



WATER RESOURCES
OF THE
MACINTYRE AND SEVERN
VALLEYS

SURVEY OF THIRTY N.S.W. RIVER VALLEYS

REPORT N° 3 — JULY 1966

WATER RESOURCES OF THE MACINTYRE AND SEVERN RIVER VALLEYS

PREFACE

BY THE HON. J.G. BEALE, M.E., A.S.T.C. Mech. Eng.,
M.I.E. Aust., M.ASCE., M.A.S.M.E., M.A.S.A.E., M.L.A.

MINISTER FOR CONSERVATION


NEW SOUTH WALES

In accordance with the policy of the New South Wales Liberal-Country Party Government announced prior to its election to office at the May, 1965 State Elections, I directed the Water Conservation and Irrigation Commission to undertake a survey of the State's water resources on an individual valley basis to enable the formulation of a balanced and soundly based programme of water conservation.

The survey will cover thirty major river valleys and will involve study of their physiographic features, climate, groundwater potential and surface water resources, together with an appraisal of current and possible future water requirements.

When completed the survey will represent the largest and most comprehensive study of its kind ever undertaken in Australia. However as the overall survey will not be completed for some time, it has been decided to prepare and issue separate reports for the individual river valleys as they become available.

This report, dealing with the Water Resources of the Macintyre and Severn River Valleys is the third of these reports to be completed.



JACK G. BEALE. M.L.A.

8TH JULY, 1966.

WATER RESOURCES OF THE MACINTYRE AND SEVERN RIVER VALLEYS

CONTENTS

<u>SECTION</u>	<u>ITEM</u>	<u>PAGE</u>
1	Introduction	1
2	Physiographic Features	3
3	Climatic Features	4
4	Groundwater Potential	11
5	Stream Gauging Stations	15
6	Catchment Yields	17
7	Average Annual Runoff	18
8	Variability of Streamflows	19
9	Persistence of Streamflows	22
10	Occurrence of Flooding	23
11	Drought Periods	24
12	The 1964-1966 Drought	26
13	Water Requirements for Current Development	30
14	Possible Irrigation Development	32
15	Macintyre and Severn Valley Storage Proposals	33
16	Acknowledgment	35

APPENDICES

Appendix 1	Ashford Monthly Rainfalls	36
Appendix 2	Beulah Monthly Rainfalls	40
Appendix 3	Boggabilla Monthly Rainfalls	43
Appendix 4	Crystal Hill Monthly Rainfalls	47
Appendix 5	Deepwater Monthly Rainfalls	51
Appendix 6	Emmaville Monthly Rainfalls	56
Appendix 7	Glen Elgin Monthly Rainfalls	61
Appendix 8	Glen Innes Monthly Rainfalls	64
Appendix 9	Graman Monthly Rainfalls	69
Appendix 10	Hartley Monthly Rainfalls	72
Appendix 11	Inverell Monthly Rainfalls	74
Appendix 12	Myall Downs Monthly Rainfalls	79
Appendix 13	Strathbogie Monthly Rainfalls	82
Appendix 14	Wallangra Monthly Rainfalls	87
Appendix 15	Yallaroi Monthly Rainfalls	92
Appendix 16	Yetman Monthly Rainfalls	97
Appendix 17	Rainfall Probabilities - Selected Stations	102
Appendix 18	Minimum Recorded Rainfall in Consecutive Months - Selected Stations	106
Appendix 19	Wallangra Streamflow Data	109
Appendix 20	Llanarth Streamflow Data	118
Appendix 21	Ashford Streamflow Data	121
Appendix 22	Yetman Streamflow Data	130
Appendix 23	Holdfast Streamflow Data	138

FIGURES

Figure 1	River Basin Map	143
Figure 2	Generalised Land Slopes	144
Figure 3	Annual Median Rainfall	145
Figure 4	January Median Rainfall	146
Figure 5	February Median Rainfall	147
Figure 6	March Median Rainfall	148
Figure 7	April Median Rainfall	149
Figure 8	May Median Rainfall	150
Figure 9	June Median Rainfall	151
Figure 10	July Median Rainfall	152

<u>FIGURES</u> (cont'd)	<u>PAGE</u>	
Figure 11	August Median Rainfall	153
Figure 12	September Median Rainfall	154
Figure 13	October Median Rainfall	155
Figure 14	November Median Rainfall	156
Figure 15	December Median Rainfall	157
Figure 16	Geological Formations	158
Figure 17	Gauging Station Locations	159
Figure 18	Distribution of Annual Flows at Holdfast, Wallangra and Ashford	160
Figure 19	Monthly Discharge Hydrographs for Ashford, Llanarth and Wallangra	161
Figure 20	Monthly Discharge Hydrographs for Yetman and Holdfast	162
Figure 21	Distribution of Average Monthly Rainfalls at Glen Innes and Yetman	163
Figure 22	Distribution of Average Monthly Discharges at Ashford, Wallangra, Holdfast and Yetman	164
Figure 23	Llanarth Flow Duration Curve	165
Figure 24	Ashford Flow Duration Curve	166
Figure 25	Wallangra Flow Duration Curve	167
Figure 26	Holdfast Flow Duration Curve	168
Figure 27	Flow per Square Mile Flow Duration Curves	169
Figure 28	Occurrence of Floods at Yetman and Holdfast	170
Figure 29	Distribution of Annual Rainfalls at Glen Innes and Yetman	171
Figure 30	Growth of Irrigation Licenses and Licensed Irrigation Area	172

WATER RESOURCES OF THE MACINTYRE AND SEVERN RIVER VALLEYS.

1. INTRODUCTION

With the exception of the air he breathes, water is the most essential single requirement of man. Viewed from space it would be readily apparent that water is a most abundant resource. About 70 percent of the Earth's surface is covered by oceans, another 4 percent by the polar icecaps whilst the remaining 26 percent, consisting of the land masses, is at times covered by water in the form of lakes or streams or as vapour in the form of clouds.

It has been estimated that there are over 320 million cubic miles of water on Earth, each cubic mile being equivalent to more than a million million gallons. However the usefulness of this resource is limited by the fact that 97.2 percent of all water is in the oceans and is therefore unfit for domestic or irrigation purposes, 2 percent lies frozen in glaciers and over 99.5 percent of the remaining 0.8 percent is in the form of underground water.

Consequently only a very minor part of this apparently plentiful resource is in a suitable form or location to be readily available for use by man.

The gross water resources of any country are generally considered to be the amount of precipitation, in the form of either rainfall or snow which falls on the land, whilst the surface water resources are regarded as the amount of water in streams and lakes.

Of all the continents Australia has the least average annual precipitation and streamflow; the average rainfall being only $1\frac{1}{2}$ feet in comparison with about 2 feet for Africa, Asia, Europe and North America and almost $4\frac{1}{2}$ feet for South America.

However when losses due to evaporation, transpiration and seepage are deducted from the annual rainfalls of the continents the comparison between the residuals, or surface water resources, is even more unfavourable than indicated by the average annual rainfalls.

The average annual surface water resources of the Australian mainland have been assessed at about 240 million acre feet which is equivalent to less than 2 inches of rainfall occurring without loss over the continent. Comparative runoffs for the other continents are about 7 inches in Africa, 9 inches in Asia and Europe, 11 inches in North America and about 19 inches in South America.

Australia has the most level surface and regular outline of any continent in the world. Only 7 percent of its area is above 2,000 feet elevation and unlike all of the other continents none of its streams are permanently snow fed.

There are very few, if any, perennial streams in New South Wales and flow records indicate that at some time all have ceased to flow or have been reduced to a trickle. In addition, records show that flows in New South Wales streams have exhibited a remarkable variability during flood and drought periods.

Major droughts in Australia have extended over lengthy periods and it is sometimes necessary to construct relatively large storages if regulated flows are to be provided without failure over the full period of each drought.

The surface water resources of the Macintyre and Severn River Valleys have recently been assessed as averaging about 370,000 acre feet per annum. On a square mile of catchment area basis, these resources are slightly greater than the average values for New South Wales and Australia and over three times greater than the average value for inland New South Wales. However there is a very high degree of variability in the annual surface water resources of the valleys and it is essential that the resources which are available be conserved and effectively used.

2. PHYSIOGRAPHIC FEATURES.

For the purpose of this report, the external boundary of the Macintyre and Severn River Valleys has been adopted as that enclosing the catchment area of the Macintyre River and its tributaries upstream of the junction of the Macintyre and Dumaresq Rivers. A separate water resources report is to be prepared for the Dumaresq River Valley.

The adopted boundary of the combined Macintyre and Severn River Valleys together with the location of the principal streams and towns is shown at Figure 1. The total combined area of the Macintyre and Severn River Valleys is about 3,250 square miles.

The Macintyre River rises in a satellite spur of the Great Dividing Range near Maybole and flows in a westerly direction to Inverell. From Inverell downstream to the Dumaresq River junction the river flows in a general north westerly direction being joined on its right bank by the Severn River about eight miles downstream of Wallangra.

About five miles upstream of its junction with the Dumaresq River the Macintyre River is joined on its left bank by Ottley's Creek, a tributary stream draining an extensive area west of Wallangra.

The Severn River rises in elevated densely timbered country about 4,000 feet above sea level in the vicinity of Bald Nob and flows in a north westerly direction to its junction with the Macintyre River.

The principal headwater tributary of the Severn River is the Beardy Waters which rises in the Great Dividing Range near Ben Lomond at elevations of about 5,000 feet. The Beardy Waters flows in a general northerly direction to its junction with the Severn River near Fladbury and traverses a high level plateau area to the east and south of Glen Innes.

The other major tributaries of the Severn River are Wellingrove Creek and Frazer's Creek which rise in the Waterloo Range to the west of Glen Innes at elevations of up to about 3,900 feet. The Pindari Dam Site is located on the section of the Severn River which lies between these two tributaries.

The Macintyre and Severn River Valleys are almost entirely devoid of mountainous topography. Hilly to steep areas with land slopes between 8 and 15 degrees comprise only about 20 percent of the total area, while about 50 percent of country can be classified as undulating to hilly with land slopes between 3 and 8 degrees. The remaining 30 percent can be classified as generally flat with slopes less than 3 degrees.

The distribution of land slopes in the Macintyre and Severn River Valleys is indicated at Figure 2. High plateau areas in the vicinity of Inverell and Glen Innes are a pronounced feature of the topography of the valleys. The plateau area near Glen Innes extends to the Great Dividing Range on the extreme eastern boundary of the catchment.

There are large areas of relatively open country mainly devoted to sheep and cattle grazing in both the Macintyre and Severn River Valleys. Wheat is grown in many areas in the southern sections of both valleys and in the Severn River Valley tobacco is an important crop. Dairying is generally limited to areas adjacent to the principal towns of Inverell and Glen Innes.

3. CLIMATIC FEATURES.

RAINFALL.

The most common method of indicating rainfall at a particular location is by use of the annual average or arithmetic mean value in inches. However, the average annual rainfall is particularly influenced by heavy rainfalls and is therefore generally greater than the rainfall most likely to occur in any year. The annual rainfall which has a probability of occurrence of 50 percent, and therefore the most likely to occur, is termed the median rainfall.

Annual median rainfall over the Macintyre and Severn River catchments varies from over 40 inches in the highest parts in the south east corner of the Macintyre River catchment to less than 25 inches near the junction with the Dumaresq. Over most of the area of both catchments, however, annual median rainfall is between 27 and 32 inches and in general reaches 35 inches only in those portions of the catchments which lie above the 3,500 feet contour.

Isohyets of annual median rainfall over the catchments are shown at Figure 3 whilst the isohyets of the monthly median rainfalls are shown at Figures 4 to 15.

Rainfall is fairly evenly distributed throughout the year. The wettest period is from December to February but only about 30 percent of the annual total is received during these three months. Median rainfall is lowest in May when only a small part of the high ground in the eastern section of the valleys receives more than $1\frac{1}{2}$ inches. A secondary maximum occurs in June and July. The median rainfall for both of these months exceeds 2 inches over much of the upper part of the valleys. Conditions are slightly drier during August and September but by October the 2 inch median isohyet includes all but the lowest part of the Macintyre River valley. Some of the higher ground receives more than 3 inches in October. Median rainfall increases slightly in November and in December with only the lower section of both valleys receiving less than $2\frac{1}{2}$ inches in each of these months.

Monthly and annual rainfall statistics for Ashford, Beulah, Boggabilla, Crystal Hill, Deepwater, Emmaville, Glen Elgin, Glen Innes, Graman, Hartley, Inverell, Myall Downs, Strathbogie, Wallangra, Yallaroi and Yetman are given in Appendices 1 to 16 respectively.

Very heavy rain occurs over the valleys when a trough forms over Queensland and a depression forms over the south of that State. Under these conditions falls of up to 5 inches can occur in 24 hours at many stations in the valleys. The heaviest 24 hour fall on record is 8.63 inches at Emmaville on January 30th, 1899.

Very high monthly totals are not often recorded at stations anywhere within the catchments of the Macintyre and Severn Rivers. Over the lower part of the catchments monthly totals in excess of 8 inches are rare. At Yetman only once in ten years does the rainfall in the wettest month, January, exceed $6\frac{1}{2}$ inches. Even in the wetter parts of the valleys, monthly totals rarely exceed 10 inches. The highest monthly total recorded at any station is 1,233 points at Inverell in February, 1956.

The tables at Appendix 17 show on a monthly and annual basis for Ashford, Beulah, Boggabilla, Deepwater, Glen Innes, Inverell, Strathbogie, Wallangra, Yallaroi and Yetman, the following details:

- (i) the maximum and minimum rainfalls and,
- (ii) the rainfalls corresponding to probabilities of occurrence of 10 percent, 30 percent, 50 percent, 70 percent and 90 percent.

At Glen Innes, which is representative of the wetter parts of the catchments the rainfall during the driest four month period, April to July, exceeds 4 inches nine years out of ten and exceeds 7 inches one year in two. At the same station the rainfall during the three summer months fails to reach $6\frac{1}{2}$ inches only one year in ten.

Dry spells occur quite frequently in the lower Macintyre Valley, particularly during the period from March to September. At Yetman once in ten years the rainfall for this seven month period is less than $4\frac{1}{2}$ inches. During the period March to May the same station receives less than $1\frac{1}{2}$ inches on ten percent of occasions.

Minimum recorded rainfalls for periods of up to twelve months at Boggabilla, Deepwater, Glen Innes, Inverell, Strathbogie and Yetman are given in the tables at Appendix 18. These tables indicate the minimum cumulative rainfalls commencing in any month of the year and continuing for up to twelve months, which have occurred at the selected rainfall stations.

TEMPERATURE.

Temperature recordings have been taken at several stations in and near the Macintyre and Severn River Valleys. Average monthly temperatures for 3 stations are listed in Tables 1, 2 and 3.

Table 1. Glen Innes which is representative of the higher parts of the Severn River Valley.

Table 2. Inverell which is representative of the middle portion of the Macintyre River Valley.

Table 3. Goondiwindi which is on the Macintyre River about 15 miles below the junction with the Dumaresq but which can be taken as representative of the lower portion of the Macintyre River Valley.

TABLE 1

GLEN INNES (Elevation 3,520 feet)

Average temperature (°F) based on 29 years of record.

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Average Maximum	80.5	78.8	74.9	68.8	61.7	55.8	54.3	57.5	64.0	70.6	75.6	78.4	68.4
Average Minimum	54.7	54.0	51.1	45.0	38.9	34.7	32.7	33.6	38.0	43.9	48.8	52.5	44.0
Average Mean	67.6	66.4	63.1	56.9	50.3	45.2	43.5	45.6	51.0	57.3	62.2	65.4	56.2
Extreme highest on record 101.4°F							Extreme lowest on record 16.0°F						

TABLE 2

INVERELL (Elevation 1,980 feet)

Average temperature (°F) for 30 years of record

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Average Maximum	87.4	86.7	82.7	75.6	68.1	61.6	59.9	63.1	69.4	76.1	81.9	85.4	74.8
Average Minimum	58.4	56.9	53.1	45.4	37.9	34.1	32.3	32.8	37.6	44.6	51.7	56.3	45.1
Average Mean	72.8	71.8	67.9	60.5	53.0	47.9	46.1	47.9	53.5	60.4	66.8	70.9	60.0
Extreme highest on record 107.0°F							Extreme lowest on record 14.0°F						

TABLE 3

GOONDIWINDI (Elevation 720 feet)

Average temperature (°F) for 30 years of record

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Average Maximum	93.9	92.3	88.0	80.8	72.6	65.9	64.7	68.9	76.0	83.3	89.0	92.0	80.6
Average Minimum	67.8	66.6	62.9	59.9	47.7	42.8	41.4	42.7	48.6	56.1	62.1	65.7	54.9
Average Mean	80.8	79.5	75.5	67.8	60.2	54.3	53.0	55.8	62.3	69.7	75.6	78.9	67.8
Extreme highest on record 113.4°F							Extreme lowest on record 23.2°F						

Tables 1, 2 and 3 indicate that the lower parts of the valleys experience hot conditions during the summer months with mean maxima in the nineties or high eighties during the period November to March. In the higher parts of the valleys day temperatures decrease with increasing elevation and are about 10°F lower above the 3,000 feet contour than at Goondiwindi. In the winter average day temperatures range from the mid sixties in the lower Macintyre River Valley to the mid fifties in the highest areas.

Nights are mild on the average during the summer, ranging from the mid fifties in the highlands to the mid sixties in the lower sections of the valleys. Average minimum temperatures during the winter fall below 40°F throughout almost the entire valley and average as low as 32°F in mid winter at higher elevations.

During the summer very hot conditions occur frequently in the lower Macintyre River Valley with temperatures often exceeding 100°F and occasionally exceeding 110°F . In the higher areas where the summer is milder, temperatures in excess of 100°F do occur on occasions but at elevations above 3,000 ft. temperatures over the century are rare.

During the winter months under conditions of clear skies and light winds, extremely low temperatures can occur in all parts of the valleys. All stations have recorded temperatures below 25°F and in sheltered valleys in the highlands temperatures on occasions fall below 15°F .

FROST.

All parts of the valleys are subject to frosts during the winter months, the average number of occurrences ranging from about 20 per annum in the lower Macintyre Valley to over 80 per annum in the upper Severn Valley. Frosts can be quite severe on occasions and all stations in the valleys have recorded air temperatures 9 or more degrees below freezing. In the lower sections of the valleys almost all frosts occur during the 3 winter months but in the more frost-prone upper reaches of the Macintyre River and its tributaries frosts have occurred in all months except December. Table 4 gives average dates of first and last occurrences of air temperatures of 36°F or less together with the date of the earliest and latest occurrence on record for selected stations.

TABLE 4

Occurrence of air temperatures of 36°F or less.

Station	Extreme Earliest	Average Earliest	Average Latest	Extreme Latest
Glen Innes	Jan. 12th	April 10th	Oct. 18th	Nov. 21st
Inverell	March 16th	April 10th	Oct. 18th	Nov. 28th
Goondiwindi	April 17th	May 31st	Aug. 29th	Oct. 16th

SUNSHINE.

No sunshine measurements have been taken in or near the valleys of the Macintyre and Severn Rivers. Table 5 gives an estimate of hours of bright sunshine for the valleys and is based on cloud observations.

TABLE 5.

Estimated duration of bright sunshine in Hours per Day.

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
9.9	9.5	8.7	8.4	7.7	6.7	7.3	8.0	8.7	9.5	10.1	10.2	8.7

EVAPORATION.

Measurements of evaporation from a sunken tank have been taken at Inverell since 1949. Table 6 gives average monthly evaporation based on the period 1950-1959 for this station together with an estimate of the standard deviation. These values are representative of those parts of the valleys lying at elevations between 1,500 feet and 2,500 feet. In the higher, and therefore cooler, parts of the valleys evaporation will be up to 5 percent less while in the lower Macintyre Valley, evaporation ranges up to 10 percent more than the values quoted for Inverell.

TABLE 6

Average Monthly and Annual Evaporation in Inches from a
Sunken Tank, at Inverell (based on
10 years of observations)

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Average	7.4	5.2	5.1	3.8	2.8	1.9	1.9	2.6	3.3	4.3	6.3	7.6	52.0
Standard Deviation	1.2	1.0	0.7	0.5	0.4	0.3	0.3	0.4	0.5	0.7	1.2	1.3	5.1

WIND.

Strong winds occur over the Macintyre and Severn Valleys from time to time in association with one of the following conditions:

- (i) Strong south easterly winds associated with an intense anticyclone over southern Australia. Under these conditions mean wind speeds of 30 m.p.h. are not uncommon and wind speeds in excess of 45 m.p.h. have been experienced in exposed places.
- (ii) On rare occasions tropical cyclones have crossed the Queensland coast and have moved far enough inland to affect the Macintyre and Severn Valleys. Under these conditions wind speeds up to 50 m.p.h. can occur.
- (iii) Violent squalls associated with thunderstorms. The strongest gusts experienced in the valleys occur with thunderstorms and may exceed 80 m.p.h. on occasions.

Table 7 gives the magnitude of extreme wind gusts likely to be experienced in the valleys.

TABLE 7

Wind Gusts to be Expected with Given Return Periods.

Return period (years)	10	20	50	100
Wind Gust equalled or exceeded (m.p.h.)	70	75	85	90

4. GROUNDWATER POTENTIAL.

The principal geological features of the Macintyre and Severn River valleys are shown at Figure 16. The oldest rocks in the two valleys consist of a series of tuffs, grits, mudstones, shales, sandstones, limestones and cherts of Carboniferous age. They have been fairly closely folded and are generally steeply dipping with a strike varying from North-north-west to North-north-east. The main areas of outcrop occur to the north-west of Inverell around Ashford and in the vicinity of the Macintyre River north of Wallangra.

The strata are as a rule, well jointed, and lend themselves fairly well to the storage of underground water. Bores on reasonable sites usually yield useful stock supplies but there are some failures, because of either very tight joint systems or hard cherty rocks which are extremely difficult to drill. The depths of bores in the Carboniferous rocks range up to 350 feet, and yields rarely exceed 300 gallons per hour. The salinity of the waters is usually between 100 and 200 parts per hundred thousand.

The main outcrop of Permian rocks is located in a belt running roughly west from Glen Innes. The sequence is not well known, but includes mainly meta-sediments such as indurated sandstones, conglomerates and claystones. A narrow discontinuous belt of conglomerates, sandstones and shales containing a coal seam, outcrops to the north and south of Ashford. The outcrops are small and are not shown on the geological map at Figure 16 but are mentioned because the coal is mined in the vicinity of Ashford.

Much of the country underlain by these strata is undeveloped and records do not reveal any bores or wells in this area. However it seems probable that bores sited in low positions with an appreciable local catchment would yield worthwhile stock supplies.

The Carboniferous and Permian sediments have been intruded by granites which are part of the very extensive New England Batholith. These igneous rocks are primarily responsible for the presence of minerals such as tin, tungsten and gemstones although the concentration of these

minerals has been brought about by stream action and they are usually mined from alluvial leads.

The granite country in the Macintyre and Severn Valleys is usually rough, inaccessible and undeveloped, and as a result has been little explored for groundwater. Elsewhere in the New England Region boring in the granite has met with varying success and in this district where the elevation and relief is often great, the outcome of boring can only be described as speculative.

In some areas springs are common and their development by trenching and the provision of a well in which to store the collected water can provide limited, but useful stock water supplies. Unfortunately seasonal conditions are commonly reflected in the long term output of such springs. Because of the small localised catchments which contribute the water to the springs, they have a tendency to dry up when most needed.

Jurassic sediments, mainly sandstones and shales, outcrop in the western part of the area. They are marginal to the Great Artesian Basin and are believed to be geologically equivalent to the sandstones comprising the main aquifer system of that Basin.

The sandstones are not all porous, but those that are usually exhibit a very high permeability, and they comprise the most prolific source of underground water in this area.

Almost without exception bores taken deep enough into these Jurassic beds yield quite large supplies of the order of 800 to 1,000 gallons per hour, often with only a few feet of drawdown. The salinity of the water is low, it being useful for domestic and garden purposes as well as being excellent stock water. In some cases, however, the proportion of alkali salts is higher than is desirable for irrigation use. The depths of these bores varies from less than 100 feet to over 400 feet, depending largely on the elevation of the site, but also on the geological structure, the beds having a general dip to the north-west. Some failures have occurred in the eastern parts of the area because the underlying shales come closer to the surface and the sandstones are either not present or are not sufficiently thick and porous to yield useful supplies of groundwater.

A recent development in the Ottley's Creek area is the use of high yielding bores in these sandstones to provide water for irrigation. Supplies as large as 30,000 gallons per hour have been obtained, some from depths as great as 600 feet and a number of landholders are currently irrigating, or proposing to irrigate, from this source of underground water. Pumping levels as deep as 200 feet are not uncommon, the static water level and, to some extent, the drawdown level during pumping being largely a function of the surface elevation.

Tertiary basalt flows cover much of the Macintyre and Severn valleys, occupying, apparently, the position of the drainage system which existed at the time of their extrusion. The basalts now outcrop over much of the more elevated country as cappings on the older rocks, sometimes forming extensive plateaux.

These lavas may contain underground water in their joint systems, in the weathered zones between successive lava flows or in the so called "honeycomb" basalts. Waters from the basalts usually have a salinity of less than 100 parts per hundred thousand but are characteristically hard. Springs are common and often provide useful stock supplies. However the results of boring (or constructing wells) in the basalts are variable.

In the Glen Innes district the basalts do not seem to be as favourable to the occurrence of underground water as they are near Inverell and further to the north-west. The extreme hardness of the basalt in the east may be responsible for this apparent variation, as in the Glen Innes area bores are rarely deeper than 100 feet, and, possibly as a result, yields rarely exceed 300 gallons per hour.

Near Inverell the average yield is higher, being of the order of 500 gallons per hour. The few failure bores are on very elevated sites or close to the margin of the basalt where the thickness is insufficient to provide worthwhile storages for underground water.

Two bores, 384 and 317 feet deep, are recorded as yielding 4,000 and 11,600 gallons per hour respectively for the Inverell Town Water Supply but they are not now used for this purpose. However these yields are exceptional and in general, deep drilling with the object of obtaining large supplies from the basalts is not warranted.

The basalts to the north-west of Inverell are consistently good water-bearers, provided there is a thickness of the order of 150 feet. Yields range up to 1,000 gallons per hour from bores on good sites.

The tongues of basalt in the north-western part of the Macintyre Valley are relatively thin and whilst they provide some stock supplies, a number of bores have been drilled through the basalt, into the underlying Jurassic sandstones, before useful supplies of water were encountered.

Both Tertiary and Recent alluvial formations are present, the former as deep leads sometimes covered with basalt, or as remnants of river terraces on the old valley side slopes, well above the present streams.

Shallow alluvial deposits of small extent occur along the various major streams, but the main area of alluvium is located below the junction of Ottley's Creek and the Macintyre River.

An investigation in the Dumaresq Valley revealed that although the alluvium is deep, the only aquifers of consequence are sands and gravels which occur above the 50 feet level. Yields ranging up to 10,000 gallons per hour are possible but the potential is not great, and in any case the area of such alluvium involved in the Macintyre and Severn River Valleys is very small.

The ground water potential of the alluvial flats of the Macintyre and Severn River valleys is relatively poor, most wells yielding only stock supplies. The depth of the alluvium ranges up to 50 feet but supplies in excess of 2,000 gallons per hour are uncommon. In the vicinity of Inverell and Ashford there are some fairly wide areas of alluvium, but again they are quite shallow, and have little ground-water potential.

The alluvium associated with Ottley's Creek is sandy and results of bores suggest that occasional irrigation supplies of up to 10,000 gallons per hour are possible from screened bores, preferably with artificial sand packs. Where the water bearing sands are shallow, as

could be expected in the case of sandy alluvium associated with the smaller streams crossing the sandstone country, it may be possible to obtain irrigation supplies from batteries of spearpoints.

The small areas of "perched" alluvial material which occur on the valley sides of the Severn River and other minor streams are unlikely to provide useful supplies of groundwater, both because of their limited size and their elevation.

5. STREAM GAUGING STATIONS.

Streamflow is the most important element for study in surface water resources investigations. It governs the engineering and economic aspects of any particular scheme concerned with irrigation development, town and commercial water supply or hydro-electric power generation. Consequently the proper appraisal of such proposals depends upon the adequacy of the basic streamflow data.

To obtain streamflow records within a river valley it is necessary to establish gauging stations on the various streams. At these stations, river heights are recorded on either a daily or continuous basis. These heights together with regular and systematic flow measurements enable computation of streamflow records.

The measurement of flow of the Macintyre River commenced in 1895 with the establishment of a stream gauging station at Boggabilla. However, streamflow measurement in the Macintyre and Severn River Valleys upstream of the Dumaresq River junction did not commence until 1925 when a station was established on the Macintyre River at Yetman. Since 1925 additional stations have been established on the Macintyre River and its tributaries and at the present time the Water Conservation and Irrigation Commission is operating a total of seven stream gauging stations in the Macintyre and Severn River Valleys. These stations are so located as to measure the runoff from about four-fifths of the combined catchment area of these valleys and to provide reasonable data for use in the investigation of water resources proposals.

The currently operated network includes stations equipped with automatic float recorders at four locations whilst automatic pressure type recorders are installed at the remaining three stations. The locations of existing and discontinued stream gauging stations in the valleys are shown at Figure 17 and the relative details concerning each station are given in Table 8.

TABLE 8

Stream	Station	Catchment Area in Square Miles	Type of Gauge	Period of Operation
Macintyre River	Inverell [∅]	280	Pressure Recorder	1936 to date
Macintyre River	Wallangra	780	Float Recorder	1936 to date
Severn River	Below Dam Site	785	Float Recorder	From 1966
Severn River	Llanarth	870	Pressure Recorder	1960 to date
Severn River	Ashford	1,220	Float Recorder	1933 to date
Macintyre River	Below Dam Site	2,255	Pressure Recorder (Manometer servo)	From 1966
Macintyre River	Yetman*	2,540	Staff Gauge	1925 to 1952
Macintyre River	Holdfast	2,600	Float Recorder	1950 to date

∅ Intermittent records only
 * Discontinued station

The present density of gauging stations in the Macintyre and Severn River Valleys is about 2.1 stations per 1,000 square miles. This density may be compared with the present densities per thousand square miles for Inland New South Wales (1.4 stations), Australia (0.3 stations) and with the American density of less than 3 stations per thousand square miles.

In addition to continuing operation of the seven existing gauging stations, the Water Conservation and Irrigation Commission intends to install a further five stations in the valleys and thereby to provide an ultimate density of gauging stations of nearly 4 per 1,000 square miles. The ultimate coverage of stream gauging stations has been

designed so as to yield adequate streamflow data for the investigation of all future water resources proposals in the valleys.

6. CATCHMENT YIELDS.

The amount of precipitation, type of vegetation, topography and size of catchment are factors which influence the water yield of a catchment.

The continuous measurement of streamflow provides the basic information for determination of the water yield of a catchment. In the Macintyre and Severn River Valleys, relatively long and continuous records of streamflow are available for the Macintyre River at Wallangra and Yetman and the Severn River at Ashford. Although a stream gauging station has been in existence on the Macintyre River at Inverell since 1936, the records obtained from this station are not continuous and are inadequate for reliable estimation of the yield of the catchment above Inverell.

Over a period of 27 complete years of record commencing in 1925, the average flow of the Macintyre River at Yetman was about 357,000 acre feet per annum which is equivalent to an average flow of about 488 cusecs or 182,000 gallons per minute. The station at Holdfast which replaced Yetman upon its discontinuance in 1952 has 15 complete years of record available. Over this period the average flow of the Macintyre River at Holdfast has been about 388,000 acre feet per annum or 531 cusecs (198,000 gallons per minute).

A comparison of the yield of the Macintyre River at Yetman and Holdfast with the yield of other gauged catchments in the valleys is given in Table 9.

TABLE 9

Stream	Station	Complete Years of Computed Record	Average Annual Yield over Period of Complete Years of Record		
			Ac. Ft. per Annum	Cusecs	Gallons per Minute
Macintyre River	Wallangra	29	101,000	139	52,000
Severn River	Llanarth	5	135,000	185	70,000
Severn River	Ashford	30	238,000	326	122,000
Macintyre River	Yetman*	27	357,000	488	182,000
Macintyre River	Holdfast	15	388,000	531	198,000

* Discontinued Station.

Details of maximum, minimum and mean streamflows for each month of record for the gauging stations shown in Table 9 are given at Appendices 19 to 23.

7. AVERAGE ANNUAL RUNOFF.

The current estimate of the long term average annual runoff of the Macintyre and Severn River Valleys has been based on streamflow correlations with the gauging station on the Macintyre River at Boggabilla for which streamflow records are available from 1895.

On this basis, the average annual runoff from the Macintyre and Severn River Valleys above the Dumaresq River junction has been assessed as being of the order of 370,000 acre feet per annum which is equivalent to an average rate of flow of about 510 cusecs or about 192,000 gallons per minute. In terms of catchment area the average annual runoff from these valleys is equivalent to about 114 acre feet per annum per square mile.

Long term average annual flows have been similarly estimated for the gauging stations on the Macintyre River at Wallangra and on the Severn River at Ashford. The long term average annual runoff has been assessed at 81,000 acre feet per annum at Wallangra and 206,000 acre feet per annum at Ashford.

In table 10, details are given of the average annual runoff of the Macintyre and Severn River Valleys and their sub-catchments at Wallangra and Ashford.

TABLE 10.

Catchment	Catchment Area (Square Miles)	Estimated Long Term Average Annual Runoff		
		Acre Feet Per Annum	Acre Feet Per Annum Per Square Mile	Percentage Runoff
Macintyre and Severn River Valleys above the Dumaresq River junction.	3,250	370,000	114	7.3%
Macintyre River above Wallangra	780	81,000	104	6.4%
Severn River above Ashford	1,220	206,000	169	9.7%

The above comparison indicates that a higher percentage runoff can be expected from the 1,220 square mile catchment of the Severn River above Ashford than from the 780 square mile catchment of the Macintyre River above Wallangra. This is due to the large component of the Severn River catchment which lies in the higher rainfall area of the valleys, along the Great Dividing Range.

8. VARIABILITY OF STREAMFLOWS.

Average annual flows do not indicate the surface water resources available in any one particular year nor do they indicate the extent to which a valley's surface water resources may be utilised without the provision of storage works.

Available records of streamflow indicate a high degree of variability in the annual surface water resources of the Macintyre and Severn River Valleys. Based on a combined period of record of 41 years for Yetman and Holdfast, the annual flow for the Macintyre River at Holdfast has varied from about 12 percent to about 480 percent of the annual average flow. At the upstream stations on the Macintyre River at Wallangra and the Severn River at Ashford the variations in annual flow over periods

of 29 and 30 years respectively have been of the order of 13 percent to 580 percent at Wallangra and 4 percent to 370 percent at Ashford. The distribution of the annual flows at Ashford, Wallangra and Holdfast (Yetman) is shown at Figure 18.

The degree of variability in monthly flows is even more marked. At Holdfast, the monthly flow has varied from a minimum of zero to a maximum almost twenty five times the average monthly flow.

A comparison of the monthly streamflow variations at the stream gauging stations on the Severn River at Ashford and Llanarth and on the Macintyre River at Wallangra is shown at Figure 19. A similar comparison for the stations at Yetman and Holdfast is shown at Figure 20. These diagrams illustrate the extreme variability of runoff in the valleys.

The valleys generally experience their lowest rainfalls during April to September inclusive. Within this period higher rainfalls can generally be expected in June and July than in the other months.

The distribution of average monthly rainfall at both Glen Innes and Yetman is shown at Figure 21. The variation in the monthly rainfalls for Glen Innes can be considered to be representative of the upper sections of the valleys while that for Yetman represents the lower sections of the valleys.

A similar trend is evident in the distribution of average monthly streamflows. The lowest streamflows generally occur in the months March, April and May with a secondary period of low flow in the months of August and September. The distribution of average monthly streamflows at Ashford, Wallangra and Holdfast is shown at Figure 22.

The highest recorded flood during the period of streamflow records in the Macintyre and Severn River Valleys occurred in October, 1933 when the Macintyre River at Yetman reached a peak flow of 104,000 cusecs. The total discharge of about 355,000 acre feet which passed Yetman during October, 1933 was almost equal to the long term average annual discharge of 357,000 acre feet. Although the peak flow during October, 1933 is the highest that has been recorded, higher monthly discharges have been recorded at Yetman and Holdfast on about three occasions since

1925. The highest discharge recorded for any month at either Yetman or Holdfast was about 725,000 acre feet in February, 1956.

Streamflow records at the gauging stations in the valleys indicate that the main streams have ceased to flow for extended periods. One of the most severe sequences of low flow occurred during 1965 when the flow of the Macintyre River at Holdfast was less than 1 cusec (375 gallons per minute) continuously over a period of nearly 150 days. At the upstream locations of Wallangra and Ashford no flow was recorded on 324 and 121 days respectively during 1965.

A quantitative indication of the variation in streamflows at the gauging stations in the valleys is given in Table 11. This table shows the maximum, minimum and mean discharges for these stations over the period of computed records.

TABLE 11

Stream	Station	Period of Computed Records	Recorded Discharges		
			Maximum	Minimum	Mean
Macintyre River	Wallangra	January 1937 to December 1965	48,000 cusecs (18,000,000 g.p.m.)	0	139 cusecs (52,000 gpm)
Severn River	Llanarth	June 1960 to December 1965	43,660 cusecs (16,400,000 g.p.m.)	0	185 cusecs (70,000 gpm)
Severn River	Ashford	January 1934 to December 1965	62,400 cusecs (23,400,000 g.p.m.)	0	326 cusecs (122,000 gpm)
Macintyre River	Yetman	January 1925 to December 1951	104,000 cusecs (39,000,000 g.p.m.)	0	488 cusecs (182,000 gpm)
Macintyre River	Holdfast	January 1951 to December 1965	85,000 cusecs (31,900,000 g.p.m.)	0	531 cusecs (198,000 gpm)

9. PERSISTENCE OF STREAMFLOWS.

Streamflows in the Macintyre and Severn River Valleys do not exhibit a high degree of persistence during prolonged dry periods. However, it appears that the valleys have a reasonable groundwater storage capacity which is able to sustain low flows in the streams for reasonably long periods without the occurrence of significant rainfall.

An indication of the persistence of dry weather flows in the Macintyre and Severn River Valleys may be obtained from the flow duration curves for the stream gauging stations on the Severn River at Llanarth and Ashford and the Macintyre River at Wallangra and Holdfast. These flow duration curves which are based on periods of records of five years, thirty years, twenty-nine years and forty-one years respectively are shown at Figures 23 to 26.

The flow duration characteristics for the gauging stations at Llanarth, Ashford, Wallangra and Holdfast are tabulated in Table 12.

TABLE 12.

Percentage of Time Tabulated Flow was Equalled or Exceeded	Flow in Cusecs*			
	Severn River		Macintyre River	
	Llanarth	Ashford	Wallangra	Holdfast
10	315	455	158	790
30	78	93	43	162
50	35	43	14	67
70	15	17	5	27
90	1	2	0	5
95	0	0	0	2
100	0	0	0	0

* One cusec is equivalent to about 375 gallons per minute.

A more direct comparison of the flow characteristics of the Macintyre and Severn Rivers may be obtained from the flow duration curves at Figure 27. These curves which are based on flow per square mile of catchment, indicate that the Severn River exhibits a better low flow persistence than does the Macintyre River.

10. OCCURRENCE OF FLOODING.

An indication of the frequency and magnitude of flooding in the Macintyre and Severn River Valleys may be obtained from examination of recorded flood data at Yetman and Holdfast since 1925. A diagram showing the occurrence of recorded flood flows exceeding 25,000 cusecs at Yetman and Holdfast is given at Figure 28.

Since the commencement of streamflow measurements at Yetman in 1925, the highest recorded flood in the valleys occurred in October, 1933 when a peak discharge of 104,000 cusecs was reached at Yetman. However, stream gauging stations now established in the valleys were not in existence at that time and therefore the corresponding peak flows were not recorded at these stations.

The highest flood which has been recorded in the valleys since 1933 occurred in February, 1955 when a peak flow of about 85,000 cusecs was reached in the Macintyre River at Holdfast, the station that replaced Yetman.

This flood is also the highest that has occurred at the gauging stations on the Macintyre River at Wallangra and the Severn River at Ashford since their establishment in December, 1936 and November, 1933 respectively. The peak flows at Wallangra and Ashford during this flood were about 48,000 and 62,000 cusecs respectively.

A comparison of the February, 1955 flood behaviour at Holdfast, Wallangra and Ashford is given in Table 13.

TABLE 13.

Stream	Station	Catchment Area (Sq. Miles)	February, 1955 flood		
			Peak Discharge		Approximate Flood Volume (Acre Feet)
			Cusecs	Cusecs/Sq. Mile	
Macintyre	Holdfast	2,600	85,000	33	308,000
Macintyre	Wallangra	780	48,000	61	117,000
Severn	Ashford	1,220	62,400	51	147,000

Table 13 shows that the discharge per square mile of catchment in the February, 1955 flood was greater at Wallangra than at Ashford or Holdfast. This situation can be attributed to the relative sizes of the three catchment areas as the discharge per square mile of a catchment is generally inversely proportional to its area.

The maximum February, 1955 discharges per square mile of catchment at Holdfast, Wallangra and Ashford are substantially less than have been recorded on many other inland New South Wales catchments. On the adjacent Gwydir River catchment at Bingara, which has a catchment area similar in size to that of Holdfast, the peak discharge per square mile in the February, 1955 flood was 84 cusecs. However, the 1890 flood at Yetman is believed to have produced a discharge per square mile comparable with this figure.

11. DROUGHT PERIODS.

The term "drought" does not lend itself to precise definition. However a general water shortage arising from below average precipitation is a general indicator of drought conditions.

The diagrams at Figure 29 show the distribution of annual rainfall at Glen Innes and Yetman since 1881 and 1885 respectively. These diagrams indicate that the valleys generally, experienced extremely low rainfalls in 1898, 1902, 1915, 1918, 1919, 1922, 1923, 1957 and 1965.

At Glen Innes, the lowest recorded calendar year rainfall is 20.59 inches which occurred in 1898. Less than $21\frac{1}{2}$ inches was recorded at Glen Innes in 1915, 1918 and 1919 while in 1965 the total rainfall was only slightly in excess of 22 inches.

The lowest calendar year rainfalls recorded at Yetman are 12.23 inches in 1902 and 12.40 inches in 1919. In 1898 the annual rainfall was only slightly more than 13 inches while the totals in 1915 and 1965 were about 14 inches and 16 inches respectively.

The minimum recorded twelve monthly rainfalls are considerably less than the lowest calendar year totals. At Glen Innes the minimum recorded twelve monthly total of 15.27 inches from November 1964 to October 1965 inclusive, is over 5 inches less than the minimum calendar year rainfall.

The minimum twelve monthly rainfall at Yetman of 9.14 inches from March 1902 to February 1903 inclusive is over 3 inches less than the lowest calendar year rainfall recorded at Yetman.

Since commencement of stream gauging in the valleys in 1925, the lowest recorded streamflows over a twelve month period occurred from December 1964 to November 1965. The total flow of the Macintyre River at Holdfast for the twelve month period from December 1964 to November 1965 and the minimum twelve monthly flows recorded at Holdfast (or Yetman) in other drought periods are compared in Table 14.

TABLE 14.

Period	Total Volume (Acre Feet)	Average Flow	
		Cusecs	Gallons Per Minute
December 1964 to November 1965	9,160	13	4,900
July 1941 to June 1942	18,370	25	9,400
December 1939 to November 1940	28,330	39	15,000

Available streamflow records indicate that all streams in the valleys have ceased to flow for extended periods of time. The Macintyre River at Holdfast ceased to flow for periods of 60 consecutive days in 1944 and 58 consecutive days in 1932. Although flow did not cease in 1965, it was less than 1 cusec (375 gallons per minute) for a total of 170 days during the year. In the period March to July 1965, the flow was less than 1 cusec for 138 days.

Upstream, on the Macintyre River at Wallangra and the Severn River at Ashford periods of no flow have been even more prolonged. At Wallangra during 1965, flow ceased for a period of 324 consecutive days. Other extended periods of no flow occurred in 1940 (212 days), 1942 (115 days), 1944 (119 days) 1954 (126 days) and 1957-58 (89 days).

The Severn River at Ashford ceased to flow for a period of 121 days from March to July 1965. During 1936 and 1940, periods of no flow of 89 and 90 consecutive days respectively were recorded. Since 1933 there have been about seven occasions when flow has ceased for more than 60 consecutive days.

The only period of no flow which has been recorded in the Severn River at Llanarth since the establishment of that gauging station in 1960, occurred in 1965 when flow ceased for a period of 115 consecutive days during the months March to July.

12. THE 1964-66 DROUGHT.

Since October 1964, a period of particularly low rainfall has been experienced over the Macintyre and Severn River Valleys and although relatively high rainfalls occurred in December 1965, the 1965 calendar year total falls have been amongst the lowest recorded in the valleys.

At Glen Innes the 1965 total of 22.08 inches is the lowest annual total since 1923 when 21.98 inches were recorded. Lower annual falls have only been received in about 5 years since the commencement of records in 1881. The lowest annual total at Glen Innes is 20.59 inches in 1898.

At some locations in the upper sections of the valleys, the total rainfall over the period from November 1964 to October 1965 inclusive, is the lowest twelve monthly rainfall recorded. However in the lower sections of the valleys, lower twelve monthly totals were generally received during 1902-03.

The recorded monthly rainfalls since October 1964 at three selected locations in the valleys are given in Table 15.

TABLE 15.

Month	Rainfall (Points)		
	Glen Innes	Inverell	Yetman
November 1964	82	187	170
December 1964	154	152	271
January 1965	184	94	118
February 1965	148	93	48
March 1965	2	79	104
April 1965	125	136	35
May 1965	58	32	15
June 1965	162	102	28
July 1965	266	48	146
August 1965	106	90	83
September 1965	158	52	120
October 1965	82	156	225
November 1965	191	163	46
December 1965	726	659	654
January 1966	186	53	43
February 1966	371	222	106
March 1966	219	393	96
April 1966	182	134	130
Totals November 1964 to April 1966	3,402	2,845	2,438
Totals January 1965 to December 1965	2,208	1,704	1,622
Minimum Twelve Monthly Totals During Period	1,527	1,197	1,239

The total rainfalls of 15.27 inches at Glen Innes, and 11.97 inches at Inverell over twelve monthly periods commencing in November 1964 and December 1964 respectively are the lowest twelve monthly totals ever recorded at these two locations. At Yetman, the twelve monthly total of 12.39 inches is about 3 inches greater than the minimum recorded twelve monthly total of 9.14 inches from March 1902 to February 1903 inclusive.

During 1965 streamflows in the valleys either ceased or were reduced to the merest trickle for extended periods of time. Over a twelve month period from December 1964 to November 1965 inclusive, the total flow of the Macintyre River at Holdfast was only about 9,160 acre feet or 3 percent of the annual average and is the lowest twelve monthly flow which has occurred at either Holdfast or at the previous gauging station, Yetman, since the commencement of streamflow measurement in the valleys in 1925.

A comparison of the twelve monthly flows of the Macintyre River at Holdfast and Wallangra and the Severn River at Ashford and Llanarth from December 1964 to November 1965 inclusive is given in Table 16.

TABLE 16.

Stream	Station	Twelve Monthly Flow December, 1964 to November, 1965.			
		Acre Feet	Average Discharge		Percentage of Average Flow
			Cusecs	Gals./Min.	
Macintyre River	Holdfast	9,160	13	4,900	3%
Macintyre River	Wallangra	1,420	2	750	1%
Severn River	Ashford	8,770	12	4,500	4%
Severn River	Llanarth	8,960	12	4,500	7%

Extremely low flows were recorded in the valleys during February to November, 1965. A comparison of the minimum total flows for one month, three months and six months during this period at Holdfast, Wallangra, Ashford and Llanarth is given in Table 17.

TABLE 17

Stream	Station	Minimum Total Flow During 1965 (Acre Feet)		
		One Month	Three Months	Six Months
Macintyre River	Holdfast	31	101	528
Macintyre River	Wallangra	0	0	0
Severn River	Ashford	0	0	566
Severn River	Llanarth	0	0	652

The minimum rate of flow recorded at Holdfast during the 1964-66 drought was 0.5 cusecs, but during the period March to July 1965 the flow at Holdfast was less than 1 cusec continuously for 138 days. Upstream at Wallangra the Macintyre River ceased to flow for a period of 324 consecutive days during 1965. The period of no flow in the Severn River at Ashford extended over 121 consecutive days during March to July, 1965.

The prolonged period of low streamflow in the valleys ended with the occurrence of a minor flood during early December 1965. However by the beginning of 1966 streamflows had again receded to below average values. This trend has continued during the early part of 1966 and by late May streamflows in the valleys had reached or were approaching the minimum 1965 values. The results of streamflow measurements at Holdfast, Wallangra, Ashford and Llanarth on 24th and 25th May, 1966 are given in Table 18.

TABLE 18.

Stream	Station	Date of Measurement	Measured Flow (Cusecs)
Macintyre River	Holdfast	25.5.66	1.1
Macintyre River	Wallangra	24.5.66	0
Severn River	Ashford	24.5.66	1.1
Severn River	Llanarth	24.5.66	1.9

13. WATER REQUIREMENTS FOR CURRENT DEVELOPMENT.

Wool, beef and wheat are the traditional primary industries of the Macintyre and Severn River Valleys. However in recent years tobacco has become an important crop. Dairying is not extensively practised commercially and is generally restricted to areas adjacent to the major population centres of Inverell and Glen Innes.

The present use of streamflow for irrigation is largely confined to the growing of tobacco, improved pastures and fodder crops on lands fronting the Macintyre and Severn Rivers and their tributary streams. Significant quantities of water are also required for town and commercial water supply.

The area authorised for irrigation by license under the Water Act has increased from about 600 acres in 1945 to about 4,150 acres at December 1965. Over the same period, the number of licenses for irrigation has increased from 30 to 200 while the average authorised area per license has remained at about 20 acres. A graph showing the variation in licensed area and number of licenses from 1945 to 1965 is shown at Figure 30.

In addition to licenses for irrigation purposes, a total of 28 licenses for town or commercial water supply were current at the end of December 1965. These licenses permit a total maximum diversion of up to 14,500 gallons per minute (39 cusecs).

Included amongst the licensed water supply works are the town water supplies for Inverell, Glen Innes and Ashford and the commercial water supplies for the Ashford Power Station.

The Inverell Municipal Council operates a storage on the Macintyre River near Inverell for water supply to that town. This dam which is a concrete structure constructed in 1939, has a storage capacity of about 1,200 acre feet (330 million gallons) and is capable of diverting a flow of up to 1,200 gallons per minute (3.2 cusecs).

The Glen Innes Municipal Council operates a town water supply storage situated on Beardy Waters to the east of Glen Innes. This dam has a capacity of about 370 acre feet (100 million gallons) and is capable of diverting up to 1,000 gallons per minute (2.7 cusecs).

The Ashford Shire Council does not operate a water supply storage but instead obtains the water supply for the township of Ashford by pumping directly from the Severn River into a storage tank near the town. The maximum pumping capacity is 100 gallons per minute (0.3 cusecs).

Another local authority, the North West County Council is licensed to draw up to 600 gallons per minute (1.6 cusecs) for use at the Ashford Power Station.

The remaining 24 water supply licenses are held by individuals or companies for either mining, commercial or stock water supply purposes.

The estimated maximum total requirements in the valleys under present conditions for irrigation under license, town and commercial water supplies, riparian usage and river losses are given in Table 19.

TABLE 19.

Requirement	Cusecs	Gallons Per Minute
Irrigation under license (4,150 acres at 2.5 feet per season).	21	7,900
Town, Commercial and Mining water supplies.	39	14,500
Riparian usage and losses	10	3,700
Total present requirements	70	26,100

Subdivision of the total demand on streamflow in the valleys into the demands on the respective tributary basins has indicated that the natural streamflows are frequently inadequate to meet the present requirements. The estimated total present requirement of 70 cusecs (26,200 gallons per minute) represents about one seventh of the average annual flow at Holdfast. This requirement can only be fully met by natural flows at Holdfast during about 50 percent of the time.

14. POSSIBLE IRRIGATION DEVELOPMENT.

The development of irrigation in the Macintyre and Severn River Valleys has been impeded to a certain extent by inadequate and uncertain water supply. An assured supply would encourage the establishment of additional areas of tobacco and improved pastures and could result in the introduction of cotton growing to the two valleys, which have large areas of irrigable land in their lower sections.

Along the lower reaches of the Severn River and along the Macintyre River from its junction with the Severn River downstream to Yetman, a total distance of about 70 river miles, the total area of irrigable land has been assessed at about 11,000 acres. About 4,000 acres of these lands have been classed as suitable for growing tobacco while the remaining 7,000 acres would be suitable for improved pastures. At present approximately 2,000 acres (including about 1,100 acres of tobacco) are irrigated.

In the upper Severn Valley (including the Frazer's Creek catchment) and the Macintyre Valley above its junction with the Severn River, the area under irrigation at the present time is slightly more than 2,000 acres. This area could be increased at least five times if adequate water supplies were assured by the construction of suitable storages in the upper reaches of the valleys.

Downstream of Yetman along the 30 river miles to the Dumaresq River junction, the Macintyre Valley opens out with areas of deep alluvial soils of high fertility extending for several miles on each side of the river.

Ultimate irrigation development in the valleys will be restricted by the quantities of water which can economically be made available as a regulated flow. The total surface water resources of the Macintyre and Severn River Valleys have been assessed as averaging about 370,000 acre feet per annum. Under present circumstances the economic regulated flow which could be provided is estimated at about 170,000 acre feet in normal years subject to a 25 percent restriction on flows for irrigation in drought years.

This degree of regulation could be provided by a single storage on the Macintyre River below the Severn-Macintyre junction. However, a dam on the Macintyre River site would not serve the areas along 40 miles of the Severn

River upstream of the Severn and Macintyre junction. It is these areas which represent the greater part of the present irrigation demand in the valleys.

Analyses indicate that the economic yield of 170,000 acre feet may also be obtained by a wide possible combination of dams on the Severn and Macintyre Rivers or their tributaries.

15. MACINTYRE AND SEVERN VALLEY STORAGE PROPOSALS.

A favourable dam site on the Severn River near Pindari, located as shown at Figure 1, affords an opportunity for economically providing some of the storage required to achieve the economic yield of the Macintyre Basin while at the same time meeting part of the Severn Valley demands. The largest capacity dam which could be constructed at this site would be about 240,000 acre feet and would provide a normal annual regulated flow of about 117,000 acre feet.

The Government's decision to build a dam of 30,000 acre feet capacity on the Severn River, to be known as Pindari Dam, marks the introduction of a new concept in the development of the State's water resources. This concept is based on the Government's view that it is in the best interests of the community as a whole to develop the resources of each river valley in planned stages.

Construction of a large dam involves considerable capital expenditure spread over a long period of time, during which heavy interest commitments are incurred and no benefit is derived from the investment. Water cannot be stored and the river flow regulated until the dam is almost completed.

On the other hand, construction of a smaller storage involves substantially less outlay from the limited funds available. The storage can be completed in a much shorter period of time to meet the urgent demand which exists for water, and production can be stabilised and expanded in the benefited area within a minimum period. Further, the construction of a smaller storage on a river system can result in other rivers receiving the benefits of regulation earlier than they otherwise would.

The funds available to any State for water conservation are not sufficient to permit major works to proceed on the scale which is desirable

to meet requirements for maximum national growth. Therefore, it is necessary to use most effectively the limited amount that can be made available for dam construction.

It is estimated that a 30,000 acre feet storage on the Severn River at the Pindari Site would provide a regulated flow of 29,400 acre feet in a normal year subject to a 25 percent restriction on flows for irrigation in drought years.

The preliminary estimate of cost for the construction of such a dam is \$7 million. For an extra cost of about \$3 million the capacity of this storage could later be increased very economically to 75,000 acre feet by the installation of spillway gates. This would increase the regulated flow to slightly more than double that provided by the 30,000 acre feet capacity storage, i.e. 60,000 acre feet in a normal year (reduced to 54,000 acre feet in a critical drought year).

Alternatively, for an expenditure of the order of \$13 million, the 30,000 acre feet storage could later be increased to provide full development of the site with a storage of 240,000 acre feet (providing a normal year regulated flow of 117,000 acre feet), bringing the total cost of the dam to about \$20 million.

In the event of development not justifying an increase in storage from 30,000 acre feet to 240,000 acre feet, it would be feasible to increase the 30,000 acre feet storage to any desired capacity up to 240,000 acre feet. The economic yield of the Macintyre and Severn River Valleys could later be developed by the provision of storages of appropriate capacity at other sites in the Macintyre and Severn Valleys.

A suitable sized dam can be provided on the Macintyre below its junction with the Severn which, in combination with the dam on the Severn River would bring the total cost for the full 170,000 acre feet per annum development to approximately \$44 million.

It is proposed to commence construction of Pindari Dam in about March 1967 to take advantage initially of a characteristically dry period following the summer rains. Construction will be undertaken by contract following the invitation of competitive tenders and the work should be completed during 1969.

Several assessments have been made of the benefits to be derived from a regulated flow in the Severn and Macintyre Rivers. With a regulating storage of 30,000 acre feet at the Pindari site it has been estimated that the present irrigated area of about 2,000 acres could be doubled and the value of production increased by more than \$600,000 annually.

Wherever the flow of a river has been regulated there have been great economic benefits to the State. A dam of the size proposed for the Macintyre and Severn River system will stabilise production and provide benefits comparable to those attained in other valleys throughout the State where the river flow is regulated.

The dam will regulate the river flow to give an assured supply for stock and domestic purposes and irrigation of pastures, fodder crops and tobacco. It will enable water usage to be doubled and this will, of course, greatly increase production. In times of drought, it will greatly increase the drought resistance of the valleys and the surrounding regions, by providing a hard core of production based on irrigation and adequate stock supplies. In addition, it will assure supplies to the town of Ashford and the Ashford Power Station.

If additional storage capacity is provided in the Macintyre Basin to supply a regulated flow of 170,000 acre feet in normal years, it would be possible to irrigate some 60,000 acres of land in the Basin in addition to the areas between Pindari Dam and Yetman.

16. ACKNOWLEDGMENT.

The Water Conservation and Irrigation Commission wishes to acknowledge the assistance given by The Director, Bureau of Meteorology in providing the Section on Climatic Features, the Rainfall Statistical Data and the Median Rainfall Maps for the Macintyre and Severn River Valleys.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1901	NO RECORDS		2	263	145	246	83	385	63	209	91	254	
1902	86	85	187	0	0	113	2	263	94	263	107	188	1388
1903	92	72	150	159	310	242	544	255	624	204	512	418	3582
1904	210	254	660	84	365	83	246	83	184	308	155	369	3001
1905	380	161	195	780	320	47	77	136	20	235	135	355	2841
1906	312	204	268	64	184	94	77	352	209	688	340	199	2991
1907	356	245	629	69	50	189	95	162	11	134	NO RECORDS		
1908	NO RECORDS												
1909	NO RECORDS												
1910	NO RECORDS												
1911	NO RECORDS												
1912	143	306	242	12	4	498	309	233	123	291	440	310	2911
1913	479	83	291	81	631	352	47	18	185	221	118	270	2776
1914	370	660	261	174	260	117	155	0	70	321	252	362	3002
1915	72	19	8	103	251	88	149	266	143	90	0	80	1269
1916	185	481	60	388	43	230	332	269	120	180	605	915	3808
1917	885	350	305	0	25	119	103	120	449	21	848	439	3664
1918	483	141	0	75	20	45	134	231	47	86	248	140	1650

ASHFORD RAINFALL STATISTICS
(Points)

ASHFORD RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1919	NO RECORDS												
1920	162	90	66	98	106	395	374	214	422	231	209	336	2703
1921	26	227	261	76	520	755	686	31	379	338	163	824	4286
1922	330	65	86	2	4	152	242	48	286	134	216	319	1884
1923	268	41	61	0	21	280	105	69	254	130	29	470	1728
1924	NO RECORDS							188	128	253	425	98	
1925	519	190	179	163	0	12	177	327	26	74	546	233	2446
1926	101	78	68	184	124	307	162	103	88	36	13	804	2068
1927	502	208	285	263	12	144	26	109	54	248	368	515	2734
1928	356	523	210	119	20	382	275	28	23	183	256	89	2464
1929	136	688	147	466	29	117	76	164	86	408	116	222	2655
1930	311	114	222	154	142	321	202	268	77	318	243	116	2488
1931	61	267	656	184	347	280	187	60	133	273	386	705	3539
1932	85	123	112	287	100	115	136	21	495	427	148	147	2196
1933	887	48	65	48	225	217	340	196	248	449	292	216	3231
1934	253	584	10	198	76	105	218	250	214	401	239	490	3038
1935	454	205	131	129	65	31	191	86	302	415	67	189	2265
1936	249	49	278	35	169	115	303	139	217	58	57	871	2540

ASHFORD RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1937	341	68	516	79	34	132	91	188	36	191	436	263	2375
1938	241	184	8	57	316	117	188	315	106	304	421	36	2293
1938	299	16	451	185	7	304	164	210	50	180	120	189	2175
1940	89	390	296	87	36	30	6	20	97	108	153	284	1596
1941	615	208	297	5	17	260	63	15	16	232	393	27	2148
1942	242	255	179	0	115	246	354	49	133	734	303	627	3237
1943	358	81	39	142	118	93	117	176	301	245	628	316	2614
1944	644	159	23	56	127	39	251	358	98	67	50	159	2031
1945	293	922	15	102	195	400	196	215	174	20	133	138	2803
1946	560	365	172	114	39	28	56	3	493	113	194	273	2410
1947	403	562	396	220	70	60	79	223	415	197	337	566	3528
1948	499	394	389	132	222	426	191	58	141	96	457	291	3296
1949	374	666	55	87	83	257	117	97	199	636	402	112	3085
1950	163	520	579	217	150	410	611	33	322	669	582	91	4347
1951	541	242	179	78	129	426	30	139	76	144	63	80	2127
1952	224	530	387	233	271	100	140	543	90	756	67	83	3424
1953	56	1127	138	72	211	0	54	285	61	200	112	48	2364
1954	178	646	253	5	95	110	109	228	186	1041	428	402	3681

ASHFORD RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1955	198	803	44	189	149	70	187	132	223	497	97	245	2834
1956	779	990	230	182	343	437	190	5	164	318	127	204	3969
1957	607	315	362	82	2	160	93	409	21	118	53	293	2515
1958	189	238	286	143	135	158	70	131	335	197	142	879	2503
1959	519	439	368	37	98	14	241	0	184	204	517	629	3250
1960	102	349	63	217	227	123	201	140	211	184	272	278	2367
1961	232	354	132	72	76	270	161	150	49	176	782	300	2754
1962	828	343	347	173	127	9	218	214	153	203	204	578	3397
1963	160	275	383	107	453	110	25	312	23	76	464	320	2708
1964	167	260	478	306	170	149	228	86	236	389	120	270	2859

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1897	NO RECORDS							150	345	331	130	511	
1898	489	684	42	39	252	315	167	241	371	173	152	190	3115
1899	764	142	151	271	147	233	136	224	220	409	303	286	3286
1900	239	593	623	271	459	378	436	115	177	72	405	528	4296
1901	234	193	334	302	240	339	167	793	94	395	178	212	3481
1902	425	111	145	28	10	260	49	375	170	426	544	736	3279
1903	34	34	222	196	290	461	692	511	792	415	292	410	4349
1904	109	132	544	179	552	243	221	157	241	508	317	236	3439
1905	428	218	476	572	319	190	143	173	58	282	331	603	3793
1906	598	219	439	110	108	178	288	478	366	459	400	268	3911
1907	658	468	583	142	109	448	151	321	83	201	714	209	4087
1908	161	654	628	247	87	300	190	442	478	330	113	292	3922
1909	148	634	264	437	125	437	202	820	206	122	566	269	4230
1910	914	180	821	70	53	383	437	257	71	400	200	654	4440
1911	1004	454	187	121	226	110	233	154	360	234	554	155	3792
1912	139	751	415	0	40	529	606	273	153	532	318	137	3893
1913	176	449	418	231	588	476	110	61	168	388	120	290	3475
1914	505	368	505	155	114	236	206	20	114	390	368	420	3401
1915	227	459	87	276	221	262	376	149	223	116	33	514	2943

BEULAH RAINFALL STATISTICS
(Points)

BEULAH RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1916	264	314	125	577	179	465	375	516	226	307	632	799	4779
1917	588	573	184	64	103	212	278	202	772	274	1192	514	4956
1918	644	46	140	249	165	39	128	433	76	128	242	61	2351
1919	140	402	239	136	314	70	69	188	52	306	39	400	2355
1920	506	175	143	253	123	604	500	542	326	249	227	366	4016
1921	102	252	521	150	800	656	699	118	346	661	349	1068	5722
1922	112	171	169	66	10	233	441	144	360	174	379	817	3076
1923	348	60	490	25	57	466	374	130	406	260	174	790	3580
1924	220	790	262	406	96	343	544	319	364	420	777	373	4914
1925	480	327	161	98	341	113	260	298	20	221	594	987	3900
1926	131	299	217	264	180	169	276	179	227	103	117	661	2823
1927	658	120	431	437	30	332	48	31	77	398	326	357	3245
1928	513	903	231	374	183	480	644	23	88	504	442	329	4714
1929	64	706	286	649	45	196	127	444	202	532	188	203	3642
1930	748	166	392	142	152	641	266	303	151	383	481	125	3950
1931	364	506	668	535	621	523	320	82	416	175	494	565	5269
1932	312	134	184	504	88	162	187	100	773	321	341	143	3249
1933	1228	33	36	135	326	331	544	421	467	767	497	462	5247
1934	193	585	190	146	10	243	609	319	286	584	436	822	4423

BEULAH RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1935	418	263	67	52	140	155	254	65	511	551	196	209	2881
1936	436	22	356	142	219	175	616	282	95	74	128	677	3222
1937	128	368	609	127	113	221	190	294	230	151	317	390	3138
1938	463	376	71	102	506	211	408	458	198	506	535	76	3910
1939	505	115	686	194	80	352	370	259	40	382	233	477	3693
1940	152	443	275	175	53	49	0	75	169	153	248	550	2342
1941	995	336	676	17	72	673	103	69	79	286	574	158	4038
1942	391	493	332	0	205	262	657	67	209	504	397	428	3945
1943	554	222	41	170	109	247	222	336	141	398	766	437	3643
1944	354	265	123	100	231	78	337	670	133	251	199	208	2949
1945	521	776	61	206	240	441	308	397	362	123	435	433	4303
1946	707	410	596	148	164	166	187	11	428	153	293	421	3684
1947	183	804	225	237	132	143	215	311	661	453	496	660	4520
1948	471	193	405	226	196	419	261	273	268	321	307	587	3927
1949	549	913	193	229	139	313	373	261	473	1307	384	289	5423
1950	671	716	131	339	286	464	844	90	467	923	641	24	5596
1951	890	90	142	126	187	543	205	264	144	63	187	262	3103
1952	268	653	341	155	394	525	512	856	597	405	342	213	5261
1953	392	864	210	232	302	8	240	480	110	59	55	74	3026

BOGGABILLA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1893	354	531	92	762	146	420	218	179	16	172	400	33	3323
1894	380	128	535	341	245	175	22	42	189	438	163	162	2820
1895	503	58	0	0	78	16	70	54	119	64	321	718	2001
1896	58	336	104	127	110	95	224	78	46	26	461	189	1856
1897	161	236	501	0	2	364	372	71	279	169	6	701	2862
1898	337	132	3	0	143	189	67	43	188	182	57	25	1366
1899	443	274	105	127	70	183	171	158	211	73	105	171	2091
1900	107	337	454	293	206	186	220	47	212	48	58	196	2364
1901	18	7	375	167	213	184	222	156	64	274	21	20	1721
1902	105	46	38	0	3	40	3	111	11	107	25	194	683
1903	257	32	314	206	284	218	448	232	365	136	448	261	3201
1904	390	285	839	13	324	46	233	67	162	123	90	172	2744
1905	330	21	243	521	157	55	42	52	2	245	60	169	1897
1906	310	263	208	58	235	86	36	503	245	212	244	233	2633
1907	739	100	657	44	123	104	161	103	5	177	368	355	2936
1908	72	533	534	311	0	128	123	269	134	202	148	123	2577
1909	57	325	87	232	243	274	116	360	60	352	192	248	2546
1910	689	92	537	83	77	384	212	36	17	245	235	405	3012

BOGGABILLA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1911	744	312	410	110	132	2	142	94	165	44	49	289	2493
1912	293	253	315	0	0	583	200	86	155	240	223	40	2388
1913	342	473	360	139	715	290	69	0	68	149	123	173	2901
1914	236	222	530	165	677	61	387	37	0	29	579	333	3256
1915	122	37	14	48	166	111	88	265	49	12	5	168	1105
1916	70	360	141	293	14	347	316	218	87	116	686	548	3198
1917	725	677	189	0	0	99	100	74	446	250	845	534	3939
1918	620	0	0	170	11	18	108	276	22	52	143	29	1449
1919	99	199	74	243	244	1	10	40	3	47	93	268	1321
1920	290	166	107	71	91	450	427	141	140	252	102	616	2853
1921	2	136	153	107	417	745	546	34	275	202	180	663	3460
1922	196	46	131	4	0	139	190	27	149	85	59	611	1637
1923	98	270	34	27	40	153	89	18	149	54	118	493	1543
1924	383	325	111	254	31	82	232	249	197	117	844	20	2845
1925	462	174	76	0	178	35	99	234	0	24	445	349	2076
1926	320	306	41	63	237	141	119	25	119	49	0	898	2318
1927	154	69	257	165	33	142	0	101	11	157	236	235	1560
1928	208	431	288	234	18	372	81	35	0	205	59	146	2077

BOGGABILLA RAINFALL STATISTICS.
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1929	60	514	218	423	3	103	49	117	58	172	57	260	2034
1930	171	168	276	148	138	380	315	230	208	249	111	94	2488
1931	122	50	310	101	207	151	102	90	146	115	326	570	2290
1932	98	154	91	320	122	100	182	23	350	254	380	165	2239
1933	405	158	17	69	146	251	303	138	125	412	335	154	2513
1934	143	487	2	100	149	129	216	172	87	355	360	306	2506
1935	766	110	18	3	102	17	102	50	329	57	83	124	1761
1936	178	105	218	42	150	84	284	102	121	85	24	389	1782
1937	237	100	795	18	18	45	100	36	53	132	512	342	2388
1938	191	242	0	66	702	43	82	155	138	232	388	0	2239
1939	226	6	397	396	0	185	182	214	50	37	86	227	2006
1940	79	367	313	57	47	0	0	14	76	40	66	403	1462
1941	552	114	311	0	12	166	36	13	10	151	313	14	1692
1942	99	332	40	0	162	80	291	25	77	229	281	790	2406
1943	288	9	9	221	75	90	99	192	72	182	513	327	2077
1944	299	94	0	24	34	31	161	373	127	210	65	70	1488
1945	244	529	0	71	154	469	205	193	20	12	384	286	2567
1946	393	71	58	247	50	12	3	0	523	41	276	231	1905

BOGGABILLA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1947	471	411	639	127	174	66	50	172	210	184	460	469	3433
1948	197	175	167	121	164	542	219	51	146	42	145	246	2215
1949	442	650	139	49	33	194	64	27	184	475	261	15	2533
1950	244	494	121	91	122	522	658	55	206	635	788	157	4093
1951	648	105	86	14	90	279	38	104	167	169	185	127	2012
1952	32	378	378	95	269	195	95	294	136	623	42	75	2612
1953	96	1550	295	62	134	0	37	341	5	101	195	67	2883
1954	316	808	0	0	25	99	219	149	72	824	346	209	3067
1955	127	647	35	381	177	38	217	111	62	235	135	302	2467
1956	548	611	196	272	343	489	219	0	99	208	147	185	3317
1957	361	294	205	88	65	107	75	110	13	187	58	92	1655
1958	352	243	358	218	28	497	29	77	243	145	187	240	2617
1959	356	584	54	129	183	16	308	13	49	224	446	79	2441
1960	257	316	102	81	188	103	138	141	125	92	134	113	1790
1961	264	276	263	64	116	87	233	143	61	360	687	195	2749
1962	924	190	657	186	133	24	71	231	170	50	44	574	3254
1963	216	154	656	67	225	46	12	148	21	137	351	511	2544
1964	229	287	101	288	170	62	197	50	203	331	209	191	2318

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1902	NO RECORDS					155	0	399	82	375	518	374	
1903	93	80	586	240	518	113	484	260	570	210	238	683	4075
1904	140	159	510	168	356	128	358	121	227	374	276	240	3057
1905	481	508	351	688	202	177	140	114	29	224	191	323	3428
1906	464	124	549	17	115	174	189	329	316	447	389	379	3492
1907	688	340	647	95	48	338	125	225	30	214	640	344	3734
1908	9	783	403	151	47	225	103	291	391	283	71	237	2994
1909	87	552	124	431	77	411	113	660	133	246	405	243	3482
1910	852	105	635	121	17	325	284	141	131	392	153	372	3528
1911	611	446	234	79	187	57	190	77	280	260	392	185	2998
1912	201	200	316	0	9	448	528	218	111	397	107	83	2618
1913	275	477	399	71	561	439	53	27	146	404	187	176	3215
1914	411	119	590	135	139	170	146	5	15	309	385	433	2857
1915	154	44	55	208	180	202	230	253	230	75	18	427	2076
1916	306	967	70	598	52	434	477	422	163	343	526	786	5144
1917	480	281	143	45	29	157	170	174	776	211	1302	414	4182
1918	567	14	22	213	112	85	145	370	47	104	169	33	1881
1919	182	261	113	204	237	129	52	153	14	219	53	338	1955

CRYSTAL HILL RAINFALL STATISTICS
(Points)

CRYSTAL HILL RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1920	293	213	156	50	150	808	418	281	270	189	151	590	3569
1921	115	261	425	184	785	500	511	88	297	430	401	883	4880
1922	197	171	122	96	19	198	376	64	205	196	223	548	2415
1923	207	66	182	0	44	389	244	66	331	170	137	571	2407
1924	187	614	142	403	50	200	328	359	220	333	789	365	3990
1925	636	120	227	37	273	58	202	371	6	87	553	264	2834
1926	156	129	224	493	270	330	167	64	208	71	45	486	2643
1927	576	112	258	272	25	130	16	25	18	169	483	301	2385
1928	355	631	270	278	80	565	447	0	35	275	278	167	3381
1929	93	509	256	503	34	138	82	270	153	483	137	152	2810
1930	498	232	384	141	153	487	217	212	139	217	405	144	3229
1931	124	122	908	368	390	538	265	70	244	102	382	475	3988
1932	371	63	167	506	72	112	181	73	510	338	329	212	2934
1933	502	93	72	62	225	279	450	169	351	647	445	435	3730
1934	293	403	19	303	113	222	404	191	211	491	346	565	3561
1935	534	149	42	61	96	69	261	97	207	249	102	160	2027
1936	245	99	227	73	175	157	396	216	222	45	33	480	2368
1937	254	194	562	50	37	99	146	184	224	160	225	335	2470

CRYSTAL HILL RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1938	307	437	0	72	275	151	206	369	82	353	408	36	2696
1939	471	30	229	280	27	376	175	253	10	144	120	346	2461
1940	120	366	308	165	57	43	28	72	135	122	88	401	1905
1941	590	288	442	166	49	442	96	29	41	175	372	139	2829
1942	352	349	237	42	154	295	557	35	89	514	351	366	3341
1943	581	235	7	107	114	173	182	182	135	234	817	242	3009
1944	524	135	37	109	223	91	428	419	100	111	76	172	2425
1945	430	659	25	94	95	287	280	243	116	67	106	429	2831
1946	823	45	137	109	83	99	67	0	338	197	196	224	2318
1947	181	288	447	182	80	82	166	317	500	463	378	757	3841
1948	710	191	338	102	245	407	296	194	146	129	502	202	3462
1949	317	894	178	135	71	317	205	180	402	974	397	319	4389
1950	362	592	412	258	272	747	889	51	331	805	601	2	5322
1951	695	124	91	78	214	542	105	242	174	36	47	231	2579
1952	58	510	325	359	423	286	175	547	159	673	87	537	4139
1953	159	761	154	71	197	4	78	403	64	146	273	14	2324
1954	115	714	18	9	101	178	126	166	62	997	713	313	3512
1955	561	1344	15	125	216	307	216	175	155	524	242	278	4158

CRYSTAL HILL RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1956	655	1130	285	272	649	405	256	39	277	325	121	211	4625
1957	421	317	444	199	0	208	84	177	52	162	110	249	2423
1958	361	442	199	77	285	180	94	292	524	383	188	614	3639
1959	616	466	677	52	177	62	341	8	320	393	556	695	4363
1960	204	324	112	196	359	94	396	212	130	230	320	323	2900
1961	154	407	330	97	86	182	232	301	50	360	804	448	3451
1962	794	462	188	106	180	62	345	267	163	241	252	507	3567
1963	372	140	549	184	693	210	87	403	131	140	486	816	4211
1964	497	42	211	327	349	181	301	115	380	524	318	109	3354

DEEPWATER T.O. RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1890	598	859	1057	215	306	131	83	38	259	264	331	287	4428
1891	870	226	85	72	70	355	180	235	359	267	332	449	3500
1892	362	204	511	461	202	638	190	146	247	665	456	482	4564
1893	497	599	256	255	273	577	225	139	55	335	501	267	3979
1894	586	93	625	275	240	342	149	155	245	658	100	386	3854
1895	625	78	0	26	76	34	123	40	158	237	326	590	2313
1896	260	622	311	93	132	114	362	304	339	62	383	683	3665
1897	485	164	230	13	24	214	395	154	298	379	12	719	3087
1898	612	412	45	41	145	329	119	126	296	126	41	118	2410
1899	861	313	64	269	79	274	181	164	194	276	192	359	3226
1900	512	312	312	60	380	261	240	136	164	103	218	225	2923
1901	172	205	224	266	105	143	109	608	98	247	138	78	2393
1902	514	8	161	12	35	109	25	297	93	317	375	521	2467
1903	40	87	399	326	698	285	552	380	618	224	367	390	4366
1904	84	152	553	40	402	115	358	40	183	337	339	430	3033
1905	315	41	368	222	225	75	160	190	10	240	280	470	2596
1906	966	245	402	93	42	52	137	418	258	328	348	193	3482
1907	530	597	840	78	112	230	95	303	10	339	566	193	3893

DEEPWATER T.O. RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1908	200	663	187	250	0	110	35	210	153	201	402	384	2795
1909	28	110	149	75	150	326	97	261	107	133	32	9	1477
1910	390	226	375	155	16	171	459	98	81	398	142	369	2880
1911	599	345	259	66	116	75	186	192	268	185	440	86	2817
1912	198	599	95	0	0	491	262	145	146	176	186	37	2335
1913	462	30	241	87	472	446	84	100	246	32	0	372	2572
1914	507	179	381	135	144	436	230	0	52	314	495	391	3264
1915	83	347	66	97	137	109	261	190	110	76	5	500	1981
1916	220	334	77	367	220	391	247	227	113	272	291	662	3421
1917	528	481	177	17	60	152	129	120	658	273	704	411	3710
1918	519	55	148	230	19	13	92	296	103	99	132	236	1942
1919	108	363	404	121	168	27	50	78	30	90	77	261	1777
1920	649	155	125	145	170	464	466	256	324	310	240	291	3595
1921	99	182	332	180	575	633	808	62	444	437	264	707	4723
1922	207	48	191	32	0	204	266	29	256	112	330	463	2138
1923	395	0	194	10	23	353	204	37	253	140	84	308	2001
1924	210	574	134	194	53	258	542	225	252	430	428	362	3662
1925	680	216	188	23	272	52	142	500	19	141	370	393	2996

DEEPWATER T.O. RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1926	268	65	316	137	120	254	273	79	91	61	36	765	2467
1927	469	47	285	96	0	256	55	90	23	329	428	303	2381
1928	632	758	460	182	158	372	374	44	52	353	258	214	3857
1929	147	389	216	345	38	98	149	222	75	529	175	221	2606
1930	294	230	234	105	157	396	186	261	104	281	237	169	2654
1931	348	361	580	167	362	269	264	74	257	209	226	627	3744
1932	233	66	296	408	87	191	102	47	462	354	359	235	2840
1933	544	172	19	125	310	195	303	159	250	666	452	220	3415
1934	527	196	30	191	48	131	333	238	207	289	225	659	3074
1935	257	340	92	64	69	45	212	63	371	313	49	390	2265
1936	257	95	200	38	90	123	255	146	214	146	115	463	2142
1937	296	133	456	70	64	122	100	219	72	285	222	416	2455
1938	331	209	0	151	304	37	276	243	227	245	399	56	2478
1939	327	0	440	148	3	298	111	187	36	201	186	248	2185
1940	164	462	157	64	4	45	28	13	103	153	235	306	1734

DEEPWATER T.O. RAINFALL STATISTICS.
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1941	439	92	416	40	104	423	74	17	11	190	473	17	2296
1942	313	315	324	0	119	117	414	33	89	692	623	591	3630
1943	313	146	67	78	69	165	148	217	249	196	707	465	2820
1944	417	125	78	16	127	28	220	324	112	183	209	332	2171
1945	373	838	0	217	137	650	289	239	252	45	373	370	3783
1946	485	77	435	118	79	43	78	0	364	108	386	285	2458
1947	263	267	717	311	47	46	135	195	281	255	391	523	3431
1948	395	267	212	41	137	500	116	224	169	94	565	366	3086
1949	231	628	72	75	99	252	167	99	220	693	515	466	3517
1950	339	516	53	261	235	727	560	82	266	618	445	21	4123
1951	1137	183	303	79	164	491	115	261	113	118	146	185	3295
1952	194	554	288	238	369	249	157	356	139	829	122	245	3740
1953	251	841	299	62	216	0	96	280	70	205	169	43	2532
1954	72	757	159	12	55	188	202	130	84	827	305	498	3289
1955	259	572	106	252	320	149	151	112	90	417	69	388	2885
1956	1314	943	36	176	381	413	163	139	128	429	146	303	4571
1957	570	677	337	100	0	90	186	170	38	225	26	231	2650
1958	515	543	277	48	199	112	142	160	540	299	109	703	3647

DEEPWATER T.O. RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1959	633	158	582	173	97	78	312	1	212	320	396	963	3925
1960	78	396	86	103	222	89	183	154	184	144	126	374	2139
1961	192	458	140	81	68	88	271	166	104	322	829	458	3177
1962	784	298	340	237	143	3	385	260	307	380	214	405	3756
1963	210	177	266	66	653	164	47	209	47	152	478	297	2766
1964	488	214	646	153	206	83	247	72	218	474	178	105	3084

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1884					NO	RECORDS					468	176	
1885	594	606	348	32	119	312	88	50	371	226	295	537	3578
1886	427	30	312	302	618	544	178	641	60	638	542	25	4317
1887	897	427	341	59	40	270	391	318	281	150	505	489	4168
1888	229	735	223	60	0	0	0	26	107	226	151	751	2508
1889	419	249	234	333	528	405	138	194	234	263	641	247	3885
1890	502	969	842	243	366	332	175	23	252	371	285	261	4621
1891	666	185	40	90	12	648	185	355	345	157	396	393	3472
1892	248	134	535	473	214	404	159	144	472	879	444	385	4491
1893	271	639	300	418	312	428	255	152	50	336	487	202	3850
1894	649	52	563	141	345	356	123	108	168	415	121	119	3160
1895	640	127	47	26	107	55	131	78	164	225	424	366	2390
1896	512	535	343	200	196	87	312	162	279	145	258	649	3678
1897	433	245	243	17	18	268	459	176	311	379	12	901	3462
1898	612	412	45	0	145	329	119	115	270	183	56	188	2474
1899	1087	220	65	381	159	368	276	203	138	269	205	371	3742
1900	471	423	332	195	469	288	372	85	247	48	275	268	3473
1901	149	155	327	260	152	201	118	596	88	359	215	136	2756

EMMAVILLE RAINFALL STATISTICS
(Points)

EMMAVILLE RAINFALL STATISTICS
(Pcints)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1902	361	164	146	0	26	182	0	310	219	461	128	763	2760
1903	10	180	520	347	266	290	589	354	630	285	752	503	4726
1904	92	188	770	180	380	101	226	63	229	424	308	339	3300
1905	371	91	327	304	230	107	25	102	30	362	228	691	2868
1906	790	293	347	91	62	93	132	483	255	376	351	45	3318
1907	270	151	481	73	38	317	123	182	15	221	483	274	2628
1908	86	734	218	197	33	191	118	276	291	262	362	218	2986
1909	70	696	56	357	162	309	216	566	111	138	456	118	3255
1910	604	197	677	175	43	256	366	134	10	348	298	394	3502
1911	536	274	185	27	163	69	220	138	410	158	224	55	2459
1912	194	110	354	5	10	459	435	257	182	258	563	172	2999
1913	398	71	497	87	489	357	80	40	254	300	126	277	2976
1914	509	161	474	138	206	200	215	0	83	339	448	501	3274
1915	165	30	21	96	95	184	237	156	177	89	0	505	1755
1916	183	446	70	273	114	463	361	322	216	225	467	705	3845
1917	772	341	160	3	49	161	208	105	651	453	717	333	3953
1918	516	83	60	145	33	36	144	405	108	161	524	154	2369
1919	338	257	392	73	255	43	65	87	30	84	102	244	1970

EMMAVILLE RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1920	310	154	112	81	211	448	559	344	515	282	131	478	3625
1921	50	362	388	153	545	777	726	76	469	555	320	865	5286
1922	307	6	168	32	0	221	316	68	224	180	213	576	2311
1923	226	78	119	20	28	275	115	74	105	173	115	464	1792
1924	229	748	99	320	96	302	472	392	316	351	572	343	4240
1925	524	232	337	62	269	17	260	574	46	137	711	380	3549
1926	241	168	196	187	191	273	244	109	127	131	64	848	2779
1927	412	48	334	260	16	246	83	105	65	239	566	302	2676
1928	550	351	335	207	164	492	356	19	53	409	302	161	3399
1929	82	473	254	357	16	152	123	249	94	595	119	317	2831
1930	312	245	268	119	114	604	255	249	113	292	334	187	3092
1931	195	451	763	314	446	399	382	72	337	332	377	887	4955
1932	321	106	229	614	90	157	141	68	405	358	255	312	3056
1933	878	142	0	124	375	262	453	230	341	753	535	338	4431
1934	627	502	40	291	42	178	364	317	322	450	350	600	4083
1935	342	363	80	12	142	31	290	92	375	378	89	340	2534
1936	301	108	269	73	150	197	453	208	228	200	79	573	2839
1937	381	136	367	106	86	190	118	226	81	242	461	408	2802

EMMAVILLE RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1938	482	302	91	97	350	64	355	340	105	620	457	175	3438
1939	560	156	626	347	26	455	171	258	113	257	239	423	3631
1940	222	650	259	127	37	62	7	14	135	132	209	341	2195
1941	623	211	511	55	116	486	120	60	11	334	453	0	2980
1942	493	389	256	0	167	242	522	67	253	750	531	664	4334
1943	229	159	54	144	121	272	225	298	303	402	1102	461	3770
1944	586	303	41	39	251	69	357	452	148	267	199	494	3206
1945	599	1107	118	179	154	364	323	364	230	63	366	542	4409
1946	482	271	366	134	92	93	82	0	473	110	288	377	2768
1947	482	595	633	317	97	116	168	282	491	312	595	628	4716
1948	509	418	298	162	210	461	208	232	217	133	586	396	3830
1949	294	699	117	130	143	310	187	151	296	954	585	281	4147
1950	219	754	75	268	272	661	686	47	510	954	485	0	4931
1951	1158	536	285	104	222	496	150	298	158	134	148	146	3835
1952	145	659	429	176	319	360	188	399	98	796	145	132	3846
1953	155	708	219	67	220	8	85	268	78	173	195	57	2233
1954	99	617	71	71	54	209	129	181	137	955	381	495	3399
1955	298	675	74	173	209	184	206	155	84	370	105	357	2890

EMMAVILLE RAINFALL STATISTICS
(Points)

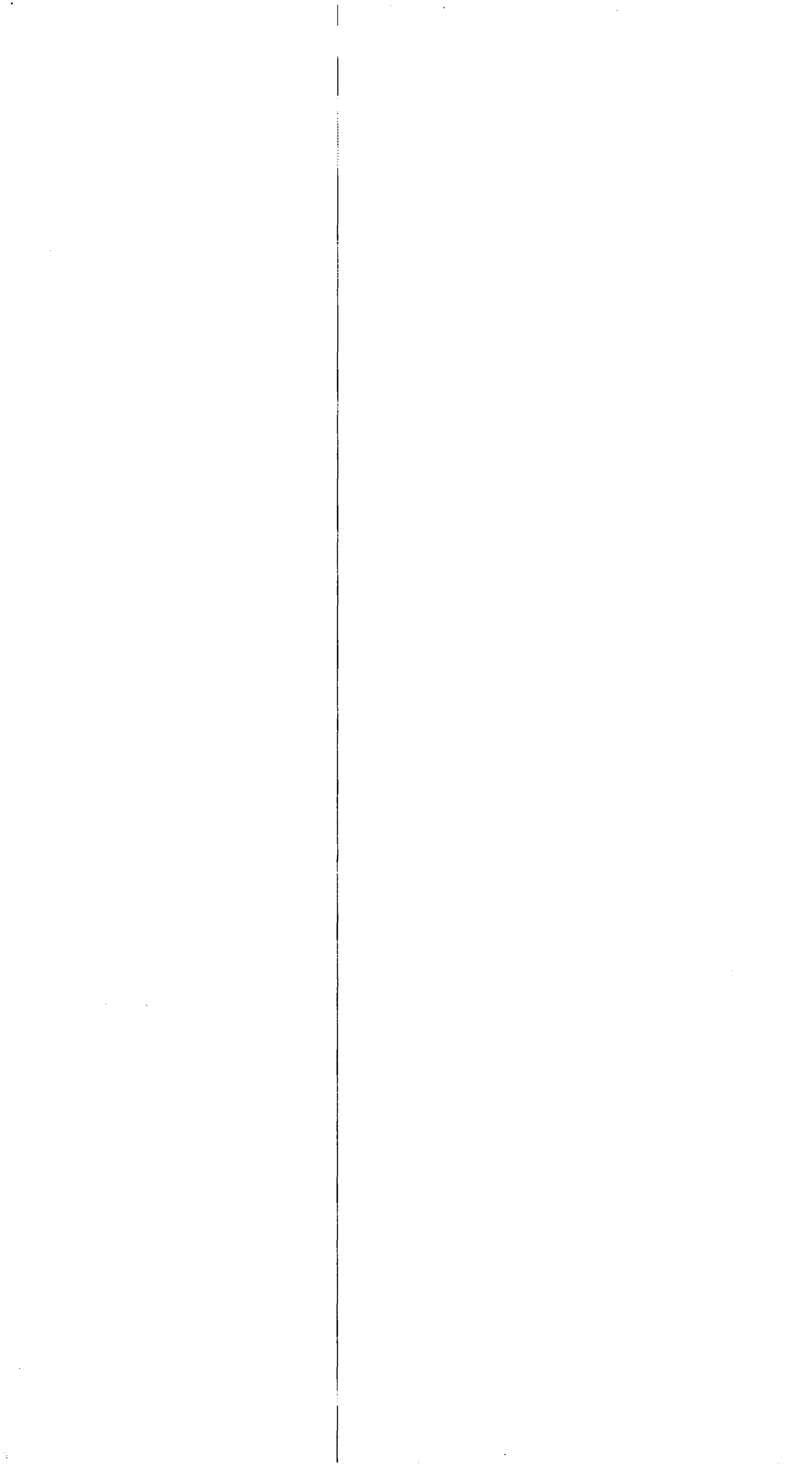
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1956	978	930	43	130	416	427	225	109	224	353	160	299	4294
1957	256	449	437	137	11	140	165	194	28	154	23	215	2209
1958	311	241	279	83	210	110	174	153	499	295	102	506	2963
1959	474	227	696	61	140	55	371	0	184	410	448	951	4017
1960	116	311	25	129	365	88	291	189	215	204	208	389	2530
1961	174	440	174	104	79	106	230	185	103	220	569	324	2708
1962	595	259	303	90	127	14	291	238	314	297	163	395	3086
1963	268	280	227	64	576	170	57	267	80	174	424	390	2977
1964	396	96	423	163	262	79	235	98	275	425	76	150	2678

GLEN ELGIN RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1910	403	159	662	237	59	332	103	42	88	286	209	523	3103
1911	999	757	304	70	91	6	284	301	136	235	262	163	3608
1912	233	556	433	20	10	667	309	181	142	384	392	164	3491
1913	360	189	282	498	513	420	87	91	254	191	152	343	3380
1914	281	285	502	6	319	455	140	125	53	603	756	732	4257
1915	121	403	34	199	115	35	76	92	36	76	85	388	1660
1916	186	222	102	689	350	149	152	125	157	332	346	573	3383
1917	614	533	235	29	48	71	62	92	387	226	1021	360	3678
1918	631	152	244	333	148	61	82	177	103	91	146	297	2465
1919	233	178	1022	444	426	69	24	39	24	93	250	664	3466
1920	852	259	259	263	171	279	383	125	279	428	153	350	3801
1921	493	179	568	327	856	481	1284	50	583	307	339	737	6204
1922	134	454	158	54	185	200	251	27	338	208	190	401	2600
1923	412	233	215	583	5	158	155	23	146	145	67	318	2460
1924	451	510	286	197	66	388	630	164	114	392	518	381	4097
1925	357	273	625	222	379	732	72	341	6	110	587	355	4059
1926	390	16	152	220	292	192	261	80	79	128	54	927	2791
1927	919	138	461	264	6	183	31	59	139	268	678	366	3512

GLEN ELGIN RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1928	510	2133	499	773	237	429	308	62	50	311	181	896	6389
1929	209	1023	360	536	70	290	174	195	114	716	165	256	4108
1930	614	445	368	289	406	798	131	290	36	279	272	132	4060
1931	204	768	358	229	360	154	214	63	119	144	299	821	3733
1932	218	284	251	425	198	120	33	27	524	301	774	368	3523
1933	810	157	158	292	257	401	609	124	250	616	788	718	5180
1934	587	456	180	409	493	61	432	189	296	230	369	796	4498
1935	664	424	202	91	173	14	433	55	402	295	26	325	3104
1936	338	320	650	79	102	102	195	56	191	130	34	802	2999
1937	433	792	706	189	69	194	91	265	59	280	390	446	3914
1938	879	361	248	106	649	45	112	201	101	255	384	55	3396
1939	512	21	767	368	62	243	137	251	94	367	158	424	3404
1940	252	414	403	305	21	95	22	135	56	177	255	385	2520
1941	618	174	328	109	159	228	25	14	5	84	557	64	2365
1942	377	944	283	70	30	70	310	50	87	596	405	810	4032
1943	375	168	202	51	67	113	119	172	293	246	745	573	3124
1944	776	81	140	14	100	107	378	597	104	82	211	323	2913
1945	365	873	72	263	136	1365	318	105	218	66	295	559	4635



Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1946	519	359	1131	183	31	12	56	3	377	146	397	316	3530
1947	790	998	864	402	55	27	89	166	314	207	358	419	4689
1948	417	270	648	80	338	1058	103	141	110	37	468	184	3854
1949	218	818	652	67	132	167	215	147	168	486	405	262	3737
1950	486	1030	386	257	250	1689	920	215	310	584	610	220	6957
1951	1245	151	679	66	207	357	93	184	35	85	162	178	3442
1952	269	910	380	287	238	241	118	572	58	702	187	496	4458
1953	553	1207	522	70	310	0	42	222	58	218	153	15	3370
1954	264	1631	96	133	335	175	1191	322	238	666	391	824	6266
1955	683	436	983	473	470	95	107	47	132	107	106	394	4033
1956	972	1517	801	169	509	407	139	63	165	284	67	373	5466
1957	602	515	449	218	3	39	219	276	26	343	28	273	2991
1958	513	270	446	310	101	483	79	135	317	126	73	869	3722
1959	1554	484	747		NO RECORDS				74	354	339	988	1021
1960	260	655	387	201	358	117	109	96	139	164	88	270	2844
1961	226	771	400	188	141	166	195	139	234	660	500	699	4319
1962					NO RECORDS								
1963	721	179	491	207	1110	108	28	220	70	286	820	776	5016
1964	488	349	686	441	232	10	144	79	171	276	363	184	3423

GLEN ELGIN RAINFALL STATISTICS
 (Points)

GLEN INNES P.O. RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1881	508	352	303	42	127	99	40	162	398	274	297	64	2666
1882	447	352	215	422	182	231	179	194	69	698	432	428	3849
1883	586	628	126	189	234	52	63	69	279	389	362	316	3293
1884	192	305	15	75	167	366	297	112	325	156	685	172	2867
1885	550	462	196	18	77	308	61	24	221	162	281	516	2876
1886	251	123	296	346	553	464	187	556	116	599	497	122	4110
1887	856	356	176	138	92	287	299	297	233	165	407	390	3696
1888	279	611	197	1	70	19	23	5	104	179	79	914	2481
1889	517	196	106	455	475	445	206	156	116	193	371	283	3519
1890	940	660	1153	44	257	340	168	116	314	616	409	408	5425
1891	716	44	127	159	31	430	188	335	447	145	303	664	3589
1892	250	130	728	551	210	426	247	163	519	760	536	440	4960
1893	329	527	288	304	252	530	208	155	17	323	471	168	3572
1894	622	135	335	214	358	210	108	153	199	500	135	64	3033
1895	675	68	124	180	136	49	78	55	287	346	408	441	2847
1896	424	612	188	228	129	77	269	207	172	189	140	483	3118
1897	283	167	188	14	22	223	430	197	222	191	57	614	2608
1898	452	336	33	1	142	247	46	123	304	168	104	103	2059

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1899	657	127	93	213	161	268	137	148	209	340	178	298	2829
1900	205	242	313	162	410	161	259	189	95	54	329	400	2819
1901	229	125	326	207	150	177	110	620	52	194	123	241	2554
1902	563	213	201	22	12	132	40	359	163	379	236	702	3022
1903	NR	55	287	241	280	NO RECORDS							
1904	143	215	613	113	331	95	253	48	91	339	323	144	2708
1905	349	123	277	336	151	68	57	132	43	244	211	537	2528
1906	546	206	383	61	58	76	109	397	278	403	423	208	3148
1907	471	433	625	185	35	276	141	173	25	215	440	169	3188
1908	63	494	283	177	39	143	117	264	235	230	193	210	2448
1909	95	612	301	297	99	252	181	494	113	124	602	295	3465
1910	663	178	949	85	23	248	326	105	43	350	266	424	3660
1911	757	301	105	91	176	88	231	144	297	225	331	152	2898
1912	138	292	136	1	11	461	356	209	185	248	339	135	2511
1913	252	140	510	93	414	474	116	58	212	342	104	417	3132
1914	488	305	674	81	155	210	101	11	147	381	211	423	3187
1915	143	379	59	157	190	109	258	172	165	48	31	353	2064
1916	308	505	99	308	120	418	286	295	147	212	434	701	3833

GLEN INNES P. O. RAINFALL STATISTICS
(Points)

GLEN INNES P.O. RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1917	891	509	143	13	37	142	176	132	485	261	722	430	3941
1918	707	5	104	173	53	13	87	323	70	196	201	131	2063
1919	200	271	228	55	247	38	58	129	30	152	87	638	2133
1920	517	97	104	217	208	427	385	267	340	319	141	424	3446
1921	70	120	460	134	633	612	700	86	404	612	277	1070	5178
1922	173	84	146	23	0	213	287	31	314	147	179	729	2326
1923	232	63	193	40	29	324	221	124	266	114	70	522	2198
1924	254	716	89	284	110	261	416	215	202	526	557	521	4151
1925	466	217	228	19	290	85	116	411	47	165	569	491	3104
1926	229	64	183	257	225	234	301	158	145	103	14	749	2662
1927	541	34	316	198	14	173	35	41	62	213	550	338	2515
1928	685	509	180	190	81	486	348	27	69	286	209	224	3294
1929	67	810	196	385	14	174	152	254	106	580	134	195	3067
1930	370	178	222	41	127	468	162	294	137	291	238	180	2708
1931	174	441	484	304	315	353	287	62	279	247	483	608	4037
1932	147	79	153	470	86	203	140	62	568	326	511	153	2898
1933	998	168	114	167	447	223	446	196	360	532	648	312	4611
1934	421	560	89	389	67	106	348	255	253	478	478	820	4264
1935	301	496	57	24	98	68	274	103	406	352	109	409	2697

GLEN INNES P.O. RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1936	274	128	287	73	187	178	413	210	234	219	60	509	2772
1937	422	203	492	110	88	242	82	293	200	248	317	507	3204
1938	562	342	58	169	415	165	350	313	171	397	542	105	3589
1939	507	39	582	200	12	452	216	247	35	246	174	323	3033
1940	254	554	305	146	30	75	17	46	106	136	126	641	2436
1941	813	179	415	93	69	399	111	54	43	146	391	122	2835
1942	510	569	341	14	207	254	553	57	141	593	395	782	4416
1943	340	240	124	141	143	254	214	292	203	165	762	354	3232
1944	479	377	46	45	207	59	321	544	155	301	196	406	3136
1945	316	779	45	158	168	550	264	249	205	56	333	440	3563
1946	498	216	568	118	120	97	77	0	343	126	237	345	2745
1947	326	529	471	256	68	64	136	244	460	254	410	521	3739
1948	418	261	485	200	110	400	131	207	156	69	337	277	3051
1949	380	692	275	117	112	234	200	211	298	818	308	342	3987
1950	374	770	81	240	164	767	661	120	422	677	559	19	4854
1951	746	267	317	172	215	308	61	262	119	76	183	151	2877
1952	275	673	488	283	383	318	180	474	140	767	60	252	4293

GLEN INNES P.O. RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1953	193	876	320	67	237	0	69	300	85	180	169	60	2556
1954	159	909	61	53	118	198	209	191	98	973	372	420	3761
1955	307	790	135	206	307	230	242	155	134	375	231	244	3356
1956	868	1054	145	418	514	503	225	121	247	498	133	272	4998
1957	449	487	352	180	0	122	114	178	36	207	41	266	2432
1958	319	195	212	81	226	143	135	287	478	355	95	673	3199
1959	820	226	676	81	138	79	379	21	306	508	454	1137	4825
1960	397	581	143	84	240	109	298	195	248	165	283	318	3061
1961	190	424	177	81	59	139	239	223	207	279	714	452	3184
1962	740	367	331	142	186	30	469	279	269	271	243	474	3801
1963	457	177	488	150	866	249	96	318	56	139	584	710	4290
1964	473	350	660	245	201	70	324	104	351	443	82	154	3457

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1908	NO RECORDS					177	66	298	188	191	190	245	
1909	38	364	23	293	94	308	135	557	142	130	350	156	2590
1910	649	214	786	192	16	444	196	73	30	244	197	483	3524
1911	698	436	226	33	224	25	160	140	247	143	120	97	2549
1912	149	117	247	6	17	552	361	183	130	188	295	164	2409
1913	274	120	272	97	661	308	71	19	132	259	131	272	2616
1914	326	194	363	98	276	199	200	24	68	251	316	361	2676
1915	101	89	23	81	190	151	216	177	99	20	7	301	1455
1916	103	637	225	344	18	290	393	322	179	123	537	716	3887
1917	656	363	138	12	35	125	98	92	535	128	865	475	3522
1918	604	34	8	149	37	21	173	307	37	71	122	107	1670
1919	222	222	122	57	228	35	28	78	7	85	11	240	1335
1920	248	99	77	47	105	473	374	209	324	304	218	514	2992
1921	131	103	401	97	492	555	657	68	360	371	279	842	4356
1922	199	56	113	28	11	134	326	31	278	135	130	306	1747
1923	136	75	110	8	29	320	126	30	254	96	43	333	1560
1924	249	415	53	361	47	221	233	225	143	216	448	299	2910
1925	450	225	147	1	291	36	180	310	50	58	449	265	2462

GRAMAN "WILLOVIE" RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1926	129	146	122	122	158	267	150	75	118	49	29	504	1869
1927	485	75	360	166	2	163	15	113	34	260	585	333	2591
1928	333	342	234	262	149	394	293	1	19	127	186	61	2401
1929	114	591	147	409	37	136	73	176	95	401	122	317	2618
1930	548	61	252	194	105	347	327	281	78	319	294	129	2935
1931	129	271	516	298	256	320	254	59	219	182	335	549	3388
1932	65	83	146	365	95	144	164	31	346	189	130	156	1914
1933	753	48	74	70	202	246	337	180	280	404	437	433	3464
1934	271	524	12	343	64	170	271	318	258	495	446	350	3522
1935	349	336	47	47	43	30	199	81	294	375	39	160	2000
1936	168	76	181	49	172	63	267	147	191	32	39	463	1848
1937	195	53	589	72	44	121	84	158	82	143	524	232	2297
1938	321	232	5	29	315	134	140	237	87	332	371	49	2252
1939	424	65	366	164	4	225	160	184	18	172	63	125	1970
1940	71	323	347	70	12	38	0	26	63	99	243	614	1906
1941	574	245	328	22	11	204	53	20	14	183	455	0	2109
1942	245	313	46	0	149	176	358	32	59	686	309	772	3145
1943	317	157	0	189	141	117	116	135	116	279	526	275	2368

GRAMAN WILLOVIE RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year	
1944	277	117	2	82	117	62	173	382	109	26	70	186	1603	
1945	411	776	34	95				NO RECORDS						
1946	807	225	146	181	65	33	29	0	492	90	194	250	2512	
1947	131	346	428	211	126	64	88	230	294	172	373	462	2925	
1948	464	620	179	85	252	461	181	100	157	79	473	345	3396	
1949	463	651	96	92	58	289	127	135	237	694	502	152	3496	
1950	247	494	549	327	143	493	684	49	303	673	695	47	4704	
1951	635	180	101	148	123	460	23	169	101	137	106	134	2317	
1952	23	445	287	297	298	133	245	573	88	825	48	56	3318	
1953	83	1286	127	47	275	1	42	314	41	174	145	30	2565	
1954	211	577	2	0	56	88	107	227	64	1013	905	275	3525	
1955-1958	NO RECORDS													
1959	NR	632	297	42	116	69	348	0	132	447	587	731	.	
1960	236	314	33	58	287	147	212	166	175	395	132	311	2466	
1961	252	227	138	150	77	213	170	199	17	143	741	264	2591	
1962	743	319	319	159	110	10	221	182	145	106	133	418	2865	
1963	272	112	348	82	407	91	42	221	46	61	483	229	2394	
1964	305	104	441	326	233	67	254	NR	266	314	245	301		

GRAMAN "WILLOWIE" RAINFALL STATISTICS
(Points)

HARTLEY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1923	307	78	137	4	25	294	157	43	287	147	58	298	1835
1924	279	568	90	385	35	283	244	198	171	259	494	329	3335
1925	401	284	133	62	261	22	172	364	60	83	556	432	2830
1926	47	241	64	166	187	322	174	77	131	56	28	821	2314
1927	603	69	480	192	4	150	33	58	56	246	510	237	2638
1928	174	511	231	234	73	432	372	23	13	183	89	66	2401
1929	113	779	170	453	48	148	85	193	104	491	92	175	2851
1930	652	92	308	223	105	354	266	290	100	315	330	185	3220
1931	74	267	212	250	338	341	238	72	207	130	408	521	3058
1932	303	111	137	392	104	150	164	57	406	222	240	273	2559
1933	830	76	138	77	307	255	335	229	327	423	360	379	3736
1934	501	375	18	225	66	138	296	238	206	386	368	488	3305
1935	356	491	51	61	43	61	170	93	317	313	50	259	2265
1936	221	121	227	44	216	114	326	165	207	22	35	823	2521
1937	259	159	503	124	31	115	127	163	125	165	377	233	2381
1938	318	373	10	134	378	141	160	304	84	255	463	26	2646
1939	398	34	407	162	6	282	178	201	36	199	162	438	2503
1940	243	372	373	97	13	33	0	39	85	116	142	264	1777

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1941	694	297	325	5	19	316	75	24	12	243	360	5	2375
1942	247	431	179	6	154	187	426	55	90	633	312	627	3347
1943	367	185	49	159	182	129	129	159	205	262	557	221	2604
1944	457	171	30	52	128	74	219	359	93	78	171	308	2140
1945	419	735	54	84	137	415	214	223	161	33	155	89	2719
1946	623	256	165	145	60	47	38	0	402	68	305	248	2357
1947	272	381	424	235	187	59	115	241	328	217	460	740	3659
1948	430	478	323	104	233	407	194	154	120	39	403	336	3221
1949	402	598	66	70	53	256	131	104	260	646	538	198	3322
1950	189	397	431	341	178	366	676	105	301	606	536	92	4218
1951	802	311	144	46	138	410	49	141	145	86	79	109	2460
1952	40	460	331	243	267	139	202	511	110	728	72	9	3112
1953	107	1054	151	75	264	0	39	380	80	235	160	26	2571
1954	140	599	20	3	67	125	128	214	207	854	594	NR	
1955	225	1077											

NO RECORDS

HARTLEY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1875	279	291	306	189	253	133	222	45	144	115	130	62	2169
1876	203	116	155	308	382	430	513	79	217	225	237	336	3201
1877	721	329	267	10	239	110	211	170	271	285	247	310	3170
1878	25	329	167	189	240	150	238	133	581	155	84	266	2557
1879	149	619	781	559	598	51	234	491	425	219	378	258	4762
1880	35	399	440	163	80	75	20	22	393	239	127	89	2082
1881	385	158	157	5	138	56	45	173	309	283	273	73	2055
1882	113	266	227	250	239	117	123	79	0	636	213	391	2654
1883	455	739	144	190	248	10	79	137	175	380	173	186	2916
1884	140	186	40	175	142	215	358	87	271	118	179	161	2072
1885	278	434	166	46	32	409	69	51	399	34	313	488	2719
1886	207	53	330	222	467	495	186	623	154	630	486	127	3980
1887	870	374	483	183	48	186	356	394	122	80	413	858	4367
1888	259	724	136	13	157	61	7	2	216	133	73	373	2154
1889	241	190	369	340	494	342	160	145	111	191	453	343	3379
1890	875	527	708	275	320	338	139	115	170	572	282	196	<u>4517</u>
1891	<u>969</u>	194	160	186	152	233	207	252	319	205	299	364	3540
1892	207	71	489	318	259	356	223	96	583	714	228	698	4242

INVERELL RAINFALL STATISTICS
(Points)

INVERELL RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1893	384	568	310	588	290	389	380	153	0	369	339	110	3880
1894	945	97	826	251	216	297	109	112	122	512	122	62	3670
1895	812	24	28	157	103	41	59	37	245	58	325	425	2314
1896	358	787	136	174	155	106	175	249	121	99	289	662	3311
1897	231	201	161	0	9	464	446	164	234	152	1	700	2763
1898	380	327	8	18	67	301	61	79	246	146	78	206	1917
1899	622	195	118	316	101	223	214	296	264	360	165	381	3255
1900	190	368	450	316	269	268	276	64	88	34	221	165	2709
1901	215	43	308	201	230	209	70	519	93	193	178	114	2373
1902	458	24	51	14	1	126	10	453	83	187	382	122	1911
1903	25	2	447	153	345	227	510	429	469	380	375	523	3885
1904	115	124	595	115	328	118	281	128	216	413	403	199	3035
1905	355	333	240	518	194	97	79	76	12	246	228	420	2798
1906	342	229	444	83	181	95	132	339	264	487	267	339	3202
1907	381	212	676	201	48	286	97	184	19	170	435	316	3025
1908	89	560	402	181	39	177	96	225	292	221	109	266	2657
1909	187	437	99	235	82	471	139	520	61	119	325	454	3129
1910	731	58	734	123	34	376	246	101	26	279	169	411	3288

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1911	702	455	225	74	203	27	151	108	267	199	329	204	2944
1912	191	272	378	0	12	458	409	218	139	189	401	98	2765
1913	414	235	357	111	596	311	65	14	145	284	84	208	2824
1914	407	158	533	82	218	211	176	19	23	313	377	437	2954
1915	173	86	18	149	221	154	223	188	165	47	22	216	1662
1916	332	440	68	744	20	330	385	394	122	307	435	698	4275
1917	764	330	52	21	40	131	118	132	512	151	1087	317	3655
1918	524	62	15	173	58	83	133	376	75	128	119	120	1866
1919	385	201	232	130	299	51	50	121	16	166	25	274	1950
1920	554	175	89	88	170	657	440	298	247	275	156	595	3744
1921	144	166	191	102	836	539	535	94	308	440	491	1014	4860
1922	107	171	152	123	4	172	398	55	291	129	184	394	2180
1923	344	168	131	14	48	404	192	21	326	206	56	441	2351
1924	348	683	160	336	38	298	281	294	176	317	614	403	3948
1925	228	170	169	27	346	37	161	300	2	110	568	287	2405
1926	137	195	163	208	185	282	185	123	162	73	4	607	2324
1927	502	52	391	214	16	149	23	55	19	197	468	320	2406
1928	538	629	186	191	80	460	294	0	37	264	257	169	3105

INVERELL RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1929	93	493	237	467	29	104	66	195	124	494	176	148	2626
1930	472	200	364	63	102	431	257	255	93	359	439	122	3157
1931	89	110	612	264	351	338	206	67	176	89	380	687	3369
1932	145	60	253	505	83	127	153	41	412	383	258	55	2475
1933	870	67	116	37	258	273	408	200	391	439	417	371	3847
1934	358	360	36	344	76	162	347	173	255	499	520	566	3696
1935	459	267	20	83	97	73	230	96	315	275	77	217	2209
1936	275	204	143	91	206	110	311	181	182	49	75	716	2543
1937	308	141	520	116	54	76	149	125	181	263	387	383	2703
1938	401	393	9	45	299	152	159	309	123	295	463	27	2675
1939	672	26	234	219	18	357	147	182	12	126	147	425	2565
1940	47	403	250	98	32	34	0	83	82	112	239	837	2217
1941	862	422	361	50	37	295	55	23	19	195	391	22	2732
1942	210	310	394	0	144	216	498	27	60	682	417	702	3660
1943	460	141	48	137	139	148	151	184	147	267	662	256	2740
1944	390	191	24	59	178	78	229	348	102	69	85	186	1939
1945	467	1026	45	136	87	394	209	224	90	29	123	275	3105
1946	890	144	348	116	55	56	63	3	327	147	249	222	2620

INVERELL RAINFALL STATISTICS
(Points)

INVERELL RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1947	282	511	508	235	92	64	160	224	378	216	393	772	3835
1948	455	347	279	87	216	407	186	149	158	53	295	237	2869
1949	323	799	220	72	95	272	149	137	356	673	401	279	3776
1950	180	470	179	190	208	445	564	78	263	575	573	27	3752
1951	445	249	131	41	131	349	38	172	68	54	30	141	1849
1952	52	476	401	243	192	145	134	473	94	558	80	243	3091
1953	148	774	64	57	185	6	50	312	64	187	336	25	2208
1954	274	627	31	42	63	131	163	193	91	818	576	589	3598
1955	342	1070	15	222	155	159	170	145	151	347	201	485	3461
1956	637	1233	156	212	523	363	168	69	195	289	127	252	4224
1957	544	290	390	157	0	195	82	192	44	131	31	240	2296
1958	349	776	382	80	215	146	80	170	434	288	115	463	3498
1959	621	368	654	63	198	58	321	0	173	294	461	1024	4235
1960	319	190	59	128	278	110	275	172	144	260	296	332	2563
1961	266	283	223	120	60	88	215	211	36	204	641	314	2661
1962	1048	334	370	131	158	33	303	200	166	238	176	668	3825
1963	296	128	344	157	603	178	60	374	54	157	579	230	3160
1964	434	96	343	320	289	98	285	128	329	458	187	152	3119

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1900	NO RECORDS		229	209	191	249	250	109	288	12	222	130	
1901	73	87	217	207	188	154	150	230	47	195	89	59	1696
1902	226	59	116	0	6	87	3	160	14	101	104	250	1126
1903	59	56	199	81	326	203	462	208	493	184	559	294	3124
1904	175	443	643	52	372	44	194	77	91	153	93	249	2586
1905	280	43	184	580	227	33	93	41	6	295	120	337	2239
1906	206	108	210	231	171	82	47	374	429	314	275	215	2662
1907	470	228	627	38	114	209	NO RECORDS						
1908	172	437	425	257	26	128	65	294	117	123	187	NR	
1909	42	506	54	226	121	254	143	579	128	171	173	172	2569
1910	815	167	572	161	16	490	189	32	32	141	221	328	3164
1911	899	315	381	56	202	21	139	247	261	81	70	84	2756
1912	390	64	264	5	0	637	218	168	73	209	174	103	2305
1913	303	304	305	107	639	264	76	25	71	213	154	171	2632
1914	255	465	375	325	536	50	190	67	5	180	264	391	3103
1915	81	155	11	96	338	111	110	195	33	9	20	306	1465
1916	172	462	198	270	40	290	321	245	176	158	616	497	3445
1917	609	547	123	8	7	137	103	77	398	141	690	492	3332

WALL DOWNS RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year	
1918	553	193	5	147	26	2	159	256	29	99	124	23	1616	
1919	169	281	79	162	159	20	26	65	2	59	94	222	1338	
1920	362	126	53	30	94	459	333	172	241	269	81	432	2652	
1921	112	107	198	101	341	816	575	54	345	230	178	548	3605	
1922	211	56	159	52	1	114	274	33	159	118	100	443	1720	
1923	74	161	82	26	37	229	95	12	129	199	34	397	1475	
1924	277	493	64	212	34	164	222	271	146	150	577	69	2679	
1925	330	128	116	12	163	29	213	188	10	66	548	283	2086	
1926	73	208	52	103	232	204	197	35	107	32	7	601	1851	
1927	341	18	219	153	18	89	0	115	6	365	326	176	1826	
1928	385	584	271	159	42	236	117	15	15	121	64	73	2082	
1929	65	514	126	349	4	100	47	150	50	312	86	258	2061	
1930	400	66	356	83	265	NO RECORDS								
1931-32	NO RECORDS													
1933	493	51	60	39	164	255	284	205	143	492	380	72	2638	
1934	165	479	115	141	92	152	157	139	176	401	70	812	2899	
1935	658	80	0	10	12	110	60	50	304	110	71	216	1681	
1936	230	269	374	18	149	58	277	125	157	20	0	429	2106	

HALL DOWNS RAINFALL STATISTICS
 (Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1937	606	70	665	32	12	139	115	99	21	45	416	265	2485
1938	215	65	0	60	541	75	56	200	135	285	514	59	2205
1939	136	0	416	147	36	209	105	266	20	107	0	103	1545
1940	166	400	380	69	34	0	0	0	70	76	127	352	1674
1941	588	412	313	10	20	116	36	0	0	128	222	30	1875
1942-47	NO RECORDS												
1948	NO RECORDS		8	124	186	445	220	60	195	128	58	250	
1949	582	336	0	60	0	168	0	48	182	556	213	0	2145
1950	119	731	344	157	210	760	699	0	0	415	885	144	4464
1951	873	20	87	12	125	NO RECORDS							

MYALL DOWNS RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year	
1872						NO RECORDS						648	830	
1873	371	350	160	0	0	775	55	282	75	102	711	1014	3895	
1874	369	337	0	100	100	203	828	145	368	300	158	200	3108	
1875	100	334	355	394	244	147	307	204	109	155	445	120	2914	
1876	161	148	140	435	294	403	592	107	270	400	248	320	3518	
1877	622	120	601	0	171	117	174	20	246	234	126	208	2639	
1878	39	650	259	73	217	81	325	113	787	242	116	354	3256	
1879	123	464	744	851	653	139	341	572	413	350	252	942	5844	
1880	35	358	455	237	218	139	30	21	471	215	305	312	2796	
1881	456	261	103	33	93	91	26	180	463	195	284	67	2252	
1882	386	389	317	312	217	250	165	259	20	585	440	465	3805	
1883	531	628	86	186	218	23	61	106	184	450	182	328	2983	
1884	199	212	65	265	186	353	436	63	368	131	399	101	2778	
1885	478	382	292	54	98	282	126	45	468	243	283	507	3258	
1886	599	25	266	312	693	508	237	627	126	740	481	47	4661	
1887	965	440	262	166	85	263	347	356	224	157	495	568	4328	
1888	147	734	231	0	94	30	18	5	144	114	96	935	2548	
1889	468	217	206	367	540	350	131	134	170	292	550	470	3895	

STRATHBOGIE RAINFALL STATISTICS
(Points)

STRATHBOGIE RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1890	512	757	841	212	322	307	189	94	240	412	276	260	4422
1891	732	185	106	100	133	439	231	352	368	151	325	491	3613
1892	310	115	503	298	200	410	237	114	569	809	354	468	4387
1893	266	755	459	389	278	382	236	137	38	438	485	135	3398
1894	634	56	627	253	302	285	103	114	154	604	136	129	3397
1895	598	86	115	30	118	37	128	88	185	212	435	471	2503
1896	570	460	265	225	222	65	277	221	246	72	256	525	3404
1897	269	190	170	0	3	293	485	150	267	278	140	709	2954
1898	390	447	17	0	112	275	108	78	295	158	69	141	2090
1899	963	171	60	296	147	379	248	171	205	239	106	405	3390
1900	544	438	421	200	457	227	328	53	212	47	286	393	3606
1901	139	180	216	283	130	211	108	459	111	217	72	211	2337
1902	206	42	64	8	0	140	2	364	122	260	199	643	2050
1903	23	180	282	224	269	207	475	308	584	206	591	296	3645
1904	73	220	595	200	301	108	345	68	208	353	192	233	2896
1905	290	68	379	411	269	82	118	139	16	225	149	269	2415
1906	520	92	411	120	60	75	110	473	282	514	356	247	3260
1907	438	343	605	38	94	342	109	184	14	238	357	248	3010
1908	286	594	127	187	28	166	238	258	202	216	158	196	2656

STRATHBOGIE RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1909	96	416	23	345	134	281	180	534	92	58	646	157	2962
1910	690	246	755	175	12	240	250	112	35	259	259	237	3270
1911	1007	242	215	47	178	30	171	149	352	97	160	24	2672
1912	224	158	261	0	18	437	351	208	134	241	367	134	2533
1913	293	83	385	77	444	210	39	49	232	260	125	316	2513
1914	537	129	722	104	189	174	155	11	39	545	513	480	3598
1915	201	8	122	98	144	148	190	154	163	89	37	505	1859
1916	276	394	35	295	100	287	344	296	200	162	415	630	3434
1917	1120	209	214	0	50	131	150	127	607	233	696	318	3855
1918	627	90	60	102	33	10	97	339	80	133	331	97	1999
1919	316	183	268	56	215	29	48	83	8	69	30	264	1569
1920	386	122	103	70	163	430	425	251	370	161	158	368	3007
1921	84	108	398	130	496	620	692	51	439	365	314	885	4582
1922	217	48	288	16	0	247	269	59	250	163	139	548	2244
1923	177	39	87	0	21	351	155	41	232	221	42	450	1816
1924	219	733	76	339	35	232	297	322	227	315	541	314	3650
1925	426	186	202	42	209	0	202	349	42	102	529	192	2481
1926	65	142	63	167	218	267	184	71	118	110	0	681	2086
1927	522	51	249	455	10	175	56	117	54	200	628	206	2723

STRATHBOGIE RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1928	476	426	204	199	131	456	217	0	26	341	250	166	2894
1929	99	566	231	459	0	158	80	205	82	475	107	281	2743
1930	305	188	343	127	95	453	185	292	58	239	335	177	2797
1931	173	573	564	343	515	347	307	38	232	315	386	757	4550
1932	165	113	190	427	81	126	128	25	500	297	148	167	2367
1933	792	73	28	53	285	234	333	177	269	659	248	246	3397
1934	371	302	90	258	4	70	278	276	293	329	258	478	3007
1935	770	362	67	2	86	201	53	111	333	339	134	366	2824
1936	205	59	241	69	174	156	352	174	211	81	30	429	2181
1937	257	139	330	44	70	124	106	161	36	171	456	463	2357
1938	431	281	27	8	354	97	285	367	88	403	403	135	2879
1939	519	14	386	359	41	442	167	193	66	267	235	389	3078
1940	182	547	279	123	34	38	6	38	111	126	143	442	2069
1941	715	156	449	35	60	318	106	24	15	265	269	0	2412
1942	279	353	342	0	150	194	415	38	201	646	492	482	3592
1943	220	102	20	147	80	216	156	158	228	363	854	392	2936
1944	432	197	61	40	219	47	289	444	128	145	78	316	2396
1945	394	753	81	72	199	229	254	292	141	59	191	397	3062

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year	
1946	463	176	330	127	55	58	64	0	416	92	236	294	2311	
1947	186	385	404	210	80	68	125	191	400	248	483	384	3164	
1948	372	422	274	88	145	410	150	135	207	128	544	244	3119	
1949	439	601	44	109	110	292	155	98	257	811	504	363	3783	
1950	243	440	138	300	234	515	567	42	372	708	442	33	4034	
1951	955	239	396	75	120	364	55	221	142	113	149	157	2986	
1952	148	514	427	193	357	252	190	522	118	845	122	152	3840	
1953	66	943	184	157	187	0	64	290	89	182	147	25	2334	
1954	269	560	58	0	70	197	113	175	134	1052	435	297	3360	
1955	365	593	72	153	248	155	215	134	108	352	96	445	2936	
1956	631	1106	117	315	361	340	235	82	209	370	138	175	4079	
1957	476	364	585	184	0	219			NO RECORDS					
1958			NO RECORDS					156	153	489	235	136	664	
1959	503	353	597	10	127	71	339	0	211	386	409	1079	4085	
1960	347	175	51	149	325	118	294	209	206	129	180	413	2596	
1961	236	444	122	87	72	182	237	212	84	233	492	440	2841	
1962	880	297	275	88	129	10	264	269	263	306	168	397	3346	
1963	196	100	274	142	556	171	63	341	108	177	496	281	2905	
1964	503	102	403	181	203	119	226	113	282	450	91	194	2867	

S. RATHBOGIE RAINFALL STATISTICS
(Points)

WALLANGRA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1883	478	898	136	148	280	37	69	74	117	352	84	225	2898
1884	78	236	86	226	156	246	317	40	330	98	277	131	2221
1885	405	337	197	133	113	361	82	17	137	115	154	364	2415
1886	330	50	289	261	567	456	298	523	249	696	690	101	4510
1887	395	439	343	140	37	179	380	358	147	112	279	624	3433
1888	170	594	86	0	122	33	0	0	127	43	51	421	1647
1889	498	121	336	287	492	304	134	172	112	122	459	285	3322
1890	669	599	878	334	241	237	122	63	15	540	338	274	4310
1891	1029	98	139	136	150	444	199	266	264	114	304	349	3492
1892	106	137	307	214	208	345	184	77	542	587	203	739	3649
1893	188	959	274	370	191	379	146	184	40	202	492	103	3528
1894	499	96	943	248	257	295	74	87	147	497	84	114	3341
1895	754	54	0	36	69	28	110	64	189	212	326	499	2341
1896	310	856	317	139	217	86	195	166	150	95	361	389	3281
1897	283	210	171	0	5	508	533	141	249	240	45	577	2962
1898	550	524	6	21	106	266	54	48	237	258	35	44	2149
1899	832	336	58	315	78	246	245	189	319	121	284	219	3242
1900	145	326	387	254	242	236	362	66	242	14	326	152	2752

WALLANGRA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1901	25	22	343	209	158	227	136	374	105	251	94	142	2086
1902	120	123	115	6	6	63	0	286	36	162	124	316	1357
1903	133	16	166	226	298	222	597	239	469	284	567	353	3570
1904	391	292	597	49	385	61	237	98	143	270	49	157	2729
1905	296	70	359	627	359	37	80	115	13	228	147	348	2679
1906	306	253	256	75	202	106	66	365	293	613	368	331	3234
1907	273	381	641	60	38	260	140	159	6	93	657	210	2918
1908	114	487	315	272	33	177	64	261	160	173	234	232	2522
1909	66	347	67	285	131	256	174	504	116	172	323	272	2713
1910	618	209	727	157	15	374	268	53	23	252	179	488	3363
1911	801	418	255	31	223	19	167	106	330	134	109	73	2666
1912	285	425	331	3	16	583	276	151	145	256	367	139	2977
1913	373	141	233	101	619	347	52	27	102	235	103	355	2688
1914	266	448	408	157	323	79	226	20	84	261	156	310	2738
1915	87	115	8	67	275	84	182	265	132	117	25	396	1753
1916	175	702	180	334	21	283	388	312	271	114	481	775	4036
1917	742	328	193	5	34	118	87	98	528	121	812	318	3384
1918	555	102	10	137	25	36	144	298	28	62	154	72	1623

WALLANGRA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1919	180	142	91	30	142	59	23	93	11	54	42	222	1089
1920	151	94	73	51	127	448	355	221	234	248	263	331	2596
1921	95	152	301	97	469	701	745	45	371	369	157	864	4366
1922	306	15	173	23	5	135	259	59	224	147	160	388	1894
1923	311	78	142	19	30	264	109	60	178	123	35	389	1738
1924	357	660	72	305	41	265	222	202	146	292	511	146	3219
1925	327	233	153	10	262	13	160	275	34	50	640	205	2362
1926	113	77	85	102	172	188	160	55	87	30	22	659	1750
1927	340	83	375	190	12	128	19	87	52	219	597	227	2329
1928	388	514	202	193	108	464	273	0	23	179	173	129	2646
1929	106	451	208	420	39	119	69	191	92	408	183	169	2455
1930	530	138	198	176	182	361	407	241	51	312	328	160	3084
1931	210	169	491	250	263	319	312	98	186	206	446	528	3478
1932	62	125	175	295	124	130	157	21	420	313	214	326	2362
1933	988	87	16	44	190	210	325	178	251	472	274	462	3497
1934	477	471	0	359	117	141	205	241	297	420	279	670	3677
1935	734	207	80	111	44	29	220	89	261	440	68	211	2494
1936	235	81	269	68	188	78	409	163	217	62	99	654	2523

WALLANGRA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1937	330	105	560	76	35	135	84	140	36	242	585	236	2564
1938	348	184	22	32	436	177	128	259	97	471	575	4	2733
1939	441	37	502	130	1	350	122	234	52	190	90	145	2294
1940	134	434	424	129	40	45	0	19	120	77	262	710	2394
1941	654	238	397	68	24	216	62	12	18	191	319	7	2206
1942	155	260	100	0	132	182	387	47	98	531	407	628	2927
1943	216	61	73	172	117	115	124	216	224	181	652	364	2515
1944	394	119	32	62	105	60	228	453	83	30	173	208	1947
1945	403	702	40	122	184	354	199	179	95	22	131	163	2594
1946	707	155	128	162	92	32	10	6	480	60	263	217	2312
1947	86	449	427	221	76	72	110	233	278	165	361	621	3099
1948	407	372	139	74	244	346	181	58	151	113	391	302	2778
1949	387	508	91	62	38	259	108	92	210	610	366	155	2886
1950	136	448	455	361	160	429	678	52	283	707	845	126	4680
1951	535	179	126	84	113	542	23	127	116	125	64	60	2094
1952	70	522	351	284	279	133	145	508	93	937	69	146	3537
1953	242	1162	222	39	245	2	46	286	53	164	132	47	2640
1954	241	663	29	7	103	111	165	206	71	980	440	170	3186

WALLANGRA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1955	211	844	24	269	156	72	201	146	126	513	135	375	3072
1956	598	1157	122	157	351	365	194	13	190	230	139	194	3710
1957	350	264	263	94	8	190	50	199	17	150	23	181	1789
1958	214	300	397	130	107	230	68	137	322	230	125	509	2769
1959	823	407	331	32	138	30	329	3	134	227	513	645	3612
1960	158	364	43	33	259	146	217	176	224	306	263	278	2467
1961	314	393	177	101	112	219	231	185	60	227	725	211	2955
1962	534	268	445	393	110	6	206	205	119	139	170	565	3160
1963	204	191	450	155	396	133	17	279	25	124	363	579	2916
1964	206	161	386	299	164	100	246	107	247	444	77	134	2571

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1879	NO RECORDS							438	458	177	181	281	
1880	44	389	332	221	86	48	37	31	314	147	170	111	1930
1881	480	227	163	0	181	54	8	111	386	102	227	35	1974
1882	247	289	114	210	139	258	147	153	15	334	345	469	2720
1883	302	663	99	191	266	35	85	56	165	233	110	67	2272
1884	36	194	25	171	101	225	491	33	232	84	251	184	2027
1885	536	545	127	0	25	154	14	14	52	104	219	392	2182
1886	402	2	170	200	559	424	297	483	112	593	267	86	3595
1887	290	505	297	46	63	135	311	303	69	149	113	260	2541
1888	202	365	70	0	91	22	0	3	130	36	34	426	1379
1889	309	77	621	285	317	279	157	175	93	150	258	371	3092
1890	734	750	983	257	318	210	103	48	212	416	223	129	4383
1891	958	116	117	204	64	384	207	263	237	99	413	306	3368
1892	108	21	221	211	157	185	130	57	356	622	216	436	2720
1893	176	987	86	367	194	431	159	214	10	236	425	112	3397
1894	602	131	1096	433	217	259	46	103	74	566	85	153	3765
1895	685	50	15	30	52	30	92	98	160	152	368	730	2462
1896	310	521-	61	94	204	106	121	121	91	152	390	463	2634

YALLAROI RAINFALL STATISTICS
(Points)

YALLAROI RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1897	275	214	160	0	7	381	478	83	279	142	91	637	2747
1898	318	202	0	16	156	183	53	37	159	208	46	146	1524
1899	615	274	19	227	23	225	202	216	201	110	147	210	2469
1900	147	198	316	242	146	236	240	69	130	149	67	148	2088
1901	65	24	184	172	142	216	113	281	58	167	142	64	1628
1902	73	159	36	0	4	60	3	248	134	135	62	211	1125
1903	141	49	205	231	233	195	483	298	455	290	447	324	3351
1904	278	500	607	9	371	29	216	83	113	276	133	161	2776
1905	312	99	209	390	270	34	80	66	7	203	145	174	1989
1906	284	220	218	75	116	87	52	400	288	448	198	179	2565
1907	405	212	527	33	102	154	137	132	10	99	367	266	2444
1908	229	601	522	208	32	161	39	238	197	232	113	165	2737
1909	274	426	53	158	80	327	133	456	148	221	177	269	2722
1910	693	45	718	149	31	331	214	44	18	156	173	245	2817
1911	736	407	338	75	222	8	139	93	165	186	61	98	2528
1912	182	167	388	5	0	580	242	80	137	201	156	57	2195
1913	267	269	294	125	790	300	56	20	95	239	110	202	2767
1914	234	501	662	276	446	42	249	47	16	266	220	359	3318

YALLAROI RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1915	104	65	3	56	225	95	148	225	84	93	36	344	1478
1916	293	535	174	375	56	281	341	383	198	134	527	874	4171
1917	687	312	141	3	19	94	126	63	349	105	643	393	2935
1918	401	7	13	138	29	12	120	336	10	90	101	63	1320
1919	119	147	64	25	195	26	14	64	39	62	96	193	1044
1920	378	129	70	76	110	507	360	161	229	313	155	348	2836
1921	53	117	314	133	482	582	518	57	306	277	227	645	3711
1922	137	91	186	56	0	145	169	32	230	154	87	421	1708
1923	80	45	20	16	41	289	113	36	133	77	57	336	1243
1924	321	483	61	227	25	221	242	194	142	226	560	35	2737
1925	392	79	105	0	261	17	149	206	4	56	396	351	2016
1926	151	171	140	122	211	117	180	25	141	59	3	451	1771
1927	409	52	226	180	18	136	18	92	30	215	416	278	2070
1928	394	478	224	323	82	357	205	20	12	174	132	46	2447
1929	244	761	185	392	0	126	60	156	102	294	215	172	2707
1930	207	28	447	68	84	472	372	314	105	298	245	161	2801
1931	196	36	477	180	195	260	180	71	178	168	340	334	2615
1932	54	102	273	226	73	135	189	21	299	199	260	237	2068

YALLAROI RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1933	421	87	0	32	170	253	298	151	218	429	423	151	2633
1934	178	549	0	251	155	174	210	201	127	398	136	834	3213
1935	544	204	0	50	42	66	133	61	231	284	63	275	1953
1936	205	125	232	43	242	90	377	162	215	0	33	441	2165
1937	412	73	715	100	14	173	96	44	43	230	456	182	2538
1938	401	229	0	17	375	182	114	228	112	289	522	0	2469
1939	217	0	257	147	0	172	146	249	34	53	137	182	1594
1940	54	344	320	92	21	10	0	20	82	61	164	329	1497
1941	523	377	298	49	14	111	35	31	10	115	210	0	1773
1942	59	307	24	0	114	111	290	12	65	374	226	491	2073
1943	147	68	87	353	99	156	118	144	93	220	292	411	2188
1944	147	140	4	54	110	39	128	244	82	24	142	75	1189
1945	293	652	28	139	104	482	220	128	17	27	352	214	2656
1946	761	249	93	147	82	12	7	0	430	0	231	397	2409
1947	117	467	492	120	68	0	66	192	203	218	347	382	2672
1948	376	152	218	76	189	434	221	31	165	111	146	267	2386
1949	342	635	45	100	25	193	104	48	471	473	275	35	2746
1950	170	332	215	269	155	525	582	90	140	790	931	214	4413

YALLAROI RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1951	547	52	114	24	91	441	7	113	167	123	91	21	1791
1952	133	483	264	190	252	125	155	291	101	703	29	128	2854
1953	98	1087	163	195	77	0	50	354	56	169	128	20	2397
1954	192	784	0	0	58	104	200	199	66	560	372	214	2749
1955	211	914	4	238	105	65	165	143	140	426	102	329	2842
1956	540	846	389	254	405	354	189	14	166	191	119	166	3633

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1885	360	495	178	55	59	224	104	35	65	69	261	447	2352
1886	359	20	164	212	700	350	291	587	98	646	329	87	3843
1887	332	340	343	17	60	88	444	297	87	44	127	430	2609
1888	NO RECORDS												
1889	319	163	250	239	352	315	191	164	147	198	289	437	3064
1890	417	553	872	297	169	156	94	33	237	381	260	183	3652
1891	721	143	113	136	70	319	34	279	166	169	248	416	2814
1892	210	92	549	256	185	223	98	128	406	565	243	311	3266
1893	270	709	96	353	241	486	207	180	14	249	374	147	3326
1894	637	136	721	326	252	224	47	107	162	511	62	83	3268
1895	425	10	10	10	141	18	97	90	136	114	234	514	1799
1896	211	687	61	115	147	78	195	125	99	58	410	505	2691
1897	232	112	435	0	3	398	429	149	322	232	35	688	3035
1898	335	160	8	20	85	197	54	50	225	111	32	27	1304
1899	651	313	30	232	28	209	264	117	161	85	79	211	2380
1900	59	527	197	308	174	228	305	79	244	20	195	78	2414
1901	18	143	339	192	149	149	100	244	80	158	20	42	1634
1902	300	92	54	39	3	66	0	196	23	134	118	198	1223

YETMAN RAINFALL STATISTICS
(Points)

YETMAN RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1903	24	59	136	225	471	187	614	242	510	200	650	220	3538
1904	199	393	723	315	373	83	201	75	97	158	62	183	2862
1905	321	143	176	592	225	55	83	84	18	299	137	282	2415
1906	259	160	218	120	203	65	54	412	348	400	238	200	2677
1907	462	108	223	86	155	205	242	179	6	159	482	327	2634
1908	123	663	350	367	76	170	144	373	225	179	248	75	2993
1909	74	353	49	325	148	235	142	562	82	228	190	173	2561
1910	630	185	692	148	20	555	240	74	45	200	297	251	3337
1911	1035	348	433	61	228	9	190	177	320	88	51	91	3031
1912	300	72	308	6	0	555	276	113	166	216	248	169	2429
1913	339	176	298	97	733	306	59	30	102	204	216	192	2752
1914	438	294	417	645	600	112	289	70	13	60	200	317	3455
1915	30	250	37	82	250	91	119	266	97	16	7	182	1427
1916	183	338	288	256	60	290	361	303	230	181	541	608	3639
1917	656	630	126	11	4	139	86	76	385	151	750	614	3628
1918	648	68	0	114	25	15	130	250	45	89	55	24	1463
1919	176	127	270	88	153	22	30	79	4	52	51	188	1240
1920	213	176	89	95	116	437	392	142	223	333	113	362	2691

YETMAN RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1921	23	145	241	113	443	856	814	44	302	211	127	617	3936
1922	241	9	264	24	0	188	208	16	165	116	64	436	1731
1923	208	41	96	139	41	217	104	34	174	149	29	518	1750
1924	348	577	57	260	30	123	299	322	144	139	703	164	3166
1925	420	173	190	8	194	24	184	268	3	64	676	442	2646
1926	80	229	31	121	194	253	148	33	65	36	75	545	1810
1927	270	347	241	211	31	123	2	110	2	230	373	260	2200
1928	390	325	217	225	82	412	190	10	18	196	136	17	2218
1929	219	657	177	400	0	74	52	149	111	309	122	209	2479
1930	332	165	461	99	187	282	294	358	125	451	222	185	3161
1931	129	161	385	145	289	266	395	103	190	122	318	578	3081
1932	87	136	134	425	161	103	182	65	388	446	279	107	2513
1933	797	70	72	41	186	299	319	165	161	485	320	273	3188
1934	209	582	66	129	96	171	275	210	197	546	107	525	3113
1935	565	75	17	60	40	181	57	64	316	138	117	154	1784
1936	296	47	508	87	196	85	376	133	199	92	6	583	2608
1937	537	57	623	50	35	98	127	93	30	58	404	178	2290
1938	327	269	24	42	473	66	74	221	103	339	527	0	2465

YETMAN RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1939	227	46	241	155	0	316	126	230	61	208	51	206	1867
1940	206	541	286	45	20	39	0	30	82	90	148	427	1914
1941	662	161	470	25	26	217	55	12	7	126	307	59	2127
1942	123	419	38	0	132	186	386	66	44	312	236	624	2566
1943	428	91	36	367	103	82	122	169	137	320	622	372	2849
1944	242	140	45	31	28	61	193	376	104	155	64	129	1568
1945	228	831	25	97	157	436	146	175	32	26	135	353	2641
1946	494	196	105	240	69	17	16	1	456	35	191	329	2149
1947	381	328	445	114	139	65	85	236	363	349	496	591	3592
1948	391	135	197	134	354	606	185	88	215	48	103	321	2777
1949	398	352	63	44	55	138	96	63	134	589	183	87	2202
1950	200	502	170	109	232	521	611	57	229	542	689	0	3862
1951	968	32	224	27	115	430	45	113	104	91	154	78	2381
1952	50	346	283	174	307	127	101	385	164	615	32	126	2710
1953	85	1073	104	57	238	0	39	254	26	140	271	24	2311
1954	131	579	0	24	48	96	136	168	163	736	475	69	2625
1955	128	850	25	357	143	67	167	117	86	417	76	266	2699
1956	727	936	92	290	295	323	214	17	170	149	151	185	3549

YETMAN RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1957	445	234	246	105	0	131	89	97	9	87	88	42	1573
1958	209	303	640	216	56	250	42	149	245	145	186	311	2752
1959	421	481	77	35	180	34	220	1	92	277	468	361	2647
1960	84	330	116	40	252	82	133	154	144	134	91	292	1852
1961	261	239	146	41	266	180	198	175	61	132	756	219	2674
1962	876	191	487	114	68	14	106	176	123	271	138	577	3143
1963	156	158	486	27	241	70	20	187	23	86	376	431	2261
1964	297	123	234	361	174	97	180	88	265	394	170	271	2654

STATISTICAL RAINFALL DATA
(Points)

Station	Rainfall Statistic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Ashford (Period 57 years)	Minimum	26	16	0	0	0	0	2	0	16	20	0	27	1269
	10%	86	60	21	4	6	29	42	17	25	72	56	82	1837
	30%	179	159	114	75	45	100	103	83	88	176	128	190	2378
	50%	280	254	202	105	121	127	163	139	148	212	227	281	2744
	70%	401	387	290	174	194	260	216	227	217	317	384	368	3034
	90%	624	673	459	270	344	415	344	319	417	646	557	735	3669
	Maximum	887	1127	660	780	631	755	686	543	624	1041	848	915	4347
Beulah (Period 56 years)	Minimum	34	22	36	0	10	8	0	11	20	59	33	24	2342
	10%	123	81	70	36	43	100	108	64	74	112	119	133	2924
	30%	228	193	170	128	109	211	191	149	145	222	234	239	3297
	50%	421	352	250	172	164	281	263	262	221	325	336	381	3843
	70%	520	505	418	249	239	435	376	334	362	414	441	514	4216
	90%	802	780	624	457	473	533	624	524	537	561	635	793	5251
	Maximum	1228	913	821	649	800	673	844	856	792	1307	1192	1068	5722
Boggabilla (Period 72 years)	Minimum	2	0	0	0	0	0	0	0	0	12	0	0	683
	10%	71	40	2	0	3	16	24	19	6	40	43	30	1504
	30%	160	127	85	56	50	66	80	50	57	91	93	157	2011
	50%	257	242	160	97	132	109	130	101	120	169	186	218	2397
	70%	356	332	311	172	174	189	218	156	165	224	336	328	2644
	90%	640	569	536	317	279	463	316	268	266	358	513	600	3255
	Maximum	924	1550	839	762	715	745	658	503	523	824	845	898	4093

STATISTICAL RAINFALL DATA
(Points)

Station	Rainfall Statistic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Deepwater T.O. (Period 75 years)	Minimum	28	0	0	0	0	0	25	0	10	32	0	9	1477
	10%	104	52	50	17	11	41	76	35	37	97	46	83	2139
	30%	256	157	146	66	69	109	128	99	102	185	174	247	2476
	50%	362	230	234	103	127	171	183	159	169	267	264	369	2996
	70%	514	399	333	180	203	288	261	224	252	330	384	451	3503
	90%	661	669	564	271	373	491	403	303	361	634	507	660	3947
	Maximum	1314	943	1057	461	698	727	808	608	658	829	829	963	4723
Glen Innes (Period 83 years)	Minimum	63	5	45	1	0	0	17	0	25	48	14	19	2063
	10%	143	80	65	27	16	65	71	42	43	116	72	137	2433
	30%	254	200	143	83	76	109	133	121	117	203	181	249	2810
	50%	374	305	228	146	138	210	216	195	185	254	277	354	3184
	70%	492	507	364	199	207	267	291	258	267	353	415	497	3617
	90%	755	777	607	307	408	473	415	322	406	590	581	725	4391
	Maximum	998	1054	949	470	866	767	700	544	568	973	762	1137	5178
Inverell (Period 90 years)	Minimum	25	2	8	0	0	6	0	0	0	29	1	22	1662
	10%	108	60	31	18	29	51	50	23	19	69	75	90	2073
	30%	219	170	143	84	80	110	126	95	93	153	170	205	2564
	50%	346	266	226	151	156	174	172	151	163	223	262	298	2930
	70%	457	397	363	206	227	298	237	208	261	303	385	417	3376
	90%	807	720	532	334	350	431	407	392	393	553	517	698	3977
	Maximum	1048	1233	826	744	836	657	564	623	583	818	1087	1024	4860

STATISTICAL RAINFALL DATA
(Points)

Station	Rainfall Statistic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Strathbogie (Period 90 years)	Minimum	23	8	0	0	0	0	2	0	8	47	0	0	1569
	10%	98	58	51	0	15	38	54	32	37	95	87	111	2136
	30%	218	152	111	63	86	139	122	91	118	163	149	207	2648
	50%	367	241	231	129	145	214	185	147	204	240	259	315	2985
	70%	477	419	336	231	218	293	273	221	262	340	401	444	3401
	90%	724	639	580	378	359	438	420	366	451	625	543	637	4057
	Maximum	1120	1106	841	851	693	775	828	627	787	1052	854	1014	5844
Wallangra (Period 82 years)	Minimum	25	15	0	0	1	2	0	0	6	14	22	4	1089
	10%	105	69	24	10	20	32	44	19	23	59	49	98	1785
	30%	199	140	110	62	88	96	110	65	93	124	134	167	2463
	50%	308	256	195	129	135	185	166	143	140	209	248	276	2735
	70%	406	428	321	210	211	265	229	205	235	274	362	379	3168
	90%	735	702	459	334	362	444	387	287	330	545	590	646	3652
	Maximum	1029	1162	878	627	619	701	745	523	542	980	845	864	4680
Yallaroi (Period 77 years)	Minimum	36	0	0	0	0	0	0	0	4	0	3	0	1044
	10%	71	43	4	0	14	21	14	20	14	58	60	44	1493
	30%	177	116	70	52	60	94	99	56	82	127	123	156	2071
	50%	275	214	170	133	104	161	146	103	133	186	177	214	2528
	70%	393	418	269	206	192	256	206	197	189	255	264	341	2747
	90%	629	680	543	293	329	435	362	305	308	453	429	464	3437
	Maximum	958	1087	1096	433	790	582	582	483	471	790	931	874	4413

STATISTICAL RAINFALL DATA
(Points)

Station	Rainfall Statistic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Yetman (Period 79 years)	Minimum	18	9	0	0	0	0	0	1	2	16	6	0	1223
	10%	78	58	25	23	4	23	37	30	14	56	46	42	1616
	30%	208	140	89	57	61	83	94	79	82	122	113	169	2292
	50%	283	188	193	114	147	163	143	126	136	164	190	219	2643
	70%	415	347	286	224	196	234	206	179	196	269	288	360	2980
	90%	658	659	520	358	353	436	379	309	330	493	565	579	3541
	Maximum	1035	1073	872	645	733	856	814	562	510	736	756	688	3936

MINIMUM RAINFALL RECORDED
IN CONSECUTIVE MONTHS
(Points)

Station	Number of Months	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Boggabilla	1	2	0	0	0	0	0	0	0	0	12	0	0
	2	25	0	0	0	29	0	3	23	24	17	41	113
	3	173	58	25	43	46	14	53	66	66	205	146	171
	4	189	87	81	46	61	54	100	183	246	275	192	209
	5	192	127	84	118	137	101	193	445	324	327	230	209
	6	232	130	195	168	177	194	451	505	530	504	230	212
	7	235	241	206	234	243	462	586	586	568	504	233	252
	8	346	252	313	300	494	747	740	724	568	507	273	255
	9	357	359	338	494	751	780	946	724	571	547	276	366
	10	464	384	532	751	783	1020	946	727	611	550	387	377
	11	489	578	789	783	1031	1096	949	767	614	661	398	484
	12	683	835	821	1097	1186	1133	989	770	725	672	505	509
Deepwater T.O.	1	28	0	0	0	0	0	25	0	10	32	0	9
	2	127	78	26	0	32	73	41	28	120	32	41	115
	3	287	104	95	113	77	86	102	198	188	174	284	383
	4	362	180	136	141	90	185	248	267	281	489	657	671
	5	478	214	259	154	193	275	325	536	559	790	899	746
	6	682	337	299	257	346	352	586	839	897	1132	911	808
	7	864	377	414	410	520	613	935	1158	1244	1158	946	917
	8	937	535	567	641	781	935	1255	1423	1256	1193	1055	942
	9	1040	772	802	902	1098	1414	1515	1510	1291	1302	1080	1185
	10	1193	1098	1108	1213	1418	1542	1660	1704	1400	1327	1371	1288
	11	1428	1423	1476	1482	1710	1687	1801	1754	1425	1572	1470	1441
	12	1477	1531	1639	1831	1855	1857	1865	1782	1608	1675	1627	1676

MINIMUM RAINFALL RECORDED
IN CONSECUTIVE MONTHS
(Points)

Station	Number of Months	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Glen Innes	1	63	5	45	1	0	0	17	0	25	48	14	19
	2	190	109	81	12	66	69	63	96	182	79	229	219
	3	379	253	148	190	122	138	138	243	244	409	388	527
	4	426	253	247	268	168	244	305	398	494	568	755	718
	5	426	348	430	314	274	380	431	728	653	999	1031	719
	6	639	435	619	420	410	494	842	882	1064	1227	1050	730
	7	926	758	725	556	536	863	1022	1242	1276	1275	1061	1170
	8	957	828	861	682	964	1022	1356	1454	1352	1286	1371	1228
	9	1256	1024	987	1144	1259	1478	1568	1535	1583	1567	1429	1357
	10	1408	1225	1351	1326	1478	1690	1649	1727	1637	1625	1558	1387
	11	1495	1356	1551	1658	1690	1771	1875	1904	1695	1754	1588	1539
	12	2063	1556	1822	1870	1771	1997	2018	2018	1824	1784	1740	1626
Inverell	1	25	2	8	0	0	6	0	0	0	29	1	22
	2	27	52	26	9	66	34	9	37	112	69	171	147
	3	277	89	66	141	66	70	97	186	152	225	223	149
	4	426	90	192	151	149	199	277	324	293	277	511	536
	5	548	216	202	240	231	311	362	465	345	626	666	661
	6	674	226	376	329	343	429	503	517	766	781	839	662
	7	684	449	579	441	582	703	555	815	925	1032	840	788
	8	947	694	691	662	915	904	1031	970	1125	1033	966	798
	9	1029	752	798	1024	1035	1170	1192	1278	1126	1159	976	1206
	10	1141	1077	1155	1076	1391	1325	1500	1569	1252	1169	1333	1334
	11	1380	1342	1207	1405	1578	1609	1715	1756	1262	1572	1512	1521
	12	1662	1456	1456	1767	1750	1779	1789	1756	1657	1705	1699	1735

MINIMUM RAINFALL RECORDED
IN CONSECUTIVE MONTHS
(Points)

Station	Number of Months	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Strathbogie	1	23	8	0	0	0	0	2	0	8	47	0	0
	2	192	101	17	0	43	44	23	26	77	99	172	218
	3	270	114	72	124	78	53	139	160	107	281	340	399
	4	303	114	205	142	116	168	208	190	371	505	531	462
	5	320	254	214	147	227	237	238	454	709	663	595	531
	6	460	256	378	291	353	267	502	840	859	812	603	531
	7	462	602	522	405	482	531	888	962	923	820	603	671
	8	826	742	636	501	746	917	1010	1065	931	820	743	673
	9	948	944	732	802	1132	1039	1113	1135	931	960	745	1037
	10	1208	989	1070	1188	1254	1142	1183	1298	1071	962	1109	1159
	11	1305	1253	1456	1310	1357	1212	1346	1530	1073	1326	1231	1372
	12	1569	1639	1578	1413	1427	1375	1638	1532	1437	1448	1491	1402
Yetman	1	18	9	0	0	0	0	0	1	2	16	6	0
	2	83	20	20	3	40	33	17	19	56	23	59	96
	3	219	30	72	104	59	34	74	134	107	168	243	239
	4	399	171	154	104	89	135	165	186	213	311	382	417
	5	486	189	162	134	171	187	216	323	389	454	508	527
	6	547	254	358	216	261	238	404	532	516	666	547	530
	7	554	376	381	306	391	426	617	752	692	705	550	596
	8	750	473	515	454	543	639	752	852	785	708	616	596
	9	773	607	633	648	752	815	882	947	788	774	616	792
	10	907	725	747	801	821	904	977	1032	854	774	812	815
	11	1025	815	855	860	957	999	1093	1098	854	970	835	949
	12	1223	947	914	996	1152	1115	1198	1098	1050	993	969	1067

MACINTYRE RIVER AT WALLANGRA

LOCATION: Latitude 29°16' Longitude 150°54'

PERIOD OF ESTABLISHMENT: December, 1936 to date.

COMPLETE YEARS OF COMPUTED RECORDS: 29.

ZERO OF GAUGE: R.L. 75.61 Assumed Datum.

CATCHMENT AREA: 780 Square Miles.

CONTROL: Rock bar with concrete improvements.

EQUIPMENT: Automatic Recorder (Pressure type)
installed December 1936.
Automatic Recorder (Float type)
installed April 1951.
Staff gauge. Range 0 to 25 feet.

CURRENT METER OBSERVATIONS:

(a) Number obtained	:	183
(b) Maximum observation in cusecs	:	35,074
(c) Minimum observation in cusecs	:	0

MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS: 48,000 cusecs.

MEAN DAILY DISCHARGE FOR 29 YEARS: 139 cusecs.

MEAN ANNUAL DISCHARGE FOR 29 YEARS: 101,000 acre feet.

MACINTYRE RIVER AT WALLANGRA

Year 1937

Year 1938

Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	680	11	96	5,942	Jan.	1700	2	46	2,838
Feb.	102	0	4.4	246	Feb.	4210	6	247	13,844
Mar.	720	0	124	7,660	Mar.	6	0	1.7	108
Apr.	89	0.75	7.5	450	Apr.	0	0	0	0
May	0.75	0.25	0.5	32	May	178	0	5	288
June	8	0	3	177	June	59	1	9	562
July	25	4	8	508	July	161	4	30	1,866
Aug.	59	8	16	990	Aug.	4440	36	416	25,774
Sept.	2010	4	193	11,584	Sept.	102	36	57	3,432
Oct.	36	3	12	730	Oct.	237	43	82	5,064
Nov.	760	3	36	2,170	Nov.	51	36	43	2,598
Dec.	178	4	68	4,234	Dec.	30	0	7	464
Total	..	..	..	34,723	Total	..	..	..	56,838

Year 1939

Year 1940 .

Jan.	1	0	0.1	8	Jan.	6	0.5	1.6	94
Feb.	20	0	2.5	140	Feb.	178	0.75	20	1,146
Mar.	1260	0	59	3,658	Mar.	308	0	13	780
Apr.	1.5	0.25	0.6	40	Apr.	2	0.15	0.7	44
May	0.25	0	0.03	1	May	0	0	0	0
June	1	0	0.2	12	June	0	0	0	0
July	237	0	52	3,252	July	0	0	0	0
Aug.	447	15	89	5,524	Aug.	0	0	0	0
Sept.	23	3	9	556	Sept.	0	0	0	0
Oct.	3	1.8	2	129	Oct.	0	0	0	0
Nov.	3	0	1.2	73	Nov.	3030	0	13	826
Dec.	6	0	0.15	9	Dec.	2350	8	157	9,768
Total	..	..	..	13,402	Total	..	..	..	12,658

MACINTYRE RIVER AT WALLANGRA

Year 1941

Year 1942

Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	5200	25	336	20,834	Jan.	0	0	0	0
Feb.	4000	20	219	12,284	Feb.	89	0	19	1,050
Mar.	1200	8	98	6,106	Mar.	4	0	0.6	35
Apr.	36	1	11	680	Apr.	0	0	0	0
May	1	1	1	62	May	0	0	0	0
June	760	0.75	135	8,122	June	0	0	0	0
July	68	11	29	1,786	July	7160	0	295	18,274
Aug.	8	4	7	420	Aug.	78	15	32	1,960
Sept.	8	1.5	2.6	158	Sept.	11	4	7	412
Oct.	1.5	0	0.5	31	Oct.	9500	4	482	29,912
Nov.	216	0	17	1,012	Nov.	1700	59	293	17,558
Dec.	25	0	3.4	212	Dec.	460	20	82	5,086
Total	..	..	..	51,707	Total	..	..	..	74,287

Year 1943

Year 1944

Jan.	8330	36	512	31,722	Jan.	460	6	38	2,376
Feb.	116	3.5	28	1,540	Feb.	68	3	23	1,352
Mar.	3.5	0	1.3	79	Mar.	3	0	0.4	26
Apr.	0	0	0	0	Apr.	0	0	0	0
May	0	0	0	0	May	0	0	0	0
June	59	3.5	16	960	June	0	0	0	0
July	15	6	12	720	July	116	0	21	1,318
Aug.	89	15	32	1,990	Aug.	3900	8	199	12,322
Sept.	20	2	8	454	Sept.	89	11	30	1,822
Oct.	20	4	7	432	Oct.	11	0	5	288
Nov.	15400	4	568	34,076	Nov.	0	0	0	0
Dec.	59	11	22	1,356	Dec.	0	0	0	0
Total	..	..	..	73,329	Total	..	..	..	19,504

MACINTYRE RIVER AT WALLANGRA

Year 1945

Year 1946

Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	116	0	12	772	Jan.	17700	0	466	28,906
Feb.	10280	2	496	27,768	Feb.	40	6	19	1,062
Mar.	408	3	60	3,704	Mar.	308	0	22	1,372
Apr.	4	0.8	2	108	Apr.	68	1	15	896
May	11	2	5	292	May	1.8	1.5	1.6	102
June	284	4	48	2,860	June	3.5	1.2	2	122
July	284	11	64	3,954	July	6	3.5	5	285
Aug.	178	25	55	3,394	Aug.	6	0.6	2.2	136
Sept.	408	27	96	5,778	Sept.	260	0	21	1,260
Oct.	25	2.5	10	622	Oct.	130	1	21	1,300
Nov.	2	0	0.5	31	Nov.	1	0	0.1	6
Dec.	33	0	7	440	Dec.	0	0	0	0
Total	..	..	..	49,723	Total	..	..	..	35,447

Year 1947

Year 1948

Jan.	0	0	0	0	Jan.	12500	43	1103	68,378
Feb.	15	0	2.6	146	Feb.	640	3	37	2,160
Mar.	4680	4	142	8,806	Mar.	680	11	115	7,112
Apr.	8	1	3.2	191	Apr.	15	6	8	494
May	43	3	9	582	May	51	8	28	1,660
June	6	3	4	240	June	1320	9	182	10,902
July	11	2.5	5	310	July	2680	43	239	14,800
Aug.	130	8	31	1,946	Aug.	145	36	61	3,790
Sept.	3800	25	289	7,936	Sept.	123	28	59	3,532
Oct.	3800	20	170	10,546	Oct.	36	4	15	936
Nov.	130	15	43	2,586	Nov.	460	4	106	6,336
Dec.	8150	68	596	36,968	Dec.	36	1	10	619
Total	..	..	..	70,257	Total	..	..	..	120,719

MACINTYRE RIVER AT WALLANGRA

Year 1949

Year 1950

Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	216	0	37	2,312	Jan.	43	8	20	1,210
Feb.	15600	0.5	498	27,873	Feb.	1320	8	481	26,956
Mar.	89	11	33	2,032	Mar.	110	6	34	2,082
Apr.	8	3	6	354	Apr.	1080	24	167	10,000
May	20	6	9	560	May	110	14	34	2,086
June	237	11	59	3,518	June	9960	36	1096	65,750
July	720	18	69	4,274	July	31080	178	2766	171,500
Aug.	196	20	59	3,664	Aug.	No	Records		34,000*
Sept.	9500	30	461	27,642	Sept.	No	Records		36,000*
Oct.	17300	43	1618	100,290	Oct.	No	Records		140,000*
Nov.	3210	89	288	17,282	Nov.	No	Records		87,800*
Dec.	332	51	111	6,896	Dec.	259	58	118	7,342
Total	..	..	..	196,697	Total	..	..	..	584,726*

Year 1951

Year 1952

Jan.	1780	42	102	6,332	Jan.	0	0	0	0
Feb.	348	14	127	7,088	Feb.	1780	0	34	1,948
Mar.	152	30	40	2,478	Mar.	440	8	76	4,188
Apr.	72	10	25	1,482	Apr.	391	21	74	4,418
May	71	22	30	1,844	May	1130	18	110	6,802
June	1030	30	159	9,560	June	5900	33	291	17,446
July	700	50	88	5,448	July	2360	39	148	9,146
Aug.	920	42	115	7,154	Aug.	17730	67	999	61,946
Sept.	104	30	44	2,648	Sept.	1017	76	142	8,540
Oct.	76	12	28	1,736	Oct.	5795	71	613	37,998
Nov.	10	0.5	4	232	Nov.	760	42	110	6,594
Dec.	0.5	0	0.13	8	Dec.	145	16	38	2,330
Total	..	..	..	46,010	Total	..	..	..	161,356

* Estimated.

MACINTYRE RIVER AT WALLANGRA

Year 1953

Year 1954

Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	101	13	29	1,812	Jan.	4.5	0	0.15	10
Feb.	17510	1.5	1116	62,489	Feb.	285	0	39	2,204
Mar.	228	36	72	4,462	Mar.	104	0	14	834
Apr.	35	21	24	1,412	Apr.	0	0	0	0
May	138	24	42	2,606	May	0	0	0	0
June	24	21	24	1,428	June	0	0	0	0
July	50	18	25	1,524	July	0	0	0	0
Aug.	145	18	45	2,784	Aug.	26	0	8	478
Sept.	186	8	33	1,986	Sept.	6	1.6	4	231
Oct.	36	7	14	832	Oct.	6210	0	683	42,336
Nov.	117	0	5	326	Nov.	14000	56	1344	80,652
Dec.	65	0	8	462	Dec.	312	16	56	3,454
Total	..	..	..	82,123	Total	..	..	..	130,199

Year 1955

Year 1956

Jan.	424	4.2	28	1,726	Jan.	4650	1.6	250	15,506
Feb.	48000	3.5	2144	120,058	Feb.	22200	110	2460	142,708
Mar.	1420	31	164	10,164	Mar.	6000	87	297	18,392
Apr.	31	18	22	1,332	Apr.	340	55	95	5,716
May	110	17	33	2,036	May	3220	104	490	30,352
June	2230	14	98	5,890	June	19500	98	810	48,630
July	326	31	63	3,882	July	3700	186	621	38,476
Aug.	510	43	91	5,642	Aug.	988	92	166	10,280
Sept.	57	24	39	2,334	Sept.	619	77	119	7,154
Oct.	884	14	120	7,412	Oct.	5448	77	242	15,028
Nov.	340	11	58	3,486	Nov.	210	37	77	4,632
Dec.	78	5	22	1,340	Dec.	138	17	38	2,354
Total	..	..	..	165,302	Total	..	..	..	339,228

MACINTYRE RIVER AT WALLANGRA

Year 1957

Year 1958

Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	186	10	46	2,878	Jan.	0	0	0	0
Feb.	198	15	41	2,320	Feb.	564	0	31	1,726
Mar.	656	13	56	3,458	Mar.	439	6	53	3,300
Apr.	51	13	23	1,398	Apr.	6	0.2	2.5	152
May	25	13	17	1,058	May	38	0	6.1	377
June	55	13	21	1,262	June	7	3.4	5.6	337
July	37	23	26	1,604	July	35	6	12	750
Aug.	68	17	27	1,652	Aug.	87	7	18	1,084
Sept.	51	8	20	1,200	Sept.	3900	25	205	12,302
Oct.	8	0.7	3.1	194	Oct.	2720	18	139	8,630
Nov.	1.4	0	0.3	17	Nov.	1260	3.4	32	1,928
Dec.	0	0	0	0	Dec.	3400	1	198	12,271
Total	..	..	..	17,041	Total	..	..	..	42,857

Year 1959

Year 1960

Jan.	2660	60	367	22,772	Jan.	600	53	141	8,762
Feb.	6070	20	371	20,750	Feb.	312	16	52	3,020
Mar.	2560	45	303	18,768	Mar.	34	9	16	1,018
Apr.	415	28	75	4,480	Apr.	24	6	12	694
May	74	10	27	1,704	May	152	14	38	2,328
June	31	12	17	1,016	June	42	18	23	1,360
July	3062	17	130	8,046	July	832	24	136	8,424
Aug.	78	18	34	2,090	Aug.	4650	42	223	13,846
Sept.	235	12	31	1,846	Sept.	69	24	36	2,158
Oct.	600	18	65	4,026	Oct.	83	9	27	1,672
Nov.	8300	45	513	30,776	Nov.	152	3	20	1,228
Dec.	14800	31	1369	84,908	Dec.	88	5	37	2,288
Total	..	..	..	201,182	Total	..	..	..	46,798

MACINTYRE RIVER AT WALLANGRA

Year 1961

Year 1962

Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	14	2	6.7	418	Jan.	16860	24	966	59,888
Feb.	2	0	0.7	37	Feb.	1166	34	163	9,126
Mar.	10	0.3	4.1	257	Mar.	503	19	66	4,118
Apr.	2.7	0.2	1.2	70	Apr.	105	13	31	1,852
May	0.2	0	0.04	2	May	36	7	12	712
June	17	0	6.5	391	June	49	12	23	1,386
July	65	2.7	12.1	753	July	1570	6	84	5,236
Aug.	152	13	46	2,880	Aug.	936	15	119	7,420
Sept.	17	2.6	8.5	512	Sept.	186	26	49	2,920
Oct.	4.5	1.2	1.9	121	Oct.	260	11	41	2,520
Nov.	3220	0.7	185	11,094	Nov.	36	4	14	828
Dec.	2880	15	135	8,398	Dec.	134	5	20	1,264
Total	..	..	..	24,933	Total	..	..	..	97,270

Year 1963

Year 1964

Jan.	4348	6	130	8,068	Jan.	725	11	59	3,656
Feb.	15	1.3	6.5	363	Feb.	21	2.3	7.9	456
Mar.	9.5	0	0.7	41	Mar.	940	3	106	6,550
Apr.	74	5	16	934	Apr.	177	6.5	27	1,646
May	23770	4	561	34,794	May	58	18	29	1,774
June	4458	65	276	16,576	June	79	18	41	2,462
July	62	32	49	3,012	July	3070	28	270	16,746
Aug.	450	28	88	5,478	Aug.	79	28	44	2,722
Sept.	433	29	88	5,298	Sept.	3400	18	107	6,436
Oct.	218	13	38	2,352	Oct.	3940	58	348	21,584
Nov.	8420	6.5	223	13,360	Nov.	410	35	91	5,460
Dec.	570	31	123	7,654	Dec.	79	5	22	1,374
Total	..	..	..	97,930	Total	..	..	..	70,866

MACINTYRE RIVER AT WALLANGRA

Year 1965

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	5	0	0.7	44
Feb.	0	0	0	0
Mar.	0	0	0	0
Apr.	0	0	0	0
May	0	0	0	0
June	0	0	0	0
July	0	0	0	0
Aug.	0	0	0	0
Sept.	0	0	0	0
Oct.	0	0	0	0
Nov.	0	0	0	0
Dec.	7180	0	249	15,500
Total	..	..	..	15,544

SEVERN RIVER AT LLANARTH

LOCATION: Latitude 29°22' Longitude 151°09'

PERIOD OF ESTABLISHMENT: May, 1960 to date.

COMPLETE YEARS OF COMPUTED RECORDS: 5

ZERO OF GAUGE: R.L. 79.99 Assumed Datum.

CATCHMENT AREA: 870 Square Miles.

CONTROL: Concrete Causeway.

EQUIPMENT: Automatic Recorder (Pressure type)
installed March, 1961.
Staff Gauge range 0 to 20 feet.

CURRENT METER OBSERVATIONS:

(a) Number obtained	55
(b) Maximum observation in cusecs	4,079
(c) Minimum observation in cusecs	0

MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS: 43,660 cusecs.

MEAN DAILY DISCHARGE FOR 5 YEARS: 185 cusecs.

MEAN ANNUAL DISCHARGE FOR 5 YEARS: 135,000 acre feet.

SEVERN RIVER AT LLANARTH

Year 1960

Year 1961

Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	..	..	..	..	Jan.	44	0.2	21	1,319
Feb.	..	..	..	..	Feb.	215	0.2	28	1,573
Mar.	..	..	..	..	Mar.	29	0.2	14	852
Apr.	..	..	..	..	Apr.	0.2	0.2	0.2	12
May	..	..	..	..	May	29	0	3.6	226
June	102	15	36	2,144	June	44	15	20	1,216
July	495	44	207	12,814	July	166	4	28	1,734
Aug.	4230	44	323	20,032	Aug.	250	29	127	7,848
Sept.	166	22	55	3,288	Sept.	62	15	23	1,370
Oct.	143	15	40	2,492	Oct.	166	4	37	2,312
Nov.	82	4	19	1,136	Nov.	3630	4	437	27,096
Dec.	166	15	55	3,396	Dec.	4780	62	432	26,830
Total	..	..	..	..	Total	..	..	..	72,388

Year 1962

Year 1963

Jan.	10480	44	1285	79,690	Jan.	10000	38	389	24,114
Feb.	2600	62	312	17,450	Feb.	21	2	14.6	816
Mar.	788	44	151	9,346	Mar.	189	2	29	1,774
Apr.	530	29	105	6,326	Apr.	250	15	54	3,242
May	44	15	26	1,608	May	43660	9.5	1286	79,758
June	62	15	42	2,506	June	5940	112	50	30,046
July	10000	4	443	27,492	July	122	70	78	4,840
Aug.	4120	82	437	27,122	Aug.	3820	48	332	20,604
Sept.	740	53	184	11,020	Sept.	1380	42	180	10,818
Oct.	565	36	100	6,172	Oct.	55	20	43	2,692
Nov.	102	15	32	1,950	Nov.	1400	12	169	10,150
Dec.	44	22	28	1,730	Dec.	3280	31	342	21,230
Total	..	..	..	192,412	Total	..	..	..	210,084

SEVERN RIVER AT LLANARTH

Year 1964

Year 1965

Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	790	20	116	7,216	Jan.	28	0.5	5.4	332
Feb.	122	12	40	2,296	Feb.	84	0	4.4	244
Mar.	6900	12	440	27,252	Mar.	6.0	0	1.2	76
Apr.	210	20	46	2,734	Apr.	0	0	0	0
May	175	31	61	3,788	May	0	0	0	0
June	70	31	43	2,594	June	0	0	0	0
July	5260	36	382	23,542	July	340	0	68	4,220
Aug.	210	12	51	3,134	Aug.	39	12	16.1	996
Sept.	5380	17	176	10,564	Sept.	39	5	17.3	1,040
Oct.	6060	54	695	43,096	Oct.	5.0	0	1.4	88
Nov.	152	28	57	3,422	Nov.	0.5	0	0.07	4
Dec.	93	9	33	1,962	Dec.	7750	0	1020	63,000
Total				131,600	Total				70,000

SEVERN RIVER AT ASHFORD

LOCATION: Latitude 29°18' Longitude 151°07'

PERIOD OF ESTABLISHMENT: November 1933 to date.

COMPLETE YEARS OF COMPUTED RECORDS: 30

ZERO OF GAUGE: R.L. 75.26 Assumed Datum.

CATCHMENT AREA: 1,220 Square Miles.

CONTROL: Rock bar with concrete improvements.

EQUIPMENT: Automatic Recorder (Float type)
installed September, 1953.
Staff Gauge, Range 0 to 30 feet.

CURRENT METER OBSERVATIONS:

(a) Number obtained	:	216
(b) Maximum observation in cusecs	:	6,372
(c) Minimum observation in cusecs	:	0

MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS: 62,400 cusecs.

MEAN DAILY DISCHARGE FOR 30 YEARS: 326 cusecs.

MEAN ANNUAL DISCHARGE FOR 30 YEARS: 238,000 acre feet.

REMARKS: No Records for November and December 1933.

SEVERN RIVER AT ASHFORD

Year 1934

Year 1935

Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	1550	24	255	15,840	Jan.	4450	72	677	41,952
Feb.	2310	38	317	17,730	Feb.	2210	26	187	10,454
Mar.	97	15	30	1,874	Mar.	44	13	24	1,496
Apr.	172	15	58	3,470	Apr.	13	7	10	582
May	82	19	35	2,138	May	21	10	15	910
June	47	19	27	1,648	June	17	13	14	836
July	2960	30	191	11,856	July	61	13	31	1,920
Aug.	1720	131	562	34,880	Aug.	37	17	24	1,502
Sept.	8100	52	910	54,602	Sept.	660	17	75	4,530
Oct.	2960	26	465	28,816	Oct.	4760	21	419	25,998
Nov.	320	52	99	5,956	Nov.	72	7	26	1,576
Dec.	4980	44	676	41,930	Dec.	425	3	36	2,232
Total	..	..	..	220,740	Total	..	..	..	93,988

Year 1936

Year 1937

Jan.	26	7	13	804	Jan.	840	9	148	9,168
Feb.	10	0	3	155	Feb.	21	1	5	304
Mar.	1	0	0	5	Mar.	2780	2	253	15,658
Apr.	0	0	0	0	Apr.	35	4	11	666
May	0	0	0	0	May	7	4	5	328
June	31	0	10	612	June	45	5	18	1,106
July	700	21	141	8,724	July	116	9	24	1,468
Aug.	4870	21	462	28,626	Aug.	290	16	60	3,694
Sept.	1710	21	203	12,186	Sept.	1930	16	222	13,330
Oct.	21	2	10	610	Oct.	74	7	19	1,196
Nov.	2	0	0.3	20	Nov.	230	9	52	3,114
Dec.	1710	0	168	10,408	Dec.	700	12	126	7,784
Total	..	..	..	62,150	Total	..	..	..	57,816

SEVERN RIVER AT ASHFORD.

Year 1938

Year 1939

Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	390	7	123	7,600	Jan.	1040	0	159	9,870
Feb.	2150	33	289	16,196	Feb.	191	0.5	34	1,929
Mar.	71	1	23	414	Mar.	1540	0	193	11,938
Apr.	1	0	0	5	Apr.	247	6	46	2,758
May	620	0	42	2,592	May	24	4	9	560
June	168	15	51	3,054	June	640	4	84	5,026
July	580	20	121	7,488	July	3450	47	318	19,710
Aug.	7950	111	1029	63,820	Aug.	3150	47	398	24,648
Sept.	330	50	125	7,500	Sept.	47	11	24	1,414
Oct.	1610	50	260	16,120	Oct.	30	11	18	1,098
Nov.	128	41	88	5,274	Nov.	30	0	11	655
Dec.	300	0.5	51	3,183	Dec.	340	0	37	2,307
Total	..	..	..	134,246	Total	..	..	..	81,913

Year 1940

Year 1941

Jan.	113	1	25	1,528	Jan.	4980	19	610	37,804
Feb.	560	0.5	90	5,210	Feb.	800	30	163	9,114
Mar.	69	0	15	915	Mar.	840	11	130	8,070
Apr.	15	0.5	5	270	Apr.	69	8	23	1,364
May	0.5	0	0	2	May	6	1	3	190
June	0	0	0	0	June	1430	2	196	11,766
July	1	0	0	2	July	220	24	57	3,516
Aug.	1	0	0.3	20	Aug.	24	11	16	970
Sept.	0	0	0	0	Sept.	11	2	7	438
Oct.	0.5	0	0	2	Oct.	19	0	2	130
Nov.	82	0	4	221	Nov.	560	1	65	3,926
Dec.	220	0	35	2,196	Dec.	57	0	10	624
Total	..	..	..	10,366	Total	..	..	..	77,912

SEVERN RIVER AT ASHFORD

Year 1942

Year 1943

Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	172	0	10	624	Jan.	23200	31	1904	118,038
Feb.	82	6	31	1,724	Feb.	620	5	88	4,944
Mar.	69	0.5	9	540	Mar.	21	0	5	307
Apr.	220	0.5	22	1,293	Apr.	3	0	0	12
May	0	0	0	0	May	0.5	0	0	4
June	0	0	0	0	June	37	2	13	808
July	10400	0	652	40,438	July	21	5	10	618
Aug.	172	19	58	3,618	Aug.	72	13	33	2,070
Sept.	24	8	14	820	Sept.	61	10	22	1,330
Oct.	17400	11	1543	95,672	Oct.	170	13	47	2,902
Nov.	10732	96	1000	59,984	Nov.	35000	26	2378	142,702
Dec.	1931	41	227	14,062	Dec.	740	41	120	7,464
Total	..	..	..	218,775	Total	..	..	..	281,199

Year 1944

Year 1945

Jan.	1670	50	322	19,946	Jan.	890	0	114	7,042
Feb.	620	50	156	9,054	Feb.	12600	2	1349	75,540
Mar.	50	1	15	918	Mar.	940	5	136	8,434
Apr.	0.5	0	0	9	Apr.	5	1	3	184
May	0	0	0	0	May	13	1	6	386
June	15	0	9	516	June	13800	7	681	40,884
July	300	11	70	4,338	July	7500	21	527	32,686
Aug.	11400	26	1066	66,066	Aug.	620	61	139	8,638
Sept.	200	31	66	3,988	Sept.	3150	52	330	19,892
Oct.	37	3	14	890	Oct.	82	11	32	2,002
Nov.	13	1	6	364	Nov.	82	6	20	1,206
Dec.	1	0	0	6	Dec.	480	15	98	6,054
Total	..	..	..	106,095	Total	..	..	..	202,948

SEVERN RIVER AT ASHFORD

Year 1946

Year 1947

Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	1660	1	152	9,404	Jan.	8	0	2	128
Feb.	220	8	46	2,576	Feb.	640	0.5	156	8,759
Mar.	1930	8	120	7,446	Mar.	8700	38	540	33,492
Apr.	113	19	45	2,704	Apr.	4870	47	370	22,188
May	30	8	17	1,066	May	172	24	52	3,210
June	19	11	15	900	June	47	15	28	1,666
July	47	11	20	1,216	July	30	11	18	1,116
Aug.	19	4	8	508	Aug.	720	15	138	8,532
Sept.	1600	1	120	7,200	Sept.	10774	82	1532	91,904
Oct.	307	11	54	3,374	Oct.	445	47	118	7,340
Nov.	47	1	14	844	Nov.	560	38	128	7,682
Dec.	172	8	40	2,494	Dec.	9660	151	1185	73,464
Total	..	..	..	39,732	Total	..	..	..	259,481

Year 1948

Year 1949

Jan.	8100	45	1136	70,458	Jan.	4980	6	384	23,778
Feb.	1480	3	65	3,766	Feb.	22460	11	1269	71,062
Mar.	1070	30	257	15,918	Mar.	132	19	79	4,890
Apr.	45	11	19	1,166	Apr.	45	15	27	1,592
May	275	19	64	3,953	May	45	11	23	1,440
June	10215	15	1051	63,036	June	275	15	68	4,058
July	1600	117	363	22,498	July	3750	24	340	11,108
Aug.	720	30	178	11,064	Aug.	2690	30	309	19,140
Sept.	166	30	65	3,886	Sept.	3850	75	598	35,886
Oct.	75	8	26	1,592	Oct.	24200	75	5493	340,586
Nov.	305	19	86	5,164	Nov.	1330	24	385	23,086
Dec.	495	11	109	6,770	Dec.	720	30	146	5,028
Total	..	..	..	209,271	Total	..	..	..	541,654

SEVERN RIVER AT ASHFORD

Year 1950

Year 1951

Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	117	24	46	2,862	Jan.	1930	54	721	44,630
Feb.	12600	24	1828	113,338	Feb.	2780	114	822	46,060
Mar.	675	37	153	9,492	Mar.	630	40	152	9,454
Apr.	375	30	189	11,368	Apr.	237	36	92	5,492
May	102	24	45	2,770	May	95	37	43	2,660
June	17400	64	2352	141,128	June	3050	45	460	27,610
July	50900	305	6487	402,220	July	720	75	217	13,434
Aug.	3850	166	562	38,874	Aug.	3600	75	667	41,382
Sept.	17400	75	1980	118,812	Sept.	125	37	59	3,554
Oct.	23450	528	6492	402,476	Oct.	70	14	39	2,388
Nov.	770	410	560	33,620	Nov.	13	1	4	220
Dec.	387	50	146	9,022	Dec.	1	0	0.1	7
Total	..	..	..	1,285,982	Total	..	..	..	196,891

Year 1952

Year 1953

Jan.	24	0	3	201	Jan.	No Records			
Feb.	13400	0	405	23,500	Feb.	No Records			
Mar.	14200	19	1335	82,774	Mar.	No Records			
Apr.	1720	33	283	17,002	Apr.	No Records			
May	4300	30	583	36,128	May	No Records			
June	12600	54	1383	82,994	June	No Records			
July	No Records				July	No Records			
Aug.	No Records				Aug.	No Records			
Sept.	No Records				Sept.	430	17	97	5,838
Oct.	No Records				Oct.	132	18	42	2,626
Nov.	No Records				Nov.	19	4	11	636
Dec.	No Records				Dec.	2.7	0	0.4	27
Total	..	..	..	..	Total	..	..	..	..

SEVERN RIVER AT ASHFORD

Year 1954

Year 1955

Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	0	0	0	0	Jan.	368	14	64	3,970
Feb.	14400	0	867	48,525	Feb.	62400	12	2371	132,794
Mar.	425	5.6	83	5,150	Mar.	2140	6.6	221	13,679
Apr.	5.6	0.1	2.8	170	Apr.	270	0	21	1,278
May	0.4	0	.05	3	May	2360	46	226	14,032
June	33	0	15	891	June	4500	69	310	18,606
July	929	10	64	3,990	July	1400	79	301	18,640
Aug.	956	27	69	4,290	Aug.	1100	102	256	15,902
Sept.	53	17	28	1,664	Sept.	125	42	75	4,470
Oct.	35000	12	2778	172,256	Oct.	984	34	204	12,646
Nov.	8100	125	1779	106,730	Nov.	239	16	75	4,480
Dec.	956	61	207	12,856	Dec.	323	4.6	72	4,489
Total	..	..	..	356,525	Total	..	..	..	244,986

Year 1956

Year 1957

Jan.	35500	6.6	2372	147,060	Jan.	598	16	93	5,736
Feb.	57800	281	6665	386,600	Feb.	586	16	132	7,394
Mar.	10400	96	561	34,758	Mar.	2520	27	260	16,096
Apr.	2520	57	229	13,720	Apr.	79	24	36	2,162
May	6600	164	871	54,022	May	43	18	25	1,540
June	25700	154	1801	108,082	June	65	18	30	1,800
July	8700	239	1313	81,392	July	53	30	41	2,538
Aug.	1930	96	217	13,470	Aug.	385	26	52	3,208
Sept.	712	79	156	9,332	Sept.	168	7	40	2,416
Oct.	5880	90	510	31,598	Oct.	7	0.4	3	184
Nov.	385	33	133	7,992	Nov.	2.5	0.2	0.9	57
Dec.	125	20	49	3,038	Dec.	1.5	0.5	0.9	54
Total	..	..	..	891,064	Total	..	..	..	43,185

SEVERN RIVER AT ASHFORD

Year 1958

Year 1959

Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	0.6	0.4	0.5	31	Jan.	6100	118	1544	95,702
Feb.	130	0.4	15.6	875	Feb.	3750	67	335	18,774
Mar.	610	0.5	75	4,678	Mar.	3650	67	603	37,394
Apr.	14	4	8.6	514	Apr.	929	43	172	10,314
May	52	0	8.3	514	May	95	18	42	2,610
June	20	7	13	762	June	77	28	42	2,550
July	147	14	39	2,412	July	7950	33	458	28,404
Aug.	138	14	51	3,146	Aug.	200	33	72	4,488
Sept.	6020	71	629	37,738	Sept.	984	25	99	5,954
Oct.	1720	52	368	22,794	Oct.	4450	63	292	18,092
Nov.	3100	8	83	4,996	Nov.	12600	72	1515	90,920
Dec.	6750	7	418	25,926	Dec.	23200	58	2597	161,026
Total	..	..	..	104,386	Total	..	..	..	476,228

Year 1960

Year 1961

Jan.	610	33	130	8,072	Jan.	50	4	21	1,280
Feb.	298	50	110	6,370	Feb.	236	2.5	40	2,263
Mar.	100	23	50	3,086	Mar.	63	9	20	1,268
Apr.	47	9	14	832	Apr.	9	1.2	2.4	147
May	273	13	66	4,082	May	12	0.4	2.3	146
June	95	28	39	2,346	June	25	7	12	742
July	610	63	247	15,326	July	189	9	36	2,230
Aug.	4900	63	463	28,688	Aug.	610	40	165	10,260
Sept.	212	40	72	4,318	Sept.	63	18	28	1,700
Oct.	128	23	50	3,110	Oct.	118	10	30	1,830
Nov.	81	8	24	1,442	Nov.	4870	7	543	32,578
Dec.	323	16	83	5,136	Dec.	4815	50	506	31,368
Total	..	..	..	82,808	Total	..	..	..	85,812

SEVERN RIVER AT ASHFORD

Year 1962

Year 1963

Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	17600	81	1950	120,894	Jan.	11350	22	456	28,254
Feb.	3300	63	347	19,438	Feb.	35	4	18	1,016
Mar.	792	40	138	8,542	Mar.	175	2	19	1,158
Apr.	1070	33	121	7,266	Apr.	260	20	57	3,434
May	33	18	24	1,490	May	49000	18	1639	101,626
June	95	20	43	2,558	June	5550	115	565	33,896
July	11600	18	484	30,014	July	130	48	70	4,310
Aug.	5295	63	511	31,676	Aug.	5750	40	432	26,760
Sept.	1160	55	230	13,802	Sept.	2700	40	221	13,232
Oct.	345	35	97	6,002	Oct.	158	21	52	3,222
Nov.	102	20	36	2,146	Nov.	3870	12	266	15,960
Dec.	115	13	25	1,580	Dec.	4110	44	455	28,200
Total	..	..	..	245,408	Total	..	..	..	261,068

Year 1964

Year 1965

Jan.	980	21	112	6,914	Jan.	22	0.4	6.3	388
Feb.	95	9	25	1,424	Feb.	61	0	1.3	72
Mar.	9500	9	560	34,724	Mar.	32	0	1.7	106
Apr.	197	21	43	2,612	Apr.	0	0	0	0
May	127	32	57	3,532	May	0	0	0	0
June	210	40	71	4,250	June	0	0	0	0
July	6515	52	565	35,068	July	1120	0	62	3,830
Aug.	197	32	65	4,006	Aug.	44	10	18.6	1,150
Sept.	6780	29	205	12,316	Sept.	40	10	22	1,330
Oct.	8940	66	951	58,962	Oct.	10	0	2.5	148
Nov.	268	29	77	4,640	Nov.	0	0	0	0
Dec.	95	3.8	28	1,750	Dec.	9300	0	1355	84,000
Total	..	..	..	170,198	Total	..	..	..	91,024

MACINTYRE RIVER AT YETMAN

LOCATION: Latitude 28°52' Longitude 150°46'

PERIOD OF ESTABLISHMENT: January 1925 to February 1952.

COMPLETE YEARS OF COMPUTED RECORDS: 27

ZERO OF GAUGE: R.L. 70.40 Assumed Datum.

CATCHMENT AREA: 2,540 Square Miles.

CONTROL: Gravel; subject to alteration.

EQUIPMENT: Staff Gauge Range 0 to 40 feet.

CURRENT METER OBSERVATIONS:

(a) Number obtained	:	157
(b) Maximum observation in cusecs	:	13,573
(c) Minimum observation in cusecs	:	0.10

MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS: 104,000 cusecs.

MEAN DAILY DISCHARGE FOR 27 YEARS: 488 cusecs.

MEAN ANNUAL DISCHARGE FOR 27 YEARS: 357,000 acre feet.

REMARKS:

No. 1 Station was established on 14th January 1925 and discontinued on 31st October 1943.

No. 2 Station was established on 4th June 1935 at a site $\frac{1}{4}$ mile downstream of No. 1 Station.

An additional station was established on 2nd February 1937 at Yetman Station located $1\frac{1}{2}$ miles downstream of No. 1 Station and discontinued in December 1951.

MACINTYRE RIVER AT YETMAN

Year 1925

Year 1926

Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	No Records			11,700*	Jan.	554	100	186	11,514
Feb.	690	100	168	9,442	Feb.	70	2	15	811
Mar.	290	9	77	4,800	Mar.	2	2	2	103
Apr.	9	3	5	284	Apr.	5	2	3	160
May	42	2.5	8	472	May	2	2	2	113
June	116	16	31	1,836	June	56	2	24	1,447
July	430	28	120	7,466	July	2350	16	350	21,708
Aug.	6380	16	442	27,422	Aug.	152	16	53	3,324
Sept.	2190	16	249	14,990	Sept.	42	5	12	740
Oct.	42	9	15	930	Oct.	5	2	3	202
Nov.	6380	9	583	34,984	Nov.	2	1	1	74
Dec.	597	100	190	11,802	Dec.	13010	1	746	46,254
Total	..	..	..	126,128*	Total	..	..	..	86,450

Year 1927

Year 1928

Jan.	12660	16	1106	68,586	Jan.	26500	5	1600	98,958
Feb.	3090	1	444	24,844	Feb.	13910	230	2546	147,624
Mar.	152	5	47	2,936	Mar.	690	66	223	13,830
Apr.	70	9	27	1,608	Apr.	176	110	133	7,970
May	42	3	14	864	May	123	88	100	6,230
June	9	2	3	202	June	17260	45	1841	110,482
July	5	3	4	236	July	26500	35	2975	184,450
Aug.	3	3	3	166	Aug.	4030	77	501	31,064
Sept.	3	2	2	130	Sept.	490	9	68	4,082
Oct.	2	2	2	99	Oct.	66	4	28	1,754
Nov.	350	2	53	3,162	Nov.	66	6	18	1,060
Dec.	1410	116	433	26,834	Dec.	18	2	6	392
Total	..	..	..	129,667	Total	..	..	..	607,896

* Estimated.

MACINTYRE RIVER AT YETMAN

Year 1929

Year 1930

Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	45	2	8	492	Jan.	18450	2	1060	65,610
Feb.	2050	6	513	28,714	Feb.	7740	13	452	25,342
Mar.	136	9	38	2,372	Mar.	380	6	123	7,486
Apr.	20950	6	1795	107,700	Apr.	71	6	15	920
May	435	84	312	19,336	May	13	4	9	558
June	70	4	13	786	June	5510	18	805	47,656
July	16	4	9	536	July	3310	89	573	35,546
Aug.	898	11	178	11,046	Aug.	7600	71	1079	66,766
Sept.	138	16	44	2,614	Sept.	3090	89	574	34,430
Oct.	52700	11	3786	233,516	Oct.	5510	89	732	45,370
Nov.	138	32	65	3,924	Nov.	176	34	103	6,188
Dec.	43	16	28	1,768	Dec.	202	34	79	4,936
Total	..	..	..	412,804	Total	..	..	..	340,808

Year 1931

Year 1932

Jan.	420	6	62	3,828	Jan.	221	16	88	5,310
Feb.	230	9	77	4,346	Feb.	9	0	3	150
Mar.	5670	34	661	40,974	Mar.	0	0	0	0
Apr.	69400	100	4110	246,618	Apr.	2210	0	326	19,572
May	14270	56	919	56,994	May	62	32	48	2,982
June	95400	119	4297	257,820	June	51	32	34	2,014
July	20310	479	4186	259,560	July	157	32	90	5,610
Aug.	1000	119	273	16,932	Aug.	62	32	41	2,524
Sept.	1900	70	307	18,420	Sept.	10310	32	1285	77,124
Oct.	8310	23	687	42,592	Oct.	1070	20	465	28,822
Nov.	1700	16	163	9,768	Nov.	650	104	247	14,848
Dec.	33500	43	3489	216,328	Dec.	415	104	134	8,332
Total	..	..	..	1,174,180	Total	..	..	..	167,288

MACINTYRE RIVER AT YETMAN

Year 1933

Year 1934

Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	29800	16	3382	209,680	Jan.	2460	157	386	23,924
Feb.	6380	43	553	30,968	Feb.	4380	312	861	48,228
Mar.	43	4	24	1,520	Mar.	312	157	187	11,594
Apr.	4	0	1	64	Apr.	415	157	275	16,496
May	138	0	39	2,430	May	570	62	274	16,964
June	470	43	87	5,216	June	62	16	24	1,444
July	21000	138	1592	98,690	July	157	16	86	5,312
Aug.	5370	89	890	55,190	Aug.	2730	221	865	53,652
Sept.	3770	89	460	27,588	Sept.	19470	190	1511	90,680
Oct.	104000	230	5730	355,240	Oct.	5610	85	1089	67,548
Nov.	10800	320	1840	110,420	Nov.	650	157	240	14,384
Dec.	920	157	454	37,264	Dec.	8030	157	1114	69,068
Total	..	..	..	934,270	Total	..	..	..	419,294

Year 1935

Year 1936

Jan.	20950	221	2461	152,592	Jan.	322	4	34	2,128
Feb.	2370	104	290	16,214	Feb.	4	1	1.4	80
Mar.	104	41	66	4,118	Mar.	13	2	3	162
Apr.	32	25	31	1,878	Apr.	2	1	1.4	84
May	41	25	28	1,752	May	2	1	1.4	92
June	41	20	30	1,826	June	2	1	1.0	70
July	102	13	46	2,862	July	1104	1	122	7,552
Aug.	19	19	19	1,178	Aug.	5530	40	534	33,080
Sept.	210	19	57	3,404	Sept.	1510	32	223	13,410
Oct.	4885	32	477	29,556	Oct.	40	8	21	1,318
Nov.	102	102	102	6,324	Nov.	4	0	2	118
Dec.	102	0	22	1,382	Dec.	1965	0	318	19,694
Total	..	..	..	223,086	Total	..	..	..	77,788

MACINTOSH RIVER AT YETMAN

Year 1937

Year 1938

Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	No Records			25,100*	Jan.	890	40	208	12,920
Feb.	No Records			820*	Feb.	4470	80	496	27,782
Mar.	3190	3	485	30,060	Mar.	97	12	57	3,640
Apr.	67	15	30	1,828	Apr.	40	7	17	1,036
May	15	4	9	528	May	462	3	39	2,390
June	31	3	9	568	June	257	16	63	3,782
July	22	13	18	1,130	July	400	30	77	4,804
Aug.	97	16	39	2,390	Aug.	5430	195	1306	80,954
Sept.	3680	19	265	15,894	Sept.	785	40	188	11,300
Oct.	22	12	14	882	Oct.	1920	40	388	22,044
Nov.	2120	19	146	8,760	Nov.	730	54	174	10,432
Dec.	245	30	103	6,396	Dec.	493	4	92	5,684
Total	..	..	..	94,356*	Total	..	..	..	186,768

Year 1939

Year 1940

Jan.	1830	0	242	14,988	Jan.	181	2	38	2,372
Feb.	493	6	49	2,766	Feb.	776	7	254	14,752
Mar.	1220	3	225	13,958	Mar.	810	36	100	6,208
Apr.	169	16	41	2,488	Apr.	68	31	49	2,910
May	42	8	24	1,470	May	23	10	13	814
June	945	8	119	7,134	June	10	6	9	512
July	2320	61	374	23,174	July	6	4	4	276
Aug.	2570	84	469	29,094	Aug.	4	1	2	120
Sept.	84	23	42	2,528	Sept.	1	0.5	0.5	34
Oct.	54	8	18	1,138	Oct.	0.5	0.2	0.4	25
Nov.	31	4	13	752	Nov.	0.5	0	0	4
Dec.	10	2	5	304	Dec.	900	1	254	15,762
Total	..	..	..	99,794	Total	..	..	..	43,789

* Estimated.

MACINTYRE RIVER AT YETMAN

Year 1941

Year 1942

Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	4820	123	1074	66,616	Jan.	0.5	0	0.1	8
Feb.	2970	86	487	27,284	Feb.	220	0	61	3,424
Mar.	1880	30	360	22,328	Mar.	10	0.5	4	240
Apr.	235	21	73	4,398	Apr.	15	0.5	5	293
May	21	5	9	566	May	1.5	0.5	0.9	56
June	1980	3	398	23,910	June	3	1.5	2	132
July	210	69	112	6,964	July	11470	1.5	988	61,246
Aug.	69	9	31	1,920	Aug.	285	30	114	7,098
Sept.	21	5	11	660	Sept.	30	14	18	1,090
Oct.	5	1	2	138	Oct.	24560	14	1863	115,504
Nov.	164	1	63	3,878	Nov.	9740	148	1174	70,442
Dec.	41	1	11	662	Dec.	1680	29	268	16,638
Total	..	..	..	159,324	Total	..	..	..	276,171

Year 1943

Year 1944

Jan.	22650	260	2212	137,130	Jan.	1370	52	328	20,326
Feb.	495	35	140	7,858	Feb.	760	29	188	10,904
Mar.	21	2	9	546	Mar.	21	0.2	5	286
Apr.	41	2	9	542	Apr.	0.2	0	0.2	11
May	665	1	13	790	May	0	0	0	0
June	54	1	14	860	June	1.5	0	0.4	26
July	30	5	16	1,012	July	208	0.5	51	3,148
Aug.	143	21	86	5,334	Aug.	17860	4	1195	74,082
Sept.	123	21	70	4,228	Sept.	535	65	157	9,408
Oct.	164	54	100	6,168	Oct.	59	1.5	17	1,042
Nov.	43100	86	2803	168,190	Nov.	1.5	0.2	1	61
Dec.	720	40	181	11,240	Dec.	10	0	1	54
Total	..	..	..	343,898	Total	..	..	..	119,348

MACINTYRE RIVER AT YETMAN

Year 1945

Year 1946

Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	1070	0.2	105	6,522	Jan.	13400	5	780	48,340
Feb.	15533	9	1562	87,480	Feb.	780	104	256	14,330
Mar.	5046	21	442	27,404	Mar.	4210	14	293	18,180
Apr.	19	2	8	482	Apr.	285	41	133	7,970
May	17	5	6	396	May	41	14	17	1,022
June	8470	21	922	55,292	June	12	9	11	646
July	8950	69	954	59,154	July	30	9	12	760
Aug.	1070	186	371	23,006	Aug.	30	5	13	788
Sept.	3190	41	498	29,884	Sept.	1030	1	172	10,322
Oct.	164	17	74	4,608	Oct.	248	10	88	5,444
Nov.	143	5	24	1,454	Nov.	15	0.5	5	286
Dec.	310	14	161	9,980	Dec.	103	15	33	3,302
Total	..	..	..	305,662	Total	..	..	..	111,390

Year 1947

Year 1948

Jan.	21	0.2	3	186	Jan.	18470	119	1419	87,992
Feb.	678	10	71	3,984	Feb.	1980	29	60	3,498
Mar.	5160	103	580	35,984	Mar.	2760	119	557	34,526
Apr.	3380	61	392	23,522	Apr.	103	21	38	2,289
May	420	29	100	6,204	May	758	29	115	7,112
June	1580	29	60	3,604	June	6260	29	1039	62,354
July	15	10	15	900	July	3780	223	703	43,556
Aug.	600	10	128	7,958	Aug.	798	119	267	16,530
Sept.	13400	177	1673	100,398	Sept.	358	103	153	9,204
Oct.	1770	88	281	17,448	Oct.	276	29	96	5,960
Nov.	490	29	135	8,098	Nov.	223	49	110	6,608
Dec.	16470	388	1714	106,292	Dec.	358	21	78	4,834
Total	..	..	..	314,578	Total	..	..	..	284,463

MACINTYRE RIVER AT YETMAN

Year 1949

Year 1950

Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	2640	25	303	18,776	Jan.	90	18	46	2,838
Feb.	31700	12	1407	78,810	Feb.	12500	34	1172	65,622
Mar.	530	34	210	13,029	Mar.	745	50	244	15,156
Apr.	34	25	29	1,752	Apr.	1220	75	364	21,826
May	25	18	20	1,228	May	157	55	79	4,894
June	1030	18	153	9,202	June	38200	98	3520	211,200
July	2760	58	327	20,260	July	62900	612	7819	484,770
Aug.	980	73	335	20,746	Aug.	5050	540	1504	93,272
Sept.	6360	108	853	51,158	Sept.	15500	155	2130	127,800
Oct.	32570	147	4483	277,962	Oct.	23600	1050	7098	440,000
Nov.	980	147	484	29,050	Nov.	17100	451	4790	287,412
Dec.	1030	40	179	11,154	Dec.	1170	147	405	25,106
Total	..	..	..	533,127	Total	..	..	..	1,779,896

Year 1951

Year 1952

Jan.	4120	129	644	39,924	Jan.	No Records			
Feb.	2310	207	873	48,894	Feb.	Discontinued 5.2.52.			
Mar.	1640	147	343	21,266	Mar.	..	..	..	..
Apr.	252	166	194	11,662	Apr.	..	..	..	..
May	157	138	148	9,174	May	..	..	..	..
June	3150	112	810	48,572	June	..	..	..	..
July	1170	186	396	24,562	July	..	..	..	..
Aug.	2760	83	718	44,486	Aug.	..	..	..	..
Sept.	207	97	140	8,400	Sept.	..	..	..	..
Oct.	146	42	78	4,844	Oct.	..	..	..	..
Nov.	42	15	23	1,364	Nov.	..	..	..	..
Dec.	15	5	9	544	Dec.	..	..	..	..
Total	..	..	..	263,692	Total	..	..	..	..

MACINTYRE RIVER AT HOLDFAST

LOCATION: Latitude 28°48' Longitude 150°44'

PERIOD OF ESTABLISHMENT: June 1950 to Date.

COMPLETE YEARS OF COMPUTED RECORDS: 15

ZERO OF GAUGE: R.L. 26.85 Assumed Datum.

CATCHMENT AREA: 2,600 Square Miles.

CONTROL: Concrete Causeway.

EQUIPMENT: Automatic Recorder (Float type)
installed June, 1950.
Staff Gauge, Range 0 to 25 feet.

CURRENT METER OBSERVATIONS:

(a) Number obtained	:	130
(b) Maximum observation in cusecs	:	32,000
(c) Minimum observation in cusecs	:	0.48

MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS: 85,000 cusecs.

MEAN DAILY DISCHARGE FOR 15 YEARS: 531 cusecs.

MEAN ANNUAL DISCHARGE FOR 15 YEARS: 368,000 acre feet.

REMARKS: No records available from June 1950 to December 1950.

MACINTYRE RIVER AT HOLDFAST

Year 1951

Year 1952

Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	No Records			39,900*	Jan.	4	0	2	114
Feb.	No Records			48,900*	Feb.	No Records			23,000*
Mar.	2090	120	335	20,762	Mar.	No Records			98,000*
Apr.	114	59	79	4,758	Apr.	820	87	232	13,934
May	133	50	75	4,672	May	No Records			41,000*
June	3320	87	781	46,860	June	15640	120	1444	86,652
July	1260	146	347	21,506	July	7600	130	673	41,724
Aug.	No Records			44,500*	Aug.	32000	232	1991	123,418
Sept.	No Records			8,400*	Sept.	930	200	477	28,590
Oct.	146	42	78	4,844	Oct.	9000	200	1107	68,656
Nov.	42	14	21	1,268	Nov.	1320	118	436	26,170
Dec.	9	4	6	388	Dec.	156	36	81	5,036
Total	..	..	..	246,758*	Total	..	..	..	556,294*

Year 1953

Year 1954

Jan.	118	37	67	4,138	Jan.	4	1	2.4	144
Feb.	32000	21	2501	140,076	Feb.	12350	2	822	46,046
Mar.	No Records			18,000*	Mar.	560	21	196	12,160
Apr.	No Records			3,000*	Apr.	22	4	11	660
May	308	84	137	8,510	May	4	4	4	248
June	86	60	67	3,994	June	22	4	9	532
July	100	49	64	3,942	July	215	15	76	4,682
Aug.	269	45	107	6,658	Aug.	250	45	90	5,600
Sept.	523	45	150	8,974	Sept.	54	28	39	2,318
Oct.	135	18	52	3,218	Oct.	35600	4	1597	99,026
Nov.	55	9	20	1,226	Nov.	19950	No Records		265,000*
Dec.	37	3	11	700	Dec.	610	106	285	17,693
Total	..	..	..	202,436*	Total	..	..	..	454,109*

* Estimated.

MACINTYRE RIVER AT HOLDFAST

Year 1955

Year 1956

Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	415	45	117	7,224	Jan.	40500	15	2689	166,724
Feb.	85000	28	5573	312,124	Feb.	83000	510	12498	724,884
Mar.	3700	84	434	26,804	Mar.	16400	215	1166	72,290
Apr.	No Records			2,500*	Apr.	2850	106	325	19,488
May	685	95	164	10,148	May	10800	156	1286	79,718
June	1740	130	360	21,624	June	60000	215	3750	225,056
July	935	130	316	19,574	July	13500	610	2437	151,068
Aug.	1135	156	412	25,456	Aug.	3000	232	529	32,784
Sept.	250	64	128	7,704	Sept.	930	156	312	18,690
Oct.	1545	54	332	20,594	Oct.	11700	215	853	52,892
Nov.	460	37	159	9,562	Nov.	585	74	312	18,722
Dec.	250	15	67	4,126	Dec.	106	64	83	5,136
Total	..	..	..	467,440*	Total	..	..	..	1,567,452

Year 1957

Year 1958

Jan.	329	31	114	7,072	Jan.	2.5	0.3	1.6	97
Feb.	368	52	155	8,692	Feb.	3355	2.5	101	5,680
Mar.	4200	41	366	22,674	Mar.	2750	20	213	13,178
Apr.	150	31	64	3,812	Apr.	35	14	22	1,328
May	74	26	46	2,846	May	21	7	12	726
June	109	31	51	3,052	June	50	9	19	1,162
July	122	74	95	5,900	July	98	20	42	2,618
Aug.	122	52	67	4,140	Aug.	109	34	66	4,084
Sept.	276	31	99	5,950	Sept.	4840	98	490	29,406
Oct.	165	2.5	18	1,127	Oct.	1730	87	439	27,188
Nov.	86	2	7.3	441	Nov.	604	34	96	5,762
Dec.	2	1.5	1.7	106	Dec.	5335	20	559	34,676
Total	..	..	..	65,812	Total	..	..	..	125,905

* Estimated

MACINTYRE RIVER AT HOLDFAST

Year 1959

Year 1960

Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	9250	330	2114	131,064	Jan.	No Records			16,800 *
Feb.	6425	140	677	37,916	Feb.	410	97	183	10,638
Mar.	5628	111	954	59,158	Mar.	125	33	66	4,072
Apr.	3265	97	346	20,760	Apr.	33	14	16.3	976
May	133	43	71	4,428	May	273	18	93	5,748
June	133	33	64	3,818	June	72	38	51	3,080
July	8750	33	492	30,486	July	935	60	370	22,966
Aug.	420	60	137	8,470	Aug.	7300	111	736	45,644
Sept.	682	38	117	7,048	Sept.	194	60	88	5,254
Oct.	2880	66	240	14,872	Oct.	185	28	81	4,996
Nov.	14775	151	1959	117,520	Nov.	118	5	32	1,902
Dec.	No Records			245,900*	Dec.	No Records			7,400*
Total	..	..	..	681,440*	Total	..	..	..	129,476 *

Year 1961

Year 1962

Jan.	30	10	22	1,350	Jan.	27100	188	4544	282,000
Feb.	202	4	25	1,400	Feb.	2170	174	522	29,300
Mar.	110	5	26	1,620	Mar.	875	110	237	14,700
Apr.	5	2	3.8	228	Apr.	311	76	113	6,760
May	8	0	2.5	154	May	66	16	37	2,300
June	58	5	28	1,650	June	125	16	67	4,000
July	202	8	29	1,810	July	7000	27	486	30,100
Aug.	629	130	290	18,000	Aug.	4120	99	571	35,400
Sept.	134	25	64	3,850	Sept.	1000	99	241	14,400
Oct.	88	13	27	1,700	Oct.	604	57	155	9,620
Nov.	6650	18	792	47,500	Nov.	125	16	52	3,110
Dec.	5380	122	731	45,300	Dec.	66	16	40	2,510
Total	..	..	..	124,562	Total	..	..	..	434,200

* Estimated.

MACINTYRE RIVER AT HOLDFAST

Year 1963

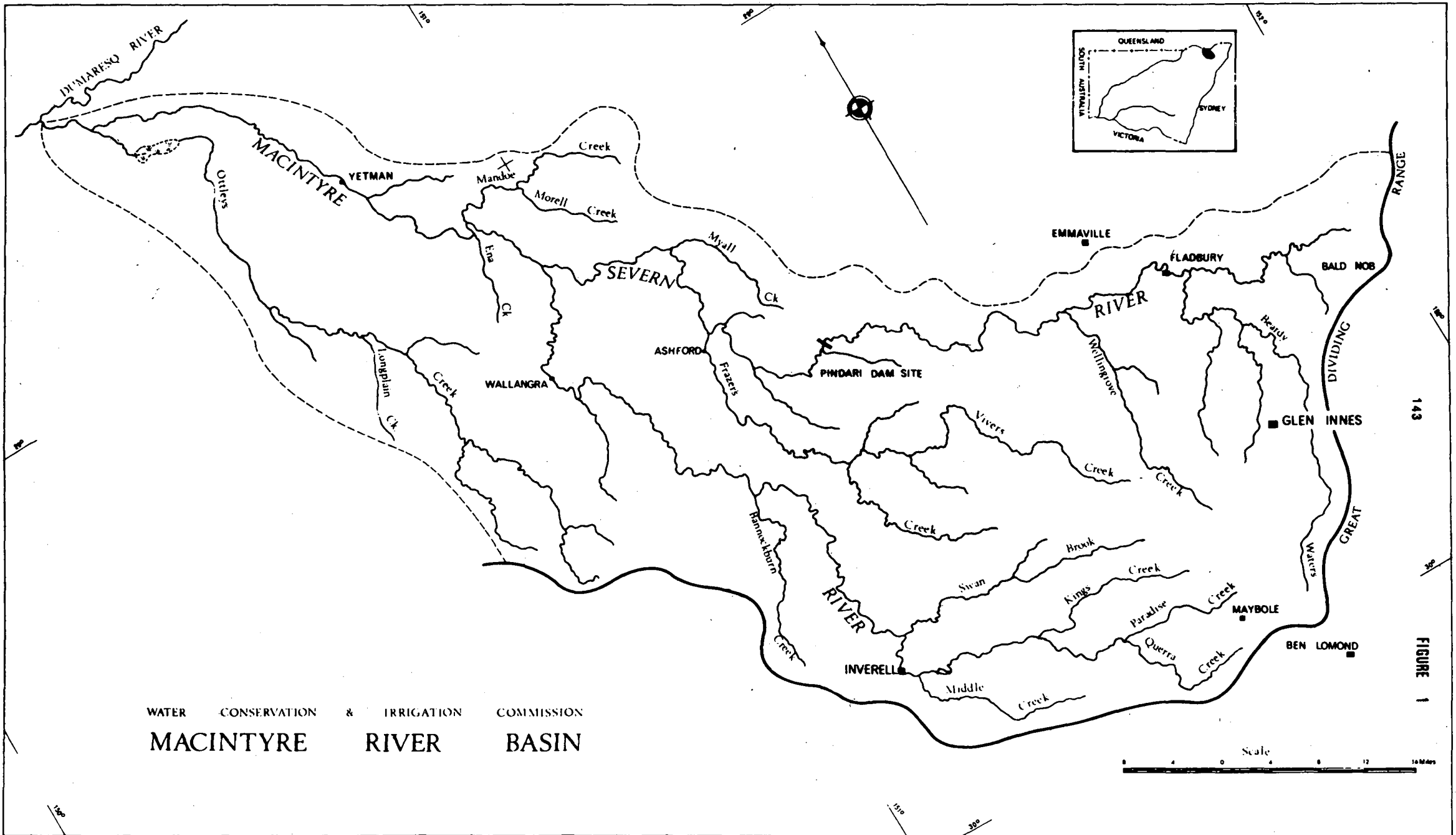
Year 1964

Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	8950	34	480	29,800	Jan.	765	38	153	9,510
Feb.	41	16	25	1,400	Feb.	194	16	58	3,340
Mar.	278	4	46	2,850	Mar.	8340	16	623	38,600
Apr.	245	27	104	6,220	Apr.	250	29	78	4,670
May	No Records			160,000*	May	194	57	101	6,280
June	9900	229	977	58,600	June	230	57	124	7,430
July	245	99	158	9,790	July	6960	125	779	43,300
Aug.	6600	87	370	22,900	Aug.	250	68	105	6,490
Sept.	6600	87	569	34,100	Sept.	2090	57	125	7,490
Oct.	311	47	102	6,350	Oct.	9600	145	1680	104,000
Nov.	7500	22	405	24,300	Nov.	545	70	197	11,800
Dec.	3260	95	638	39,500	Dec.	125	8	54	3,360
Total		..	..	395,810*	Total	..	..	..	251,270

Year 1965

Jan	7	3	4.7	294
Feb.	3	0.6	1.6	89
Mar	1.8	0.6	0.7	44
Apr.	0.6	0.5	0.5	31
May	0.6	0.5	0.55	34
June	0.6	0.6	0.6	36
July	150	0.6	16.9	1,050
Aug.	80	15	30	1,850
Sept.	69	15	28	1,700
Oct.	22	1.0	10.2	630
Nov.	1.0	0.5	0.6	38
Dec.	11400	1	1720	106,000
Total	..	..	..	111,796

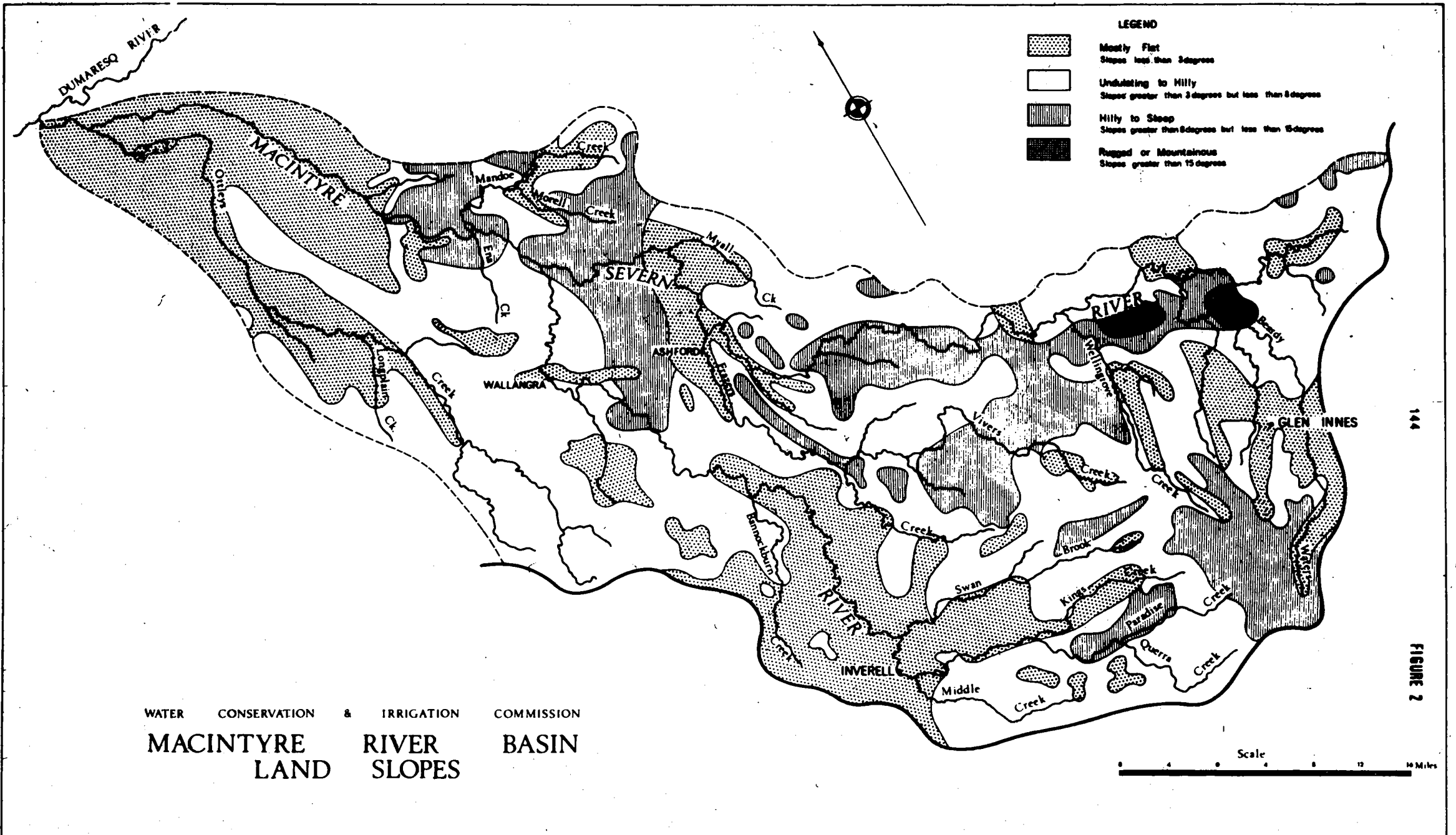
* Estimated.







WATER CONSERVATION & IRRIGATION COMMISSION
MACINTYRE RIVER BASIN

143

FIGURE 1



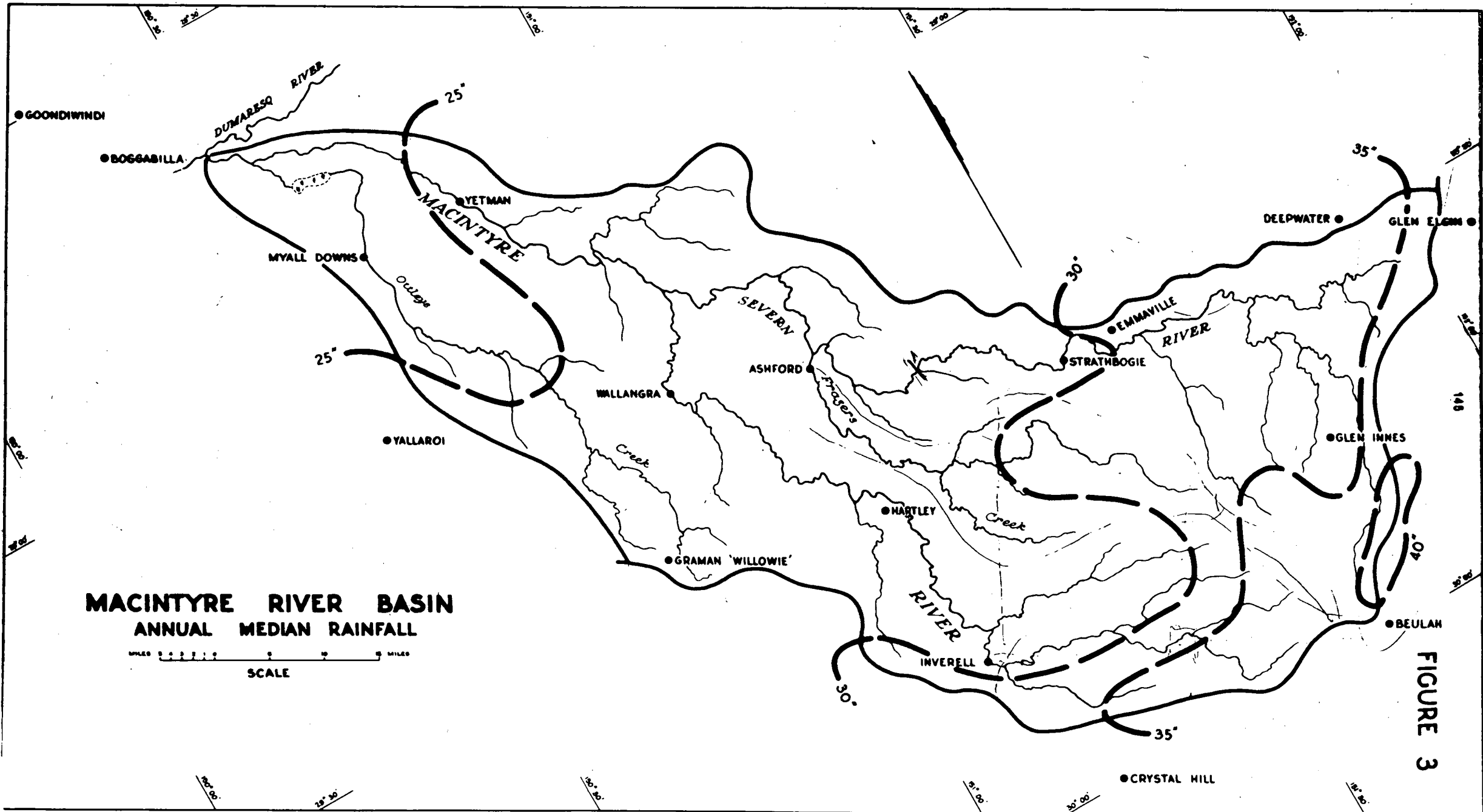
LEGEND

-  Mostly Flat
Slopes less than 3 degrees
-  Undulating to Hilly
Slopes greater than 3 degrees but less than 8 degrees
-  Hilly to Steep
Slopes greater than 8 degrees but less than 15 degrees
-  Rugged or Mountainous
Slopes greater than 15 degrees

WATER CONSERVATION & IRRIGATION COMMISSION
MACINTYRE RIVER BASIN
LAND SLOPES

Scale 0 4 8 12 Miles

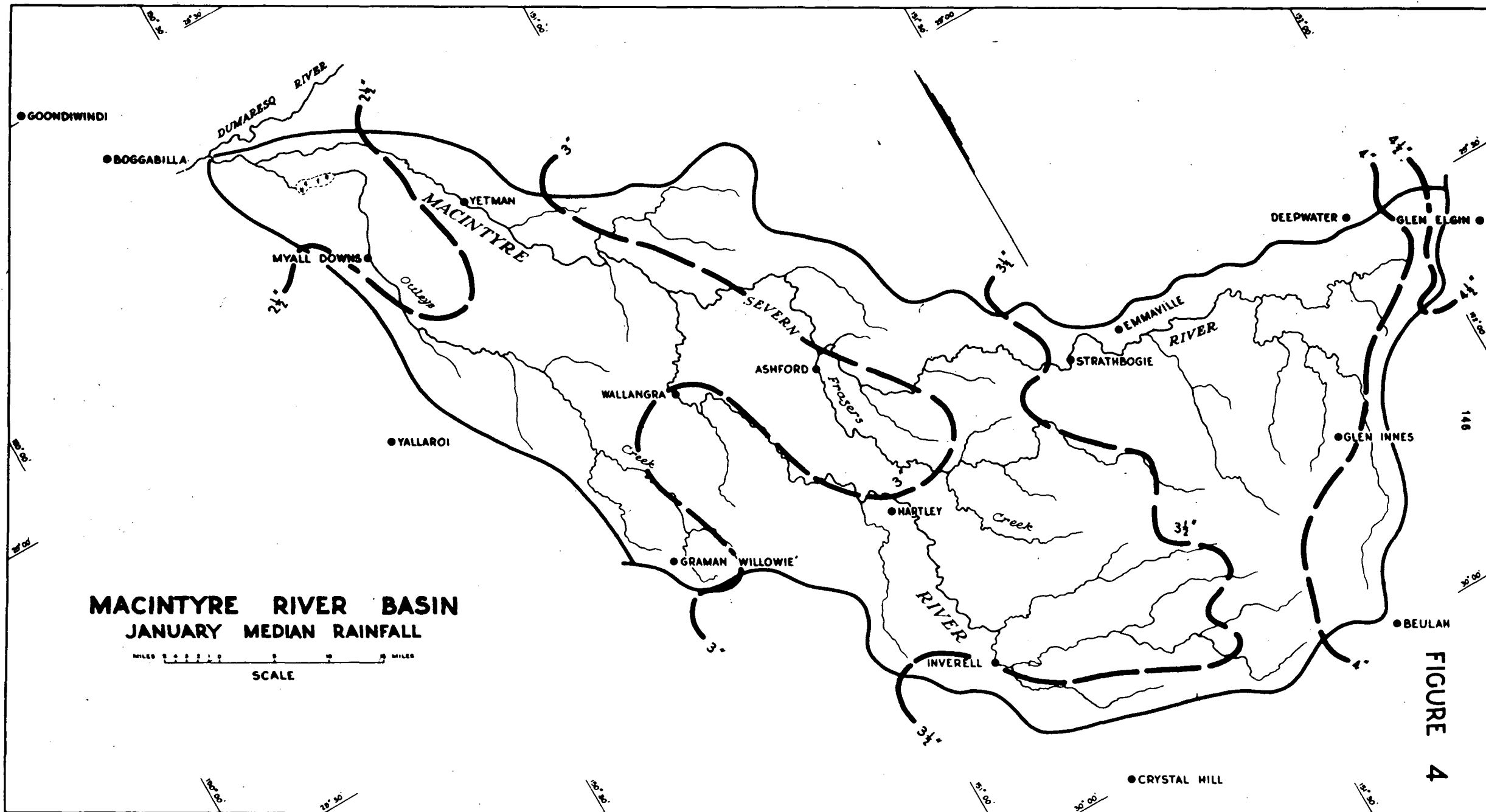
144
FIGURE 2



**MACINTYRE RIVER BASIN
ANNUAL MEDIAN RAINFALL**

0 5 10 15 20 MILES
SCALE

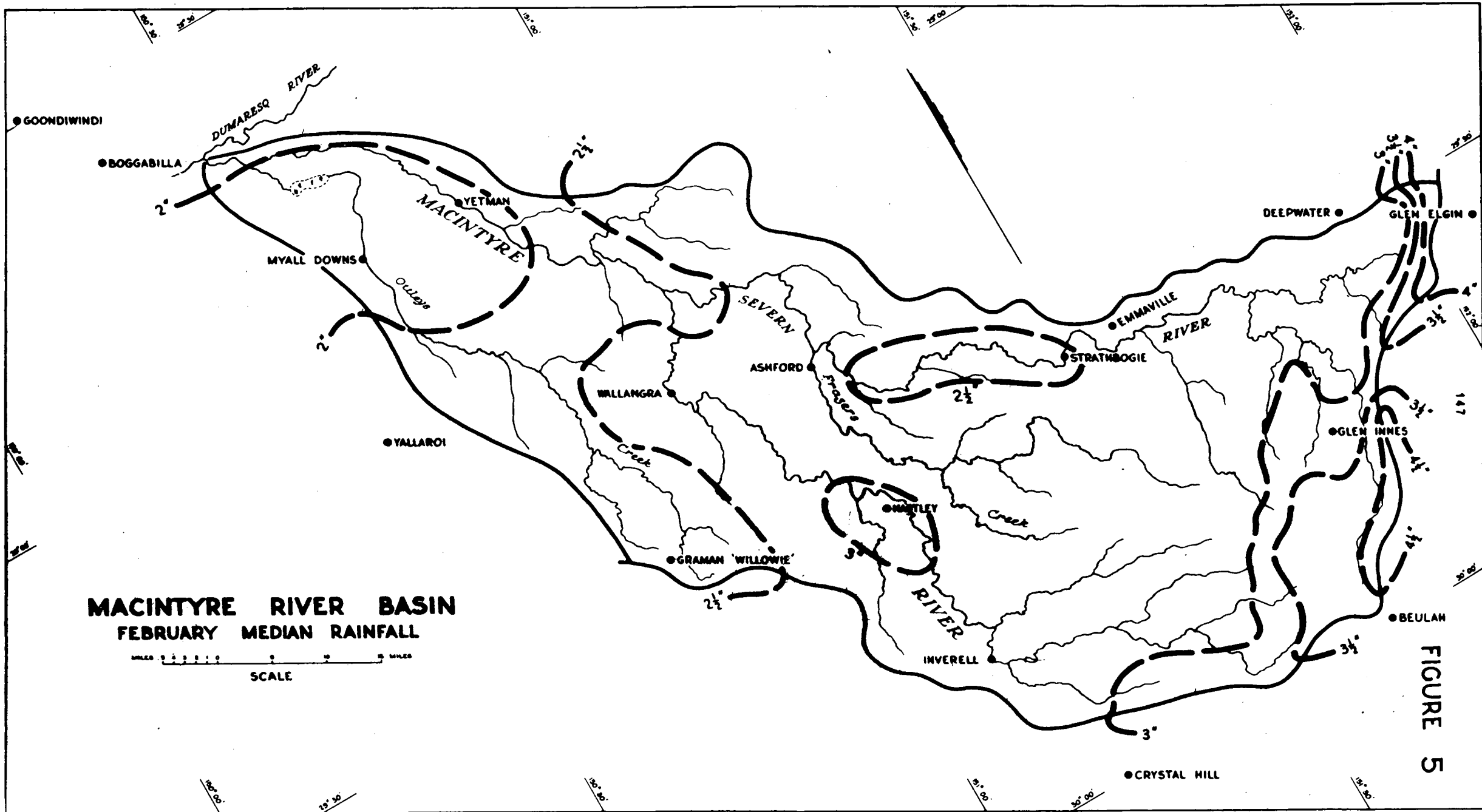
FIGURE 3

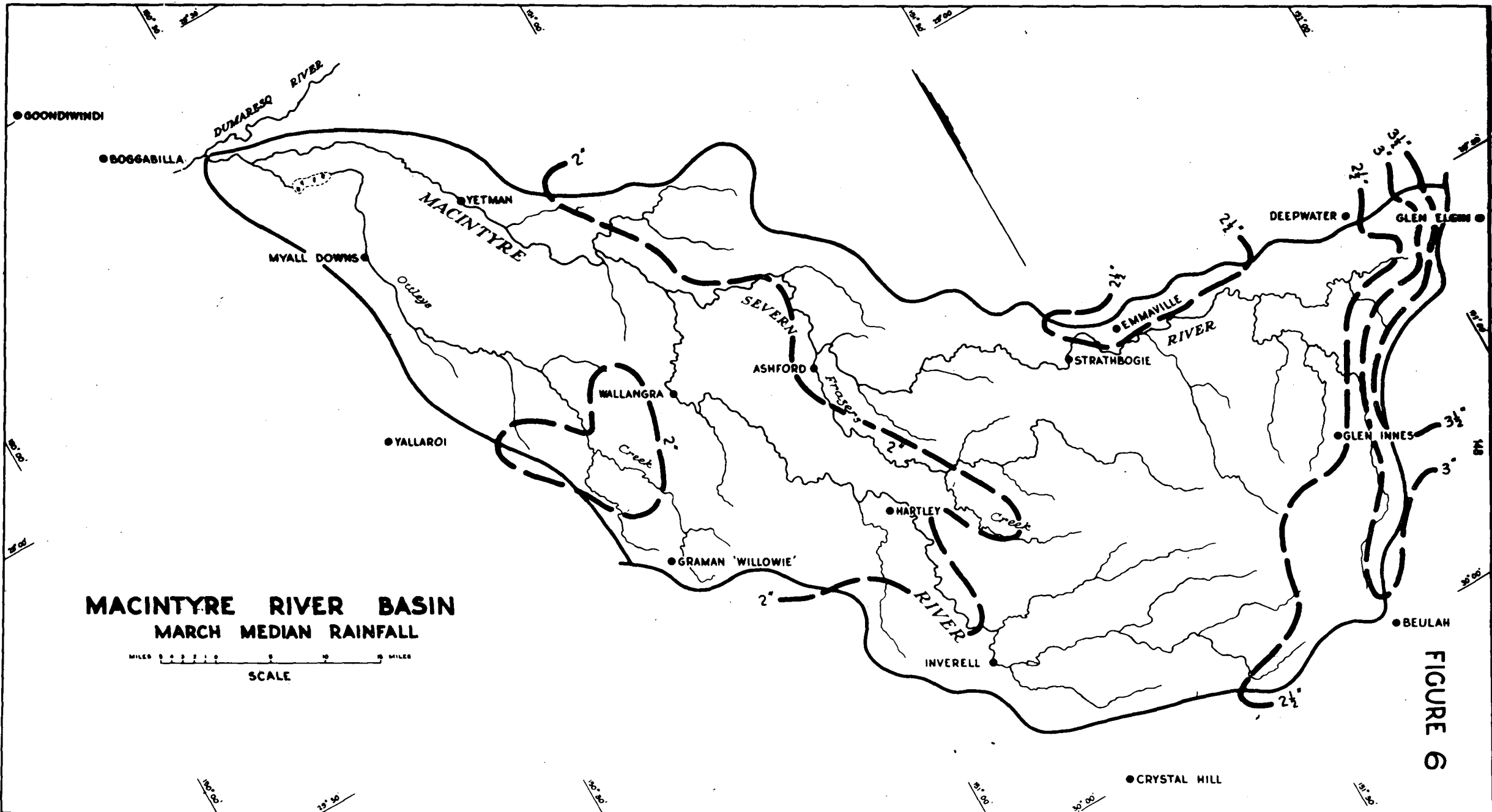


**MACINTYRE RIVER BASIN
JANUARY MEDIAN RAINFALL**

MILES 0 5 10 15 20 MILES
SCALE

FIGURE 4

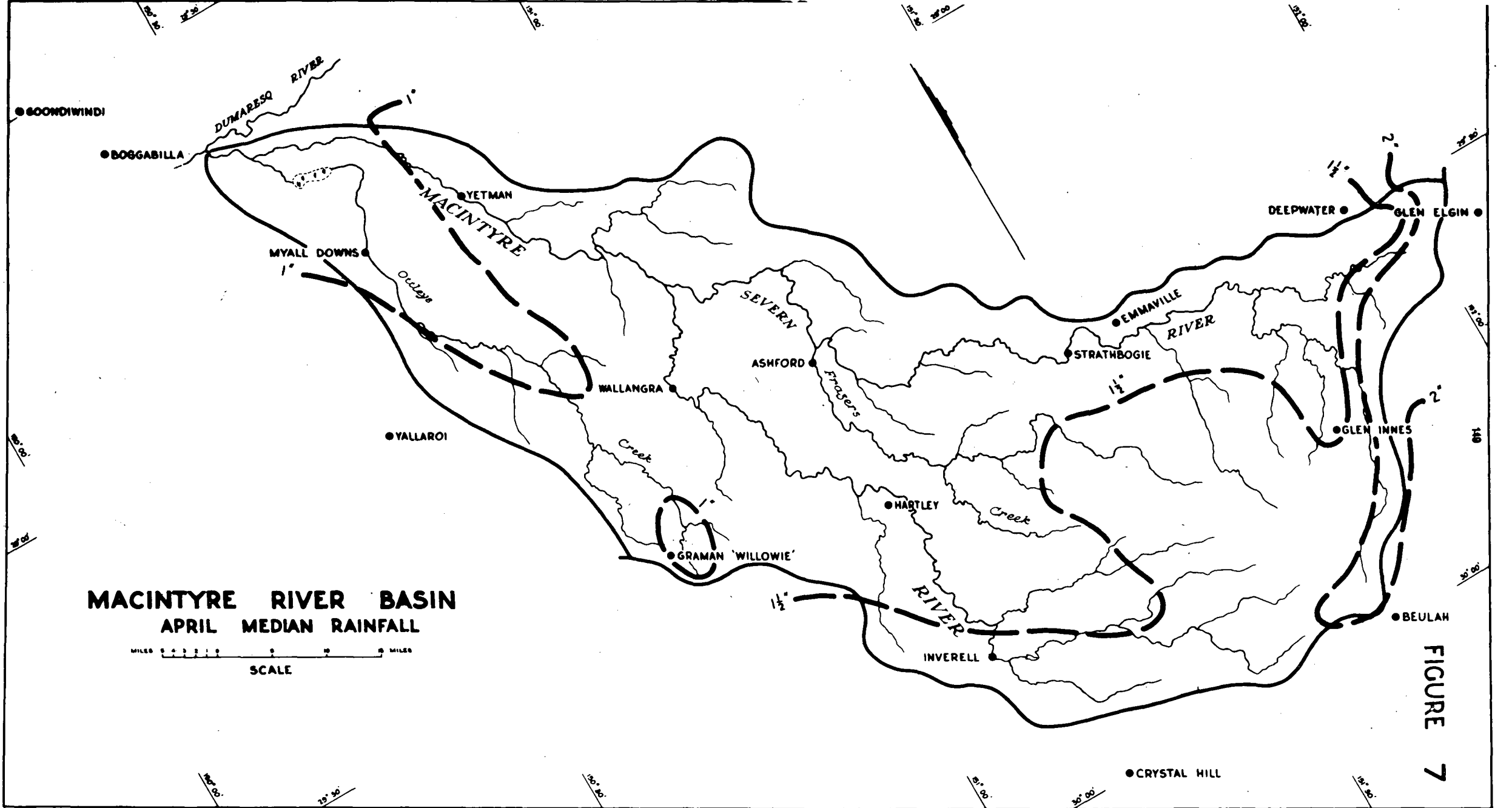




MACINTYRE RIVER BASIN
MARCH MEDIAN RAINFALL

MILES 0 1 2 3 4 5 6 7 8 9 10
 SCALE

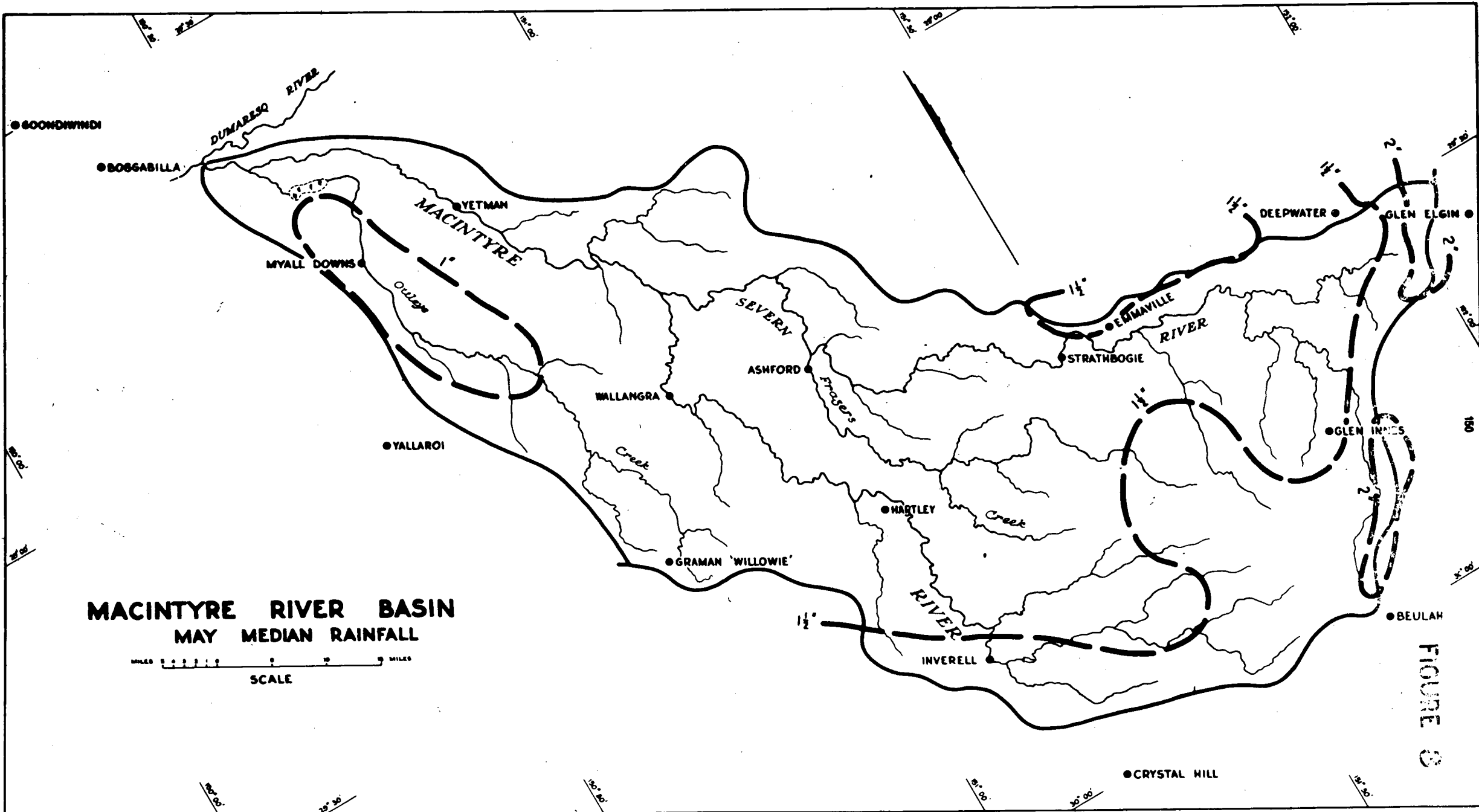
FIGURE 6



MACINTYRE RIVER BASIN
APRIL MEDIAN RAINFALL

MILES 0 1 2 3 4 5 6 7 8 9 10 MILES
 SCALE

FIGURE 7



MACINTYRE RIVER BASIN
MAY MEDIAN RAINFALL

MILES 0 1 2 3 4 5
 SCALE

FIGURE 3

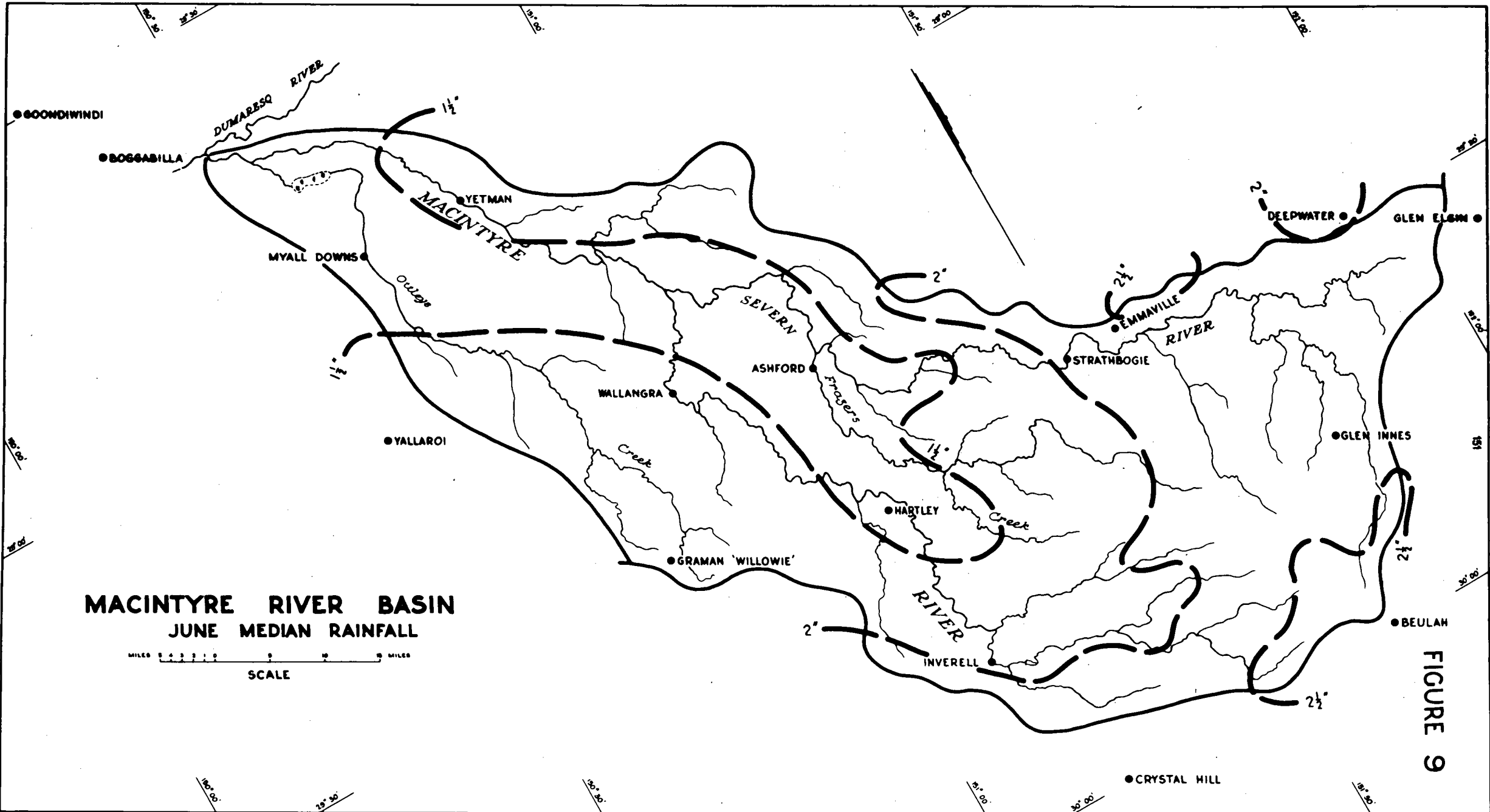
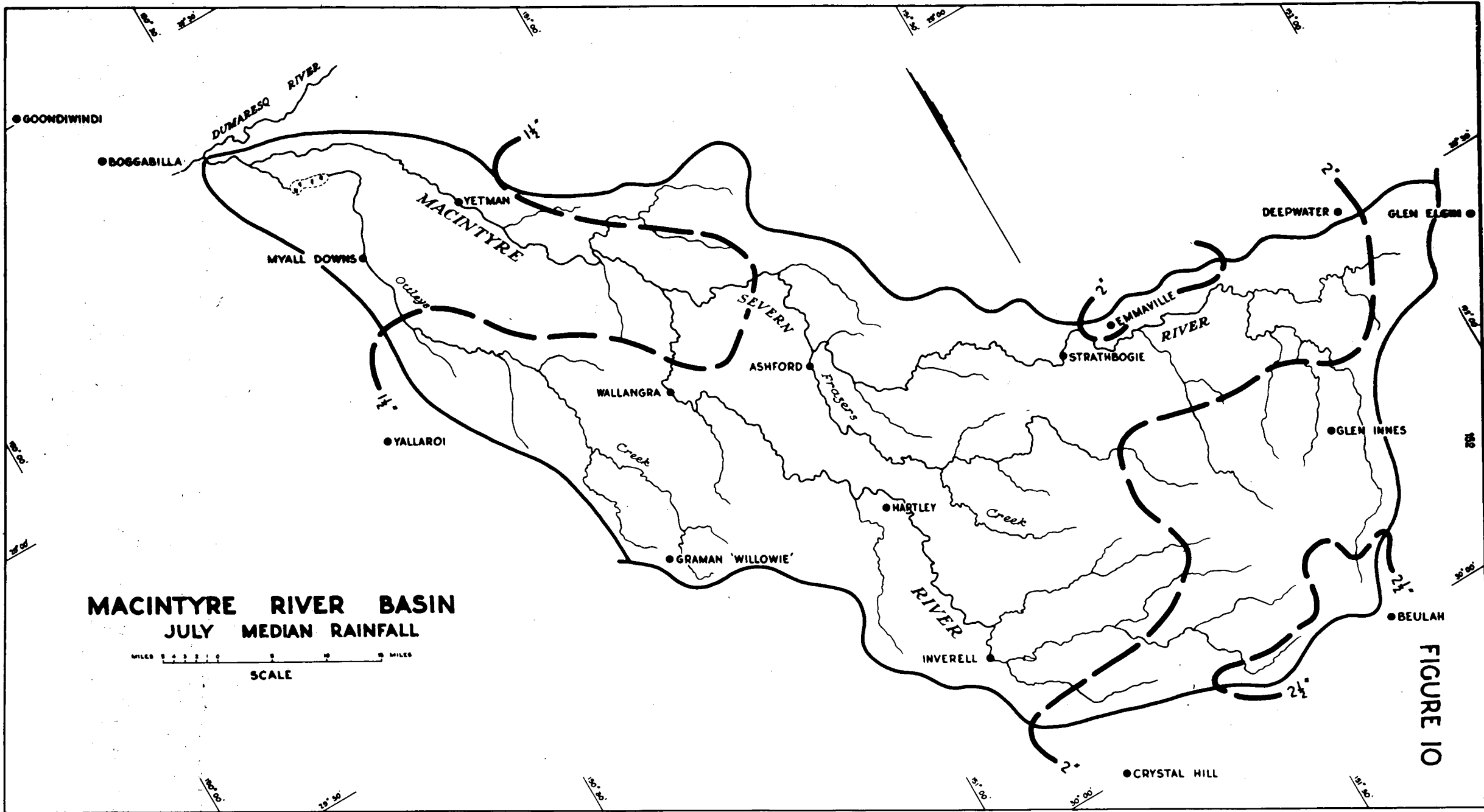


FIGURE 9



● GOONDIWINDI

● BOGABILLA

DUMARESQ RIVER

● YETMAN

MACINTYRE

● MYALL DOWNS

● YALLARO

● WALLANGRA

Creek

● GRAMAN 'WILLOWIE'

● ASHFORD

SEVERN

Fraser's

● HARTLEY

Creek

RIVER

● INVERELL

● STRATHBOGIE

EMMAVILLE RIVER

● CRYSTAL HILL

● DEEPWATER

● GLEN ELGIN

2"

2"

● GLEN INNES

● BEULAH

2 1/4"

2 1/4"

2"

34° 30'

34° 00'

33° 30'

33° 00'

32° 30'

32° 00'

31° 30'

31° 00'

30° 30'

30° 00'

29° 30'

29° 00'

28° 30'

28° 00'

27° 30'

27° 00'

26° 30'

26° 00'

25° 30'

25° 00'

31° 30'

31° 00'

30° 30'

30° 00'

29° 30'

29° 00'

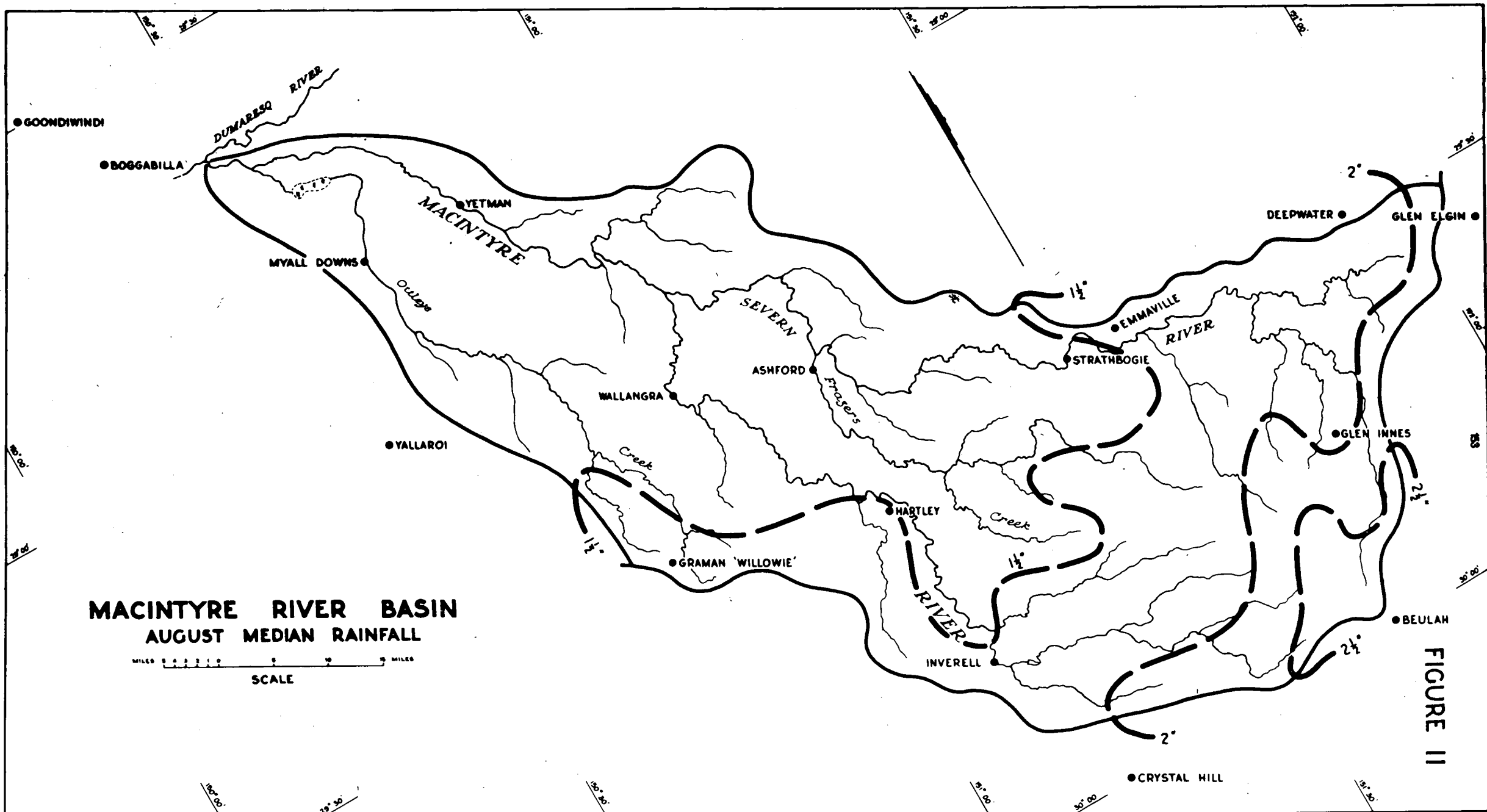
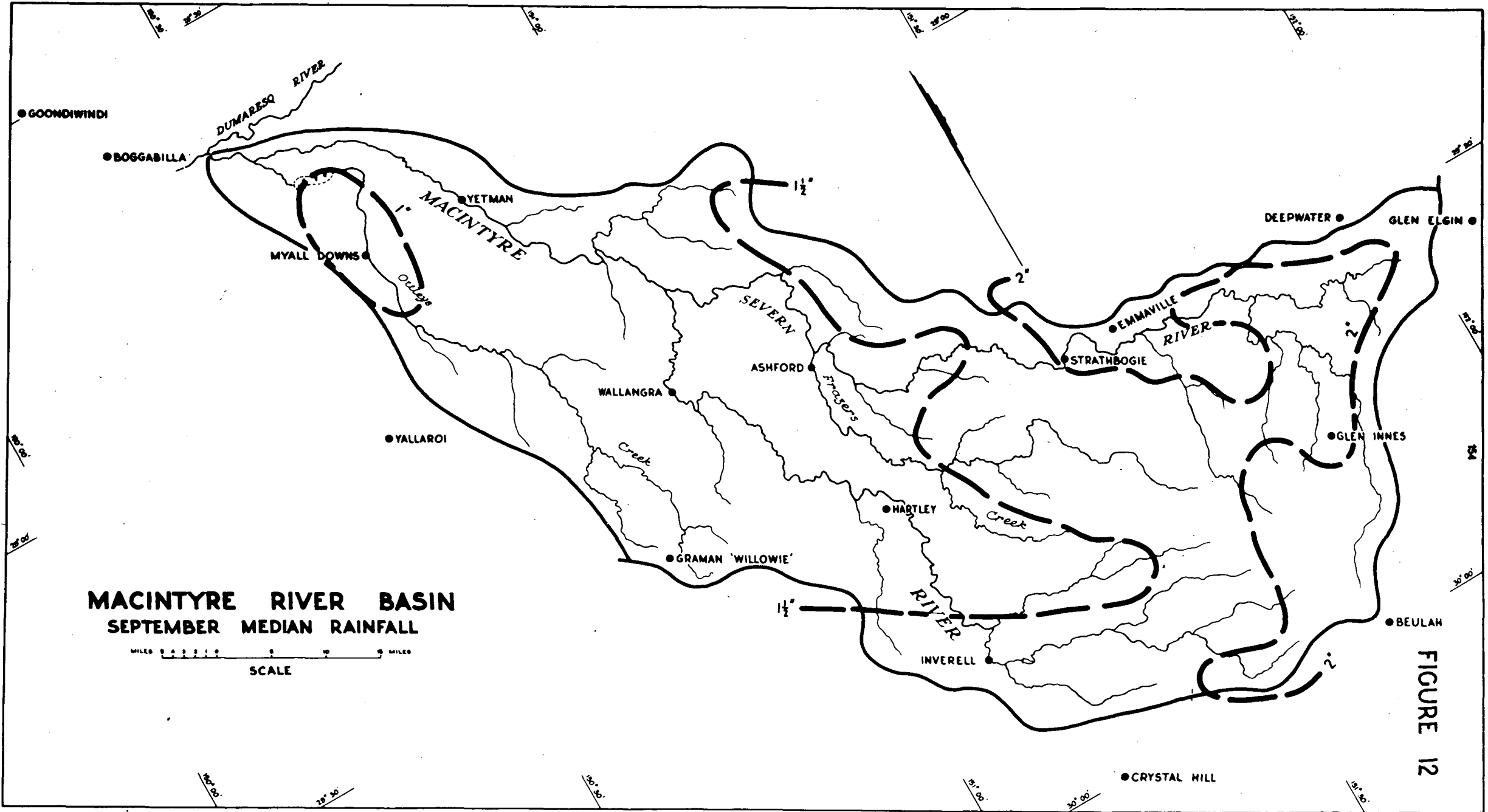
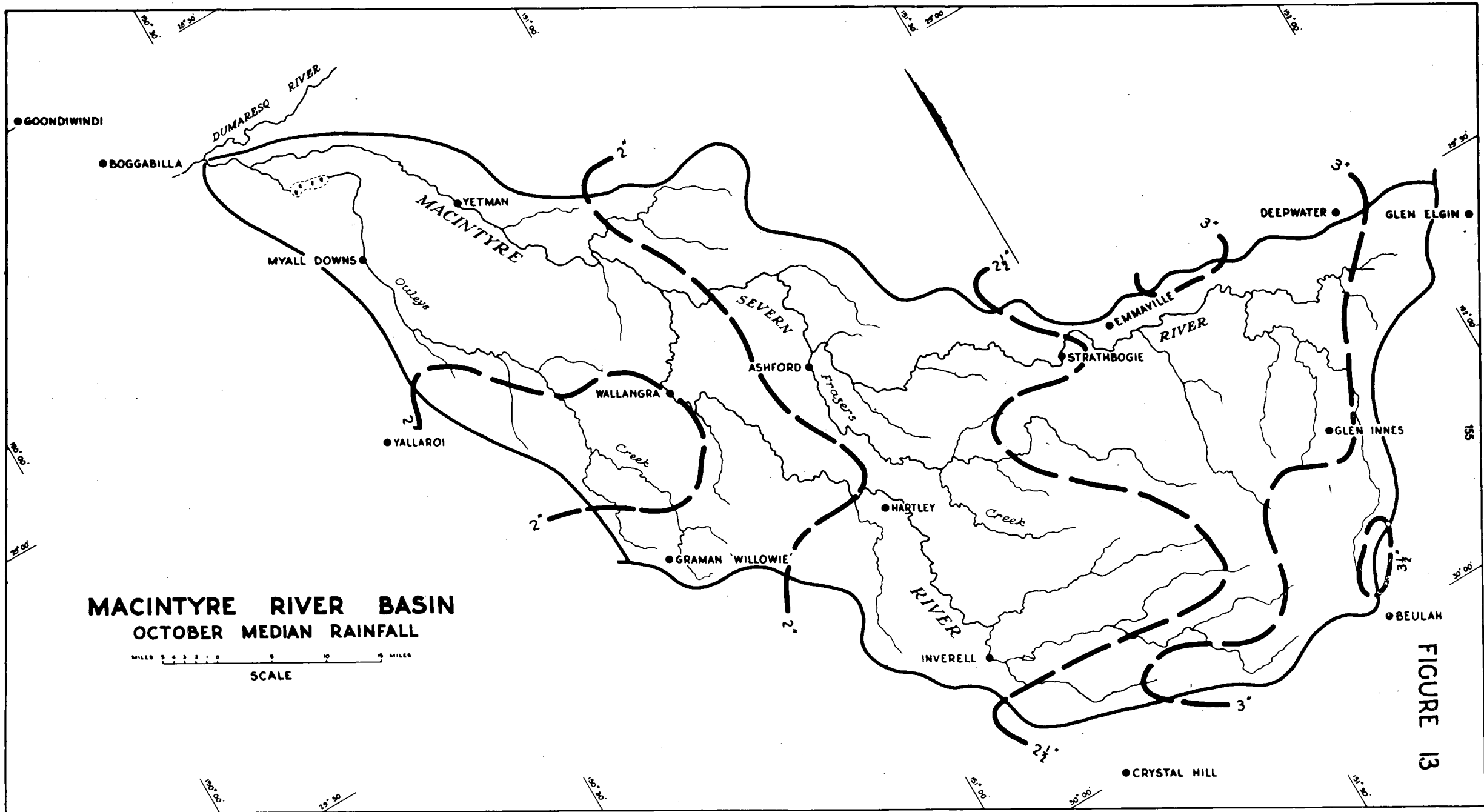


FIGURE II





● GOONDIWINDI

● BOGGABILLA

DUMARESQ RIVER

● YETMAN

MACINTYRE

● MYALL DOWNS

● YALLAROI

● WALLANGRA

● ASHFORD

● HARTLEY

● GRAMAN 'WILLOWIE'

● INVERELL

● STRATHBOGIE

● EMMAVILLE

● DEEPWATER

● GLEN ELGIN

● GLEN INNES

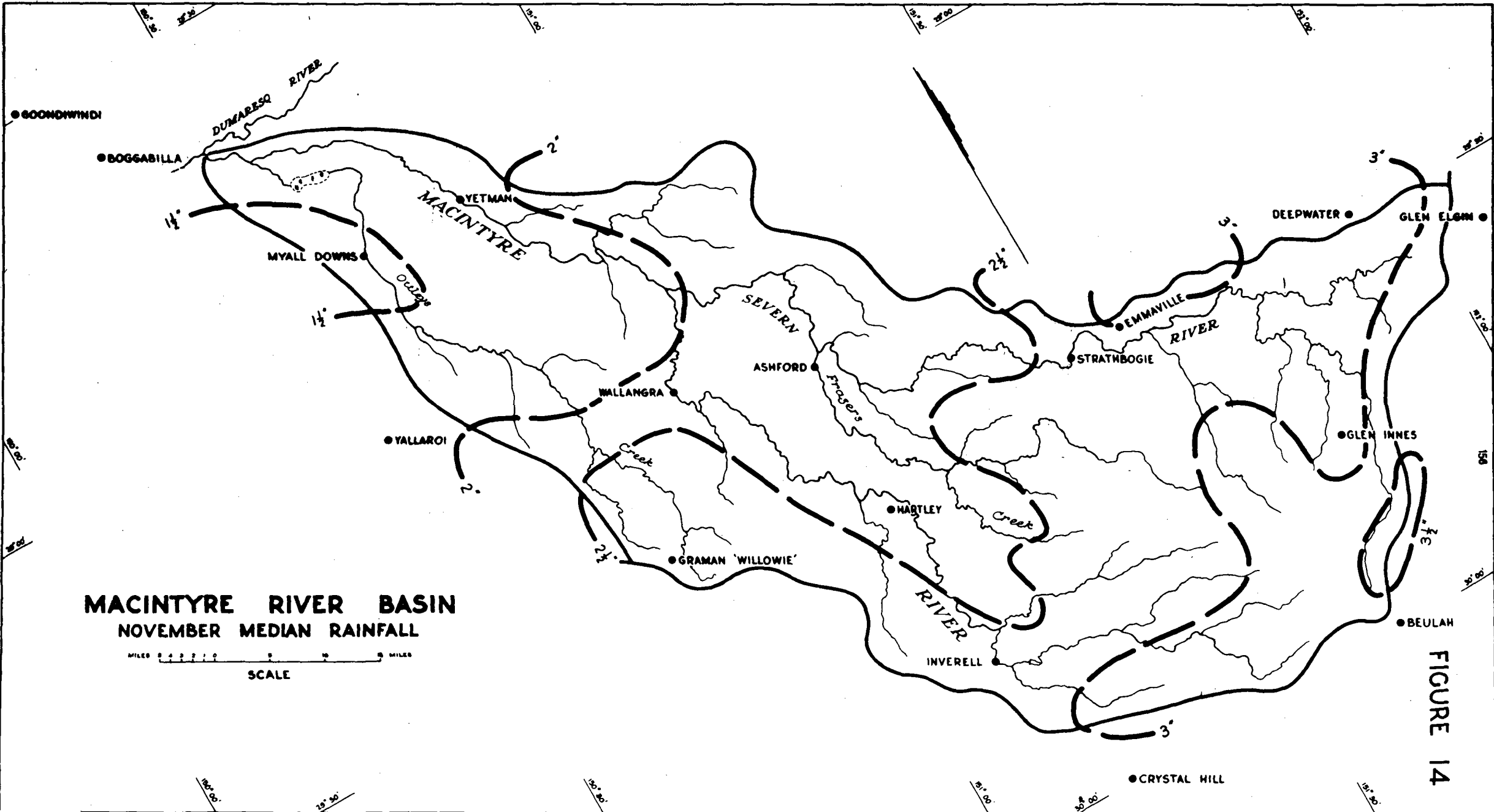
● BEULAH

● CRYSTAL HILL

MILES 0 2 4 6 8 10 12 MILES

SCALE

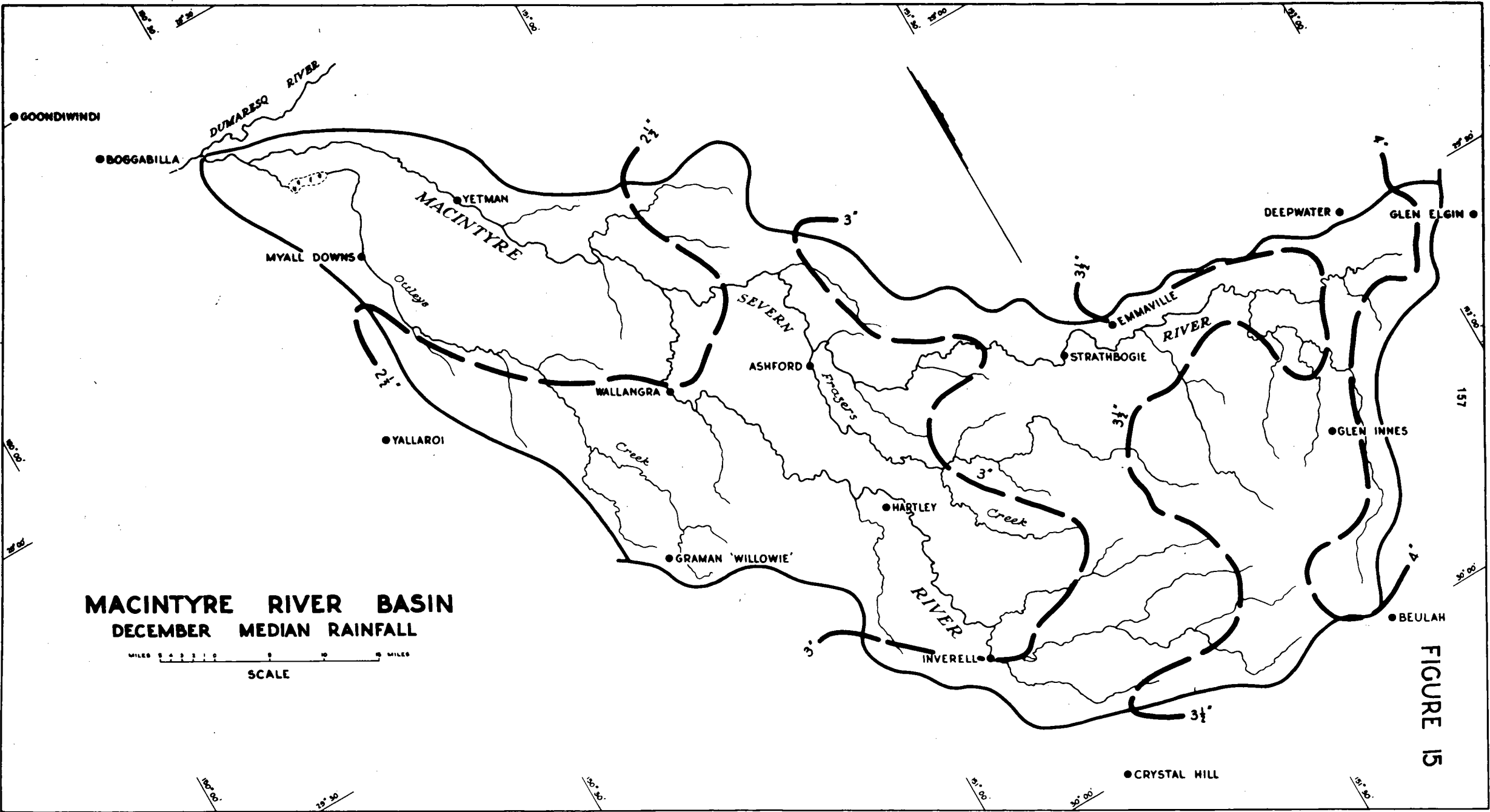
FIGURE 13

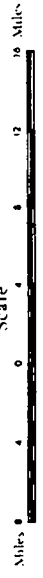
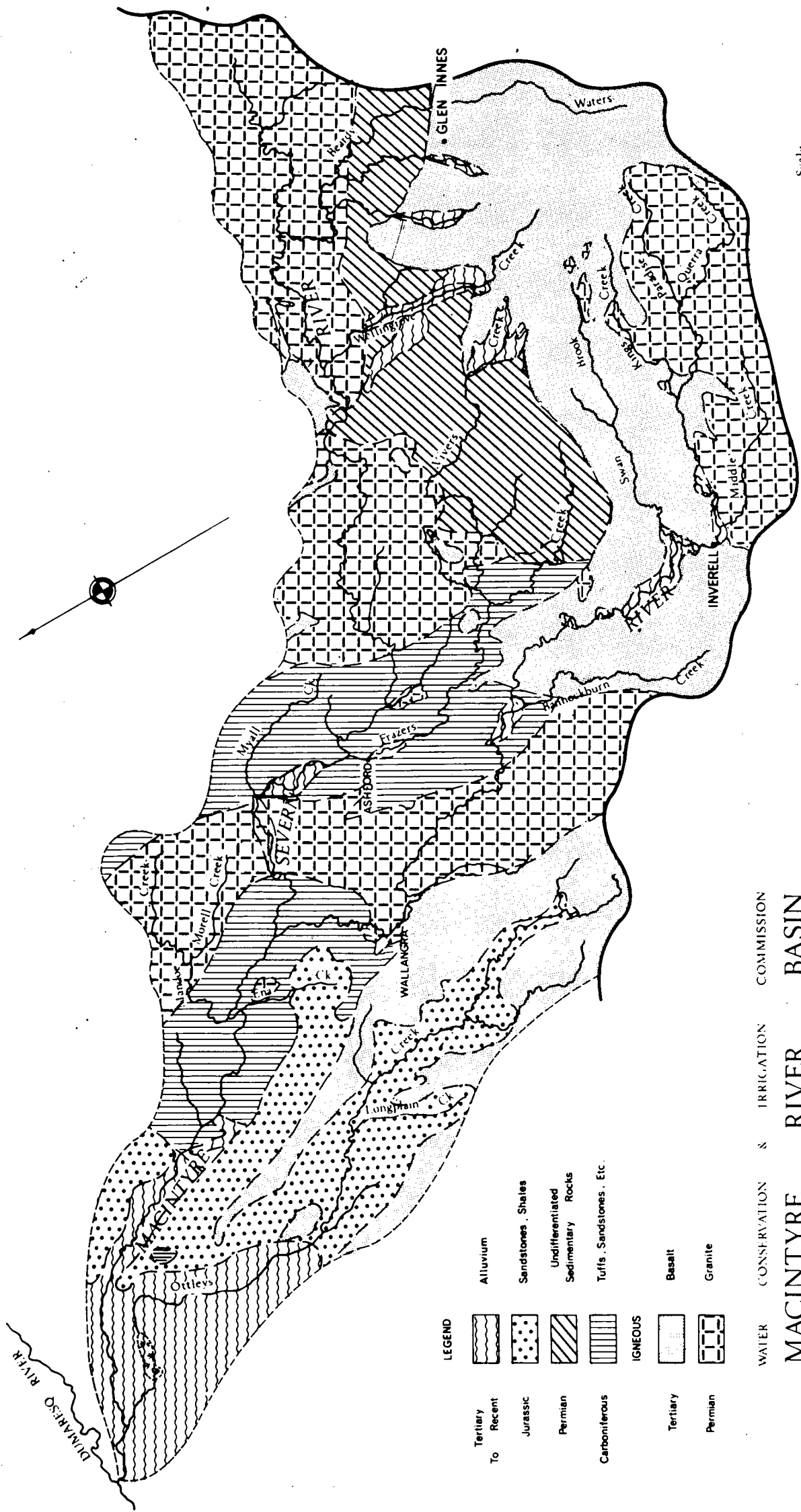


MACINTYRE RIVER BASIN
NOVEMBER MEDIAN RAINFALL

MILES 0 2 4 6 8 10
 SCALE

FIGURE 14

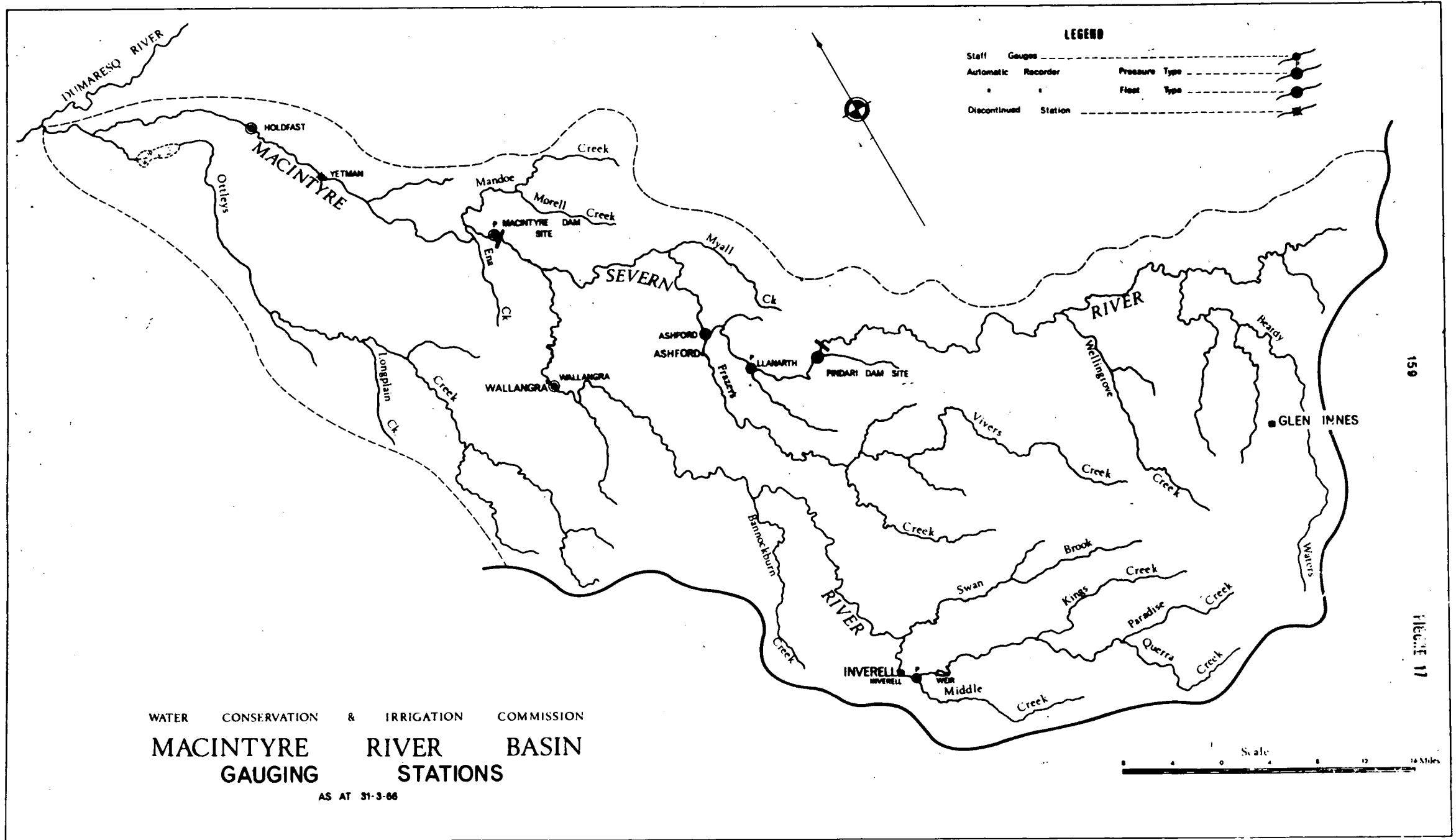


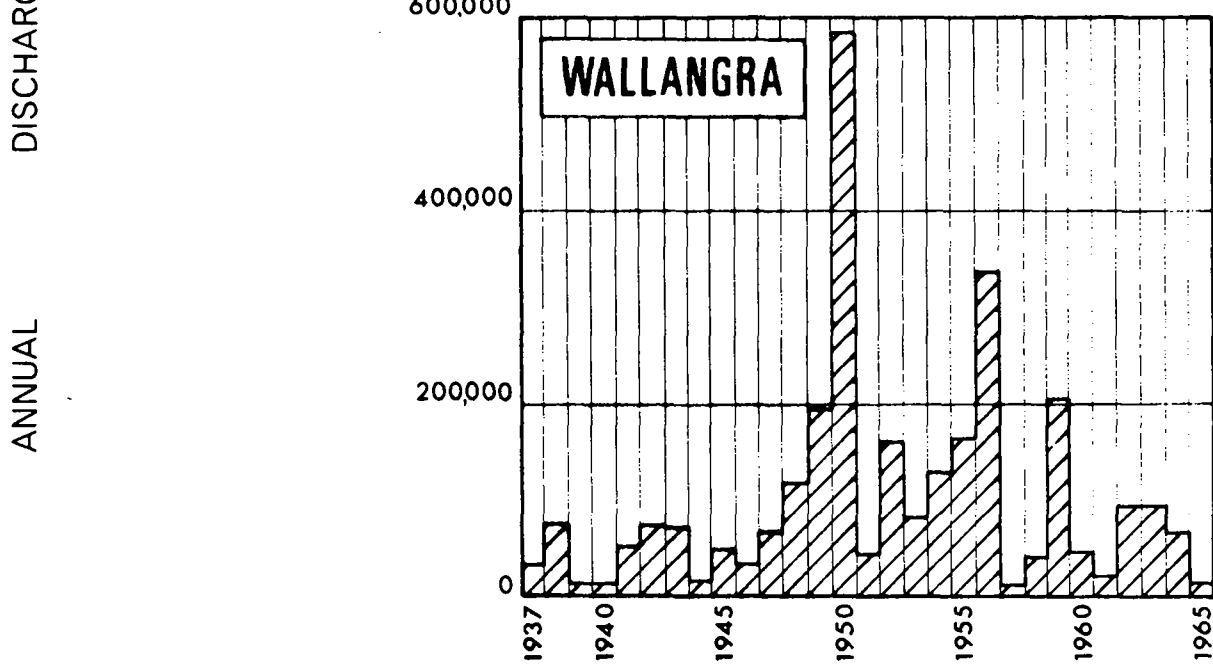
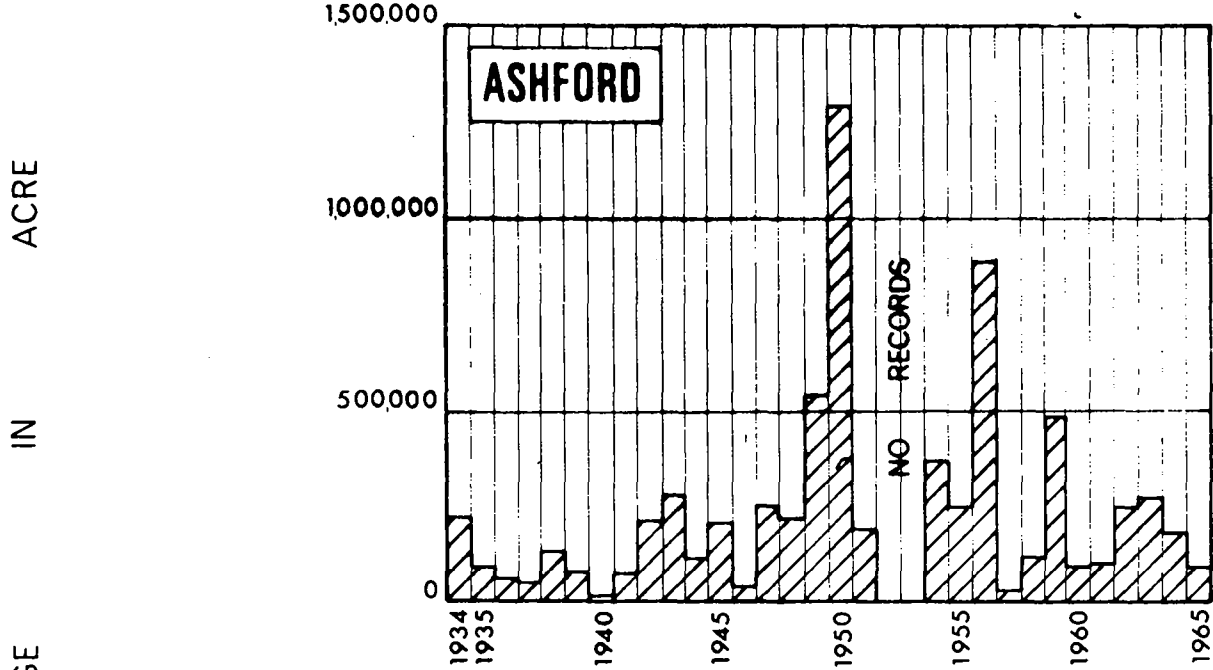
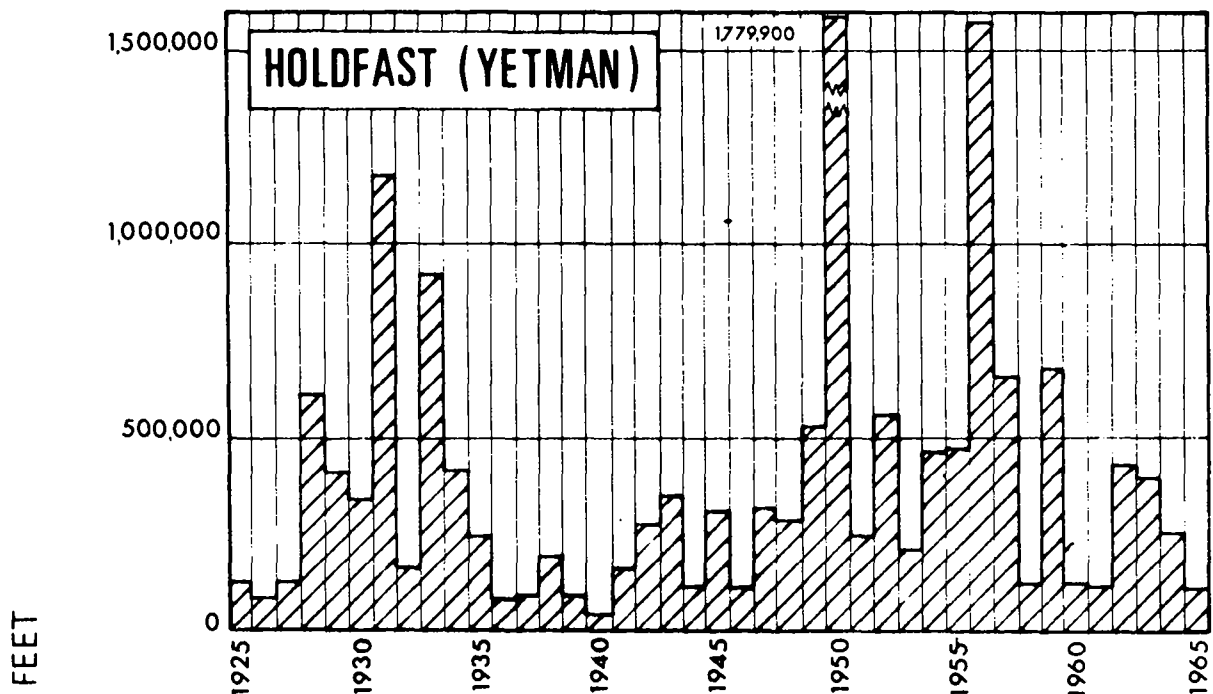


WATER CONSERVATION & IRRIGATION COMMISSION
 MACINTYRE RIVER BASIN
 GEOLOGICAL FORMATIONS

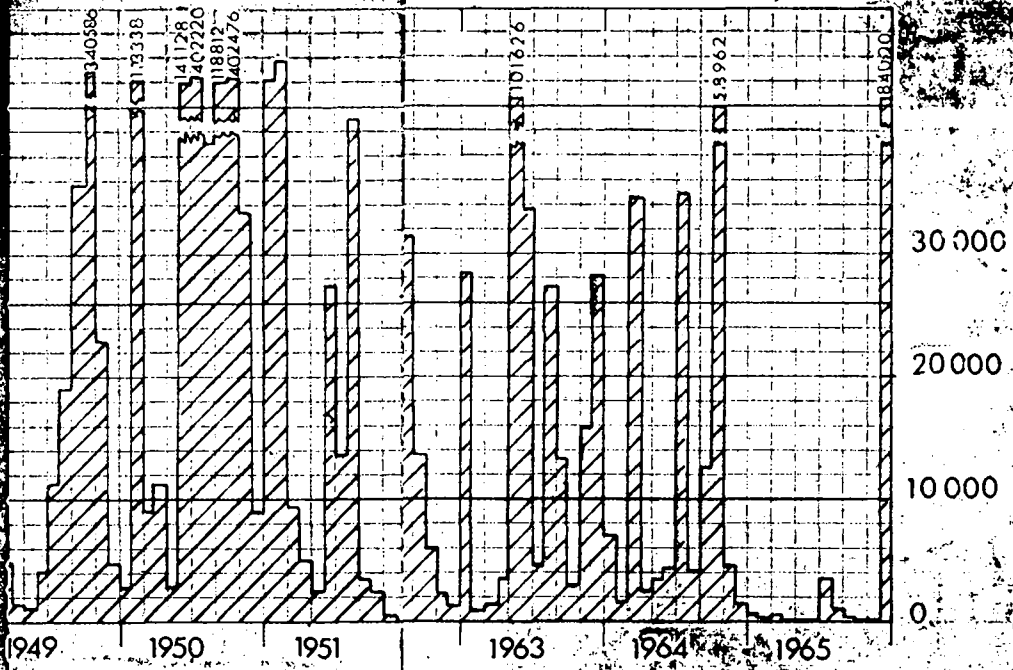
LEGEND

Tertiary To Recent	Alluvium
Jurassic	Sandstones, Shales
Permian	Undifferentiated Sedimentary Rocks
Carboniferous	Tuffs, Sandstones, Etc.
IGNEOUS	
Tertiary	Basalt
Permian	Granite

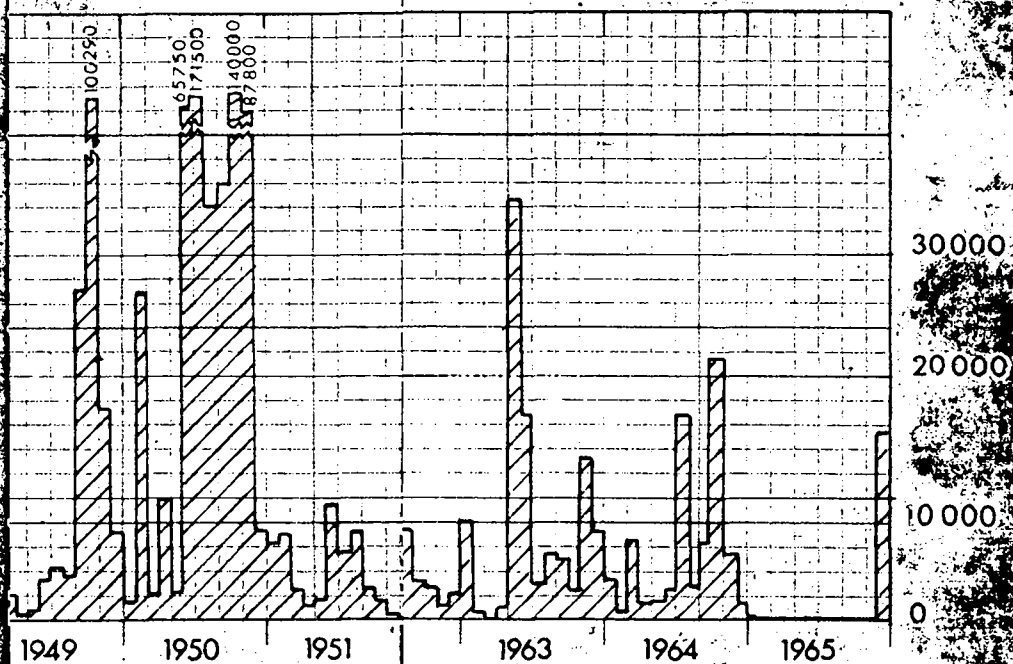




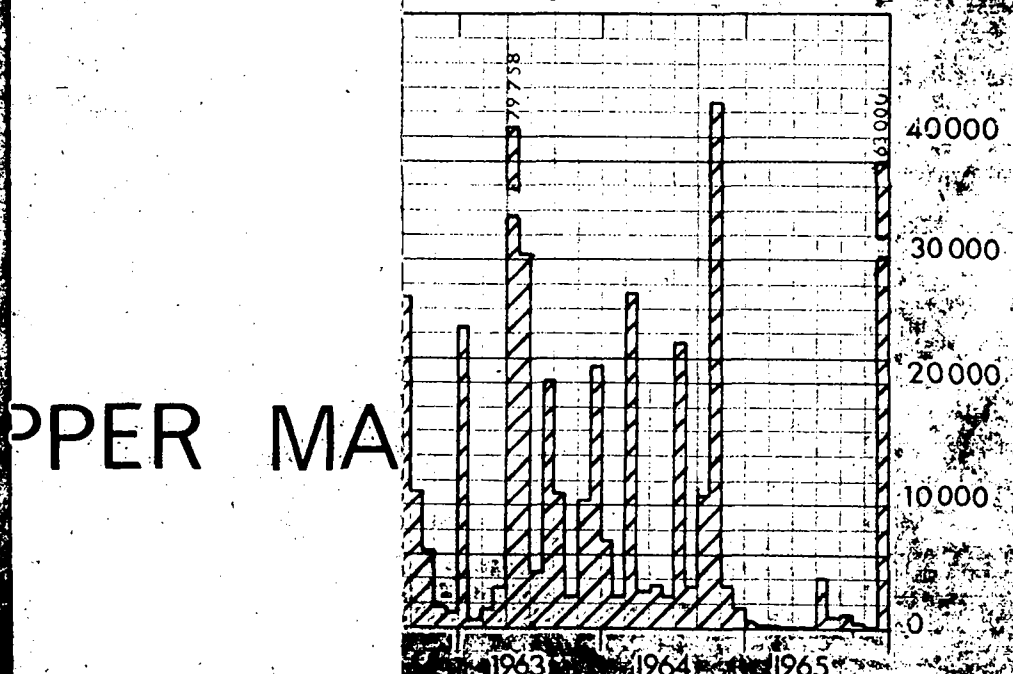
**DISTRIBUTION OF ANNUAL DISCHARGE AT
HOLDFAST (YETMAN) ; ASHFORD & WALLANGRA**



ASHFORD



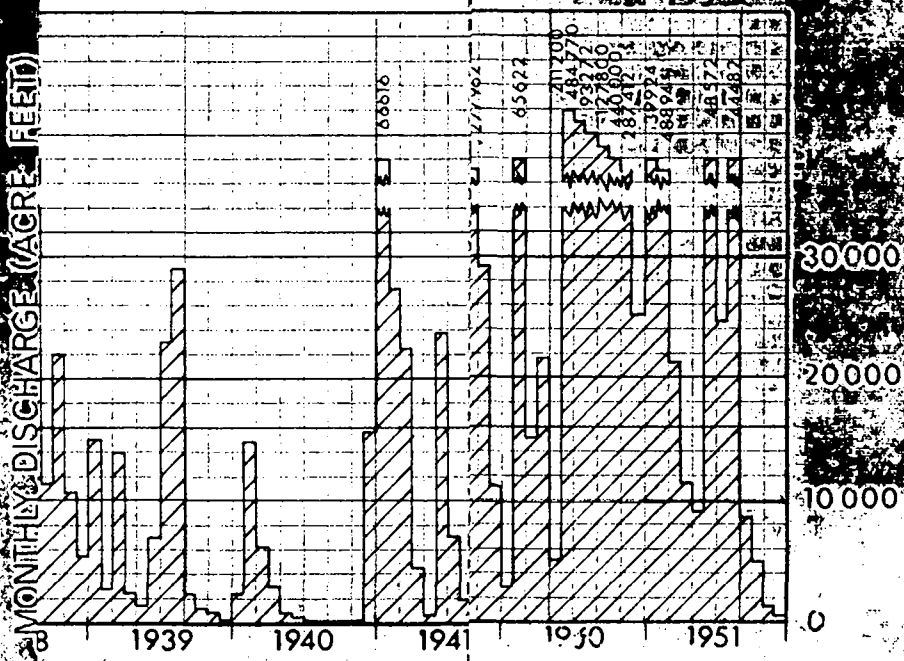
ALLANGRA



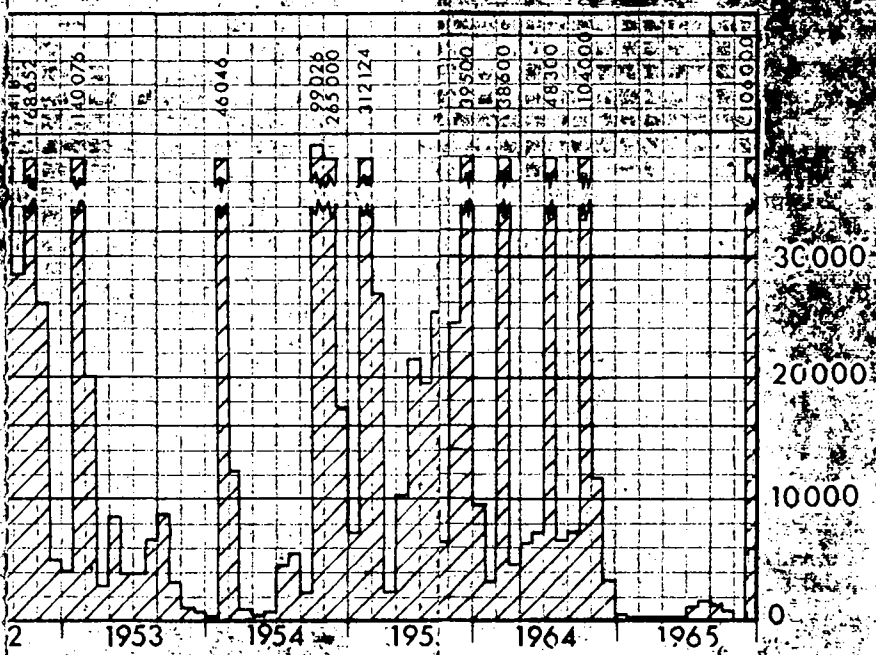
UPPER MA...

R AT CLANARTH

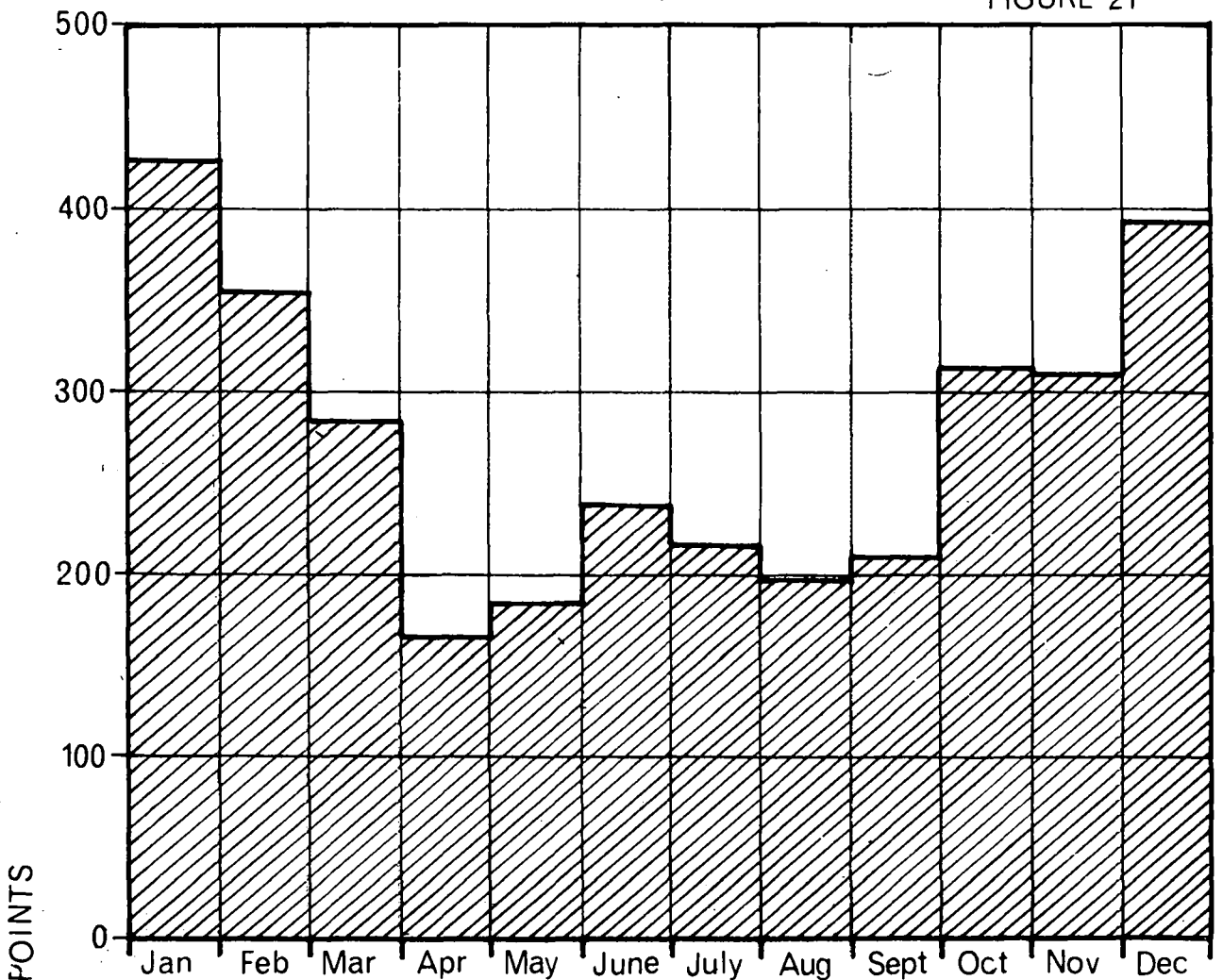
Figure 20



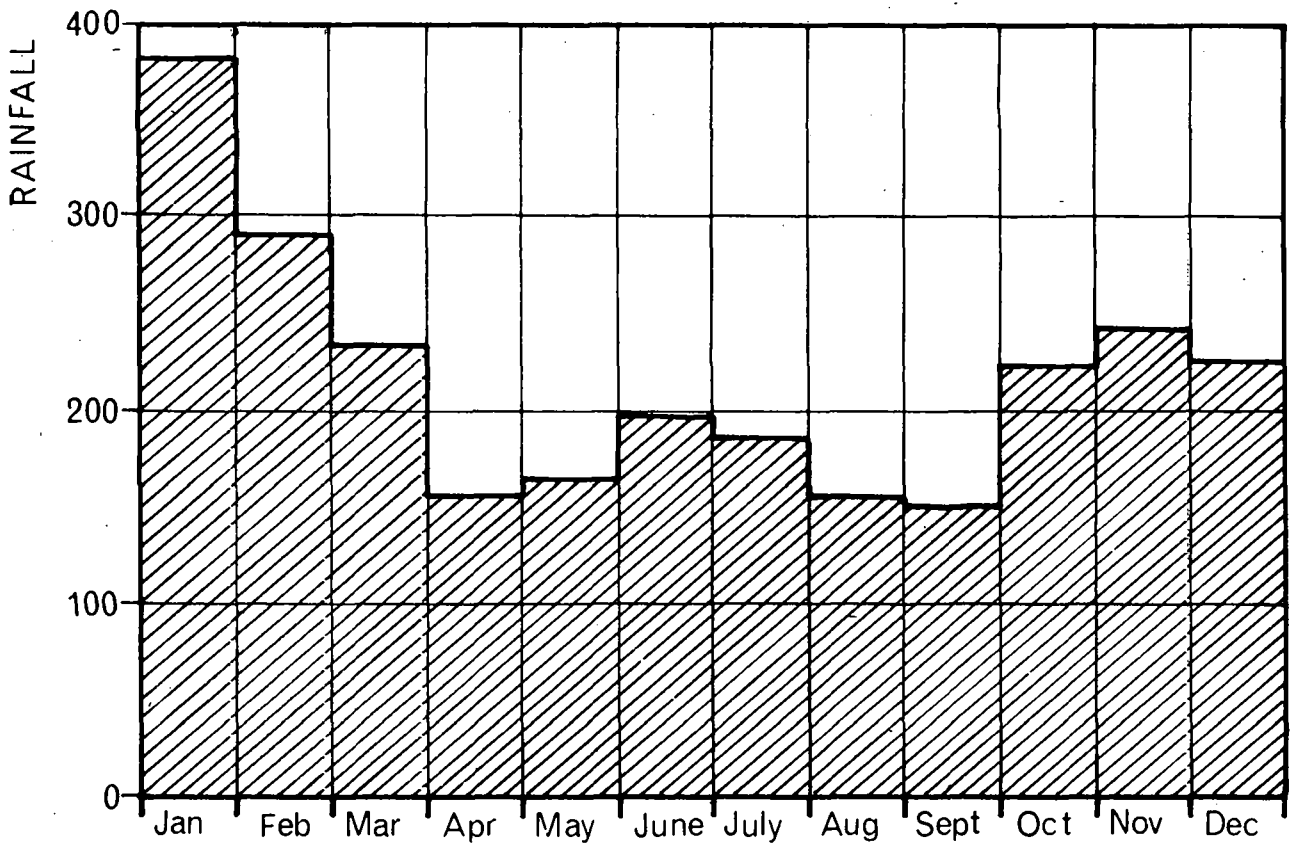
R AT YETMAN



FOR LOW

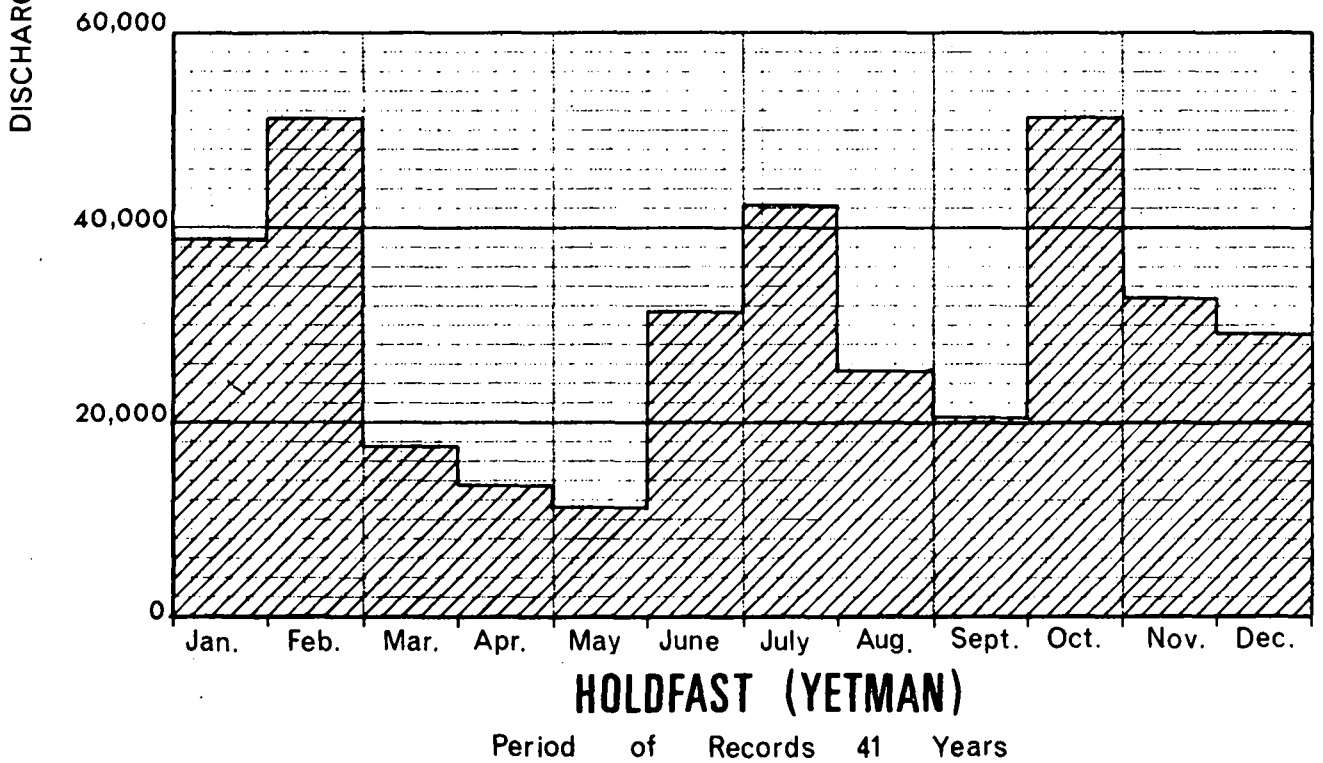
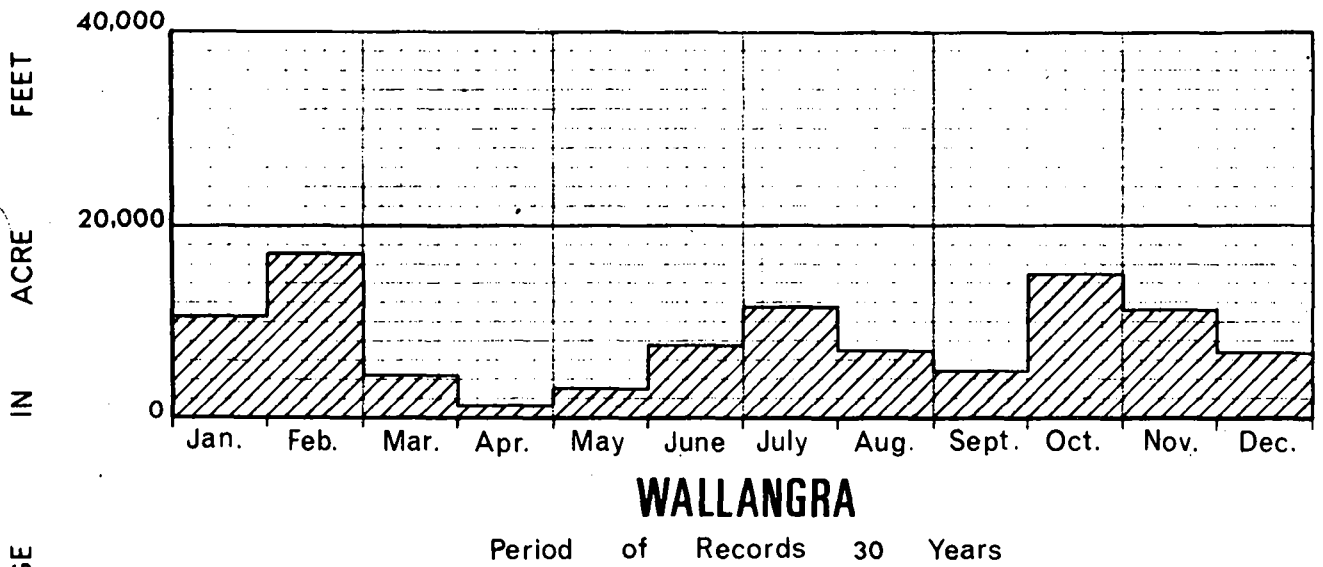
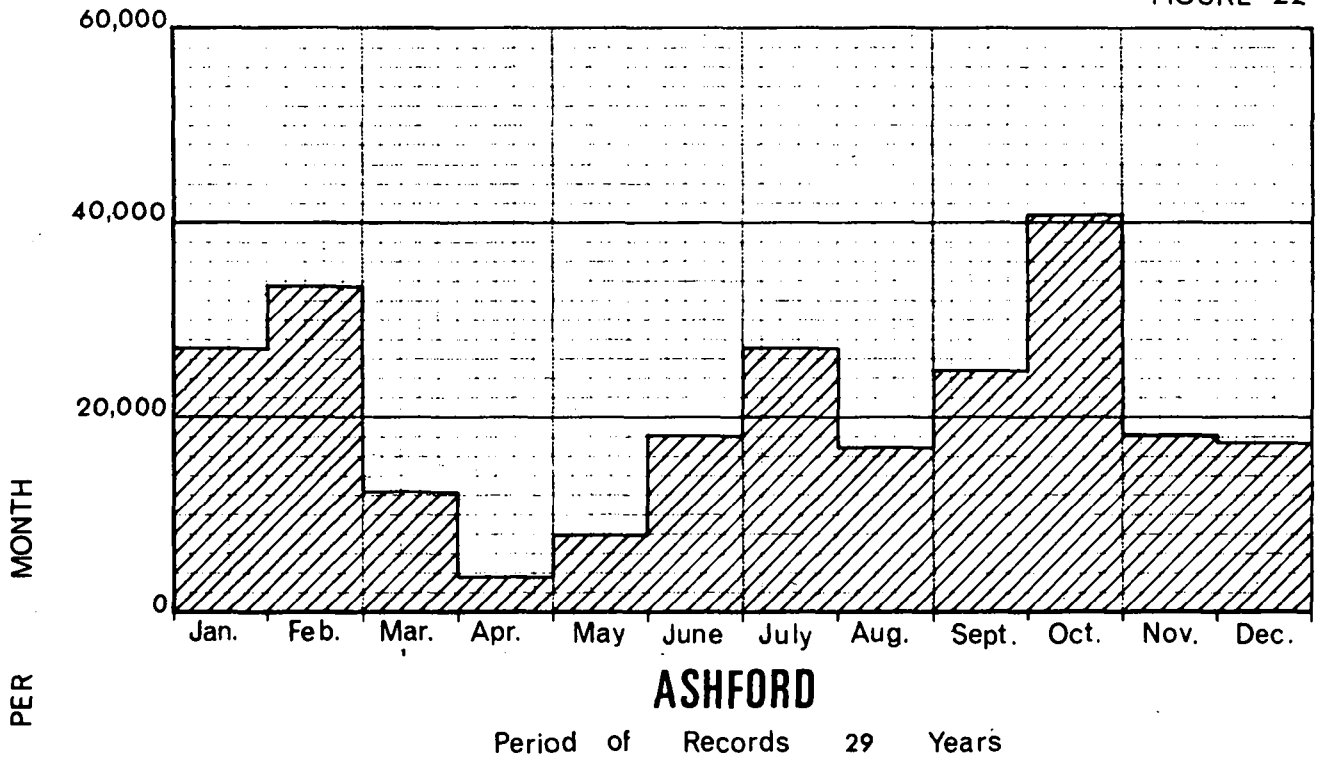


GLEN INNES

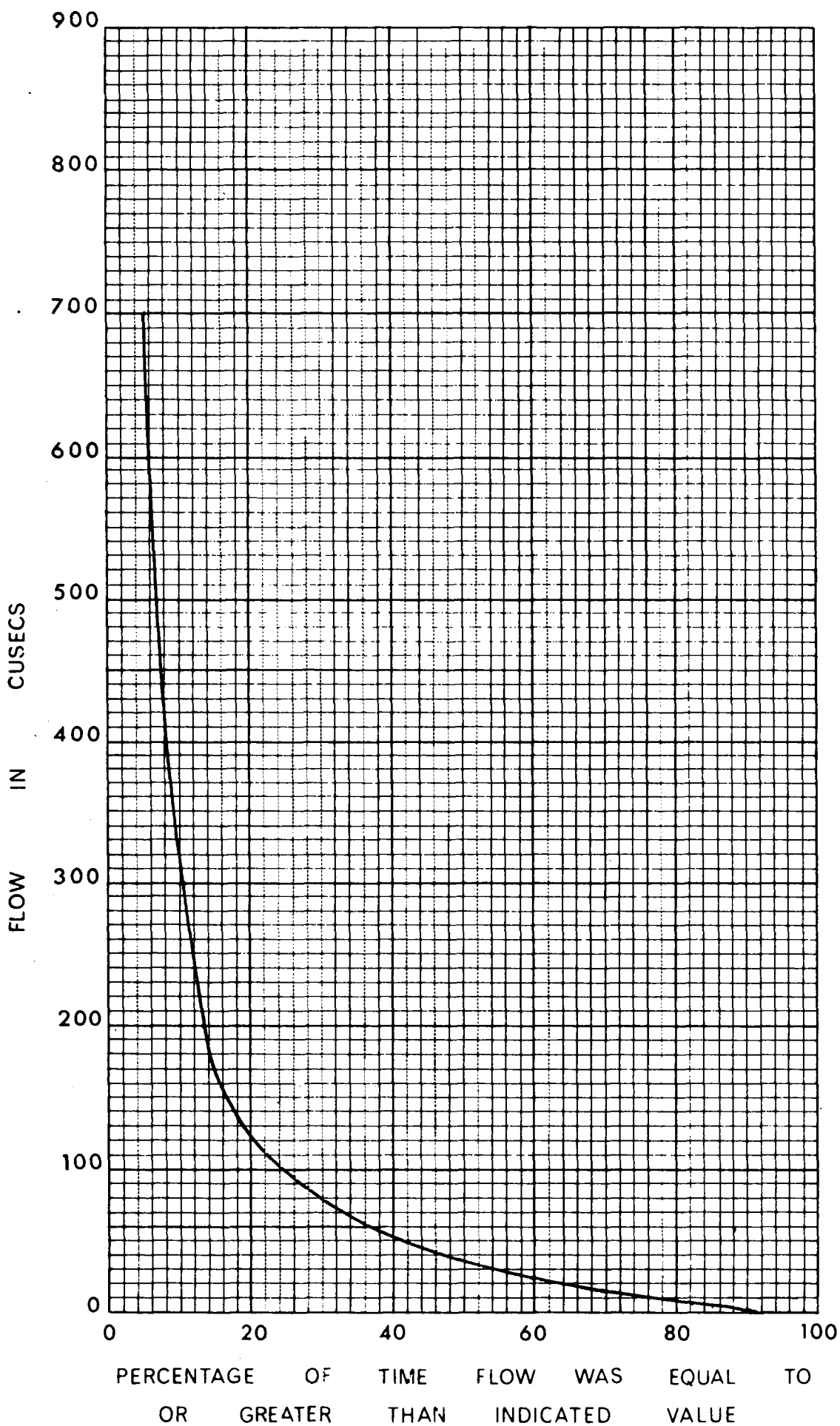


YETMAN

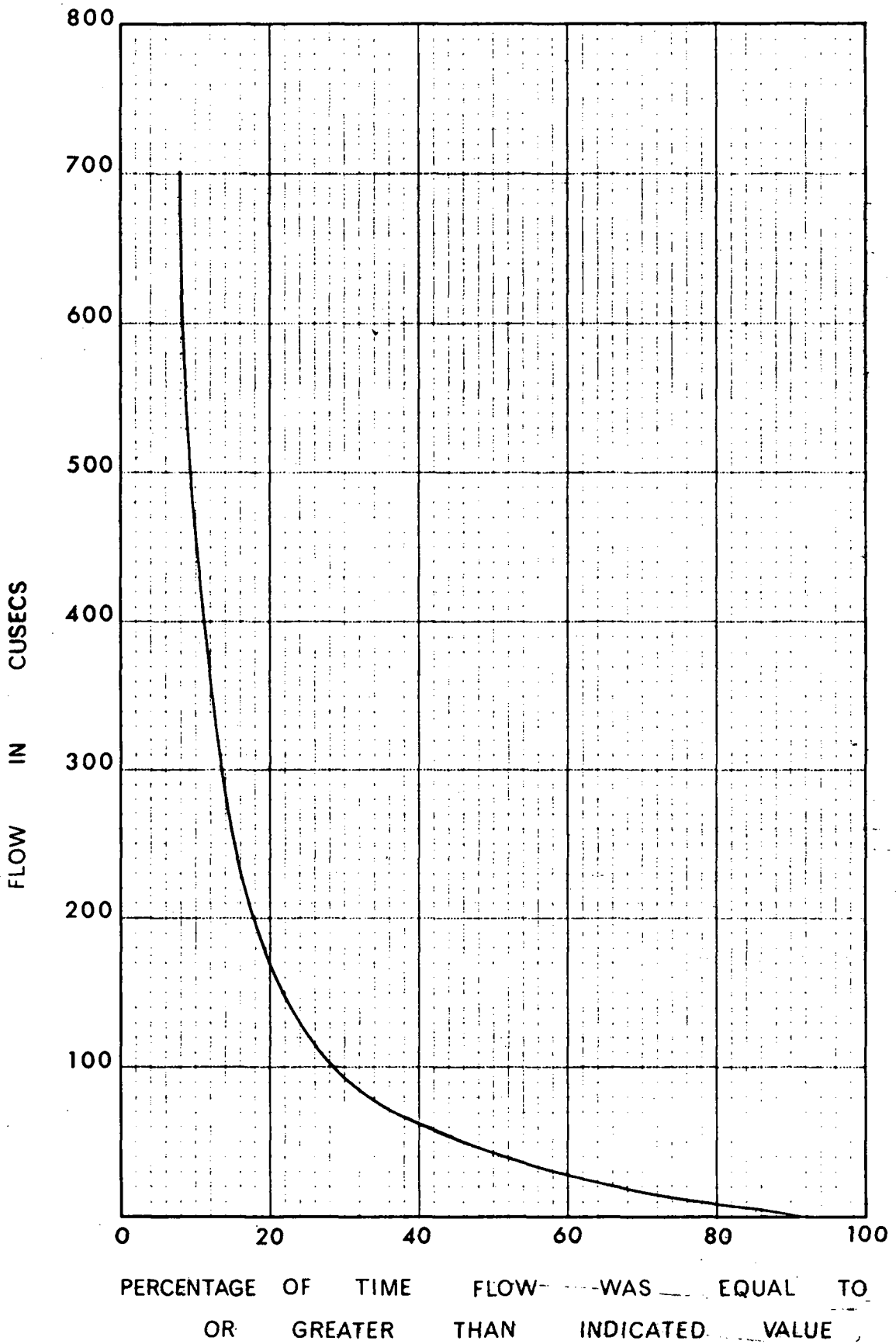
**DISTRIBUTION OF AVERAGE MONTHLY RAINFALLS
GLEN INNES AND YETMAN**



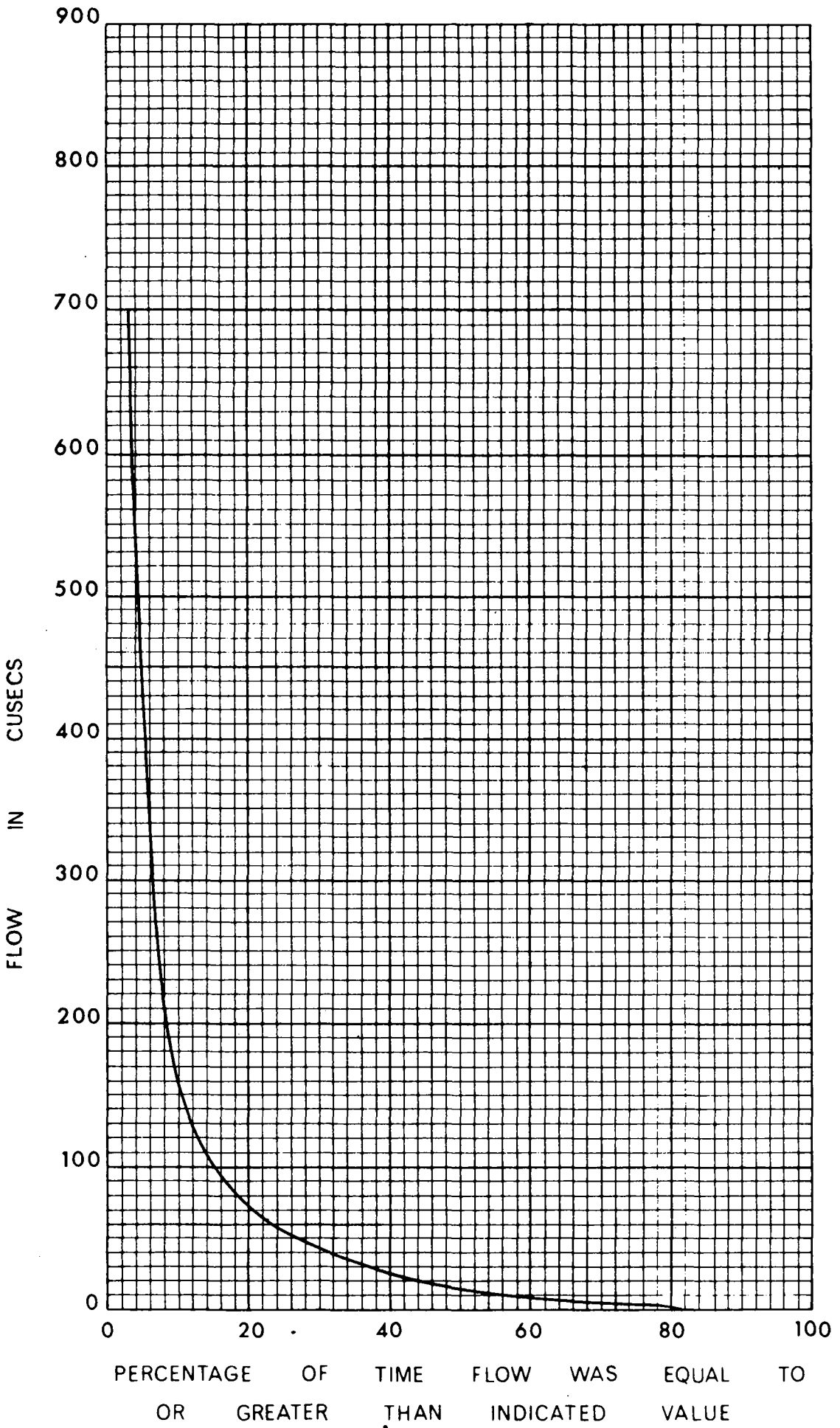
**AVERAGE MONTHLY DISCHARGES FOR
ASHFORD ; WALLANGRA AND HOLDFAST (YETMAN)**



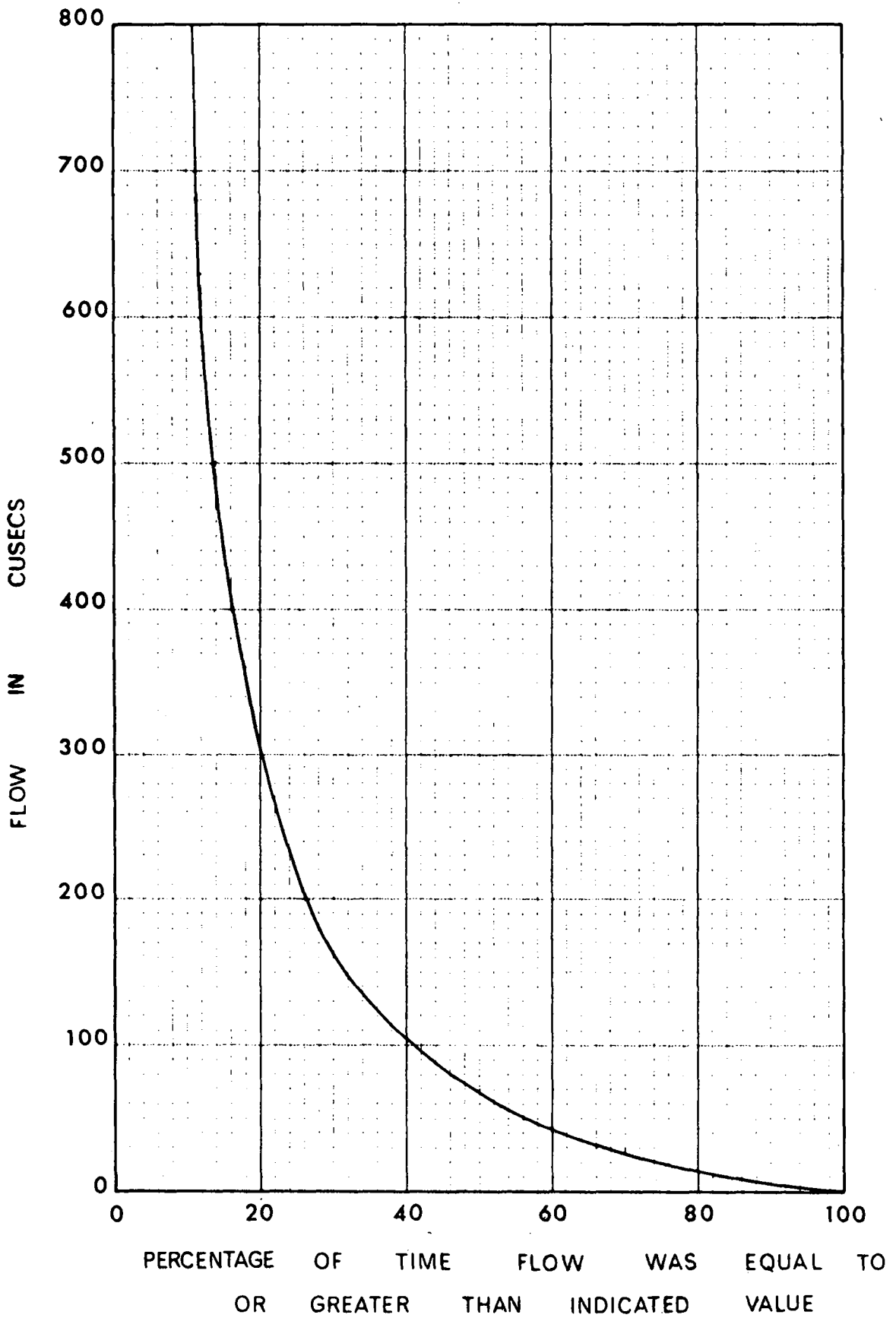
FLOW DURATION CURVE FOR SEVERN RIVER AT LLANARTH



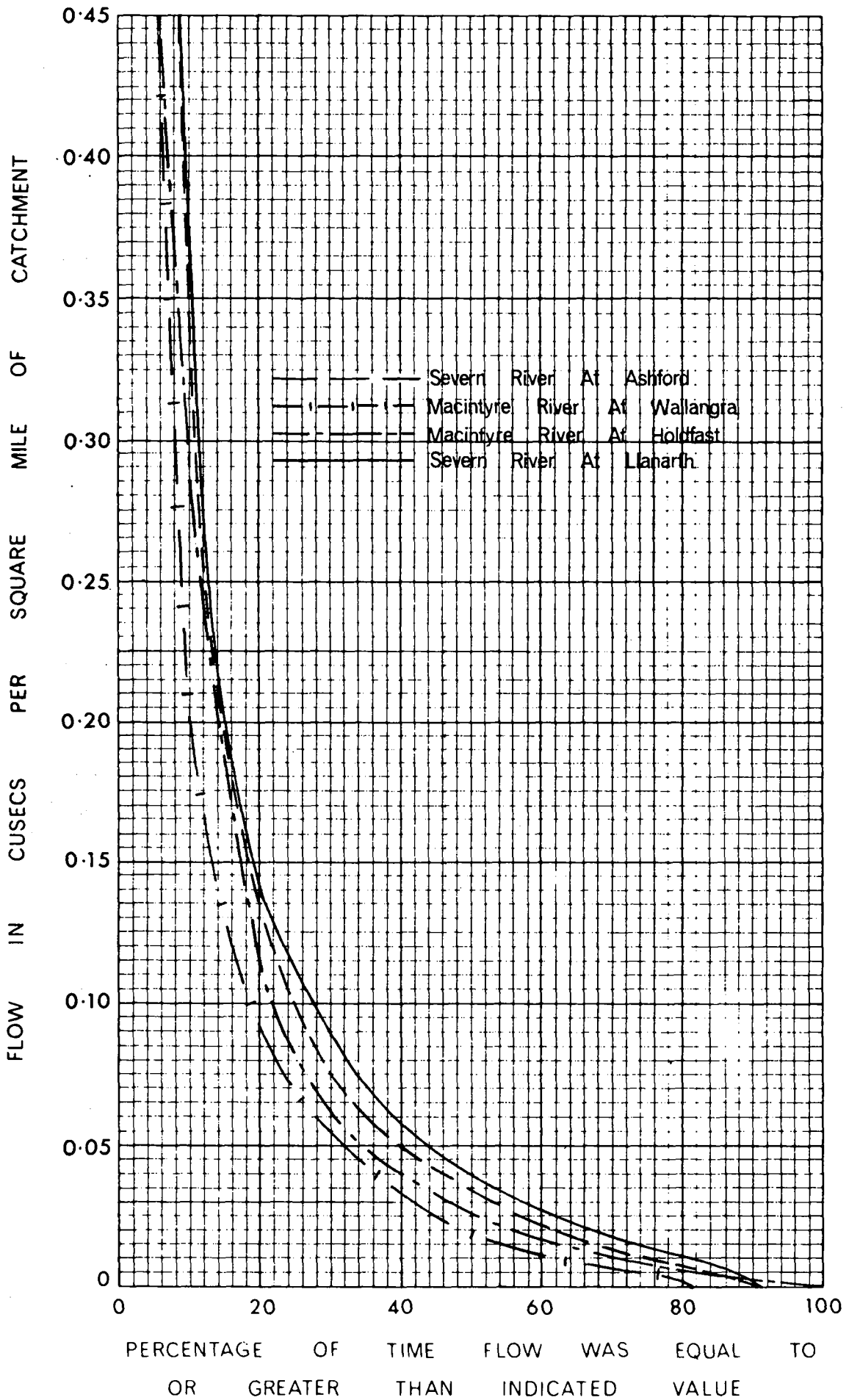
**FLOW DURATION CURVE FOR
SEVERN RIVER AT ASHFORD**



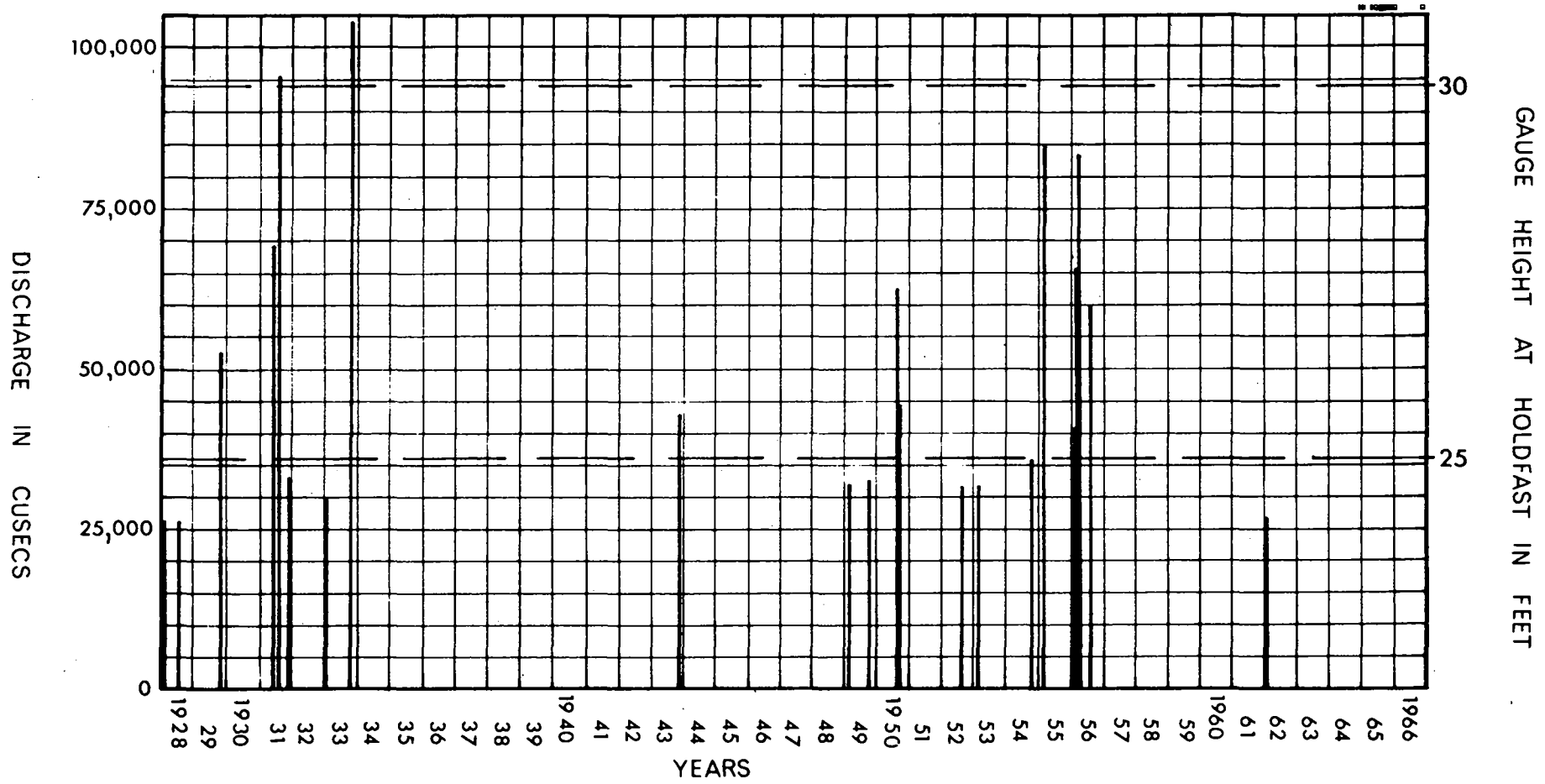
**FLOW DURATION CURVE FOR
MACINTYRE RIVER AT WALLANGRA**



**FLOW DURATION CURVE FOR
MACINTYRE RIVER AT HOLDFAST**



**FLOW DURATION CURVES FOR
MACINTYRE AND SEVERN RIVERS**



DETAILS OF THE NUMBER OF OCCURRENCES WHEN THE DISCHARGE
AT YETMAN OR HOLDFAST EXCEEDED 25,000 CUSECS

DISTRIBUTION OF ANN YETMAN

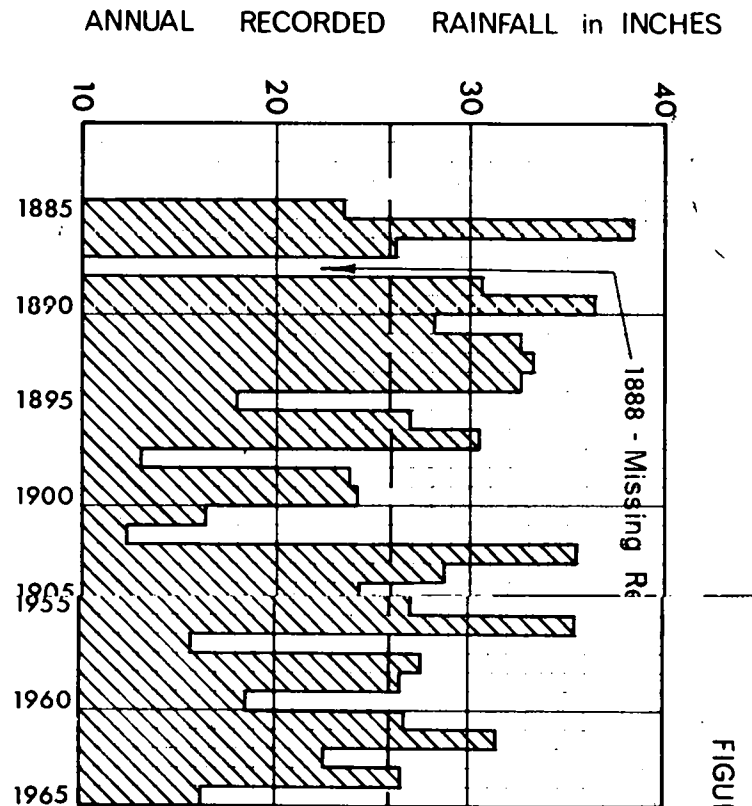
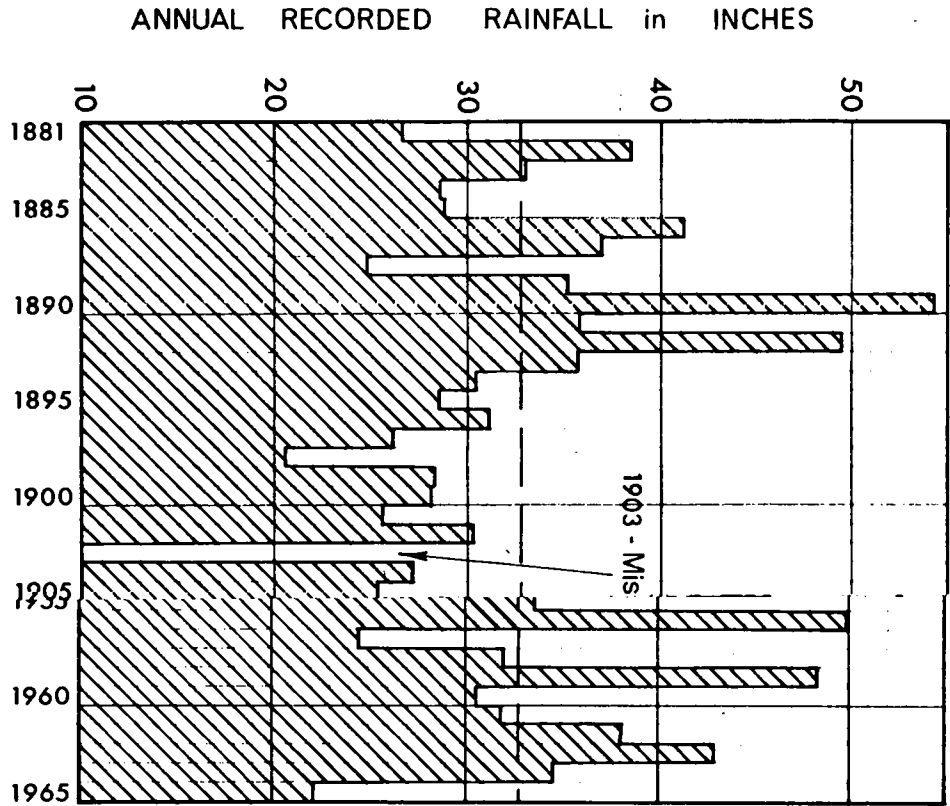
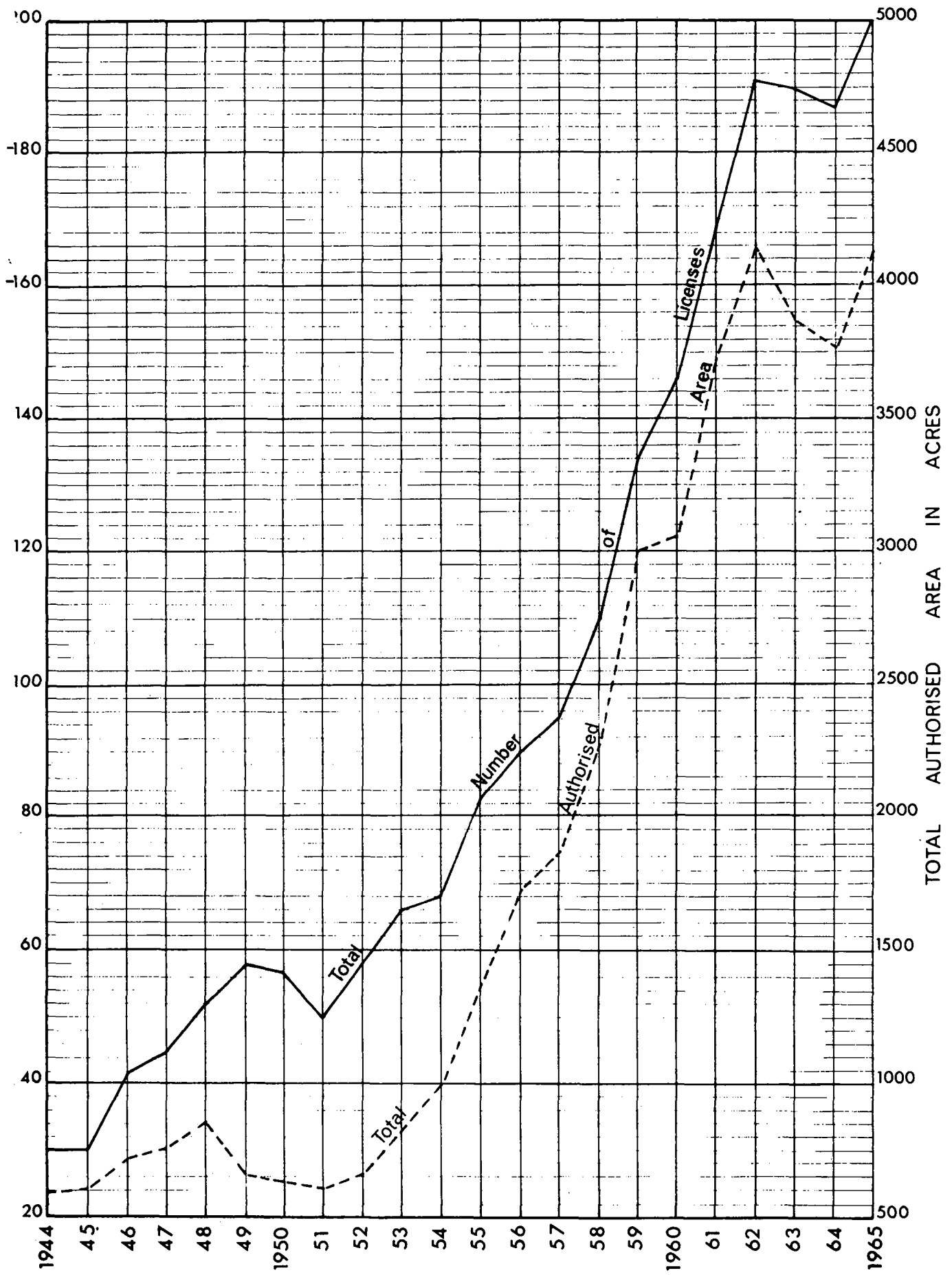


FIGURE 29



MACINTYRE RIVER BASIN
AREA AUTHORISED FOR IRRIGATION AND
TOTAL NUMBER OF LICENSES AT 31st.
DECEMBER FOR EACH YEAR INDICATED