.6	25.8	25.3	<u>25.2</u>	25.7	35.6	19.3
11. Mersing	45.4	25.5	25.9	26.5	26.7	26.5	26.1	25.7	25.7	25.7	25.8	25.4	25.1	25.9	36.4	18.
12. Kuantan	15.3	<u>24.4</u>	25.0	25.7	26.6	<u>26.7</u>	26.5	26.3	26.2	26.1	25.9	25.2	24.6	25.8	35.5	16.8
13. Kuala Trengganu	35.1	<u>24.9</u>	25.5	26.1	27.0	<u>27.2</u>	26.8	26.6	26.4	26.2	26.1	25.3	25.2	26.1	33.9	18.4
14. Kota Baru	4.6	<u>25.5</u>	26.0	26.7	27.7	<u>27.9</u>	27.5	27.2	26.9	26.8	26.6	25.8	25.7	26.7	35.5	18.3

Table 2 MONTHLY MEAN RELATIVE HUMIDITY

Unit: %

	El.-m	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean	Daily	
															Max.	Min.
1. Alor Star	4.6	74.0	71.2	73.6	78.6	83.2	83.9	83.7	83.5	85.3	<u>86.0</u>	84.7	80.3	80.7	96.8	57.3
2. Bayan Lepas	33	73.9	74.7	77.2	81.7	83.3	82.7	81.9	82.4	84.4	<u>84.7</u>	82.7	79.0	80.7	96.4	60.7
3. Ipoh	39	78.4	77.0	77.7	81.4	81.6	80.4	79.4	80.1	81.9	83.2	<u>84.2</u>	83.1	80.7	97.1	53.3
4. Cameron Highlands	1471.6	85.3	83.2	83.8	87.0	88.4	87.5	86.6	87.9	89.1	89.3	<u>89.7</u>	89.0	87.2	96.9	65.6
5. Sitiawan	7.0	83.7	82.5	82.7	84.7	84.5	83.8	83.4	83.7	85.3	86.2	<u>87.1</u>	86.9	84.5	99.1	61.0
6. Subang	16.5	82.5	81.2	82.2	84.9	84.3	83.9	83.4	83.0	84.6	85.6	<u>86.8</u>	85.7	84.0	98.3	55.9
7. Met. Head.qu.	46	78.7	78.3	78.7	81.8	80.6	79.4	79.7	78.7	81.5	81.7	<u>83.7</u>	82.4	80.4	94.9	54.9
8. Malacca	8.5	79.0	77.0	80.3	84.2	85.0	85.9	85.6	86.1	85.7	85.3	<u>86.4</u>	84.7	83.8	98.5	60.2
9. Johore Baru	38	83.5	83.6	84.6	87.1	87.3	87.6	87.5	87.2	87.3	87.4	<u>88.9</u>	87.7	86.7	99.2	60.8
10. Keluang	88	82.3	82.8	82.0	85.0	85.8	86.1	86.4	85.9	86.3	85.6	<u>87.7</u>	86.3	85.2	97.8	61.3
11. Mersing	45.4	81.7	82.3	81.6	83.4	84.8	86.1	86.3	86.4	85.8	85.8	<u>87.4</u>	87.3	84.9	95.9	67.5
12. Kuantan	15.3	84.3	83.0	83.2	83.6	84.6	84.1	83.7	83.8	84.1	85.9	88.4	<u>89.1</u>	84.8	98.5	61.0
13. Kuala Trengganu	35.1	84.3	83.3	83.4	83.6	84.7	85.2	84.8	85.4	85.8	87.1	<u>89.5</u>	87.7	85.4	98.2	68.7
14. Kota Baru	4.6	80.5	78.8	79.0	79.0	79.5	79.9	80.3	81.9	82.0	83.6	86.4	84.5	81.3	95.9	62.1

Table 3 MEAN DAILY SUNSHINE HOURS

														Unit: h
	El.-m	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean
1. Alor Star	4.6	8.40	8.58	8.53	8.42	7.07	5.98	6.36	6.15	5.38	5.25	5.33	6.12	6.80
2. Bayan Lepas	33	8.13	8.16	7.91	7.53	6.53	6.31	6.46	6.12	5.12	5.35	5.75	6.32	6.64
3. Ipoh	39	7.31	7.46	7.48	7.24	6.67	6.59	6.69	6.19	5.65	5.55	5.37	5.60	6.48
4. Cameron Highlands	1471.6	5.38	5.70	5.78	5.21	4.86	5.03	4.96	4.61	3.86	3.69	3.41	3.54	4.67
5. Sitiawan	7.0	6.85	7.05	7.12	7.13	6.76	6.51	6.61	6.36	5.57	5.44	5.16	5.45	6.33
6. Subang	16.5	6.35	6.75	6.93	6.76	6.83	6.28	6.52	6.14	5.32	5.52	4.93	5.13	6.12
7. Met. Head.qu.	46													
8. Malacca	8.5	6.79	6.96	6.95	7.12	6.99	6.17	6.52	6.11	5.59	5.81	4.98	5.28	6.27
9. Johore Baru	38													
10. Keluang	88													
11. Mersing	45.4	6.20	7.03	7.69	7.64	7.59	6.68	6.46	6.32	5.80	5.82	4.55	4.34	6.34
12. Kuantan	15.3	5.49	6.45	6.90	7.15	6.67	6.11	6.59	6.20	5.60	5.20	3.67	3.41	5.79
13. Kuala Trengganu	35.1	6.45	7.55	8.24	8.82	8.03	6.88	7.04	6.91	6.23	5.77	4.36	4.08	6.70
14. Kota Baru	4.6	7.19	8.15	8.52	8.99	7.99	6.89	7.12	7.18	6.75	5.73	4.36	4.46	6.94

Table 4 MONTHLY OPEN WATER EVAPORATION

														Unit: mm
	El.-m	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1. Alor Star	4.6	151	152	177	175	155	145	146	147	143	136	130	130	1,787
2. Bayan Lepas	33.0	158	154	176	168	151	147	147	147	142	138	136	137	1,801
3. Ipoh	39.0	148	146	170	162	154	150	150	149	148	141	133	129	1,780
4. Cameron Highlands	1471.6	101	102	118	110	102	102	104	101	101	97	90	87	1,215
5. Sitiawan	7.0	142	141	164	159	151	145	144	147	144	138	129	126	1,730
6. Subang	16.5	139	139	160	154	149	141	142	144	143	140	130	124	1,705
7. Met. Head.qu.	46													
8. Malacca	8.5	147	144	162	157	147	137	138	140	142	141	132	126	1,713
9. Johor Baru /*	38	142	130	148	137	135	124	132	138	136	145	135	133	1,635
10. Keluang	88													
11. Mersing	45.4	149	151	172	166	153	143	139	144	149	145	129	121	1,761
12. Kuantan	15.3	130	134	156	156	147	141	144	146	147	136	116	106	1,659
13. Kuala Trengganu	35.1	137	142	170	177	163	150	150	151	151	141	119	115	1,766
14. Kota Baru	4.6	144	148	177	185	167	155	155	157	158	143	122	119	1,830

Remarks: /* Estimated by the Hargreaves Method.
The others are estimated by the Penman's Method.

Table 5 NUMBER OF RAINGAUGES
IN PENINSULAR MALAYSIA

Agency	Automatic	Manual	Total
DID	169	636	805
MMS	56	174	230
Total	225	810	1,035

Table 6 NUMBER OF SELECTED RAINGAUGES
BY RAINFALL REGION

Region	Area (km ²) (approximate)	Number of Rain gauge
Northwest	16,000	34
West	41,000	70
Port Dickson- Muar Coast	8,000	20
Southwest	18,000	20
East	48,000	50
Total		194

Table 7 BASIN MEAN MONTHLY RAINFALL

Basin No.	River	C.A (km ²)	Unit: mm												Total
			Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	
1.	Perlis	790	58	34	97	155	214	167	169	179	265	253	204	104	1,903
2.	P. Langkawi	475	24	43	64	142	209	206	214	200	304	263	210	78	1,958
3.	Kedah-A	3,695	48	46	100	186	252	185	203	220	310	357	245	124	2,274
4.	Merbock & Others	520	49	58	97	190	275	228	226	229	340	383	238	123	2,433
5.	Muda	4,300	70	68	124	235	260	189	210	221	286	409	299	158	2,528
6.	Perai & Others	895	77	111	167	222	258	212	211	260	388	276	277	120	2,780
7.	P. Pinang	300	95	83	151	211	200	146	169	191	274	374	258	173	2,325
8.	Kurian	1,420	136	137	212	286	242	164	175	186	271	409	341	233	2,790
9.	Kuran & Others	3,255	148	164	201	260	217	149	158	178	231	354	321	252	2,634
10.	Perak	14,700	128	118	146	223	200	144	149	165	222	327	284	237	2,342
11.	Bernam	3,335	160	150	196	255	219	148	128	164	201	315	323	234	2,490
12.	Tengi & Others	565	152	137	159	211	174	128	119	145	165	240	286	233	2,142
13.	Selangor	1,820	163	144	208	270	213	159	137	162	202	285	302	241	2,498
14.	Buloh & Others	560	160	132	158	207	138	123	110	141	180	251	257	212	2,068
15.	Kelang	1,425	154	139	182	237	179	133	139	156	179	259	271	217	2,246
16.	Longat	1,815	136	122	172	223	183	140	152	156	188	257	297	197	2,207
17.	Sepang & Others	640	110	96	122	185	184	168	195	201	228	255	259	172	2,176
18.	Linggi & Others	1,420	93	96	147	220	189	148	164	159	201	230	263	172	2,082
19.	Melaka & Others	1,010	75	92	139	191	161	150	165	162	182	203	226	168	1,910
20.	Kesang	705	76	86	135	183	161	136	142	143	157	182	212	165	1,778
21.	Muar & Others	6,595	101	114	150	182	156	113	133	126	146	173	214	193	1,796
22.	Batu Pahat & Others	2,600	115	138	174	225	168	141	147	154	182	209	230	205	2,088
23.	Pontian Kechil & Others	2,660	147	172	198	257	223	175	171	186	205	237	269	279	2,521
24.	Johor & Others	3,250	165	164	155	225	204	157	163	167	182	217	275	320	2,395
25.	Sedili Besar & Sedili Kechie	1,820	194	179	144	213	218	165	161	173	189	215	315	369	2,534
26.	Mersing & Others	880	289	173	139	143	156	150	150	174	186	215	398	621	2,795
27.	Endau	4,740	227	190	161	189	189	158	157	171	181	213	312	454	2,601
28.	Pompri & Pontian	4,285	217	161	157	156	153	125	140	151	156	198	301	430	2,343
29.	Behar & Marchong	1,895	312	172	171	142	148	116	124	132	162	207	345	627	2,659
30.	Pahang & Pener	29,300	143	106	122	171	184	143	135	153	185	243	268	267	2,127
31.	Kuantan & Others	2,025	265	149	143	148	169	133	140	173	197	267	324	521	2,629
32.	Kemaman & Others	2,570	290	169	148	143	198	180	172	208	393	333	389	609	3,097
33.	Pala	850	253	133	135	123	147	157	160	197	219	307	501	593	2,923
34.	Dugun	1,875	269	157	138	127	175	204	199	234	273	347	563	622	3,309
35.	Marng & Others	760	297	171	126	107	167	178	184	234	262	365	597	722	3,414
36.	Trengganu	4,650	294	185	142	165	194	194	190	227	280	369	606	704	3,549
37.	Setiu & Others	1,035	289	130	113	90	123	176	168	231	261	329	641	723	3,273
38.	Besutg Keluang	1,230	303	150	103	104	168	182	171	209	255	294	501	798	3,239
39.	Kemasin & Semerak	1,020	203	83	77	82	152	150	175	205	255	289	562	563	2,795
40.	Kelantan & Others	13,100	176	97	105	138	195	178	176	193	230	304	365	401	2,558
41.	Golock	895	185	81	69	95	187	188	240	247	293	357	475	548	2,966

Table 8 INVENTORY OF HYDROLOGICAL STATIONS (1/3)

	Station Code	State	Catchment Area (km ²)	Recorded Period	Nos. of Recorded Yrs.
1.	1737451	Johor	1,130	1963 - 1979	14
2.	1931423	Johor	186	1960 - 1980	8
3.	2130422	Johor	350	1970 - 1979	6
4.	2224432	Melaka	161	1960 - 1980	18
5.	2234475	Johor	2,945	1976 - 1979	1
6.	2237471	Johor	207	1961 - 1979	16
7.	2322413	Melaka	350	1960 - 1980	17
8.	2322415	Melaka	73	1963 - 1970	4
9.	2519421	N. Sembilan	523	1960 - 1980	16
10.	2527411	Johor	3,130	1960 - 1979	12
11.	2528414	Johor	660	1960 - 1979	18
12.	2625412	N. Sembilan	1,212	1960 - 1980	15
13.	2722413	N. Sembilan	370	1960 - 1980	18
14.	2816441	Selangor	1,240	1960 - 1980	18
15.	3015431	Selangor	712	1960 - 1978	14
16.	3022431	N. Sembilan	904	1960 - 1980	17
17.	3029482	Pahang	2,252	1976 - 1978	2
18.	3116430	Selangor	457	1973 - 1980	6
19.	3116434	Selangor	145	1960 - 1980	19
20.	3224433	Pahang	2,000	1972 - 1976	5
21.	3414421	Selangor	1,450	1960 - 1980	19
22.	3423421	Pahang	2,920	1972 - 1977	3
23.	3424411	Pahang	19,000	1963 - 1980	15

Table 9 INVENTORY OF HYDROLOGICAL STATIONS (2/3)

	Station Code	State	Catchment Area (km ²)	Recorded Period	Nos. of Recorded Yrs.
24.	3516422	Selangor	321	1961 - 1980	18
25.	3527410	Pahang	25,600	1973 - 1979	7
26.	3813411	Selangor	1,090	1961 - 1980	16
27.	3930401	Pahang	582	1975 - 1980	2
28.	4019462	Pahang	1,670	1965 - 1979	9
29.	4023412	Pahang	13,200	1972 - 1980	6
30.	4121413	Pahang	7,320	1972 - 1980	7
31.	4223450	Pahang	5,050	1973 - 1979	6
32.	4232451	Trengganu	630	1966 - 1976	4
33.	4310401	Perak	N.A.	1973 - 1980	6
34.	4311464	Perak	432	1960 - 1980	16
35.	4809443	Perak	7,769	1960 - 1980	18
36.	4832441	Trengganu	1,480	1972 - 1980	2
37.	4907422	Perak	803	1960 - 1980	19
38.	5007421	Perak	337	1960 - 1980	16
39.	5028401	Trengganu	N.A.	1974 - 1975	1
40.	5106433	Perak	216	1960 - 1980	19
41.	5130432	Trengganu	3,340	1960 - 1980	15
42.	5206432	Perak	629	1973 - 1980	3
43.	5222452	Kelantan	2,430	1975 - 1980	4
44.	5320443	Kelantan	7,770	1972 - 1980	7
45.	5405421	P. Pinang	129	1960 - 1979	19
46.	5505412	P. Pinang	4,010	1960 - 1979	19

Table 10 INVENTORY OF HYDROLOGICAL STATIONS (3/3)

Station Code	State	Catchment Area (km ²)	Recorded Period	Nos. of Recorded Yrs,
47. 5606410	Kedah	3,330	1970 - 1980	8
48. 5721442	Kelantan	11,900	1960 - 1980	16
49. 5724411	Trengganu	787	1960 - 1970	8
50. 5806414	Kedah	1,710	1960 - 1980	19
51. 6007415	Kedah	1,220	1960 - 1973	9
52. 6019411	Kelantan	561	1961 - 1980	14

Remarks: Nos. of Recorded Years: Number of years in which data is not lacking more than 2 continuous months.

N.A.: Data not readily available.

Table 11 KEY STATIONS AND BASIN NUMBER

Rainfall Region	Key Station	Supplemental Station	Basin Number
North-West	5007421	4311464	1 - 9
West	4311464	3813411	10
	3813411	4311464	11
	3414421	-	12 - 17
Port Dickson- Muar Coast	2322413	2224432	18 - 19
	2224432	2322413	20
	2527411	2224432	21 - 22
South West	1737451	2322413	23 - 29
East	3424411	3022431	30
	5130432	5721442	31 - 38
	5721442	5130432	39 - 41

Table 12 MONTHLY NATURAL RUNOFF AT KEY STATION (1/3)

STATION : 1737451													UNIT: 10 ⁶ m ³ /s
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1961	96.5	48.9	73.1	123.1	142.7	75.7	22.2	26.3	16.5	15.5	20.7	47.1	707.5
1962	22.2	2.4	60.0	142.0	109.0	37.3	22.0	37.2	74.6	141.2	164.6	57.3	869.9
1963	24.1	3.9	0.8	2.1	25.4	10.1	8.3	9.9	71.0	140.3	169.8	141.4	607.2
1964	87.9	84.7	283.9	128.6	149.5	32.1	20.5	32.7	71.0	56.2	24.1	163.9	1205.1
1965	135.5	36.8	20.1	62.7	113.0	39.1	29.2	59.7	36.8	115.4	172.4	165.0	985.8
1966	115.7	45.0	52.8	83.5	83.2	65.1	91.9	108.7	72.1	107.1	154.7	150.0	1109.7
1967	234.9	269.3	147.5	122.6	181.1	69.3	51.4	31.1	60.4	64.8	301.2	151.3	1680.0
1968	64.0	8.3	40.7	98.2	102.0	55.6	51.7	15.5	41.2	90.3	137.1	102.6	817.3
1969	80.9	28.4	20.1	73.4	99.4	114.6	83.8	115.7	88.1	155.0	82.2	176.0	1295.5
1970	81.4	48.9	39.1	119.2	146.5	68.4	70.7	66.2	48.5	89.7	122.1	129.9	1050.6
1971	265.4	27.3	35.4	20.0	14.2	23.6	25.2	59.5	59.1	37.8	42.8	202.0	812.1
1972	45.5	29.6	16.1	84.0	95.4	61.7	19.8	28.7	67.4	45.8	121.6	116.5	731.9
1973	114.2	83.7	58.9	123.9	122.8	92.8	72.0	71.2	72.3	90.5	103.2	73.9	1082.3
1974	22.2	49.1	38.8	53.4	64.3	57.8	65.6	32.9	97.5	44.3	43.0	51.4	640.4
1975	33.7	23.0	20.5	142.3	133.7	98.7	78.2	40.8	64.8	44.5	103.4	85.2	958.3
1976	23.0	10.0	31.7	32.1	42.3	31.6	39.1	32.7	29.0	105.0	72.6	162.8	402.1
1977	165.0	72.3	46.8	17.9	46.9	55.0	36.2	55.7	61.7	151.6	140.5	89.2	926.7
1978	162.0	10.6	64.0	82.2	122.7	43.0	84.2	38.0	39.1	45.3	122.1	180.5	1025.6
1979	120.5	17.2	74.7	140.7	54.6	52.5	56.5	48.5	85.3	52.8	436.8	126.2	1301.8
AVERAGE	99.7	50.4	61.5	88.0	96.5	57.8	52.7	49.0	60.8	83.8	133.4	135.4	968.9

STATION : 2224432													UNIT: 10 ⁶ m ³ /s
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1961	10.7	4.1	5.4	13.2	15.5	11.1	3.7	5.4	6.0	5.1	5.2	6.2	91.6
1962	3.6	1.2	8.0	13.7	14.3	6.0	3.2	5.9	10.1	12.6	8.3	5.9	94.8
1963	2.9	0.7	0.5	0.5	4.0	0.1	0.1	0.1	6.7	13.1	13.5	14.5	56.5
1964	7.5	5.5	13.7	9.3	11.5	2.9	5.9	3.5	10.1	3.2	4.9	10.7	88.7
1965	2.9	0.7	0.8	4.4	2.9	1.3	0.8	1.9	3.4	5.6	13.2	19.0	57.0
1966	6.7	1.5	2.9	10.6	5.9	4.4	3.2	2.9	5.2	9.4	12.7	20.1	85.5
1967	16.3	11.1	9.1	8.0	12.9	9.1	9.6	7.8	7.5	4.8	15.8	17.7	129.8
1968	13.7	1.5	4.8	9.1	13.7	5.7	3.2	2.9	7.5	9.6	16.6	13.4	101.7
1969	8.3	2.7	4.0	7.0	12.9	10.6	8.8	5.6	6.2	16.1	21.0	24.6	127.9
1970	7.5	1.7	5.4	10.1	11.8	10.1	5.9	3.7	10.4	7.6	15.8	15.0	104.3
1971	21.2	4.8	11.0	6.7	5.4	6.0	4.3	7.2	11.4	5.9	15.0	51.6	130.5
1972	9.6	5.0	5.4	8.3	6.2	4.7	1.1	1.1	6.0	5.1	9.3	9.1	70.8
1973	2.1	1.5	3.7	8.0	10.4	6.2	2.7	4.0	8.3	11.0	14.3	10.2	82.5
1974	2.4	1.0	1.7	4.9	7.0	3.9	3.7	5.9	14.0	8.8	8.0	5.6	69.0
1975	3.2	0.7	7.8	10.6	7.0	8.8	4.0	5.1	16.1	7.0	14.5	17.7	102.4
1976	3.5	0.5	4.3	5.7	8.3	4.1	2.7	8.3	14.8	31.6	31.9	13.1	126.8
1977	5.9	3.4	4.6	2.6	4.3	3.4	5.1	7.5	6.5	13.9	13.7	6.2	77.0
1978	2.9	0.5	3.2	6.2	17.7	6.2	4.8	9.9	8.8	4.3	7.3	5.1	76.9
1979	1.6	1.0	4.0	17.8	4.8	4.4	5.6	1.9	4.4	4.3	20.0	6.7	76.3
AVERAGE	7.1	2.6	5.4	8.3	9.3	5.7	4.1	4.8	8.6	9.4	13.7	13.3	92.2

STATION : 2322413													UNIT: 10 ⁶ m ³ /s
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1961	21.7	11.1	16.9	28.3	33.2	17.4	5.1	6.2	3.4	3.9	4.7	10.7	162.0
1962	5.1	0.5	13.7	32.7	24.9	8.6	5.1	8.6	17.1	32.4	37.8	13.1	199.5
1963	5.6	1.0	0.3	0.5	5.9	2.3	1.9	2.1	16.3	32.1	38.9	32.4	139.4
1964	12.6	15.8	27.1	27.2	35.1	5.2	25.4	16.1	12.2	9.4	14.3	22.0	222.2
1965	9.4	4.1	4.3	17.9	23.3	9.8	16.3	8.3	9.8	15.0	26.4	28.4	173.1
1966	19.0	9.7	9.6	21.3	13.9	11.9	11.2	17.9	13.7	27.5	27.2	42.9	224.8
1967	37.8	21.0	21.7	17.1	23.8	19.7	26.5	8.8	7.5	6.7	51.6	26.0	268.5
1968	12.9	1.8	6.3	30.3	34.8	12.2	10.4	3.2	8.3	23.3	19.4	28.7	193.6
1969	18.5	5.3	7.0	16.8	17.9	14.8	15.3	15.0	8.0	16.5	27.7	25.7	187.3
1970	21.2	8.2	12.6	15.4	21.4	18.1	15.0	14.5	20.0	17.4	23.9	44.2	236.9
1971	65.1	12.6	25.4	14.5	11.0	10.9	12.6	20.6	26.4	20.1	30.8	59.7	309.8
1972	20.1	15.3	13.1	24.1	16.9	16.1	9.6	6.7	18.7	16.9	21.5	29.7	208.7
1973	12.9	7.7	20.8	24.4	28.1	16.6	6.4	9.6	23.1	34.6	40.4	34.6	259.0
1974	10.7	8.7	7.8	10.1	14.5	9.3	12.9	14.7	18.1	12.1	15.8	13.1	147.8
1975	13.7	9.7	16.3	23.8	16.3	18.7	17.9	12.9	22.8	16.6	32.4	44.7	245.9
1976	7.8	2.3	5.4	8.0	8.8	5.4	1.6	4.8	27.2	41.8	54.4	12.6	180.1
1977	9.6	4.8	3.5	2.9	4.6	3.9	5.8	16.3	4.4	10.2	10.4	2.1	78.3
1978	6.2	1.0	6.4	12.7	35.9	12.4	9.6	20.1	17.9	8.8	14.5	10.2	155.7
1979	3.5	2.2	9.4	35.5	5.1	1.8	5.6	0.8	7.5	3.2	21.5	6.4	102.5
AVERAGE	16.5	7.5	12.1	19.3	19.6	11.3	11.3	10.9	14.9	18.2	27.2	25.6	194.5

STATION : 2527411													UNIT: 10 ⁶ m ³ /s
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1961	213.9	57.6	103.1	176.3	233.3	18.3	12.3	21.2	21.3	22.0	55.2	76.6	1030.9
1962	95.6	11.9	85.2	241.1	187.2	46.9	20.4	51.4	53.1	92.4	151.6	107.7	1144.5
1963	65.9	9.4	11.2	6.7	13.7	8.6	8.4	7.2	17.1	41.0	110.2	118.1	415.5
1964	66.4	41.6	330.0	66.9	195.5	30.1	40.7	22.0	37.8	33.5	44.8	189.9	1099.2
1965	43.1	18.1	13.1	50.6	75.8	20.7	21.2	21.7	30.3	68.6	290.8	191.8	851.3
1966	174.4	34.1	54.9	145.4	68.0	31.6	31.1	44.5	47.2	197.1	296.0	255.8	1380.1
1967	345.0	254.3	312.6	76.5	147.6	63.2	50.6	30.8	40.4	84.6	258.2	398.0	2061.8
1968	159.9	22.6	34.0	43.8	97.0	47.7	40.7	19.3	37.8	73.9	107.3	187.0	870.9
1969	142.0	63.8	70.2	119.5	221.0	181.2	152.9	97.5	107.8	273.7	359.3	421.6	2190.4
1970	128.6	29.5	91.6	171.8	200.3	174.2	98.8	65.6	178.8	118.1	272.2	256.1	1785.7
1971	363.5	82.5	186.4	113.5	92.7	101.6	73.4	123.2	196.7	102.3	256.2	540.2	2234.2
1972	165.5	85.4	97.9	140.0	106.1	78.8	19.6	77.7	100.8	87.9	159.4	156.2	1209.1
1973	38.6	23.5	65.6	137.9	176.5	105.2	45.0	67.5	140.5	186.3	244.4	173.3	1406.3
1974	43.4	18.6	65.9	85.5	117.0	68.4	66.2	101.2	237.9	151.9	138.4	96.7	1191.2
1975	53.8	10.4	132.0	182.2	120.5	151.1	68.0	86.0	272.9	119.2	247.3	300.2	1743.8
1976	71.8	24.3	42.9	94.1	75.3	66.1	43.9	30.0	62.5	113.8	238.2	115.2	978.0
1977	133.9	136.7	35.6	26.2	72.0	47.2	27.1	22.8	32.1	111.7	128.8	72.6	846.7
1978	101.0	20.1	52.0	156.0	159.9	62.2	52.0	23.6	32.1	42.1	336.7	257.7	1295.2
1979	59.2	51.0	41.0	117.9	97.8	84.8	62.7	28.2	71.8	76.1	243.4	250.2	1182.0
AVERAGE	129.9	51.3	95.7	113.2	129.3	74.0	49.1	46.3	90.8	105.2	207.4	219.2	1311.4

Table 13 MONTHLY NATURAL RUNOFF AT KEY STATION (2/3)

STATION : 3414421 UNIT: 10⁶m³/d

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1961	217.5	135.2	165.5	162.5	231.6	99.5	80.5	87.0	148.5	115.2	175.0	226.4	1824.5
1962	228.7	77.9	142.5	215.9	315.0	127.0	79.0	121.5	110.2	204.9	181.8	261.1	2321.4
1963	115.0	61.9	81.7	48.0	89.2	45.4	48.7	68.0	67.6	238.4	496.1	341.0	1701.0
1964	192.0	107.7	135.5	120.5	192.3	99.3	170.6	91.7	194.9	119.5	201.2	170.1	1869.0
1965	68.0	60.0	79.3	175.7	267.6	78.3	65.4	65.6	97.2	239.4	311.0	578.2	1885.7
1966	201.4	167.1	154.1	226.3	132.0	138.7	116.9	171.4	90.5	196.3	292.4	366.3	2199.8
1967	240.5	133.1	165.5	200.4	243.7	150.3	91.6	61.3	80.9	162.8	389.1	245.1	2164.3
1968	95.6	78.2	65.9	112.6	259.8	170.6	151.9	79.3	91.8	200.1	226.8	295.2	1836.0
1969	237.0	118.1	146.0	149.0	298.1	193.9	98.6	122.4	102.9	270.6	241.4	231.0	2229.3
1970	252.8	91.1	112.2	249.9	201.9	119.6	77.1	71.8	115.3	167.4	267.2	245.9	2034.5
1971	320.1	123.6	149.2	114.3	92.1	76.9	82.2	172.5	179.4	88.9	166.7	324.1	1888.0
1972	135.3	130.5	81.7	167.7	189.6	144.1	73.4	62.4	64.3	156.2	295.5	305.9	1806.5
1973	188.3	93.6	132.1	214.4	288.7	198.2	94.8	110.6	132.7	233.5	262.8	280.7	2248.4
1974	101.2	107.2	99.9	156.8	188.0	121.0	95.4	73.7	156.3	86.0	156.0	150.0	1491.5
1975	186.1	125.6	151.5	215.4	145.4	90.2	116.5	76.6	169.0	97.2	218.8	217.0	1807.7
1976	102.0	54.9	138.2	184.8	95.1	112.0	77.9	109.0	72.0	234.9	179.1	131.8	1499.2
1977	135.5	77.7	72.6	90.2	144.2	164.5	80.1	54.1	73.6	315.8	158.3	117.9	1544.4
1978	76.3	55.2	75.8	138.2	178.4	70.5	52.5	35.9	52.6	82.5	202.4	124.3	1148.6
1979	62.0	62.2	49.0	109.4	116.8	132.2	97.5	58.4	128.8	160.7	276.8	130.2	1588.9
AVERAGE	166.5	98.0	115.0	161.3	196.2	122.5	91.2	86.1	113.4	181.6	201.1	241.3	1836.0

STATION : 3424411 UNIT: 10⁶m³/d

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1961	1287.1	1159.8	950.1	1575.8	1587.7	771.4	708.7	1037.6	862.1	742.7	951.5	1435.4	11365.0
1962	1514.4	631.6	1001.7	1584.7	1543.7	941.2	719.4	1369.5	1526.7	1417.1	2200.9	1360.1	15780.9
1963	1094.9	1692.7	1214.1	525.4	551.9	290.0	793.1	1683.9	1844.2	5015.3	4365.2	3534.1	20611.0
1964	1862.8	855.9	1358.2	1684.8	1604.5	569.4	2011.7	1258.8	1253.0	1691.4	2581.7	5777.1	21109.4
1965	1532.3	101.8	201.1	1716.9	1567.0	3240.5	1251.7	1862.6	1809.4	3355.9	4125.2	4287.1	27333.6
1966	1069.4	1916.0	2396.4	2715.9	2509.3	1781.0	1781.7	2717.2	1911.9	2561.6	5501.3	3726.1	30450.5
1967	5773.0	5163.8	6107.9	2071.9	3072.9	1466.6	1460.3	444.0	897.4	2738.4	5415.1	4204.0	37014.3
1968	1321.0	1004.3	987.8	875.8	1267.4	1587.6	1916.8	671.2	581.4	1288.9	1394.4	2072.1	23475.4
1969	2587.3	652.9	396.4	472.8	1338.0	1216.2	217.5	1553.1	952.8	1453.6	2169.8	2102.6	14992.6
1970	2687.0	763.2	1164.3	658.7	1019.9	905.8	917.4	927.8	1086.6	1307.6	1285.1	1881.2	14498.5
1971	3172.3	1712.5	1854.0	954.9	988.3	1007.3	1498.0	1658.7	1302.7	1206.4	1388.8	2688.9	18872.9
1972	2120.0	1319.7	1015.6	1149.6	1443.4	1178.0	757.5	942.3	1293.3	1524.3	1675.7	4052.2	18441.4
1973	1608.1	732.4	867.4	992.7	1672.7	1516.5	776.2	753.4	1019.2	1288.0	2171.1	4260.5	17043.4
1974	1176.4	1030.1	965.4	1165.5	1545.9	855.7	906.4	876.6	954.4	1255.5	1737.7	1299.0	15949.6
1975	2282.0	1114.5	1250.0	1129.5	1642.9	1016.6	805.7	557.5	746.0	785.3	2579.6	2658.0	16538.2
1976	1013.0	513.6	500.6	532.9	720.8	709.2	614.5	677.6	776.8	1197.5	1367.6	1823.7	10771.5
1977	1603.6	611.5	483.5	518.6	413.5	466.6	384.1	405.5	354.3	2272.8	1729.4	1003.9	9996.7
1978	1160.8	526.2	509.4	694.1	1273.0	856.1	659.7	591.1	506.5	776.7	2086.8	1982.8	11623.4
1979	901.8	557.8	449.3	685.4	685.7	688.5	844.5	441.7	1088.9	2466.3	3787.0	1870.1	14413.7
AVERAGE	2001.7	1022.7	1249.1	1124.8	1481.4	1109.3	1055.1	1056.3	1004.4	1739.8	2447.5	2641.3	18027.0

STATION : 3813411 UNIT: 10⁶m³/d

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1961	218.9	113.0	115.3	583.6	165.9	65.8	48.7	88.4	159.9	192.6	261.0	281.0	2130.1
1962	206.5	79.8	169.5	196.2	242.9	116.1	76.3	97.5	124.7	265.4	348.9	175.2	2099.1
1963	127.0	57.8	70.2	46.4	123.2	113.5	77.1	138.2	126.2	264.1	425.3	264.9	1813.7
1964	160.4	85.9	107.1	105.2	125.1	92.5	175.4	114.4	210.0	176.2	262.6	221.5	1834.2
1965	88.7	63.4	77.1	159.8	240.8	98.0	88.1	132.8	121.3	198.2	252.2	281.0	1861.4
1966	183.2	125.3	166.6	212.0	127.8	137.1	132.0	127.5	144.6	254.2	295.0	297.0	2202.4
1967	275.3	175.7	159.0	175.1	224.2	93.3	61.9	54.6	88.4	161.5	354.1	168.8	1968.0
1968	82.0	57.6	59.4	69.7	247.5	186.9	123.5	101.2	144.4	193.4	194.9	234.3	1654.7
1969	185.6	118.6	96.8	125.7	252.6	156.9	75.0	113.8	118.5	317.9	226.8	223.4	1982.6
1970	240.0	89.9	61.0	131.2	279.1	94.8	70.3	43.1	122.9	231.1	234.1	192.6	1713.1
1971	355.7	85.4	110.6	75.4	77.7	52.6	49.0	110.9	141.3	87.0	216.4	252.0	1612.0
1972	161.7	93.7	73.4	127.3	162.7	142.0	64.5	56.2	117.4	231.1	290.6	184.3	1705.0
1973	90.3	51.5	85.3	215.1	217.8	197.8	104.2	145.4	158.1	257.6	264.9	273.1	2054.0
1974	97.5	99.2	86.2	150.3	188.8	101.7	82.8	68.0	138.9	105.5	156.9	163.4	1471.0
1975	154.5	102.6	122.7	156.6	154.0	79.1	140.6	64.3	159.9	59.5	116.1	341.5	1651.0
1976	126.4	65.9	141.7	81.1	83.3	111.7	101.0	87.6	60.6	224.7	205.3	148.4	1437.1
1977	117.8	56.6	55.2	52.6	75.8	73.1	55.4	53.6	50.5	265.7	186.9	136.6	1179.9
1978	42.9	23.5	27.6	84.5	120.8	33.7	26.8	17.4	25.4	59.7	155.5	75.5	893.3
1979	29.5	40.4	91.6	122.6	94.8	96.2	87.6	57.6	144.1	118.8	265.2	119.5	1265.7
AVERAGE	154.9	81.0	96.5	140.9	170.8	106.4	84.7	88.0	127.5	192.5	244.9	212.4	1700.0

STATION : 4111884 UNIT: 10⁶m³/d

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1961	79.3	37.5	37.5	127.5	61.9	21.3	16.1	29.2	53.1	64.0	86.6	93.5	707.4
1962	115.7	17.9	28.1	66.9	120.8	56.0	22.2	73.9	59.9	140.1	89.2	26.5	757.3
1963	31.1	20.3	25.1	20.5	76.6	27.2	23.8	35.6	27.7	53.6	119.5	60.5	519.8
1964	30.8	37.6	25.2	26.4	34.3	23.3	65.5	29.7	47.4	40.2	66.9	39.4	484.7
1965	15.0	11.9	22.2	45.1	66.2	20.2	18.5	22.5	46.7	52.2	58.1	84.6	461.0
1966	39.1	24.9	34.8	38.6	26.9	31.9	37.2	20.1	27.2	56.8	64.5	45.0	445.1
1967	41.8	21.8	26.5	37.3	61.9	29.8	13.7	10.7	28.0	51.7	101.1	35.6	459.8
1968	18.5	15.1	16.7	23.1	81.3	56.5	26.5	12.1	15.3	28.9	37.8	41.5	369.5
1969	27.1	24.0	35.9	49.4	78.7	52.1	15.3	35.6	15.3	74.2	67.4	62.4	537.7
1970	29.8	23.2	21.2	43.5	92.7	31.4	10.2	14.5	40.7	76.9	71.0	64.0	569.0
1971	61.1	31.9	36.4	25.4	19.8	11.7	8.7	18.2	34.7	7.2	29.8	113.3	596.3
1972	23.1	21.3	8.0	49.0	45.5	27.7	8.6	3.4	22.3	62.7	94.9	46.1	474.2
1973	14.7	3.1	6.4	24.1	45.3	74.9	24.5	28.4	33.7	68.6	100.6	82.2	508.6
1974	34.8	21.3	23.0	44.8	88.6	28.0	26.0	15.5	53.4	21.2	31.1	23.8	391.6
1975	41.5	19.1	28.1	38.6	31.3	10.1	29.5	12.9	32.7	12.1	23.6	69.6	349.1
1976	42.1	15.3	46.9	27.0	27.6	57.1	55.5	29.2	26.7	74.7	68.2	49.3	477.4
1977	39.1	18.9	18.5	17.4	25.2	24.4	18.5	17.9	16.8	86.1	61.9	45.3	392.0
1978	14.2	7.7	9.1	28.0	40.2	11.1	8.8	5.6	8.3	19.8	51.4	25.2	229.7
1979	9.9	15.5	10.5	40.7	31.3	31.9	29.2	19.3	48.0	38.8	88.1	59.6	420.9
AVERAGE	40.0	20.3	24.9	40.7	54.5	30.9	22.7	23.0	32.5	54.5	68.0	55.1	466.9

Table 14 MONTHLY NATURAL RUNOFF AT KEY STATION (3/3)

STATION : 5007421												UNIT:	10 ⁶ m ³ /s
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1961	51.4	30.0	41.0	62.5	63.7	25.9	18.5	20.9	38.4	62.1	77.8	61.6	553.7
1962	52.0	11.1	33.2	53.1	49.8	16.1	10.4	29.7	36.3	91.3	78.5	53.0	514.7
1963	23.8	11.1	11.8	10.4	80.1	25.1	12.3	16.9	23.1	85.7	96.4	65.4	462.1
1964	23.7	20.5	19.6	24.6	48.5	22.3	52.2	29.7	53.1	46.9	85.0	37.5	455.8
1965	9.4	9.7	19.6	67.1	52.5	14.8	22.2	34.8	56.0	77.7	102.9	73.0	541.6
1966	27.6	42.6	39.4	61.4	53.1	68.4	68.3	60.0	64.3	91.9	94.3	78.5	747.9
1967	52.4	23.0	20.6	32.9	87.6	34.2	26.8	25.2	32.9	44.7	54.2	14.7	452.3
1968	17.4	14.3	10.2	21.5	78.2	52.0	24.6	11.5	14.3	27.1	35.3	38.8	346.0
1969	25.7	22.3	33.7	46.4	73.9	48.7	14.5	33.5	14.5	69.4	63.0	58.4	504.2
1970	73.1	21.3	27.0	57.3	87.0	61.2	47.1	41.5	69.7	93.2	104.5	81.2	763.3
1971	46.9	36.5	35.0	51.8	42.1	23.1	13.7	53.3	62.7	60.8	61.7	88.4	594.2
1972	29.5	31.6	27.1	70.8	56.4	47.2	18.5	22.8	64.8	97.8	136.1	62.7	665.0
1973	27.3	17.9	22.5	70.5	99.9	54.4	45.5	65.6	47.7	100.4	105.8	81.9	738.5
1974	33.7	32.9	15.5	48.5	66.0	38.4	38.8	31.1	58.8	53.8	59.1	26.5	501.2
1975	50.9	33.1	59.2	60.7	53.6	32.0	84.0	32.4	47.7	36.6	70.0	95.6	660.6
1976	59.4	14.3	43.9	25.1	24.0	34.7	33.3	27.3	25.1	69.9	63.8	46.1	447.0
1977	40.7	26.9	22.8	23.3	57.9	53.7	37.8	41.0	69.5	143.0	123.4	72.3	710.2
1978	33.2	22.0	34.0	63.2	76.3	30.6	24.9	18.7	31.4	93.2	89.7	33.5	550.8
1979	9.1	12.6	28.4	38.1	29.5	29.8	27.3	17.9	44.8	36.4	82.4	37.2	393.4
AVERAGE	35.4	22.9	29.0	46.8	61.8	37.5	32.7	32.3	45.0	72.8	83.4	58.5	550.0

STATION : 5130432												UNIT:	10 ⁶ m ³ /s
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1961	1342.7	516.7	290.5	371.7	369.9	239.8	189.8	159.8	292.4	533.7	775.3	1073.2	6163.1
1962	1721.9	480.2	632.4	267.8	411.4	218.0	236.2	251.8	345.3	426.9	625.2	1410.7	7220.1
1963	1708.3	544.3	440.6	197.3	168.7	152.9	133.3	202.0	307.2	424.0	932.9	1631.9	4845.5
1964	518.8	540.2	431.8	215.1	421.8	376.4	413.3	316.9	463.7	409.3	467.6	731.1	5307.9
1965	433.5	368.9	245.6	320.9	332.1	239.2	256.3	245.6	345.8	514.8	787.8	3203.4	2775.9
1966	2675.7	805.4	786.1	397.4	553.1	399.4	345.3	295.4	267.0	731.2	705.5	2701.4	10679.0
1967	4982.4	1760.2	1361.4	543.5	623.5	159.0	428.2	370.2	354.3	493.4	1424.6	1836.6	13637.7
1968	532.2	229.5	196.1	145.7	256.1	231.7	207.3	200.1	488.6	741.9	666.9	1745.2	5641.3
1969	971.7	303.4	186.1	134.5	158.3	163.8	136.1	161.2	212.8	289.5	1133.5	2761.4	6612.4
1970	1709.9	503.0	315.2	391.1	316.1	311.3	275.8	380.9	566.6	878.0	1221.0	1221.1	7693.8
1971	2445.1	522.5	832.4	519.1	338.8	315.4	340.2	407.7	516.3	428.3	623.0	1186.2	10281.2
1972	136.9	110.5	66.7	80.4	81.2	256.6	124.8	85.4	205.0	174.4	284.4	486.5	2272.7
1973	809.4	361.9	272.4	279.1	314.7	406.4	354.2	344.9	559.4	443.6	602.0	3788.6	8932.7
1974	534.1	776.6	442.5	688.5	495.0	427.9	368.5	300.5	415.5	557.1	1330.5	1484.1	7800.7
1975	2026.8	731.1	525.5	376.4	441.0	394.8	368.8	276.4	374.3	414.3	1708.6	1916.4	10356.4
1976	529.0	234.5	182.9	177.3	365.3	297.4	321.4	370.7	357.2	396.1	332.7	2047.1	6601.8
1977	1247.6	572.4	345.2	257.9	179.5	212.5	219.6	364.8	286.9	445.4	714.4	1112.1	5892.9
1978	1105.9	330.0	257.9	183.3	245.3	238.2	258.7	216.4	276.8	481.3	647.2	1894.2	6135.3
1979	486.2	317.8	254.3	288.2	312.3	346.3	293.3	231.4	438.3	395.3	2265.9	1030.9	6631.1
AVERAGE	1359.0	526.8	424.3	288.7	336.3	294.1	278.6	274.8	382.7	493.7	947.7	1866.5	7473.3

STATION : 5721442												UNIT:	10 ⁶ m ³ /s
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1961	1336.8	1284.1	737.1	923.8	919.2	596.2	471.1	396.9	726.8	1331.4	1926.6	2467.2	15317.2
1962	3026.9	937.0	1126.5	711.8	927.0	602.1	748.6	533.5	1152.4	1485.2	1517.6	2556.3	15324.8
1963	2591.6	856.2	672.5	336.2	383.8	391.9	415.4	603.2	656.6	1361.6	2365.5	2916.0	13304.6
1964	1289.4	1342.5	1073.2	534.7	1048.1	935.5	1026.9	787.4	1152.1	1617.3	1162.0	1822.1	13191.2
1965	845.3	605.8	488.0	608.3	855.5	616.9	760.1	959.7	1366.2	2078.4	2543.2	5062.4	14669.8
1966	3814.3	1441.4	1305.7	919.6	941.7	971.7	704.2	1113.7	1153.7	1425.7	1375.1	5266.0	20432.3
1967	6328.3	2728.4	3383.6	1350.7	1549.7	892.2	1064.9	919.6	880.2	1224.2	3540.7	2846.9	26711.5
1968	986.2	604.9	553.1	453.0	745.1	886.7	915.7	593.5	1105.5	1785.4	1080.1	1758.9	11449.0
1969	1693.8	610.1	469.8	376.1	609.1	655.1	564.6	674.4	635.3	1117.7	2627.8	4560.8	14584.6
1970	3130.8	1249.8	783.7	927.7	814.0	810.3	980.8	1032.5	1408.0	2162.1	2023.8	3034.6	18378.0
1971	6076.8	1298.4	2068.5	793.2	842.1	784.1	845.6	1013.5	1281.3	1064.4	1563.2	7918.7	25551.9
1972	1023.1	826.3	497.6	599.3	606.7	548.7	523.6	638.0	1530.8	1302.2	1974.3	5128.6	15199.4
1973	2011.5	899.7	676.8	549.5	792.3	1010.4	885.2	956.2	1390.1	1599.8	1993.2	9413.4	22200.0
1974	1757.3	1175.5	836.7	1271.4	1482.0	898.4	1125.7	936.6	1325.3	1662.8	2233.8	2176.5	16881.9
1975	4073.0	1684.2	1108.1	879.5	1358.8	970.2	990.7	874.2	1589.7	1444.2	3673.9	6088.3	22534.7
1976	1695.1	709.1	597.8	613.3	988.1	982.4	823.6	1124.4	1105.7	1714.7	2586.6	2965.8	15706.5
1977	2196.6	1008.6	661.8	451.5	467.6	522.8	723.4	981.6	657.1	1822.7	2267.2	1683.6	13444.6
1978	1914.8	682.9	663.2	510.9	804.9	809.7	1006.3	620.0	1210.2	1263.1	2020.7	3112.0	14618.6
1979	1210.1	789.1	606.9	667.4	776.5	860.5	728.8	575.1	1089.2	982.7	5631.6	2562.2	16480.1
AVERAGE	2568.5	1080.7	963.7	710.5	890.1	776.6	805.6	807.1	1127.3	1465.6	2310.9	3765.4	17271.9

Table 15 5-DAY NATURAL RUNOFF AT STATION NO. 1737451 (1/3)

STATION		YEAR 1961											UNIT
		1737451											CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	69.21a	9.60a	12.74a	25.05a	85.44a	21.38a	10.56a	8.64a	5.24a	8.03a	9.25a	8.81a	
6-10	52.72a	8.29a	22.09a	22.76a	97.31a	31.86a	7.68a	23.13a	5.85a	6.55a	2.88a	3.49a	
11-15	36.13a	11.26a	24.53a	55.68a	68.25a	32.12a	7.86a	14.23a	4.28a	3.40a	5.76a	6.72a	
16-20	24.87a	41.54a	29.24a	44.51a	36.05a	48.35a	9.51a	9.51a	4.01a	3.00a	6.02a	17.11a	
21-25	18.68a	31.51a	52.63a	69.56a	22.26a	25.31a	8.47a	3.32a	5.67a	7.33a	5.59a	57.87a	
26-END	14.54a	17.75a	22.84a	68.16a	22.47a	16.15a	6.76a	1.89a	8.55a	6.18a	18.42a	14.33a	

STATION		YEAR 1962											UNIT
		1737451											CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	17.81a	1.75a	1.57a	86.84a	41.54a	8.55a	11.78a	4.01a	18.94a	13.35a	79.69a	30.98a	
6-10	6.02a	1.31a	12.48a	84.05a	40.41a	26.44a	13.97a	3.06a	28.37a	31.86a	64.06a	21.56a	
11-15	2.97a	1.05a	22.95a	61.44a	63.36a	11.78a	10.47a	17.63a	17.72a	107.61a	63.89a	28.28a	
16-20	13.35a	0.61a	19.81a	41.66a	56.21a	10.74a	8.64a	31.07a	48.18a	68.51a	98.62a	13.09a	
21-25	6.89a	0.35a	40.24a	32.05a	29.41a	16.23a	3.06a	12.22a	40.67a	52.72a	41.37a	17.19a	
26-END	3.49a	1.31a	34.62a	22.87a	17.89a	12.39a	2.54a	15.06a	18.77a	43.71a	33.34a	18.18a	

STATION		YEAR 1963											UNIT
		1737451											CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	22.06a	2.44a	0.61a	0.26a	2.53a	2.18a	1.83a	2.62a	30.29a	15.80a	32.90a	87.72a	
6-10	11.52a	1.83a	0.09a	0.74a	15.45a	11.00a	2.97a	1.92a	34.82a	66.24a	21.82a	63.71a	
11-15	6.81a	1.31a	0.16a	1.22a	6.89a	4.36a	2.88a	7.51a	29.94a	53.24a	87.32a	63.71a	
16-20	4.98a	1.31a	0.23a	0.52a	18.50a	0.61a	5.32a	5.85a	16.06a	32.99a	83.52a	43.64a	
21-25	3.23a	1.31a	0.29a	0.52a	11.52a	0.87a	2.18a	2.64a	41.63a	74.97a	72.79a	26.62a	
26-END	6.18a	1.31a	0.36a	1.53a	3.35a	4.36a	3.27a	1.96a	11.96a	68.00a	94.61a	35.13a	

STATION		YEAR 1964											UNIT
		1737451											CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	35.08	18.58	239.66	24.67	88.64	15.44	14.22	27.86	23.04	7.46	14.02	7.58	
6-10	19.44	26.44	65.12	74.56	93.12	13.88	22.54	12.76	47.40	17.50	15.58	2.94	
11-15	11.48	21.60	152.90	64.10	83.68	14.12	20.22	9.32	32.94	7.62	8.08	5.96	
16-20	39.92	13.88	110.00	59.86	43.28	9.44	35.94	9.72	28.88	43.98	6.88	10.78	
21-25	56.72	16.64	49.94	57.58	22.20	12.86	55.98	8.56	20.50	30.88	3.94	140.04	
26-END	33.75	123.63	32.78	66.88	12.78	8.38	50.63	5.93	11.84	19.08	7.36	177.03	

STATION		YEAR 1965											UNIT
		1737451											CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	171.72	10.74	8.38	13.24	33.68	22.26	11.98	20.34	12.04	26.58	88.84	73.28	
6-10	59.16	11.04	7.18	19.82	36.84	15.90	7.82	22.52	14.78	21.60	61.38	52.26	
11-15	33.52	23.08	6.46	24.44	50.52	11.36	19.08	24.50	8.94	39.62	47.52	56.80	
16-20	21.16	18.26	5.40	26.72	50.68	16.84	9.14	24.16	15.50	37.84	46.02	74.92	
21-25	14.46	13.20	9.30	34.92	49.82	12.30	8.58	24.92	17.86	64.16	55.16	52.16	
26-END	11.18	14.20	8.05	25.82	33.67	11.80	9.55	18.03	16.16	81.13	80.56	60.45	

STATION		YEAR 1966											UNIT
		1737451											CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	50.48	24.80	13.54	11.88	50.14	27.98	13.94	27.68	42.16	22.32	24.96	45.50	
6-10	32.90	19.26	32.84	18.46	24.76	34.76	26.32	43.40	25.22	28.06	36.92	51.36	
11-15	45.84	15.46	17.68	46.78	18.28	30.00	40.44	35.18	34.02	69.40	74.98	62.52	
16-20	30.52	17.90	15.82	33.16	16.74	24.12	48.28	48.56	19.00	47.56	72.52	53.20	
21-25	30.28	19.74	24.12	38.62	16.90	18.76	44.74	46.06	27.04	42.32	80.90	57.10	
26-END	48.13	13.03	14.97	44.46	16.13	14.82	32.68	42.22	19.16	32.13	68.04	64.58	

STATION		YEAR 1967											UNIT
		1737451											CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	56.86	39.96	127.16	24.68	81.18	25.84	16.34	9.62	18.38	22.56	63.16a	58.98a	
6-10	52.66	21.54	60.62	33.28	53.04	18.96	17.86	8.54	26.36	20.60	68.15a	55.16a	
11-15	196.66	50.24	53.52	24.36	89.22	18.60	24.80	12.44	23.12	19.44	130.72a	45.86a	
16-20	143.68	284.50	53.00	25.78	82.56	42.76	26.28	15.32	15.38	13.64	176.12a	102.51a	
21-25	51.00	182.48	30.48	40.12	64.46	31.48	19.80	11.22	20.22	35.22	140.82a	45.16a	
26-END	35.48	74.63	20.62	135.36	60.30	23.00	11.73	12.47	36.32	32.25	118.19a	35.60a	

STATION		YEAR 1968											UNIT
		1737451											CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	55.09a	5.93a	0.50a	76.32	39.64	24.80	35.31a	8.80a	11.18a	23.33	56.78	30.58	
6-10	31.15a	5.54a	0.59a	39.84	37.18	26.66	16.12a	5.64a	13.45a	28.84	56.90	29.64	
11-15	23.34a	3.86a	6.43a	34.06	31.84	30.74	7.52a	4.94a	8.11a	56.08	37.52	42.90	
16-20	15.92a	2.97a	11.57a	23.40	57.34	32.18	24.92a	6.13a	44.61a	26.72	76.18	64.42	
21-25	12.96a	0.79a	24.63a	25.96	38.92	19.78	13.95a	5.34a	10.29a	21.36	49.00	32.84	
26-END	8.16a	0.37a	42.28a	27.62	25.85	17.84	18.38a	4.04a	7.62a	42.25	44.74	30.87	

Table 16 5-DAY NATURAL RUNOFF AT STATION NO. 1737451 (2/3)

STATION		1737451											YEAR 1969		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.				
1-5	43.08	13.56	7.04	18.95*	41.47	49.66	27.68	12.38	69.06	19.72	36.24	45.28				
6-10	46.22	12.66	5.26	22.71*	48.00	64.72	48.04	13.12	42.42	26.12	27.66	73.50				
11-15	26.60	11.16	5.46	26.46*	31.58	41.26	41.10	18.64	23.46	42.52	21.88	464.64				
16-20	25.72	10.14	5.38	30.21*	24.80	42.82	27.80	44.22	17.44	64.92	39.22	143.82				
21-25	18.02	8.56	5.10	33.97*	48.58	41.86	30.58	75.74	28.02	86.06	36.40	87.32				
26-END	22.77	8.60	15.20	37.72*	29.70	26.96	15.37	86.60	23.86	61.02	28.60	46.52				

STATION		1737451											YEAR 1970		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.				
1-5	34.52	15.42	7.64	36.08	56.62	41.42	32.64	26.90	13.10	48.20	27.44	67.06				
6-10	44.44	45.08	6.48	43.60	63.88	25.74	35.56	29.78	14.10	45.62	42.74	58.26				
11-15	36.30	25.20	8.12	46.36	48.86	29.88	20.08	37.38	17.08	37.74	27.22	49.48				
16-20	32.66	12.64	23.56	57.40	50.78	20.32	21.78*	20.84	28.00	19.72	39.66	40.84				
21-25	19.38	9.76	15.32	68.34	55.06	20.50	23.49*	16.92	19.40	25.74	69.40	31.42				
26-END	17.80	8.41	24.27	70.56	53.50	20.46	25.10*	17.78	20.70	25.52	75.84	43.17				

STATION		1737451											YEAR 1971		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.				
1-5	195.10	16.20	8.71*	12.96*	5.10	6.86	17.72	12.12	18.84	10.42	11.96*	21.41*				
6-10	233.68	12.62	10.43*	8.96*	4.56	6.50	8.18	13.08	36.86	7.56	24.47*	27.28*				
11-15	86.50	10.36	5.70*	7.12*	4.94	5.42	5.90	17.50	29.24	8.90	17.38*	99.35				
16-20	42.58	9.06	27.34*	6.67*	3.78	5.58	10.10	67.04	21.98	10.04	16.07*	146.56				
21-25	29.72	9.47	17.05*	5.51*	4.42	13.58	5.84	28.32	13.46	35.22	15.26*	92.00				
26-END	22.50	9.46*	10.38*	5.20*	6.78	16.58	8.67	16.53	16.32	12.93*	15.82*	67.33				

STATION		1737451											YEAR 1972		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.				
1-5	32.14	10.32	6.86	16.72	41.52	26.44	11.18	7.24	13.28	26.00	14.86	50.60				
6-10	18.04	11.56	5.12	23.52	29.02	16.02	8.48	6.30	13.96	13.34	27.98	42.30				
11-15	12.98	15.28	6.62	10.52	22.88	19.42	6.72	6.70	18.32	12.98	42.34	34.02				
16-20	15.20	7.88	3.42	35.22	18.82	30.60	5.84	12.10	25.56	11.12	65.24	44.80				
21-25	16.84	12.40	6.44	40.92	48.50	30.08	6.20	10.50	41.70	16.34	58.78	48.22				
26-END	10.20	14.02	5.43	47.46	49.97	19.96	6.05	19.73	42.90	21.62	72.40	41.23				

STATION		1737451											YEAR 1973		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.				
1-5	52.54	16.00	30.00	28.82	44.38	60.20	51.12	43.36	25.10	21.74	39.26	21.70				
6-10	53.30	11.58	15.14	30.92	51.30	53.24	28.56	38.98	31.58	13.82	62.30	30.02				
11-15	70.48	12.50	19.78	35.02	60.62	31.66	22.60	33.70	18.22	15.86	34.42	27.18				
16-20	48.86	75.22	19.98	46.72	38.28	19.68	16.68	19.46	19.88	36.16	56.68	50.60				
21-25	37.68	53.06	24.68	71.52	35.74	18.84	16.70	14.50	51.70	58.88	35.84	27.88				
26-END	19.40	42.17	22.37	73.66	49.02	33.76	27.83	12.38	21.46	52.33	30.36	15.75				

STATION		1737451											YEAR 1974		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.				
1-5	12.50	20.34	16.24	10.14	16.12	23.88	23.58	20.62	17.10	58.58	11.00	22.66				
6-10	9.56	21.24	27.56	25.72	22.90	16.48	13.82	14.00	16.52	33.42	7.82	13.66				
11-15	7.74	10.10	19.80	20.46	29.30	14.04	12.56	11.48	36.88	17.48	10.46	17.88				
16-20	6.42	9.36	10.00	25.50	20.10	20.02	25.17	9.04	58.82	12.72	21.46	14.80				
21-25	5.56	32.32	7.54	18.40	24.20	30.52	39.26	9.24	47.26	11.12	33.34	21.64				
26-END	8.03	33.73	7.17	23.32	30.38	29.00	33.05	10.03	69.14	13.15	15.22	23.87				

STATION		1737451											YEAR 1975		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.				
1-5	10.96	6.34	16.32	42.94	35.74	34.14	29.48	12.38	37.76	13.86	58.26	33.30				
6-10	12.90	7.32	32.82	58.62	58.60	25.80	34.32	18.22*	24.76	23.88	39.68	32.36				
11-15	16.82	14.94	31.00	28.62	61.34	28.66	24.86	24.07	28.18	16.97	24.58	59.24				
16-20	16.52	12.12	34.80	66.68	37.80	51.46	25.66	24.00	21.66	15.02	34.56	27.12				
21-25	11.48	7.52	42.62	87.84	42.34	35.16	40.86	27.96	14.82	12.62	27.36	17.78				
26-END	8.13	7.80	43.57	44.78	61.12	52.62	21.63	28.60	23.08	17.35	54.72	22.83				

STATION		1737451											YEAR 1976		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.				
1-5	14.80	4.64	6.18*	10.57*	14.96*	14.12	11.54	12.30	12.30	12.94	29.34	39.62				
6-10	11.48	4.04	6.91*	11.30*	15.69*	12.98	11.48	10.20	11.80	27.60	29.60	24.26				
11-15	8.42	3.58	7.84*	12.03*	16.42	10.96	14.60	10.08	10.22	35.72	31.54	28.90				
16-20	6.78	3.30	8.38*	12.76*	18.60	10.80	17.52	10.98	11.10	50.20	8.46	63.10				
21-25	5.04	3.00	9.11*	13.50*	16.18	10.68	16.84	11.68	10.28	48.36	22.34	73.16				
26-END	5.15	5.43	9.86*	14.23*	13.25	13.64	15.67	17.12	11.44	40.38	44.64	123.45				

Table 17 5-DAY NATURAL RUNOFF AT STATION NO. 1737451 (3/3)

STATION		YEAR 1977											UNIT: CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	178.58	12.46	31.40	7.00	6.38	17.16	11.56	12.14	22.14	80.74	35.22	39.38		
6-10	95.46	22.00	14.14	7.46	12.16	31.40	16.24	15.98	25.32	73.38	33.70	48.00		
11-15	64.32	36.06	9.72	6.74	29.18	21.76	11.56	16.72	18.88	56.26	72.02	35.33*		
16-20	27.64	15.62	8.04	9.50	23.46	30.78	12.42	17.34	12.50	46.66	61.10	22.87		
21-25	19.22	20.70	7.64	5.64	15.52	14.60	12.26	26.90	15.20	41.24	75.44	31.08		
26-END	14.03	101.53	7.98	5.28	19.25	11.84	14.80	33.42	48.86	43.80	47.66	25.18		

STATION		YEAR 1978											UNIT: CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	29.54	17.07	26.54	24.70	33.10	22.98	35.24	15.08	19.18	11.66	35.82	109.30		
6-10	64.38	13.56	17.22	23.72	63.30	17.38	34.56	14.02	15.48	10.15	51.44	107.30		
11-15	129.70	11.02	18.52	21.88	81.54	16.74	48.10	12.66	14.98	10.89*	87.16	56.32		
16-20	78.70	21.48	16.08	37.72	68.12	11.26	34.98	18.42	10.38	11.64	39.18	36.08		
21-25	62.98	18.92	35.28	39.50	29.76	16.14	23.02	13.66	15.50	17.30	27.30	51.50		
26-END	24.72	15.90	28.53	40.92	23.52	15.20	18.07	12.05	15.18	35.83	61.68	47.57		

STATION		YEAR 1979											UNIT: CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	43.58	11.90	28.06	62.24	41.38	12.62	12.56	27.82	34.48	16.98	41.48	110.74		
6-10	126.96	44.45	36.14	78.08	23.24	17.68	10.30	16.72	34.36	12.76	55.20	62.84		
11-15	42.76	13.83	21.36	67.82	22.56	30.86	13.94	11.86	31.86	15.74	96.40	37.54		
16-20	24.36	13.22	18.82	47.90	13.04	28.86	17.82	11.70	36.34	15.58	184.48*	35.50		
21-25	20.96	17.30	35.30	29.64	10.62	27.52	27.38	17.60	35.68	24.15	272.56*	24.58		
26-END	17.62	16.07	27.83	40.26	11.52	15.44	40.42	22.05	24.54	30.98	300.64	17.60		

Remarks: (1) Figures marked by star (*) were supplemented.
 (2) CMS = m³/s

Table 18 5-DAY NATURAL RUNOFF AT STATION NO. 2224432 (1/3)

STATION		2224432										YEAR		1961		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.					
1-5	6.34	1.32	1.16	2.08	8.04	2.34	1.74	3.58	1.96	2.10	2.38	2.06					
6-10	5.64	1.24	1.86	2.84	8.64	5.02	1.56	3.24	2.12	1.72	1.80	2.12					
11-15	5.48	1.88	2.00	6.52	6.82	5.22	1.38	2.30	2.14	1.76	2.36	2.58					
16-20	2.98	2.58	2.88	4.68	4.42	7.06	1.68	1.10	2.48	2.08	1.50	2.66					
21-25	2.34	1.72	2.46	7.24	5.56	3.82	1.26	0.90	2.52	1.92	1.58	2.76					
26-END	1.78	1.23	1.57	7.40	2.73	2.56	1.08	0.90	2.74	1.82	2.22	1.93					

STATION		2224432										YEAR		1962		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.					
1-5	3.14	0.54	1.20	6.40	3.54	2.86	1.72	0.92	3.94	1.60	3.84	2.34					
6-10	1.70	0.44	1.62	6.92	4.72	2.46	1.54	0.70	5.56	2.54	4.20	1.98					
11-15	2.20	0.60	1.24	5.44	5.98	1.86	1.06	2.02	3.26	9.80	3.08	2.20					
16-20	2.48	0.60	1.34	4.84	8.00	1.74	1.06	5.16	4.48	7.62	4.12	2.12					
21-25	1.78	0.44	6.08	2.76	5.88	1.98	1.00	2.30	3.76	4.30	2.26	2.20					
26-END	1.23	1.43	5.93	5.64	4.07	2.92	0.88	2.33	2.42	2.77	1.94	2.48					

STATION		2224432										YEAR		1963		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.					
1-5	2.06	0.40	0.28	0.10	0.98	0.01*	0.01*	0.01*	1.90	2.84	2.70	8.08					
6-10	1.40	0.32	0.18	0.12	1.44	0.03*	0.01*	0.01*	1.94	8.66	3.08	5.64					
11-15	0.94	0.30	0.10	0.34	1.74	0.01*	0.01*	0.02*	2.12	7.74	6.98	6.16					
16-20	0.80	0.24	0.10	0.26	2.16	0.00*	0.02*	0.02*	1.32	3.34	6.30	5.78					
21-25	0.72	0.30	0.14	0.18	1.14	0.00*	0.01*	0.01*	3.88	4.10	5.62	3.62					
26-END	0.82	0.37	0.13	0.18	1.37	0.01*	0.01*	0.01*	4.10	3.10	6.52	3.68					

STATION		2224432										YEAR		1964		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.					
1-5	2.66	1.22	5.18	2.70	6.68	1.06	1.60	2.02	2.54	0.60*	1.14*	6.06					
6-10	2.30	1.18	4.68	2.36	5.90	1.00	2.66	0.98	3.76	0.83*	1.24*	3.42					
11-15	1.40	1.68	7.38	3.54	5.38	1.08	1.94	0.82	5.50	1.72*	0.67*	2.96					
16-20	2.48	1.62	5.50	3.34	3.68	0.94	1.52	1.22	4.62	1.07*	0.65*	2.76					
21-25	5.18	2.50	3.98	4.52	2.76	0.88	2.26	1.32	3.78	1.42*	2.24*	5.58					
26-END	2.55	6.05	3.97	4.92	1.73	1.64	3.05	1.37	3.14	1.60*	5.34*	3.23					

STATION		2224432										YEAR		1965		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.					
1-5	1.98	0.38	0.20	0.62	1.40	0.42	0.20	0.20	1.30	0.76	4.02	5.04					
6-10	1.34	0.30	0.18	1.18	1.52	0.82	0.20	0.96	1.32	0.98	3.72	6.58					
11-15	0.98	0.34	0.10	3.18	1.32	0.62	0.64	1.58	1.36	1.46	3.10	10.98					
16-20	0.90	0.36	0.10	2.10	1.06	0.68	0.40	0.52	1.30	0.96	8.48	9.78					
21-25	0.80	0.20	0.12	1.52	0.76	0.38	0.22	0.42	1.44	1.40	4.72	5.50					
26-END	0.67	0.20	0.85	1.60	0.52	0.24	0.23	0.33	1.30	5.97	6.52	5.30					

STATION		2224432										YEAR		1966		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.					
1-5	3.38	0.76	0.52	2.96	3.38	1.74	0.72	2.64	1.96	4.02	4.86	7.06					
6-10	2.38	0.52	0.94	1.90	2.80	2.68	1.60	1.34	1.84	3.30	3.72	6.16					
11-15	2.50	0.36	0.62	2.80	2.02	1.76	1.48	1.08	1.92	4.50	4.18	8.58					
16-20	2.08	0.80	1.18	3.18	1.98	0.82	2.04	0.74	1.90	3.54	6.66	9.60					
21-25	2.46	0.52	2.64	4.62	1.60	1.74	1.04	0.48	1.88	2.30	5.60	7.46					
26-END	2.18	0.33	1.00	8.96	1.32	1.74	0.58	0.55	2.74	3.30	4.16	6.15					

STATION		2224432										YEAR		1967		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.					
1-5	5.36	2.64	4.46	2.46	3.66	3.46	4.80	7.68	1.78	1.34	8.88	8.22					
6-10	4.06	1.50	4.42	2.90	3.14	1.96	4.64	3.18	2.94	1.30	3.50	5.56					
11-15	9.64	2.90	4.26	3.56	2.80	1.74	5.02	2.60	6.52	1.20	4.46	4.62					
16-20	8.90	10.74	2.82	2.28	3.48	5.94	3.54	1.86	2.04	1.18	7.20	12.02					
21-25	4.40	5.34	1.66	3.44	6.28	4.18	2.16	1.66	1.82	1.72	4.72	4.82					
26-END	4.77	4.33	1.42	4.00	8.85	3.62	1.77	0.80	2.30	3.50	7.56	5.10					

STATION		2224432										YEAR		1968		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.					
1-5	12.10	1.08	0.38	1.36	2.76	2.20	1.42	1.18	1.80	3.02	8.90	4.10					
6-10	6.26	0.92	0.42	3.72	2.36	1.68	1.38	0.68	2.34	1.84	5.14	4.50					
11-15	5.00	0.48	1.04	2.66	10.36	3.54	0.82	0.56	1.44	4.92	2.60	9.72					
16-20	3.42	0.40	2.04	3.06	7.02	3.38	0.68	0.48	2.22	3.44	9.00	5.82					
21-25	2.44	0.32	2.80	3.80	4.92	1.48	0.72	1.90	1.44	3.26	2.76	3.42					
26-END	1.78	0.30	3.53	6.24	3.27	0.96	2.07	1.52	8.14	4.98	10.06	2.75					

Table 19 5-DAY NATURAL RUNOFF AT STATION NO. 2224432 (2/3)

STATION		YEAR 1969											UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	3.48	1.08	2.88	6.28	3.04	5.90	6.34	2.18	2.38	3.52	4.04	10.16	
6-10	4.16	0.90	0.84	2.88	4.18	4.50	4.40	2.58	3.16	3.06	6.38	8.74	
11-15	2.84	0.64	1.08	2.24	4.42	2.80	2.58	1.32	1.98	4.68	8.38	14.12	
16-20	4.34	0.66	1.84	1.48	2.74	3.38	3.26	1.86	1.70	6.28	9.42	11.52	
21-25	2.48	1.74	0.80	1.18	9.84	4.34	2.50	3.10	2.82	12.12	6.58	6.56	
26-END	1.43	1.53	1.87	2.12	4.75	3.62	1.35	1.78	2.54	6.17	13.82	4.92	

STATION		YEAR 1970											UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	4.08	0.86	1.16	2.90*	3.03*	4.63	2.28	1.20	1.70	3.22	1.48	4.98	
6-10	3.14	0.84	1.10	4.59*	4.53*	2.30	2.20	2.98	3.04	2.74	1.16	7.94	
11-15	3.18	0.74	2.06	2.76*	4.04*	2.82	1.16	1.72	4.46	2.12	2.42	6.86	
16-20	2.30	0.66	3.02	5.54*	3.97*	5.62	2.08	1.34	2.52	3.84	4.02	9.28	
21-25	1.22	0.56	2.20	3.73*	5.04*	4.78	2.60	0.90	4.68	2.08	13.40	5.28	
26-END	1.23	0.53	2.38	3.75*	5.41*	3.44	2.55	0.63	7.80	1.67	14.36	4.42	

STATION		YEAR 1971											UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	14.72	2.22	2.96	3.72	2.38	1.60	3.46	0.96	7.96	1.96	5.56	6.70	
6-10	15.74	1.84	2.52	3.10	2.48	2.46	1.48	1.94	4.86	1.64	4.86	12.56	
11-15	7.46	1.30	1.76	3.20	1.96	1.40	1.80	1.26	3.38	1.54	10.32	11.20	
16-20	4.12	1.44	7.32	1.98	1.50	3.02	1.18	2.48	2.88	2.16	4.98	16.02	
21-25	3.46	2.16	6.66	1.68	1.48	2.82	0.88	3.88	4.84	3.06	4.38	13.58	
26-END	3.08	3.37	3.33	1.68	2.30	2.44	0.95	5.12	2.92	2.93	5.04	9.28	

STATION		YEAR 1972											UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	4.84	1.82	2.74	2.08	3.16	1.94	0.60	0.48	1.62	1.42	1.56	4.12	
6-10	4.22	1.74	2.06	2.76	2.36	1.62	0.44	0.52	1.58	1.16	1.90	3.46	
11-15	3.72	2.58	1.88	2.50	2.06	1.44	0.68	0.32	2.72	1.10	5.20	3.84	
16-20	3.48	1.36	1.94	2.38	1.84	1.78	0.38	0.40	2.72	1.42	4.22	3.50	
21-25	3.14	2.46	1.78	2.90	2.28	2.58	0.40	0.32	2.86	2.54	4.78	3.68	
26-END	2.50	2.03	1.68	6.34	2.22	1.32	0.45	0.28	2.14	3.72	5.92	2.42	

STATION		YEAR 1973											UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	0.90	0.36	0.76	0.68	3.48	4.64	1.69	1.72	1.18	1.12	6.90	5.88	
6-10	1.24	0.30	0.52	1.66	3.62	2.52	1.36	1.86	6.18	1.14	9.82	7.18	
11-15	0.84	0.24	2.42	1.92	3.98	1.78	0.82	1.98	2.50	2.12	6.58	2.96	
16-20	1.04	0.26	2.68	4.20	3.62	1.48	0.72	1.30	2.64	2.50	4.16	3.42	
21-25	0.66	0.52	1.22	4.90	3.02	1.54	0.72	0.86	4.86	9.34	2.88	2.10	
26-END	0.45	2.50	1.07	5.30	2.32	2.30	0.72	1.17	1.66	7.73	2.74	1.60	

STATION		YEAR 1974											UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	1.18	0.32	1.38	1.28	1.60	1.10	0.56	1.84	2.76	8.22	1.82	2.58	
6-10	1.10	0.30	1.64	3.86	2.06	1.18	0.26	1.44	2.10	4.04	1.80	2.48	
11-15	0.90	0.20	1.90	2.04	1.52	1.06	0.24	0.52	4.04	2.44	2.52	1.62	
16-20	0.86	0.28	1.24	2.46	2.00	1.04	0.68	1.20	8.86	2.18	2.44	1.52	
21-25	0.76	0.74	1.22	0.98	6.24	1.36	2.08	5.46	6.22	1.72	6.16	1.16	
26-END	0.90	1.13	1.27	0.94	2.02	3.52	4.28	2.70	8.24	1.63	3.98	2.95	

STATION		YEAR 1975											UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	1.10	0.12	2.74	2.52	2.52	1.98	1.00	3.56	13.56	1.62	5.00	8.00	
6-10	0.98	0.16	5.20	4.18	3.04	2.74	0.94	2.82	8.42	3.12	2.52	8.56	
11-15	2.60	0.46	3.06	3.68	3.28	6.00	0.70	1.58	5.66	3.52	2.68	6.68	
16-20	1.58	0.36	1.96	5.60	1.86	4.96	0.48	1.16	3.12	1.96	9.36	5.56	
21-25	0.54	0.20	2.06	4.20	2.38	2.64	3.20	1.48	3.78	1.80	6.84	4.02	
26-END	0.40	0.20	2.37	2.50	2.68	2.14	2.42	0.87	2.64	3.60	7.08	4.83	

STATION		YEAR 1976											UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	2.14	0.32	1.14	2.64	6.04	2.52	0.42	1.96	5.62	9.10	9.54	8.34	
6-10	1.58	0.28	1.10	1.64	3.56	1.66	1.00	0.48	2.98	12.72	18.92	7.08	
11-15	1.24	0.20	1.38	3.30	1.88	1.50	0.30	0.40	3.44	19.64	14.50	3.86	
16-20	1.24	0.20	2.42	1.74	1.90	1.44	0.28	0.54	5.92	12.54	11.44	3.30	
21-25	1.00	0.12	1.46	2.16	1.94	1.22	1.08	1.44	7.58	11.86	10.44	3.18	
26-END	0.88	0.13	2.07	1.88	3.17	1.40	2.85	11.82	8.54	6.27	8.66	3.72	

Table 20 5-DAY NATURAL RUNOFF AT STATION NO. 2224432 (3/3)

STATION		2224432 YEAR 1977												UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.			
1-5	3.84	0.32	2.32	0.92	1.14	1.10	0.28	1.60	2.40	6.96	6.62	2.16			
6-10	4.96	0.34	1.82	1.10	2.12	1.24	0.58	1.22	2.22	8.62	8.20	1.88			
11-15	1.58	3.80	1.64	1.10	2.14	1.42	3.56	0.88	1.70	5.34	6.54	1.56			
16-20	1.34	2.22	1.54	0.92	1.82	1.72	1.58	1.92	1.44	3.12	3.90	1.52			
21-25	1.20	0.74	1.50	0.90	1.22	1.26	1.16	8.16	1.40	2.38	3.80	4.40			
26-END	0.77	0.67	1.43	0.94	1.23	1.10	4.27	2.88	5.80	4.97	2.96	2.12			

STATION		2224432 YEAR 1978												UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.			
1-5	0.76	0.26	1.18	0.90	2.18	3.50	1.46	0.94	2.62	1.50	2.30	1.98			
6-10	0.78	0.20	1.18	2.94	8.10	3.14	1.86	0.62	2.40	1.16	1.96	2.02			
11-15	2.36	0.20	1.16	1.94	11.76	2.54	1.60	4.44	3.40	1.12	4.48	2.34			
16-20	1.78	0.20	1.08	2.80	6.24	1.62	1.06	2.78	4.40	1.22	2.18	1.48			
21-25	0.90	0.14	1.12	5.28	7.14	1.82	2.68	9.66	4.80	1.40	1.78	2.00			
26-END	0.67	0.17	1.20	2.50	4.37	1.62	1.90	3.75	2.66	2.93	3.86	1.43			

STATION		2224432 YEAR 1979												UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.			
1-5	0.74	0.58	1.00	1.94	3.42	1.16	0.22	1.86	1.42	0.76	5.82	5.94			
6-10	0.74	0.76	0.98	1.82	2.32	2.98	0.14	0.98	3.54	0.78	2.10	3.04			
11-15	0.54	0.18	1.00	13.88	2.16	2.12	0.12	0.44	1.32	3.48	1.48	1.86			
16-20	0.50	0.16	1.06	7.62	1.30	1.40	0.42	0.58	1.52	1.44	12.34	1.54			
21-25	0.44	0.34	2.30	8.78	1.06	1.36	4.16	0.24	1.28	1.48	8.34	1.40			
26-END	0.40	0.10	2.42	6.62	0.95	1.16	6.63	0.30	1.10	1.75	16.08	1.23			

Table 21 5-DAY NATURAL RUNOFF AT STATION NO.2322413 (1/3)

STATION		2322413											YEAR		1961	UNIT		CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.						
1-5	15.86	2.20	2.92	5.74	19.58	4.90	2.42	1.98	1.20	1.84	2.12	1.56						
6-10	12.08	1.90	5.20	5.10	22.30	7.30	1.76	5.30	1.34	1.30	0.66	0.80						
11-15	8.28	2.58	5.62	12.76	15.84	7.36	1.80	3.26	0.98	0.78	1.32	1.54						
16-20	5.70	9.52	6.70	10.20	8.26	11.08	2.18	2.18	0.92	0.70	1.38	3.92						
21-25	4.78	7.22	12.06	15.94	5.10	5.80	1.94	0.76	1.30	1.68	1.28	13.26						
26-END	3.33	4.07	5.23	15.62	5.15	3.70	1.55	0.43	1.96	1.42	4.22	3.28						

STATION		2322413											YEAR		1962	UNIT		CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.						
1-5	4.08	0.40	0.36	19.90	9.52	1.96	2.70	0.92	4.34	3.06	18.26	7.10						
6-10	2.64	0.30	2.84	19.76	9.26	6.06	3.20	0.70	6.50	7.30	14.68	4.94						
11-15	0.68	0.24	5.26	14.08	14.52	2.70	2.40	4.04	4.08	24.66	14.64	6.48						
16-20	3.06	0.14	4.54	9.50	12.88	2.44	1.98	7.12	11.04	15.70	22.60	3.00						
21-25	1.58	0.08	9.22	7.34	6.74	3.72	0.70	2.80	9.32	12.08	9.48	3.94						
26-END	0.80	0.30	7.93	5.24	6.10	2.84	0.58	3.45	4.30	10.02	7.64	4.17						

STATION		2322413											YEAR		1963	UNIT		CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.						
1-5	5.06	0.56	0.14	0.06	0.58	0.50	0.42	0.60	6.94	3.62	7.54	20.10						
6-10	2.64	0.42	0.02	0.17*	3.54	2.52	0.68	0.44	7.98	15.18	5.00	14.60						
11-15	1.56	0.30	0.04*	0.28	1.58	1.00	0.66	1.72	6.86	12.20	20.02	14.60						
16-20	1.14	0.30	0.05*	0.12	4.24	0.14	1.22	1.34	3.68	7.56	19.14	10.00						
21-25	0.74	0.30	0.07*	0.12	2.64	0.20	0.50	0.56	9.54	17.18	16.68	6.10						
26-END	1.42	0.30	0.08	0.35*	0.77	1.00	0.75	0.45	2.74	15.58	21.68	8.05						

STATION		2322413											YEAR		1964	UNIT		CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.						
1-5	3.46	1.52	11.88	2.46	26.80	2.20	1.58	10.16	4.54	1.76	3.30	11.04						
6-10	2.08	1.38	8.20	6.96	21.82	1.82	13.84	3.32	5.40	2.42	3.60	8.42						
11-15	1.74	10.26	19.18	11.62	14.92	2.88	11.44	2.80	6.48	5.00	1.94	7.96						
16-20	9.26	3.82	11.40	8.12	8.48	1.72	6.36	7.62	4.98	3.12	1.86	7.70						
21-25	8.88	5.74	7.10	9.92	5.16	1.58	9.04	7.76	3.72	4.12	6.52	9.92						
26-END	3.10	17.15	4.05	23.72	3.35	1.62	13.85	4.73	2.98	4.65	15.52	4.92						

STATION		2322413											YEAR		1965	UNIT		CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.						
1-5	6.60	1.96	0.98	3.68	3.86	3.66	2.70	3.66	1.48	4.94	8.76	6.62						
6-10	4.26	1.70	0.96	7.68	10.16	6.64	5.50	2.62	3.40	2.88	7.68	11.84						
11-15	3.48	1.44	0.46	5.94	16.12	2.42	11.28	3.00	2.70	7.64	8.72	13.50						
16-20	2.64	2.52	0.78	6.50	11.04	3.56	5.60	3.74	5.30	3.60	16.18	12.88						
21-25	2.08	1.26	1.92	10.86	7.68	2.52	2.22	4.02	6.36	3.78	9.02	9.46						
26-END	1.98	1.32	4.22	6.84	5.97	4.04	8.98	2.20	3.58	9.83	10.98	9.73						

STATION		2322413											YEAR		1966	UNIT		CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.						
1-5	7.50	5.58	2.30	7.40	6.08	6.58	0.96	8.04	12.74	12.10	10.56	14.78						
6-10	7.20	4.08	4.54	5.86	4.10	6.46	3.92	9.46	4.50	12.60	9.34	14.00						
11-15	9.10	2.44	2.18	8.70	5.24	4.14	8.62	4.76	4.14	17.06	9.96	24.80						
16-20	6.16	3.98	4.64	6.86	6.64	2.96	5.24	4.62	2.74	9.52	11.58	16.82						
21-25	7.52	3.02	5.12	9.00	3.74	4.16	2.86	6.12	2.94	5.60	11.42	13.40						
26-END	5.58	2.13	3.00	11.58	5.28	3.42	3.65	7.05	4.62	5.45	10.22	13.00						

STATION		2322413											YEAR		1967	UNIT		CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.						
1-5	12.80	5.86	15.98	5.34	6.94	8.30	4.74	7.44	2.92	1.14	10.88	10.16						
6-10	10.96	4.92	8.42	5.36	6.06	4.44	5.98	3.54	5.12	1.30	11.74	9.50						
11-15	24.44	6.00	12.04	7.20	4.90	6.20	19.12	2.76	3.50	2.84	22.52	7.90						
16-20	17.92	17.78	4.88	7.10	7.38	11.30	17.14	2.52	2.98	0.92	30.34	17.66						
21-25	9.90	8.82	4.12	7.84	14.60	7.72	7.84	2.88	1.62	3.20	24.26	7.78						
26-END	9.75	8.77	3.78	6.84	12.65	7.66	5.72	1.22	1.28	5.27	20.36	6.13						

STATION		2322413											YEAR		1968	UNIT		CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.						
1-5	11.14	1.20	0.10	7.56	13.54	5.68	7.14	1.78	2.26	4.66	13.14	3.54						
6-10	6.30	1.12	0.12	9.78	11.76	5.92	3.26	1.14	2.72	2.20	8.20	8.38						
11-15	4.72	0.78	1.30	10.60	16.26	6.30	1.52	1.00	1.64	11.28	4.22	18.20						
16-20	3.22	0.60	2.34	9.78	12.70	5.34	5.04	1.24	9.02	7.86	7.20	18.12						
21-25	2.62	0.16	4.98	11.00	11.50	2.78	2.82	1.08	2.08	10.28	2.98	6.36						
26-END	1.65	0.08	8.55	21.56	10.08	2.06	3.72	0.82	1.54	14.82	9.44	10.00						

Table 22 5-DAY NATURAL RUNOFF AT STATION NO. 2322413 (2/3)

STATION 2322413 YEAR 1969 UNIT: CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	7.14	1.52	6.68	18.10	7.26	7.82	14.30	5.98	3.22	5.66	3.78	15.58
6-10	11.48	1.00	0.88	5.70	8.08	10.18	8.38	3.56	5.44	6.52	8.96	7.62
11-15	8.84	1.46	3.70	3.36	8.04	4.14	3.62	2.66	2.40	6.26	6.02	14.00
16-20	10.28	4.26	1.12	2.42	3.96	3.32	5.04	4.24	2.16	4.12	7.42	10.78
21-25	3.76	2.48	0.42	2.00	9.22	7.88	2.38	8.58	2.54	6.88	6.22	5.16
26-END	2.82	2.43	6.17	7.70	3.93	5.76	1.28	8.23	2.66	3.53	31.72	5.42

STATION 2322413 YEAR 1970 UNIT: CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	8.60	4.14	3.14	5.30	5.54	5.58	5.34	6.70	7.82	8.36	5.36	11.06
6-10	14.18	3.44	3.06	8.40	8.28	6.90	5.00	5.46	5.82	8.02	6.34	9.60
11-15	8.28	3.04	5.78	5.04	7.36	6.36	3.76	6.04	5.06	6.90	8.78	23.34
16-20	6.54	3.42	6.10	10.12	7.26	9.86	7.00	6.80	5.80	5.88	8.00	25.46
21-25	5.28	3.04	3.98	6.82	9.22	7.48	6.32	3.92	8.30	4.62	21.72	18.70
26-END	5.15	3.23	4.03	6.86	9.90	5.56	6.22	4.02	13.62	5.25	9.74	11.65

STATION 2322413 YEAR 1971 UNIT: CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	49.46	6.62	6.26	9.32	3.60	4.82	5.34	4.16	16.20	5.62	8.60	15.40
6-10	50.78	4.52	7.50	6.44	3.80	4.68	3.68	4.76	12.58	6.06	17.60	19.62
11-15	17.26	4.22	4.10	5.12	3.80	3.12	3.68	7.06	10.10	6.50	12.50	20.14
16-20	12.82	4.04	19.66	4.88	3.76	3.60	5.98	7.28	6.66	8.48	10.12	28.68
21-25	9.98	5.58	12.26	3.96	4.38	4.82	3.42	9.44	9.90	8.78	10.96	29.94
26-END	8.88	6.80	7.47	3.74	4.97	3.98	6.52	12.57	5.88	9.30	11.38	20.15

STATION 2322413 YEAR 1972 UNIT: CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	10.58	5.40	7.08	10.20	7.24	5.84	4.38	3.10	7.06	3.88	4.30	10.70
6-10	8.84	5.70	4.20	5.92	5.34	5.26	3.54	3.56	3.64	2.96	3.34	10.08
11-15	7.60	4.52	3.78	8.70	6.98	3.02	3.52	2.60	7.90	3.74	13.08	17.56
16-20	6.58	3.98	5.36	7.26	5.94	5.44	2.14	2.30	9.50	5.32	10.86	11.88
21-25	5.98	8.42	3.72	9.88	6.76	10.72	4.00	1.82	8.02	10.90	9.44	10.38
26-END	5.85	6.45	5.08	13.82	5.83	4.82	3.90	2.00	6.94	10.13	8.52	7.00

STATION 2322413 YEAR 1973 UNIT: CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	5.96	2.38	4.02	4.30	9.20	12.28	3.60	3.56	4.12	11.84	18.98	12.70
6-10	6.50	2.00	2.34	4.36	13.04	6.68	3.02	4.72	7.80	6.22	18.44	29.54
11-15	4.94	1.86	17.78	6.82	14.32	5.22	2.62	4.32	11.06	12.70	14.68	10.32
16-20	4.14	2.16	10.68	7.78	10.42	3.82	2.02	2.56	8.30	8.02	15.40	9.84
21-25	4.22	3.34	9.88	14.62	7.70	4.52	1.84	1.86	16.24	19.58	12.72	10.00
26-END	3.23	10.60	5.55	18.52	8.75	5.84	1.65	4.23	5.88	18.45	13.12	6.33

STATION 2322413 YEAR 1974 UNIT: CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	5.30	3.40	3.46	1.78	4.46	3.16	3.48	5.78	6.24	7.28	3.06	5.34
6-10	4.50	3.86	4.24	3.66	6.82	2.84	2.66	3.94	5.60	4.56	2.74	5.66
11-15	4.08	3.14	4.14	4.38	4.12	2.30	4.06	3.02	6.02	3.88	3.06	4.88
16-20	3.34	3.26	2.34	5.34	5.02	2.70	3.78	2.90	7.66	4.10	3.98	4.66
21-25	2.84	3.84	1.74	2.76	8.30	5.62	5.24	8.50	8.90	3.62	14.52	3.86
26-END	4.18	3.97	1.80	3.66	4.02	5.26	8.72	8.18	7.76	3.75	8.94	5.15

STATION 2322413 YEAR 1975 UNIT: CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	5.92	1.92	3.74	7.66	7.06	4.72	4.68	4.10	12.26	4.16	14.44	11.96
6-10	4.14	3.58	8.96	6.04	6.20	5.86	9.30	4.44	8.70	8.12	5.88	23.74
11-15	6.18	7.40	5.90	8.24	4.82	11.10	5.42	3.86	6.64	7.12	5.30	17.52
16-20	8.62	4.88	4.36	14.96	4.80	11.26	5.90	4.12	6.82	5.08	12.76	17.26
21-25	3.96	3.08	4.10	10.88	3.44	5.42	9.34	4.50	10.82	3.26	21.70	15.24
26-END	2.52	2.97	8.72	7.48	9.48	4.70	5.83	7.15	7.26	8.83	14.86	14.63

STATION 2322413 YEAR 1976 UNIT: CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	4.80	1.12	1.16	1.20	4.36	1.26	0.68	0.50	9.04	14.68	32.00	5.98
6-10	3.34	1.02	0.52	3.96	7.90	1.58	0.90	0.44	12.88	30.74	32.20	5.12
11-15	2.58	0.82	2.56	2.36	2.96	1.52	0.54	0.46	10.38	27.50	10.52	3.02
16-20	2.88	0.76	4.66	1.82	1.78	0.82	0.68	0.88	10.78	13.44	22.94	4.18
21-25	2.10	0.72	1.04	6.88	1.34	1.02	0.60	2.04	13.30	6.52	13.44	5.14
26-END	1.70	0.90	1.88	2.94	1.77	6.50	0.68	5.95	6.44	3.58	8.68	4.70

Table 23 5-DAY NATURAL RUNOFF AT STATION NO. 2322413 (3/3)

STATION 2322413 YEAR 1977 UNIT: CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	10.34	0.50	2.22	0.80	1.76	1.10	0.58	1.18	1.56	5.40	1.94	1.24
6-10	6.20	0.56	1.44	0.80	3.50	1.20	3.30	0.90	1.54	9.80	5.44	1.08
11-15	1.78	5.98	1.00	0.80	2.00	1.90	4.10	1.10	1.40	3.18	7.18	0.70
16-20	1.60	2.54	1.00	1.84	1.34	2.18	1.70	15.04	1.40	1.66	4.08	0.70
21-25	1.22	0.64	1.00	1.50	0.92	1.46	0.98	17.40	1.46	1.56	5.52	0.70
26-END	0.80	1.33	1.00	1.04	0.82	0.90	2.05	2.08	3.06	1.43	2.50	0.70

STATION 2322413 YEAR 1978 UNIT: CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	1.55*	0.53*	2.41*	1.83*	4.65*	7.14*	2.98*	1.92*	5.34*	3.06*	4.69*	4.04*
6-10	1.59*	0.41*	2.41*	6.00*	16.52*	6.40*	3.79*	1.26*	4.89*	2.37*	4.00*	4.12*
11-15	4.81*	0.41*	2.37*	3.96*	23.98*	5.18*	3.26*	9.05*	6.93*	2.28*	9.14*	4.77*
16-20	2.61*	0.41*	2.20*	5.71*	12.73*	3.50*	2.36*	5.67*	8.97*	2.49*	4.45*	3.02*
21-25	1.83*	0.29*	2.28*	6.69*	14.56*	3.71*	5.47*	19.70*	9.79*	2.85*	3.65*	4.08*
26-END	1.36*	0.34*	2.45*	5.10*	8.91*	3.30*	3.88*	7.65*	5.43*	5.98*	7.87*	2.92*

STATION 2322413 YEAR 1979 UNIT: CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	1.76*	1.38*	2.38*	4.61*	5.68	0.34	0.10	0.76	0.70	0.50	1.38	6.42
6-10	1.76*	1.81*	2.33*	4.33*	2.66	0.52	1.10*	0.20	1.30	0.50	1.16	3.28
11-15	1.28*	0.43*	2.38*	33.01*	2.56	1.90	2.10	0.21*	2.70	1.84	0.58	2.10
16-20	1.19*	0.38*	2.52*	18.12*	0.44	0.94	0.46	0.22	9.62	1.98	8.18	1.12
21-25	1.05*	0.81*	5.47*	20.88*	0.30	0.34	4.52	0.10	2.18	0.94	10.62	0.86
26-END	0.95*	0.24*	5.75*	1.33	0.33	0.44	4.15	0.27	0.86	1.27	27.62	0.80

Table 24 5-DAY NATURAL RUNOFF AT STATION NO. 2527411 (1/3)

STATION		2527411 YEAR 1961												UNIT
		CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	89.90	8.30	14.48	25.44	83.94	13.08	4.54	14.20	7.84	11.28	17.02	25.36		
6-10	115.94	6.06	22.10	64.90	122.34	17.14	3.40	10.74	8.98	7.44	19.56	20.60		
11-15	128.72	10.16	62.22	65.80	124.54	19.38	5.24	9.78	7.56	5.44	28.82	28.78		
16-20	108.44	34.25	77.18	103.64	114.84	16.18	5.10	5.82	6.32	5.80	16.60	23.74		
21-25	46.42	52.24	41.32	87.60	67.76	10.92	5.06	4.04	8.24	7.22	22.18	48.48		
26-END	13.68	37.33	17.92	60.80	22.10	7.16	4.35	3.90	10.40	11.38	23.40	25.27		

STATION		2527411 YEAR 1962												UNIT
		CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	39.26	7.50	18.86	101.76	62.30	10.10	15.14	3.48	21.74	8.22	69.33*	42.25*		
6-10	33.51*	3.58	3.84	2.47	3.12	3.54	2.50	2.38	6.50	5.78	40.24	61.58		
11-15	27.85*	2.90	4.66	2.72	3.40	3.02	2.00	1.86	5.70	12.20	40.38	61.84		
16-20	22.18A	2.88	2.88	2.38	3.84	2.32	1.58	2.60	4.74	12.60	65.28	33.22		
21-25	16.52A	2.94	3.06	2.08	10.18	1.80	1.40	2.16	8.66	20.66	42.00	13.30		
26-END	23.37	11.07	83.47	30.74	21.92	32.60	3.83	25.22	11.34	22.80	35.03*	44.83*		

STATION		2527411 YEAR 1963												UNIT
		CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	39.17*	5.20	5.78	4.22	2.18	4.10	3.70	3.16	6.20	4.78	31.00	34.10		
6-10	33.51*	3.58	3.84	2.47	3.12	3.54	2.50	2.38	6.50	5.78	40.24	61.58		
11-15	27.85*	2.90	4.66	2.72	3.40	3.02	2.00	1.86	5.70	12.20	40.38	61.84		
16-20	22.18A	2.88	2.88	2.38	3.84	2.32	1.58	2.60	4.74	12.60	65.28	33.22		
21-25	16.52A	2.94	3.06	2.08	10.18	1.80	1.40	2.16	8.66	20.66	42.00	13.30		
26-END	10.86*	7.07	5.07	1.50	7.33	4.96	3.03	3.68	7.58	32.17	35.98	57.75		

STATION		2527411 YEAR 1964												UNIT
		CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	63.70	5.22	148.16	23.40	76.24	11.60	7.90	16.78	17.50	7.98	18.66	71.90		
6-10	13.28	6.24	127.48	13.74	94.16	12.10	10.00	6.54	17.80	11.88	12.08	62.90		
11-15	8.02	7.88	135.28	25.68	104.72	12.34	13.28	4.48	18.80	12.72	10.22	38.12		
16-20	13.30	5.82	187.20	22.22	104.72	12.48	14.30	4.72	12.80	11.96	8.34	55.80		
21-25	32.40	12.52	109.74	33.80	52.56	10.18	23.46	9.02	9.50	12.74	12.42	76.66		
26-END	15.97	73.38	46.63	36.18	16.60	10.84	20.95	7.80	11.48	16.65	42.02	111.90		

STATION		2527411 YEAR 1965												UNIT
		CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	51.14	12.30	3.84	22.20	18.88	12.80	4.60	8.42	7.80	17.12	101.36	59.52		
6-10	17.88	6.04	4.60	15.38	17.46	9.04	5.06	4.70	22.54	12.32	133.64	37.78		
11-15	10.08	9.00	3.86	15.68	30.56	5.86	13.72	3.18	13.28	24.70	116.54	36.80		
16-20	7.52	6.66	3.10	13.94	20.06	7.38	11.68	7.90	9.12	27.22	103.76	81.66		
21-25	6.38	5.08	4.88	26.56	37.92	7.36	6.70	14.64	15.88	23.66	135.74	98.32		
26-END	5.57	5.07	8.48	22.24	41.93	5.76	6.07	9.48	15.58	64.78	82.40	108.28		

STATION		2527411 YEAR 1966												UNIT
		CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	115.06	23.18	7.62	58.42	68.20	17.28	5.06	15.92	36.22	28.78	62.66	89.28		
6-10	54.10	14.08	27.54	36.92	23.30	19.96	13.32	11.26	16.22	48.62	104.70	87.42		
11-15	48.48	9.94	25.14	49.34	17.90	11.04	12.36	9.62	11.96	100.56	131.54	96.64		
16-20	81.76	10.34	15.44	63.02	15.60	6.36	14.80	9.08	10.14	132.34	138.52	124.88		
21-25	43.12	14.84	28.42	50.48	16.34	8.94	10.36	9.20	12.66	96.50	137.18	91.20		
26-END	51.12	10.73	19.10	78.38	13.28	9.88	13.13	39.50	21.74	42.88	112.42	85.52		

STATION		2527411 YEAR 1967												UNIT
		CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	154.36	33.12	147.98	24.00	60.62	31.66	13.98	10.66	14.64	10.80	76.72	194.24		
6-10	137.26	19.32	159.22	27.10	42.20	23.98	13.16	13.10	12.74	11.64	65.58	159.62		
11-15	137.62	25.54	135.60	25.68	33.38	15.84	15.26	11.16	19.28	31.56	91.70	131.92		
16-20	181.14	217.20	133.54	19.98	60.62	29.56	28.06	8.38	12.92	21.96	93.64	163.20		
21-25	130.52	206.78	88.40	29.58	70.58	28.60	28.10	17.44	16.24	35.22	111.84	170.24		
26-END	56.15	144.43	32.58	50.74	61.73	16.70	15.68	8.62	18.06	70.48	158.26	85.00		

STATION		2527411 YEAR 1968												UNIT
		CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	112.10	11.60	6.40	25.86	16.80	15.80	9.84	10.48	10.38	9.92	48.70	78.58		
6-10	119.24	12.78	4.36	19.00	16.22	21.44	13.74	7.88	12.08	14.86	53.50	34.94		
11-15	67.64	9.40	6.96	15.16	31.84	23.32	10.42	6.62	10.68	66.68	42.90	62.22		
16-20	31.48	7.38	17.40	11.72	68.48	27.08	13.40	7.62	24.60	46.44	29.56	100.80		
21-25	20.96	6.30	10.46	13.04	63.80	12.00	33.16	5.56	17.42	17.12	27.80	93.30		
26-END	15.60	5.45	27.58	16.42	22.88	10.80	11.52	5.45	12.16	30.00	45.74	50.60		

Table 25 5-DAY NATURAL RUNOFF AT STATION NO. 2527411 (2/3)

STATION		YEAR 1969											UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	59.52*	18.47*	49.25*	107.40*	51.99*	100.90*	108.43*	37.28*	40.70*	60.20*	69.09*	123.76*	
6-10	71.15*	15.39*	14.37*	49.25*	71.49*	76.96*	75.25*	44.12*	56.04*	52.33*	109.11*	149.47*	
11-15	48.57*	10.95*	18.47*	38.31*	75.59*	47.89*	44.12*	22.58*	33.86*	80.08*	143.32*	241.48*	
16-20	77.64*	11.29*	28.05*	25.31*	44.86*	57.80*	55.75*	31.81*	29.07*	107.40*	181.10*	197.02*	
21-25	42.41*	29.76*	13.08*	20.16*	188.29*	74.22*	42.76*	53.02*	48.23*	207.28*	112.53*	112.15*	
26-END	24.51*	26.22*	31.93*	36.26*	81.23*	81.91*	23.09*	30.49*	43.44*	105.47*	236.35*	84.95*	

STATION		YEAR 1970											UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	69.78*	14.71*	19.84*	49.58*	51.82*	29.10*	38.99*	20.52*	29.07*	53.07*	25.31*	85.17*	
6-10	87.90*	14.37*	18.81*	78.57*	72.44*	39.34*	37.63*	50.97*	46.86*	46.86*	50.84*	50.28*	
11-15	54.39*	12.06*	35.23*	47.13*	69.02*	48.23*	10.84*	29.42*	74.28*	36.26*	41.39*	117.32*	
16-20	39.36*	11.29*	51.65*	94.86*	67.91*	94.11*	35.57*	27.92*	43.10*	65.67*	68.75*	158.71*	
21-25	20.87*	9.58*	37.83*	63.79*	86.25*	81.75*	44.47*	15.39*	80.04*	35.57*	229.17*	90.30*	
26-END	21.09*	9.12*	40.76*	64.17*	92.59*	58.83*	43.61*	10.83*	133.40*	28.51*	265.59*	75.54*	

STATION		YEAR 1971											UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	251.76*	37.97*	50.62*	63.62*	40.70*	27.36*	59.17*	16.42*	136.13*	33.18*	91.67*	148.79*	
6-10	269.19*	31.47*	43.10*	53.02*	42.41*	42.07*	25.31*	33.18*	79.70*	28.05*	83.12*	216.80*	
11-15	127.58*	25.65*	30.10*	54.73*	33.52*	23.94*	30.78*	21.55*	57.80*	24.36*	176.50*	191.55*	
16-20	70.46*	24.63*	125.19*	33.86*	25.65*	51.63*	20.18*	42.41*	49.25*	36.94*	85.17*	273.98*	
21-25	59.17*	36.94*	113.90*	28.73*	25.31*	48.23*	15.05*	66.36*	82.77*	62.33*	74.91*	232.25*	
26-END	52.73*	57.58*	57.00*	28.73*	39.34*	41.73*	16.25*	87.51*	49.94*	50.16*	86.19*	157.91*	

STATION		YEAR 1972											UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	82.77*	31.13*	46.86*	35.57*	54.04*	33.18*	6.84*	8.21*	27.71*	24.29*	26.68*	70.46*	
6-10	72.17*	29.76*	35.23*	47.20*	40.36*	27.71*	7.52*	8.89*	27.02*	18.84*	32.49*	59.17*	
11-15	63.62*	44.12*	32.15*	42.76*	35.23*	24.63*	8.21*	5.47*	46.52*	16.81*	88.93*	65.67*	
16-20	59.52*	23.26*	33.18*	40.70*	31.47*	30.44*	6.50*	6.84*	46.52*	24.29*	72.17*	59.86*	
21-25	53.70*	42.07*	30.44*	49.60*	38.99*	44.12*	6.84*	5.47*	48.91*	40.02*	81.75*	62.94*	
26-END	42.76*	34.63*	28.78*	108.43*	37.92*	22.58*	7.70*	4.84*	36.60*	63.57*	67.04*	36.20*	

STATION		YEAR 1973											UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	15.39*	4.16*	13.08*	11.83*	59.52*	29.35*	27.36*	29.42*	20.18*	19.15*	118.01*	100.58*	
6-10	21.21*	5.13*	8.89*	28.39*	61.91*	43.10*	23.26*	31.81*	105.69*	19.50*	167.94*	122.79*	
11-15	16.37*	4.11*	41.39*	32.84*	107.27*	30.44*	14.02*	33.86*	42.76*	36.28*	112.53*	50.62*	
16-20	17.79*	4.45*	45.83*	71.83*	61.91*	25.31*	12.31*	22.23*	45.15*	42.76*	71.15*	58.99*	
21-25	13.29*	8.89*	20.87*	83.80*	34.55*	26.34*	12.31*	16.71*	83.12*	159.74*	49.25*	35.91*	
26-END	7.70*	42.76*	18.25*	90.64*	73.83*	39.34*	12.26*	19.96*	28.39*	132.25*	46.80*	27.36*	

STATION		YEAR 1974											UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	20.18*	5.47*	23.60*	21.89*	27.36*	18.81*	9.58*	31.47*	47.20*	140.58*	31.13*	44.12*	
6-10	18.81*	5.13*	28.05*	66.02*	35.23*	20.18*	4.45*	24.51*	35.91*	69.09*	30.78*	42.41*	
11-15	13.39*	3.42*	32.49*	34.89*	25.99*	18.13*	4.11*	8.89*	69.09*	41.73*	43.10*	27.71*	
16-20	14.71*	4.79*	21.21*	62.07*	36.20*	17.79*	11.63*	20.52*	153.53*	37.28*	43.73*	25.99*	
21-25	13.08*	12.66*	20.87*	16.76*	106.72*	23.26*	35.57*	93.38*	106.38*	29.42*	105.15*	23.26*	
26-END	15.39*	19.38*	21.67*	16.08*	34.49*	60.20*	73.25*	46.18*	140.92*	27.93*	68.07*	50.45*	

STATION		YEAR 1975											UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	18.81*	2.05*	46.86*	43.10*	43.10*	33.86*	17.10*	60.88*	231.56*	27.71*	85.51*	136.82*	
6-10	16.76*	2.74*	88.93*	71.49*	51.99*	46.86*	16.08*	48.23*	144.00*	53.36*	43.10*	146.40*	
11-15	44.47*	7.87*	52.33*	97.14*	56.09*	102.61*	11.97*	27.02*	93.38*	56.78*	45.83*	148.45*	
16-20	27.02*	6.16*	33.52*	95.77*	32.15*	84.48*	8.21*	19.84*	53.36*	33.52*	160.08*	95.09*	
21-25	9.26*	3.42*	35.23*	71.83*	40.70*	45.15*	54.73*	25.31*	66.36*	30.78*	116.98*	68.75*	
26-END	6.84*	3.42*	40.48*	42.76*	45.89*	36.60*	41.34*	14.83*	45.15*	61.57*	121.08*	82.95*	

STATION		YEAR 1976											UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	48.34	11.30	11.26	26.32	45.28	12.86	19.34	8.46	20.72	32.84	41.94	40.34	
6-10	31.40	11.08	9.92	23.22	42.26	29.46	26.74	6.82	21.26	23.56	103.96	36.30	
11-15	24.48	10.26	15.70	26.92	29.44	32.78	19.12	6.28	16.60	41.76	122.38	27.90	
16-20	24.38	9.14	28.68	30.14	27.32	19.62	12.84	8.92	20.64	57.34	99.62	37.98	
21-25	19.16	8.22	16.46	51.80	15.48	15.80	11.96	16.60	28.06	65.68	112.07	53.10	
26-END	15.22	7.90	14.26	59.38	12.25	42.44	9.63	18.70	37.80	35.40	71.68	60.78	

Table 26 5-DAY NATURAL RUNOFF AT STATION NO. 2527411 (3/3)

STATION 2527411 YEAR 1977												
UNIT : CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	130.92	9.70	21.66	8.07	11.12	15.57	8.78	7.30	14.45	37.92	28.88	28.62
6-10	90.68	9.72	16.54	7.94	14.50	18.88	11.24	7.18	11.82	43.14	28.06	20.06
11-15	37.82	90.50	12.38	7.94	34.28	22.54	14.86	7.48	10.96	65.85	58.02	19.86
16-20	20.30	159.82	10.76	16.68	43.30	23.78	12.10	7.82	11.02	48.13	56.96	20.36
21-25	15.16	35.96	9.88	11.06	34.06	17.40	7.56	8.86	11.18	30.40	53.98	36.08
26-END	12.37	17.93	9.47	8.74	24.81	11.24	6.70	11.75	14.54	27.43	72.20	35.70

STATION 2527411 YEAR 1978												
UNIT : CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	14.42	11.30	32.40	17.56	40.72	29.50	11.24	10.94	12.30	9.30	69.08	61.84
6-10	10.64	8.72	25.74	29.68	44.66	28.66	28.04	9.74	13.10	8.88	157.92	109.05
11-15	63.14	7.20	15.86	52.57	49.82	42.62	32.94	7.10	12.16	8.78	202.58	156.25
16-20	52.30	6.94	10.92	59.24	48.64	18.84	23.66	9.00	12.68	9.98	167.68	145.40
21-25	65.14	7.42	16.26	91.16	82.42	13.58	11.90	9.00	11.76	11.66	104.18	59.82
26-END	23.10	7.70	15.83	111.24	86.55	10.92	10.47	7.27	12.12	40.83	77.74	53.17

STATION 2527411 YEAR 1979												
UNIT : CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	26.04	6.88	11.40	56.50	78.80	13.62	13.58	17.12	24.74	15.88	35.88	284.98
6-10	50.24	31.68	9.98	41.22	47.56	29.18	9.52	10.06	42.16	16.00	56.74	169.56
11-15	24.06	42.44	13.14	54.90	41.30	63.10	10.68	7.68	26.70	25.18	35.86	57.24
16-20	14.08	14.50	12.68	59.02	29.20	36.54	12.38	6.68	30.48	33.36	32.62	27.00
21-25	10.78	14.40	23.28	21.60	14.00	29.38	50.00	6.52	21.46	35.30	102.84	21.18
26-END	9.95	13.33	20.28	59.50	13.00	22.64	40.62	10.72	20.80	41.77	299.76	16.17

Table 27 5-DAY NATURAL RUNOFF AT STATION NO. 3414421 (1/3)

STATION		YEAR 1961											UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	123.20	42.60	47.48	61.48	144.60	33.70	21.38	52.36	50.96	40.38	74.90	63.52		
6-10	132.26	37.00	71.12	59.08	97.10	36.16	16.92	26.70	79.74	55.16	58.16	52.04		
11-15	98.30	38.54	82.72	83.76	97.50	42.20	22.88	26.58	55.28	36.64	44.48	71.84		
16-20	58.10	65.92	57.16	66.40	100.40	57.52	21.02	34.54	54.20	39.44	48.16	104.68		
21-25	43.04	81.18	52.46	43.38	51.48	31.28	26.72	31.98	53.96	37.78	81.84	112.08		
26-END	40.75	79.77	60.15	81.96	37.28	27.72	24.37	24.38	48.90	64.57	97.52	100.23		

STATION		YEAR 1962											UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	93.94	40.80	21.20	50.84	125.08	41.38	50.68	19.00	48.40	55.18	127.34	170.56		
6-10	87.32	30.08	43.56	98.22	82.20	54.68	35.16	17.68	53.96	39.52	155.48	129.48		
11-15	50.50	29.36	37.74	117.66	149.34	59.50	28.22	26.84	40.94	112.60	126.22	88.56		
16-20	108.50	32.02	57.74	92.44	189.30	42.92	23.52	60.96	40.74	150.44	157.04	78.60		
21-25	123.36	32.48	92.78	62.98	101.42	40.60	21.80	81.62	39.64	172.48	187.84	65.54		
26-END	54.67	25.57	67.97	77.84	56.17	52.70	19.93	79.13	29.04	85.72	130.10	59.73		

STATION		YEAR 1963											UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	55.54	25.44	19.36	18.98	18.20	26.08	12.38	17.34	21.84	46.50	102.50	197.14		
6-10	48.72	24.76	21.90	17.34	42.86	19.68	16.30	41.92	22.52	86.38	196.00	172.88		
11-15	44.32	29.70	25.42	16.60	41.62	17.16	19.02	26.02	15.46	101.26	200.80	135.84		
16-20	37.76	28.44	25.54	16.80	36.20	15.82	23.14	18.04	21.96	98.42	231.36	111.22		
21-25	39.88	23.54	21.96	21.14	34.38	12.86	18.20	19.08	56.58	118.72	207.08	86.28		
26-END	29.65	20.15	27.75	20.08	27.42	13.14	20.50	29.03	64.36	84.00	198.14	67.38		

STATION		YEAR 1964											UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	63.20	39.80	48.88	41.52	133.96	31.94	29.02	62.86	52.72	35.64	105.04	89.60		
6-10	57.76	42.74	79.38	32.98	89.00	38.56	45.84	36.76	105.32	31.66	58.68	68.54		
11-15	51.46	56.20	36.14	59.28	84.28	34.40	30.02	31.92	107.44	68.80	76.10	69.00		
16-20	78.48	44.52	52.04	68.22	59.14	35.34	66.82	27.16	89.10	43.64	61.56	48.38		
21-25	106.16	36.24	52.48	62.68	43.12	13.56	75.84	27.06	55.86	59.96	69.30	49.50		
26-END	73.10	37.88	36.75	109.56	29.53	56.02	73.17	26.10	42.78	69.27	99.70	57.00		

STATION		YEAR 1965											UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	39.56	19.26	21.50	56.70	88.02	36.68	21.28	20.80	32.54	55.34	119.20	105.76		
6-10	29.60	19.72	20.26	87.44	103.26	39.86	33.26	19.64	35.88	48.14	123.50	92.12		
11-15	23.62	27.10	18.48	55.38	176.64	27.40	31.42	18.98	32.66	65.20	103.14	173.32		
16-20	21.80	39.04	19.28	58.64	93.66	28.58	28.80	26.78	31.16	114.30	130.68	179.74		
21-25	19.54	22.20	46.62	68.88	91.36	28.32	20.12	28.72	38.74	114.08	135.68	153.88		
26-END	19.28	19.27	47.62	79.60	59.27	22.48	24.47	37.47	54.10	131.10	107.70	142.32		

STATION		YEAR 1966											UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	77.90	57.66	44.22	63.54	70.70	39.46	33.56	30.70	37.08	102.44	76.76	111.38		
6-10	74.08	62.92	46.32	84.86	58.02	62.38	44.72	43.90	26.00	73.86	100.12	141.82		
11-15	89.98	47.92	40.86	67.72	43.76	67.12	76.42	49.06	31.20	71.20	88.34	163.04		
16-20	99.72	90.82	69.58	86.10	45.70	41.24	55.18	37.08	31.64	60.20	140.14	122.68		
21-25	65.34	100.02	84.12	94.32	41.62	66.34	32.06	32.96	35.62	60.66	153.50	116.60		
26-END	56.63	53.43	59.77	107.30	38.10	44.48	27.90	53.62	47.60	71.73	118.10	164.62		

STATION		YEAR 1967											UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	123.74	71.60	67.98	52.10	96.36	48.04	43.32	22.63	25.22	40.72	147.04	170.02		
6-10	99.26	52.42	54.10	96.52	93.56	39.18	34.64	20.80	21.76	30.26	139.52	102.24		
11-15	90.00	45.76	92.06	78.02	70.74	36.60	36.86	19.62	28.14	46.54	116.96	69.68		
16-20	96.86	51.44	61.94	58.42	108.54	107.10	34.68	21.14	46.74	33.22	150.50	71.30		
21-25	65.06	51.70	49.50	66.66	115.50	67.74	32.56	27.32	32.94	72.90	141.42	85.12		
26-END	68.13	58.83	47.95	111.80	66.05	49.30	26.58	25.20	32.62	127.62	205.00	57.32		

STATION		YEAR 1968											UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	44.50	33.14	20.56	30.42	103.36	57.26	57.38	31.24	30.36	72.28	163.62	55.48		
6-10	43.48	34.66	18.24	33.78	68.76	60.22	47.60	29.94	30.46	76.02	98.00	114.26		
11-15	39.30	27.26	19.34	33.64	80.26	106.00	39.48	29.60	30.64	79.56	67.60	135.56		
16-20	33.26	39.56	20.34	44.98	159.40	81.88	55.80	25.46	57.96	59.02	74.38	162.44		
21-25	33.48	24.34	30.80	52.84	105.78	47.14	100.60	25.88	32.44	60.06	70.84	70.34		
26-END	30.77	21.40	35.88	65.46	69.75	42.98	42.25	34.40	35.48	96.80	70.56	137.60		

Table 28 5-DAY NATURAL RUNOFF AT STATION NO. 3414421 (2/3)

STATION		3414421										YEAR 1969		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.			
1-5	125.62	51.72	52.24	111.98	83.26	102.18	43.98	19.88	55.22	55.70	70.70	125.36			
6-10	92.00	44.74	33.34	45.46	86.30	98.96	43.04	25.72	52.36	61.40	96.22	91.84			
11-15	81.32	41.60	51.56	38.06	101.82	69.84	37.36	31.68	30.10	99.52	93.46	116.86			
16-20	115.92	48.18	64.54	41.06	113.12	66.20	37.56	42.04	27.38	118.92	82.32	90.94			
21-25	66.08	49.48	44.90	44.62	135.16	60.88	34.52	63.56	30.80	124.60	73.72	66.10			
26-END	56.38	62.67	76.15	63.70	141.87	50.92	26.57	67.30	42.42	138.73	142.96	75.10			

STATION		3414421										YEAR 1970		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.			
1-5	87.52	56.88	34.60	119.84	116.14	81.72	37.16	24.62	31.00	65.22	56.48	119.32			
6-10	141.58	40.48	33.68	94.22	109.62	47.52	36.20	21.64	33.70	92.24	69.70	96.62			
11-15	117.82	36.10	29.46	78.16	82.92	41.18	25.06	31.32	47.46	69.98	122.98	71.84			
16-20	94.46	29.56	45.14	67.86	69.64	38.34	21.92	26.04	51.28	63.10	107.94	85.28			
21-25	56.64	32.40	34.16	122.44	106.16	32.48	28.16	22.54	59.62	48.06	150.70	101.64			
26-END	72.73	33.37	69.20	95.80	101.57	35.92	25.30	33.08	43.98	40.95	110.68	76.35			

STATION		3414421										YEAR 1971		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.			
1-5	130.44	58.96	55.40	48.18	35.06	27.10	32.30	27.04	65.22	32.60	32.98	64.64			
6-10	249.44	50.34	40.80	47.76	39.56	23.86	26.38	26.58	105.66	29.62	85.72	107.78			
11-15	127.52	45.64	38.80	53.40	35.56	24.74	27.40	45.46	82.86	28.14	90.44	128.71			
16-20	88.56	45.78	68.58	40.90	32.20	30.08	31.36	59.00	58.18	33.72	58.22	149.61			
21-25	68.62	52.80	83.78	32.80	28.62	29.24	28.40	138.00	61.32	40.98	61.98	117.10			
26-END	63.35	54.33	48.08	61.42	35.35	38.26	36.90	86.18	42.56	36.17	56.60	151.75			

STATION		3414421										YEAR 1972		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.			
1-5	83.44	46.52	32.00	50.30	75.92	41.64	32.64	22.14	23.14	38.18	75.76	110.62			
6-10	60.06	60.20	28.58	31.78	71.56	33.04	27.48	20.86	20.10	33.42	81.34	112.02			
11-15	48.62	77.58	35.08	51.84	66.56	44.58	24.92	21.18	31.04	66.28	122.72	113.43			
16-20	42.04	37.68	29.28	68.70	77.38	87.58	31.00	24.64	25.04	49.76	160.88	114.83			
21-25	35.98	43.80	27.28	79.84	81.00	80.26	26.24	25.36	22.92	62.38	144.20	116.23			
26-END	35.95	45.20	30.94	105.74	55.40	46.54	22.88	25.35	26.58	92.90	99.16	117.64			

STATION		3414421										YEAR 1973		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.			
1-5	119.04	31.56	47.74	79.36	85.80	152.88	45.26	55.88	50.24	61.70	124.48	99.44			
6-10	112.26	35.36	33.72	83.48	83.74	90.84	33.76	61.62	50.30	47.24	115.22	181.84			
11-15	67.92	37.52	72.40	73.88	102.50	61.46	28.82	45.00	49.24	80.38	90.22	129.20			
16-20	45.60	30.36	54.02	81.74	101.24	44.92	33.90	30.84	40.30	70.22	80.06	87.42			
21-25	41.38	35.44	62.68	90.38	104.74	47.66	28.66	25.58	62.66	119.12	100.26	83.42			
26-END	41.42	77.43	46.32	87.09	160.35	56.30	41.62	30.90	47.94	134.62	136.16	57.22			

STATION		3414421										YEAR 1974		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.			
1-5	46.86	30.66	31.00	38.75	64.92	33.44	42.84	45.44	41.88	50.22	41.12	58.18			
6-10	43.02	34.40	55.86	54.71	62.42	32.18	30.10	33.02	39.94	31.88	32.82	56.02			
11-15	37.20	33.94	54.52	70.66	100.56	27.66	27.52	23.74	51.60	28.18	55.06	47.72			
16-20	33.62	55.76	37.92	76.86	97.58	53.78	28.26	21.62	73.88	32.22	76.82	51.82			
21-25	31.76	65.66	24.82	58.68	68.88	71.46	30.36	21.30	94.24	26.78	73.88	65.80			
26-END	34.78	47.73	22.80	63.34	40.98	61.84	42.47	20.92	60.10	26.52	61.28	74.83			

STATION		3414421										YEAR 1975		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.			
1-5	118.36	29.20	47.92	74.62	54.76	47.86	30.28	30.58	88.44	37.52	72.42	50.84			
6-10	97.30	36.14	80.14	57.02	52.10	36.24	38.06	37.46	87.34	44.44	63.90	102.48			
11-15	68.92	71.50	58.60	60.16	49.12	34.35	30.20	28.94	39.96	33.36	51.94	120.16			
16-20	60.58	80.52	44.54	90.48	43.12	52.46	47.46	26.70	47.44	35.56	97.04	76.02			
21-25	43.70	42.06	46.72	126.54	56.56	30.38	60.36	26.68	48.14	25.88	147.16	70.38			
26-END	35.00	44.99	60.22	89.60	67.47	27.40	52.47	24.17	79.76	38.62	73.66	68.40			

STATION		3414421										YEAR 1976		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.			
1-5	48.24	24.88	23.38	60.38	42.60	44.16	25.64	19.34	40.32	36.26	69.92	43.04			
6-10	46.96	23.82	16.74	75.56	46.24	86.76	42.38	19.30	27.64	105.24	68.98	36.20			
11-15	35.76	19.42	44.52	65.66	52.14	34.80	31.76	20.44	32.40	137.92	77.44	34.10			
16-20	42.50	19.08	49.54	61.18	29.62	28.38	24.56	35.58	25.52	104.48	77.96	40.52			
21-25	33.92	20.28	51.70	73.02	24.34	25.90	29.22	26.56	23.70	95.76	70.20	48.46			
26-END	24.10	50.25	110.13	92.28	20.85	39.40	22.30	109.10	30.28	52.70	50.36	85.40			

Table 29 5-DAY NATURAL RUNOFF AT STATION NO. 3414421 (3/3)

STATION 3414421 YEAR 1977 UNIT 1 CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	56.32	42.00	31.52	21.54	72.64	38.22	40.78	18.28	18.74	94.56	77.94	58.14
6-10	95.76	32.48	22.44	22.40	52.28	107.02	40.28	18.58	21.72	153.88	74.80	86.92
11-15	37.92	38.36	22.36	26.54	77.48	83.82	35.48	18.44	17.90	132.08	68.12	65.88
16-20	36.54	25.38	22.36	49.28	54.78	65.88	27.42	19.86	27.50*	113.16	69.52	47.45
21-25	29.60	21.74	42.52	63.70	29.58	48.12	19.94	21.14	37.28*	95.08	91.22	42.78
26-END	31.42	36.80	22.10	45.48	43.15	38.28	18.03	23.93	46.97	118.63	77.46	31.90

STATION 3414421 YEAR 1978 UNIT 1 CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	22.50	17.86	18.84	41.34	57.68	29.62	18.48	13.90	17.88	17.44	64.40	52.26
6-10	23.12	24.94	21.68	30.82	85.86	34.88	19.34*	13.08	17.64	16.58	72.88	70.44
11-15	31.64	26.12	29.28	55.60	101.32	31.04	20.19*	14.60	16.36	15.00	79.06	51.16
16-20	44.00	30.98	21.58	59.18*	54.52	21.94	21.05*	12.56	17.44	19.52	102.04	35.82
21-25	30.32	17.38	37.76	64.78*	66.02	23.20	21.90	12.72	31.74	44.82	85.30	40.30
26-END	21.17	16.90	46.22	70.33	39.62	22.34	17.00	13.28	20.96	64.85	64.84	31.42

STATION 3414421 YEAR 1979 UNIT 1 CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	31.14	16.38	21.18	35.58	100.44	33.14	20.94	23.54	37.70	22.78	95.26	83.77
6-10	37.54	18.56	18.12	30.46	46.08	76.80	18.98	21.44	64.10	32.02	126.54	68.68
11-15	26.20	17.28	17.18	64.32	38.36	82.12	28.08	16.74	39.12	62.02	99.90	45.64
16-20	19.72	30.72	16.96	32.18	23.54	48.84	32.70	15.46	55.74	69.38	143.32	37.06
21-25	18.64	41.64	16.94	26.92	20.34	37.80	70.86	21.58	32.28	59.42	101.44	54.58
26-END	18.25	32.43	19.23	63.68	34.55	27.36	45.27	30.25	29.02	105.15	74.35	27.95

Table 30 5-DAY NATURAL RUNOFF AT STATION NO. 3424411 (1/3)

STATION 3424411 YEAR 1961 UNIT 1 CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	1454.37a	115.20a	274.33a	321.79a	824.81a	296.67a	218.29a	322.91a	393.65a	231.85a	384.16a	367.44a
6-10	786.39a	304.61a	448.07a	423.93a	804.26a	336.25a	252.19a	483.39a	239.33a	260.78a	297.83a	350.26a
11-15	530.14a	385.97a	481.78a	756.78a	815.32a	311.85a	254.45a	299.84a	314.56a	240.44a	292.41a	401.78a
16-20	575.78a	873.17a	361.67a	351.10a	376.74a	340.32a	221.91a	480.08a	404.95a	231.85a	470.68a	470.53a
21-25	397.26a	626.40a	284.71a	479.07a	405.40a	262.58a	339.41a	305.07a	340.12a	330.18a	303.26a	997.90a
26-END	327.60a	302.68a	309.20a	683.80a	364.50a	239.99a	295.28a	275.11a	302.35a	353.27a	454.66a	486.98a

STATION 3424411 YEAR 1962 UNIT 1 CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	1051.69a	308.42a	252.04a	451.05a	614.41a	310.49a	537.15a	361.56a	409.47a	552.97a	942.32a	382.11a
6-10	586.63a	250.83a	466.88a	953.87a	658.94a	406.30a	257.16a	333.54a	1018.69a	445.62a	699.17a	592.05a
11-15	394.10a	251.28a	360.20a	817.13a	709.59a	305.32a	228.44a	678.38a	427.54a	361.32a	849.17a	525.17a
16-20	551.36a	211.96a	439.99a	629.11a	604.41a	277.05a	277.50a	361.94a	618.27a	812.13a	1245.91a	433.42a
21-25	475.45a	244.05a	337.44a	424.18a	378.74a	366.42a	311.74a	303.26a	649.90a	496.86a	809.44a	452.40a
26-END	371.73a	220.71a	381.51a	390.94a	305.45a	493.08a	262.88a	780.41a	409.92a	362.79a	528.33a	469.28a

STATION 3424411 YEAR 1963 UNIT 1 CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	593.18a	533.96	509.76	331.76	205.18	176.32	153.42	633.56	790.92	674.82	1119.02	1619.04
6-10	435.38a	797.66	453.82	266.12	204.08	105.82	155.10	614.04	748.58	929.40	1179.90	1870.46
11-15	345.15a	818.52	333.44	201.82	201.54	44.18	178.42	361.94	708.34	1262.10	1689.90	1004.24
16-20	314.47a	620.24	489.48	338.60	233.36	78.48	219.14	54.48	659.58	1349.06	2102.22	832.58
21-25	366.14a	717.68	502.82	338.90	214.76	109.98	408.38	669.46	670.74	1338.20	2044.18	1045.46
26-END	400.19a	744.97	417.65	130.38	200.88	162.86	594.22	730.28	691.30	1172.13	1969.28	1507.75

STATION 3424411 YEAR 1964 UNIT 1 CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	814.14	310.42	694.80	292.04	794.22	275.24	368.80	474.46	269.80	363.66	968.16	2144.24
6-10	699.96	156.86	465.38	473.14	926.72	261.22	575.98	384.96	587.62	371.34	430.76	1220.32
11-15	655.10	330.34	731.08	851.32	977.56	235.08	854.56	704.06	754.94	307.96	401.04	942.08
16-20	678.16	317.88	502.08	863.42	900.12	314.88	700.38	521.56	601.40	612.42	743.12	1370.00
21-25	930.64	484.08	401.58	756.94	563.32	405.34	909.24	511.22	471.82	822.48	1251.22	1807.78
26-END	445.25	701.85	259.65	662.88	205.03	521.08	1041.55	264.88	214.92	1067.77	2187.48	1068.98

STATION 3424411 YEAR 1965 UNIT 1 CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	892.44	100.44	31.56	192.04	1045.58	1270.42	1163.44	505.88	497.32	685.66	1616.04	1673.62
6-10	860.44	102.74	39.24	347.96	1208.02	1117.50	884.08	284.42	585.04	720.22	1754.52	1623.20
11-15	728.42	45.14	39.38	595.24	1246.28	1299.80	610.60	636.70	671.32	871.32	1804.76	1822.10
16-20	595.92	42.54	147.44	860.14	1290.52	1254.24	424.64	789.40	759.02	1413.00	1523.16	1899.58
21-25	309.40	24.42	163.32	1032.94	1382.74	1184.82	449.96	685.64	876.10	1821.18	1404.36	1621.76
26-END	300.12	52.57	124.85	1012.34	1309.48	1172.16	395.28	579.67	942.34	1840.37	1441.66	981.97

STATION 3424411 YEAR 1966 UNIT 1 CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	722.82	855.20	773.36	1818.30	627.00	833.12	784.34	498.44	794.60	1364.48	970.80	1114.18
6-10	677.88	722.54	610.90	1440.06	499.66	450.40	821.58	399.24	437.92	542.56	1734.90	1561.88
11-15	644.04	614.82	446.18	877.28	918.10	454.90	883.80	613.62	479.36	870.76	1714.68	1356.74
16-20	652.04	944.26	678.72	613.88	1237.92	631.58	840.64	1080.56	728.60	1503.54	1663.94	1602.34
21-25	1482.46	814.44	961.92	732.04	1080.52	851.46	317.76	1650.80	801.44	875.00	1275.54	1213.42
26-END	2479.82	784.73	1779.77	724.82	909.57	903.10	371.78	1705.93	1183.96	684.38	691.66	1481.98

STATION 3424411 YEAR 1967 UNIT 1 CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	2271.64	963.20	5534.04	854.46	906.44	818.88	723.54	197.44	272.46	813.74	3050.50	2802.82
6-10	2806.14	242.36	1775.90	646.12	879.70	500.34	755.42	113.94	278.42	877.44	1634.78	1891.60
11-15	2832.52	814.82	4126.62	708.98	953.80	408.08	680.24	113.08	337.62	865.64	2282.42	1385.74
16-20	2542.02	1744.96	2375.50	758.74	1772.50	567.52	524.40	209.54	480.50	997.50	2016.82	1774.18
21-25	1292.40	1950.54	1444.00	617.84	1426.40	348.02	424.10	263.90	390.78	1262.00	1762.18	978.06
26-END	937.43	1256.40	1104.57	1014.48	941.93	544.28	243.67	183.82	337.72	1268.92	3775.84	755.15

STATION 3424411 YEAR 1968 UNIT 1 CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	633.44	613.51a	542.22a	350.91a	319.64	450.12	782.42	395.00	248.06	479.02	806.94	476.00
6-10	614.80	408.29a	377.00a	345.71a	446.22	389.18	737.92	244.48	147.60	561.42	720.78	416.16
11-15	490.58	403.88a	321.79a	140.50a	616.18	524.06	684.50	127.10	172.04	457.38	501.40	741.80
16-20	400.74	397.88a	306.52a	333.28a	517.58	795.94	694.46	168.76	178.80	872.44	483.58	1060.00
21-25	396.20	392.65a	361.36a	310.07a	491.92	759.52	841.88	220.88	209.94	744.90	382.02	1034.54
26-END	418.72	347.43a	358.14a	324.85a	431.58	554.02	587.17	331.48	389.44	854.93	342.24	890.53

Table 31 5-DAY NATURAL RUNOFF AT STATION NO. 3424411 (2/3)

STATION		YEAR 1969										UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	1460.78	190.26	177.50	226.60	489.04	478.76	316.46	147.32	566.84	398.38	947.14	1053.69*
6-10	1534.78	173.30	136.46	158.70	257.32	321.82	510.10	129.32	425.88	396.06	660.72	947.63*
11-15	948.20	150.62	139.98	113.74	338.74	301.36	266.64	253.96	254.88	359.58	716.86	991.51*
16-20	722.70	180.30	138.94	174.96	519.74	518.04	197.00	492.52	239.24	524.28	798.78	1113.83*
21-25	546.18	222.14	109.74	135.20	769.64	803.00	212.78	858.56	272.48	711.38	872.50	590.03*
26-END	261.15	219.87	179.38	285.24	563.65	390.32	126.78	656.23	446.30	812.55	1026.76	527.25*

STATION		YEAR 1970										UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	673.86*	263.96*	207.44*	225.07*	243.15*	395.46*	379.64*	333.09*	333.54*	685.16*	772.36*	409.92*
6-10	1686.68*	276.16*	217.39*	275.24*	437.94*	368.34*	319.98*	290.00*	280.32*	608.78*	590.70*	508.90*
11-15	1292.58*	309.13*	268.01*	364.27*	417.15*	334.44*	276.59*	253.54*	368.79*	319.53*	516.58*	997.90*
16-20	1141.68*	414.89*	413.99*	259.53*	393.65*	325.86*	364.27*	446.98*	470.93*	448.33*	393.20*	595.06*
21-25	784.58*	307.78*	578.95*	169.03*	411.73*	329.02*	362.92*	362.92*	479.52*	456.47*	578.28*	898.48*
26-END	447.05*	247.83*	841.37*	205.18*	381.15*	350.26*	349.88*	383.77*	541.89*	623.70*	325.60*	821.04*

STATION		YEAR 1971										UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	1979.99*	227.33*	1033.16*	335.80*	418.05*	732.04*	488.56*	310.94*	456.92*	200.67*	464.49*	945.12*
6-10	2490.12*	179.88*	654.88*	226.88*	349.81*	401.78*	425.28*	385.51*	499.40*	498.05*	438.84*	957.68*
11-15	1257.32*	303.71*	923.33*	210.61*	317.72*	321.79*	550.93*	574.43*	802.21*	646.07*	766.51*	1122.19*
16-20	781.42*	309.35*	762.89*	449.24*	351.17*	260.78*	710.92*	766.96*	572.62*	486.56*	632.26*	1032.25*
21-25	667.77*	1036.32*	444.27*	478.82*	370.15*	210.16*	573.07*	1059.82*	413.99*	633.03*	443.81*	969.88*
26-END	300.55*	916.71*	394.33*	463.25*	400.72*	385.06*	599.22*	618.43*	270.27*	436.01*	325.60*	921.25*

STATION		YEAR 1972										UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	1308.40	564.08	450.68	416.08	585.10	413.30	337.52	298.47*	439.92*	581.38	449.96	849.34
6-10	861.28	580.18	387.44	471.58	481.38	375.90	274.20	322.05*	463.50*	493.88	447.46	429.84
11-15	810.80	637.28	359.40	422.54	534.68	541.12	497.76	275.62	345.63*	487.08*	1033.58	540.76
16-20	657.88	430.14	339.06	414.36	541.12	497.50	269.70	369.20*	510.65*	418.52	831.56	843.48
21-25	603.50	453.62	352.90	429.42	636.46	582.44	260.60	392.78*	534.22*	383.36	965.68	2768.04
26-END	556.38	484.72	384.49*	507.26*	468.83	396.42	274.90	416.35*	557.80*	514.67	643.38	1376.57

STATION		YEAR 1973										UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	826.92	341.08	268.08	278.30	548.38	621.34	580.62	352.40	333.24	388.94	1244.50	838.04
6-10	826.74	302.94	221.28	296.60	514.32	721.82	285.82	348.48	199.26	284.38	770.82	1999.14
11-15	383.80	206.20	261.94	282.28	515.56	493.06	259.88	253.24	354.52	341.28	505.32	3111.88
16-20	578.14	312.44	214.32	296.98	437.78	311.30	210.12	759.48	293.24	446.44	573.38	1943.64
21-25	468.56	268.04	218.32	429.18	472.00	433.92	204.82	240.88	555.18	674.60	783.74	1176.54
26-END	365.68	319.63	262.15	723.52	614.72	386.02	240.32	241.43	423.70	705.07	1145.94	633.40

STATION		YEAR 1974										UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	579.50	323.04	357.72	265.44	849.66	284.90	292.67*	649.94	329.92	652.94	407.68	783.66
6-10	521.54	406.58	470.14	494.60	908.02	294.42	259.64	294.66	352.92	393.98	352.52	436.56
11-15	425.78	315.12	555.08	432.48	439.45	296.86	360.08	247.66	366.40	324.18	657.02	311.66
16-20	380.42	519.20	304.36	514.52	490.28	375.76	407.70	201.72	341.60	686.74	627.06	574.38
21-25	344.74	446.34	255.08	573.18	444.16	368.73	314.68	305.54	412.58	401.92	1121.94	342.54
26-END	390.80	521.93	239.87	830.30	378.33	325.70*	366.18	275.00	403.60	335.08	856.34	463.35

STATION		YEAR 1975										UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	664.56	355.24	532.36	296.62	491.10	459.00	240.24*	242.28	312.40	223.06	328.43*	1455.18
6-10	1196.02	338.86	540.66	435.22	555.56	480.44	228.85*	204.66	289.24	171.60	363.70	977.24
11-15	1178.02	349.66	363.16	327.98	476.24	440.84	217.42	207.16	245.26	425.78	850.22	981.86
16-20	1040.38	309.86	342.82	413.62	860.76	424.18	319.96	171.40	299.56	387.68	613.54	802.66
21-25	657.02	628.36	463.92	515.76	722.70	297.30	407.50	184.76	238.32	257.90	949.80	841.64
26-END	455.15	997.63	375.27	625.24	597.18	251.62	375.95	192.82	343.78	293.17*	2865.36	911.77

STATION		YEAR 1976										UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	595.30	230.70	187.04	167.46	343.64	242.04	170.80	147.80	383.38	329.78	508.94	399.04
6-10	442.14	252.98	170.54	140.26	350.32	325.82	223.88	122.80	273.36	376.10	656.64	471.02
11-15	376.10	209.72	207.58	154.18	322.58	273.44	370.00	118.82	269.24	589.40	494.56	378.28
16-20	328.36	192.22	200.72	205.60	278.64	212.44	283.36	177.34	202.26	958.38	461.46	586.40
21-25	289.58	174.62	150.14	221.16	194.82	208.06	214.24	278.96	235.28	704.28	534.88	859.26
26-END	261.23	160.77	202.25	365.04	148.62	379.66	179.95	602.32	436.68	423.87	509.70	1271.78

Table 32 5-DAY NATURAL RUNOFF AT STATION NO. 3424411 (3/3)

STATION 3424411 YEAR 1977 UNIT 1 CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	1193.76	232.28	259.68	124.40	121.18	153.02	130.64	107.50	180.32	532.72	572.82	362.78
6-10	1084.26	228.08	200.24	127.22	134.56	198.84	163.44	105.48	109.34	835.10	654.08	476.18
11-15	490.30	360.66	175.90	111.88	133.44	191.06	198.84	106.60	101.32	980.22	988.94	379.72
16-20	346.44	239.90	161.88	146.00	231.40	214.08	149.48	120.34	101.30	1162.12	581.48	311.92
21-25	288.98	208.30	148.72	115.26	139.90	191.18	102.80	168.42	100.98	605.08	715.26	388.32
26-END	256.75	243.13	144.45	112.50	170.85	127.70	110.62	275.42	227.02	858.32	490.54	337.53

STATION 3424411 YEAR 1978 UNIT 1 CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	253.20	265.90	267.66	225.48	318.20	280.74	297.42	265.02	170.82	236.08	525.64	866.50
6-10	326.04	217.44	201.24	192.30	386.08	327.88	269.76	243.52	192.56	231.34	1164.80	1218.48
11-15	715.32	216.48	180.74	179.06	529.64	440.68	239.36	222.80	159.86	239.14	660.42	1101.74
16-20	550.34	205.84	160.60	226.28	606.80	232.34	221.18	209.40	175.74	257.68	941.82	538.64
21-25	484.92	203.62	173.56	363.80	690.56	367.00	231.36	198.76	244.80	384.56	899.80	657.12
26-END	297.67	181.20	162.67	420.04	346.32	335.02	223.07	192.23	288.78	374.57	658.34	336.00

STATION 3424411 YEAR 1979 UNIT 1 CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	443.38	195.10	208.58	184.00	270.12	186.64	158.32	318.50	208.38	399.48	954.60	1740.34
6-10	524.94	277.80	199.12	217.68	309.80	272.76	156.52	165.70	292.80	422.76	913.26	834.24
11-15	300.52	225.34	171.70	217.68	348.54	338.46	167.74	95.58	432.30	1243.36	883.40	545.98
16-20	264.84	227.72	185.90	267.64	359.06	377.48	202.34	110.40	801.18	1182.22	992.50	446.54
21-25	244.28	217.30	159.08	318.20	234.16	211.66	474.02	154.20	422.04	1186.38	1413.94	374.72
26-END	252.93	227.37	134.88	334.88	54.37	160.54	680.23	145.07	345.08	1062.27	3562.22	323.03

Table 33 5-DAY NATURAL RUNOFF AT STATION NO.3813411 (1/3)

STATION		YEAR 1961											UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	229.74*	14.53*	15.17*	85.57*	138.92*	4.52*	18.64*	37.76*	55.22*	80.76*	70.15*	79.85*	
6-10	165.11*	23.79*	47.69*	86.84*	112.06*	8.99*	28.78*	28.54*	71.66*	89.18*	80.63*	57.09*	
11-15	90.99*	28.60*	59.19*	119.11*	104.35*	47.33*	18.68*	18.25*	64.25*	69.43*	83.89*	61.84*	
16-20	30.59*	62.32*	37.33*	191.85*	44.98*	58.17*	7.17*	18.43*	58.47*	49.08*	46.19*	75.27*	
21-25	14.15*	117.78*	36.67*	129.99*	18.85*	21.02*	9.51*	33.48*	71.68*	78.52*	193.72*	131.75*	
26-END	18.77*	24.29*	55.05*	244.84*	9.33*	9.75*	28.55*	56.60*	48.84*	82.40*	149.46*	203.98*	

STATION		YEAR 1962											UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	119.76	37.94	41.14	81.48	89.34	42.20	46.40	21.74	42.08	41.58	106.46	94.00	
6-10	79.62	31.72	85.02	82.90	101.10	54.70	33.08	20.26	52.46	49.28	132.44	72.20	
11-15	56.32	31.78	65.66	95.32	140.66	47.32	25.56	29.22	33.62	127.26	143.94	68.18	
16-20	94.76	26.24	52.28	101.52	115.12	40.86	24.40	38.64	58.92	151.42	159.24	55.24	
21-25	71.08	31.30	104.08	54.38	62.80	41.16	21.52	43.36	64.52	141.74	159.62	49.52	
26-END	47.02	43.00	54.45	58.48	64.57	43.58	21.50	60.53	37.16	85.73	105.94	55.43	

STATION		YEAR 1963											UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	71.62	28.94	19.56	19.34	21.84	65.94	28.28	22.00	40.16	36.48	133.84	168.18	
6-10	56.12	24.02	25.44	15.48	43.80	49.20	29.14	92.04	29.10	85.74	179.60	131.88	
11-15	43.02	26.08	30.98	16.60	29.10	43.10	35.42	60.38	30.06	117.92	152.30	98.40	
16-20	38.78	24.66	24.04	20.36	55.62	24.52	28.52	36.30	57.54	127.40	160.50	77.88	
21-25	45.66	20.70	25.04	17.26	76.34	28.34	19.14	44.20	83.48	133.78	187.84	67.14	
26-END	32.05	19.10	31.15	18.22	68.50	49.08	31.78	54.07	51.76	91.75	165.44	58.30	

STATION		YEAR 1964											UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	58.08	30.90	56.14	25.66	53.28	27.08	40.76	74.96	67.90	37.34	129.58	105.10	
6-10	48.20	33.86	55.28	28.40	64.58	25.40	53.16	42.62	108.42	43.72	96.40	82.36	
11-15	33.50	43.40	28.54	47.92	45.70	32.38	84.62	44.84	118.04	53.80	99.86	116.58	
16-20	95.56	37.40	30.00	42.70	56.90	45.26	59.32	32.26	91.46	45.20	77.46	78.64	
21-25	68.26	27.32	43.50	32.96	35.72	36.62	59.38	32.22	58.64	92.24	83.32	61.90	
26-END	39.88	26.63	28.82	65.72	27.75	49.06	90.50	31.57	41.02	113.28	120.96	56.88	

STATION		YEAR 1965											UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	51.78	22.58	23.58	65.00	77.00	42.38	25.84	42.60	59.36	68.74	111.46	66.06	
6-10	40.18	18.94	17.88	64.16	81.88	48.86	28.54	45.30	62.06	44.44	97.98	72.86	
11-15	30.54	36.34	17.66	44.16	102.52	32.46	31.24	48.00	64.76	55.58	75.52	99.52	
16-20	27.14	31.14	17.06	73.98	105.84	42.10	33.96	50.70	67.46	86.38	103.76	134.82	
21-25	25.52	24.36	28.52	74.58	120.08	33.78	36.66	53.40	70.16	83.48	105.10	142.74	
26-END	25.15	21.90	61.55	70.90	58.25	27.14	39.63	56.37	72.86	100.30	90.18	112.20	

STATION		YEAR 1966											UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	75.62	48.76	36.68	88.34	73.44	42.28	41.00	28.08	40.48	125.68	99.18	104.80	
6-10	70.70	41.20	43.46	86.16	59.88	73.00	30.94	43.86	29.78	116.98	102.48	101.38	
11-15	78.94	32.00	46.40	75.82	42.24	62.02	85.94	51.16	48.58	92.62	104.70	107.30	
16-20	71.00	59.34	86.82	54.10	42.26	39.62	57.36	37.38	56.04	84.08	119.80	106.40	
21-25	82.78	82.58	78.06	90.26	38.70	56.86	35.54	48.62	71.08	74.06	141.14	94.88	
26-END	54.07	44.13	78.65	96.34	52.67	43.64	28.83	71.55	87.98	79.07	115.00	142.38	

STATION		YEAR 1967											UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	125.80	95.08	72.16	48.26	74.00	39.70	28.12	17.26	20.58	48.68	112.98	114.58	
6-10	115.34	71.14	50.64	78.06	98.60	32.30	23.50	15.28	18.74	38.66	115.78	78.46	
11-15	103.46	61.72	65.56	68.76	70.72	31.46	21.04	17.04	28.18	54.94	139.12	63.18	
16-20	82.60	68.38	42.56	42.66	89.04	53.88	23.90	26.80	53.58	33.04	141.82	64.42	
21-25	85.54	66.84	44.70	64.18	101.38	32.80	25.72	25.66	39.88	56.90	113.66	65.32	
26-END	95.75	71.27	38.82	99.50	57.80	25.76	17.55	20.22	43.74	117.78	150.14	42.75	

STATION		YEAR 1968											UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	34.42	25.16	13.60	17.20	98.22	81.32	47.86	28.54	56.28	61.06	108.00	54.86	
6-10	32.34	31.02	12.90	10.40	58.74	78.94	36.30	34.56	56.36	71.42	82.37	78.50	
11-15	30.66	23.08	11.90	21.54	78.28	103.12	32.52	47.64	37.22	67.64	81.82	58.06	
16-20	28.48	25.38	13.02	17.80	123.40	79.56	47.98	29.36	73.52	67.94	73.40	95.06	
21-25	29.86	17.80	15.20	26.80	101.50	46.84	78.80	31.48	45.74	60.04	66.10	58.06	
26-END	28.47	13.95	20.18	61.42	93.77	44.84	35.78	61.20	54.70	87.82	65.28	98.62	

Table 34 5-DAY NATURAL RUNOFF AT STATION NO.3813411 (2/3)

STATION 3813411 YEAR 1969 UNIT : CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	111.74	55.12	42.26	66.20	107.74	62.94	35.10	24.74	72.62	72.08	80.84	107.90
6-10	82.54	36.02	28.70	32.34	80.12	47.68	36.52	18.02	59.38	68.14	90.40	83.24
11-15	64.86	34.12	32.22	31.24	74.20	64.18	29.64	24.20	29.00	152.38	94.36	88.56
16-20	67.30	33.46	28.14	46.04	95.52	53.88	27.36	38.86	33.74	176.24	91.20	85.56
21-25	44.56	66.32	29.60	37.02	113.14	52.92	22.30	64.72	31.18	125.70	75.82	57.26
26-END	49.03	73.63	48.90	77.38	94.68	35.18	18.67	75.58	36.92	117.70	92.24	28.55

STATION 3813411 YEAR 1970 UNIT : CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	73.91*	39.14*	17.28*	38.30*	92.37*	70.09*	16.68*	12.71*	43.84*	57.54*	77.27*	34.99*
6-10	114.33*	42.27*	10.06*	61.12*	107.06*	39.38*	8.73*	11.56*	82.98*	104.85*	86.34*	63.47*
11-15	115.71*	21.27*	12.77*	39.32*	122.90*	28.12*	7.02*	25.29*	61.18*	141.45*	95.41*	71.24*
16-20	100.46*	15.29*	17.52*	45.28*	94.36*	19.57*	5.32*	16.32*	36.25*	90.63*	104.68*	73.95*
21-25	55.64*	32.28*	23.42*	48.41*	115.62*	17.58*	14.90*	10.00*	49.74*	59.13*	71.96*	82.26*
26-END	79.59*	19.47*	55.75*	70.94*	94.94*	44.38*	14.70*	20.02*	10.24*	68.20*	60.34*	100.01*

STATION 3813411 YEAR 1971 UNIT : CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	185.52	44.16	53.62	42.16	21.42	21.42	24.74	26.94	45.88	23.20	47.34	87.53*
6-10	342.68	32.84	31.54	34.14	19.74	16.12	15.68	16.00	63.46	21.06	141.54	95.56*
11-15	97.00	27.64	32.94	26.32	26.08	16.74	15.90	41.72	66.78	25.60	97.52	103.60
16-20	79.40	26.36	46.62	19.18	27.94	19.58	14.68	26.58	41.62	33.32	43.42	88.60
21-25	58.02	40.92	54.22	16.70	29.80	19.98	13.20	85.88	71.08	42.02	71.66*	96.74
26-END	50.82	43.33	31.13	31.18	45.55	28.14	24.78	49.88	38.18	45.32	79.69*	92.80

STATION 3813411 YEAR 1972 UNIT : CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	78.66	44.04	21.54	40.66	63.68	51.86	30.56	15.70	44.20	88.68	90.70	98.48
6-10	70.30	46.12	21.94	36.34	55.42	38.02	26.22	15.32	37.94	60.54	92.20	63.14
11-15	58.64	37.84	41.68	51.10	74.18	47.76	22.28	17.52	62.34	120.56	88.42	56.64
16-20	43.60	26.60	35.44	57.22	64.08	73.90	28.48	19.64	43.02	81.36	180.36	63.22
21-25	37.36	37.02	24.32	49.52	80.36	74.20	19.72	27.54	39.90	69.58	133.66	82.34
26-END	34.52	31.47	21.03	60.40	70.92	42.88	18.72	28.70	44.28	95.28	87.28	52.12

STATION 3813411 YEAR 1973 UNIT : CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	43.92	20.40	26.22	54.00	79.00	128.60	54.90	72.40	62.94	60.02	105.66	113.44
6-10	38.78	20.28	22.36	64.66*	66.34	83.66	36.50	61.18	68.30	42.82	97.08	193.44
11-15	29.86	16.38	45.96	73.32*	91.34	56.62	35.30	69.28	59.10	71.56	96.78	101.64
16-20	34.92	18.18	31.34	81.98*	72.34	43.72	26.08	41.04	66.10	62.60	88.88	86.76
21-25	31.22	17.08	26.58	90.64	64.52	70.36	28.70	38.64	60.48	131.22	102.88	72.22
26-END	25.23	45.17	33.88	131.52	108.85	74.58	49.80	65.10	49.12	180.37	122.14	57.37

STATION 3813411 YEAR 1974 UNIT : CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	69.10	27.42	34.86	24.78	71.58	37.78	37.16	26.58*	38.93*	49.02	40.14	62.40
6-10	42.42	32.70	48.66	66.60	77.82	33.48	25.78	24.81*	46.78*	40.02	35.58	58.90
11-15	35.24	22.46	40.66	46.86	78.94	27.50	32.68	23.03	54.62*	37.56	44.88	59.90
16-20	30.70	38.16	30.70	62.96	83.70	41.12	31.90	22.64	62.47	37.96	70.74	62.86
21-25	28.46	66.90	21.80	64.60	64.78	43.48	30.13*	23.24	62.42	35.48	60.42	58.36
26-END	33.30	69.97	19.08	82.04	50.23	56.62	28.35*	31.09*	56.56	36.58	65.02	63.25

STATION 3813411 YEAR 1975 UNIT : CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	69.14	40.22	52.08	63.08	29.53*	36.59*	28.68	35.14	30.17*	17.76*	56.77*	28.84*
6-10	75.72	29.96	66.44	67.12	73.29*	20.11*	28.96	42.78*	41.21*	43.36*	57.59*	195.73*
11-15	59.82	51.90	39.10	36.96	29.53*	29.67	25.50	20.80*	30.51*	24.72*	37.18*	148.73*
16-20	59.74	58.70	30.70	51.34	72.40*	37.08	67.92	13.93*	123.03*	19.52*	35.42*	50.04*
21-25	45.88	33.90	36.24	70.38	60.14*	23.64	93.74	13.05*	81.53*	10.30*	42.97*	123.52*
26-END	42.48	38.17	49.37	73.32	76.36*	35.92	67.03	19.13*	63.97*	18.07*	36.79*	202.92*

STATION 3813411 YEAR 1976 UNIT : CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	100.44*	24.81*	22.40*	31.91*	37.09*	42.39*	51.20*	15.78*	26.68*	76.78*	61.78*	82.56*
6-10	54.80*	20.29*	13.19*	29.87*	36.97*	71.24*	62.17*	15.29*	19.27*	132.06*	67.53*	59.98*
11-15	46.43*	22.70*	78.40*	17.64*	44.08*	37.39*	39.95*	21.50*	21.56*	118.33*	75.69*	68.59*
16-20	51.36*	18.49*	90.63*	33.72*	21.32*	29.75*	19.03*	39.80*	30.95*	69.69*	104.78*	49.80*
21-25	20.95*	11.98*	54.26*	30.29*	23.36*	37.65*	31.79*	39.92*	27.16*	55.94*	59.19*	34.74*
26-END	15.44*	10.09*	56.70*	44.62*	24.89*	40.22*	24.79*	58.56*	61.24*	56.40*	77.44*	39.97*

Table 35 5-DAY NATURAL RUNOFF AT STATION NO.3813411 (3/3)

STATION		3813411											YEAR		1977												UNIT : CMS											
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	65.49*	18.85*	32.30	15.06	18.36	22.90	17.60	11.23	22.04	65.12	78.96	48.98	1-5	15.02	8.14	6.84	17.44	47.14	19.40	7.02	5.86	6.52	8.76	64.38	32.12	1-5	15.52	7.42	12.97	62.35	59.42	29.00	15.12	21.94	45.04	23.72	71.52	76.02
6-10	42.27*	17.76*	18.46	15.50	25.58	42.32	23.08	11.30	15.18	90.30	65.24	59.56	6-10	16.06	10.20	7.76	16.92	56.14	17.36	13.14	4.68	8.34	5.12	56.28	50.46	6-10	15.14	8.74	21.20*	40.27	38.80	63.42	12.56	19.64	55.04	26.68	76.10	61.76
11-15	63.53*	28.62	18.72*	18.06	45.28	31.04	27.16	10.36	12.30	126.07	75.14	71.34	11-15	16.38	10.42	10.44	19.68	68.48	14.14	9.76	10.98	7.98	9.62	66.82	33.58	11-15	11.98	8.16	29.43*	69.23	50.68	60.56	20.64	14.76	74.10	38.22	76.90	62.40
16-20	26.01*	22.18	19.03	24.68	29.08	33.34	23.18*	12.72	12.22	104.08	72.08	53.02	16-20	23.42	13.64	10.20	30.44	45.52	9.74	8.66	7.16	4.60	12.76	64.85*	21.24	16-20	8.24	11.68	37.66*	27.36	21.58	39.16	22.36	18.62	76.38	42.20	178.52	34.94
21-25	24.39*	18.96	20.82	24.66	18.80	21.14	19.20*	27.63*	12.62	95.92	73.56	44.24	21-25	15.44	7.22	13.36	68.24	38.04	9.12	13.52	5.42	21.34	28.26	62.88	19.86	21-25	8.30	36.40	45.89*	36.38	16.76	21.16	71.96	25.86	45.00	48.72	101.22	31.36
26-END	42.59*	41.33	15.53	23.88	32.17	18.46	15.22*	42.55	42.34	111.30	67.60	32.38	26-END	10.82	7.53	12.85	43.08	20.02	8.14	8.45	4.92	9.84	60.50	64.96	16.67	26-END	7.53	35.53	54.12*	48.08	26.50	18.12	50.12	27.22	38.26	75.87	109.46	25.08

Table 36 5-DAY NATURAL RUNOFF AT STATION NO.4311464 (1/3)

STATION		YEAR 1961											UNIT: CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY.	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	76.32	4.76	5.04	28.42	46.14	1.50	5.44	12.54	18.34	20.18	23.30	26.52		
6-10	54.84	7.90	15.84	22.20	37.22	2.32	9.56	9.48	23.80	29.62	26.78	18.96		
11-15	30.22	9.50	19.64	39.54	34.66	15.72	5.54	6.06	21.34	23.06	21.22	20.54		
16-20	10.16	20.70	12.40	63.72	14.94	19.32	2.38	6.12	19.42	16.30	13.34	25.00		
21-25	4.20	39.12	12.18	59.76	6.20	6.98	3.16	11.12	23.74	26.08	64.34	43.76		
26-END	6.23	8.07	18.28	81.32	3.10	3.24	9.44	18.80	16.22	27.37	69.64	67.75		

STATION		YEAR 1962											UNIT: CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY.	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	103.78	2.68	12.70	19.80	35.78	11.56	8.42	5.32	21.00	14.54	22.42	6.94		
6-10	69.24	3.52	9.82	35.68	44.24	14.68	10.12	9.48	23.16	38.50	32.92	9.14		
11-15	41.86	5.74	7.28	32.96	54.16	23.42	13.54	23.66	19.66	98.26	33.02	18.66		
16-20	25.82	6.00	10.22	31.62	73.96	10.40	4.52	43.74	14.00	84.70	35.84	15.38		
21-25	17.70	13.40	12.06	13.36	44.42	6.62	4.96	58.54	9.72	56.10	27.28	7.18		
26-END	7.73	17.30	10.98	21.22	22.68	10.88	5.03	25.47	5.14	26.77	8.48	3.33		

STATION		YEAR 1963											UNIT: CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY.	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	19.22	20.44	4.24	6.20	9.42	19.26	4.48	21.00	5.86	5.96	43.54	49.20		
6-10	28.76	9.86	6.64	9.02	19.05	9.18	5.60	13.94	5.68	21.76	54.84	27.18		
11-15	7.04	6.40	9.26	13.08	26.26	11.28	6.42	11.76	4.44	28.30	61.44	20.22		
16-20	6.34	4.40	14.72	5.84	31.36	9.34	7.00	10.52	15.36	23.44	39.44	21.42		
21-25	4.68	5.42	10.56	6.88	40.66	8.08	8.08	13.88	22.00	26.10	35.24	13.06		
26-END	4.82	4.20	7.07	6.48	43.97	6.14	19.57	7.68	11.28	15.30	41.76	7.62		

STATION		YEAR 1964											UNIT: CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY.	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	12.94	10.64	20.90	7.38	12.64	5.12	7.78	16.10	19.56	7.28	25.72	18.44		
6-10	9.38	18.62	11.04	7.46	21.40	5.46	32.10	11.94	30.62	9.20	28.94	14.30		
11-15	11.16	14.40	6.20	6.86	7.58	10.86	31.06	14.78	20.44	11.96	23.60	18.42		
16-20	18.26	20.36	6.42	6.22	15.96	9.98	28.08	7.92	15.48	10.88	29.88	16.06		
21-25	10.48	14.08	6.16	11.88	5.12	13.48	23.64	9.68	14.92	19.40	26.18	12.00		
26-END	7.67	11.48	6.20	21.84	13.65	9.26	20.33	6.75	8.96	28.77	22.54	9.85		

STATION		YEAR 1965											UNIT: CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY.	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	8.96	4.18	3.54	15.22	34.24	9.80	7.38	3.82	14.84	9.82	34.10	11.12		
6-10	8.24	4.32	3.24	13.88	27.84	11.02	3.82	3.82	20.10	11.92	21.24	24.90		
11-15	5.58	7.86	3.52	10.88	21.02	3.66	3.58	8.88	14.48	18.86	18.24	30.76		
16-20	5.38	4.12	6.90	18.44	30.60	7.70	6.50	8.12	13.18	23.00	23.34	54.54		
21-25	5.00	5.14	18.56	24.76	25.30	5.96	4.84	12.64	24.82	18.18	21.52	44.80		
26-END	4.43	2.93	14.88	21.46	12.00	8.62	6.37	14.30	20.58	34.22	14.24	24.97		

STATION		YEAR 1966											UNIT: CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY.	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	16.02	12.90	6.78	12.58	15.92	15.50	8.82	4.86	4.50	24.50	29.54	17.60		
6-10	15.62	9.18	9.52	13.32	13.32	20.56	18.52	7.70	3.92	18.82	17.84	13.04		
11-15	15.10	5.54	7.26	14.06	6.56	6.60	28.64	7.38	2.70	27.10	15.64	15.68		
16-20	11.60	14.38	25.50	11.54	13.28	8.74	19.34	4.90	19.22	27.00	18.72	16.04		
21-25	15.14	13.54	14.20	17.46	3.90	15.44	7.62	8.46	11.28	18.20	47.52	12.06		
26-END	12.43	3.80	14.35	20.20	5.87	7.76	5.93	10.97	21.26	13.20	20.06	25.02		

STATION		YEAR 1967											UNIT: CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY.	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	17.42	14.44	13.54	10.80	27.46	9.24	7.04	3.06	1.20	7.20	31.24	27.16		
6-10	19.82	7.50	7.48	10.34	22.72	6.20	5.16	2.44	3.88	11.04	35.80	16.38		
11-15	20.92	6.64	18.54	9.30	25.06	6.60	4.40	4.94	21.94	13.10	34.36	11.02		
16-20	11.70	6.68	7.58	7.56	28.42	24.56	6.62	4.78	16.94	7.94	46.48	9.80		
21-25	10.94	8.34	6.70	23.32	25.16	12.86	4.42	6.80	16.48	28.36	28.82	10.46		
26-END	13.07	9.33	6.53	25.14	11.90	9.52	3.20	2.28	10.26	43.27	37.34	6.18		

STATION		YEAR 1968											UNIT: CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY.	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	4.26	7.40	4.78	3.12	40.16	36.48	14.76	4.54	4.56	5.98	20.52*	10.62*		
6-10	3.38	8.60	1.78	7.32	29.16	17.10	11.16	3.44	19.96	17.16	13.94*	15.16*		
11-15	7.42	6.96	4.72	7.98	17.90	30.48	3.60	3.72	4.54	9.10	11.24*	17.64*		
16-20	5.80	6.50	3.16	3.44	37.68	29.68	13.54	2.74	7.24	6.74	14.21*	16.40*		
21-25	9.96	3.62	2.64	11.26	23.70	10.52	9.86	4.94	2.90	6.30	12.80*	11.24*		
26-END	10.10	2.93	6.65	18.04	37.52	8.34	5.18	5.65	5.28	18.68	12.66*	19.09*		

Table 37 5-DAY NATURAL RUNOFF AT STATION NO.4311464 (2/3)

STATION 4311464 YEAR 1969 UNIT : CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	11.90	7.46	5.84	14.72	54.54	45.42	9.34	4.26	8.72	13.14	23.32	29.44
6-10	18.72	7.88	6.68	14.38	16.92	14.94	7.24	6.04	5.42	9.28	21.58	26.88
11-15	9.10	9.44	9.70	39.46	14.96	6.90	5.78	9.32	4.62	33.04	22.58	29.82
16-20	8.48	11.40	9.88	16.26	23.64	9.92	6.38	19.74	5.62	27.00	19.90	24.28
21-25	5.16	11.94	17.02	7.30	49.08	27.74	3.00	25.02	4.70	43.80	20.58	14.06
26-END	5.48	12.07	28.40	22.46	19.45	15.62	3.10	15.08	8.60	37.38	47.92	16.77

STATION 4311464 YEAR 1970 UNIT : CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	24.55*	13.00	5.76	12.74	30.68	23.28	5.54	4.22	14.56	19.11*	25.66*	11.62
6-10	37.97*	14.04	3.34	20.30	35.56	13.08	2.90	3.84	27.56	34.82	28.66*	21.08
11-15	38.43*	7.06	4.24	33.04	40.82	9.34	2.33*	8.40	20.32	46.98	31.69*	23.66
16-20	33.37*	5.08	5.82	15.04	31.36	6.50	1.77	5.42	12.04	30.10	34.70	24.56
21-25	18.68*	10.72	7.78	16.08	38.40	5.84	4.95	3.32	16.52	19.64	23.90	27.32
26-END	26.43*	6.47	18.52	23.56	31.53	14.74	4.88	6.65	5.40	22.65*	20.04	33.22

STATION 4311464 YEAR 1971 UNIT : CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	42.60	7.86	14.40	11.04	5.80	12.04	2.07*	4.36	8.78	2.22	2.62	32.56
6-10	36.62	5.48	10.38	8.80	10.52	4.46	1.63	4.03*	30.86	2.22	15.10	38.50
11-15	22.06	11.18	11.84	9.82	10.04	3.60	2.70	3.70	18.08	2.92	10.50	41.20
16-20	17.88	10.86	11.32	8.80	7.58	2.13	2.42	5.88	7.62	2.96	8.18	41.88
21-25	12.78	25.18	18.24	9.90	6.40	2.37	3.56	18.18	11.56	3.92	9.22	63.30
26-END	7.93	21.90	15.30	10.30	4.53	2.50	2.80	4.75	3.50	1.95	23.08	37.50

STATION 4311464 YEAR 1972 UNIT : CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	19.02	5.68	2.36	17.18	18.15	8.40	7.31*	1.39*	3.36	20.96	25.46	22.98
6-10	13.14	16.76	1.96	6.68	16.88*	9.61*	4.34*	1.80	4.82	18.98	27.80	12.38
11-15	7.84	8.42	3.12	27.80	15.62	10.82*	1.38	1.10	6.52	20.04	40.10	11.70
16-20	5.36	4.34	4.20	15.32	14.86	12.03*	4.10	1.50	6.54*	22.44	61.40	21.52
21-25	4.28	6.74	4.10	12.62	18.08	13.24	1.52	3.46	8.56	18.06	39.60	24.98
26-END	3.77	8.95	2.43	35.90	18.42	10.27*	0.98	2.70	23.98	35.97	25.12	10.98

STATION 4311464 YEAR 1973 UNIT : CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	6.66	2.46	0.78	8.00	8.00	38.24	12.62	18.12	17.03	11.42	56.96	68.44
6-10	5.16	1.32	2.54	3.78	15.88	53.68	9.30	11.16	13.24	5.26	39.00	44.64
11-15	3.08	0.88	4.56	7.24	12.72	25.40	6.03	14.54	13.88	7.48	30.76	26.62
16-20	7.94	0.80	1.42	11.42	4.62	15.82	6.02	6.08	10.54	24.60	25.28	28.18
21-25	5.34	9.76	2.18	5.36	3.23	21.00	8.14	8.00	15.56	42.56	39.76	27.30
26-END	4.73	1.70	3.07	20.04	50.00	21.13	14.15	6.42	7.74	56.15	40.74	17.03

STATION 4311464 YEAR 1974 UNIT : CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	21.80	9.38	10.74	7.06	25.36	7.76	7.96	11.16	16.15	22.08	3.00	12.38
6-10	9.26	8.08	14.84	14.18	24.60	5.26	5.46	5.58	18.21*	9.14	2.12	11.66
11-15	7.94	5.66	7.62	12.96	30.26	5.56	7.02	4.88	20.28	4.14	8.44	6.26
16-20	7.52	8.36	7.24	19.50	27.74	12.18	5.44	5.06	23.70	4.20	17.03	7.54
21-25	12.82	11.76	4.70	20.66	26.18	19.06	10.38	3.78	17.90	3.58	19.44*	7.20
26-END	17.97	10.53	7.32	29.28	15.33	16.44	19.93	5.40	27.56	5.02	21.84	8.22

STATION 4311464 YEAR 1975 UNIT : CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	18.88	4.20	7.18	16.30	8.02	7.48	1.94	6.82	6.15*	3.62	11.98	5.88
6-10	33.45	5.80	18.78	22.02	14.94	4.10	2.68	6.72	8.40	8.84	11.74	39.90
11-15	20.58	10.96	8.70	10.82	6.02	2.64	3.40	4.24	6.22	5.04	7.58	30.32
16-20	15.94	12.87	3.00	10.78	14.76	4.34	15.28	2.84	25.08	3.98	7.22	10.20
21-25	5.76	8.32*	13.90	20.92	12.26	1.80	20.84	2.68	16.82	2.10	8.76	25.18
26-END	2.75	3.97	9.83	9.00	15.57	3.20	21.82	3.90	13.04	3.88	7.50	41.37

STATION 4311464 YEAR 1976 UNIT : CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	33.36	8.24	7.44	10.40	12.32	14.08	17.01*	5.24	8.86	25.50	20.52	27.42
6-10	18.20	6.74	4.38	9.92	12.28	23.68	20.65	5.08	6.40	43.86	32.08	19.97
11-15	15.42	7.14	26.04	5.80	14.84	12.42	13.27	7.14	7.16	39.36	25.14	22.78
16-20	17.06	8.14	30.10	11.20	7.08	9.88	6.32	13.22	10.28	23.08	34.80	16.54
21-25	6.96	3.98	18.02	10.06	7.76	12.44	10.56	13.26	9.02	18.58	19.66	11.54
26-END	5.13	3.55	18.83	14.82	8.27	13.36	8.25	19.45	20.34	18.73	25.72	13.27

Table 38 5-DAY NATURAL RUNOFF AT STATION NO.4311464 (3/3)

STATION 4311464 YEAR 1977												UNIT: CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	21.75	6.26	10.73*	5.00*	6.10*	7.61*	5.85*	3.73*	7.32*	21.83*	26.22*	16.27*
6-10	14.04	5.90	6.11*	5.15*	8.50*	14.06*	7.67*	3.75*	5.04*	29.99*	21.67*	19.78*
11-15	21.10	9.51*	6.22*	6.00*	15.04*	10.31*	9.02*	3.44*	4.08*	41.86*	24.96*	23.69*
16-20	6.64	7.37*	6.32*	6.20*	9.66*	11.07*	7.70*	4.23*	4.06*	34.57*	23.94*	17.61*
21-25	6.10	6.30*	6.92*	8.19*	6.74*	7.02*	6.38*	9.18*	4.19*	31.86*	24.43*	14.69*
26-END	14.08*	13.73*	5.16*	7.93*	10.68*	6.13*	5.05*	14.13*	14.06*	36.97*	22.43*	10.75*

STATION 4311464 YEAR 1978												UNIT: CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	4.99*	2.70*	2.27*	5.79*	15.66*	6.44*	2.31*	1.95*	2.17*	2.91*	21.38*	16.67*
6-10	5.31*	3.39*	2.58*	5.62*	18.65*	5.77*	4.36*	1.55*	2.77*	2.03*	18.69*	16.76*
11-15	5.44*	3.46*	3.47*	6.54*	22.74*	4.70*	3.74*	3.65*	2.65*	1.19*	22.19*	11.15*
16-20	7.78*	5.33*	3.39*	10.12*	15.12*	3.74*	2.88*	2.38*	1.53*	4.24*	21.34*	7.06*
21-25	5.14*	2.40*	4.64*	22.88*	12.63*	3.03*	4.49*	1.80*	7.09*	9.39*	20.88*	6.60*
26-END	3.59*	2.50*	4.27*	14.31*	6.65*	2.70*	2.81*	1.63*	3.27*	20.09*	14.93*	4.87*

STATION 4311464 YEAR 1979												UNIT: CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	5.15*	2.46*	4.31*	20.71*	19.73*	9.63*	5.02*	7.29*	14.96*	7.88*	23.75*	25.25*
6-10	5.03*	2.90*	7.06*	13.37*	12.89*	21.06*	4.17*	6.52*	18.28*	8.86*	25.28*	20.51*
11-15	3.98*	2.71*	9.77*	22.09*	16.90*	20.11*	6.86*	4.90*	26.61*	12.69*	25.54*	14.08*
16-20	2.74*	3.88*	12.51*	9.09*	7.17*	10.02*	7.42*	6.18*	25.37*	14.02*	59.29*	11.61*
21-25	2.76*	12.09*	15.24*	12.08*	5.57*	7.03*	23.90*	8.59*	16.95*	16.18*	33.62*	10.48*
26-END	2.50*	11.80*	17.97*	15.97*	8.80*	6.02*	14.65*	9.04*	12.71*	25.20*	18.36*	8.33*

Table 39 5-DAY NATURAL RUNOFF AT STATION NO.5007421 (1/3)

STATION 5007421 YEAR 1961 UNIT: CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	32.36	6.3R	11.06	15.94	40.94	9.04	5.16	12.46	7.68	6.90	20.88	23.9R
6-10	31.20	5.14	14.84	21.50	37.08	6.54	5.98	14.08	21.62	7.64	27.08	11.20
11-15	24.52	7.24	16.06	27.50	23.64	14.02	10.52	6.18	9.84	27.82	18.90	12.50
16-20	12.64	27.42	17.06	27.68	22.04	13.30	5.50	6.16	17.58	32.86	30.20	24.72
21-25	9.18	18.74	11.58	21.64	11.50	9.56	2.60	4.02	21.38	34.16	45.24	35.18
26-END	7.58	7.43	20.15	30.62	9.37	7.62	11.23	4.62	10.92	28.93	17.64	29.18

STATION 5007421 YEAR 1962 UNIT: CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	31.12	5.90	5.52	21.66	22.98	5.24	4.06	2.84	19.64	28.92	36.66	25.56
6-10	21.82	3.96	17.3R	33.30	16.20	5.68	7.20	2.70	21.92	30.20	38.40	25.98
11-15	15.94	3.44	6.79	17.54	26.56	5.34	3.34	6.40	15.64	34.40	32.24	29.94
16-20	27.86	3.14	6.30	26.90	29.08	4.88	4.82	21.60	12.10	39.72	26.40	17.78
21-25	12.16	7.06	24.06	12.42	12.34	9.70	2.48	16.18	7.46	45.72	24.42	9.78
26-END	9.33	4.10	14.02	11.36	6.95	6.26	1.77	16.15	6.94	27.12	23.42	11.55

STATION 5007421 YEAR 1963 UNIT: CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	11.74	3.16	4.56R	4.10	9.86R	19.80	2.48	6.44	3.50	14.66	31.92	44.10
6-10	18.18	2.82	4.48R	6.00	19.95R	21.14	2.32	10.2R	3.00	39.86	38.34	34.18
11-15	8.50	4.62	4.40R	3.22	27.48R	7.58	2.76	6.16	2.94	34.88	45.72	29.9R
16-20	6.56	5.86	4.33R	4.10	32.82R	3.86	2.48	4.08	5.98	35.00	42.84	17.34
21-25	5.30	6.72	4.25R	3.46	42.55R	3.14	1.90	6.96	15.72	37.46	33.98	12.28
26-END	4.05	4.63	4.18R	2.82	43.92R	2.66	13.75	4.33	22.52	30.77	30.52	10.98

STATION 5007421 YEAR 1964 UNIT: CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	17.68	5.30	5.04	3.52	22.68	7.94	9.60	21.56	17.76	8.46R	35.34	12.78
6-10	9.28	9.00	3.66	5.94	29.58	6.96	9.60	12.08	34.36	10.70R	29.38	14.00
11-15	9.18	9.78	3.40	8.78	23.94	11.96	9.46	12.02	23.14	15.90R	39.88	14.56
16-20	7.50	9.58	4.14	7.64	12.00	8.16	17.32	7.84	19.60	12.65R	36.82	21.78
21-25	7.58	9.58	2.66	8.62	14.36	6.08	30.72	8.18	12.00	22.55R	35.42	12.60
26-END	6.72	5.35	3.08	22.28	8.13	10.38	36.92	5.87	16.14	33.44R	21.66	9.43

STATION 5007421 YEAR 1965 UNIT: CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	8.30	1.72	3.60	16.70	36.78	8.06	6.08	7.54	24.80	14.04	43.94	23.96
6-10	4.42	2.80	2.26	26.92	26.64	7.12	6.52	10.60	36.70	12.02	40.36	17.72
11-15	2.84	6.82	2.48	31.56	22.30	4.76	7.18	12.04	20.68	28.24	31.34	28.34
16-20	1.98	5.48	4.56	29.66	14.74	4.08	8.72	12.98	11.86	38.54	38.76	44.34
21-25	1.88	2.92	2.50	22.30	10.14	3.76	4.90	18.00	11.04	33.16	48.02	30.68
26-END	1.93	4.77	22.48	28.30	9.27	6.56	14.80	16.05	26.44	44.78	35.74	23.75

STATION 5007421 YEAR 1966 UNIT: CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	11.44	17.70	14.62	30.16	30.16	30.16	35.60	14.96	12.26	37.64	30.46	29.74
6-10	11.08	10.12	10.18	18.94	27.78	34.84	36.90	22.92	13.24	35.26	24.80	27.12
11-15	14.04	8.90	12.66	13.26	14.00	33.70	34.26	17.16	21.68	32.80	30.00	43.72
16-20	10.50	21.12	16.30	20.62	17.24	12.20	25.86	15.04	31.28	44.18	42.38	28.26
21-25	8.12	32.40	16.30	23.06	10.72	22.60	12.32	22.16	34.30	23.64	58.22	25.04
26-END	7.25	16.23	17.60	35.94	19.42	19.84	10.95	38.88	36.04	32.62	32.68	23.42

STATION 5007421 YEAR 1967 UNIT: CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	26.02	17.30	9.16	7.48	37.42	7.90	13.02	6.22	5.38	9.00	25.78	18.02
6-10	29.68	9.72	4.44	14.60	41.90	7.98	6.88	7.04	5.32	11.66	18.60	5.86
11-15	27.52	6.54	14.82	11.32	34.22	12.12	6.80	8.26	10.58	13.52	30.76	2.12
16-20	13.76	5.70	5.02	8.76	31.72	29.30	15.00	9.46	27.64	11.24	22.32	3.14
21-25	13.24	7.78	4.22	12.52	42.64	13.38	10.98	5.86	18.60	14.68	14.44	3.76
26-END	15.12	10.63	8.33	21.34	12.25	8.46	7.80	17.97	8.48	36.03	15.76	1.07

STATION 5007421 YEAR 1968 UNIT: CMS												
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	3.99R	6.93R	4.46R	2.92R	37.61R	32.29R	13.62R	4.25R	4.27R	5.58R	19.22R	9.95R
6-10	3.16R	8.05R	1.65R	6.85R	27.31R	16.01R	10.45R	5.09R	10.26R	16.07R	14.92R	14.20R
11-15	6.95R	6.52R	4.42R	7.47R	16.76R	28.34R	5.24R	3.68R	4.25R	8.52R	10.33R	16.52R
16-20	5.43R	6.09R	2.96R	5.09R	35.26R	27.79R	12.68R	2.57R	6.78R	5.84R	13.31R	17.23R
21-25	9.33R	3.39R	2.47R	10.54R	21.72R	9.85R	9.23R	4.63R	2.72R	5.90R	11.98R	10.53R
26-END	9.66R	2.74R	6.23R	16.89R	35.13R	7.81R	4.85R	5.29R	4.94R	17.49R	11.84R	17.88R

Table 40 5-DAY NATURAL RUNOFF AT STATION NO. 5007421 (2/3)

STATION		5007421												YEAR		1969												UNIT		CMS											
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.																
1-5	11.14a	6.99a	5.67a	13.78a	51.07a	42.51a	8.75a	3.99a	8.16a	12.30a	21.84a	27.57a	6-10	17.33a	7.38a	6.25a	13.67a	15.84a	13.99a	6.78a	5.66a	5.07a	8.69a	20.21a	25.17a																
11-15	8.52a	8.84a	9.14a	36.95a	14.01a	6.66a	5.41a	8.73a	4.33a	31.50a	21.14a	27.92a	16-20	7.94a	10.67a	9.25a	15.23a	22.14a	9.29a	5.97a	18.48a	5.26a	25.28a	18.63a	22.76a																
21-25	4.83a	11.18a	15.94a	6.84a	45.96a	25.98a	2.81a	23.43a	4.40a	41.01a	19.27a	13.17a	26-END	7.94a	11.30a	26.59a	21.03a	18.21a	14.63a	2.90a	16.12a	6.18a	35.01a	44.82a	15.70a																

STATION		5007421												YEAR		1970												UNIT		CMS											
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.																
1-5	28.98	13.04	4.16	19.06	24.26	36.92	22.06	17.80	16.42	26.02	23.16	22.04	6-10	46.36	9.82	2.92	24.30	23.98	18.62	10.76	13.98	17.42	37.60	46.32	38.14																
11-15	29.08	10.08	3.54	18.34	49.94	19.82	10.58	17.70	31.08	55.74	40.08	26.24	16-20	20.80	7.36	6.66	25.10	30.08	19.72	20.44	15.60	34.76	28.36	54.00	30.88																
21-25	17.00	6.56	16.20	22.62	34.80	20.20	16.94	12.10	38.80	35.08	47.60	28.62	26-END	22.33	5.67	22.17	22.90	31.92	26.14	23.50	15.63	22.64	27.68	30.50	34.73																

STATION		5007421												YEAR		1971												UNIT		CMS											
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.																
1-5	25.80	11.32	29.73	23.86	11.12	15.72	5.02	5.58	17.24	13.18	20.24	26.72a	6-10	20.82	7.90	19.80	21.42	12.88	11.06	3.52	10.86	20.60	12.96	42.82	28.60																
11-15	20.12	12.27a	13.02	31.60	21.10	5.82	3.54	15.72	18.12	24.92	22.28	25.32	16-20	17.56	16.83a	15.76	15.70	16.44	7.02	6.06	18.60	31.78	26.76	13.94	42.04																
21-25	12.30	21.00a	24.42	14.52	15.28	6.90	8.94	49.60	38.96	40.04	16.78	48.40	26-END	10.00	25.37a	17.43	12.98	16.98	6.74	3.73	19.25	18.66	19.08	24.84	28.07																

STATION		5007421												YEAR		1972												UNIT		CMS											
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.																
1-5	16.24	11.40	10.48	26.42	27.10	11.56	10.26	6.22	17.68	28.20	56.70	29.66	6-10	10.22	13.10	9.54	17.18	25.98	10.42	7.44	7.04	26.93	40.42	59.60	21.32																
11-15	11.20	14.00	9.56	27.78	19.98	17.56	6.54	7.24	28.23a	29.00	53.98	19.96	16-20	8.38	9.48	9.35	34.08	15.38	33.42	6.50	7.16	29.52	27.90	56.50	19.30																
21-25	7.06	15.76	9.80	28.46	16.98	24.22	6.24	11.82	21.92	30.26	56.88	36.62	26-END	7.38	17.33	11.38	30.16	17.25	12.28	4.77	11.02	25.84	38.93	31.56	15.07																

STATION		5007421												YEAR		1973												UNIT		CMS											
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.																
1-5	9.28	6.94	4.27	8.58	24.78	36.92	12.42	55.62	7.70	34.05	60.48	46.56	6-10	8.72	5.56	3.93	6.74	28.84	30.86	12.16	34.88	10.42	22.75	39.78	40.98																
11-15	7.74	5.08	12.00	20.44	25.58	19.12	14.00	22.00	29.94	31.16a	45.34	24.86	16-20	13.80	9.98	5.70	34.02	34.06	12.16	7.66	18.56	14.80	59.57	28.60	34.96																
21-25	11.88a	8.66	10.52	47.82	43.90	10.36	16.92	11.50	20.34	45.66	29.60	26.66	26-END	9.88	8.43	12.82	45.52	54.03	16.34	36.98	7.90	27.19a	69.52	40.82	19.05																

STATION		5007421												YEAR		1974												UNIT		CMS											
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.																
1-5	24.16	14.20	6.90	8.84	18.72	8.14	18.74a	31.66	16.08a	34.80	15.18	16.54	6-10	12.42	13.16	6.38a	26.38	27.64	6.16	12.22a	13.06	24.86	17.52	13.96	8.68																
11-15	7.66	6.64	5.85a	27.78	38.70	5.80	5.70	6.86	23.46	14.36	19.62	6.68	16-20	7.78	15.00	5.32a	17.92	29.63	11.42	15.96	5.48	20.84	13.72	19.14	11.22																
21-25	9.00	21.10	4.80	10.70	17.87	31.78	16.52a	6.38	26.00	12.18	33.74	6.00	26-END	14.28	9.77	5.48	20.28	13.03	25.26a	17.08	7.30	24.86	26.78	35.24	10.13																

STATION		5007421												YEAR		1975												UNIT		CMS											
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.																
1-5	17.78	7.20	13.44	15.78	14.84	13.98	18.00	18.73	20.64	31.48	39.48	15.28	6-10	16.92	13.92	25.00	24.92	23.20	9.36	22.00	17.48	15.96	11.60	20.20	54.50																
11-15	28.34	20.96	16.32	23.72	21.95a	10.96	30.28	13.70	10.22	13.50	20.38	34.46	16-20	28.76	13.78	15.36	23.76	20.70	23.60	45.72	9.44	16.84	15.56	55.08	19.38																
21-25	16.50	6.18	26.74	28.50	18.28	8.92	45.00	7.70	15.02	15.08	28.08	28.12	26-END	7.98	24.83	35.50	23.76	20.60	9.52	31.87a	6.76	31.90	20.20	18.96	58.05																

STATION		5007421												YEAR		1976												UNIT		CMS											
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.																
1-5	31.26a	7.72a	6.97a	9.93a	11.54a	13.18a	15.92a	4.91a	8.30a	25.88a	19.21a	23.68a	6-10	17.04a	6.31a	4.10a	9.29a	11.50a	22.15a	19.34a	4.76a	5.99a	41.07a	30.02a	18.65a																
11-15	14.44a	7.06a	24.38a	5.43a	13.71a	11.63a	12.42a	6.69a	6.70a	36.80a	23.54a	21.53a	16-20	15.98a	5.75a	28.19a	10.49a	8.63a	9.25a	5.92a	12.38a	9.63a	21.61a	32.59a	15.49a																
21-25	6.52a	3.73a	16.87a	9.42a	7.27a	11.65a	9.89a	12.42a	8.45a	17.40a	18.41a	10.81a	26-END	4.87a	3.14a	17.63a	13.88a	7.74a	12.51a	7.71a	18.21a	19.05a	17.54a	24.08a	12.43a																

Table 41 5-DAY NATURAL RUNOFF AT STATION NO.5007421 (3/3)

STATION		YEAR 1977										UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	29.04	6.20	12.04	4.70	7.70	28.85*	12.32	15.70*	17.45	49.80	61.56	25.58	
6-10	29.60	11.67*	5.40	5.80	20.36	30.04	12.38	15.17*	14.47	60.46	65.56	34.28	
11-15	13.62	17.15	9.56	9.24	21.62	31.66	9.30	14.83*	21.53*	35.28	41.20	36.90	
16-20	6.74	8.46	9.20	15.68	25.28	18.00	17.30	14.10	20.60*	45.62	39.16	25.36	
21-25	6.54	6.22	9.40	12.16	26.47*	8.88	16.77*	15.28*	35.67*	61.24	39.12	25.82	
26-END	7.55	15.20	5.67	6.22	27.66*	7.02	16.23*	16.47*	42.73*	65.72	38.70	19.53	

STATION		YEAR 1978										UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	10.72	6.86	12.28	14.54	19.00	13.76	11.12	6.90	12.86	6.72	40.94	13.78	
6-10	7.06	11.60	8.98	19.44	19.60	21.08	5.34	5.84	19.80	27.62	40.92	19.54	
11-15	8.46	6.76	16.04	10.14	51.46	11.72	5.06	7.00	15.67*	30.98	37.82	12.34	
16-20	25.08	11.10	12.96	20.40	24.50	7.66	8.84	8.76	11.53*	38.06	39.64	10.92	
21-25	16.40	7.96	16.90	32.74	39.10	7.00	12.98	5.98	7.40	47.14	26.38	10.04	
26-END	9.55	11.23	9.70	20.08	19.27	9.72	11.70	7.55	5.56	54.60	16.18	8.88	

STATION		YEAR 1979										UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1-5	4.83*	2.31*	4.03*	19.39*	18.46*	9.02*	4.70*	6.82*	14.01*	7.38*	22.24*	23.64*	
6-10	4.71*	2.72*	6.59*	12.52*	12.07*	19.72*	3.91*	6.11*	17.12*	8.30*	23.67*	19.21*	
11-15	3.75*	2.54*	9.15*	21.53*	15.82*	18.84*	6.42*	4.59*	23.05*	11.89*	23.92*	13.19*	
16-20	2.56*	3.83*	11.71*	8.51*	8.71*	9.38*	6.95*	5.79*	23.70*	13.13*	55.52*	10.87*	
21-25	2.58*	11.32*	14.27*	11.32*	5.21*	6.58*	22.38*	8.04*	14.00*	15.15*	31.46*	9.82*	
26-END	2.34*	11.05*	16.83*	14.95*	8.24*	5.63*	15.59*	8.47*	11.90*	25.60*	34.04*	7.80*	

Table 42 5-DAY NATURAL RUNOFF AT STATION NO. 5130432 (1/3)

STATION		YEAR 1961											UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	585.93*	177.06*	174.52*	96.10*	200.66*	97.10*	48.43*	82.98*	70.40*	170.94*	352.36*	360.04*		
6-10	598.60*	137.02*	113.32*	117.23*	206.43*	83.80*	47.86*	68.81*	91.20*	167.90*	347.55*	375.13*		
11-15	957.56*	225.32*	121.18*	107.70*	154.87*	81.86*	65.28*	59.28*	100.53*	198.08*	271.63*	372.72*		
16-20	438.67*	360.68*	115.43*	195.87*	135.23*	161.01*	67.32*	51.69*	156.97*	304.03*	248.46*	291.88*		
21-25	276.79*	212.27*	89.08*	194.89*	78.36*	69.04*	59.66*	46.39*	151.22*	193.54*	278.92*	326.76*		
26-END	208.80*	139.48*	102.48*	148.75*	66.98*	62.36*	125.21*	50.57*	106.62*	171.64*	295.56*	631.39*		

STATION		YEAR 1962											UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	1019.94	337.10	279.50	127.78	158.20	86.20	99.36	85.78	354.02	159.18	197.22	547.38		
6-10	692.48	231.68	114.88	97.60	170.55	85.08	73.18	57.80	237.76	127.38	195.62	530.86		
11-15	431.40	166.74	187.54	92.92	138.66	77.84	66.26	84.20	163.30	146.16	246.54	404.42		
16-20	740.82	149.30	125.86	101.98	193.98	74.70	91.76	70.34	186.74	160.72	248.72	867.54		
21-25	843.68	125.64	165.32	92.24	150.08	73.62	63.60	103.92	173.76	136.24	173.72	514.40		
26-END	361.45	168.33	242.40	107.28	117.17	107.32	127.03	150.48	142.86	232.10	387.44	333.97		

STATION		YEAR 1963											UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	1638.44	311.10	236.64	81.26	59.8A	78.78	63.80	71.58	200.34	68.78	186.24	875.32		
6-10	882.32	215.02	253.02	79.46	76.80	72.84	45.74	65.52	97.84	95.94	254.18	1013.36		
11-15	420.46	183.46	152.44	110.10	46.72	58.86	42.16	66.36	114.38	239.28	241.00	420.88		
16-20	323.16	217.20	144.32	70.32	81.50	41.04	56.34	47.66	81.00	168.62	223.98	303.64		
21-25	297.68	168.42	119.7A	61.44	68.44	43.88	35.32	73.54	129.72	201.56	423.64	405.92		
26-END	305.50	275.10	94.6R	53.98	72.65	60.78	58.45	119.15	87.78	172.73	790.28	632.00		

STATION		YEAR 1964											UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	291.38*	108.98*	238.87*	86.85*	214.71*	118.61*	97.85*	184.09*	93.28*	90.52*	161.58*	259.93*		
6-10	228.74*	143.3R*	151.69*	80.20*	162.49*	153.73*	98.15*	105.02*	170.63*	316.46*	158.84*	181.49*		
11-15	212.57*	178.91*	174.57*	98.85*	150.99*	132.98*	151.44*	111.30*	263.71*	193.76*	174.36*	164.66*		
16-20	179.01*	300.27*	119.01*	88.32*	210.59*	163.79*	112.70*	106.22*	225.50*	109.45*	187.26*	311.84*		
21-25	146.61*	231.37*	103.36*	68.70*	126.03*	137.36*	194.06*	115.55*	194.34*	153.58*	200.54*	405.70*		
26-END	117.28*	359.41*	176.70*	75.20*	92.91*	164.78*	251.89*	92.81*	125.69*	236.63*	199.72*	311.46*		

STATION		YEAR 1965											UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	305.54	141.88	109.52	115.44	110.28	87.18	95.04	87.54	88.30	171.40	162.88	2722.44		
6-10	198.90	130.72	134.20	82.02	162.78	104.94	118.10	82.22	145.92	159.92	124.08	1082.56		
11-15	145.00	131.92	105.14	173.02	125.66	57.78	107.14	81.74	119.22	184.38	194.50	691.64		
16-20	132.44	123.82	73.54	152.04	147.06	72.24	66.40	118.90	137.56	248.52	341.64	829.76		
21-25	101.68	123.60	63.52	138.10	132.64	113.62	69.86	118.58	141.36	176.80	320.26	442.50		
26-END	103.65	336.60	68.95	82.02	92.07	118.46	114.22	66.30	168.08	209.02	633.62	1368.70		

STATION		YEAR 1966											UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	926.82	64.42	544.90	153.50	168.98	177.08	141.66	108.36	80.18	174.68	272.20	1240.04		
6-10	1448.94	198.82	316.30	131.98	119.66	145.62	120.32	105.22	67.44	297.60	281.18	482.26		
11-15	735.68	418.06	253.46	117.16	244.08	144.74	180.80	76.66	97.02	224.62	206.12	463.30		
16-20	440.44	476.92	239.68	107.36	256.64	127.52	157.38	84.02	87.60	387.30	250.20	327.08		
21-25	1798.80	279.36	201.34	227.80	272.02	120.86	108.74	130.84	99.58	279.78	304.96	251.78		
26-END	705.72	710.77	220.25	182.14	182.57	209.00	107.75	148.88	186.08	273.88	318.34	2907.47		

STATION		YEAR 1967											UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	2652.50	311.26	774.36*	225.81*	226.66*	137.62*	151.32*	106.55*	112.99*	144.14*	198.43*	983.86		
6-10	3309.44	215.70	340.67*	204.06*	267.17*	121.87*	154.39*	335.63*	138.15*	120.13*	244.53*	969.18		
11-15	1763.06	291.48	1146.45*	180.41*	236.58*	125.48*	173.20*	170.16*	151.28*	204.33*	353.45*	781.96		
16-20	755.32	1899.58	361.25*	182.19*	280.08*	145.58*	190.46*	168.73*	150.40*	185.72*	311.21*	744.32		
21-25	518.76	875.68	264.65*	206.11*	230.76*	171.83*	165.91*	136.91*	130.39*	240.08*	265.56*	406.98		
26-END	375.88*	1134.60	218.40*	259.55*	188.53*	128.49*	330.48*	117.26*	136.75*	206.30*	1924.60*	304.22*		

STATION		YEAR 1968											UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	242.80	105.90	65.58	52.00	75.84	94.12	75.10	64.92	150.12	179.08	306.42	293.44		
6-10	242.08	111.08	59.18	52.44	94.36	89.48	75.58	77.10	119.38	150.22	262.94	471.18		
11-15	273.28	92.14	106.04	54.92	69.80	96.32	93.44	69.92	162.72	112.02	167.88	562.60		
16-20	191.70	85.36	79.18	48.00	98.24	92.82	77.68	57.42	184.86	258.22	322.34	1121.54		
21-25	140.82	78.02	66.88	49.18	111.32	79.60	86.38	67.26	168.74	206.90	164.62	518.40		
26-END	117.92	73.43	63.95	80.90	119.62	83.94	61.57	105.40	345.20	675.67	119.82	894.13		

Table 43 5-DAY NATURAL RUNOFF AT STATION NO. 5130432 (2/3)

STATION		5130432										YEAR		1969		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.					
1-5	425.80	128.00	85.94	64.02	54.38	80.00	63.18	51.30	100.00	91.86	188.64	1478.50					
6-10	492.20	184.62	75.12	69.70	38.48	49.92	72.06	47.62	81.22	81.46	309.24	1023.80					
11-15	420.82	133.26	77.92	51.44	50.04	70.98	39.50	64.00	42.52	112.52	519.60	1115.20					
16-20	298.68	114.04	66.62	45.56	69.54	56.98	44.66	54.10	62.80	117.32	328.98	1163.20					
21-25	298.10	91.08	56.92	40.26	82.70	49.58	54.04	71.34	99.40	116.94	242.88	562.94					
26-END	170.63	84.63	57.15	40.66	59.45	51.40	34.58	70.77	106.60	126.98	1034.44	873.55					

STATION		5130432										YEAR		1970		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.					
1-5	456.64	239.14	121.68	147.74	104.62	137.52	135.96	97.39	205.73	426.49	223.94	256.92					
6-10	653.60	312.40	114.14	233.32	102.84	102.56	94.78	86.90	198.45	420.96	208.25	262.56					
11-15	1180.00	217.84	118.64	158.80	170.40	97.80	82.82	207.17	169.57	426.03	288.54	219.76					
16-20	850.32	170.66	103.74	166.86	112.82	91.42	91.38	142.10	168.28	308.76	409.48	287.21					
21-25	414.30	145.06	122.28	111.28	102.30	141.92	108.74	155.22	312.02	226.44	462.45	241.41					
26-END	336.20	131.93	124.63	107.28	157.08	149.52	107.88	160.65	257.32	186.53	262.18	1299.37					

STATION		5130432										YEAR		1971		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.					
1-5	2372.01	284.96	374.83	168.30	97.73	158.42	116.20	141.41	166.61	116.09	214.52	307.22					
6-10	1648.43	282.38	195.38	136.90	96.90	120.08	120.40	145.61	170.82	99.25	208.77	1164.47					
11-15	578.64	160.43	144.39	121.42	168.96	121.75	124.60	149.81	202.24	93.40	162.76	1935.28					
16-20	396.43	155.99	611.12	111.03	127.05	110.28	128.80	154.01	167.50	127.14	188.30	1752.57					
21-25	320.78	167.34	374.78	102.11	106.40	107.80	133.00	158.21	320.25	194.56	445.10	1478.62					
26-END	286.45	250.73	188.68	99.09	154.51	112.00	137.20	162.41	167.90	300.80	236.56	621.24					

STATION		5130432										YEAR		1972		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.					
1-5	76.97	51.18	26.93	25.84	31.18	93.52	77.34	22.09	51.17	85.89	84.10	80.92					
6-10	59.32	46.95	25.53	31.83	30.84	85.60	65.52	24.98	74.94	63.84	92.30	68.80					
11-15	46.02	48.01	24.42	32.51	30.51	104.52	64.44	26.82	56.69	85.67	87.06	85.10					
16-20	42.09	37.95	23.58	32.18	30.18	106.52	26.17	31.23	100.79	53.82	136.89	853.06					
21-25	39.73	41.98	22.88	31.85	29.84	114.64	23.19	50.09	97.65	49.22	132.80	250.86					
26-END	44.09	37.45	25.74	31.51	29.51	89.16	27.01	35.43	93.11	54.22	78.62	208.71					

STATION		5130432										YEAR		1973		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.					
1-5	413.30	170.76	103.73	101.22	107.98	133.30	199.86	232.67	141.33	229.79	425.97	735.89					
6-10	430.24	140.06	102.81	84.93	111.84	228.02	120.68	149.59	201.60	153.25	251.41	2251.91					
11-15	280.34	129.02	103.21	77.55	131.00	153.64	112.98	132.19	258.65	177.11	267.86	1905.82					
16-20	320.44	203.57	85.54	72.64	119.13	102.81	107.33	122.68	191.69	288.67	218.71	1894.06					
21-25	221.06	117.23	89.45	87.07	124.02	124.55	103.92	115.19	222.44	235.97	317.18	1259.33					
26-END	173.55	128.80	121.38	106.56	120.00	198.77	149.75	115.31	279.03	320.63	375.68	602.22					

STATION		5130432										YEAR		1974		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.					
1-5	359.14	139.84	186.02	184.68	249.32	159.35	157.44	133.34	191.28	186.06	493.72	369.78					
6-10	250.48	145.68	234.28	267.47	194.78	161.64	126.18	113.48	140.06	124.20	282.56	333.92					
11-15	182.70	143.16	138.96	189.97	173.16	163.93	134.24	101.38	173.92	153.18	210.54	206.54					
16-20	150.76	816.98	156.17	247.56	185.18	166.22	137.30	89.06	174.96	289.76	252.72	216.84					
21-25	132.84	400.02	139.62	313.05	154.77	168.51	131.80	116.40	185.24	188.80	1191.30	315.36					
26-END	133.63	253.40	141.12	344.65	157.06	170.80	138.30	118.28	166.28	289.78	688.92	1660.82					

STATION		5130432										YEAR		1975		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.					
1-5	2091.86	322.52	301.84	140.28	145.44	168.28	121.02	123.02	103.84	118.96	157.12	610.38					
6-10	1548.96	219.76	229.76	230.66	131.58	132.88	134.94	125.12	114.22	137.00	183.54	373.70					
11-15	1190.84	179.00	171.38	123.72	155.08	157.00	139.56	97.84	119.22	167.56	187.76	721.60					
16-20	850.82	154.84	176.54	147.64	235.22	169.02	141.56	98.58	136.76	167.70	238.52	1054.52					
21-25	485.56	451.02	168.52	106.34	191.22	160.10	160.28	81.36	229.50	156.98	921.48	1109.46					
26-END	313.05	608.23	140.08	122.72	139.00	126.70	146.78	94.92	162.70	175.65	2247.06	472.05					

STATION		5130432										YEAR		1976		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.					
1-5	308.82	109.34	84.52	52.42	150.62	111.22	87.12	92.54	149.96	113.56	164.06	656.44					
6-10	254.88	100.98	77.26	48.46	169.58	123.90	97.90	70.18	111.96	119.60	155.88	291.48					
11-15	201.50	92.80	69.10	66.74	155.74	106.06	208.50	80.12	138.74	175.24	194.84	424.52					
16-20	163.74	88.00	62.32	72.94	114.02	120.40	127.80	125.50	112.44	179.38	430.64	726.80					
21-25	143.68	83.16	60.40	65.38	164.88	89.12	109.94	198.96	136.36	143.74	709.98	1458.44					
26-END	126.67	86.20	38.13	104.26	92.47	138.26	94.18	242.33	177.04	354.32	1406.36	982.45					

Table 44 5-DAY NATURAL RUNOFF AT STATION NO. 5130432 (3/3)

STATION		5130432										YEAR 1977		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.			
1-5	1269.50	151.16	175.86	92.07	61.34	92.54	71.14	83.38	114.78	117.36	155.66	460.20			
6-10	637.30	265.20	146.08	66.04	59.54	72.98	93.44	140.26	101.18	144.16	162.16	483.52			
11-15	351.42	357.30	119.70	73.28	59.54	71.24	99.02	121.04	116.78	201.52	217.04	278.54			
16-20	249.32	182.42	103.64	79.16	81.20	86.76	79.54	120.96	128.80	169.70	419.60	572.52			
21-25	191.52	207.36	110.42	64.40	62.60	98.10	64.62	177.92	94.46	191.54	424.36	609.04			
26-END	157.23	269.37	120.65	62.20	75.98	70.46	83.62	167.30	109.96	172.30	274.94	323.72			

STATION		5130432										YEAR 1978		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.			
1-5	205.52	163.60	157.64	73.30	74.52	91.22	86.88	78.02	79.34	87.16	343.58	520.64			
6-10	796.64	144.90	99.54	64.92	61.56	109.28	108.18	79.54	134.64	184.12	314.04	1928.78			
11-15	664.72	117.30	95.64	61.36	101.78	125.12	132.36	75.12	107.80	167.12	270.40	955.66			
16-20	395.02	125.70	76.62	81.54	116.92	74.66	62.00	101.12	89.00	243.64	325.34	417.62			
21-25	270.26	105.28	69.50	66.18	96.96	72.62	64.34	76.40	129.30	181.92	212.16	298.60			
26-END	191.32	178.17	81.75	76.88	96.63	78.38	87.43	75.85	100.66	225.03	152.88	207.88			

STATION		5130432										YEAR 1979		UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.			
1-5	259.65*	107.75*	127.66*	80.14*	130.34*	129.12*	75.89*	82.61*	110.63*	106.06*	457.75*	785.36*			
6-10	264.52*	189.52*	99.38*	92.38*	129.01*	127.20*	67.38*	73.85*	112.58*	108.61*	265.95*	533.31*			
11-15	150.04*	115.42*	98.85*	79.00*	133.56*	145.50*	82.17*	67.44*	139.19*	167.51*	351.21*	350.25*			
16-20	125.64*	113.69*	83.77*	88.30*	101.94*	201.30*	116.15*	88.13*	298.94*	143.77*	632.12*	283.21*			
21-25	158.78*	95.59*	73.80*	133.99*	86.86*	112.42*	157.32*	122.50*	195.50*	195.01*	613.77*	219.27*			
26-END	140.42*	188.58*	68.26*	147.82*	117.94*	86.05*	149.68*	84.20*	157.61*	161.89*	2926.63*	180.93*			

Table 45 5-DAY NATURAL RUNOFF AT STATION NO. 5721442 (1/3)

STATION		YEAR 1961											UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	1436.20	440.04	309.46	238.84	498.70	241.32	120.36	206.24	174.96	424.87	879.70	894.80		
6-10	1487.68	340.52	281.82	291.34	513.52	208.26	119.94	171.00	226.66	417.29	863.76	932.30		
11-15	2379.80	559.98	301.16	267.66	384.90	203.44	162.24	249.84	392.28	492.28	675.08	926.30		
16-20	1090.22	896.38	286.88	486.80	336.98	400.16	187.32	128.46	390.12	755.60	617.50	725.40		
21-25	687.90	527.36	221.38	484.34	194.74	171.58	148.12	113.28	373.82	481.00	691.18	812.08		
26-END	518.42	346.65	234.70	369.68	166.47	154.98	311.18	129.67	264.98	426.07	734.34	1569.17		

STATION		YEAR 1962											UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	1947.48	551.34	346.28	396.42	243.44	197.70	467.48	181.85*	750.50*	540.60	540.64	714.50		
6-10	1205.42	453.60	680.74	315.32	296.92	192.66	266.56	122.53*	504.04*	504.48	524.48	944.72		
11-15	899.20	357.10	518.08	212.76	392.14	166.70	229.86	178.50*	346.19*	498.12	568.57	924.96		
16-20	808.02	311.32	300.42	256.26	442.48	240.22	225.30	149.12*	395.86*	488.06	488.82	1641.08		
21-25	1251.24	299.54	263.24	284.74	459.12	293.92	239.50	220.30*	368.36*	621.04	515.04	965.48		
26-END	745.85	326.73	413.92	181.84	259.55	302.34	253.67	319.01*	302.85*	544.42	679.48	605.30		

STATION		YEAR 1963											UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	2145.42	490.28	293.52	145.78	109.36	190.82	141.18	272.36	306.42	362.42	630.76	1467.46		
6-10	1381.46	375.78	291.42	138.20	161.56	152.18	119.28	291.74	273.68	373.04	797.20	1494.48		
11-15	758.08	319.86	238.34	157.28	114.52	159.58	113.64	187.30	199.78	434.72	988.56	786.24		
16-20	592.82	322.92	242.96	130.90	115.56	114.86	169.50	141.00	183.96	553.38	898.42	614.00		
21-25	525.84	304.22	256.48	108.10	189.80	101.54	200.92	242.24	282.44	541.56	480.06	748.76		
26-END	495.95	283.57	176.48	98.20	184.43	188.06	180.73	218.20	272.62	533.90	1480.76	1362.45		

STATION		YEAR 1964											UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	724.16	270.84	593.66	215.84	533.62	294.78	243.18	457.52	231.82	224.96	401.56	464.00		
6-10	568.48	356.34	376.98	199.32	403.82	382.06	243.94	261.00	424.06	289.44	394.76	451.04		
11-15	528.28	444.46	433.84	245.66	375.34	330.48	376.58	276.62	655.40	481.54	433.32	408.72		
16-20	444.88	746.24	295.76	219.50	523.38	407.06	280.08	263.98	560.44	272.02	465.38	775.00		
21-25	369.34	575.02	256.48	170.74	313.22	341.38	482.30	287.16	482.98	381.68	498.40	1008.28		
26-END	291.48	893.22	439.15	186.90	230.90	409.52	626.02	230.67	312.38	587.60	496.36	774.05		

STATION		YEAR 1965											UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	517.20	231.32	198.06	260.46	337.12	238.18	370.00	288.48	289.00	514.20	798.64	4011.82		
6-10	363.76	259.14	208.90	253.74	345.46	310.46	342.58	246.58	765.10	521.78	726.08	1701.68		
11-15	300.22	220.68	190.12	208.30	270.18	191.32	317.86	244.64	508.80	957.66	628.40	1661.16		
16-20	276.46	257.58	170.74	236.94	314.58	200.40	228.94	551.36	400.04	1158.58	1114.88	1454.32		
21-25	241.08	256.10	182.72	271.34	348.70	219.36	189.56	392.84	504.60	733.38	859.74	1144.52		
26-END	234.77	295.63	186.00	177.34	303.33	314.66	258.93	414.48	690.66	771.22	1096.50	1454.20		

STATION		YEAR 1966											UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	1202.48	760.48	531.06	380.40	363.20	480.02	276.14*	338.55	318.74	360.12*	530.60*	2417.23*		
6-10	2012.42	605.54	577.62	314.40	298.18	322.20	234.54*	326.40	261.86	580.11*	548.11*	940.07*		
11-15	1235.16	513.86	412.64	320.84	344.44	326.28	352.44*	310.86	394.10	437.85*	401.79*	903.12*		
16-20	835.82	535.78	399.48	288.66	361.56	303.28	306.78*	331.88	382.60	734.97*	487.72*	637.56*		
21-25	1846.98	609.34	462.28	422.30	408.64	362.96	208.07*	491.56	431.86	543.38*	594.42*	490.80*		
26-END	1613.75	519.17	532.85	401.80	336.58	454.40	210.04*	649.13	901.38	533.88*	620.54*	5667.56*		

STATION		YEAR 1967											UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	4111.60*	482.48*	1924.50	561.20	563.32	342.02	376.06	264.80	280.82	358.22	493.16	1525.07*		
6-10	5129.92*	334.35*	846.66	507.20	664.00	302.88	383.70	337.08	343.34	298.56	607.72	1502.31*		
11-15	2732.80*	451.82*	2849.22	448.36	587.96	311.84	430.44	422.88	375.96	507.82	878.42	1212.11*		
16-20	1170.81*	2634.50*	897.80	452.78	696.06	361.80	473.34	414.36	373.78	461.56	773.44	1153.76*		
21-25	804.12*	1357.38*	662.70	512.24	573.50	427.04	412.34	340.26	324.06	396.66	639.98	630.85*		
26-END	582.65*	1758.73*	542.78	645.06	418.85	319.34	324.27	291.42	339.86	512.72	4783.14	471.57*		

STATION		YEAR 1968											UNIT : CMS	
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.		
1-5	449.84*	275.08	187.66	184.86	205.74	448.86	643.86	206.62	307.92	529.52	735.04	330.88		
6-10	448.51*	278.54	178.46	165.32	238.76	299.60	400.52	235.22	268.26	507.96	501.40	611.62		
11-15	506.32*	243.90	204.58	170.96	238.50	446.96	286.72	210.44	317.08	619.00	359.40	475.32		
16-20	355.17*	231.56	210.16	166.00	272.10	328.92	316.76	175.12	568.16	924.40	362.78	923.62		
21-25	260.90*	211.56	198.56	162.32	309.66	259.10	397.30	172.34	407.84	652.64	296.04	522.88		
26-END	218.47*	199.08	250.67	200.86	383.53	269.12	228.97	311.72	689.48	858.58	245.76	1006.22		

Table 46

5-DAY NATURAL RUNOFF AT STATION NO. 5721442 (2/3)

STATION		5721442											YEAR		1969	UNIT		CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.						
1-5	767.34	289.26	201.80	195.24	189.76	226.68	233.20	158.06	318.04	266.36	556.10	3263.82						
6-10	1116.90	287.12	176.86	165.32	155.76	208.64	277.00	167.86	309.02	294.48	589.24	1562.50						
11-15	705.26	263.24	180.94	136.66	192.06	241.84	188.74	213.54	178.72	359.82	939.94	1988.94						
16-20	514.96	246.82	175.42	130.12	199.12	230.72	230.44	205.62	203.46	417.82	914.70	1494.42						
21-25	406.14	207.72	155.36	119.32	170.20	353.86	200.94	349.66	227.48	560.50	1122.16	903.08						
26-END	342.02	196.83	164.48	124.04	293.97	232.16	147.13	388.73	233.86	571.87	1960.54	1053.83						

STATION		5721442											YEAR		1970	UNIT		CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.						
1-5	790.88	594.33*	302.41*	267.17*	287.33	376.74	473.70	303.64	511.36	1059.96	556.56	638.52						
6-10	1786.06	776.40*	283.67*	530.10*	295.02	273.28	261.30	353.58	493.20	1046.20	824.54	652.54						
11-15	1582.78	541.39*	294.85*	394.66*	358.68	234.82	245.72	514.88	421.42	1058.82	767.20	544.92						
16-20	1506.34	423.64*	257.82*	412.55*	280.62	195.86	261.36	353.16	518.22	748.76	951.58	713.80						
21-25	772.96	360.51*	303.90*	276.51*	245.34	437.70	482.00	385.76	775.46	562.78	933.00	599.98						
26-END	671.55	327.88*	309.74*	266.62*	347.70	357.44	455.17	399.25	639.52	463.58	651.62	3229.20						

STATION		5721442											YEAR		1971	UNIT		CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.						
1-5	5895.06	708.20	931.56	418.26	242.88	393.72	288.78*	351.43*	414.08*	288.52	533.14	763.52						
6-10	4096.78	701.80	485.56	340.24	240.82	298.64	299.22*	361.87*	424.52	246.66	518.86	2893.90						
11-15	1438.00	398.72	358.84	301.76	419.90	302.58	309.67*	372.31*	502.62	232.12	404.50	6809.68						
16-20	985.24	387.68	1518.80	275.94	315.74	274.08	320.11*	382.76*	416.28	315.98	467.98	4355.00						
21-25	797.22	465.60	931.44	253.78	269.40	267.90	330.55*	393.20*	795.90	483.52	1106.18	3654.88						
26-END	711.90	373.43	468.43	246.26	384.00	278.34*	340.99*	403.64*	417.28	747.57	587.92	1543.95						

STATION		5721442											YEAR		1972	UNIT		CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.						
1-5	574.96	382.34	201.18	193.04	232.91*	217.94*	202.98*	165.04	382.28	641.62	628.24	604.40						
6-10	443.14	350.74	190.72	237.80	230.41*	215.43*	200.49*	186.60	559.78	424.52	624.86	513.94						
11-15	343.76	358.68	182.40	242.88	227.92*	212.96*	197.99*	200.38	423.48	639.94	650.38	635.74						
16-20	314.42	283.46	176.18	240.39*	225.42*	210.46*	195.50	233.30	752.90	402.04	1022.58	6372.50						
21-25	296.82	315.62	170.94	237.89*	222.93*	207.97*	173.20	374.16	729.44	367.66	992.00	1873.94						
26-END	329.35	279.75	192.32	235.40*	220.64*	205.48*	201.75	264.68	695.52	405.03	587.32	1559.07						

STATION		5721442											YEAR		1973	UNIT		CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.						
1-5	1027.16	424.38	257.80	251.56	268.36	331.28	496.70	578.24	331.24	571.10	1038.66	1828.88						
6-10	1069.26	346.08	255.52	211.08	277.94	566.70	299.92	371.78	501.02	382.32	624.82	5596.60						
11-15	696.72	320.66	255.50	192.74	325.56	381.78	280.78	328.54	642.82	440.16	665.70	4736.48						
16-20	796.38	505.92	212.60	180.02	296.00	255.52	266.74	304.90	476.40	717.42	543.56	4707.24						
21-25	549.38	291.34	222.32	217.88	308.22	309.54	258.26	286.28	552.82	636.14	788.28	3129.76						
26-END	436.83	320.10	301.67	264.78	298.23	494.00	372.17	286.58	693.46	798.85	933.16	1496.67						

STATION		5721442											YEAR		1974	UNIT		CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.						
1-5	1041.00	392.34	376.52	350.12	585.76	319.58	364.80*	437.48	458.48	648.88	720.76	744.80						
6-10	821.36	405.56	410.48	478.10	925.10	320.60	374.30*	346.42	359.28	446.78	519.96	510.54						
11-15	647.20	340.46	318.80	339.50	443.82	333.42	384.20	307.87	561.56	417.84	697.18	473.88						
16-20	361.60	585.68	279.16	442.52	611.00	406.64	379.46	266.90	438.64	1007.96	725.84	682.84						
21-25	481.20	691.84	249.58	559.58	686.98	344.80	530.44	343.82	612.44	597.76	1454.74	501.88						
26-END	441.17	505.75	252.25	793.14	414.88	354.50*	477.42	387.85	437.18	608.25	1052.40	1770.33						

STATION		5721442											YEAR		1975	UNIT		CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.						
1-5	2392.32	643.08	588.76	293.28	375.74	549.90	323.46	361.44	606.34	445.84	621.00	1284.04						
6-10	1967.68	508.52	486.42	503.04	383.98	352.76	476.16	334.88	494.28	559.52	897.70	984.54						
11-15	1920.04	447.96	370.46	318.52	367.44	363.56	351.80	280.84	521.04	538.94	785.10	1160.50						
16-20	1438.14	378.88	346.48	303.20	642.00	370.36	354.21*	297.56	455.04	387.92	644.52	1514.16						
21-25	923.14	810.70	406.74	290.82	686.26	327.86	356.82*	275.82	687.46	478.10	1630.22	3027.20						
26-END	655.85	1077.77	313.57	327.00	574.65	281.14	359.03*	394.23	915.88	760.68	3925.56	1268.58						

STATION		5721442											YEAR		1976	UNIT		CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.						
1-5	882.96	350.18	247.58	174.28	344.14	388.44	242.02	265.72	541.96	445.02	625.58	970.00						
6-10	684.52	322.18	228.18	168.00	399.16	363.58	251.14	198.58	345.64	429.46	655.38	608.58						
11-15	561.52	296.44	213.06	246.20	447.86	320.58	471.16	198.22	445.98	682.98	503.36	610.88						
16-20	478.78	261.14	215.10	238.06	356.00	471.94	306.68	460.30	396.04	941.98	980.86	1026.86						
21-25	412.94	239.32	198.38	222.28	432.08	280.88	340.80	477.18	322.62	765.96	1301.06	1658.78						
26-END	366.80	239.92	209.75	370.56	239.97	448.64	245.48	885.58	607.44	586.70	1920.98	1658.68						

Table 47 5-DAY NATURAL RUNOFF AT STATION NO.5721442 (3/3)

		STATION 5721442 YEAR 1977										UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	1842.68	351.74	300.72	194.28	154.94	185.24	276.82	224.26	264.54	391.28	456.66	613.34
6-10	1141.36	416.66	259.82	185.76	159.54	196.40	331.54	308.58	236.60	528.18	951.86	869.96
11-15	687.44	648.76	251.66	168.80	151.36	224.02	354.22	395.80	266.74	1142.92	802.48	521.06
16-20	524.82	337.88	222.72	184.56	219.58	200.86	251.96	394.81*	282.10	717.80	1194.60	838.90
21-25	436.84	311.60	213.64	158.42	158.42	214.22	187.36	393.83	194.74	519.30	1031.38	644.78
26-END	376.47	446.73	230.02	153.06	182.20	183.10	227.25	462.70	276.36	766.10	611.30	507.37

		STATION 5721442 YEAR 1978										UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	370.74	313.06	375.50	195.67	212.26	308.06	255.48	248.38	209.68	394.96	792.10	1125.90
6-10	1097.72	292.10	302.83*	172.46	217.34	309.76	423.20	214.56	520.66	418.30	1307.06	2534.96
11-15	1034.06	274.60	230.17	162.70	278.60	402.94	378.34	192.60	478.34	382.88	610.24	1596.96
16-20	843.56	269.64	191.85	214.64	297.44	222.30	528.96	283.28	259.42	607.44	915.36	817.54
21-25	581.06	260.94	195.79*	191.64	511.90	363.38	410.18	261.52	723.28	550.12	662.16	583.56
26-END	421.22	286.10	195.73*	245.44	287.90	266.84	276.35	195.75	609.84	475.27	390.74	453.87

		STATION 5721442 YEAR 1979										UNIT : CMS
PERIOD	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1-5	645.30	267.78	317.26	199.18	323.94	320.90	188.60	205.32	274.94	263.60	1137.62	1946.86
6-10	657.40	471.00	246.98	229.58	320.62	316.12	167.46	183.54	279.80	269.92	655.98	1325.42
11-15	372.90	286.84	245.66	196.34	331.92	361.32	204.22	167.60	345.92	416.32	872.86	870.42
16-20	312.24	262.34	288.20	219.44	233.34	500.28	288.66	219.02	742.94	357.32	1570.98	703.86
21-25	394.62	237.54	183.60	333.00	215.82	279.40	390.98	304.44	485.86	484.66	1525.38	544.94
26-END	348.98	468.67	189.65	367.38	295.12	215.86	372.50	209.25	391.70	402.35	7273.44	449.67

Table 48 RAINFALL, RUNOFF RELATION AT KEY STATIONS (1/6)

Station No. : 1737451
 Catchment Area : 1130.0 km² Unit: mm

Year	Rainfall	Gauge Runoff	Irrigation Withdrawals	Total Runoff	Loss
1961	2159.0	-	-	-	-
1962	2446.0	-	-	-	-
1963	2122.0	-	-	-	-
1964	2671.0	1066.5	0.	1066.5	1604.5
1965	2099.0	872.4	0.	872.4	1226.6
1966	2279.0	982.0	0.	982.0	1297.0
1967	2849.0	1086.3	0.	1086.3	1762.7
1968	2317.0	-	-	-	-
1969	2726.0	1081.6	0.	1081.6	1644.4
1970	2403.0	936.8	0.	936.8	1466.2
1971	1851.0	-	-	-	-
1972	2332.0	647.7	0.	647.7	1684.3
1973	2280.0	957.8	0.	957.8	1322.2
1974	1972.0	566.7	0.	566.7	1405.3
1975	2153.0	850.2	0.	850.2	1302.8
1976	1883.0	485.7	0.	485.7	1397.3
1977	2605.0	819.4	0.	819.4	1785.6
1978	2342.0	910.3	0.	910.3	1431.7
1979	2330.0	1083.0	0.	1083.0	1247.0
	2306.0			Mean	1469.8

Station No. : 2224432
 Catchment Area : 161.0 km² Unit: mm

Year	Rainfall	Gauge Runoff	Irrigation Withdrawals	Total Runoff	Loss
1961	1626.0	514.9	54.0	568.9	1057.1
1962	1878.0	537.9	50.9	588.8	1289.2
1963	1285.0	-	-	-	-
1964	1749.0	465.8	34.8	500.6	1248.4
1965	1745.0	295.7	58.4	354.0	1391.0
1966	1788.0	470.8	60.2	531.1	1256.9
1967	1746.0	751.6	54.7	806.2	939.8
1968	1639.0	566.5	65.2	631.7	1007.3
1969	2399.0	724.2	70.2	794.4	1604.6
1970	2079.0	441.6	70.2	511.8	1567.2
1971	2094.0	712.4	98.1	810.6	1283.4
1972	1610.0	314.9	124.8	439.8	1170.2
1973	2143.0	477.6	34.8	512.4	1630.6
1974	1626.0	309.3	119.3	428.6	1197.4
1975	1922.0	510.6	125.5	636.0	1286.0
1976	2193.0	687.0	113.0	800.0	1393.0
1977	1482.0	350.3	128.0	478.3	1003.7
1978	1816.0	365.2	112.4	477.6	1338.4
1979	1743.9	359.0	113.0	472.0	1271.0
	1819.0			Mean	1274.2

Table 49 RAINFALL, RUNOFF RELATION AT KEY STATIONS (2/6)

Station No. : 2322413
 Catchment Area : 350.0 km² Unit: mm

Year	Rainfall	Gauge Runoff	Irrigation Withdrawals	Total Runoff	Loss
1961	1492.0	447.7	15.1	462.9	1029.1
1962	1769.0	554.9	15.1	570.0	1199.0
1963	1343.0	381.7	15.1	396.9	946.1
1964	2022.0	619.7	15.1	634.9	1387.1
1965	1637.0	478.0	16.6	494.6	1142.4
1966	1883.0	626.6	15.7	642.3	1240.7
1967	1774.0	750.6	16.6	767.1	1006.9
1968	1708.0	535.7	17.4	553.1	1154.9
1969	2126.0	516.6	18.6	535.1	1590.9
1970	1821.0	658.0	18.9	676.9	1144.1
1971	1953.0	864.0	21.1	885.1	1067.9
1972	1472.0	572.0	24.3	596.3	875.7
1973	1784.0	702.9	37.1	740.0	1044.0
1974	1538.0	386.9	35.4	422.3	1115.7
1975	1796.0	674.6	28.0	702.6	1093.4
1976	1695.0	487.4	27.1	514.6	1180.4
1977	1278.0	190.6	33.1	223.7	1054.3
1978	1684.0	-	-	-	-
1979	1650.0	-	-	-	-
	1707.0			Mean	1133.7

Station No. : 2527411
 Catchment Area : 3130.0 km² Unit: mm

Year	Rainfall	Gauge Runoff	Irrigation Withdrawals	Total Runoff	Loss
1961	1723.0	319.5	9.8	329.4	1393.6
1962	1746.0	277.7	5.1	282.8	1463.2
1963	1151.0	103.9	7.8	111.7	1039.3
1964	1794.0	341.4	9.7	351.2	1442.8
1965	1538.0	261.6	10.4	272.0	1266.0
1966	1830.0	430.9	10.0	440.9	1389.1
1967	1904.0	647.9	10.9	658.7	1245.3
1968	1588.0	265.7	12.6	278.2	1309.8
1969	1538.0	-	-	-	-
1970	1888.0	-	-	-	-
1971	2054.0	-	-	-	-
1972	1470.0	-	-	-	-
1973	1826.0	-	-	-	-
1974	1417.0	-	-	-	-
1975	1727.0	-	-	-	-
1976	1245.0	296.6	15.9	312.5	932.5
1977	1116.0	249.1	18.7	267.9	848.1
1978	1416.0	394.8	16.9	411.7	1004.3
1979	1434.0	360.6	17.0	377.6	1056.4
	1600.0			Mean	1199.2

Table 50 RAINFALL, RUNOFF RELATION AT KEY STATIONS (3/6)

Station No. : 3414421
 Catchment Area : 1450.0 km²

Unit: mm

Year	Rainfall	Gauge Runoff	Irrigation Withdrawals	Total Runoff	Loss
1961	2524.0	1258.3	0.	1258.3	1265.7
1962	2821.0	1601.0	0.	1601.0	1220.0
1963	2491.0	1173.1	0.	1173.1	1317.9
1964	2591.0	1289.0	0.	1289.0	1302.0
1965	2781.0	1300.5	0.	1300.5	1480.5
1966	2866.0	1517.1	0.	1517.1	1348.9
1967	2652.0	1492.6	0.	1492.6	1159.4
1968	2633.0	1262.1	0.	1262.1	1370.9
1969	2854.0	1537.4	0.	1537.4	1316.6
1970	2687.0	1403.1	0.	1403.1	1283.9
1971	2627.0	1299.3	0.	1299.3	1327.7
1972	2592.0	1239.2	0.	1239.2	1352.8
1973	2900.0	1549.0	0.	1549.0	1351.0
1974	2259.0	1041.0	0.	1041.0	1218.0
1975	2470.0	1249.1	0.	1249.1	1220.9
1976	2243.0	1033.9	0.	1033.9	1209.1
1977	2384.0	1062.7	0.	1062.7	1321.3
1978	2297.0	783.3	0.	783.3	1513.7
1979	2389.0	957.9	0.	957.9	1431.1
	2582.0			Mean	1316.4

Station No. : 3813411
 Catchment Area : 1090.0 km²

Unit: mm

Year	Rainfall	Gauge Runoff	Irrigation Withdrawals	Total Runoff	Loss
1961	3235.0	-	-	-	-
1962	3160.0	1925.8	0.	1925.8	1234.2
1963	3081.0	1682.3	0.	1682.3	1398.7
1964	3233.0	1682.8	0.	1682.8	1550.2
1965	2975.0	1707.7	0.	1707.7	1267.3
1966	3245.0	2020.6	0.	2020.6	1224.4
1967	3053.0	1805.5	0.	1805.5	1247.5
1968	2863.0	1517.4	0.6	1518.1	1344.9
1969	3192.0	1818.3	0.6	1818.9	1373.1
1970	3041.0	1481.7	0.	1481.7	1559.3
1971	2780.0	1491.4	0.	1491.4	1288.6
1972	3030.0	1564.2	0.	1564.2	1465.8
1973	3549.0	1909.4	0.	1909.4	1639.6
1974	2388.0	1316.6	0.	1316.6	1071.4
1975	2989.0	-	-	-	-
1976	2702.0	-	-	-	-
1977	2503.0	983.0	0.	983.0	1520.0
1978	2297.0	633.9	0.	633.9	1663.1
1979	2723.0	1109.1	0.	1109.1	1613.9
	2940.0			Mean	1403.9

Table 51 RAINFALL, RUNOFF RELATION AT KEY STATIONS (4/6)

Station No. : 3424411
 Catchment Area : 19000.0 km² Unit: mm

Year	Rainfall	Gauge Runoff	Irrigation Withdrawals	Total Runoff	Loss
1961	2321.0	-	-	-	-
1962	2117.0	-	-	-	-
1963	1882.0	1025.8	1.3	1027.2	854.8
1964	2069.0	1109.0	2.0	1111.0	958.0
1965	2312.0	1446.9	2.2	1449.1	862.9
1966	2459.0	1660.7	2.0	1602.7	856.3
1967	2728.0	1946.4	1.7	1948.1	779.9
1968	1743.0	690.8	3.0	693.8	1049.2
1969	2278.0	665.9	2.0	667.9	1610.1
1970	2387.0	-	-	-	-
1971	2624.0	-	-	-	-
1972	1953.0	847.2	2.8	850.0	1103.0
1973	2220.0	894.4	2.6	897.0	1323.0
1974	2119.0	733.4	3.0	736.4	1382.6
1975	2545.0	890.7	2.9	893.6	1651.4
1976	1990.0	564.0	2.9	566.9	1423.1
1977	1830.0	523.3	2.9	526.1	1303.9
1978	2151.0	609.2	2.6	611.8	1539.2
1979	2116.0	755.9	2.7	758.6	1357.4
	2203.0			Mean	1203.7

Station No. : 4311464
 Catchment Area : 432.0 km² Unit: mm

Year	Rainfall	Gauge Runoff	Irrigation Withdrawals	Total Runoff	Loss
1961	2432.0	1637.5	0.	1637.5	794.5
1962	2598.0	1753.0	0.	1753.0	845.0
1963	2427.0	1203.2	0.	1203.2	1223.8
1964	2363.0	1075.7	0.	1075.7	1287.3
1965	2570.0	1067.1	0.	1067.1	1502.9
1966	2753.0	1030.3	0.	1030.3	1722.7
1967	2488.0	1064.4	0.	1064.4	1423.6
1968	2158.0	671.5	0.	671.5	1486.5
1969	2829.0	1244.7	0.	1244.7	1584.3
1970	3026.0	1152.5	0.	1152.5	1873.5
1971	2530.0	921.1	0.	921.1	1608.9
1972	2563.0	954.9	0.	954.9	1608.1
1973	2797.0	1177.3	0.	1177.3	1619.7
1974	2309.0	900.5	0.	900.5	1408.5
1975	2400.0	815.3	0.	815.3	1584.7
1976	2189.0	1100.0	0.	1100.0	1089.0
1977	2270.0	-	-	-	-
1978	1953.0	-	-	-	-
1979	2307.0	-	-	-	-
	2472.0			Mean	1416.4

Table 52 RAINFALL, RUNOFF RELATION AT KEY STATIONS (5/6)

Station No. : 5007421
 Catchment Area : 337.0 km² Unit: mm

Year	Rainfall	Gauge Runoff	Irrigation Withdrawals	Total Runoff	Loss
1961	3136.0	1608.6	32.9	1641.5	1494.5
1962	2937.0	1492.0	35.3	1527.3	1409.7
1963	2819.0	1076.6	22.0	1098.5	1720.5
1964	2808.0	1191.4	22.0	1213.4	1594.6
1965	3027.0	1589.9	17.2	1607.1	1419.9
1966	3406.0	2193.5	25.8	2219.3	1186.7
1967	2958.0	1315.4	26.7	1342.1	1615.9
1968	2845.0	-	-	-	-
1969	3209.0	-	-	-	-
1970	3243.0	2238.3	26.7	2265.0	978.0
1971	2701.0	1679.8	53.4	1733.2	967.8
1972	2612.0	1939.5	29.1	1968.5	643.5
1973	3537.0	2135.6	49.0	2184.6	1352.4
1974	2775.0	1433.2	36.8	1470.0	1305.0
1975	3174.0	1898.2	59.6	1957.9	1216.1
1976	2747.0	2163.8	25.2	2189.0	558.0
1977	2675.0	1902.7	64.1	1966.8	708.2
1978	2736.9	1594.7	34.4	1629.1	1106.9
1979	3027.0	-	-	-	-
	2957.0			Mean	1204.9

Station No. : 5130432
 Catchment Area : 3340.0 km² Unit: mm

Year	Rainfall	Gauge Runoff	Irrigation Withdrawals	Total Runoff	Loss
1961	5881.0	2784.4	0.2	2784.6	3096.4
1962	3363.0	2163.3	0.2	2163.5	1199.5
1963	3533.0	2049.3	0.3	2049.6	1483.4
1964	4966.0	2113.5	0.2	2113.7	2852.3
1965	3724.0	2178.2	0.2	2178.4	1545.6
1966	3902.0	3197.1	0.2	3197.3	704.7
1967	4045.0	4275.7	0.2	4275.9	-
1968	2563.0	1688.6	0.4	1689.0	874.0
1969	2613.0	1979.8	0.	1979.8	633.2
1970	3511.0	-	-	-	-
1971	2823.0	-	-	-	-
1972	2153.0	-	-	-	-
1973	3013.0	-	-	-	-
1974	4429.0	2428.2	1.4	2429.6	1999.4
1975	4161.0	3099.4	1.3	3100.7	1060.3
1976	2999.0	1974.9	1.6	1976.6	1022.4
1977	2543.0	1764.5	1.3	1765.8	777.2
1978	3113.0	1835.3	1.6	1836.9	1276.1
1979	5991.0	2235.4	1.8	2237.2	3753.8
	3862.0			Mean	1591.3

Table 53 RAINFALL, RUNOFF RELATION AT KEY STATIONS (6/6)

Station No. : 5721442					
Catchment Area : 11900.0 km ²		Unit: mm			
Year	Rainfall	Gauge Runoff	Irrigation Withdrawals	Total Runoff	Loss
1961	2644.0	1286.9	0.3	1287.2	1356.8
1962	2422.0	1145.7	0.4	1146.1	1275.9
1963	2413.0	1136.7	0.4	1137.0	1276.0
1964	2351.0	1108.1	0.4	1108.5	1242.5
1965	2980.0	1395.4	0.4	1395.8	1584.2
1966	2884.0	-	-	-	-
1967	2995.0	-	-	-	-
1968	2013.0	880.7	0.2	880.9	1132.1
1969	2649.0	1225.2	0.4	1225.6	1423.4
1970	2717.0	-	-	-	-
1971	2963.0	1995.2	0.4	1995.6	967.4
1972	2366.0	1177.7	0.0	1177.7	1183.3
1973	2710.0	1865.2	0.3	1865.5	844.5
1974	2400.0	1423.4	0.4	1423.7	976.3
1975	3132.0	1896.6	0.2	1896.8	1235.2
1976	2340.0	1319.3	0.6	1319.9	1020.1
1977	1778.0	1128.1	0.5	1128.6	649.4
1978	2336.0	1232.2	0.6	1232.9	1103.1
1979	2265.0	1384.2	0.7	1384.9	880.1
	2540.0			Mean	1134.7

Table 54 CONVERSION RATIO FROM KEY STATION TO BASINS

Station No.	Key Station					Applied Basin					
	Co Catchment Area (km ²)	Ro Rain-Fall (mm)	Qo Run-off (mm)	Lo Loss (mm)	fo Run-off Ratio	Basin No.	Total Catchment Area (km ²)	Ci Ri Rain-fall (mm)	fi Run-off Ratio	Qi Run-off (mm)	Conversion Ratio
5007421	337	2,957	1,752	1,205 (1,008)	0.592	1	790	1,903	0.470	895	1.198
5007421	337	2,957	1,752	(1,123)	0.592	2	475	2,500	0.551	1,377	1.109
5007421	337	2,957	1,752	(1,078)	0.592	3	3,695	2,274	0.526	1,196	7.49
5007421	337	2,957	1,752	(1,107)	0.592	4	520	2,433	0.545	1,326	1.169
5007421	337	2,957	1,752	(1,125)	0.592	5	4,300	2,528	0.555	1,403	10.23
5007421	337	2,957	1,752	1,205	0.592	6	895	2,780	0.567	1,575	2.39
5007421	337	2,957	1,752	1,205	0.592	7	300	2,700	0.554	1,495	0.761
5007421	337	2,957	1,752	1,205	0.592	8	1,420	2,790	0.568	1,585	3.81
5007421	337	2,957	1,752	1,205	0.592	9	3,255	2,634	0.543	1,429	7.89
4311464	432	2,472	1,056	1,416	0.427	10	14,700	2,342	0.395	926	29.8
3813411	1,090	2,940	1,536	1,404	0.522	11	3,335	2,490	0.436	1,086	2.16
3414421	1,450	2,582	1,266	1,316	0.490	12	565	2,142	0.386	826	0.255
3414421	1,450	2,582	1,266	1,316	0.490	13	1,820	2,498	0.473	1,182	1.170
3414421	1,450	2,582	1,266	1,316	0.490	14	560	2,068	0.364	752	0.230
3414421	1,450	2,582	1,266	1,316	0.490	15	1,425	2,246	0.414	930	0.722
3414421	1,450	2,582	1,266	1,316	0.490	16	1,815	2,207	0.404	891	0.882
3414421	1,450	2,582	1,266	1,316	0.490	17	640	2,176	0.395	860	0.300
2322413	350	1,707	573	1,134	0.336	18	1,420	2,082	0.455	948	6.70
2322413	350	1,707	573	1,134	0.336	19	1,010	1,910	0.406	776	3.90
2224432	161	1,819	545	1,274	0.300	20	705	1,778	0.283	504	4.04
2527411	3,130	1,600	401	1,199	0.251	21	6,595	1,796	0.332	597	3.13
2527411	3,130	1,600	401	1,199	0.251	22	2,600	2,088	0.426	889	1.84
1737451	1,130	2,306	836	1,470	0.363	23	2,660	2,521	0.417	1,051	2.96
1737451	1,130	2,306	836	1,470	0.363	24	3,250	2,395	0.386	925	3.18
1737451	1,130	2,306	836	1,470	0.363	25	1,820	2,534	0.420	1,064	2.05
1737451	1,130	2,306	836	1,470	0.363	26	880	2,795	0.474	1,325	1.23
1737451	1,130	2,306	836	1,470	0.363	27	4,740	2,601	0.435	1,131	5.67
1737451	1,130	2,306	836	1,470	0.363	28	4,285	2,343	0.373	873	3.96
1737451	1,130	2,306	836	1,470	0.363	29	1,895	2,659	0.447	1,189	2.38
3424411	19,000	2,203	999	1,204	0.453	30	29,300	2,127	0.434	923	1.43
5130432	3,340	3,862	2,271	1,591	0.588	31	2,025	2,629	0.395	1,038	0.277
5130432	3,340	3,862	2,271	1,591	0.588	32	2,570	3,097	0.486	1,506	0.510
5130432	3,340	3,862	2,271	1,591	0.588	33	850	2,923	0.456	1,332	0.149
5130432	3,340	3,862	2,271	1,591	0.588	34	1,875	3,309	0.519	1,718	0.425
5130432	3,340	3,862	2,271	1,591	0.588	35	760	3,414	0.534	1,823	0.183
5130432	3,340	3,862	2,271	1,591	0.588	36	4,650	3,549	0.552	1,958	1.20
5130432	3,340	3,862	2,271	1,591	0.588	37	1,035	3,273	0.514	1,682	0.230
5130432	3,340	3,862	2,271	1,591	0.588	38	1,230	3,239	0.509	1,648	0.267
5721442	11,900	2,540	1,405	1,135	0.553	39	1,020	2,795	0.594	1,660	0.101
5721442	11,900	2,540	1,405	1,135	0.553	40	13,100	2,558	0.556	1,423	1.110
5721442	11,900	2,540	1,405	1,135	0.553	41	895	2,966	0.617	1,831	0.0980

Remarks; (): Estimated value for Basins 1 - 5

$$\text{Conversion ratio} = \frac{Ci \cdot Ri \cdot fi}{Co \cdot Ro \cdot fo}$$

$$Qi = Ri - Lo, fi = Qi/Ri$$

Table 55 WATER BALANCE BY RIVER BASIN

Unit: $10^9 \text{ m}^3/\text{year}$

Basin	Area (km^2)	Rainfall	Evapo- transpira- tion	Ground- water recharge	Surface Run-off	
1	Perlis	790	1.50	0.59	0.07	0.84
2	P. Langkaur	475	0.93	0.38	0.03	0.52
3	Kedah-A	3,695	8.40	3.18	0.51	4.71
4	Merbock	520	1.27	0.51	0.05	0.71
5	Muda	4,300	10.87	4.40	0.38	6.09
6	Perai	895	2.49	0.88	0.22	1.39
7	P. Pinang	300	0.70	0.28	0.03	0.39
8	Kurian	1,420	3.96	1.53	0.21	2.22
9	Kuran	3,255	8.57	3.04	0.73	4.80
10	Perak	14,700	34.43	17.42	1.96	15.05
11	Bernan	3,335	8.30	3.05	0.86	4.39
12	Tengi	565	1.21	0.44	0.18	0.59
13	Selangor	1,820	4.55	2.13	0.19	2.23
14	Buloh	560	1.16	0.49	0.10	0.57
15	Kelang	1,425	3.20	1.48	0.15	1.57
16	Longat	1,815	4.01	1.75	0.29	1.97
17	Sepang	640	1.39	0.55	0.16	0.68
18	Linggi	1,420	2.96	1.91	0.09	0.96
19	Melaka	1,010	1.93	1.24	0.06	0.63
20	Kesang	705	1.25	0.77	0.08	0.40
21	Muar	6,595	11.84	8.23	0.51	3.10
22	Batu Pahat	2,600	5.43	3.62	0.39	1.42
23	Pontion Kechil	2,660	6.71	4.10	0.49	2.12
24	Johor	3,250	7.78	4.51	0.37	2.90
25	Sedili Besar	1,820	4.61	2.67	0.22	1.72
26	Mersing	880	2.46	1.46	0.08	0.92
27	Endau	4,740	12.33	6.83	0.91	4.59
28	Rompin	4,285	10.04	5.75	0.56	3.73
29	Bebar	1,895	5.04	2.38	0.79	1.87
30	Pahang	29,300	62.32	33.24	2.42	26.66
31	Kuantan	2,025	5.32	1.81	0.43	3.08
32	Kemaman	2,570	7.96	2.99	0.36	4.61
33	Pafa	850	2.48	0.96	0.08	1.44
34	Dungun	1,875	6.20	2.41	0.19	3.60
35	Marang	760	2.59	0.99	0.10	1.50
36	Trengganu	4,650	16.50	6.23	0.71	9.56
37	Setin	1,035	3.39	1.19	0.24	1.96
38	Besut	1,230	3.98	1.40	0.27	2.31
39	Kemasin	1,020	2.85	0.74	0.48	1.63
40	Kelantan	13,100	33.51	13.00	1.36	19.15
41	Golok	895	2.65	0.90	0.23	1.52

Table 56 DETAILS OF FLOW DURATION CURVE
AT KEY STATIONS (1/6)

STATION : 1737451
 YEAR : 1963 - 1979
 TOTAL : 5428 DAYS
 MAXIMUM : 642.0 CMS
 MINIMUM : 2.5 CMS
 AVERAGE : 32.6 CMS
 COEFFICIENT OF
 RIVER REGIME : 256.8

STATION : 2224432
 YEAR : 1961 - 1979
 TOTAL : 6690 DAYS
 MAXIMUM : 31.5 CMS
 MINIMUM : 0.1 CMS
 AVERAGE : 2.5 CMS
 COEFFICIENT OF
 RIVER REGIME : 315.0

DURATION (%)	RUN-OFF (CMS)	NON-DIMENSIONAL RUN-OFF (%)	DURATION (%)	RUN-OFF (CMS)	NON-DIMENSIONAL RUN-OFF (%)
5	77.7	238	5	8.5	334
10	60.3	185	10	6.0	235
15	52.6	161	15	4.7	184
20	46.0	141	20	3.9	153
25	41.1	126	25	3.2	125
30	37.0	113	30	2.8	110
35	33.0	101	35	2.4	94
40	29.6	90	40	2.1	82
45	27.0	82	45	1.8	70
50	24.2	74	50	1.6	62
55	21.9	67	55	1.4	55
60	19.3	59	60	1.2	47
65	17.4	53	65	1.0	39
70	15.5	47	70	0.9	35
75	13.9	42	75	0.7	27
80	12.4	38	80	0.5	19
85	11.0	33	85	0.4	15
90	9.3	28	90	0.3	11
95	6.9	21	95	0.2	7
97	5.8	17	97	0.2	7
99	4.7	14	99	0.1	3

Remark; CMS = m³/s

Table 57 DETAILS OF FLOW DURATION CURVE
AT KEY STATIONS (2/6)

STATION : 2322413
 YEAR : 1961 - 1979
 TOTAL : 6293 DAYS
 MAXIMUM : 116.7 CMS
 MINIMUM : 0.1 CMS
 AVERAGE : 6.2 CMS
 COEFFICIENT OF
 RIVER REGIME : 1167.0

STATION : 2527411
 YEAR : 1961 - 1979
 TOTAL : 4288 DAYS
 MAXIMUM : 389.8 CMS
 MINIMUM : 1.3 CMS
 AVERAGE : 35.4 CMS
 COEFFICIENT OF
 RIVER REGIME : 299.8

DURATION (%)	RUN-OFF (CMS)	NON-DIMENSIONAL RUN-OFF (%)	DURATION (%)	RUN-OFF (CMS)	NON-DIMENSIONAL RUN-OFF (%)
5	17.7	287	5	127.3	359
10	13.0	210	10	94.9	268
15	10.6	172	15	70.3	198
20	9.1	147	20	54.3	153
25	8.1	131	25	42.5	120
30	7.2	116	30	34.0	96
35	6.2	100	35	27.8	78
40	5.5	89	40	23.3	65
45	4.9	79	45	19.8	55
50	4.4	71	50	16.8	47
55	4.0	64	55	14.7	41
60	3.6	58	60	12.8	36
65	3.1	50	65	11.3	31
70	2.7	43	70	9.9	27
75	2.2	35	75	8.7	24
80	1.7	27	80	7.4	20
85	1.2	19	85	6.5	18
90	0.8	12	90	5.1	14
95	0.5	8	95	3.4	9
97	0.4	6	97	2.8	7
99	0.1	1	99	2.1	5

Table 58 DETAILS OF FLOW DURATION CURVE
AT KEY STATIONS (3/6)

STATION : 3414421
 YEAR : 1961 - 1979
 TOTAL : 6808 DAYS
 MAXIMUM : 345.8 CMS
 MINIMUM : 11.6 CMS
 AVERAGE : 58.0 CMS
 COEFFICIENT OF
 RIVER REGIME : 29.8

STATION : 3424411
 YEAR : 1963 - 1979
 TOTAL : 5494 DAYS
 MAXIMUM : 6058.1 CMS
 MINIMUM : 0.2 CMS
 AVERAGE : 599.4 CMS
 COEFFICIENT OF
 RIVER REGIME : 299.9

DURATION (%)	RUN-OFF (CMS)	NON-DIMENSIONAL RUN-OFF (%)	DURATION (%)	RUN-OFF (CMS)	NON-DIMENSIONAL RUN-OFF (%)
5	132.8	229	5	1659.0	276
10	110.5	190	10	1212.4	202
15	95.5	164	15	983.5	164
20	84.1	145	20	843.6	140
25	74.6	128	25	762.5	127
30	67.6	116	30	683.4	114
35	61.5	106	35	605.3	100
40	56.2	96	40	530.8	88
45	51.4	88	45	477.4	79
50	47.0	81	50	427.3	71
55	43.1	74	55	390.2	65
60	39.3	67	60	353.4	58
65	36.1	62	65	320.3	53
70	33.5	57	70	288.5	48
75	30.9	53	75	256.8	42
80	27.9	48	80	224.2	37
85	24.7	42	85	197.1	32
90	21.6	37	90	166.6	27
95	19.0	32	95	126.1	21
97	18.0	31	97	105.9	17
99	14.7	25	99	34.9	5

Table 59 DETAILS OF FLOW DURATION CURVE
AT KEY STATIONS (4/6)

STATION : 3813411
 YEAR : 1961 - 1979
 TOTAL : 5935 DAYS
 MAXIMUM : 820.3 CMS
 MINIMUM : 4.2 CMS
 AVERAGE : 54.3 CMS
 COEFFICIENT OF
 RIVER REGIME : 195.3

STATION : 4311464
 YEAR : 1961 - 1979
 TOTAL : 5820 DAYS
 MAXIMUM : 117.0 CMS
 MINIMUM : 0.1 CMS
 AVERAGE : 15.4 CMS
 COEFFICIENT OF
 RIVER REGIME : 1170.0

DURATION (%)	RUN-OFF (CMS)	NON-DIMENSIONAL RUN-OFF (%)	DURATION (%)	RUN-OFF (CMS)	NON-DIMENSIONAL RUN-OFF (%)
5	116.1	213	5	44.5	289
10	100.0	184	10	33.4	217
15	88.7	163	15	26.9	175
20	79.9	147	20	23.0	149
25	73.4	135	25	20.4	132
30	67.4	124	30	18.2	118
35	61.7	113	35	15.5	100
40	56.9	104	40	13.7	89
45	51.5	94	45	12.2	79
50	46.3	85	50	10.7	69
55	41.7	76	55	9.4	61
60	38.1	70	60	8.1	52
65	34.4	63	65	7.2	46
70	31.2	57	70	6.5	42
75	28.1	51	75	5.8	37
80	25.0	46	80	5.2	33
85	21.3	39	85	4.4	28
90	18.0	33	90	3.5	22
95	13.6	25	95	2.4	15
97	10.3	18	97	1.9	12
99	6.9	12	99	1.0	6

Table 60 DETAILS OF FLOW DURATION CURVE
AT KEY STATIONS (5/6)

STATION : 5007421
 YEAR : 1961 - 1979
 TOTAL : 5647 DAYS
 MAXIMUM : 96.1 CMS
 MINIMUM : 0.7 CMS
 AVERAGE : 18.9 CMS
 COEFFICIENT OF
 RIVER REGIME : 137.3

STATION : 5130432
 YEAR : 1961 - 1979
 TOTAL : 5802 DAYS
 MAXIMUM : 7047.1 CMS
 MINIMUM : 32.7 CMS
 AVERAGE : 257.3 CMS
 COEFFICIENT OF
 RIVER REGIME : 215.5

DURATION (%)	RUN-OFF (CMS)	NON-DIMENSIONAL RUN-OFF (%)	DURATION (%)	RUN-OFF (CMS)	NON-DIMENSIONAL RUN-OFF (%)
5	44.0	232	5	877.7	341
10	37.0	195	10	497.0	193
15	32.1	169	15	361.4	140
20	28.4	149	20	291.2	113
25	26.9	142	25	238.4	92
30	25.5	134	30	206.5	80
35	22.7	119	35	181.8	70
40	20.2	106	40	163.0	63
45	18.1	95	45	148.8	57
50	16.1	85	50	137.2	53
55	14.0	73	55	126.9	49
60	12.3	64	60	116.6	45
65	10.7	56	65	108.1	42
70	9.4	49	70	100.7	39
75	8.1	42	75	92.8	36
80	6.9	36	80	84.6	32
85	5.8	30	85	76.7	29
90	4.7	24	90	67.2	26
95	3.5	18	95	58.8	22
97	2.8	14	97	51.7	20
99	2.0	10	99	40.8	15

Table 61: DETAILS OF FLOW DURATION CURVE
AT KEY STATIONS (6/6)

STATION : 5721442
 YEAR : 1961 - 1979
 TOTAL : 6307 DAYS
 MAXIMUM : 9995.6 CMS
 MINIMUM : 89.0 CMS
 AVERAGE : 542.7 CMS
 COEFFICIENT OF
 RIVER REGIME : 112.3

DURATION (%)	RUN-OFF (CMS)	NON-DIMENSIONAL RUN-OFF (%)
5	1357.9	250
10	960.5	176
15	776.5	143
20	669.5	123
25	583.5	107
30	533.5	98
35	483.1	89
40	444.3	81
45	403.3	74
50	372.1	68
55	345.2	63
60	318.5	58
65	296.3	54
70	276.8	51
75	256.3	47
80	236.4	43
85	214.0	39
90	191.8	35
95	167.8	30
97	153.7	28
99	120.3	22

Table 62 FLOOD FREQUENCY ANALYSIS AT
SELECTED GAUGING STATIONS (1/4)

Basin No.	River	Station	Catchment area (km ²)	Discharge (m ³ /s) for Return Period (yr)						
				2	5	10	20	50	100	200
5	Muda	Jeniang (5806414)	1,710	320	500	630	740	950	1,100	1,300
5	Muda	Ldg. Victoria (5505412)	4,010	570	790	930	1,060	1,240	1,370	1,500
6	Perai/ Kulim	Ara Kuda (5405421)	130	50	59	62	63	64	65	68
8	Kerian/ Ijok	Titi Ijok (5106433)	216	70	80	90	100	110	120	120
9	Kurau	Pondok Tanjong (5007421)	337	86	100	110	120	130	140	150
10	Perak	Jan. Iskandar* (4809443)	7,769	1,500	2,800	4,000	5,300	7,300	9,000	11,000
	Plus	Kg. Lintang (4911445)	1,088	220	310	360	410	480	530	600
	Bidor	B9 Jl. Anson (4011451)	373	90	120	130	140	160	170	180
	Bidor	B18 Jl. Anson (4012451)	339	80	90	100	105	110	120	125
	Sungkai	Sungkai (3913458)	289	70	100	130	150	180	200	230
	Kinta	Ipoh (4510462)	313	90	120	140	150	170	180	200
	Kampar	Kg. Lanjut (4311464)	432	90	110	120	130	135	140	150
	Pari	Jl. Silibin (4610466)	245	80	110	130	150	190	210	250

Table 63 FLOOD FREQUENCY ANALYSIS AT
SELECTED GAUGING STATIONS (2/4)

Basin No.	River	Station	Catchment area (km ²)	Discharge (m ³ /s) for Return Period (yr)						
				2	5	10	20	50	100	200
11	Bernam	Jam. SKC (3813411)	1,090	240	340	410	460	550	620	700
	Bernam	Tg. Malim (3615412)	186	54	64	70	73	79	82	90
13	Selangor	Rantau Panjang (3414421)	1,450	230	280	320	360	400	440	470
	Selangor	Rasa (3510422)	321	87	130	150	180	210	240	270
15	Klang/ Batu	Sentul (3116434)	145	46	64	76	87	100	110	130
16	Langat	Dengkil (2816411)	1,240	120	160	180	200	220	240	270
18	Linggi	Sua Betong (2519432)	523	83	120	140	160	200	220	250
	Linggi	Rahang (2719422)	189	60	82	94	100	115	120	130
	Pedas	Kg. Pilih (2520423)		30	43	51	59	69	77	85
19	Melaka	P.Belim Bing (2322413)	350	38	53	66	82	110	140	170
20	Kesang	Chin Chin* (2224432)	161	30	45	55	70	85	100	110
21	Muar	B57 Jl. Gemas/ Rompin	1,212	160	200	230	240	270	280	300

Table 64 FLOOD FREQUENCY ANALYSIS AT
SELECTED GAUGING STATIONS (3/4)

Basin No.	River	Station	Catchment area (km ²)	Discharge (m ³ /s) for Return Period (yr)						
				2	5	10	20	50	100	200
	Gemanceh	Jl. Gemas/Rom. (2525413)	453	55	100	140	180	260	310	420
	Muar	K. Pilah (2722413)	370	62	99	130	150	190	220	260
22	Batu Pahat/ Bekok	B8 Jam. Yong Peng/Labis (2130432)	350	43	60	70	80	90	100	110
	Sembrong	B2 Air Hitam (1931423)	186	36	64	94	140	220	310	470
24	Johor	R. Panjang (1737451)	1,130	180	270	340	400	480	540	620
27	Endau/ Lenggor	B42 Kluang/ Mersing (2237471)	207	190	280	320	340	400	430	-
30	Pahang	Temeroh* (3424411)	19,000	3,200	5,500	6,200	8,500	10,500	11,500	-
	Pahang	Sg. Yap* (4023412)	13,200	2,800	4,900	6,200	7,500	9,200	10,500	-
	Bentong	K. Marong Br. (3519426)	241	170	250	290	310	350	380	400

Table 65 FLOOD FREQUENCY ANALYSIS AT
SELECTED GAUGING STATIONS (4/4)

Basin No.	River	Station	Catchment area (km ²)	Discharge (m ³ /s) for Return Period (yr)						
				2	5	10	20	50	100	200
36	Trengganu	Kg. Tanggol* (5130432)	3,340	3,150	4,800	5,900	6,900	8,300	9,300	10,500
39	Kemasin	Peringat (6022421)	48	43	79	110	140	190	230	280
40	Kelantan	Jam Guille- mard* (5721442)	11,900	5,200	9,200	11,900	14,400	17,100	19,000	21,000
41	Golok	R. Panjang (6019411)	561	250	340	400	460	530	590	650

- Remarks:
- * Results of frequency analysis in Ref. PN 7, 8, 9, 10 and 11 adopted.
 - Data discarded - due to much difference (+ 100%) from DID's regional flood estimate (Ref. PN 11): 5007423, 4611463, 3116433, 2528414, 4907422,
- inconsistent to detailed study result (Ref. PN 10): 4019462, 3022431, 3527410.

Table 66 DEPTH-DURATION-FREQUENCY OF POINT RAINFALL (1/2)

Station No.	Return Period (yrs)	Rainfall Depth (mm)									
		Storm Duration (hrs)									
		1/4	1/2	1	2	3	6	12	24	48	72
<u>North-West</u>											
5210069	2	30	47	61	70	74	77	83	91	106	117
	5	39	60	76		104	108	115	131	152	152
	10	45	68	87		124	129	136	158	182	175
	20	51	76	96	117	143	149	156	184	211	198
	50	58	87	109		168	174	182	217	249	227
100	64	95	118		186	193	201	243	277	248	
554035	2	26	41	60	75	76	80	86	100	117	122
	5	34	51	84		105	115	120	144	169	178
	10	39	58	99		125	137	142	173	204	215
	20	43	65	114	135	144	159	163	201	238	251
	50	50	73	133		168	187	191	238	281	297
<u>West</u>											
4708084	2	33	42	56	62	67	72	74	85	98	101
	5	34	55	69		80	85	90	105	120	125
	10	39	64	77		89	94	100	118	135	140
	20	44	72	85	94	97	103	109	131	149	155
	50	51	84	95		108	114	122	148	168	174
100	55	92	102		116	122	131	160	181	189	
3411017	2	29	41	55	69	74	82	83	95	108	119
	5	38	51	75		112	118	118	149	160	168
	10	42	58	89		137	142	142	185	193	201
	20	47	64	101	145	161	165	165	219	226	232
	50	53	72	117		192	194	194	263	268	273
<u>Port Dickson - Muar Coast</u>											
2322004	2	35	52	68	76	77	84	86	100	112	123
	5	40	62	79		97	107	110	125	142	161
	10	43	68	86		110	123	127	141	163	186
	20	46	74	93	109	123	133	143	157	182	211
50	51	82	102		139	157	163	178	207	242	

Table 67 DEPTH-DURATION-FREQUENCY OF POINT RAINFALL (2/2)

Station No.	Return Period (yrs)	Rainfall Depth (mm)									
		Storm Duration (hrs)									
		1/4	1/2	1	2	3	6	12	24	48	72
<u>Port Dickson - Muar Coast</u>											
1829078	2	27	46	57	67	76	86	94	112	127	144
	5	33	55	68		104	129	135	155	180	202
	10	37	62	75		122	157	163	184	215	240
	20	41	68	82	104	140	184	189	212	249	277
	50	45	75	90		163	219	223	246	293	325
<u>South-West</u>											
1437116	2	33	51	65	75	79	91	109	129	163	187
	5	42	64	81		96	110	141	207	268	312
	10	48	72	92		107	123	162	259	337	395
	20	53	80	102	109	118	135	182	309	404	475
	50	61	90	115		132	151	208	373	491	578
<u>East</u>											
5725006	2	25	40	56	74	87	121	155	221	262	308
	5	30	52	83		137	198	249	352	441	532
	10	34	59	100		170	249	312	439	560	680
	20	38	67	117	168	201	298	372	522	674	823
	50	42	139			243	362	450	630	822	1007
5331048	2	20	31	49	60	66	86	135	201	246	279
	5	28	44	66		95	128	225	297	383	461
	10	34	52	76		115	155	285	360	474	581
	20	39	60	87	112	133	181	342	421	561	697
	50	46	70	101		157	215	416	500	674	847
2636170	2	31	50	66	89	106	133	155	206	257	282
	5	39	61	83		144	170	192	292	346	382
	10	44	69	94		170	194	217	350	405	448
	20	50	77	105	160	194	217	241	404	462	512
	50	56	86	119		226	247	271	475	535	594
	100	61	93	129		250	269	294	529	590	655

Table 68 CONVERSION RATIO OF POINT RAINFALL
TO CATCHMENT AVERAGE RAINFALL

Catchment Area (km ²)	Storm Duration (hrs)				
	1/2	1	3	6	24
0	1.0	1.0	1.0	1.0	1.0
100	0.73	0.83	0.91	0.94	0.96
200	0.64	0.75	0.87	0.91	0.94
400	0.57	0.68	0.81	0.87	0.93
600		0.66	0.79	0.85	0.92
800			0.79	0.84	0.92
1,000				0.83	0.91

Table 69 FLOOD PEAK ESTIMATE

Station No.	Catchment Area (km ²)	Dimensionless Hydrograph		50-yr flood Peak Discharge (m ³ /s)	
		Lg (hrs)	Dp	Estimated	Frequency Analysis
1931423	186	56.5	0.81	107	220
2224432	161	29.6	0.76	106	51
2237471	207	32.7	0.81	346	400
3116434	145	11.3	0.94	176	100
3615412	186	7.8	0.82	646	79
3913458	287	12.9	0.95	493	180
4311464	438	17.1	0.83	339	135
4610466	245	27.6	0.96	108	190
5405421	131	13.2	0.90	193	64
6022421	48	34.3	0.80	193	190

Remarks: Lg Catchment lag time

Dp Peak ordinate of the dimensionless hydrograph

Table 70 INVENTORY OF SEDIMENT SURVEY STATION

	Station No.	River	Catchment Area (km ²)	Data	
				Period	Nos.
1	1737451	Johor	1130	1978 - 80	13
2	2625412	Muar	1212	76 - 79	33
3	2816441	Langat	1240	76 - 80	34
4	3024432	Serting	950	74 - 78	26
5	3414421	Selangor	1450	77 - 79	29
6	3423421	Semantan	2920	72 - 78	33
7	3424411	Pahang	19000	72 - 74	34
8	3813411	Bernam	1090	77 - 79	34
9	4019462	Lipis	1670	72 - 76	34
10	4023412	Pahang	13200	72 - 74	32
11	4212467	Kinta	119	77 - 79	34
12	4223450	Tembeling	5050	74 - 77	31
13	4809443	Perak	7769	77 - 79	34
14	5007421	Kurau	337	78 - 80	29
15	5206432	Krian	629	77 - 78	34
16	5606410	Muda	3330	76 - 78	34
17	5721442	Kelantan	11900	-	21

Table 71 SEDIMENT CONCENTRATION

(Suspended load)

Rainfall Region	Station	Catchment Area (km ²)	Average Sediment Concentration (ppm)
North-West	5007521	337	90
	5206532	629	80
	5606510	3,330	50
West	3813411	1,090	230
	3414421	1,450	880
	4809443	7,769	70
	4212467	119	2600
	2816411	1,240	740
Port Dickson -Muar Coast	2625512	1,212	60
	3024443	950	70
South-West	1737451	1,130	80
East	3423421	2,920	110
	3424411	19,000	140
	4019562	1,670	130
	4023512	13,200	150
	4223450	5,050	130
	5721442	11,900	150

Table 72 KELANG RIVER - PEAK FLOOD DISCHARGES
(Before and After Land Development)

Case	Basin Condition	River Improvement	Flow Regulation by Dam	Peak Discharge (m ³ /S)	
				Market Street	Puchong Drop
<u>1971 Flood</u>					
1	1,971	Not improved	Kelang Gates dam	470	410
2	1,971	Improved	Kelang Gates dam	550	670
3	1,990	Improved	Kelang Gates dam	750	1,220
4	1,990	Improved	3 dams *	540	1,000
<u>100-Year Flood</u>					
5	1,990	Improved	Kelang Gates dam	1,100	1,750
6	1,990	Improved	3 dams *	720	1,380

Remarks : * Kelang Gates, Batre and Bombak dams

FIGURES

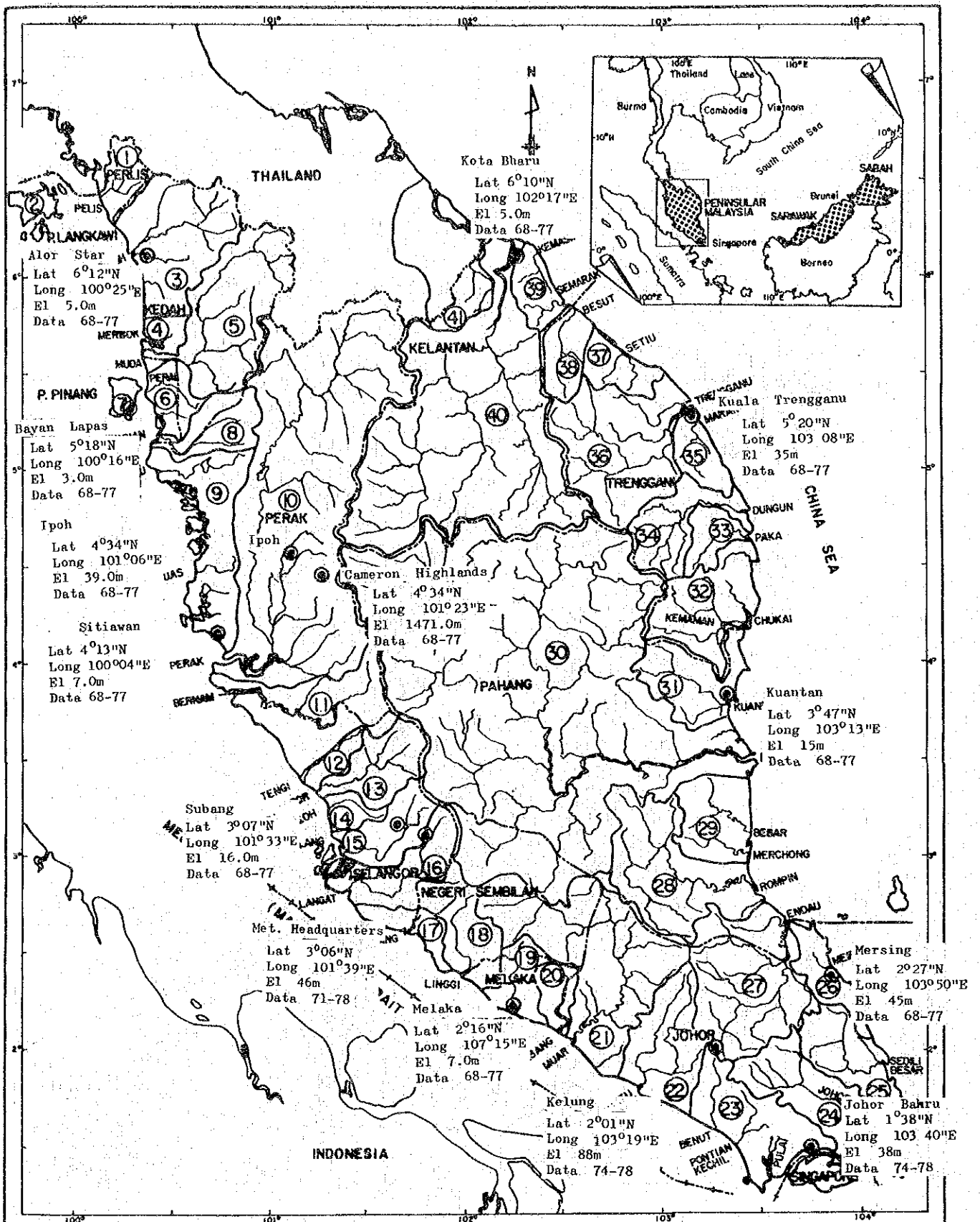
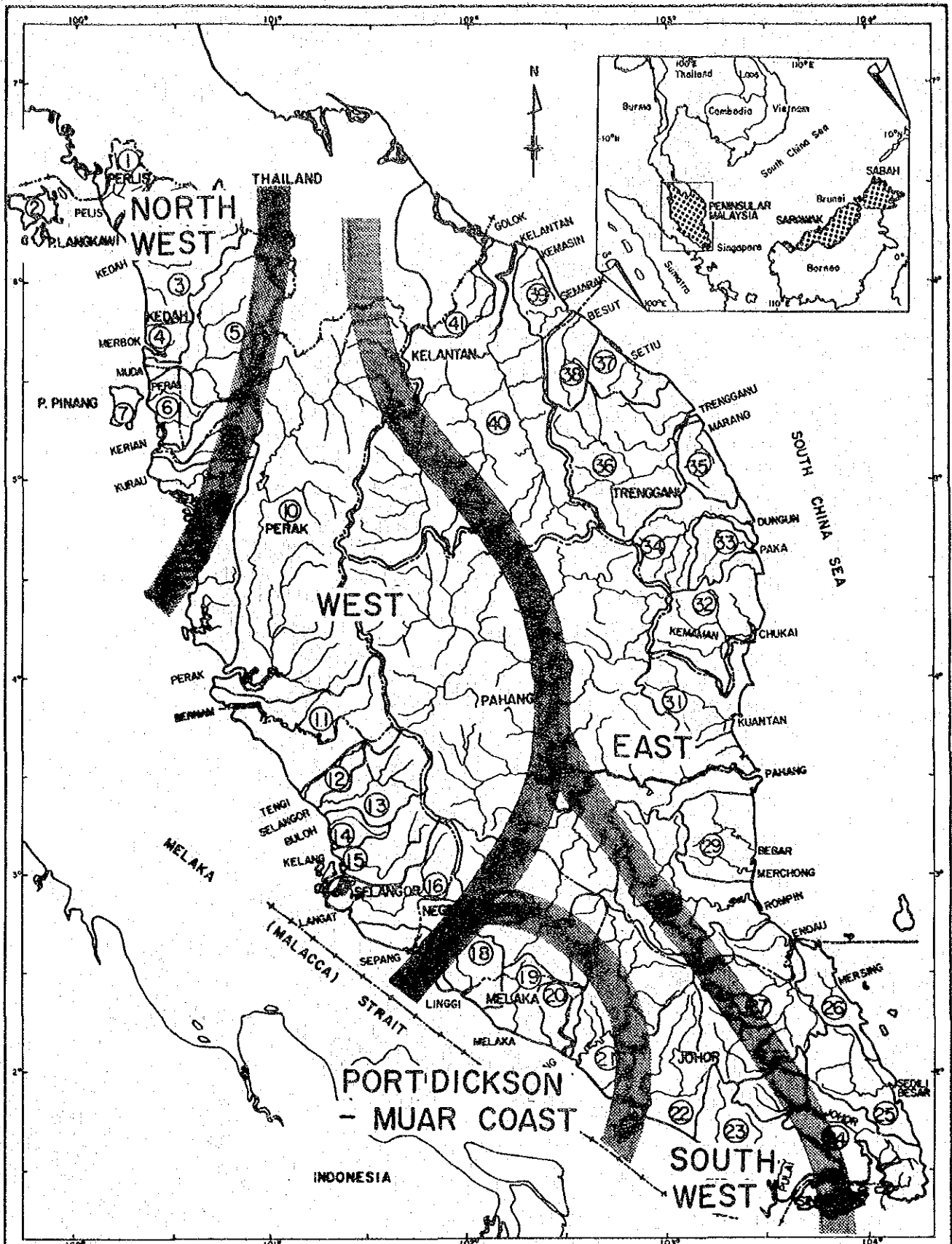


Fig. 1 Location of Principal Meteorological Stations

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LEGEND

- International Boundary
- State Boundary
- Basin Boundary
- ~~~~~ River
- ③ Basin Number

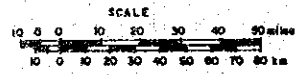


Fig. 2 Rainfall Regions

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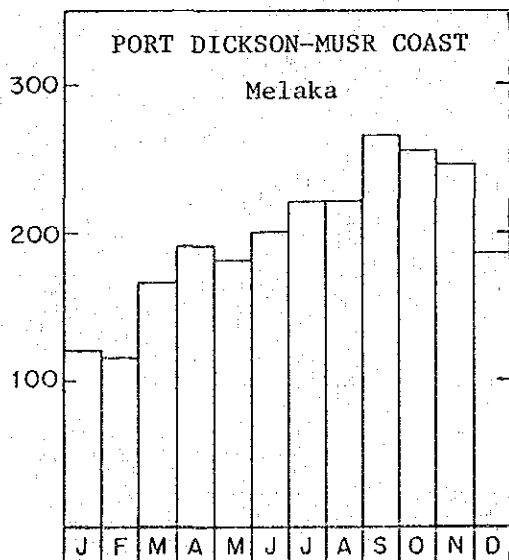
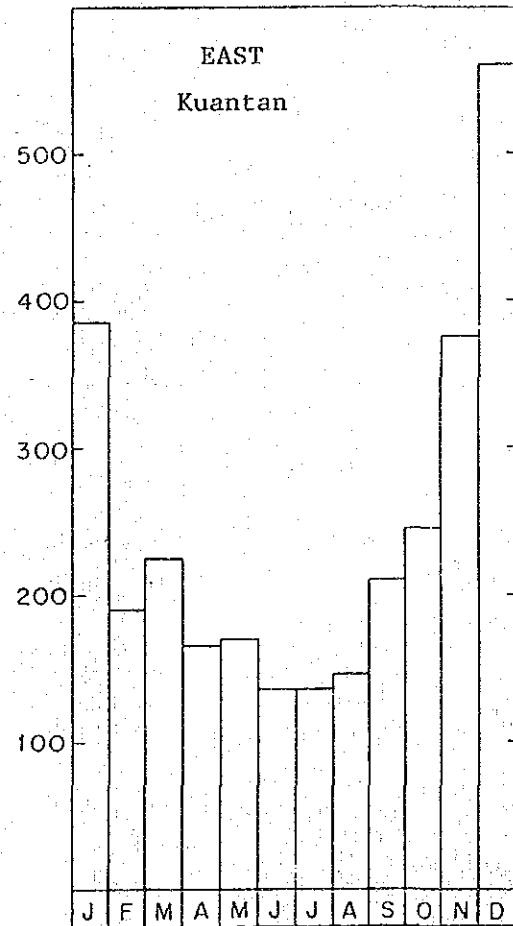
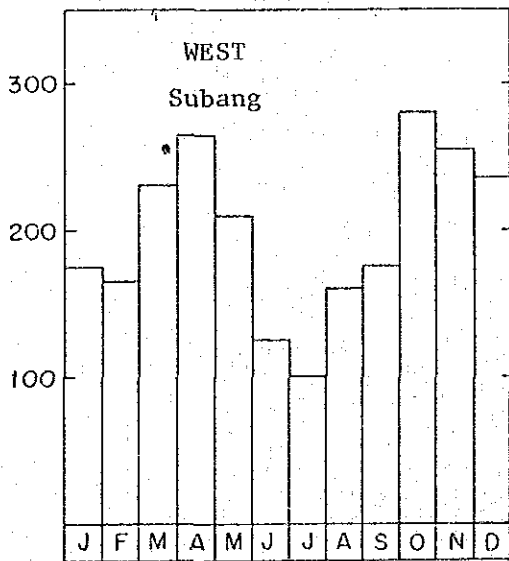
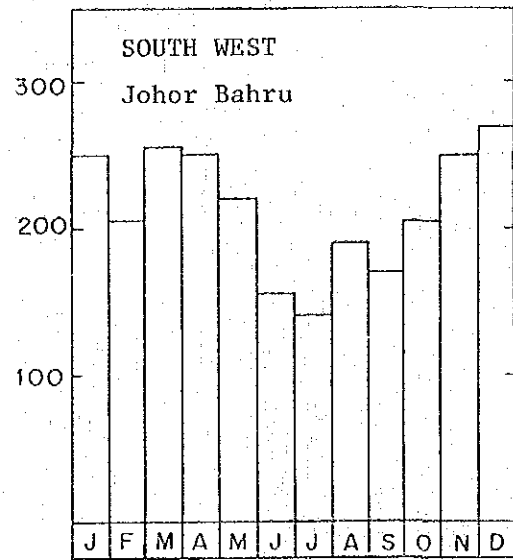
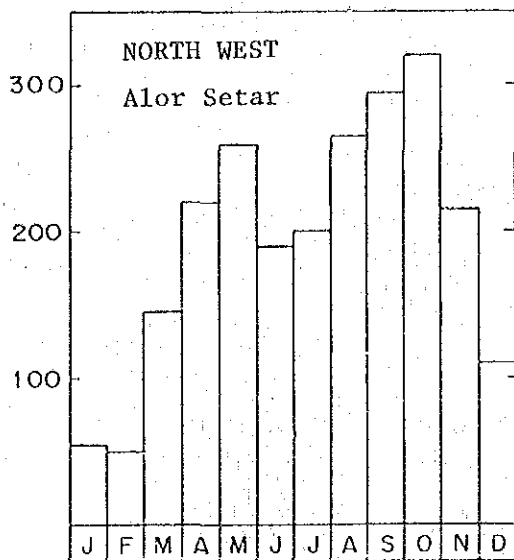


Fig. 3 Regional Rainfall

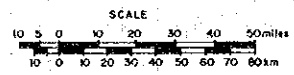
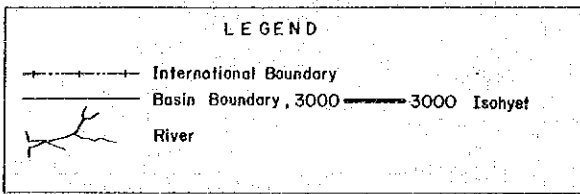
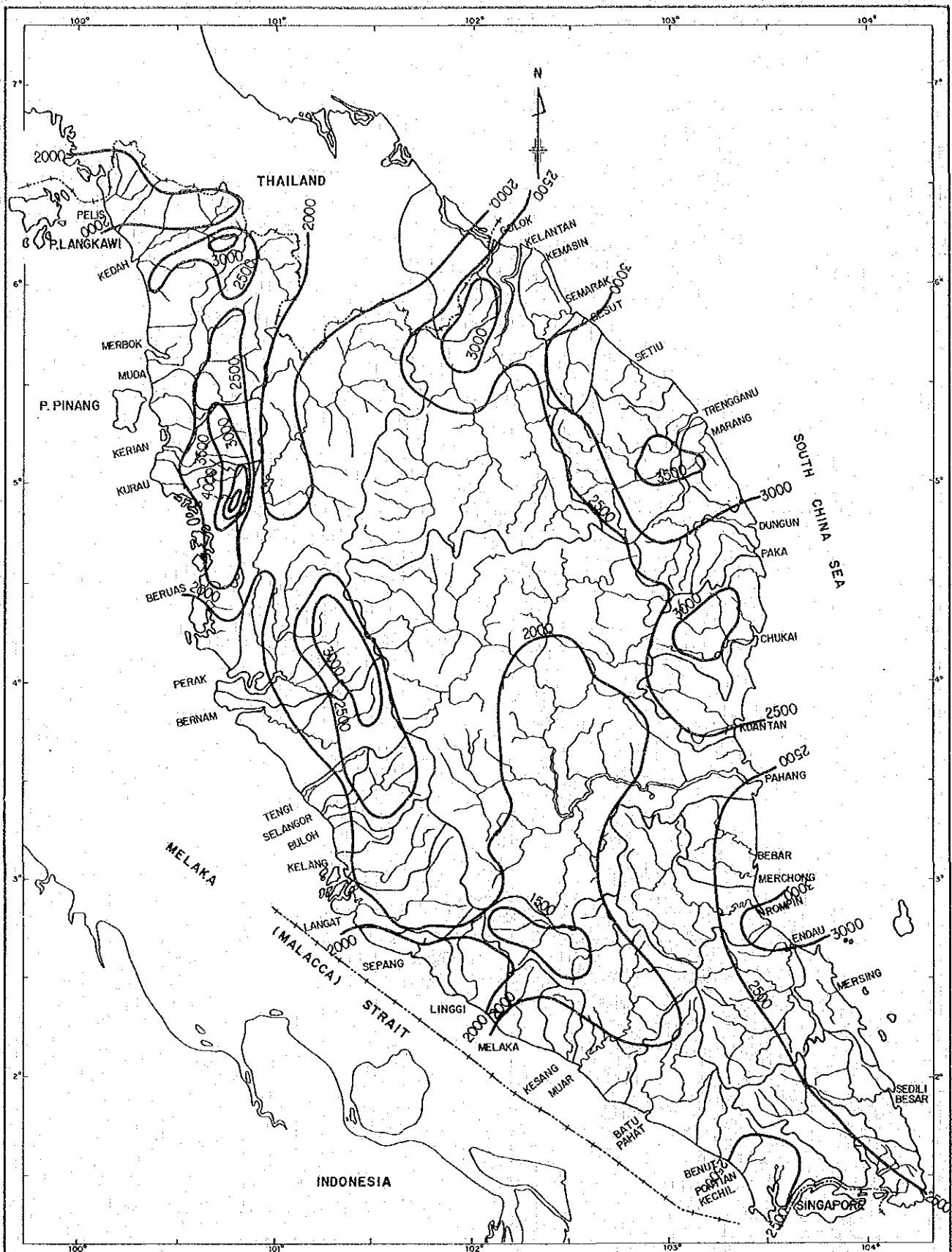


Fig. 4 Isohyetal Map of Annual Rainfall

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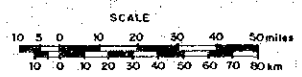
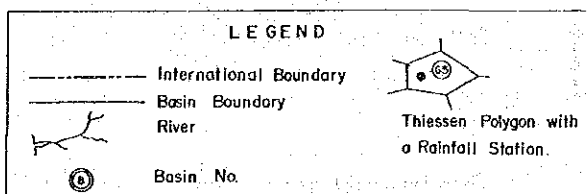
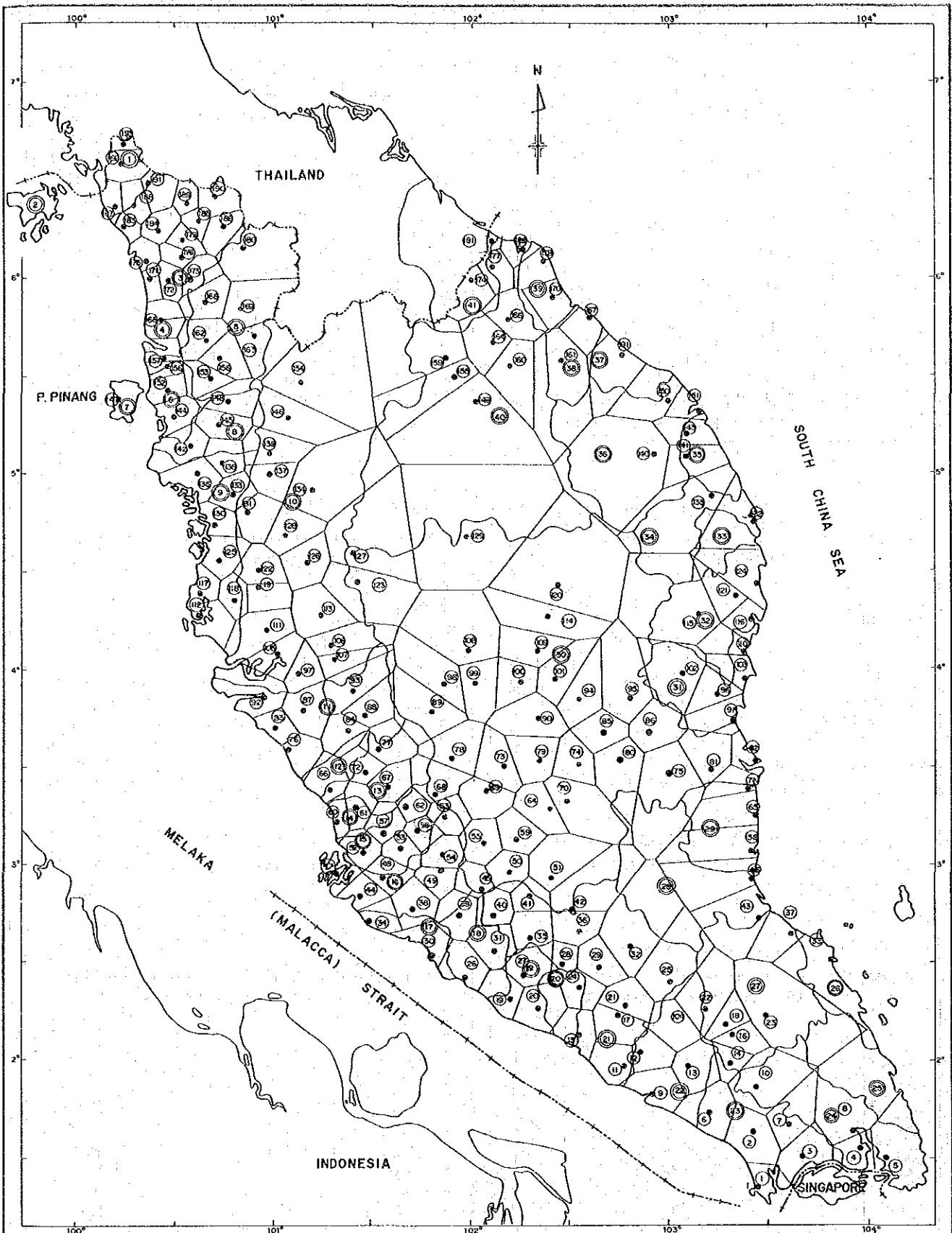


Fig. 5 Network of Thiessen Polygon

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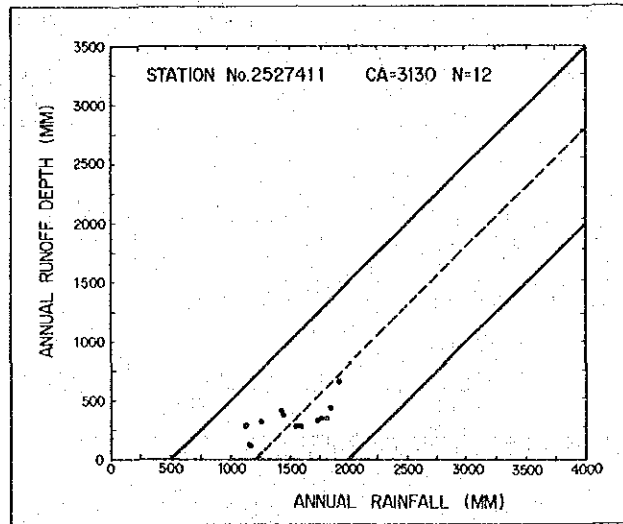
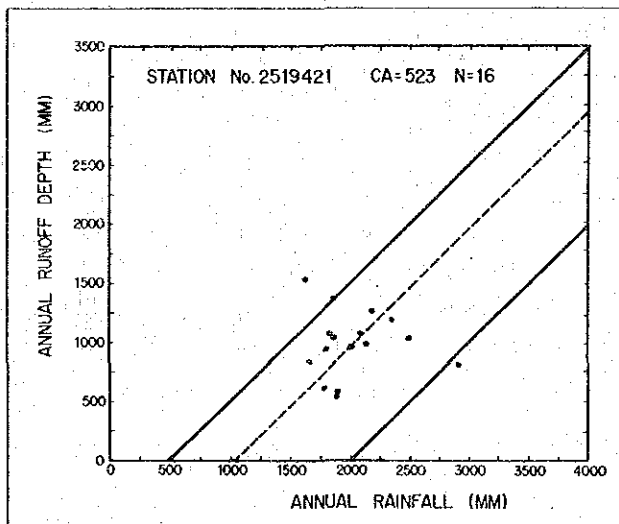
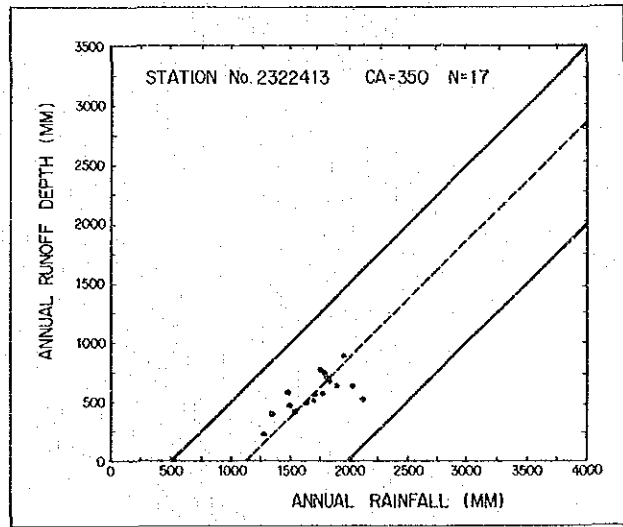
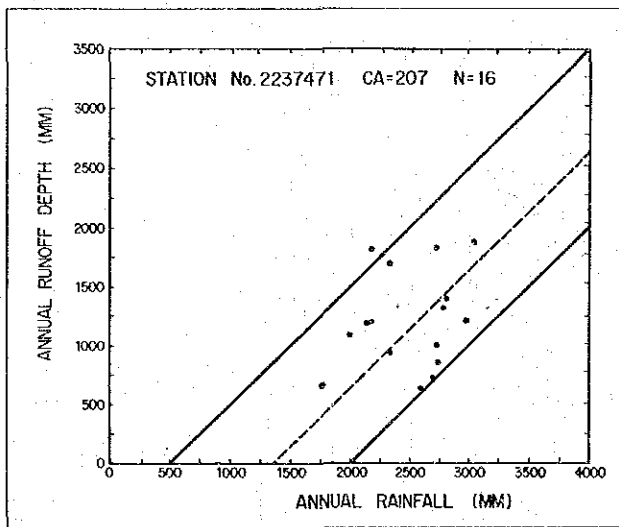
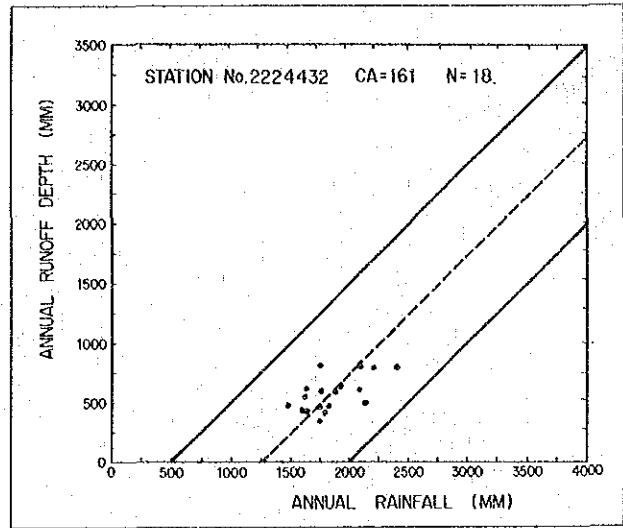
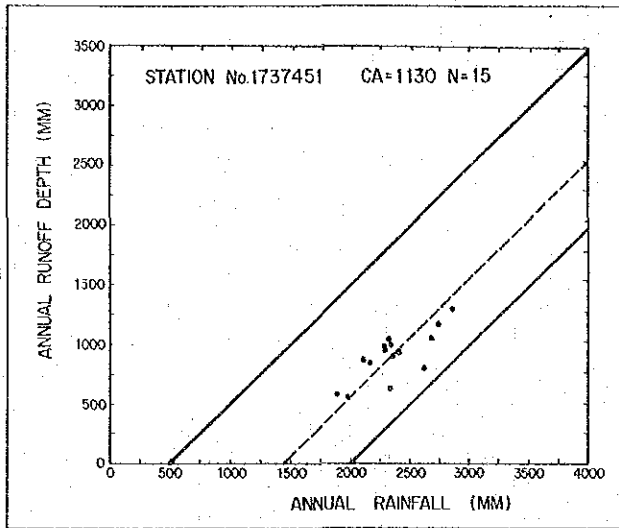


Fig. 6 Rainfall - Runoff Relationship (1/5)

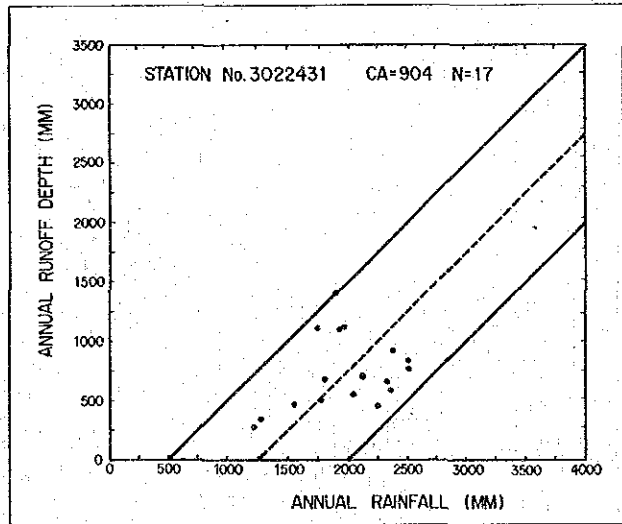
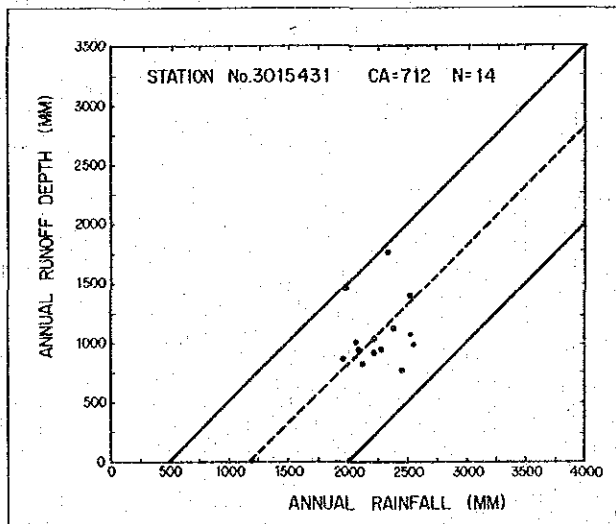
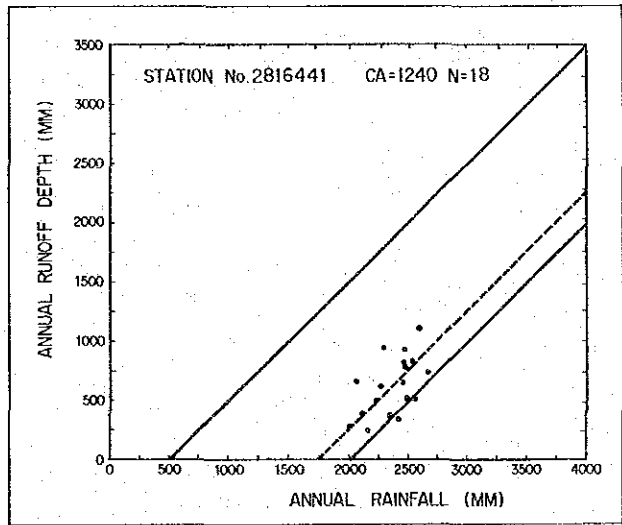
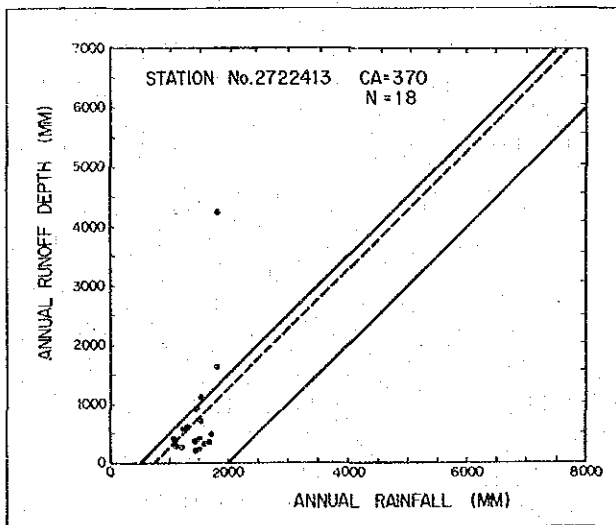
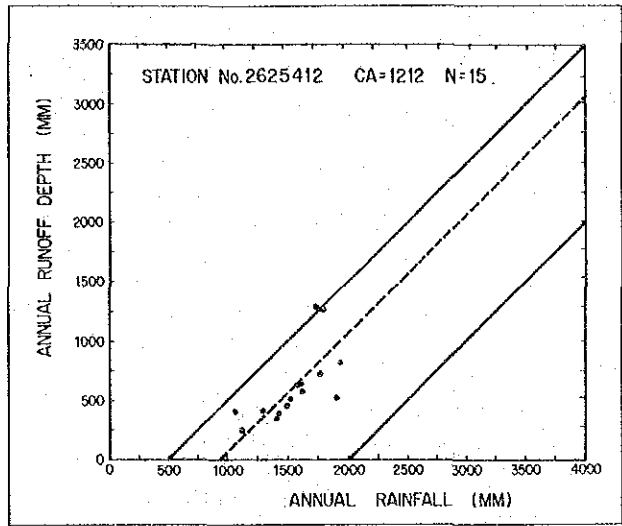
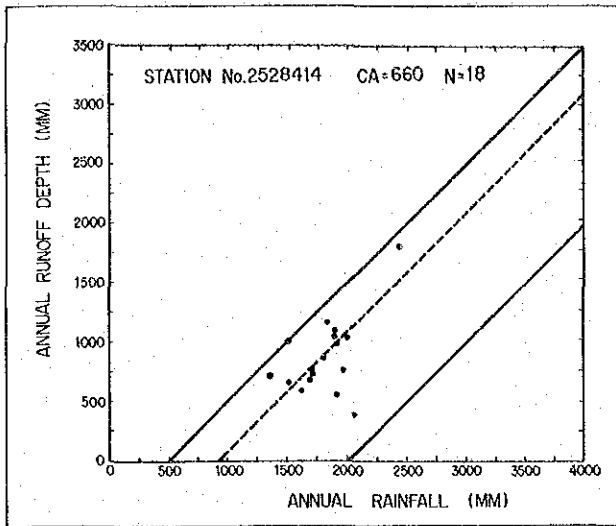


Fig. 7 Rainfall - Runoff Relationship (2/5)

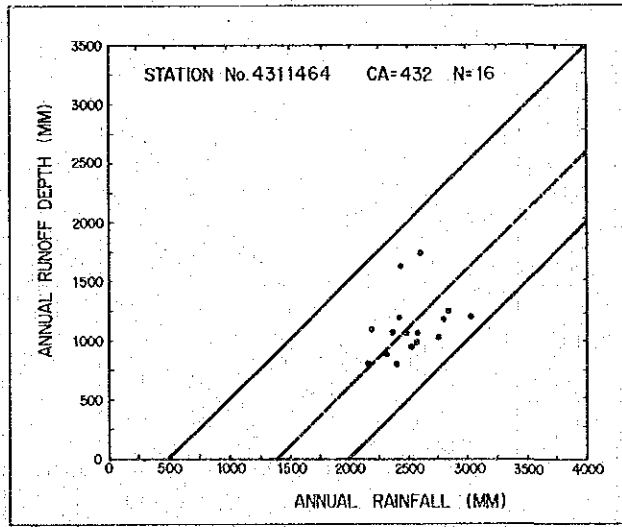
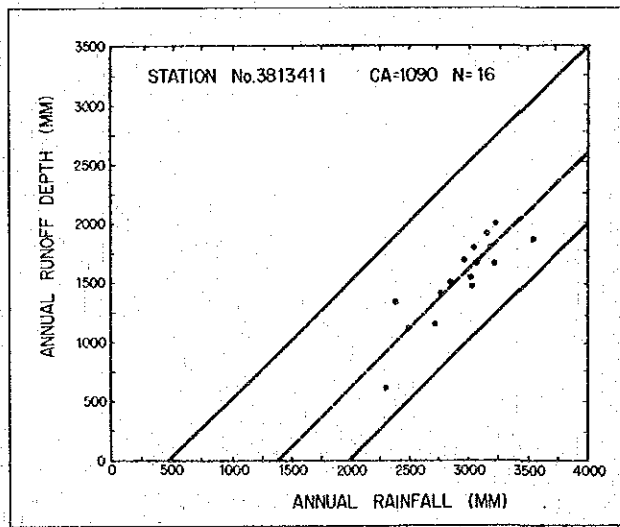
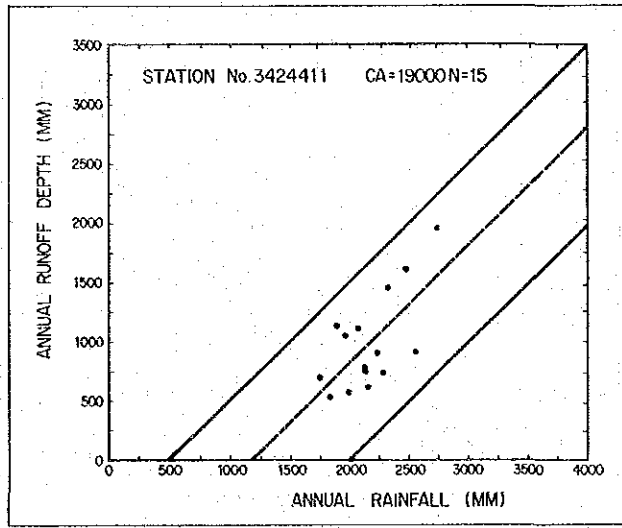
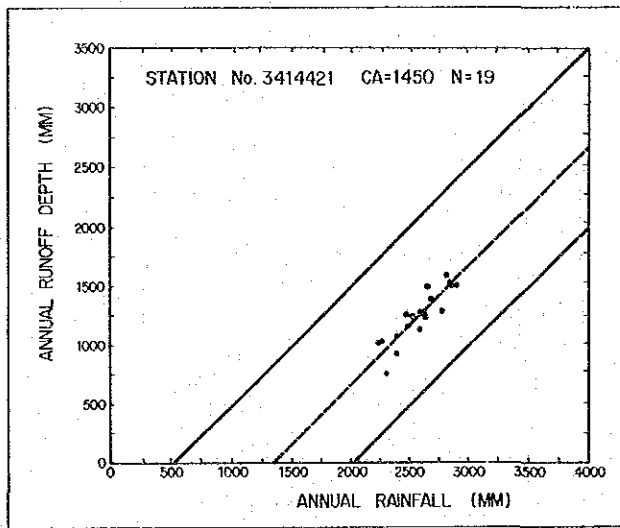
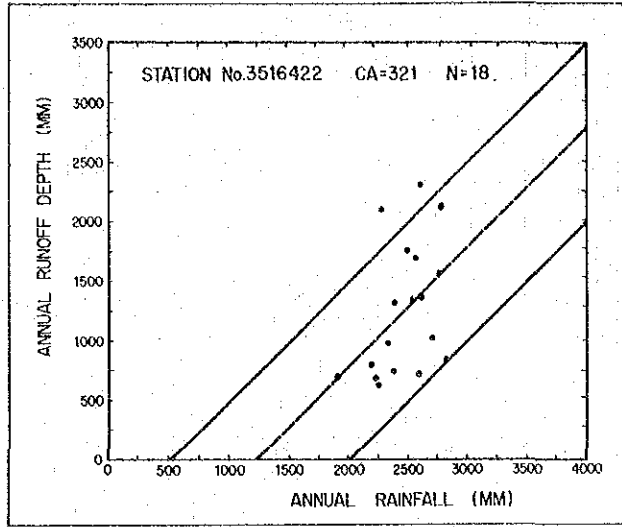
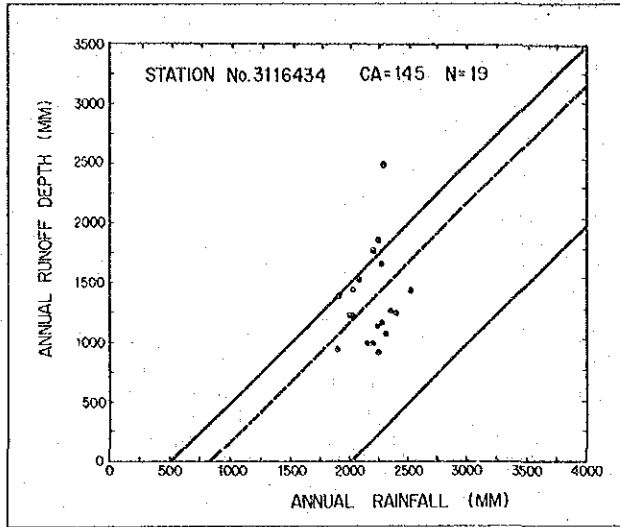


Fig. 8 Rainfall - Runoff Relationship (3/5)

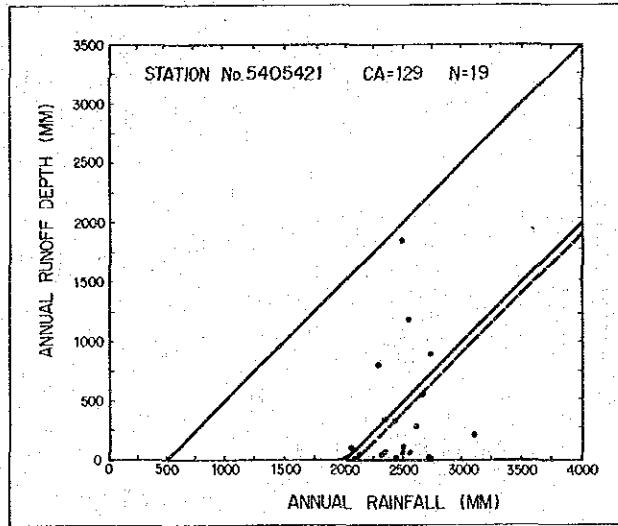
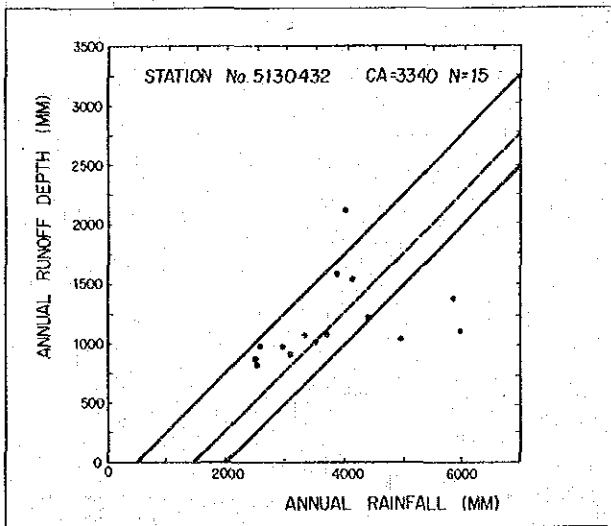
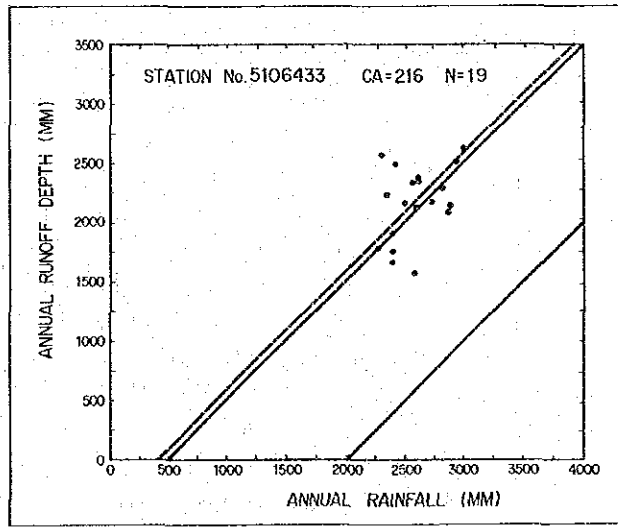
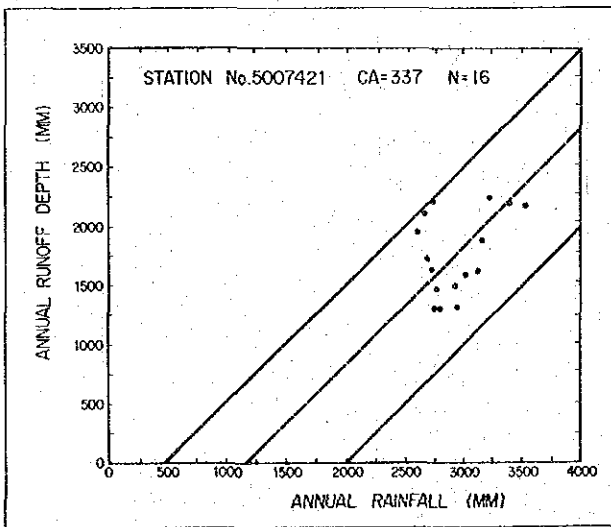
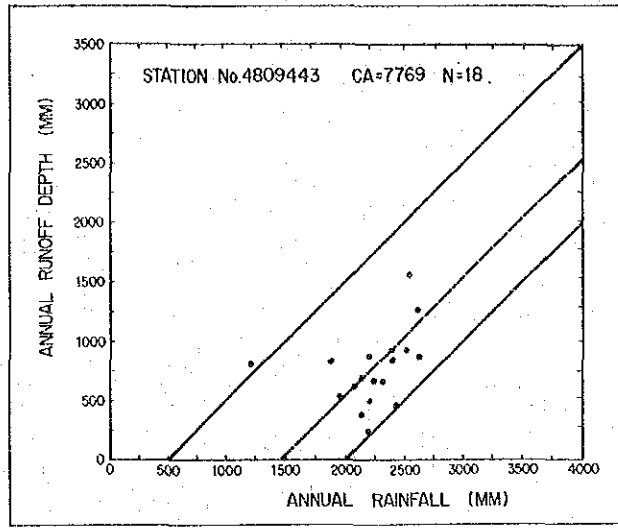
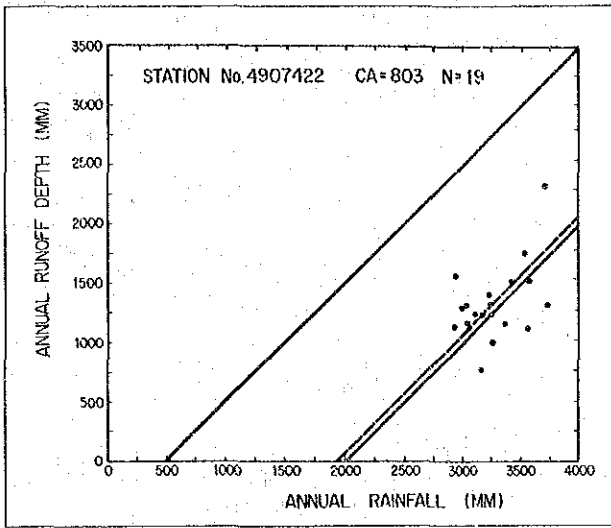


Fig. 9 Rainfall-Runoff Relationship (4/5)

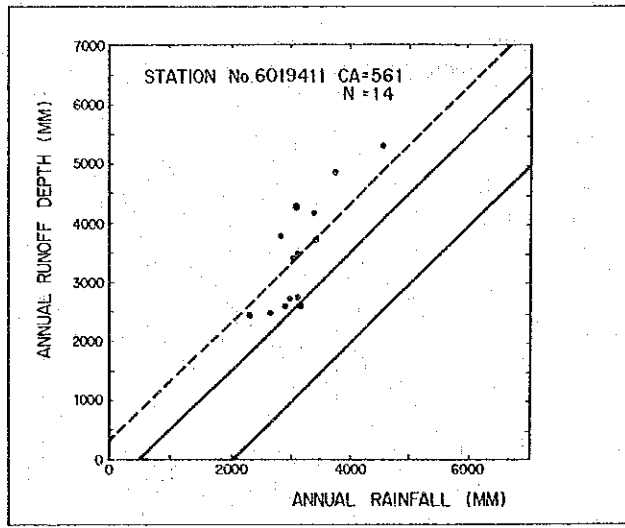
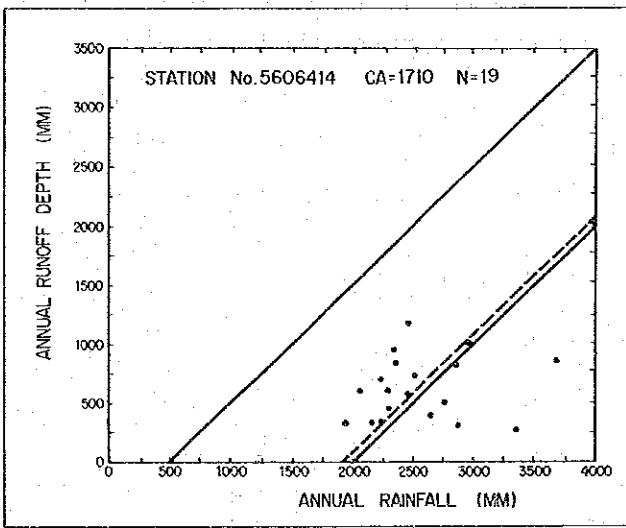
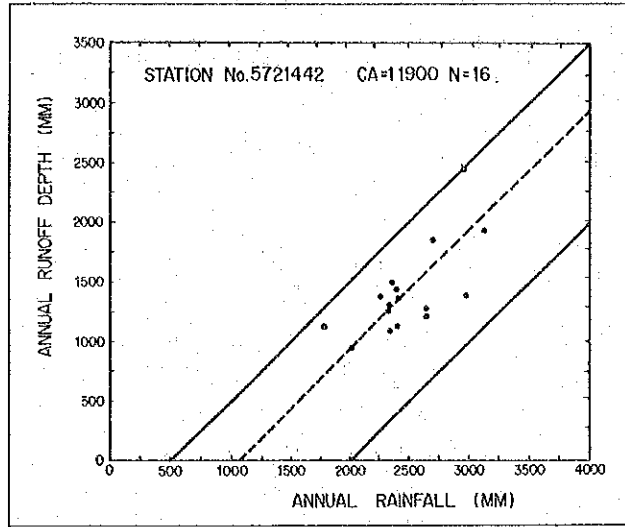
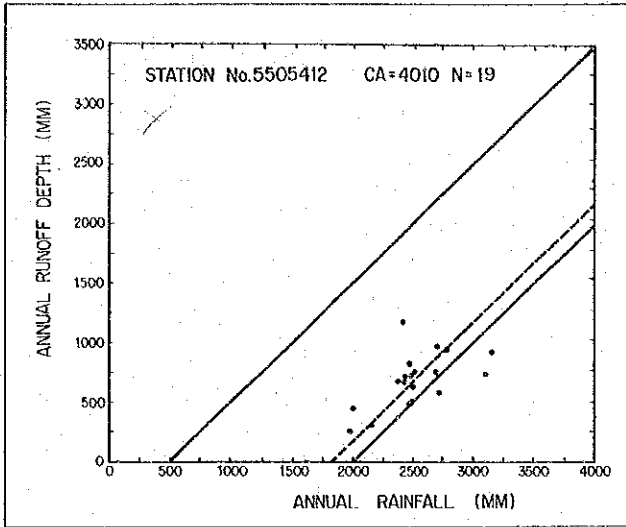
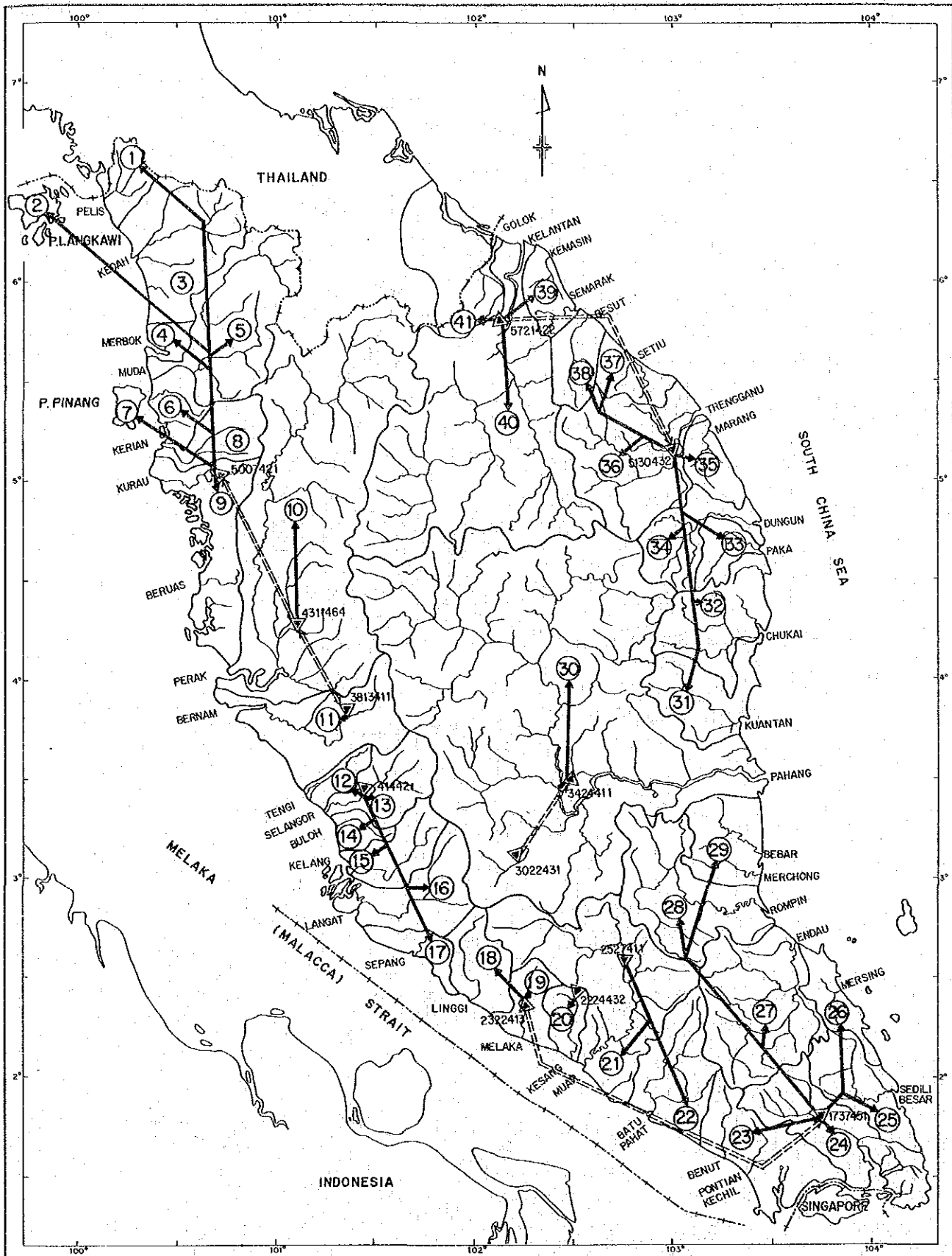


Fig. 10 Rainfall - Runoff Relationship (5 / 5)



LEGEND

	International Boundary		Basic Gauging Station with Station Number
	Basin Boundary		Gauge to Basin Discharge Estimation
	River		Gauge to Gauge Discharge Extrapolation
	Basin Number		

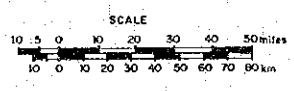
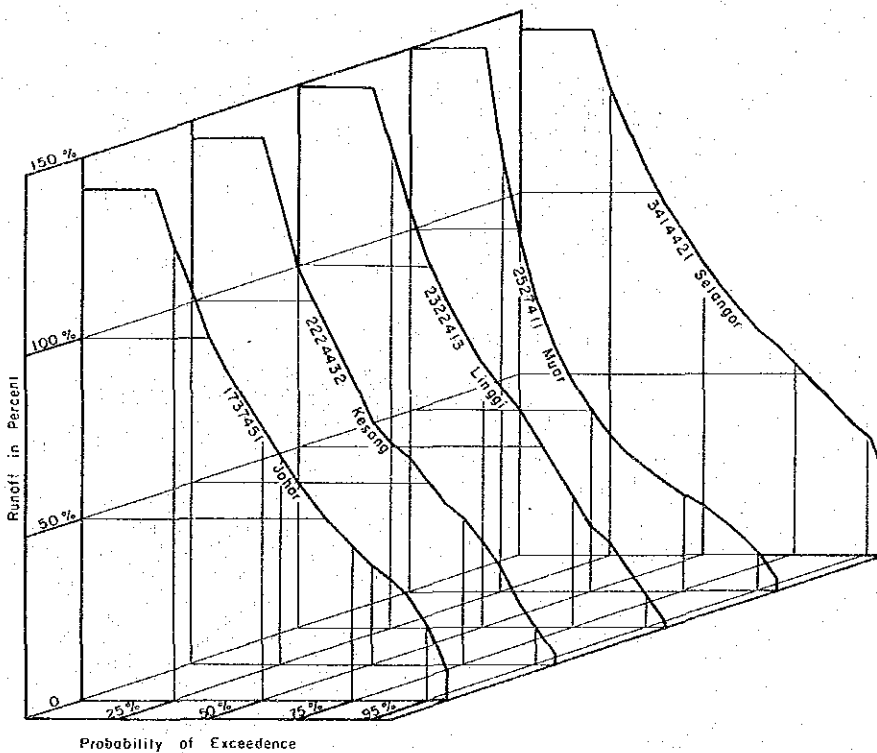
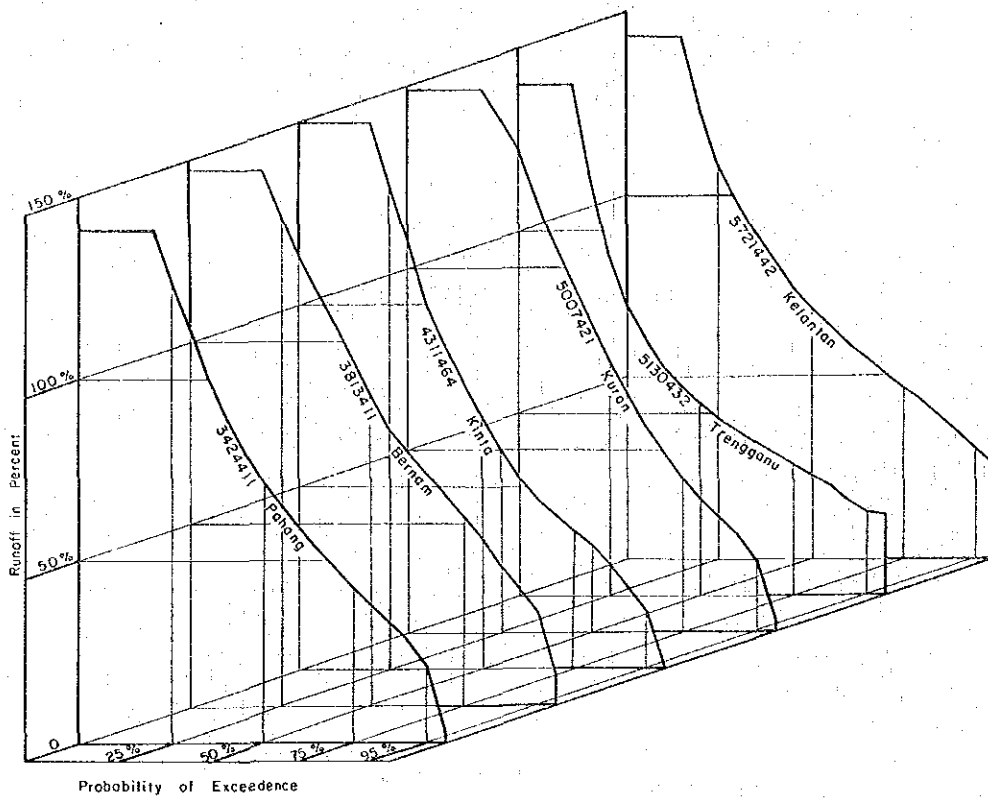
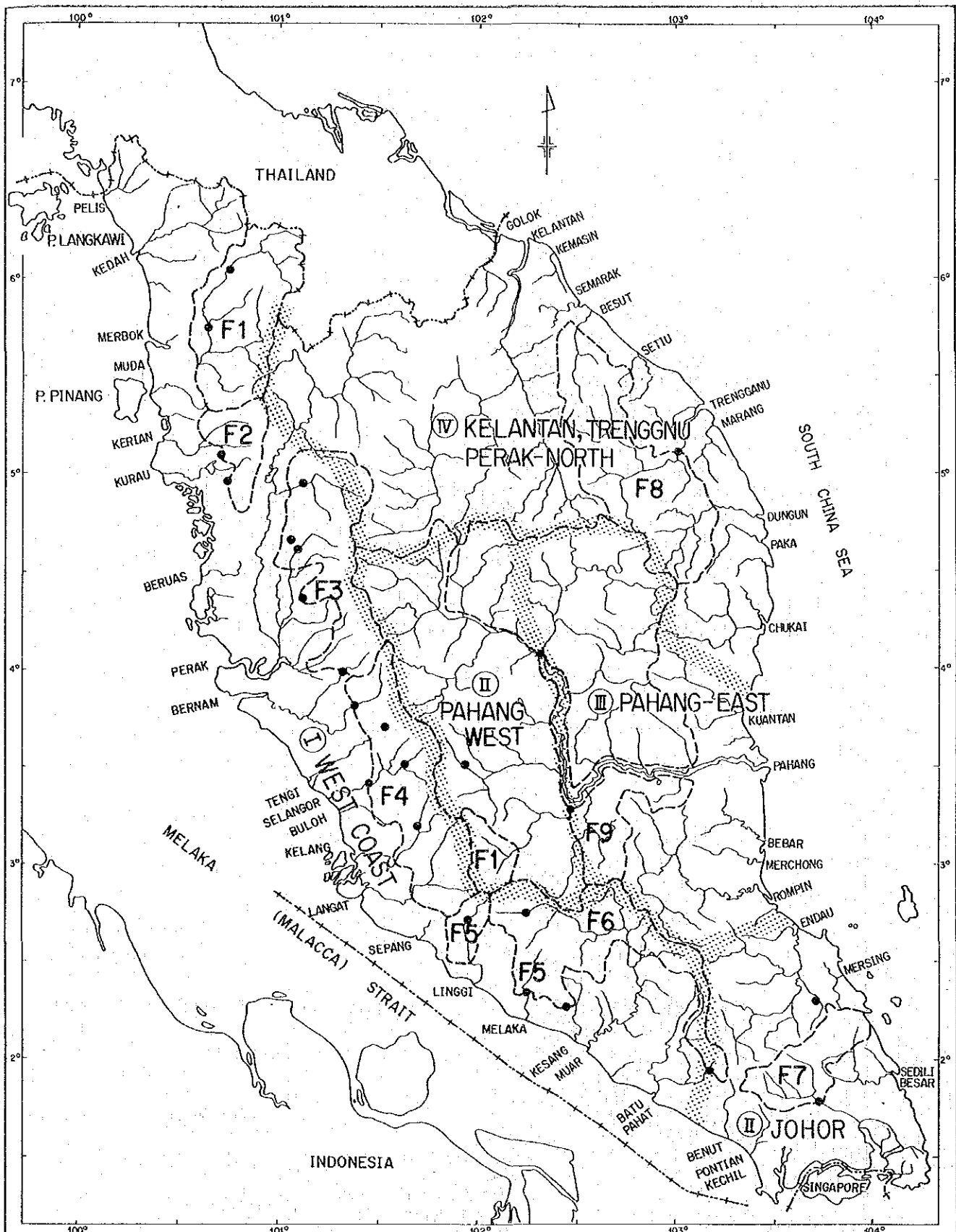


Fig. 11. Basic Station and Their Covering Basins



Remarks; Average runoff is 100 %

Fig. 12 Non-dimensional Flow Duration Curves



LEGEND

- F2 DTD's Flood Frequency Region (Ref. PN11)
- Gauging Station
- ▨ Flood Region Boundary (by this study)

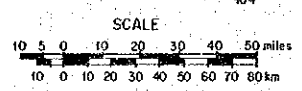
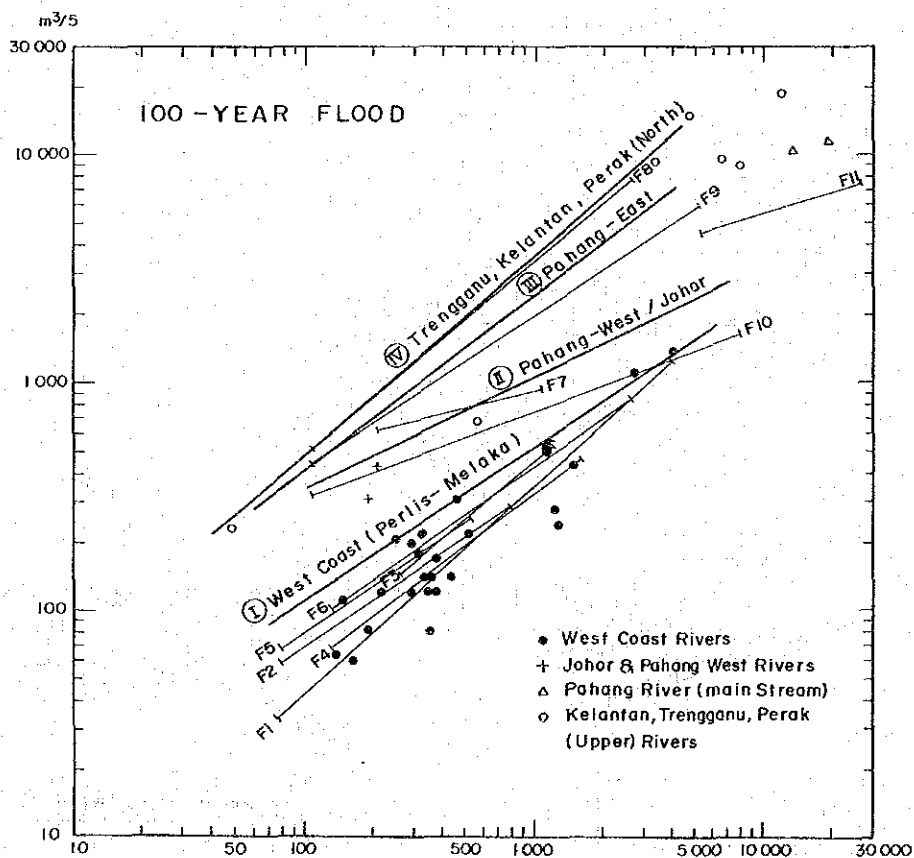
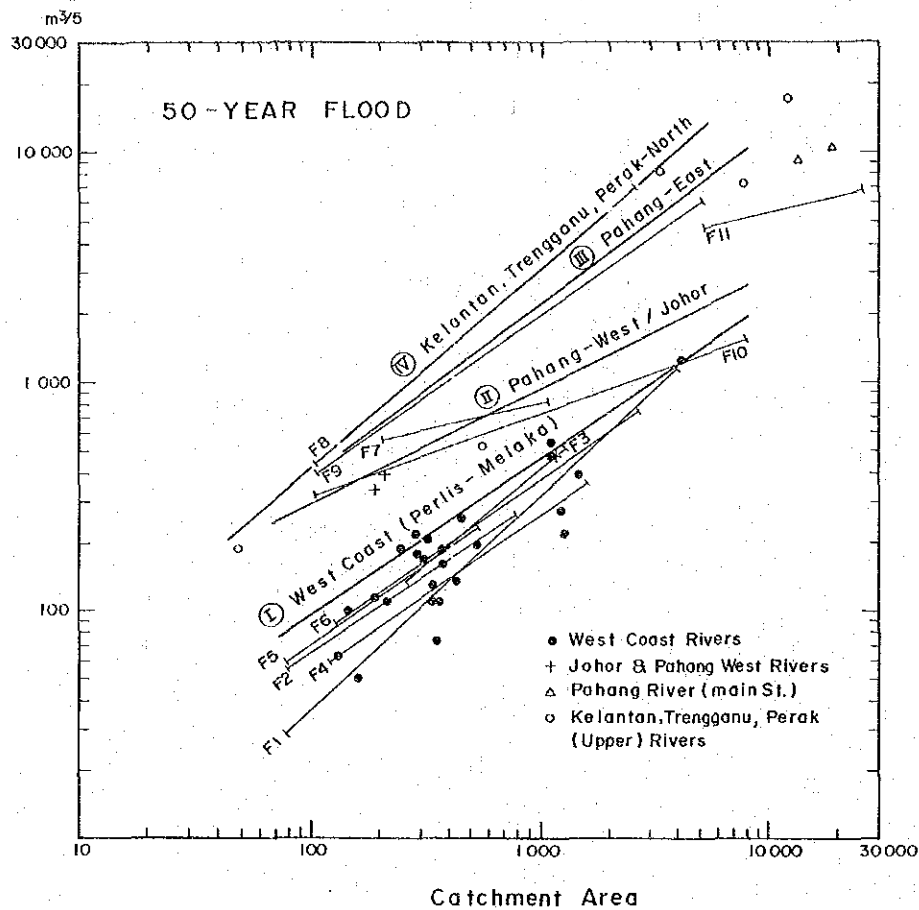


Fig.13 Flood Region

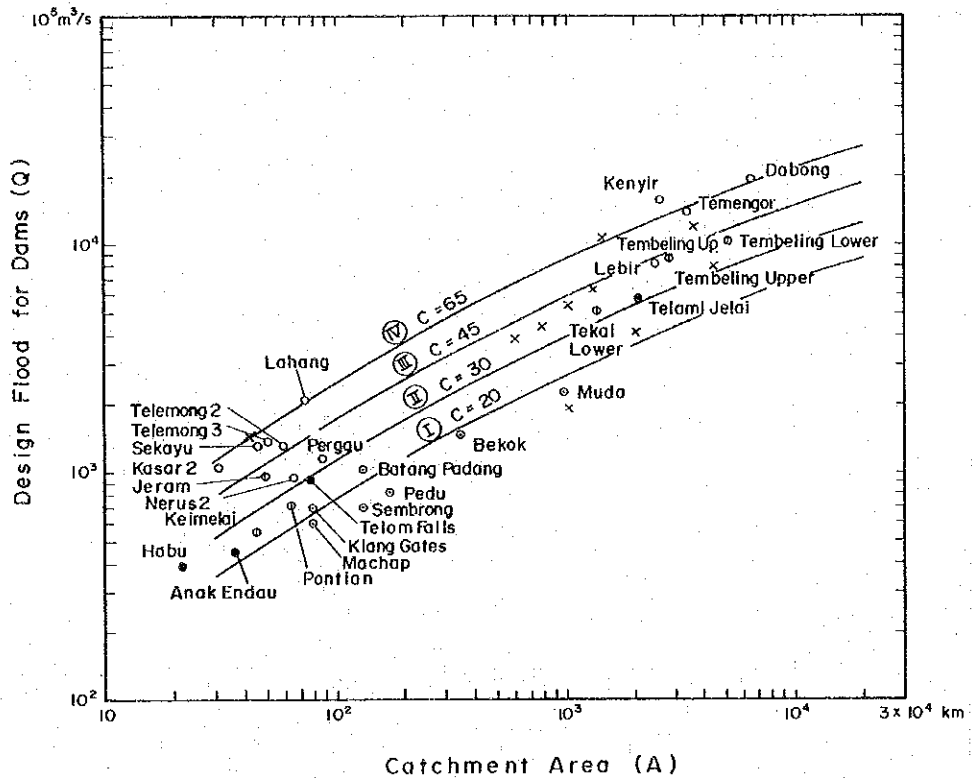
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 JAPAN INTERNATIONAL COOPERATION AGENCY



Note :

- + △ ○ Probable discharge at selected gauges
- F1-F9 Ref. 11
- Curve I drawn by enveloping ● & F1-F6
- Curves II & III are as analysed in Ref. 8
- Curve IV drawn by enveloping ○ & F8

Fig. 14 Envelope Curves for Regional Flood



- I ○ West coast
- II ● Johor & Pahang-West
- III ○ Pahang - East
- IV ○ Kelantan, Trengganu, Perak-North
- X Projects in other S.E. Asia countries
- C Creager's value

Fig. 15 Design Flood Envelope Curves

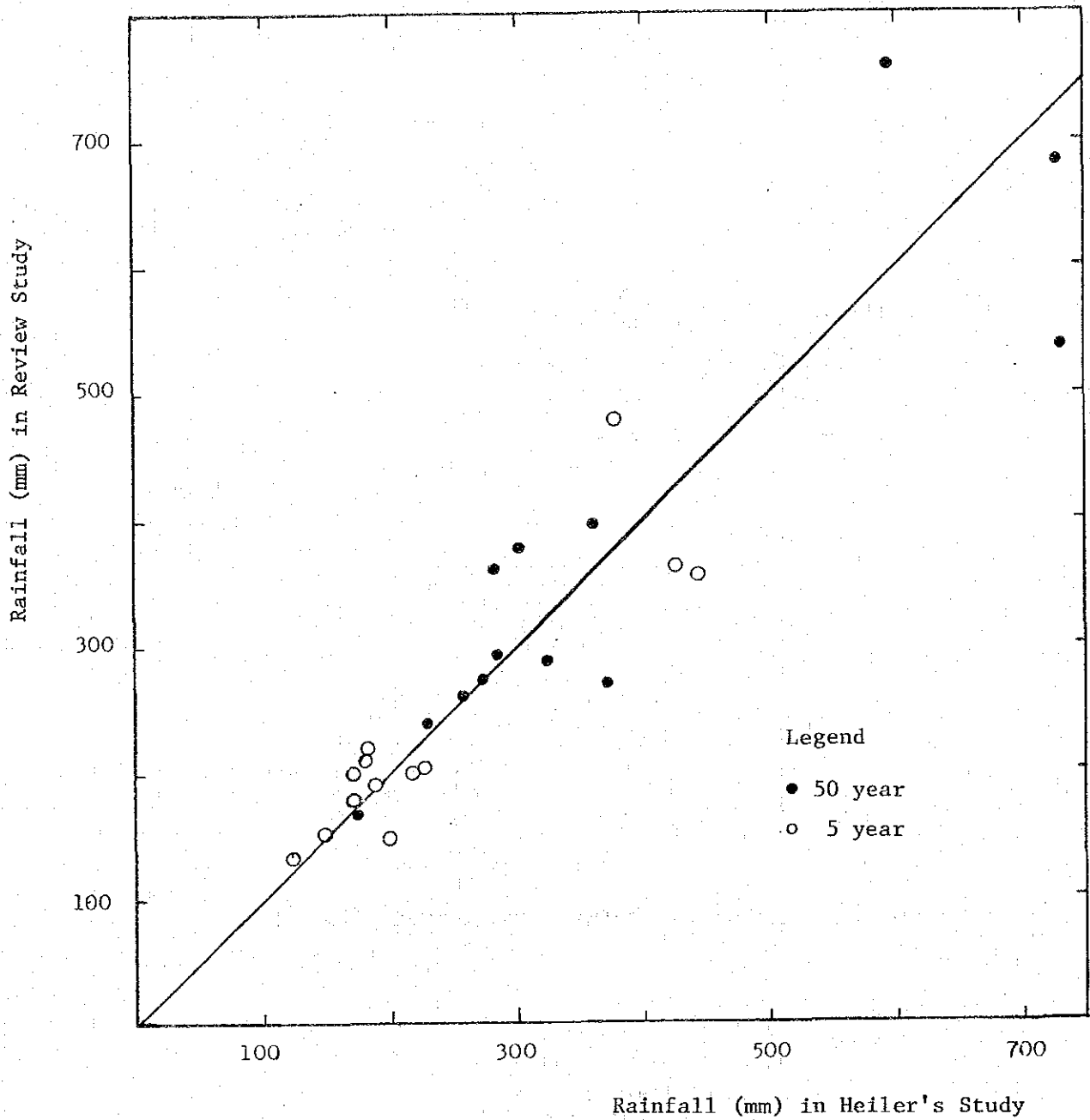


Fig. 16 Cross Check of Storm Frequency Analysis

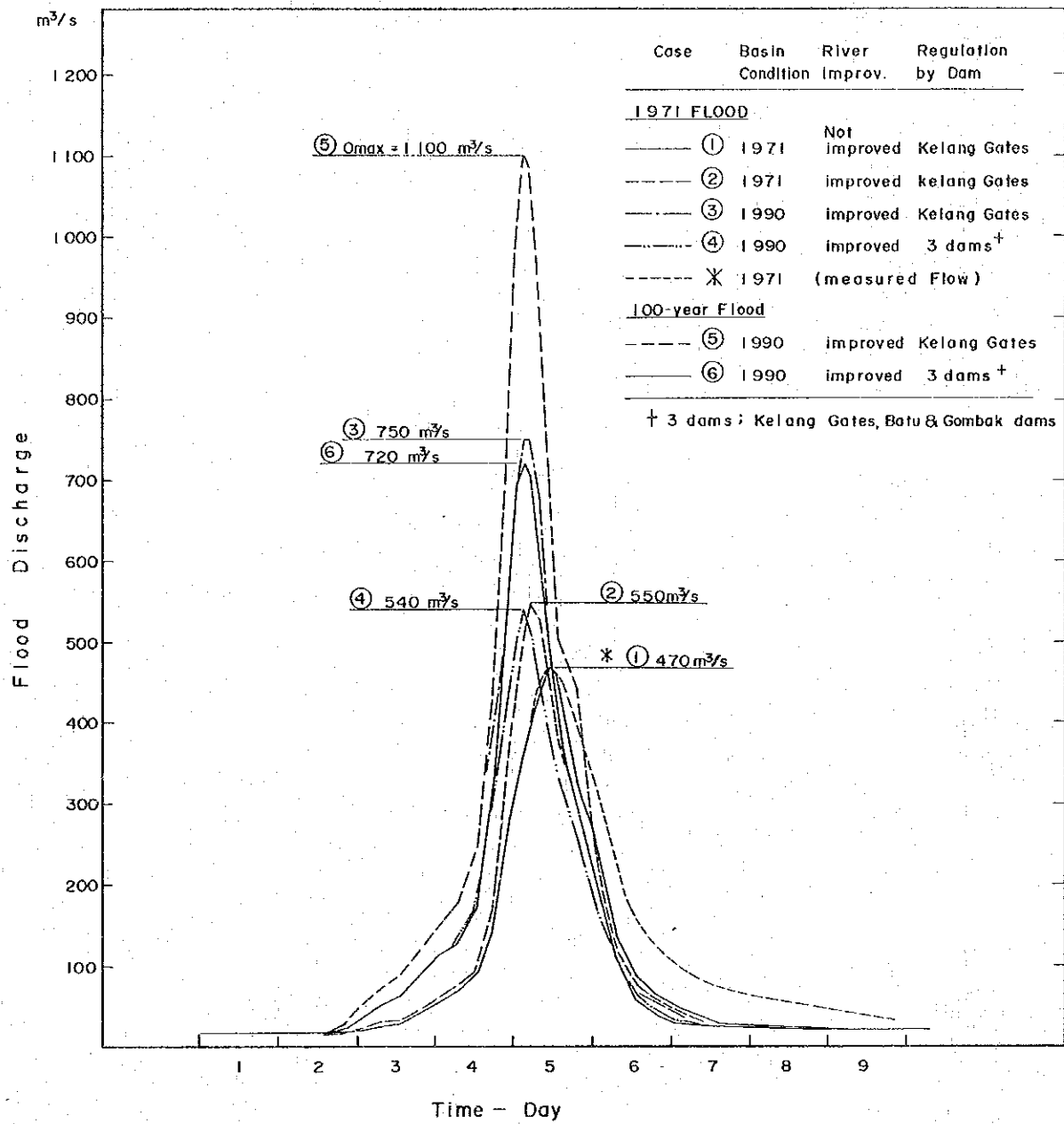


Fig.17 Kelang River Flood Hydrograph (1/2)
 - at Market Street Bridge

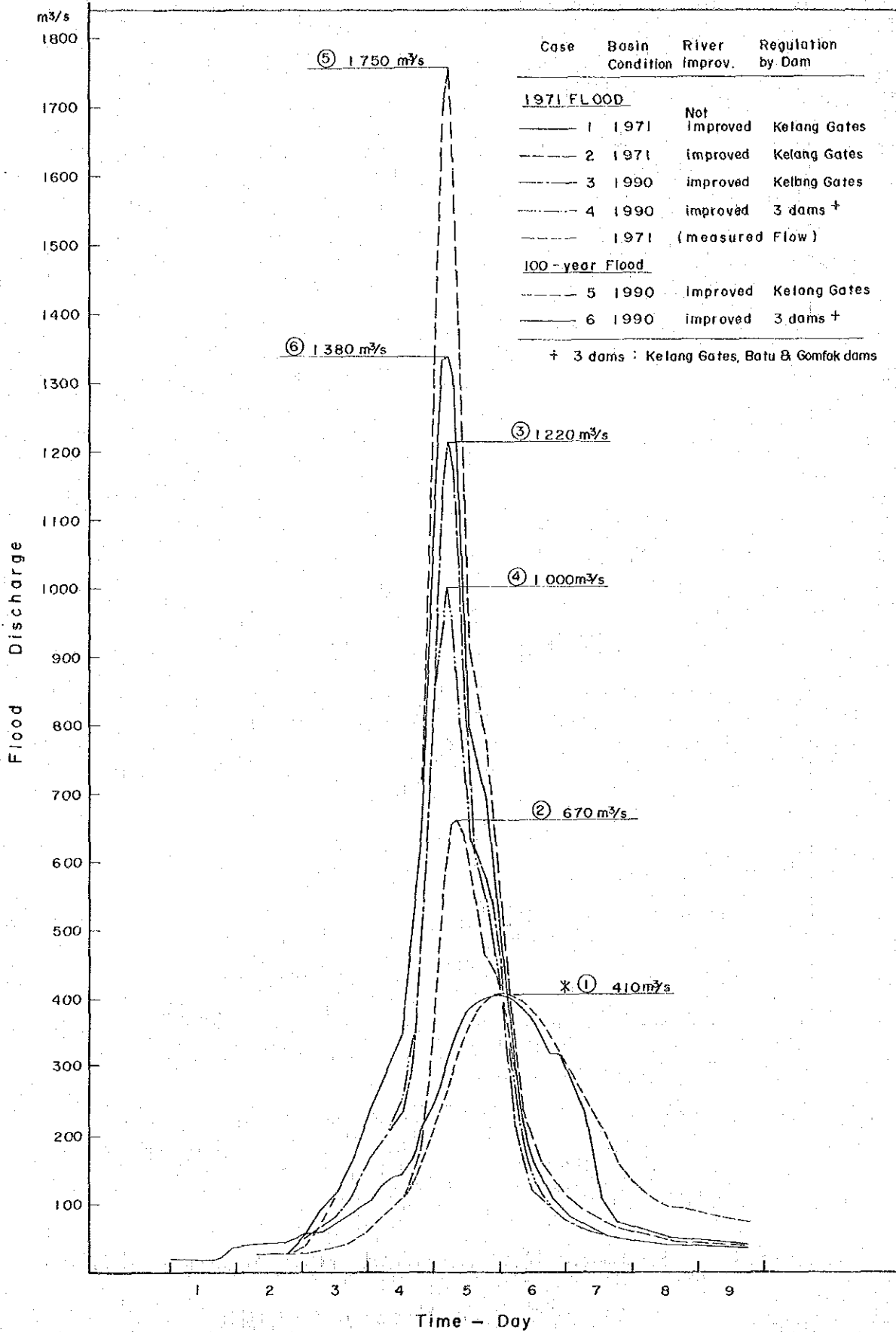


Fig.18 Kelang River Flood Hydrograph (2/2)
-at Puchong Drop