



WATER RESOURCES
OF THE
MACQUARIE VALLEY
INCLUDING THE BOGAN VALLEY

SURVEY OF THIRTY N.S.W. RIVER VALLEYS

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WATER RESOURCES OF THE MACQUARIE RIVER VALLEY
(INCLUDING THE BOGAN RIVER VALLEY)

PREFACE

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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 have 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 deal with thirty major river valleys covering most of the State and when completed it will be the largest and most comprehensive study of its kind ever undertaken in Australia.

For each river valley the survey will cover physiographic and climatic features as well as groundwater potential and surface water resources. In addition it will review current water requirements and assess possible future water development.

As the overall survey will not be completed for some time separate reports are being issued for individual valleys as they are prepared. This report on the water resources of the Macquarie River Valley, including the Bogan River Valley, is the sixth report to be completed.


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CONTENTS

<u>SECTION</u>	<u>ITEM</u>	<u>PAGE</u>
1	Introduction	1
2	Physiographic Features	2
3	Climatic Features	4
4	Groundwater Potential	10
5	Stream Gauging Stations	20
6	Catchment Yields	21
7	Average Annual Runoff	25
8	Variability of Streamflows	26
9	Persistence of Streamflows	27
10	Occurrence of Flooding	29
11	Drought Periods	32
12	The 1964 to 1966 Drought	33
13	Water Requirements for Current Development	39
14	Possible Irrigation Development	44
15	Investigation of Storage Proposals	47
16	Acknowledgments	49
 <u>APPENDICES</u>		
Appendix 1	Annual Rainfalls - Oberon, Bathurst, Sofala, Orange, Mudgee, Dunedoo	50
Appendix 2	Annual Rainfalls - Wellington, Dubbo, Peak Hill, Carinda, Murrumbogie, Bourke	52
Appendix 3	Statistical Rainfall Data	54
Appendix 4	Minimum Rainfalls Recorded in Consecutive Months	58
Appendix 5	Streamflow Data - Fish River at Tarana ✓	64
Appendix 6	Streamflow Data - Macquarie River at Bathurst ✓	67
Appendix 7	Streamflow Data - Macquarie River at Bruinbun ✓	76
Appendix 8	Streamflow Data - Turon River at Sofala ✓	80
Appendix 9	Streamflow Data - Cudgegong River at Yamble Bridge ✓	84
Appendix 10	Streamflow Data - Macquarie River at Wellington ✓	89
Appendix 11	Streamflow Data - Bell River at Newrea ✓	98
Appendix 12	Streamflow Data - Macquarie River at Dubbo	103
Appendix 13	Streamflow Data - Talbragar River at Narranmore	115
Appendix 14	Streamflow Data - Macquarie River at Narromine	118
Appendix 15	Streamflow Data - Gunningbar Creek at Regulator	128
Appendix 16	Streamflow Data - Marra Creek at Yarrawin	131
Appendix 17	Streamflow Data - Macquarie River at Carinda	133
Appendix 18	Streamflow Data - Marthaguy Creek at Carinda	135
Appendix 19	Streamflow Data - Bogan River at Peak Hill	137
Appendix 20	Streamflow Data - Bogan River at Gongolgon	139
 <u>FIGURES</u>		
Figure 1	River Valley Map	141
Figure 2	Land Slopes	142
Figure 3	Median Rainfalls - Annual	143
Figure 4	Median Rainfalls - January	144
Figure 5	Median Rainfalls - February	145
Figure 6	Median Rainfalls - March	146

FIGURES (cont.)PAGE

Figure 7	Median Rainfalls - April	147
Figure 8	Median Rainfalls - May	148
Figure 9	Median Rainfalls - June	149
Figure 10	Median Rainfalls - July	150
Figure 11	Median Rainfalls - August	151
Figure 12	Median Rainfalls - September	152
Figure 13	Median Rainfalls - October	153
Figure 14	Median Rainfalls - November	154
Figure 15	Median Rainfalls - December	155
Figure 16	Geological Formations	156
Figure 17	Gauging Stations	157
Figure 18	Monthly Discharge Hydrographs - Bathurst, Sofala	158
Figure 19	Monthly Discharge Hydrographs - Yamble Bridge, Newrea, Narranmore	159
Figure 20	Monthly Discharge Hydrograph - Dubbo	160
Figure 21	Monthly Discharge Hydrographs - Carinda, Gongolgon	161
Figure 22	Flow Durations - Bruinbun, Wellington	162
Figure 23	Flow Durations - Yamble Bridge, Narranmore	163
Figure 24	Flow Durations - Carinda	164
Figure 25	Flow Durations - Yarrawin, Gongolgon	165
Figure 26	Flow Durations - Flow per Square Mile	166
Figure 27	Flood Peaks at Dubbo	167
Figure 28	Annual Rainfalls - Bathurst, Mudgee	168
Figure 29	Annual Rainfalls - Dubbo, Carinda	169
Figure 30	Median Monthly Rainfalls - Bathurst, Mudgee, Dubbo, Carinda	170
Figure 31	Irrigation Licenses	171
Figure 32	Possible Dam Sites	172

WATER RESOURCES OF THE MACQUARIE RIVER VALLEY

(INCLUDING THE BOGAN RIVER VALLEY)

1. INTRODUCTION

Water is one of man's most valuable natural resources. Without it no life is possible. The quantity of water on the Earth would be sufficient to completely cover it with a layer having a uniform depth of over one and a half miles, but only a very small proportion of this vast amount is in a form and in locations where it is readily available for man's use.

The surface water contained in rivers and lakes would make up only approximately four inches of the 1½ miles layer, while underground water would account for some 70 feet. Over 99 percent of the Earth's water is contained in the oceans and polar ice caps and is unsuitable for man's consumptive use.

Surface and underground water supplies are being continually replenished by rain. Australia, however, is ill favoured by the meteorological processes causing rain, as it lies in a latitudinal belt where the world air circulation pattern produces a generally descending, and therefore relatively dry, movement of air masses. In addition, Australia's low topographic relief allows air masses to traverse the greater part of the continent without being forced to rise sufficiently to shed their moisture.

Consequently, Australia's average annual rainfall of 18 inches is less than the approximate averages of 23 to 53 inches received by the other continents.

Australia's surface water supply compares even less favourably with that of the rest of the world than does its rainfall, as the natural processes of evaporation, seepage, and consumption by vegetation use a large part of the total precipitation. The usable residue appearing as runoff in Australia's rivers and streams amounts to only about one ninth of the rainfall, or an average of 2 inches per annum, compared with averages of from 7 inches to 19 inches in the other continents. It has been estimated that the total volume of water discharged by all streams in Australia is only about one hundredth of the total discharge of all the rivers of the world.

Furthermore, it is generally accepted that the rate of replenishment of water supplies by rainfall is most variable in areas receiving the least average rainfall. Australia, then, as well as being the driest continent, can also expect greater variations in its supplies of water than would occur in other continents.

It is therefore evident that accurate assessment, careful planning and wise use of water resources are essential for the continued growth of the agriculture, population and industry of the Australian continent.

The valleys of the Macquarie and Bogan Rivers cover an area of over 28,000 square miles and receive an average annual rainfall of approximately 20 inches, of which an average of 0.8 inch, or 1,190,000 acre feet, appears as streamflow each year. These surface water resources per square mile of catchment area are less than half of the average over Australia but are some 25 percent greater than the average over inland New South Wales.

2. PHYSIOGRAPHIC FEATURES

The boundaries of the Macquarie and Bogan River Valleys adopted for the purposes of this report are shown at Figure 1. The catchment occupies approximately 9 percent of the total area of New South Wales.

The eastern boundary is formed by the Great Dividing Range between points near Oberon in the south and Coolah in the north. The southern boundary is a well-defined ridge extending north west from the Great Dividing Range for some 250 miles and then turning northwards. The western portion of this boundary between Nyngan and Bourke is located across the flat plains country where catchment boundaries are practically indeterminate. The north eastern boundary follows the relatively low watershed between the Castlereagh and Macquarie River systems.

The Macquarie River is formed near Bathurst by the joining of the Fish and Campbell's Rivers. These two streams drain a high plateau area centred around Oberon, with a general elevation above sea level of 3,000 to 3,600 feet, consisting largely of undulating to hilly terrain.

The Macquarie then passes through the Bathurst Plains area, which is a well marked undulating lowland of some 2,400 feet elevation, surrounded by higher tablelands on all sides. This area includes a fairly extensive flood plain around Bathurst.

The river then flows northward into the Hill End Plateau area, and is joined from the east by the Turon River. In the Hill End Plateau, the ridge tops are often at elevations of over 3,000 feet, and most of the area is predominantly steep, with deeply dissecting streams. The Turon River drains

a plateau extending from near Portland to Sofala, with a general elevation ranging from over 3,600 feet in the south to some 2,400 feet in the north, and having predominantly rugged slopes.

At Burrendong Dam the Macquarie is joined from the east by the Cudgong River, which rises in uplands around Rylstone where the general elevation is over 2,400 feet, and where there are substantial areas of flat and undulating land surrounded by a hilly perimeter.

From Burrendong Dam the Macquarie flows north west through Wellington and Dubbo, being joined from the south by the Bell and Little Rivers. The Bell River rises in the flat to undulating country of the Orange Plateau, where the general elevation is some 3,000 feet, the highest point being the extinct volcanic peak of Mount Canobolas at about 4,600 feet. The Bell River flows north west through the undulating to hilly Molong Upland which is generally between 1,200 feet and 1,800 feet above sea level, and then turns north to join the Macquarie at Wellington. The Little River rises in undulating to hilly country west of Molong and flows north to join the Macquarie upstream from Dubbo.

North of Dubbo the Macquarie is joined from the east by the Talbragar River, its most important downstream tributary. This river rises in mountainous country at the junction of the Great Dividing Range and the Warrumbungle Range, in which is located Brennan's Gap. Mountainous slopes rapidly give way to undulating country, and at Cassilis Gap near Coolah the Dividing Range, at less than 1,500 feet, is at its lowest elevation in New South Wales. The Talbragar flows westward through the northern end of the Gulgong Upland, and past Dunedoo. Its valley is broad and flat, bordered by undulating hills which become less apparent as the river progresses towards Dubbo.

Downstream from Wellington there are extensive flat areas bordering the Macquarie River, and below Dubbo the whole valley opens out into flat plains country. From Dubbo the river continues to flow north west through Narromine and Warren, where a complex system of effluent creeks, connecting the Macquarie, Darling and Bogan Rivers, commences. Near Carinda the Macquarie is joined by Marthaguy Creek, which drains a catchment area of over 2,500 square miles and also carries spill-over water from the Macquarie and Castlereagh Rivers during floods.

The Bogan River rises to the west of the headwaters of the Little River and flows north west through Peak Hill and Nyngan to join the Darling near Bourke. Below Peak Hill the valley is broad and flat, and includes the rural centres of Tullamore and Tottenham.

Land slopes over the Macquarie and Bogan Valleys are shown at Figure 2 and are summarised at Table 1.

TABLE 1.

Area	Percent of Land Classified* as			
	Mostly Flat	Undulating to Hilly	Hilly to Steep	Rugged or Mountainous
Macquarie Valley above Dubbo	10%	49%	26%	15%
Talbragar Valley	52%	36%	6%	6%
Macquarie Valley below Dubbo	99%	1%	-	-
Bogan Valley	96%	3%	1%	-
Total Macquarie and Bogan Valleys	71%	17%	8%	4%

* Land Slope Classifications.

Mostly Flat: Slopes up to 3 degrees

Undulating to Hilly: Slopes from 3 degrees to 8 degrees

Hilly to Steep: Slopes from 8 degrees to 15 degrees

Rugged or Mountainous: Slopes greater than 15 degrees

The original land cover of the valleys included hardwood forest on the Oberon Plateau, with fringing areas of tall woodland, while most of the remainder of the higher country consisted of Savannah woodlands. Large areas of woodland have been cleared for agricultural and pastoral development.

The stand of mixed eucalypts virtually ceases west of Trangie where Coolibah and River Gum become the dominant species. In this area also are found western shrubs and small trees of great fodder value, including the well known Kurrajong and Wilga, as well as many acacia species.

3. CLIMATIC FEATURES

Rainfall.

Rainfall over the Macquarie and Bogan Valleys generally decreases from a maximum over the high ground in the east to a minimum along the Darling River. Marked variations in rainfall occur over the headwaters of the Macquarie River due to the rugged nature of the terrain. Generally, the peaks and tablelands in this area receive higher rainfalls than the valleys, due to the shadowing effects of the surrounding ranges.

Along the higher parts of the Great Dividing Range, which forms the eastern boundary of the drainage area, annual median rainfalls are from 30 to 35 inches. (The median is that rainfall experienced or exceeded on 50 percent of occasions). Where breaks in the Divide allow the intrusion of moist easterly air streams inland, annual median rainfalls of 30 inches or more are experienced further westward.

The middle section of the Macquarie Valley and the headwaters of the Bogan River experience an annual median of about 20 inches, while the lower reaches of both river systems experience an annual median rainfall of about 12 to 15 inches. The distribution of annual median rainfalls is shown at Figure 3 whilst the distributions of monthly median rainfalls are shown at Figures 4 to 15.

Over the entire drainage area, rainfall is distributed nearly uniformly throughout the year, with a slight tendency towards higher falls in the periods from June to August and from December to February. Monthly median rainfalls vary from 2 to 3 inches per month over the headwaters of the Macquarie to about $\frac{1}{2}$ to 1 inch per month over the lower reaches of the rivers.

Annual rainfalls recorded at Oberon, Bathurst, Sofala, Orange, Mudgee, Dunedoo, Wellington, Dubbo, Peak Hill, Carinda, Murrumbidgee and Bourke are given at Appendices 1 and 2.

Very high monthly totals as recorded over the river basins to the east of the Divide are not recorded over the Macquarie and Bogan Valleys. Highest monthly totals on record for stations in the region are between 8 and 15 inches. High monthly totals are generally associated with one of the following meteorological conditions:

- (1) In the warmer months of the year heavy falls can occur when a depression forms to the north of the area. These depressions, which cause moist northerly air streams to occur west of the Divide, usually form in a trough from south-eastern Australia to the north of the continent. Very high daily totals may be recorded under these conditions.
- (2) In the cooler months of the year, high monthly totals may result when a series of well developed troughs associated with southern depressions causes several substantial falls in one month. Very high daily totals are not common under these conditions.

All stations in the catchment have recorded falls of more than 3 inches in 24 hours. The highest total on record for a station in the catchment for a 24 hour period ending 9 a.m. is 10.83 inches, which occurred at Nevertire on 24th February 1955.

The tables at Appendix 3 show on a monthly and annual basis for Oberon, Bathurst, Sofala, Orange, Mudgee, Dunedoo, Wellington, Dubbo, Peak Hill, Carinda, Murrumbidgee and Bourke, the following data:

- (1) The maximum and minimum rainfalls.
- (2) The 10th, 30th, 50th, 70th and 90th percentiles (a rainfall observation less than the 10th percentile can be expected once in ten years on the average. Similarly, a rainfall observation less than the 70th percentile can be expected seven times in ten years on the average, or alternatively, a rainfall observation greater than the 70th percentile can be expected on an average of three years in ten).

Minimum recorded rainfalls at the same twelve locations are shown in the tables at Appendix 4. These tables indicate the minimum cumulative rainfalls commencing in any month of the year and continuing for up to 12 months, which have occurred at the selected stations.

Dry spells occur over the area, particularly over the lower reaches of both rivers where annual rainfalls of less than about 8 inches can be expected on an average of one year in ten. Totals of less than 3 inches in twelve months have been recorded in the area along the Darling River. The effect of dry spells over the eastern sector of the region is partly reduced as rainfall is approximately double that received by the western border areas. On an average of one year in ten, less than 15 to 20 inches are received per annum, while the lowest totals on record for twelve consecutive months are between 10 and 14 inches.

Temperature.

The temperature regime of the region is well recorded. The average monthly and yearly temperatures for selected stations are listed at Tables 2 to 7 as follows:

- (1) Sunny Corner and Lithgow, Tables 2 and 3, representative of headwaters of the Macquarie above 3,000 feet.

- (2) Orange and Mudgee, Tables 4 and 5, representative of the headwaters of the Bogan and the middle section of the Macquarie between 1,500 and 3,000 feet.
- (3) Dubbo and Bourke, Tables 6 and 7, representative of the lower sections of both rivers below 1,500 feet.

TABLE 2
SUNNY CORNER (Elevation 4,500 feet)
Average Temperatures (°F) Based on 11 Years of Records.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year		
Average Maximum	77.7	75.2	70.0	63.2	54.1	46.9	44.9	48.2	56.4	64.0	70.1	75.6	62.2		
Average Minimum	50.6	50.0	46.6	40.0	34.6	32.1	31.8	32.5	35.2	37.6	42.2	46.9	40.0		
Average Mean	64.1	62.6	58.3	51.6	44.3	39.5	38.3	40.3	45.8	50.8	56.1	61.3	51.1		
Extreme highest on record						95.5°F.		Extreme lowest on record						19.0°F.	

TABLE 3
LITHGOW (Elevation 3,017 feet)
Average Temperatures (°F) Based on 27 Years of Records.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year		
Average Maximum	78.0	76.9	72.3	63.8	56.6	51.1	49.9	53.1	59.3	65.8	71.5	75.3	64.5		
Average Minimum	51.9	52.0	48.4	42.7	37.8	33.4	32.4	33.2	36.7	41.0	45.3	49.8	42.1		
Average Mean	64.9	64.5	60.3	53.3	47.2	42.3	41.2	43.1	48.0	53.4	58.4	62.5	53.3		
Extreme highest on record						103.2°F.		Extreme lowest on record						10.2°F.	

TABLE 4
ORANGE (Elevation 2,896 feet)
Average Temperatures (°F) Based on 21 Years of Records.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year		
Average Maximum	83.9	81.9	77.4	67.6	60.4	52.6	51.6	55.3	61.9	68.6	75.4	81.0	68.1		
Average Minimum	53.7	53.3	49.2	41.7	36.5	33.0	31.4	37.8	35.8	40.3	46.1	50.5	42.0		
Average Mean	68.8	67.6	63.3	54.7	48.5	42.8	41.5	44.1	48.9	54.5	60.7	65.7	55.1		
Extreme highest on record						106.0°F.		Extreme lowest on record						12.0°F.	

TABLE 5

MUDGEE (Elevation 1,635 feet)

Average Temperatures(^oF) Based on 28 Years of Records.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Average Maximum	88.5	87.8	82.6	73.9	66.0	59.1	57.6	60.6	67.9	75.2	81.6	85.9	73.9
Average Minimum	59.4	59.0	54.7	46.8	39.7	35.9	34.5	35.5	39.4	45.2	51.1	56.6	46.5
Average Mean	74.0	73.5	68.7	60.3	52.8	47.5	46.0	48.1	53.7	60.1	66.4	71.3	60.2
Extreme highest on record 113.2 ^o F.							Extreme lowest on record 15.0 ^o F.						

TABLE 6

DUBBO (Elevation 870 feet)

Average Temperatures(^oF) Based on 30 Years of Records.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Average Maximum	92.1	91.3	85.7	76.9	68.0	61.0	59.7	63.5	70.3	78.5	85.3	89.6	76.8
Average Minimum	63.8	63.8	58.9	50.8	43.5	39.3	37.5	38.3	42.1	49.3	56.4	61.3	50.5
Average Mean	77.9	77.5	72.3	63.8	55.8	50.1	48.6	50.9	56.5	63.9	70.8	75.4	63.6
Extreme highest on record 115.4 ^o F.							Extreme lowest on record 19.9 ^o F.						

TABLE 7

BOURKE (Elevation 361 feet)

Average Temperatures(^oF) Based on 30 Years of Records.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Average Maximum	98.0	96.7	91.0	80.9	71.8	64.5	63.8	69.2	76.9	84.7	91.3	95.2	82.0
Average Minimum	69.3	68.9	63.5	54.6	47.6	42.3	40.8	43.1	48.7	55.9	62.3	66.8	55.3
Average Mean	83.6	82.8	77.3	67.8	59.7	53.4	52.3	56.2	62.8	70.3	76.8	81.0	68.7
Extreme highest on record 125.0 ^o F.							Extreme lowest on record 25.0 ^o F.						

Hot to very hot days are experienced over most of the area during summer, particularly below the 3,000 feet contour. Over the middle and lower reaches of the Macquarie Valley and over most of the Bogan Valley, prolonged hot spells with temperatures exceeding 100^oF on seven or more consecutive days occur in most areas. Temperatures exceeding 110^oF are not uncommon, and temperatures exceeding 115^oF are experienced occasionally. An air temperature of 125^oF has been recorded at Bourke and this is the highest on record for New South Wales. Temperatures experienced over the headwaters of the Macquarie River

are, on the average, about 12 degrees cooler than those experienced over the western part of the area.

In winter, average minima are low, particularly over the Macquarie headwaters. Temperatures in the low thirties are common and all stations have experienced a minima of 25°F or lower. Many stations in the higher parts have experienced temperatures lower than 15°F. In general, temperatures are about 30 degrees cooler in winter than in summer.

Frost and Snow.

Frosts occur over the entire catchment in the cooler months of the year. In the headwaters of the Macquarie the frost season usually commences about the beginning of April and finishes early in November, while in the western sector the average frost season commences about a month later and finishes about two months earlier. Frosts have been experienced in the Macquarie headwaters as early as the end of January and as late as mid December. Severe frosts are usually confined to the months from April to October in the highlands and from June to August in the west.

Snowfalls occur on an average of 3 or 4 days per year at places above 3,000 feet and more frequently on the higher peaks. Although usually light these falls may on rare occasions, be quite heavy. On a few occasions stations above 3,000 feet have recorded snowfalls of one foot or more in 24 hours.

Sunshine.

Estimates based on cloud observations, of the average duration of bright sunshine in hours per day for the eastern, middle and western sections of the area are shown at Table 8. In general, the duration of bright sunshine increases from a minimum in the east to a maximum in the west.

TABLE 8

SUNSHINE

Estimated Average Duration of Bright Sunshine in Hours Per Day

Section	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Eastern	9.7	9.1	8.2	7.5	6.5	5.2	5.8	6.7	8.0	8.9	10.0	10.3	8.0
Middle	10.3	9.8	8.9	8.2	7.3	6.8	6.8	7.4	8.3	9.5	10.3	10.6	8.7
Western	10.6	10.5	9.5	9.0	8.1	7.0	7.3	8.2	9.0	9.9	10.8	11.0	9.2

Evaporation.

Estimates of the average monthly and annual evaporation (from a sunken pan) together with estimates of the standard deviations, for the eastern, middle and western sections of the area are shown at Table 9.

TABLE 9
Estimated Average Monthly and Annual Evaporation in
Inches for the Macquarie and Bogan Valleys

		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Eastern Section	Evaporation	8.0	6.5	5.5	3.6	2.2	1.6	1.4	1.9	3.0	4.2	6.0	7.8	51.7
	Standard Deviation	1.2	1.1	0.9	0.6	0.3	0.2	0.2	0.3	0.4	0.7	1.0	1.3	4.8
Middle Section	Evaporation	10.5	7.5	6.5	4.5	2.7	2.1	1.8	2.5	3.8	5.7	7.0	10.2	64.8
	Standard Deviation	1.3	1.1	1.1	0.7	0.4	0.3	0.3	0.4	0.8	1.0	1.3	1.6	7.0
Western Section	Evaporation	12.5	8.5	7.5	5.5	3.5	2.8	2.1	3.5	4.7	7.2	8.9	11.9	78.6
	Standard Deviation	1.4	1.2	1.2	0.8	0.6	0.5	0.5	0.7	0.9	1.2	1.4	1.7	8.2

Wind.

Winds in the Macquarie and Bogan Valleys are mainly only light or moderate. However, violent squalls may be experienced over limited areas on rare occasions in association with severe local storms such as thunderstorms or frontal squalls. Table 10 shows the magnitude of extreme wind gusts likely to be experienced for various return periods.

TABLE 10
Wind Gusts to be Expected for Given Return Periods

Return period (years)		10	20	50	100
Wind gust equalled or exceeded (m.p.h.)	Eastern Section	80	85	95	105
	Western Section	75	80	90	95

4. GROUNDWATER POTENTIAL.

Examination of the map at Figure 16 reveals the geological complexity of the catchment of the Macquarie River compared to that of the Bogan. The age of the rocks varies from 500 million years in the case of the Ordovician slates to the present in the case of the sands, silts and clays which are still being deposited by present day streams.

However, factors other than geological ones have a bearing on the difference in groundwater potential of the two valleys. Both rivers join

the Darling after meandering across extensive flood plains, but upstream of these plains the river basins are sharply contrasting. The Macquarie rises in highlands where there is considerable relief, whilst in the headwaters of the Bogan relief rarely exceeds several hundred feet and is usually less than 200 feet.

Over much of the Macquarie catchment the mean annual rainfall is between 20 and 30 inches, while over most of the Bogan catchment it is between 15 and 20 inches and only a small area receives more than 20 inches. In addition, evaporation rates are higher in the Bogan catchment than in the Macquarie. The low rainfall and high evaporation in the Bogan catchment result in infrequent and small infiltration of water into the underlying strata, and extremely small rates of percolation through the strata. Not only is there opportunity for any cyclic salt in the rainfall to be concentrated by evaporation, but the slowly moving groundwater has ample time to dissolve saline matter from the strata.

In the following sections the two valleys are dealt with separately, each under three subheadings based on the mode of occurrence of the groundwater, viz. Jointed Rocks, which contain water in the cracks, joints and fractures; Porous Rocks, such as sandstones, which contain water in the pore spaces; and Unconsolidated Deposits, in which water may be held in the sands and gravel comprising part of the riverine flats and plains. Geological features mentioned in the discussion are shown at Figure 16 and place names which are not shown on this map because of lack of space are included at Figure 1.

THE MACQUARIE VALLEY

Jointed Rocks.

Slates, schists and quartzites of Ordovician age outcrop in a meridional zone between Orange and Wellington, and in smaller areas to the north, south and east of Mudgee. Bores on good sites can usually be relied on to produce supplies of the order of 300 to 500 gallons per hour of fair to good quality water. Near Orange, yields in excess of 1,000 gallons per hour have been obtained, and many bores produce water of suitable quality for irrigation from depths less than 100 feet.

The Silurian strata which include lavas, tuffs, slates, shales and limestones, are normally favourable to the occurrence of good stock supplies. These strata occupy extensive areas in the vicinities of Dubbo, Orange,

Bathurst and Mudgee, and it is of interest that the salinity of the groundwater in them gradually increases towards the west, usually being in the range from 100 to 400 parts per hundred thousand. Occasional bores yield from 4,000 to 5,000 gallons per hour and in most instances where yields are of this order, the total saline content is less than 100 parts per hundred thousand. In general however, yields rarely exceed 1,000 gallons per hour, and the depths to water vary between 50 and 350 feet.

Overlying the Silurian strata, and outcropping over much of the more rugged part of the Macquarie catchment are limestones and shales of Lower Devonian age. Much of this rugged country is undeveloped and the few bores known to have been constructed have met with mixed success. On topographically good sites, stock supplies can be expected, but in the areas of high relief the water table appears to be very deep, and boring on elevated country is not advisable, not only because of the risk and high cost of boring, but also because of the cost of pumping equipment needed to lift the water to the surface.

The thin belt of Lower Devonian shales and limestones which lies to the west of Molong and Wellington is unfavourable to the occurrence of useful supplies of groundwater. Many bores in these strata have been unsuccessful and where water is encountered it is often quite brackish.

The Devonian volcanics which form the southern part of the divide between the Bogan and Macquarie catchments have been little explored because the country they underlie is little developed and the strata are unusually hard. However, jointing is well developed and it seems likely that useful supplies could be obtained at reasonable cost if a suitable drilling rig were used.

The Upper Devonian quartzites and sandstones in the south-eastern and south-western parts of the Macquarie Valley have been little tested, but results elsewhere in the State suggest that their potential should be reasonably good, and that useful supplies of water suitable for stock and sometimes for domestic purposes should be obtainable from well-sited bores.

The Permian strata include conglomerates, sandstones, shales and coal seams, the main outcrops occurring in the catchment of the Cudgegong River upstream of Mudgee. Groundwater from these strata is usually high in sulphates and rather acid, the total salinity being often in excess of 300 parts per hundred thousand. Yields are normally adequate for stock watering

and the depth to water is usually less than 150 feet.

There are two major outcrops of granite in the Macquarie catchment and the difference in their groundwater potentials is about what would be expected as a result of the climatic differences between the two areas. The granites between Yeoval and Narromine are not favourable to the occurrence of groundwater and there have been a number of failure bores constructed in them, particularly in the northern part. Near Yeoval well-sited bores yield good stock supplies from depths ranging down to 150 feet, but failures are relatively common, usually because of poor sites or insufficient penetration after encountering hard granite at shallow depths.

The Bathurst granite is elevated and weathering of the rock is usually fairly shallow. Springs are common and successful wells have been constructed in spring-fed swampy areas. Bores sited to take advantage of the terrain usually encounter water at depths between 50 and 100 feet. The salinity of the water is normally less than 100 parts per hundred thousand, and yields are mostly of the order of 500 to 1,000 gallons per hour.

To the south of Orange there is an area of volcanic rocks, chiefly basalt, with some trachytic lavas, which flank the central core of the extinct volcanic complex of the Canobolas area. On the middle and lower slopes, where there is sufficient thickness of basalt, supplies of up to 2,000 gallons per hour are obtained from both bores and wells at depths between 10 and 150 feet. The salinity is usually low and the water is commonly used for domestic and garden purposes. Recently a bore on the lower slopes obtained a supply of 16,000 gallons per hour at 115 feet in vesicular and pumiceous basalt.

In the north-eastern part of the Valley, in the headwaters of the Talbragar River, there is a large elevated area of basalt. Springs are common and suitably sited wells and bores usually yield useful supplies for stock and domestic purposes. The waters from these basalts and those south of Orange usually have salinities of less than 60 parts per hundred thousand, but the presence of calcium and magnesium salts renders them quite hard.

Porous Rocks.

The Triassic sandstones in the eastern part of the Valley form part of a fairly elevated but deeply dissected plateau. The areas of outcrop are little

developed and although bores may be expected to produce limited but useful supplies of good quality water there has been no incentive as yet to prospect these strata.

The Triassic-Jurassic sediments consist mainly of shales and fine grained sandstones with occasional conglomerates, which outcrop to the south and east of Dubbo. The sandstones contain some discontinuous aquifers, but in general these strata are impervious. Approximately half of the bores sunk have been unsuccessful, even though many have reached depths of the order of 400 feet. Even when yields are adequate, the salinity is usually in excess of 150 parts per hundred thousand and the water is suitable only for stock.

The main outcrops of Jurassic strata occur in the vicinity of Dubbo and on the northern side of the Talbragar River. Sandstones predominate over shales and some very porous zones occur in the former which comprise part of the intake beds of the Great Artesian Basin. Bores in these sandstones are almost invariably successful within a depth of 200 feet, the few failures usually being because of insufficient thickness of sandstones overlying the less permeable older strata. Yields between 500 and 1,000 gallons per hour are common and a few supplies are sufficient for relatively large scale irrigation. These high yielding bores enjoy peculiarly favourable hydrogeological conditions, being in sandstones overlain by alluvial material on the western side of the Macquarie River, where it flows northwards from Narromine. The salinities of the waters from bores in or close to the outcrop areas are usually low, but there is a fairly sharp increase to the west and north, as distance from the recharge area increases.

To the north-west of Dubbo there are occasional small outcrops of the sequence of shales and sandstones (called the Transition Stage) which overlie the Pilliga sandstones, but in the main all the younger strata in the Artesian Series are covered by a veneer of alluvial material. Thick, impermeable shaley strata overlie the Transition Stage, and it is the combination of the deep sandstones containing porous strata and the blanket of impervious shales forming a confining layer, that allows the development of pressures sufficient to cause the water to rise above surface level when tapped by bores. The boundary of the area within which flowing bores are still found is shown on the geological map.

The Artesian Basin sediments are approximately 2,350 feet thick in the vicinity of the confluence of the Macquarie and Barwon Rivers; at Carinda the thickness is about 2,250 feet; and at Warren the sequence has thinned to about 800 feet.

Within the flow line, bores which fully penetrate the main aquifer group usually yield flows in excess of 100,000 gallons per day. However there is considerable variation in the disposition of the Pilliga Sandstones because of the presence of basement ridges, and to a considerable extent the rather sinuous flow-line reflects the varying basement conditions.

Where flows are not obtained there are usually very considerable pressure rises, and in most bores the static water level is within 100 feet of the surface. Pumped supplies are usually adequate for stock watering and domestic use. However, because of the sodium imbalance which is typical of waters from the Great Artesian Basin, most supplies are unsuitable for irrigation. However in the case of gardens it may be practicable to take the necessary corrective action consisting of liberal use of organic material, addition of gypsum at a rate dependent on the excess of sodium present and proper water management.

It is usual for the deepest aquifers to contain the best quality waters, the salinity in the main aquifers in the Pilliga sandstones usually being less than 60 parts per hundred thousand. Aquifers in the Transition Stage yield slightly more saline waters, while the occasional thin, pervious sandstones in the overlying shaley sequence of Cretaceous Age are rarely drawn on because the waters range from brackish to very salty.

Unconsolidated Deposits.

There are extensive alluvial deposits in the main Macquarie Valley and in the valleys of some of the tributaries, of which the Cudgegong, Talbragar and Bell Rivers are the more important from the aspect of groundwater potential.

In the main valley the potential of the alluvial deposits is varied, because of the combination of geological and physiographic factors. In the vicinity of Bathurst, where the fairly ready decomposition of the granites produces rolling country with relatively little relief, there has been some development of alluvial flats. However, the deposits are relatively fine grained and clayey and groundwater supplies are normally adequate only for stock purposes. There is also a tendency for the waters to be slightly

brackish and, although the flats have not been extensively prospected for underground water it appears unlikely that there is any substantial potential for irrigation supplies.

Downstream of Bathurst the Macquarie becomes deeply entrenched, and there is little or no development of alluvium with appreciable groundwater potential as far downstream as Wellington. Between Wellington and Dubbo there is a steady increase in the depth and width of the alluvial deposits, and in most instances where landholders have undertaken test boring programmes, worthwhile irrigation supplies have been obtained. Depths of bores are mostly less than 200 feet and yields usually are between 15,000 and 30,000 gallons per hour although a few bores have produced more than 40,000 gallons per hour.

A number of screened bores provide part of the Dubbo town water supply, the most productive bore being capable of yielding 50,000 gallons per hour. An analysis of water from this bore revealed that it had a total salinity of 24.0 parts per hundred thousand, a hardness of about 14 parts per hundred thousand and a pH factor of 7. Water of this quality would be suitable for irrigation and also for domestic use provided it were softened.

From Dubbo to Narromine the alluvium covers extensive areas, but while stock supplies are readily obtained, aquifers capable of yielding irrigation supplies have proved difficult to locate. Yields are usually in the range 8,000 to 12,000 gallons per hour, but some larger supplies have been obtained. Narromine obtains its water supply from bores in the alluvial flats.

On the Bell River quite extensive flats occur for some miles upstream of its confluence with the Macquarie. Supplies of up to 25,000 gallons per hour have been obtained from shallow aquifers, but little is known of the potential of the deeper alluvial material.

As in the case of the Macquarie River, the Cudgegong has considerable areas of alluvium flanking its upper reaches, whilst in the middle reaches it is entrenched into the resistant Silurian strata and there is little or no alluvial development. Upstream of Mudgee however, there is probably more intensive irrigation from underground water sources than elsewhere in the Macquarie Valley. Recent test bores indicate that the alluvial deposits may be as deep as 200 feet, but the main irrigation yields are obtained from wells which are usually less than 40 feet deep, and there is to date no evidence to suggest that good aquifers occur at greater depths than 50 feet.

Yields are usually within the range from 10,000 to 15,000 gallons per hour and in a few cases have exceeded 20,000 gallons per hour. However, there is considerable seasonal fluctuation in the level of the water table, and in dry periods the heavy demand coupled with seasonal lowering of the water table considerably reduces the yields of wells throughout the area.

The proportions of salts as well as the total salinity of the waters in the alluvial flats near Mudgee reflect the geological conditions in the catchment. Waters rich in chlorides and sulphates derive their salinity from the Permian strata in the upper catchment of the Cudgegong itself, while those high in bicarbonates originate in tributary catchments, notably Lawson's Creek, underlain by older Palaeozoic and igneous rocks.

Some 20 miles downstream of Mudgee, Wialdra Creek joins the Cudgegong and there is quite extensive alluvium in the Home Rule - Gulgong area on this creek system. Exploratory bores in the area have revealed up to 250 feet of alluvium, much of which is of late Tertiary age. Although water was often a problem in gold mining operations, few bores have yielded supplies sufficient for irrigation. It is generally possible however, to obtain useful stock supplies.

In the upper reaches of the Talbragar River the alluvial flats are shallow and only stock supplies are normally obtained. In the few cases where irrigation supplies have been obtained, lowering of the water table has greatly restricted the yields in dry times. Waters are typically quite hard, although the salinity is usually not greater than 70 parts per hundred thousand. The town of Coolah obtains its water supply from wells in the flats along Coolah Creek, a major tributary of the Talbragar.

Away from the headwaters, alluvial deposits are well developed and are surprisingly deep, especially when it is realised that downstream from Dunedoo to the vicinity of Ballimore, there is little or no alluvium. Upstream of Dunedoo a depth of 240 feet has been established near Craboon, and whilst there has been little prospecting of this deeper alluvium there are some irrigation bores yielding supplies ranging from 12,000 gallons per hour to over 35,000 gallons per hour.

The town of Dunedoo obtains its water supply from a large diameter well only about 30 feet deep. The yield of the well is said to be of the order of 20,000 gallons per hour and the water is of quite low salinity, although rather hard.

From Ballimore to the confluence with the Macquarie River alluvial flats again occur, but they have been little explored except by shallow bores or wells to provide stock water supplies.

Downstream of Narromine the Macquarie River trends northwards and then north-westwards across the vast flood plains which it and its neighbouring streams have built up. Abandoned channels, of which the Boggy Cowal is one, indicate that it is only relatively recently in geological terms that the Macquarie ceased to flow westwards in continuation of its trend above Narromine.

The alluvial deposits comprising the flood plains yield stock rather than irrigation supplies of groundwater. Some good quality waters are encountered, but in general there is a rapid deterioration in the quality of the groundwater with distance from the edge of the flood plain and from the main river channel and its distributaries. Much of the groundwater in the alluvium is too saline even for sheep, and recourse must be had to the underlying aquifers in the Great Artesian Basin.

THE BOGAN VALLEY

Jointed Rocks.

Most of the country underlain by the Silurian strata has a relief of 100 feet or less. Erosion has not removed the products of weathering and decomposition of the slates, shales, lavas and tuffs comprising this sequence, and there is a tendency for these clayey decomposition products to inhibit percolation of the relatively meagre rainfall. As mentioned earlier, high evaporation rates and the extremely slow movement of the groundwater give rise to waters of quite high saline content. It is often possible to obtain water by boring, but the salinity is frequently too high even for sheep.

The best quality supplies are usually obtained in areas of greater relief. Bores sited to take advantage of the harder strata, with their shallower weathering and faster rates of groundwater movement, may yield quite good quality waters. The depth to water may be as little as 100 feet, but depths between 200 and 400 feet are more usual. A bore in hard strata at Tullamore yields 600 gallons per hour of water suitable for garden use but such supplies are rare.

The Upper Devonian strata which outcrop in the south-eastern part of the Bogan catchment are much more favourable to boring than the older Silurian strata. Where sandstones and quartzites predominate over the near-impervious shales, the salinity of the groundwater may be quite low. The depths of bores are variable, ranging up to 500 feet, and yields rarely exceed 300 gallons per hour. Salinity is often less than 300 parts per hundred thousand, and the water is usually suitable for most classes of stock. Unfortunately these better water bearing strata occur in only a very small part of the valley.

The granites which occur in the south-western and northern parts of the valley are not favourable to the occurrence of good supplies of groundwater. On good sites, yields of several hundred gallons per hour may be obtained from depths up to 200 feet, but the water is usually brackish and rarely suitable for domestic use. Salty supplies are to be expected and boring in the granites must be regarded as highly speculative.

Porous Rocks.

There are no surface outcrops of the porous sandstones which underlie the alluvial deposits along the lower reaches of the Bogan. However, sandstones of the Artesian Basin occur at quite shallow depths in the vicinity of Nyngan. Northwards from Nyngan the Basin is deeper but there is a considerable variation in the depth to water in it because the Silurian strata, the outcrops of which define its edge, form areas of very uneven basement west of the Bogan River.

Depths to stock supplies in the sandstones vary from about 300 feet in the area to the south-east of Nyngan to well over 1,500 feet where the "limit of flowing bores" extends across the Bogan.

As there is little or no local recharge of the sandstone aquifers in this part of the Basin, the quality of the waters tends to be poorer than in the Macquarie catchment. In general, where there is more than one aquifer the salinity of the waters in them improves with depth and with distance from the western edge of the Basin. This indicates that recharge takes place from intake beds to the east. Yields are usually adequate for stock supplies and these aquifers of the Artesian Basin provide the only consistently reliable and widespread source of groundwater in the Bogan Valley.

Unconsolidated Deposits.

Because of unfavourable topography, rainfall and source rocks, the widespread alluvial deposits in the Bogan catchment have a poor potential for groundwater. Aquifers tend to be thin and the sands comprising them are usually very fine grained, so that even when the water quality is satisfactory for stock use, it has often been impossible to control the entry of fine sands and silts, and many bores have had to be abandoned.

In the alluvium in the vicinity of Nyngan and Dandaloo, the majority of successful bores are located on the eastern side of the river where the water is usually suitable for stock, while on the western side it is mostly too saline even for sheep. The depths to water range between 200 and 300 feet, and yields rarely exceed 500 gallons per hour.

Downstream of Nyngan the alluvial deposits usually contain salty water, although some useful supplies have been found in shallow sands close to the main drainage lines.

The alluvial flats associated with the tributary creeks have proved to contain few aquifers and the water in them is rarely of any use because of its high salt content.

5. STREAM GAUGING STATIONS

Records of streamflow are obtained from gauging stations, where stream heights are recorded either by visual readings on a gauge, or else continuously by an automatic recording instrument. Each gauging station is calibrated by making a number of actual measurements of flow over a range of gauge heights, so that the flow corresponding to any gauge height can be deduced. From the recorded gauge heights and the derived calibrations, continuous records of stream flow are then computed.

The earliest streamflow records on the Macquarie River are those for Dubbo, commencing in 1885, and the earliest records on the Bogan River commenced in 1925 at Peak Hill. Other gauging stations established at early dates were on the Macquarie River at Wellington (1894), Warren (1898), Narromine (1900), Bathurst (1908) and Burrendong (1909); on Gunningbar Creek near Warren (1899); on the Bell River at Wellington (1908); on the Talbragar River at Talbragar (1912); and on Marra Creek Cutting at Mount Harris (1918).

By the end of 1950, 27 stream gauging stations had been installed in the area, and at 30th June, 1966, 47 stations were in operation. These, as well as discontinued stations, are shown at Figure 17 and are listed at Table 11 on pages 23, 23 and 24.

The present density of gauging stations in the Macquarie and Bogan Valleys is about 1.7 stations per 1,000 square miles, which can be compared with present approximate densities of 1.4 stations per 1,000 square miles for inland New South Wales, 0.5 stations for Australia and less than three stations for America.

It is proposed to expand this network by the establishment of approximately 18 additional stations and to improve the standard of recording at a number of existing stations. The ultimate coverage to be provided is designed to furnish sufficient information for the operation of existing water conservation works in the valleys and for the investigation of any future proposals for additional water conservation or utilisation schemes.

The units commonly used for the expression of streamflow rates and volumes are the cusec and the acre foot. "Cusec" is an abbreviation of "cubic foot per second", and is a unit of measurement of the rate of streamflow. One cusec is approximately equal to 374 gallons per minute.

"Acre Foot" is a unit of measurement of volume. One acre foot of water is the volume which would cover an area of one acre to a uniform depth of one foot, and is approximately equal to 270,000 gallons. A flow of one cusec discharges approximately two acre feet in twenty four hours.

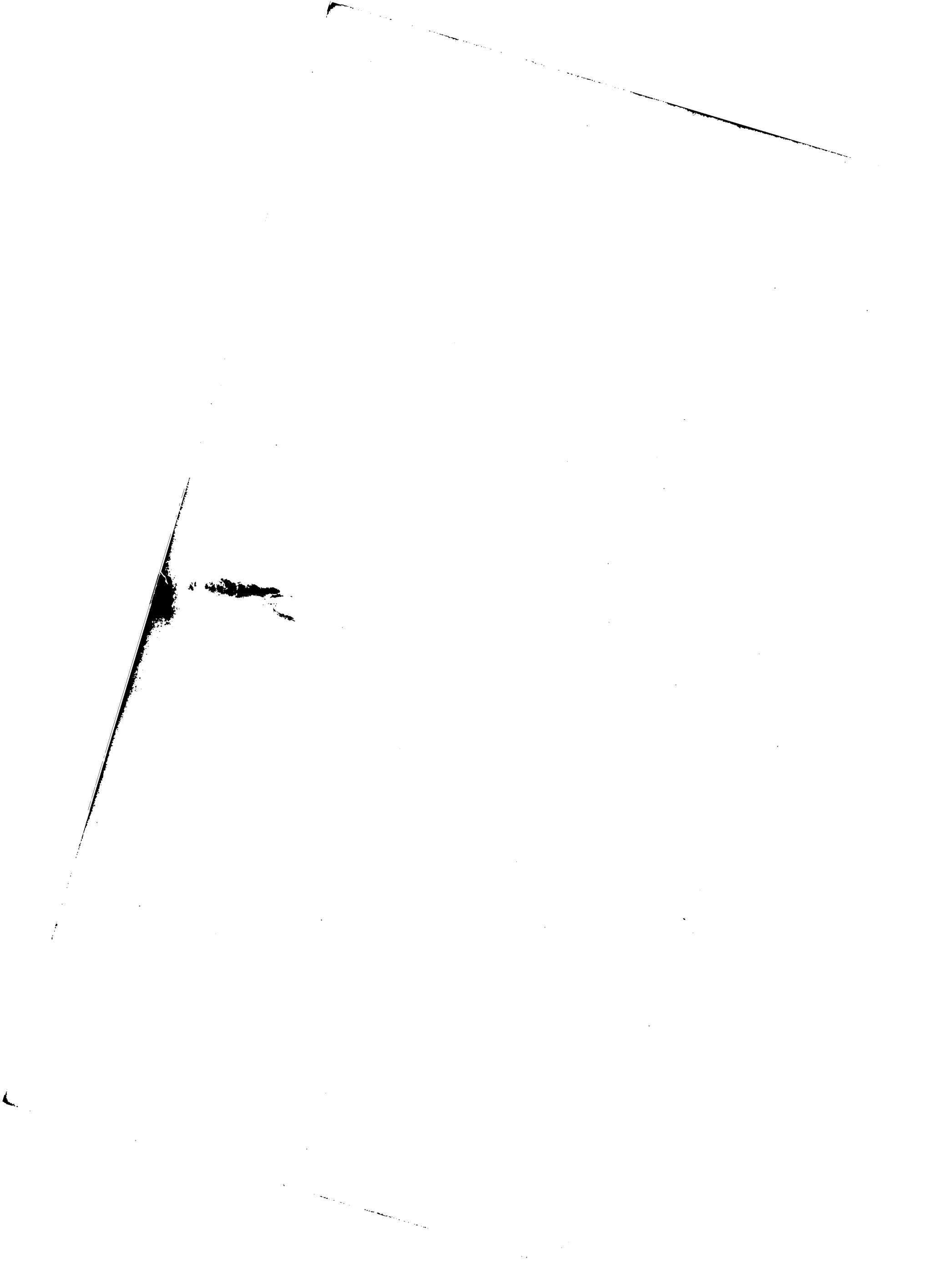
6. CATCHMENT YIELDS.

The water yields at a number of stream gauging stations in the Macquarie and Bogan Valleys, in terms of average flows over the periods of records, are shown at Table 11, together with the numbers of complete years of computed records on which the averages are based. Stations for which no averages are shown include those where the periods of records are too short for the averages to have any significance, and those where, because of lack of information concerning stream heights or discharges, flow records are not complete.

Details of the recorded maximum, minimum and mean streamflows for each month of record are tabulated at Appendices 5 to 14 for ten stations, and total monthly flows are tabulated at Appendices 15 to 20 for a further six stations, as indicated at Table 11.

Stream	Station	Catchment Area in Square Miles	Type of Gauge	Period of Operation	Complete Years of Computed Records	Average Yield over Period of Complete Years of Record			Notes
						Ac.Ft. /Annum	Cusecs	Gallons/Minute	
Duckmaloi River	Dam Site	40	Float recorder	1954 to date	11	26,900	37	13,800	
McKeon's Creek	Dam Site	10	Pressure recorder	1954 to date	11	10,600	15	5,400	
Bindo Creek	Below Gum Valley Creek	13	Pressure recorder	1954 to date	11	9,900	14	5,100	
Slippery Creek	Dam Site	6	Pressure recorder	1954 to date	11	2,270	3.1	1,160	
Fish River	Tarana	220	Float recorder	1954 to date	10	136,000	186	69,700	5
Campbell's River	Rockley	190	Staff gauge	1965 to date					
Stony Creek	Above Wiseman's Creek	124	Staff gauge	1965 to date					
Wiseman's Creek	Wiseman's Creek	34	Staff gauge	1965 to date					
Macquarie River	White Rock	920	Staff gauge	1921 to 1932	) 57	218,000	299	112,000	1
Macquarie River	Macquarie Vale	940	Staff gauge	1924 to 1930					1
Macquarie River	Bathurst	1070	Staff gauge	1908 to 1923					5
				1932 to date					
Queen Charlotte's Vale Creek	George's Plains	78	Staff gauge	1965 to date					
* Macquarie River	Bruinbun	1720	Float recorder	1947 to date	18	490,000	670	251,000	5
* Turon River	Sofala	320	Float recorder	1947 to date	18	117,000	161	60,000	5
Crudine Creek	Above Turon Junction	89	Pressure recorder	1963 to date					
Blackman's Swamp	Orange	12	Pressure recorder	1965 to date					
Lewis Ponds Creek	Ophir	240	Pressure recorder	1965 to date					
* Cudgegong River	Rylstone	210	Staff gauge	1957 to date	7	22,400	31	11,500	
Cudgegong River	Guntawang	1050	Staff gauge	1927 to 1939	11	32,200	44	16,500	1
Cudgegong River	Yamble Bridge	1520	Float recorder	1939 to date	26	164,000	224	84,000	5
Meroo Creek	Yarrabin	260	Staff gauge	1954 to date	11	87,000	119	44,600	
Macquarie River	Burrendong	5360	Pressure recorder	1909 to 1961	) 46	800,000	1,100	410,000	1
Macquarie River	Below Burrendong	5400	Float recorder	1960 to date					

TABLE 11



Stream	Station	Catchment Area in Square Miles	Type of Gauge	Period of Operation	Complete Years of Computed Records	Average Yield over Period of Complete Years of Record			Notes
						Ac.Ft. /Annum	Cusecs	Gallons/Minute	
Macquarie River	Wellington	5500	Staff gauge	1894 to date	57	802,000	1,100	411,000	5
Bell River	Molong	131	Staff gauge	1965 to date					
Molong Creek	Molong	72	Staff gauge	1965 to date					
Bell River	Gowan Green	530	Staff gauge	1948 to 1951					1
Bell River	Newrea	620	Float recorder	1939 to date	26	149,000	204	76,300	5
Bell River	Wellington	720	Staff gauge	1908 to 1959	46	93,100	128	47,700	1
Little River	Obley	240	Staff gauge	1965 to date					
Macquarie River	Dubbo	7700	Pressure recorder	1885 to date	80	890,000	1,220	456,000	5
Talbragar River	Meruthera	325	Staff gauge	1965 to date					
Talbragar River	Cobborah	960	Staff gauge	1949 to 1954					1
Talbragar River	Narranmore	1100	Staff gauge	1955 to date	10	79,200	108	40,500	5
Talbragar River	Elong Elong	1260	Float recorder	1964 to date					
Talbragar River	Beni	1750	Staff gauge	1944 to 1951					1
Talbragar River	Gavels	1770	Staff gauge	1950 to 1954					1
Talbragar River	Talbragar	1800	Staff gauge	1912 to 1925					1
Coolbaggie Creek	Rawsonville	200	Staff gauge	1965 to date					
Macquarie River	Narromine	10100	Staff gauge	1900 to date	64	970,000	1,300	486,000	5
Macquarie River	Gin Gin	10400	Staff gauge	1954 to date	10	1,450,000	1,980	742,000	
Beleringar Creek	Offtake	Effluent	Staff gauge	1932 to 1958					1
Gunningbar Creek	Regulator	Effluent	Staff gauge	1899 to date	64	72,800	100	37,300	6
Albert Priest Canal	Offtake	Effluent	Staff gauge	1942 to date					
Gunningbar Creek	Gunningbar Weir	Effluent	Staff gauge	1936 to date					
Duck Creek	Offtake	Effluent	Staff gauge	1936 to date					
Crooked Creek	Offtake	Effluent	Staff gauge	1936 to date					
Macquarie River	Warren Weir	10600	Staff gauge	1898 to date	64	643,000	880	329,000	2
Marra Creek	Mount Harris	Effluent	Staff gauge	1918 to 1933					1
Cutting									

TABLE 11 (Cont.)

Stream	Station	Catchment Area in Square Miles	Type of Gauge	Period of Operation	Complete Years of Computed Records	Average Yield over Period of Complete Years of Record			Notes
						Ac.Ft./Annum	Cusecs	Gallons/Minute	
Marra Creek	Yarrowin	Effluent	Staff gauge	1945 to date	20	230,000	315	118,000	6
Macquarie River	Oxley Station	12000	Staff gauge	1944 to date	18	410,000	560	210,000	2
Macquarie River	Carinda	12700	Staff gauge	1926 to date	27	160,000	219	81,900	2, 6
Marthaguy Creek	Carinda	2500	Staff gauge	1926 to 1939) 1944 to date)	18	162,000	222	82,900	3, 6
Bogan River	Peak Hill	210	Staff gauge	1925 to date	41	16,000	22	8,200	6
Bogan River	The Plains	5700	Staff gauge	1959 to date					
Gunningbar Creek	Above Bogan Junction	Effluent	Staff gauge	1965 to date					
Duck Creek	Above Bogan Junction	Effluent	Staff gauge	1965 to date					
Bogan River	Broomfield	9300	Staff gauge	1963 to date					4
Bogan River	Gongolgon	10800	Staff gauge	1945 to date	20	182,000	249	93,000	4, 6

- NOTES:
1. Discontinued Station.
 2. Nominal catchment area, flow reduced by effluent streams.
 3. Nominal catchment area, high flows include spillage from Macquarie River.
 4. Nominal catchment area, flows include effluent discharges from Macquarie River.
 5. Monthly maximum, minimum and mean flows tabulated in Appendices.
 6. Total monthly flows tabulated in Appendices.

TABLE 11 (Cont.)

7. AVERAGE ANNUAL RUNOFF.

Long term records of streamflow are available at several locations in the Macquarie Valley, the longest being the 80 years of records for Dubbo. Using these flow records as a base for correlation, long term average flows have been assessed for other gauging stations and sub-catchments within the Macquarie and Bogan Valleys, and these are listed at Table 12, together with the assessed long term average runoff of the adjoining Castlereagh River Valley which is included for comparison.

TABLE 12

Area	Average Annual Rainfall in Inches	Long Term Average Annual Runoff			
		Acre Feet	Inches	Percent of Rainfall	Percent of Macquarie Bogan Total Runoff
Macquarie and Bogan Valleys	20	1,190,000	0.8	4%	100%
Macquarie River above Bathurst	29	207,000	3.6	12%	17%
Turon River above Sofala	27	60,000	3.5	13%	5%
Cudgegong River above Yamble Bridge	26	108,000	1.3	5%	9%
Macquarie River above Wellington	27	764,000	2.6	10%	64%
Bell River above Newrea	27	98,000	3.0	11%	8%
Macquarie River above Dubbo	26	890,000	2.2	8%	75%
Talbragar River Valley	24	79,000	0.8	3%	7%
Bogan River above Macquarie Effluents	18	60,000	0.2	1%	5%
Castlereagh River Valley	21	200,000	0.5	2%	-

From this table it can be seen that the best water yielding sections of the area are the plateaux and uplands of the south east, where the Bell, Turon and Upper Macquarie Rivers all yield greater than 10 percent of their catchment rainfalls.

The Cudgegong River runoff is about 5 percent of its catchment rainfall, while the Talbragar River, although it rises adjacent to the Great Dividing Range, carries as runoff only about 3 percent of the rainfall over its catchment. The low percentage runoff of this stream is largely due to the predominantly flat

land making up its catchment. This flat terrain is conducive to high infiltration rates and a large part of the rainfall is absorbed by the soil.

Nearly two thirds of the total runoff of the Macquarie and Bogan Valleys occurs above Wellington, from about one fifth of the total catchment area of the two streams. The area upstream of Dubbo, which comprises a little over one quarter of the total catchment, contributes about three quarters of the runoff.

8. VARIABILITY OF STREAMFLOWS.

In common with most other streams in New South Wales, flows in the Macquarie River and its tributaries and those in the Bogan River exhibit a high degree of variability. At Table 13 on page 27 are set out the ranges of annual, monthly and instantaneous flows, expressed proportionately to mean flows, which have been recorded at fifteen selected gauging stations.

Because of the different lengths of record at individual stations it is difficult to generalise from the figures shown in the table. However, it is apparent that at each station there have been large variations in annual streamflow and that, as would be expected, the variations are more marked when monthly or instantaneous flows are considered. It is also of interest to note that at the gauging stations in the lower reaches, below Warren, the maximum instantaneous flows are only slightly greater than the maximum monthly flow rates. This feature, which is in contrast to the characteristics of the headwater streams, is a result of the flat stream grades and large volumes of channel and off-river storage in the lower reaches, which lessen the peak flows and extend the time bases of floods.

Another feature of the down-river stations, and also of the Bogan River at Peak Hill, is the occurrence of long periods of zero flow, every one of these streams having ceased flowing for at least one calendar year.

At some time during the period of records, flow has completely ceased at every gauging station having a reasonable length of record, with the exception of four gauging stations in the Oberon district, where the minimum flows recorded have ranged from 2.5 cusecs in the Fish River at Tarana to 0.05 cusecs in Slippery Creek. It should be borne in mind, however, that the length of record at each of these stations is only about eleven years, and it is likely that flow has ceased at each of them at some time prior to the commencement of records.

The maximum recorded flow rates per unit of catchment area range from 385 cusecs per square mile for Bindo Creek, 113 cusecs per square

mile for the Bell River at Newrea and 75 cusecs per square mile for the Talbragar River at Narranmore, to 27 cusecs per square mile for the Macquarie River at Dubbo and 1.2 cusecs per square mile for Marthaguy Creek at Carinda.

Variations in recorded monthly flows are illustrated graphically at Figures 18, 19, 20 and 21 for nine gauging stations as indicated at Table 13.

TABLE 13

Stream	Station	Period of Computed Records	Maximum and Minimum Recorded Flows (Maximum - Ratio to Mean (Minimum - Percent of Mean)			For Monthly Flows See Figure
			Annual	Monthly	Instantaneous	
Fish River	Tarana	1954 to 1966	2.8 (14%)	6.1 (2.5%)	101 (1.4%)	-
Macquarie River	Bathurst	1909 to 1966	5.3 (4.6%)	12 (0)	247 (0)	18
Macquarie River	Bruinbun	1947 to 1966	3.4 (10%)	7.3 (0.9%)	104 (0)	-
Turon River	Sofala	1947 to 1966	4.6 (8.0%)	9.9 (0)	106 (0)	18
Cudgegong River	Rylstone	1957 to 1966	2.2 (19%)	12 (2%)	142 (0)	-
Cudgegong River	Yamble Bridge	1939 to 1966	8.1 (1.1%)	21 (0)	330 (0)	19
Macquarie River	Wellington	1909 to 1966	8.6 (2.0%)	18 (0)	136 (0)	-
Bell River	Newrea	1939 to 1966	6.4 (1.2%)	17 (0.2%)	343 (0)	19
Macquarie River	Dubbo	1885 to 1966	9.3 (2.2%)	19 (0)	170 (0)	20
Talbragar River	Narranmore	1956 to 1966	7.2 (0)	17 (0)	760 * (0)	19
Macquarie River	Carinda	1938 to 1966	5.8 (0)	8.2 (0)	** (0)	21
Marthaguy Creek	Carinda	1944 to 1966	6.6 (0)	13 (0)	14 (0)	-
Marra Creek	Yarrawin	1945 to 1966	7.9 (0)	16 (0)	17 (0)	21
Bogan River	Peak Hill	1925 to 1966	7.7 (0)	46 (0)	213 (0)	-
Bogan River	Gongolgon	1945 to 1966	6.0 (0)	11 (0)	15 (0)	21

* February 1955 flood, before continuous records commenced.

** Not estimated.

9. PERSISTENCE OF STREAMFLOWS.

The flow duration graphs at Figures 22 to 25 inclusive indicate the persistence of dry weather flows at eight selected gauging stations.

From these graphs it can be seen that while zero flows have occurred so rarely as to be insignificant at Bruinbun (Macquarie River), the most upstream station considered, they occupy increasing proportions of the periods of record at Wellington (Macquarie River), Yamble Bridge (Cudgegong River) and Narranmore (Talbragar River).

In the downstream reaches of the river systems, at Gongolgon (Bogan River), Yarrawin (Marra Creek) and Carinda (Macquarie River), flows have been zero for proportions of the record ranging from 26 percent to 52 percent. Marthaguy Creek at Carinda has carried no flow for 63 percent of the time. At these locations flows diminish rapidly to zero after the passage of rises, the flat terrain and low rainfall being incapable of maintaining the water table at a sufficient level or gradient to promote groundwater flow into the stream channels.

Tables 14 and 15 set out the flows corresponding to various frequencies at the eight selected stations.

The flow characteristics of four of the gauging stations may be compared more directly on the composite flow duration graph at Figure 26, which shows the flows expressed in cusecs per square mile of catchment area. This graph emphasises the more favourable dry weather flow persistence of the upper Macquarie River, as recorded at Bruinbun, when compared with other regions of the valley. The Macquarie River at Wellington, the Cudgegong River at Yamble Bridge and the Talbragar River at Narranmore follow the Macquarie River at Bruinbun in descending order of low flow persistence.

TABLE 14.

Percent of Time Flow Equalled or Exceeded	Corresponding Flows in Cusecs *			
	Macquarie River at Bruinbun	Macquarie River at Wellington	Cudgegong River at Yamble Bridge	Talbragar River at Narranmore
10	1,700	1,950	350	140
30	450	420	68	24
50	180	150	24	8
70	90	60	4	1
76				0
81			0	
90	40	8		
95	25	0		
100	0			

TABLE 15

Percent of Time Flow Equalled or Exceeded	Corresponding Flows in Cusecs*			
	Macquarie River at Carinda	Bogan River at Gongolgon	Marra Creek at Yarrawin	Marthaguy Creek at Carinda
10	610	760	700	740
30	145	73	32	25
37				0
48			0	
50	55	10		
57		0		
70	8			
7 $\frac{1}{2}$	0			

* One cusec is approximately equal to 374 gallons per minute.

10. OCCURRENCE OF FLOODING.

Upstream from Wellington, flooding in the Macquarie River system is generally confined to the immediate vicinity of the stream channels, with the exception of areas at Bathurst on the Macquarie River and Mudgee on the Cudgegong River, where fairly extensive flood plains are subject to inundation by floodwaters. From Wellington to Dubbo flooding is more widespread but is still confined within a broad band extending along the river. However, downstream from Dubbo where the Macquarie River enters the plains, there are extensive flood liable areas and in major floods overbank flows inundate some hundreds of square miles of country, particularly between the Macquarie and Bogan Rivers.

Floods generated on the upper reaches of the Bogan River, have interrupted communications and inundated rural lands and settlements. In the lower reaches, flooding has been largely due to overland flows from the Macquarie River, which, during high floods, have been known to reach the Bogan River entering it as far upstream as Dandaloo.

Important towns which have suffered major inundation are Dubbo, Narromine, Warren and Nyngan. Extensive damage has been caused to farming lands and installations and also to communications systems by swiftly moving floodwaters in the Talbragar, Bell and Little River valleys and in the Macquarie Valley between Wellington and Dubbo. Downstream from Dubbo floodwaters move more slowly and damage is mainly due to inundation. In

these areas communication systems have been disrupted for extended periods and there have been heavy stock losses.

The graph at Figure 27 shows the incidence of floods which have exceeded 25 feet on the gauge at the Dubbo Town Water Supply Weir since 1885. Thirty-eight floods exceeding this level have occurred in the eighty one years period, the average recurrence interval being approximately once every two years. The longest interval without any floods was the sixteen years period between 1900 and 1916, while the most severe sequence was in the seven years from 1950 to 1956, when twenty floods were experienced.

The highest flood ever recorded at Dubbo occurred in February 1955 and reached a peak height of 41'-7". Other high floods occurred in March 1956 (39'-0½") and June 1870 (38'-0"). The greatest annual discharge was in the year 1950 (over 8 million acre feet), when nine flood peaks exceeding 25 feet were recorded.

More than half the total number of floods occurred in the winter months of June, July and August, although the two highest floods were in the months of February and March, which have otherwise been relatively flood free.

Details of the four highest recorded floods at selected gauging stations are shown at Table 16. As would be expected in view of the large area covered by the catchment, record floods have occurred at different times at the various stations.

In most locations, however, record or near record rises occurred as a result of very heavy rains in February 1955. The only area where high floods were not experienced on this occasion was in the upper reaches of the Macquarie River, which received only marginal rains. Flooding was particularly severe in the Cudgegong, Talbragar and Bogan Rivers, and in the Macquarie River downstream from Wellington.

In the lower reaches of the Macquarie and its effluents, below Warren, and in the lower Bogan, floodwaters are slow moving and cover large areas, tending to form huge temporary storage basins. Serious flooding can be caused in this area not only by the sudden influx of high flows from the upper catchments, but also by large volumes of water being discharged into the basin over longer periods, at lower flow rates. Consequently in 1950, when at Dubbo and Narromine the total flood volumes were more than three times as great as in 1955 although the peak discharges were less, flood peaks in

the lower reaches either approached or exceeded those of 1955. Similarly in 1956, when total flood volumes at Dubbo and Narromine were more than twice the 1955 totals, high flood levels were again experienced downstream from Warren.

TABLE 16

Stream	Station	Dates and gauge heights of highest recorded flood peaks			
Macquarie River	Bathurst *	June 1964 20'-3"	July 1952 20'-0"	Oct. 1916 19'-0"	July 1922 17'-0"
Turon River	Sofala	Feb. 1955 13'-0"	June 1956 12'-0"	July 1950 11'-9"	March 1950 11'-5½"
Cudgong River	Yamble Bridge	March 1956 29'-3"	Feb. 1955 29'-0"	July 1950 20'-2"	Feb. 1950 20'-0"
Macquarie River	Wellington	Feb. 1955 48'-1"	March 1926 47'-9"	June 1870 47'-7"	March 1956 47'-4"
Bell River	Newrea	Jan. 1941 24'-0"	March 1956 23'-5"	Oct. 1950 23'-0"	Aug. 1956 20'-3"
Macquarie River	Dubbo ∅	Feb. 1955 41'-7"	March 1956 39'-0½"	June 1870 38'-0"	Sept. 1892 37'-6"
Talbragar River	Narranmore	Feb. 1955 32'-4"	June 1956 19'-11"	July 1956 17'-3"	Aug. 1956 16'-11"
Macquarie River	Narromine (town gauge)	Feb. 1955 51'-4"	March 1956 49'-8"	Nov. 1950 48'-9"	Sept. 1892 48'-9"
Macquarie River	Warren (town gauge)	Feb. 1955 32'-10"	March 1956 32'-8"	Nov. 1950 32'-6"	June 1956 32'-2½"
Macquarie River	Oxley	July 1950 13'-4½"	Oct. 1950 13'-3"	March 1956 13'-2½"	July 1956 13'-1½"
Marra Creek	Yarrawin	Dec. 1950 8'-7"	Aug. 1950 8'-0½"	Nov. 1950 8'-0"	March 1955 7'-9"
Bogan River	Peak Hill	Feb. 1955 21'-6½"	Jan. 1955 21'-0"	June 1925 20'-0"	April 1959 19'-10"
Bogan River	The Plains	1950 8'-6"	1955 8'-6"	1956 7'-6"	
Bogan River	Gongolgon	March 1955 5'-0"	Dec. 1950 4'-10½"	April 1956 4'-9"	July 1956 4'-8"

* There is evidence that a flood in 1823 may have reached a peak height equivalent to approximately 22 feet.

∅ Equivalent readings on gauge at town water supply weir.

The main flood mitigation work which has been undertaken in the Macquarie Valley is the construction of Burrendong Dam below the junction of the Macquarie and Cudgong Rivers. Burrendong Dam commenced storing water in March 1965 and has a total storage capacity of 1,361,000 acre feet, of which 397,000 acre feet is reserved for flood mitigation storage. This amount of flood storage is more than half of the estimated total volume of floodwaters which passed Burrendong during the 1955 flood, and is about one quarter of the volume discharged at Narromine

in the same flood. It has been estimated that had Burrendong Dam been in existence in February 1955 the flood storage would have reduced the flood peak at Wellington from 48'-1" to about 23 feet and that at Dubbo Town Water Supply Weir from 41'-7" to about 35 feet.

It is therefore apparent that Burrendong Dam will have a considerable mitigating effect on future floods in the Macquarie River, particularly in the middle reaches between the Dam and Dubbo, where swiftly moving floodwaters have in the past caused considerable damage.

11. DROUGHT PERIODS.

In general terms, drought is a lack of water for some purpose. In New South Wales, the term "drought" is usually used to describe an extended period during which there is insufficient rainfall to maintain soil moisture at a level necessary to meet the requirements of pastures or crops, and when streamflows are insufficient to meet normal demands.

The annual rainfalls recorded at Bathurst, Mudgee, Dubbo and Carinda, which are shown at Figures 28 and 29, exhibit a broad similarity in their patterns of occurrence. The lowest yearly totals recorded at each of these locations were 10.73 inches (44 percent of average) at Bathurst in 1944, 12.21 inches (47 percent of average) at Mudgee in 1888, 11.31 inches (50 percent of average) at Dubbo in 1919 and 5.85 inches (36 percent of average) at Carinda in 1929. In each of these years of minimum recorded rainfall at one centre, available registrations at the other three centres were also below average.

The lowest twelve monthly rainfalls recorded at the four locations were as follows:

Bathurst:	9.57 inches from March 1868 to February 1869.
Mudgee :	9.44 inches from March 1888 to February 1889.
Dubbo :	7.62 inches from November 1901 to October 1902.
Carinda :	3.92 inches from November 1901 to October 1902.

The most protracted sequence of low rainfall years over the catchment was from 1880 to 1885, and other notable dry periods occurred in 1888, 1902, 1912/13, 1918/19, 1922/23, 1929, 1940, 1944, 1952, 1957 and 1965.

At all gauging stations in the Macquarie and Bogan Valleys with reasonable lengths of records, flows have either completely ceased or have been reduced to a trickle at some time during the periods of record.

At many of the stations the cessations of flow have often been for extended periods.

Table 17 on page 34 sets out the longest recorded durations of zero flow in selected streams in the two valleys, and also shows for each stream of gauging station the total number of days and the percentage of the record during which zero flows occurred. It is apparent from the table that in the Turon and Bell Rivers and in the Macquarie as far downstream as Dubbo, periods of zero flow are shorter and occupy a smaller proportion of the time than in the other streams. The Cudgegong River has experienced longer periods of zero flow, while in the Talbragar River and the downstream reaches of the Macquarie and its effluents, cessations of flow for intervals exceeding twelve months have occurred. In its upper reaches the Bogan River, as measured at Peak Hill, must be classed as only an ephemeral stream.

The two lowest recorded twelve monthly flows for each of six selected gauging stations are detailed at Table 18 on page 35. It will be noted that the minimum twelve monthly flows expressed as percentages of mean flows, are with one exception slightly less than the minimum calendar year flows for the same stations detailed as percentages of the mean flows at Table 13 in Section 8. The one exception is the Bell River at Newrea, where the period of minimum twelve monthly flow coincided with a calendar year.

From Tables 17 and 18 it can be seen that low streamflows occurred at a number of locations in 1912, 1919, 1929, 1936, 1940, 1942, 1944, 1946, 1947, 1957 and 1965.

12. THE 1964 TO 1966 DROUGHT.

Commencing late in 1964, a period of very low rainfall was experienced generally over the Macquarie and Bogan River Valleys. Table 19 on page 35 sets out the monthly rainfalls recorded from October 1964 to September 1966 at six reporting stations selected to provide a reasonable coverage of the area.

It can be seen from the table that following reasonable rains in October 1964, registrations were very low during the 1964/65 summer, and continued low until October 1965. Good falls were recorded in that month and again in December 1965 and March and August 1966. However, between these rains conditions were again dry in the 1965/66 summer and the catchment did not recover from the severe soil moisture deficit which had been

TABLE 17

Stream	Station	Period of Records	Occurrences of Zero Flow		
			Period	Number of Consecutive Days	Total Days in Period of Records (Percent of Time)
Macquarie River	Bathurst	1909 to June 1966	Jan. to May 1942	148	1,536 (7%)
			Jan. to June 1912	140	
			Jan. to Apr. 1940	105	
			Feb. to Apr. 1939	65	
Turon River	Sofala	1947 to June 1966	Nov. 1957 to Jan. 1958	76	275 (4%)
			Jan. to Mar. 1966	74	
			Feb. to Apr. 1965	47	
Cudgegong River	Guntawang and Yamble Bridge	1927 to June 1966	Feb. to Nov. 1946	275	3,141 (22%)
			Dec. 1941 to June 1942	199	
			Jan. to Aug. 1965	190	
			Mar. to Aug. 1944	174	
Macquarie River	Wellington	1909 to June 1966	Feb. to July 1912	135	986 (5%)
			Jan. to May 1942	135	
			Jan. to Apr. 1940	90	
			Mar. to May 1944	82	
Bell River	Wellington and Newrea	1913 to June 1966	Mar. to May 1947	59	340 (2%)
			Jan. to Mar. 1936	49	
			Jan. to Feb. 1947	31	
			Nov. to Dec. 1929	27	
Macquarie River	Dubbo	1885 to June 1966	Mar. to June 1912	92	1,082 (4%)
			Jan. to Apr. 1889	90	
			Jan. to Apr. 1940	83	
			Jan. to Mar. 1914	78	
Talbragar River	Talbragar, Beni and Narranmore	1912 to 1923 1944 to June 1966	Dec. 1964 to June 1966	549	4,739 (38%)
			Nov. 1945 to Dec. 1946	401	
			Aug. 1915 to June 1916	297	
			Jan. to Sept. 1923	248	
Bogan River	Peak Hill	1925 to June 1966	Mar. 1928 to Mar. 1930	733	12,119 (80%)
			Aug. 1936 to June 1938	684	
			Nov. 1964 to June 1966	594	
			Feb. 1941 to May 1942	478	
Bogan River	Gongolgon	1945 to June 1966	Jan. 1965 to June 1966	534	3,424 (43%)
			Nov. 1945 to Feb. 1947	470	
			Oct. 1951 to June 1952	253	
			Jan. to July 1951	209	
Marra Creek	Yarrowin	1945 to June 1966	Jan. 1957 to May 1958	493	3,737 (52%)
			Nov. 1945 to Feb. 1947	467	
			Feb. to Dec. 1965	318	
			Oct. 1959 to Aug. 1960	300	
Macquarie River	Carinda	1938 to June 1966	Nov. 1945 to July 1947	620	2,943 (26%)
			Jan. 1965 to June 1966	517	
			Jan. 1940 to Jan. 1941	357	
			Oct. 1948 to July 1949	264	

TABLE 18

Stream	Station	Period of Records	Minimum Recorded Twelve Monthly Flow			
			Period	Acre Feet	Equivalent Flow in Cusecs	Percent of Average
Macquarie River	Bathurst	1909 to 1966	Dec. 1939 to Nov. 1940	7,710	11	3.5%
			Feb. 1944 to Jan. 1945	11,914	16	5.5%
Turon River	Sofala	1947 to 1966	Dec. 1964 to Nov. 1965	8,195	11	7.0%
			Feb. 1957 to Jan. 1958	11,333	16	9.7%
Cudgegong River	Yamble Bridge	1939 to 1966	Dec. 1945 to Nov. 1946	1,657	2	1.0%
			Feb. 1965 to Jan. 1966	1,692	2	1.0%
Macquarie River	Wellington	1909 to 1966	Dec. 1939 to Nov. 1940	14,138	19	1.8%
			Dec. 1918 to Nov. 1919	15,771	22	2.0%
Bell River	Newrea	1939 to 1966	Jan. 1944 to Dec. 1944	1,756	2	1.2%
			Nov. 1945 to Oct. 1946	3,069	4	2.1%
Macquarie River	Dubbo	1885 to 1966	Dec. 1918 to Nov. 1919	13,936	19	1.6%
			Nov. 1945 to Oct. 1946	18,358	25	2.1%

TABLE 19

Month	Rainfall in Points					
	Bathurst	Mudgee	Dunedoo	Dubbo	Nyngan	Carinda
October 1964	457	370	263	378	314	293
November 1964	250	358	248	103	0	8
December 1964	55	191	120	88	22	32
January 1965	10	18	12	12	0	52
February 1965	14	51	29	16	0	7
March 1965	145	21	4	11	26	8
April 1965	164	121	99	30	21	7
May 1965	73	104	39	89	53	2
June 1965	51	70	56	76	51	24
July 1965	122	89	51	118	40	8
August 1965	115	134	134	157	87	49
September 1965	193	140	148	107	67	57
October 1965	350	409	295	319	102	158
November 1965	111	67	80	62	28	25
December 1965	203	486	632	405	190	196
January 1966	109	75	13	70	62	31
February 1966	35	174	190	57	34	28
March 1966	428	238	341	355	336	110
April 1966	145	55	38	124	6	11
May 1966	205	123	74	169	90	69
June 1966	160	127	104	141	30	47
July 1966	117	101	95	57	83	57
August 1966	283	334	277	311	392	291
September 1966	158	339	168	272	68	88
Totals December 1964 to September 1966	3,246	3,467	2,999	3,046	1,788	1,357
Totals 1965	1,551	1,710	1,579	1,402	665	593
Minimum twelve monthly totals during period	1,403	1,415	1,067	1,085	469	412

incurred in the extremely dry months early in 1965.

Streamflows, which had been generally of reasonable proportions during the 1964 winter and spring diminished rapidly in many streams during 1965.

In the Macquarie River at Bathurst, flows of over 30 cusecs were maintained until late in 1965, partly because of releases made from the Fish River Dam to supplement water supplies in the lower river, but in March 1966, prior to additional releases being made, the flow had fallen to about 5 cusecs. Further downstream at Bruinbun, flow ceased for 10 days in February 1966.

In the Turon River at Sofala, flow ceased for 47 consecutive days from February to April 1965, for 74 days from January to March 1966, and again in April and May 1966. There were 142 days of zero flow from February 1965 to May 1966.

The Cudgegong River ceased flowing at Yamble Bridge late in January 1965 and there was no further flow until August 1965. Another long period of zero flow commenced in December 1965 and continued to the end of June 1966, broken only by a brief flow in March and April. There were 375 days of zero flow from January 1965 to June 1966.

The Bell River at Newrea ceased flowing for 8 days in February and March 1966, and the flow was 1 cusec or less for a total of 92 days between October 1965 and May 1966.

The Talbragar River at Narranmore ceased flowing in December 1964 and no further flows had occurred up to the end of June 1966, 549 days later.

In the Bogan River at Peak Hill, there was no flow over the town water supply weir for 309 consecutive days from November 1963 to October 1964, and again for 594 days from November 1964 to June 1966.

In the Macquarie River downstream from Burrendong Dam, flows were maintained throughout the drought as far downstream as Dubbo, but there were brief cessations of flow at Narromine in March and May 1965 before the quantity of stored water in the Dam was sufficient to permit significant regulation of flows. In the effluent system downstream from Warren, there were protracted periods of zero flow during 1965 and 1966, particularly in the most downstream reaches.

This drought occurred at a most inopportune time for the lower Macquarie Valley. Burrendong Dam, which, with an irrigation storage capacity of 964,000 acre feet would have been capable of providing an assured supply of water had it contained a significant volume in storage at the commencement of the drought, only commenced storing water in March 1965. The drought was by then well advanced and the paucity of inflows permitted the storage to rise only to 14,000 acre feet (1.5 percent of capacity) by the end of August 1965, 25,000 acre feet (2.6 percent) by the end of March 1966, and 32,000 acre feet (3.3 percent) by the end of June 1966. However, as a result of good rainfalls over the catchment, which commenced in August 1966, the storage volume had reached 464,000 acre feet (48 percent of capacity), by the end of November 1966.

During 1965 and 1966 a number of special measures were undertaken to permit supplies of water to be made to areas where the needs were most urgent. These measures involved the co-operation of a number of governmental agencies, local government bodies and private citizens.

The principal groups of water users having an interest in the meagre supplies available during the drought were firstly the towns such as Wellington, Dubbo, Narromine and Warren which draw their water supplies from the Macquarie River; secondly the irrigation farmers located mainly between Burrendong Dam and Warren; thirdly the pastoralists and other residents along the Macquarie and its effluents, who rely on streamflows for their domestic and stock water supplies; and fourthly the towns of Nyngan and Cobar, together with the Cobar Mines. Water supplies for Nyngan and Cobar are drawn from a weir storage in the Bogan River near Nyngan, and in the case of Cobar the water is pumped overland through a pipeline some 80 miles long. Because of the ephemeral nature of flows in the Bogan River, the Albert Priest Canal, a licensed work, was constructed in 1942 to carry water from the Macquarie River at Warren to the Nyngan weir storage.

In order to supplement the water available in the Macquarie System during the drought, releases were made from the Fish River Dam and the Chifley Dam, which are water supply storages upstream from Bathurst. Releases from the Fish River Dam, authorised by the Minister for Public Works, amounted to a total of approximately 5,100 acre feet. This volume was made

up of some 2,100 acre feet released in July 1965, a further 1,500 acre feet in September and October 1965, and an additional 1,500 acre feet commencing in March 1966. In March and April 1966 a release of some 1,800 acre feet was made from the Chifley Dam by Bathurst City Council, to assist in alleviating downstream conditions.

At Burrendong Dam, inflows were insufficient until August 1966 to raise the storage level to a height at which flows could be passed through the main outlet works. Consequently for the seventeen months after closure of the diversion works in March 1965, water was discharged from the Dam through a 30 inches diameter by-pass pipe placed at a lower level than the main outlets. From January 1966 to March 1966 the by-pass pipe discharge was augmented by using a temporary installation to pump from the storage into the main outlet conduit.

Special measures were also taken to provide a supply of water for Nyngan and Cobar and for stock and domestic purposes in the Macquarie and effluent streams downstream from Warren. Demands for water supplies further upstream, and the substantial evaporation and seepage losses incurred in the long transmission system from Burrendong Dam to Nyngan, made it difficult to provide an adequate flow into the Nyngan Weir. By the end of 1965 this storage was depleted to such an extent that supplies to the two towns were placed in some jeopardy, and preliminary arrangements were made for rail cartage of water to Nyngan.

However, it was not necessary to proceed with these arrangements. The releases from Fish River Dam and Chifley Dam, coupled with periods of total irrigation bans along the Macquarie River, allowed an increased flow to reach Warren and pass along the Albert Priest Canal. By this means water was supplied to Nyngan and Cobar and in addition stock and domestic supplies were replenished for some distance down the effluent streams. The flow passed over Warren Weir was sufficient to supply stock and domestic requirements in the Macquarie River downstream to the vicinity of the Macquarie Marshes.

However, with the limited quantities of water available, it was not possible to provide adequate supplies to the most downstream reaches of the system, and extended periods of zero flow commenced in those areas early in

1965. Brief particulars of flows at the four most downstream gauging stations are as follows:-

Marthaguy Creek at Carinda. Ceased flowing in January 1965. Brief flows occurred in December 1965 and September 1966, and better flows commenced in November 1966.

Macquarie River at Carinda. Ceased flowing in January 1965. Flow recommenced in September 1966.

Marra Creek at Yarrawin. Ceased flowing in January 1965. Brief flows occurred in December 1965, January 1966 and September 1966, and better flows commenced in November 1966.

Bogan River at Gongolgon. Ceased flowing in January 1965. There was no further flow up to the end of November 1966.

13. WATER REQUIREMENTS FOR CURRENT DEVELOPMENT.

A wide range of rural activities is undertaken in the Macquarie and Bogan Valleys. In most of the area sheep raising for wool or meat production is either the dominant or a subsidiary activity. The breeding of fat lambs, based on sown pastures and grazing crops, is of considerable importance, and beef cattle are grazed in many localities, usually as a secondary pursuit.

The production of grain, principally wheat, is a primary activity in large tracts of the central portion of the region, and is a secondary activity in parts of the higher country around Mudgee, Molong and Orange. Vegetable growing, stimulated by a substantial canning and freezing industry at Bathurst, is of considerable proportions around Orange, Oberon and Bathurst, while non-citrus orchards are established in these areas and also near Gulgong and Mudgee.

Fodder crops are grown on many of the river flat areas, and other activities of a relatively minor nature include dairying, mainly for the production of whole milk for local town supplies, poultry farming, mainly for egg production, and pig raising.

The total area in the Macquarie and Bogan Valleys which is licensed for irrigation under the Water Act, has risen from about 3,200 acres in 1944 to over 25,000 acres at the end of June 1966. The number of licenses in force has risen from 146 to 589 in the same period. The average area applicable to each license remained fairly constant at about 20 acres until 1955, and had risen to over 40 acres in 1966. A graph showing the growth in both licensed area and number of licenses since 1944 is appended at Figure 31.

As well as the water drawn for irrigation purposes, supplies of surface water are obtained for town, commercial and industrial use. A total of 45 licenses under the Water Act for these purposes was current at the end of June 1966, and in addition, there are a number of town water supply schemes which do not come under the licensing provisions of the Water Act. The total diversion capacity at June 1966 of all town, industrial and commercial water supplies is estimated at approximately 56,000 gallons per minute (150 cusecs).

A number of storages for town water supplies have been constructed in the area. The Fish River Dam, near Oberon, which was completed in 1957, has a storage capacity of some 37,000 acre feet and a safe draft of 12,000 acre feet per annum. It supplies water to Oberon, Portland and other towns in the Macquarie Valley, and also to a number of centres outside the valley boundaries including Wallerawang, Lithgow and Blue Mountains City.

Two separate dams having a combined storage capacity of over 14,000 acre feet and a safe draft of 12,000 acre feet per annum, are used for Bathurst's water supply. The Chifley Dam (13,000 acre feet) which is the larger of the two, was completed in 1958 and is located on the Campbell's River upstream from its junction with the Fish River. Water is released into the river from the Dam and is extracted by pumping at Bathurst.

Orange draws its water supply from four reservoirs on creeks near the city. The combined storage capacity is about 18,000 acre feet and the safe draft is about 5,000 acre feet per annum. The largest reservoir, Suma Park Dam, has a storage of some 15,000 acre feet. It is located on Summer Hill Creek, approximately two miles to the east of Orange, and was completed in 1962.

Including smaller storages which have been constructed to provide relatively minor supplies for a number of other centres, the total regulated flow available from town water supply storages in the Macquarie Valley, is of the order of 30,000 acre feet per annum.

Another important existing demand for water in the Macquarie Valley is in the Macquarie Marshes area on the lower river. These marshes, which have been subject to periodical inundation, provide flood irrigated pastures for stock and a breeding ground for Ibis and other forms of bird life.

The largest water conservation structure in the area is the Burrendong Dam. Built by the Water Conservation and Irrigation Commission, this dam commenced storing water in 1965 and has a total capacity of 1,361,000 acre feet. Part of this storage is to be used for flood mitigation purposes, but the major portion, 964,000 acre feet, will be utilised for conservation and will provide a regulated flow in the Macquarie River for irrigation, stock, domestic, town and industrial supplies.

The Dam is an earth and rock fill embankment 250 feet high located just downstream from the junction of the Macquarie and Cudgegong Rivers, and has a catchment area of 5,360 square miles. A concrete lined chute spillway, located on a saddle about one mile north east of the embankment, has its sill at a level equivalent to the top of the irrigation storage, and radial gates 20 feet high mounted on the sill provide additional storage for flood control. The spillway has a capacity of 490,000 cusecs.

It has been calculated that during a repetition of the flows recorded in the 73 years from 1894 to 1966, the Dam would, after allowance for an average operational loss of about 10,000 acre feet per annum, be able to provide an annual regulated flow of 329,000 acre feet in normal years, subject to a 25 percent restriction being imposed on irrigation and licensed pumps during critical periods when the storage falls below half of its irrigation capacity. Variations in the adopted operating procedure, involving alterations to the method of applying restrictions or the use of part of the flood storage for irrigation purposes during certain periods of the year, would result in alterations to the normal regulated flow available.

The estimated maximum demands on surface water under present development in various sections of the Macquarie and Bogan Valleys are shown at Table 20 on page 42, together with the areas which were licensed for irrigation at the end of June 1966. This table shows that over 25,000 acres are licensed for irrigation, of which some 16,000 acres are located downstream from Burrendong Dam. The main development is along the Macquarie River, where licensed areas total over 13,000 acres between Burrendong Dam and Warren, and almost 2,000 acres below Warren. Significant areas are also irrigated in the Cudgegong and Bell River Valleys.

Section of Valley	Area Licensed for Irrigation at June 1966 (acres)	Maximum Annual Requirements in Acre Feet			
		Irrigation Requirement (1)	Town, Industrial and other Supplies (2)	Riparian usage and losses	Total Requirements
Macquarie River above Burrendong	305	800	15,000	8,000	23,800
Fish River and tributaries	810	2,000	18,000	5,000	25,000
Campbell's River and tributaries	575	1,400	-	4,000	5,400
Turon River and tributaries	30	100	17,000	5,000	22,100
Cudgegong River and tributaries	2,777	6,900	6,200	11,000	24,100
Other Macquarie tributaries above Burrendong	933	2,300	17,000	-	19,300
Macquarie River between Burrendong and Talbragar River junction (4)	3,899	9,700	10,000	8,000	27,700
Bell River and tributaries	1,261	3,200	4,300	6,000	13,500
Little River and tributaries	464	1,200	300	5,000	6,500
Macquarie River from Talbragar junction to Warren Weir (4)	9,526	23,800	4,900	14,000	42,700
Talbragar River and tributaries	444	1,100	800	10,000	11,900
Macquarie River below Warren Weir (4)	1,987	5,000	1,200	50,000 (3)	56,200
Marthaguy Creek and tributaries	85	200	3,100	16,000	19,300
Effluent streams (4)	704	1,800	3,600	60,000	65,400
Bogan River and tributaries above Macquarie effluents	371	900	1,600	13,000	15,500
Bogan River below Macquarie effluents (4)	429	1,100	700	15,000	16,800
Miscellaneous tributaries	536	1,300	7,000	-	8,300
Total Macquarie - Bogan Valleys	25,136	62,800	110,700	230,000	403,500
Total below Burrendong Dam	16,545	41,400	20,400	147,000	208,800

(1) Based on application of 2.5 feet of water per annum.

(2) Includes both licensed and unlicensed supplies.

(3) Includes an allowance of 40,000 acre feet for Macquarie Marshes.

(4) Included in total below Burrendong Dam.

TABLE 20

The total assessed present maximum annual water requirement of the Macquarie River Valley as indicated at Table 20 is approximately 370,000 acre feet, equivalent to almost 40 percent of the long term average flow of the Macquarie River at Narromine. The assessed maximum annual requirement of some 32,000 acre feet in the Bogan River Valley is equivalent to more than twice the long term average flow of the Bogan River at Peak Hill.

In those sections of the Macquarie and Bogan River Valleys which could be supplied by the use of regulated flows resulting from the operation of Burrendong Dam, the existing assessed maximum annual requirement is over 200,000 acre feet. This maximum requirement is about two thirds of the assessed normal annual regulated flow which the Burrendong storage would be able to provide under the operating conditions referred to previously.

The impression given by this comparison is that most of the regulated flow which will be provided by Burrendong Dam will go towards satisfying existing requirements and that the scope for further development is limited. This impression, however, is misleading. More than half the above assessed total maximum requirement below Burrendong Dam would consist of the riparian usage and losses in the reaches below Warren Weir and in the effluent streams if there was continuous flow in these sections of the river system. However these sections have never had the benefit of continuous flow, particularly in their lower reaches.

The existing irrigation and water supply requirements shown at Table 20 for all sections of the valley are the assessed maximum present requirements, based on the full licensed areas being irrigated and on water supply pumps being used to full capacity. Experience has shown, however, that during recent years areas actually irrigated from regulated streams have averaged only about 60 percent of the total licensed area. If allowance is made for this factor, a further quantity of water, amounting to some 25,000 acre feet per annum, would also be available for future irrigation or other development below Burrendong Dam.

The existing town water supply dams and Burrendong Dam already provide a total regulated flow of the order of 370,000 acre feet per annum, equivalent to almost 40 percent of the long term average flow of the Macquarie River at Narromine.

14. POSSIBLE IRRIGATION DEVELOPMENT.

The potential for irrigation development within the Macquarie Valley has been the subject of investigation, principally along the Macquarie River and its effluents downstream from Burrendong Dam, since the passage of the Burrendong Dam Enabling Act in 1946.

Between Burrendong Dam and Narromine the Macquarie River is bordered by undulating country and alluvial flats and terraces, frequently at considerable heights. For this reason irrigation development in this section of the river will probably be confined principally to river frontage lands with application of water being made, for the most part, by pumping from the river to a system of portable or fixed irrigation sprays. These lands, embracing an area of approximately 32,000 acres, are generally at a high enough elevation to be free from flooding.

From Narromine downstream to Warren large areas of land suitable for irrigation extend on each side of the river, particularly to the west; but this land is dissected by cowals or shallow watercourses. These carry floodwaters which periodically escape from the river because of its progressively diminishing capacity towards the lower reaches.

These lands were examined in some detail by a special Inter-Departmental Committee during the course of its investigation preparatory to preparing its 1958 report on the extent and location of lands and the form of production which would offer most benefit to the State by development under irrigation from waters available upon completion of Burrendong Dam. Whilst this Committee (the Macquarie River Investigations Committee) favoured development of irrigation within an area of approximately 156,000 acres west of the railway between Trangie and Nevertire, investigations showed that the economics of developing an irrigation area, although more favourable than elsewhere along the Macquarie River, were not comparable with those of existing State irrigation development in the southern part of New South Wales.

Lands between Narromine and Warren appear to possess the greatest scope for irrigation development in the Macquarie Valley. It is evident that the limit of such development will be governed by the availability of water and the economics of supply having regard to the forms of production adopted under irrigation, and not by the suitability of soils and topography.

Investigations are currently being undertaken to determine the practicability and cost of diverting water from the Macquarie River into its effluents and adjacent streams, such as the Ewenmar, Marthaguy and Beleringar Creeks, together with augmentation of diversions into the Gunningbar Creek system. The provision of such works, if found to be economically justifiable, could, of course, considerably increase the potential for expansion of licensed irrigation development.

The potential for irrigation development on lands adjacent to the river downstream of Warren as far as the Marshes is affected by the susceptibility of these lands to flooding. In addition, the maintenance of a regulated discharge in this section of the Macquarie River for other than limited irrigation would result in considerable water losses.

Investigation has shown that by raising the crest of Warren Weir and increasing the capacity of Gunningbar Creek regulator it would be possible to divert a considerable quantity of water to the Bogan River. However the soils of the Bogan River lands downstream of Nyngan are essentially different from the soils of the alluvial plains between the Macquarie and Bogan Rivers, and development of irrigation on these soils was not favoured by the earlier Macquarie River Investigations Committee.

In addition to those lands which can be served by the waters of Burrendong Dam, the Macquarie Valley contains within its boundaries extensive areas suitable for irrigation development along its upstream tributaries including the Cudgegong River (upstream from the Burrendong Storage), the Bell, Talbragar and Little Rivers. It should be possible to construct storages on these streams to provide a total regulated flow of the order of 100,000 acre feet per annum. This would be sufficient to meet the requirements of existing and potential development along these rivers below the storage sites, and also to augment supplies available in the Macquarie River by at least 50,000 acre feet per annum.

The potential areas of readily irrigable lands along the Macquarie River, its effluents and tributaries, including the Bogan River, which have been assessed both from field inspection and aerial survey, are summarised at Table 21.

TABLE 21.

Stream	Approximate Area Considered Suitable for Ultimate Irrigation Development
Macquarie River above Burrendong Fish River and Tributaries Campbells River and Tributaries Turon River and Tributaries Cudgegong River and Tributaries Other Macquarie Tributaries above Burrendong	2,000 acres 3,000 acres 1,500 acres 500 acres 5,000 acres 3,000 acres
Macquarie River between Burrendong and the Talbragar River confluence Bell River and Tributaries Little River and Tributaries	20,000 acres 4,000 acres 6,000 acres
Macquarie River from Talbragar River confluence to Narromine Macquarie River from Narromine to Warren Weir Talbragar River and Tributaries	15,000 acres 20,000 acres adjacent to the river 15,000 acres
Macquarie River below Warren Weir and also Gunningbar, Beleringar, Duck, Crooked, Marra and Marthaguy Creeks	) ) ) 30,000 acres)
Bogan River and Tributaries above the Macquarie River effluents Bogan River below the Macquarie River effluents	2,000 acres 3,000 acres

Table 21 shows that the potential area of readily irrigable lands within the Macquarie Valley is not less than 130,000 acres of which about 90,000 acres could be supplied from Burrendong storage.

If however, the extensive topographically suitable land situated some distance from the Macquarie River between Narromine and Warren, and along the Beleringar and Gunningbar Creeks System, is considered, the total potential area of land suitable for irrigation development is more than double this amount. In addition further substantial areas of suitable land exist in the Macquarie Valley below Warren.

After allowance is made for all requirements between Burrendong Dam and Narromine, including those for existing and potential irrigation development (estimated at about 120,000 acre feet per annum), the remainder of the regulated flow provided by Burrendong Dam, available below Narromine to meet requirements, is about 210,000 acre feet per annum. This volume is insufficient to enable

full development of even the readily irrigable lands along the Macquarie River and its effluents below Narromine.

If storages on the Cudgegong, Bell, Little and Talbragar Rivers were to be constructed, this would increase the total regulation provided by storages in the Macquarie Valley from the present level of almost 40 percent to about 470,000 acre feet per annum equivalent to approximately 50 percent of the long term average flow at Narromine. The flow available to meet requirements below Narromine would then be increased by about 50,000 acre feet to the order of 260,000 acre feet per annum.

15. INVESTIGATION OF STORAGE PROPOSALS.

When conservation of water was initially contemplated on the Macquarie River, sites for dams were examined at Watton, about 16 miles downstream of Bathurst and at White Rock, a short distance downstream of the confluence of the Fish and Campbell's Rivers.

The Watton site was considered unattractive because of its high cost in relation to the available storage capacity (a storage of less than 50,000 acre feet would be provided by a dam 110 feet in height). The White Rock site was apparently superior to that at Watton as a dam 110 feet high would provide a storage capacity of about 200,000 acre feet, and as a result preliminary surveys and test borings were undertaken.

The Burrendong site was, however, found to be superior to all other sites within the Macquarie Valley for effectively controlling its waters. The construction of the Burrendong Dam has provided a total capacity of 1,361,000 acre feet and the dam already stores sufficient water to meet the demands of existing irrigation development along the Macquarie River and its effluents during a severe drought.

Sites for storage dams have been located on the Cudgegong River near Gulgong, at Apple Tree Flat about 15 miles upstream of Mudgee, and at a point about three miles upstream from Cudgegong, but the suitability of these sites will require confirmation by detailed investigations including surveys, foundation drilling, and the location and testing of construction materials.

The purpose of a conservation storage on the Cudgegong River would be primarily that of stabilising river flow to secure the development of the fertile alluvial flats under irrigation, but in addition, a head storage would provide a dependable water supply for towns situated within the valley.

Preliminary analyses of streamflow records indicate that storage volumes necessary to meet the more immediate demands of the Cudgegong River between the Cudgegong and Apple Tree Flat Dam Sites and the upper limit of Burrendong Storage are as set out in Table 22.

TABLE 22.

Dam Site	Level of Development			
	Present Irrigation Demand		200% of Present Irrigation Demand	
	Requirement (Acre Feet Per Annum)	Required Storage Capacity (Acre Feet)	Requirement (Acre Feet Per Annum)	Required Storage Capacity (Acre Feet)
Near Cudgegong	7,800	12,000	11,000	18,000
Apple Tree Flat	6,800	10,000	9,100	14,000

Preliminary examination of the Bell River valley has disclosed the existence of several possible sites for small storages within a distance of 34 river miles from Wellington, but present indications are that costs of dams at these sites would be high in relation to the benefits which might be expected. In addition, although an apparently satisfactory site exists on the Bell River about 60 river miles upstream from Wellington, a storage dam on this site would inundate highly improved lands.

Preliminary examination of the Little River valley from aerial photographs indicates that suitable sites for conservation storages may be found in the Walmer-Arthurville area. A storage in this locality would control the runoff from an area of nearly 700 square miles and could therefore contribute useful additional regulated flow to the Macquarie River.

Although the Talbragar Valley possesses a considerable potential for irrigation development, extensive investigation will be necessary to determine the most suitable sites for major storages.

Locations of the Dam Sites mentioned in the foregoing are shown at Figure 32.

16. ACKNOWLEDGMENTS.

The Water Conservation and Irrigation Commission wishes to acknowledge the assistance given in the preparation of this report by The Director, Bureau of Meteorology in providing the section on Climatic Features, the Rainfall Statistical Data and the Median Rainfall Maps; and by the New South Wales Department of Public Works in providing details of the various town water supply schemes.

ANNUAL RAINFALL
(Points)

Year	Oberon	Bathurst	Sofala	Orange	Mudgee	Dunedoo	Year
1858		2561					1858
1859		2488					1859
1860		2459					1860
1861		2982					1861
1862		1687					1862
1863		2847					1863
1864		2296					1864
1865		1254					1865
1866		1644					1866
1867		*					1867
1868		1247					1868
1869		2565					1869
1870		3612					1870
1871		2290		3448			1871
1872		3063		4621	3282		1872
1873		2650		3631	2364		1873
1874		2653		5005	*		1874
1875		2205		3821	*		1875
1876		2052		3116	*		1876
1877		1772		*	1630		1877
1878		2676		5049	3783		1878
1879		3243		5227	3656		1879
1880		1984		3098	1918		1880
1881		2119		3222	1824		1881
1882		2188		3078	2148		1882
1883		2179		2842	1982		1883
1884		1953		2394	1984		1884
1885		2088		3049	2448		1885
1886		3073		4623	3400		1886
1887		3343		5408	3819		1887
1888		1504		2012	1221		1888
1889	4107	2426		4237	2728		1889
1890	4858	3437		5093	3740		1890
1891	4369	3095		4925	3387		1891
1892	4203	3129		4227	3425		1892
1893	3827	3146	3545	4592	3167		1893
1894	3509	2706	3027	5073	2911		1894
1895	2704	2367	2156	3149	2182		1895
1896	3058	2820	2799	3622	2597		1896
1897	2854	1748	1881	2649	1752		1897
1898	2661	1846	2120	3030	3017		1898
1899	2887	1726	1983	2817	1989		1899
1900	4238	2802	3115	4056	2978		1900
1901	3322	2717	2320	3047	2559		1901
1902	1973	1486	1523	2104	1373		1902
1903	3976	2289	2837	2903	2497		1903
1904	3229	1924	2082	2799	2250		1904
1905	2944	2074	2254	2997	2217		1905

* Incomplete Records.

ANNUAL RAINFALL
(Points)

Year	Oberon	Bathurst	Sofala	Orange	Mudgee	Dunedoo	Year
1906	3639	2333	2699	3530	2992		1906
1907	3148	2069	2082	2952	2108		1907
1908	2631	1613	1928	2370	1986		1908
1909	3488	2313	2814	3666	2825		1909
1910	2885	2531	2180	2803	2449		1910
1911	3001	2643	2648	3375	2692		1911
1912	2155	1769	1509	2277	1484	1834	1912
1913	2877	2107	1696	2723	1940	2362	1913
1914	2681	2368	2052	2998	2647	2142	1914
1915	3230	1927	2222	2770	2212	1678	1915
1916	5562	3667	3535	5418	3725	2933	1916
1917	2767	3112	3050	3941	3007	2757	1917
1918	1494	1925	1595	2883	1908	1179	1918
1919	1808	1458	1558	1932	1359	1428	1919
1920	3612	2850	3027	4321	3655	3306	1920
1921	3291	3639	3335	3370	3818	3028	1921
1922	2675	2094	2000	2531	1638	1404	1922
1923	2910	1747	1956	3591	1969	1738	1923
1924	3208	2454	2960	3208	2904	2154	1924
1925	2417	1608	1548	2743	1693	1648	1925
1926	3269	3056	3616	4033	3662	3750	1926
1927	1705	1521	1554	2511	1617	1758	1927
1928	2621	2574	2375	3181	2554	2190	1928
1929	2332	1705	1924	2327	1658	1672	1929
1930	3053	2565	2656	3364	2999	2480	1930
1931	4097	2571	2687	4572	2488	2949	1931
1932	2735	2474	2662	3191	2176	1881	1932
1933	3244	1832	2102	2918	2813	2609	1933
1934	4163	2801	3005	3703	3051	2609	1934
1935	3115	1978	2063	3000	1827	1925	1935
1936	3630	2289	2466	3098	2755	2227	1936
1937	2366	1720	1992	2699	2064	1710	1937
1938	2284	1578	1610	2402	1802	1781	1938
1939	2670	2188	2057	3388	2264	2070	1939
1940	2018	1449	1944	2080	1689	1331	1940
1941	2553	2426	2196	2575	2218	2068	1941
1942	3229	2869	3036	3362	2649	2628	1942
1943	3244	2837	2753	3314	2215	2043	1943
1944	1384	1073	1286	1467	1664	1289	1944
1945	3282	2393	2529	3174	2491	2998	1945
1946	2585	2072	1784	2051	1946	1487	1946
1947	4023	2908	2768	4065	3140	375	1947
1948	2990	2416	2776	3180	2667	2184	1948
1949	3307	2814	2728	2916	3261	2532	1949
1950	5755	5170	5900	6236	5678	5410	1950
1951	4156	2474	2003	3551	2397	1769	1951
1952	5385	3178	3328	4778	3035	2813	1952
1953	2804	2299	1818	2859	1947	1912	1953
1954	3230	2658	2939	3770	2916	2600	1954
1955	4348	3360	3684	4884	3841	4203	1955
1956	5441	3985	4102	6110	4332	3637	1956
1957	2116	1679	1486	1865	1779	1335	1957
1958	3829	3311	4090	3872	2929	2585	1958
1959	3299	2732	2640	3533	2894	2822	1959
1960	4396	3485	2894	4683	2350	2085	1960
1961	3351	2771	2592	3468	2650	2572	1961
1962	3527	2532	2671	3370	2601	2001	1962
1963	4171	3113	2975	4292	3540	3181	1963
1964	4397	3199	2372	4140	3020	2281	1964
1965	2102	1551	1598	213	1710	1579	1965

* Incomplete Records.

ANNUAL RAINFALL
(Points)

Year	Wellington	Dubbo	Peak Hill	Carinda	Murrumbogie	Bourke	Year
1871		1550					1871
1872		2475				2471	1872
1873		*				1214	1873
1874		*				*	1874
1875		2070				992	1875
1876		1957				1314	1876
1877		1159				804	1877
1878		2355				1331	1878
1879		3013				1736	1879
1880		1983				2328	1880
1881		1332				1636	1881
1882	2371	1923				2247	1882
1883	1969	1243			1216	1011	1883
1884	1898	2263			1638	967	1884
1885	2092	1991			1831	1427	1885
1886	3431	3483			2486	2048	1886
1887	3375	3736			3822	2440	1887
1888	1530	1390			1428	683	1888
1889	2473	3215			3154	1971	1889
1890	2856	3783			2954	2971	1890
1891	2379	2721	3227		2916	2560	1891
1892	3008	2860	*		*	815	1892
1893	2643	2464	2200		2326	1256	1893
1894	2751	2979	2841		3219	2389	1894
1895	2523	2417	2252		1360	1137	1895
1896	2069	2069	1807		1649	1958	1896
1897	1738	1973	1596		1389	1720	1897
1898	2633	2638	2122		1478	1076	1898
1899	1717	1596	1579		1296	1009	1899
1900	2273	1921	2438	1019	1549	1052	1900
1901	1967	1657	2001	1383	1137	816	1901
1902	1470	1408	1279	742	807	699	1902
1903	2383	2598	1523	2011	1642	1323	1903
1904	1808	1726	1751	1386	1338	1116	1904
1905	2075	1830	2162	1802	2292	1019	1905
1906	2517	2450	2146	2207	2112	1535	1906
1907	2059	2390	2015	1410	1510	1440	1907
1908	1527	1960	1341	1836	1168	1067	1908
1909	2809	2423	2039	1750	*	1457	1909
1910	2266	2090	2327	2055	1726	1184	1910
1911	2538	2574	2664	1726	2424	1463	1911
1912	1837	1650	1520	1222	1200	696	1912
1913	1842	1969	1635	1609	1590	938	1913
1914	2373	2379	2199	1546	1246	667	1914
1915	2159	1830	1641	945	1086	845	1915
1916	3337	2926	3866	2135	2640	1519	1916
1917	2447	2387	2479	1642	2154	1613	1917
1918	1604	1313	1472	976	1124	627	1918

* Incomplete Records.

ANNUAL RAINFALL
(Points)

Year	Wellington	Dubbo	Peak Hill	Carinda	Murrumbogie	Bourke	Year
1919	1467	1131	1239	865	903	588	1919
1920	2843	2543	2316	2325	1893	1560	1920
1921	2977	2626	2116	2296	1777	1921	1921
1922	1546	1415	1004	983	906	555	1922
1923	1721	1472	1420	1344	1114	854	1923
1924	2377	2608	2286	1764	2450	1582	1924
1925	1867	2276	2501	1892	1928	1849	1925
1926	3190	3350	2170	1854	2087	1621	1926
1927	2100	1706	2043	1109	1643	630	1927
1928	2034	1872	2240	1072	2036	818	1928
1929	1365	1588	1350	585	1065	402	1929
1930	3020	2695	2057	1778	2212	1532	1930
1931	3258	2965	2974	2197	2290	1676	1931
1932	2100	2047	1761	1316	1817	1144	1932
1933	2251	2003	2342	1912	1479	1448	1933
1934	3051	2879	2584	2267	2090	1230	1934
1935	1967	1511	1422	1098	1193	470	1935
1936	2363	2245	2151	2019	2179	2577	1936
1937	2110	1819	1443	974	940	645	1937
1938	1823	1464	2035	1472	1428	975	1938
1939	1888	2050	2016	2662	1852	1958	1939
1940	1363	1450	1428	814	1008	806	1940
1941	2607	1838	1653	1836	1683	1176	1941
1942	3030	3147	2318	2084	1803	1343	1942
1943	2234	2056	2049	1416	1307	786	1943
1944	1126	1429	915	1078	657	692	1944
1945	2730	2593	2106	1254	1681	1109	1945
1946	1415	1533	1487	1083	1082	797	1946
1947	2721	2641	2787	2115	2530	2293	1947
1948	2273	2303	1847	1721	1584	1540	1948
1949	2667	2296	*	1647	1923	1890	1949
1950	5456	5233	4790	4221	3758	3362	1950
1951	2162	1930	1808	1221	1201	754	1951
1952	2858	2588	2663	1402	2229	1143	1952
1953	1555	1562	1540	1208	1221	1125	1953
1954	2572	2432	2463	1810	2530	1323	1954
1955	3599	3371	2913	2680	3168	2030	1955
1956	4431	4098	4448	3057	3418	2567	1956
1957	1694	1237	1226	865	1033	581	1957
1958	2983	2728	2223	1736	2531	1096	1958
1959	2827	2862	2765	2311	2711	1286	1959
1960	2442	2358	2210	975	1517	1176	1960
1961	2772	2477	2481	1356	2263	1387	1961
1962	2537	2146	2419	2279	2172	1762	1962
1963	2820	2877	2729	1661	2228	2296	1963
1964	2594	2439	1900	1130	1302	896	1964
1965	1412	1402	1531	593	1268	522	1965

* Incomplete Records.

STATISTICAL RAINFALL DATA
(Points)

Station	Rainfall Statistic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Oberon (Period 76 years)	Minimum	21	0	5	0	1	38	23	0	25	10	0	4	1384
	10%	92	33	52	30	53	129	77	112	97	127	68	44	2143
	30%	210	103	109	157	111	193	167	187	157	198	170	169	2771
	50%	271	182	172	214	191	286	245	277	225	293	214	266	3229
	70%	396	298	271	278	290	432	385	348	311	400	355	369	3603
	90%	519	492	585	450	462	665	537	507	464	590	507	522	4377
	Maximum	763	597	1029	600	736	1053	830	648	804	789	737	880	5755
Bathurst (Period 74 years)	Minimum	0	0	0	0	0	30	25	0	16	14	10	1	1073
	10%	49	31	24	26	24	68	52	62	66	74	54	40	1611
	30%	167	110	93	92	75	113	121	111	123	147	110	132	2071
	50%	241	170	166	152	132	163	170	176	165	210	160	220	2440
	70%	346	254	243	218	200	242	240	238	214	276	330	333	2802
	90%	429	467	517	384	322	401	366	368	317	423	422	560	3255
	Maximum	752	629	901	537	485	800	589	586	580	649	709	778	5170
Sofala (Period 72 years)	Minimum	0	0	0	0	4	20	8	38	0	11	0	0	1286
	10%	57	24	11	15	27	73	59	78	72	71	67	35	1569
	30%	144	98	74	85	74	129	113	130	107	148	114	111	2047
	50%	230	154	166	150	104	171	175	186	160	203	170	201	2420
	70%	359	266	259	215	185	269	220	249	225	282	284	343	2800
	90%	445	553	510	386	363	386	364	347	335	423	464	498	3475
	Maximum	755	915	1075	644	526	840	682	416	464	737	775	1068	5900

STATISTICAL RAINFALL DATA
(Points)

Station	Rainfall Statistic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Orange (Period 87 years)	Minimum	2	0	0	0	0	19	13	4	39	7	3	2	1467
	10%	58	29	20	34	68	136	112	112	94	111	56	37	2317
	30%	137	98	110	123	146	236	192	211	170	190	142	156	2891
	50%	243	164	186	209	252	344	307	305	262	250	226	245	3191
	70%	375	278	304	308	338	468	429	408	325	425	348	329	3743
	90%	516	466	629	520	579	751	647	584	512	575	547	549	4950
	Maximum	757	973	1116	723	712	1238	802	1108	742	883	673	837	6236
Mudgee (Period 68 years)	Minimum	0	0	0	0	0	32	13	3	8	25	0	0	1359
	10%	70	12	13	12	20	68	64	56	48	49	23	54	1663
	30%	158	85	77	66	78	143	120	117	99	110	108	104	2041
	50%	238	174	152	145	155	183	181	182	144	181	189	197	2494
	70%	348	262	235	227	236	294	245	277	234	273	286	339	2908
	90%	489	542	397	397	349	448	418	370	347	476	521	491	3656
	Maximum	756	1021	1194	707	519	789	699	462	468	745	932	878	5678
Dunedoo (Period 53 years)	Minimum	0	0	0	0	0	9	8	3	1	19	0	4	1179
	10%	54	36	8	27	21	29	34	40	24	39	34	44	1414
	30%	146	81	71	90	53	75	111	102	77	74	89	112	1843
	50%	212	180	134	131	123	159	162	149	128	141	172	216	2184
	70%	319	261	243	238	236	257	214	200	217	211	275	294	2609
	90%	493	704	432	408	369	413	402	295	365	400	393	424	3347
	Maximum	811	1485	985	587	608	608	680	418	405	606	1037	767	5410

STATISTICAL RAINFALL DATA
(Points)

Station	Rainfall Statistic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Wellington (Period 83 years)	Minimum	0	0	0	0	0	18	10	0	0	8	2	0	1126
	10%	28	9	15	13	17	58	46	62	41	59	27	35	1536
	30%	105	51	51	88	83	114	113	121	87	91	109	93	1982
	50%	180	126	135	144	164	193	175	167	137	163	162	168	2371
	70%	282	224	244	244	236	266	238	251	212	264	282	275	2662
	90%	464	503	417	421	396	426	376	382	310	410	456	449	3134
	Maximum	1205	1276	1063	591	586	975	543	677	686	886	731	644	5456
Dubbo (Period 90 years)	Minimum	0	0	0	0	0	2	4	1	0	0	0	0	1131
	10%	39	17	8	6	21	45	38	37	24	36	26	19	1416
	30%	108	55	67	67	77	108	97	109	75	84	84	67	1887
	50%	182	117	132	144	170	179	160	148	123	145	134	152	2254
	70%	296	263	214	231	218	274	210	225	196	200	242	244	2584
	90%	464	481	449	456	387	402	354	324	377	378	454	451	3134
	Maximum	914	1289	1131	723	566	766	581	637	577	900	763	706	5233
Peak Hill (Period 56 Years)	Minimum	2	0	0	0	0	7	4	0	10	8	0	0	915
	10%	24	6	8	1	31	51	38	45	33	46	10	26	1347
	30%	81	43	63	44	64	107	86	101	65	81	68	79	1636
	50%	151	108	132	109	117	153	146	144	97	112	111	170	2041
	70%	222	225	222	217	197	228	210	198	144	175	197	268	2200
	90%	428	365	415	402	325	416	305	324	250	302	425	377	2608
	Maximum	861	755	770	740	569	735	560	422	364	462	489	506	3866

STATISTICAL RAINFALL DATA
(Points)

Station	Rainfall Statistic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Carinda (Period 57 years)	Minimum	0	0	0	0	0	0	0	0	0	0	0	0	585
	10%	18	5	0	2	0	12	12	3	10	9	4	9	968
	30%	57	33	19	21	34	51	53	41	32	31	39	49	1235
	50%	100	167	74	65	96	119	101	72	51	68	93	100	1642
	70%	186	273	170	144	143	207	146	122	105	137	149	213	1877
	90%	490	437	346	321	238	356	288	228	272	314	359	397	2302
	Maximum	894	728	899	782	518	490	605	412	669	814	631	505	4221
Murrumbogie (Period 55 years)	Minimum	0	0	0	0	0	0	0	0	5	0	0	0	657
	10%	19	15	0	3	11	51	21	24	22	35	3	24	1023
	30%	58	59	41	41	61	85	77	72	58	62	55	71	1291
	50%	135	93	73	81	107	143	122	111	105	100	104	128	1777
	70%	187	201	158	163	192	227	187	189	143	173	209	217	2173
	90%	351	486	502	317	317	343	278	230	245	365	354	428	2575
	Maximum	765	867	835	387	518	451	349	314	476	692	778	633	3758
Bourke (Period 52 years)	Minimum	0	0	0	0	0	0	0	0	0	3	0	0	402
	10%	1	0	0	0	1	5	5	0	4	11	1	2	641
	30%	19	30	21	10	34	30	30	19	19	39	24	58	964
	50%	81	96	45	54	64	83	57	54	43	75	71	134	1289
	70%	147	181	145	132	148	166	104	85	112	147	133	186	1614
	90%	358	412	417	307	230	277	209	211	223	248	345	311	2304
	Maximum	809	1116	830	719	302	502	622	371	385	355	626	423	2971

MINIMUM RAINFALL RECORDED
IN CONSECUTIVE MONTHS
(Points)

Station	Number of Months	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Oberon	1	21	0	5	0	1	38	23	0	25	10	0	4
	2	71	77	76	40	66	140	119	123	118	37	128	94
	3	150	109	149	168	231	180	244	312	209	204	206	166
	4	210	228	387	271	303	416	407	435	445	445	371	367
	5	329	467	413	544	521	488	590	625	575	534	459	397
	6	580	493	680	774	611	801	772	729	720	643	489	522
	7	606	720	872	960	908	842	850	934	773	673	733	650
	8	933	1009	1068	1087	1042	1022	1101	1011	803	921	861	898
	9	1042	1147	1205	1159	1127	1286	1209	1043	1072	1077	1075	1058
	10	1168	1309	1301	1256	1361	1339	1239	1162	1318	1100	1223	1256
	11	1352	1363	1398	1401	1414	1369	1598	1591	1341	1248	1419	1392
	12	1384	1478	1543	1454	1444	1728	1809	1614	1489	1537	1540	1557
Bathurst	1	0	0	0	0	0	30	25	0	16	14	10	1
	2	83	55	28	16	54	102	103	109	45	92	75	85
	3	85	144	36	66	149	193	246	285	127	204	201	122
	4	232	149	187	206	233	324	348	340	273	451	306	175
	5	248	224	332	290	394	423	417	427	550	476	427	243
	6	298	391	469	451	507	487	547	587	617	703	427	259
	7	523	475	630	680	589	577	853	720	824	703	443	309
	8	639	636	771	755	742	921	986	948	824	719	493	534
	9	857	830	835	818	1068	1119	1162	1022	840	769	718	650
	10	913	915	915	1162	1201	1232	1234	1094	890	994	834	868
	11	1049	939	1259	1313	1429	1304	1303	1267	1115	1110	1052	968
	12	1073	1283	1482	1500	1529	1373	1533	1292	1231	1328	1152	1127

MINIMUM RAINFALL RECORDED
IN CONSECUTIVE MONTHS
(Points)

Station	Number of Months	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Sofala	1	0	0	0	0	4	20	8	38	0	11	0	0
	2	87	27	13	19	103	46	121	120	11	64	78	47
	3	159	66	36	110	167	144	195	181	64	213	118	138
	4	237	120	219	229	256	244	271	234	255	286	233	221
	5	285	291	345	382	340	291	338	467	328	383	394	320
	6	392	345	434	466	393	420	611	488	516	599	401	332
	7	511	434	518	594	446	632	711	554	641	637	413	423
	8	664	518	594	706	794	859	785	907	679	687	504	542
	9	748	722	723	975	925	925	1105	907	818	778	623	779
	10	952	1036	1074	1039	991	1199	1143	961	909	897	860	897
	11	1109	1234	1209	1105	1263	1237	1275	1278	990	1046	978	1008
	12	1286	1331	1435	1380	1301	1396	1366	1315	1088	1146	1073	1137
Orange	1	2	0	0	0	0	19	13	4	39	7	3	2
	2	53	45	23	14	147	148	162	123	122	94	101	15
	3	129	68	33	151	266	232	345	357	164	289	169	84
	4	241	187	404	298	350	483	488	407	384	339	207	160
	5	304	433	576	410	589	548	619	599	434	410	416	285
	6	544	580	688	622	666	679	790	771	505	621	496	432
	7	691	692	870	867	797	809	976	1007	716	666	580	569
	8	803	904	1129	1098	1082	1167	1192	1141	761	994	717	716
	9	1015	1149	1214	1205	1440	1393	1268	1167	1080	1110	864	828
	10	1260	1378	1322	1541	1638	1465	1393	1287	1189	1218	976	1040
	11	1429	1416	1580	1724	1738	1689	1668	1611	1313	1405	1188	1285
	12	1467	1774	1799	1861	1962	1977	1777	1802	1492	1547	1433	1516

MINIMUM RAINFALL RECORDED
IN CONSECUTIVE MONTHS
(Points)

Station	Number of Months	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Mudgee	1	0	0	0	0	0	32	13	3	8	25	0	0
	2	18	20	8	0	77	93	94	76	36	46	45	79
	3	73	57	29	104	169	160	174	185	54	169	142	179
	4	230	116	237	181	203	227	311	260	219	266	336	248
	5	254	268	330	252	270	361	350	316	316	421	383	328
	6	377	341	375	422	407	382	569	358	478	456	427	328
	7	454	375	442	559	482	742	647	562	513	500	582	432
	8	525	442	579	701	798	851	851	721	557	758	686	509
	9	674	579	736	1012	876	1055	1010	879	832	807	763	580
	10	811	878	1092	1133	1080	1210	1158	922	864	897	834	859
	11	949	1280	1277	1206	1239	1254	1229	1206	954	1026	1033	995
	12	1359	1368	1315	1373	1319	1338	1447	1226	1083	1106	1063	1016
Dunedoo	1	0	0	0	0	0	9	8	3	1	19	0	4
	2	5	23	14	26	36	42	91	41	22	51	32	75
	3	28	83	26	156	86	177	177	176	56	90	114	75
	4	149	83	182	327	207	218	245	215	118	172	197	98
	5	194	271	327	369	255	256	280	322	200	255	293	406
	6	413	418	369	497	396	291	544	394	283	417	429	451
	7	423	536	497	594	497	616	616	578	504	487	516	483
	8	572	612	642	628	656	702	719	639	515	606	758	493
	9	823	731	699	746	738	785	863	692	675	913	768	642
	10	847	788	789	828	821	999	931	737	941	958	917	893
	11	966	862	871	911	1042	999	976	1145	975	1079	1062	917
	12	1179	944	954	1087	1043	1044	1361	1264	1107	1120	1100	1036

MINIMUM RAINFALL RECORDED
IN CONSECUTIVE MONTHS
(Points)

Station	Number of Months	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Wellington	1	0	0	0	0	0	18	10	0	0	8	2	0
	2	45	16	12	5	39	48	58	65	58	26	37	28
	3	68	16	64	58	100	116	207	156	76	115	69	74
	4	108	64	194	100	190	242	232	220	160	130	123	105
	5	142	214	236	386	366	250	250	242	175	314	237	228
	6	239	256	461	488	460	268	481	266	359	428	259	233
	7	281	559	563	624	485	582	509	469	473	463	264	286
	8	631	601	647	654	679	641	712	626	508	550	317	328
	9	741	685	664	848	703	844	869	735	618	603	359	678
	10	908	702	897	920	906	1001	978	751	671	645	709	788
	11	925	1014	1023	1204	1063	1100	994	832	713	950	819	972
	12	1128	1188	1294	1361	1172	1105	1071	885	981	1069	1003	1073
Dubbo	1	0	0	0	0	0	2	4	1	0	0	0	0
	2	41	25	28	8	40	29	40	35	19	10	36	12
	3	101	58	75	40	78	147	197	103	32	144	59	69
	4	187	118	187	78	211	200	200	181	173	194	110	125
	5	230	238	225	302	328	202	208	214	209	204	235	223
	6	261	276	427	364	495	210	377	240	298	407	257	232
	7	299	459	511	505	518	452	468	393	436	435	266	263
	8	523	562	615	626	682	666	607	712	464	462	297	301
	9	585	703	698	748	727	714	741	745	517	493	335	525
	10	726	762	864	889	807	758	787	784	548	531	559	587
	11	889	988	984	990	945	789	811	866	586	755	621	728
	12	1131	1057	1058	1036	973	813	933	904	810	817	762	912

MINIMUM RAINFALL RECORDED
IN CONSECUTIVE MONTHS
(Points)

Station	Number of Months	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Peak Hill	1	2	0	0	0	0	7	4	0	10	8	0	0
	2	15	15	13	3	44	55	92	61	74	20	31	41
	3	138	29	26	44	111	108	138	147	110	100	60	88
	4	144	77	188	168	164	246	219	179	147	147	103	226
	5	144	210	293	320	308	264	231	257	173	289	247	232
	6	260	334	385	372	394	276	344	309	350	380	247	235
	7	384	486	521	458	557	430	515	408	415	397	250	276
	8	536	596	568	641	662	661	563	499	451	441	291	400
	9	646	686	659	722	723	692	654	516	502	640	415	552
	10	821	686	850	787	786	783	671	560	718	764	567	662
	11	825	865	897	900	877	800	715	817	811	916	677	837
	12	915	912	900	991	894	844	1023	846	964	1026	852	949
Carinda	1	0	0	0	0	0	0	0	0	0	0	0	0
	2	24	0	0	0	43	5	3	0	15	12	7	12
	3	30	21	5	76	48	41	28	15	38	28	19	42
	4	104	22	87	76	51	66	100	53	38	111	42	61
	5	104	92	140	79	76	149	145	125	135	126	61	111
	6	160	150	191	141	159	183	212	143	177	145	111	111
	7	175	234	216	224	221	310	262	182	196	195	111	167
	8	280	289	265	265	310	349	398	215	246	195	167	182
	9	314	360	265	415	423	422	443	400	246	251	182	287
	10	385	452	526	460	462	455	577	400	302	266	287	321
	11	511	567	642	562	495	577	611	451	317	371	321	392
	12	585	703	681	595	680	611	679	470	422	405	392	518

MINIMUM RAINFALL RECORDED
IN CONSECUTIVE MONTHS
(Points)

Station	Number of Months	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Murrumbogie	1	0	0	0	0	0	0	0	0	5	0	0	0
	2	28	0	0	0	15	18	58	41	36	3	8	28
	3	73	29	14	127	80	89	108	125	94	67	49	97
	4	83	29	175	205	104	179	166	171	99	130	143	144
	5	83	175	240	228	240	227	220	232	177	197	145	198
	6	310	240	264	278	308	230	308	282	244	199	199	314
	7	375	264	433	346	362	325	358	343	246	253	322	350
	8	399	509	501	441	481	477	496	384	300	422	410	415
	9	590	519	522	493	560	553	498	482	512	553	509	439
	10	627	522	593	598	666	605	552	562	581	583	621	623
	11	652	619	738	743	668	659	671	631	613	675	712	660
	12	657	884	805	745	722	702	843	663	722	788	738	685
Bourke	1	0	0	0	0	0	0	0	0	0	3	0	0
	2	0	0	0	0	4	0	0	0	10	5	1	9
	3	10	0	4	8	10	0	14	35	34	5	45	9
	4	10	4	8	14	12	43	73	35	82	59	45	29
	5	33	8	14	93	43	77	73	90	111	82	47	33
	6	37	14	97	104	77	77	94	135	111	86	51	33
	7	43	97	128	163	77	94	148	136	111	90	51	37
	8	126	129	163	163	276	148	183	173	115	90	55	43
	9	170	200	163	296	328	183	259	257	115	94	61	126
	10	226	207	337	350	328	259	268	260	119	100	144	170
	11	226	400	391	385	365	268	284	270	125	183	188	244
	12	402	518	426	435	448	284	374	277	208	227	262	339

FISH RIVER AT TARANA

LOCATION: Latitude 33°34' Longitude 149°55'

PERIOD OF ESTABLISHMENT: October 1954 to date.

COMPLETE YEARS OF COMPUTED RECORDS: 10 years.

ZERO OF GAUGE: 69.30 Assumed Datum.
Approximately 2,600 feet above sea level.

CATCHMENT AREA: 220 square miles.

CONTROL: Rock.

EQUIPMENT: Float recorder installed August, 1955.
Staff gauge range 0 to 30 feet.

CURRENT METER OBSERVATIONS:

- (a) Number obtained : 86
- (b) Maximum observation
in cusecs : 6,050
- (c) Minimum observation
in cusecs : 2.1

MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS: 18,860 cusecs.

MEAN DAILY DISCHARGE FOR 10 YEARS: 186 cusecs.

MEAN ANNUAL DISCHARGE FOR 10 YEARS: 136,000 acre feet.

FISH RIVER AT TARANA

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.	Jan.	58	23	40	2,454
Feb.	Feb.	273	21	76	4,280
Mar.	Mar.	291	64	127	7,884
Apr.	Apr.	139	38	62	3,724
May	May	255	70	145	8,976
June	June	170	13	96	5,734
July	July	96	74	83	5,146
Aug.	Aug.	546	94	358	22,218
Sept.	Sept.	464	116	218	13,060
Oct.	Oct.	2590	102	333	20,626
Nov.	355	146	255	15,300	Nov.	1790	80	272	16,300
Dec.	139	38	76	4,708	Dec.	462	97	200	12,386
Total	Total	..	..	..	122,788

Year 1956

Year 1957

Jan.	600	44	120	7,434	Jan.	181	26	40	2,506
Feb.	3420	75	828	48,040	Feb.	130	27	38	2,142
Mar.	3086	330	1073	66,526	Mar.	32	19	24	1,472
Apr.	1404	209	438	26,308	Apr.	63	16	21	1,272
May	2140	247	699	43,320	May	47	19	22	1,346
June	3600	200	681	40,890	June	80	22	55	1,528
July	1596	447	755	46,818	July	101	23	32	1,976
Aug.	755	240	440	27,256	Aug.	163	21	48	2,998
Sept.	1380	189	423	25,364	Sept.	64	19	29	1,750
Oct.	2863	293	655	40,588	Oct.	21	11	16	970
Nov.	473	50	173	10,370	Nov.	21	4	9	558
Dec.	92	38	51	3,134	Dec.	87	4	7	420
Total	..	..	..	386,048	Total	..	..	..	18,938

Year 1958

Year 1959

Jan.	492	7	24	1,462	Jan.	200	16	46	2,840
Feb.	614	15	73	4,102	Feb.	1870	26	110	6,158
Mar.	87	14	21	1,314	Mar.	370	48	112	6,948
Apr.		No Records			Apr.	636	42	113	6,758
May		No Records			May	56	29	36	2,244
June		No Records			June	1098	29	99	5,922
July	452	33	84	5,238	July	2370	59	324	20,076
Aug.	261	30	108	6,704	Aug.	398	71	164	10,168
Sept.	220	69	103	6,184	Sept.	111	44	63	3,788
Oct.	855	75	192	11,898	Oct.	812	41	129	7,968
Nov.	240	32	57	3,076	Nov.	555	71	141	8,454
Dec.	123	21	37	2,276	Dec.	934	30	67	4,178
Total	..	..	..	..	Total	..	..	..	85,502

Year 1960

Year 1961

Jan.	120	24	44	2,702	Jan.	605	36	109	6,730
Feb.	185	23	35	2,042	Feb.	61	30	36	2,016
Mar.	35	19	23	1,448	Mar.	157	21	37	2,312
Apr.	172	14	25	1,506	Apr.	104	26	37	2,232
May	232	22	79	4,918	May	43	24	29	1,812
June	102	45	58	3,460	June	58	22	34	2,014
July	3900	45	382	22,960	July	278	32	72	4,478
Aug.	4275	189	715	44,322	Aug.	921	65	232	14,368
Sept.	1468	140	384	23,056	Sept.	340	56	148	8,872
Oct.	496	115	225	13,938	Oct.	578	32	74	4,586
Nov.	456	35	92	5,534	Nov.	1655	33	310	18,598
Dec.	560	37	179	11,130	Dec.	864	74	196	12,154
Total	..	..	..	137,016	Total	..	..	..	80,172

FISH RIVER AT TARANA

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.	650	55	145	8,980	Jan.	2632	48	283	17,576
Feb.	298	56	117	6,536	Feb.	1384	53	220	12,292
Mar.	63	30	40	2,480	Mar.	840	41	147	9,088
Apr.	42	24	30	1,816	Apr.	1130	53	143	8,582
May	510	23	67	4,138	May	1025	136	363	22,522
June	110	34	55	3,290	June	2860	181	461	27,666
July	321	31	98	6,088	July	675	172	421	26,096
Aug.	822	121	292	18,076	Aug.	3170	160	424	26,298
Sept.	258	79	135	8,078	Sept.	1720	183	530	31,772
Oct.	107	48	70	4,350	Oct.	1174	127	267	16,572
Nov.	66	16	32	1,918	Nov.	190	54	104	6,218
Dec.	816	15	136	8,404	Dec.	706	40	159	9,884
Total	..	..	..	74,154	Total	..	..	..	214,566

Year 1964

Year 1965

Jan.	89	25	38	2,380	Jan.	35	17	23	1,432
Feb.	36	16	21	1,244	Feb.	23	9	14	769
Mar.	43	13	19	1,190	Mar.	14	9	11	665
Apr.	338	13	44	2,622	Apr.	62	10	18	1,069
May	72	22	30	1,880	May	29	16	17	1,067
June	18860	27	1153	69,188	June	32	15	19	1,166
July	1467	337	728	45,146	July	125	19	57	3,540
Aug.	650	157	294	18,220	Aug.	30	18	23	1,402
Sept.	912	186	330	19,772	Sept.	114	18	44	2,662
Oct.	2070	183	612	37,922	Oct.	577	16	79	4,882
Nov.	1840	81	280	16,794	Nov.	53	11	21	1,273
Dec.	104	31	54	3,358	Dec.	222	7.5	31	1,928
Total	..	..	..	219,716	Total	..	..	..	21,855

Year 1966

Jan.	9.6	2.5	5.7	352
Feb.	9.3	2.5	4.9	278
Mar.	95	2.6	14	883
Apr.	53	24	27	1,612
May	47	9.9	21	1,319
June	63	18	26	1,566
Total	..	..	..	..

MACQUARIE RIVER AT BATHURST

LOCATION: Latitude 33°25' Longitude 149°35'

PERIOD OF ESTABLISHMENT: December 1908 to date **

COMPLETE YEARS OF COMPUTED RECORDS: 57 years.

ZERO OF GAUGE: R.L. 2122.57 Standard Datum.

CATCHMENT AREA: 1,070 square miles *

CONTROL: Sand.

EQUIPMENT: Staff gauge, range 0 to 25 feet.

CURRENT METER OBSERVATIONS:

(a) Number obtained	:	299
(b) Maximum observation in cusecs	:	9,577
(c) Minimum observation in cusecs	:	0

MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS: 74,000 cusecs

MEAN DAILY DISCHARGE FOR 57 YEARS: 299 cusecs

MEAN ANNUAL DISCHARGE FOR 57 YEARS: 218,000 acre feet

REMARKS: * Prior to the diversion of Queen Charlotte's Vale Creek into the Macquarie River upstream from the Bathurst gauge in 1933, this creek entered the Macquarie River downstream from the gauge. The catchment area at the Bathurst gauging station was 950 square miles before the diversion was made.

** From July 1923 to June 1932 inclusive no records are available at Bathurst and the following records have been included for this period:

White Rock: catchment area 920 square miles,
July 1923 to April 1924, February 1929,
October 1930 to June 1932.

Macquarie Vale: catchment area 940 square miles,
May 1924 to January 1929, March 1929 to
September 1930.

MACQUARIE RIVER AT BATHURST

Year 1909					Year 1910				
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.	2230	0	120	7,444	Jan.	155	2	15	908
Feb.	568	3	52	2,902	Feb.	5	0	2	118
Mar.	85	0	10	596	Mar.	16	0	5	290
Apr.	271	0	12	700	Apr.	2	1	2	102
May	9	2	4	248	May	177	1	6	382
June	200	3	52	3,108	June	85	2	7	406
July	177	9	36	2,252	July	2760	20	225	13,942
Aug.	465	24	200	7,416	Aug.	135	33	79	4,870
Sept.	647	33	117	7,036	Sept.	177	24	49	2,948
Oct.	85	24	48	3,000	Oct.	85	16	32	2,010
Nov.	344	1	22	1,332	Nov.	33	3	10	598
Dec.	100	0	11	660	Dec.	55	2	11	680
Total	..	..	..	36,694	Total	..	..	..	27,254

Year 1911					Year 1912				
Jan.	620	9	96	5,944	Jan.	16	0	4	274
Feb.	720	55	180	10,068	Feb.	0	0	0	0
Mar.	344	16	63	3,916	Mar.	0	0	0	0
Apr.	247	3	22	1,376	Apr.	0	0	0	0
May	55	5	24	1,468	May	0	0	0	0
June	271	16	82	4,902	June	33	0	10	596
July	368	43	137	8,514	July	594	16	164	10,190
Aug.	271	55	96	5,962	Aug.	4580	85	436	27,066
Sept.	368	55	128	7,604	Sept.	465	55	175	10,514
Oct.	368	24	106	6,544	Oct.	117	28	53	3,272
Nov.	368	1	36	2,166	Nov.	135	4	21	1,242
Dec.	6640	9	341	21,120	Dec.	16	0	2	124
Total	..	..	..	79,584	Total	..	..	..	53,278

Year 1913					Year 1914				
Jan.	1.5	0	0	10	Jan.	5	0	0	25
Feb.	70	0	6	318	Feb.	0	0	0	0
Mar.	785	2.5	80	4,984	Mar.	1190	0	112	6,944
Apr.	516	9	80	4,798	Apr.	223	2	26	1,530
May	4730	24	409	25,392	May	43	2	11	696
June	1675	177	466	27,952	June	271	9	31	1,846
July	465	117	205	12,724	July	223	55	105	6,492
Aug.	177	100	135	8,380	Aug.	85	24	41	2,568
Sept.	271	55	122	7,292	Sept.	200	16	50	3,014
Oct.	368	33	131	8,130	Oct.	135	24	52	3,250
Nov.	223	9	64	3,810	Nov.	375	24	67	4,006
Dec.	223	0	9	566	Dec.	4580	3	115	7,152
Total	..	..	..	104,356	Total	..	..	..	37,523

Year 1915					Year 1916				
Jan.	465	0	73	4,542	Jan.	683	0	26	807
Feb.	3800	0	116	6,486	Feb.	177	0	12	710
Mar.	2760	0	56	3,442	Mar.	247	0	16	974
Apr.	1675	3	81	4,836	Apr.	49	0	14	864
May	135	3	38	2,354	May	20	3	7	400
June	850	9	142	8,482	June	4580	5	1082	64,950
July	4890	100	454	28,138	July	8850	344	1688	104,640
Aug.	3650	100	507	31,412	Aug.	12700	344	1722	106,974
Sept.	1095	55	205	12,300	Sept.	4260	177	535	32,126
Oct.	392	33	87	5,396	Oct.	42333	410	3581	220,020
Nov.	33	0	8	496	Nov.	2190	322	542	32,526
Dec.	92	0	7	428	Dec.	3050	255	610	37,842
Total	..	..	..	108,312	Total	..	..	..	602,833

MACQUARIE RIVER AT BATHURST

Year 1917

Year 1918

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.	255	39	153	9,434	Ján.	1305	30	167	10,374
Feb.	660	60	169	9,468	Feb.	720	49	148	8,312
Mar.	122	30	65	4,028	Mar.	210	30	51	3,184
Apr.	60	20	37	2,266	Apr.	80	27	39	2,366
May	210	12	43	2,694	May	113	34	51	3,188
June	495	20	130	7,830	June	231	39	68	4,098
July	5040	60	863	53,480	July	350	49	113	7,006
Aug.	8670	280	1449	89,832	Aug.	4420	122	914	56,660
Sept.	8850	255	1395	83,710	Sept.	380	88	171	10,242
Oct.	7800	255	1124	69,682	Oct.	1410	49	99	6,154
Nov.	5200	186	747	44,840	Nov.	142	20	45	2,708
Dec.	2045	49	461	28,578	Dec.	20	2	8	520
Total	..	..	..	405,842	Total	..	..	..	114,812

Year 1919

Year 1920

Jan.	2	0	1	52	Jan.	8850	0	513	31,802
Feb.	4890	0	127	7,114	Feb.	9	0	1.5	98
Mar.	186	0	10	644	Mar.	266	0	10	632
Apr.	1	0	0.3	16	Apr.	0	0	0	0
May	49	2	19	1,172	May	9	0	5	284
June	88	23	35	2,128	June	1106	7	64	3,856
July	23	12	18	1,104	July	14500	323	1133	70,234
Aug.	49	12	19	1,166	Aug.	11040	288	1190	73,766
Sept.	60	10	23	1,376	Sept.	1410	163	380	22,800
Oct.	23	1	9	540	Oct.	163	60	103	6,422
Nov.	186	0	7	418	Nov.	122	17	48	2,878
Dec.	163	0	11	698	Dec.	3050	73	543	33,696
Total	..	..	..	16,428	Total	..	..	..	246,468

Year 1921

Year 1922

Jan.	350	34	88	5,436	Jan.	1200	104	312	19,330
Feb.	255	17	42	2,340	Feb.	512	49	104	5,808
Mar.	255	17	75	4,654	Mar.	73	23	43	2,662
Apr.	186	17	65	3,884	Apr.	73	23	29	1,750
May	790	39	129	8,002	May	104	30	42	2,636
June	1305	163	348	20,902	June	54	30	39	2,354
July	8320	163	710	44,006	July	29400	60	1655	102,586
Aug.	12425	231	1245	77,220	Aug.	1000	255	431	26,716
Sept.	512	163	231	13,886	Sept.	350	231	273	16,356
Oct.	300	122	170	10,548	Oct.	280	104	171	10,612
Nov.	1410	60	117	7,044	Nov.	163	49	79	4,746
Dec.	7800	23	378	23,412	Dec.	410	30	95	5,882
Total	..	..	..	221,334	Total	..	..	..	201,438

Year 1923

Year 1924

Jan.	186	17	37	2,308	Jan.	470	0	28	1,754
Feb.	17	0	4	200	Feb.	64	8	21	1,266
Mar.	142	0	14	840	Mar.	24	0	7	424
Apr.	23	0	4	244	Apr.	24	0	4	244
May	39	30	33	2,040	May	70	20	33	2,058
June	720	30	121	7,270	June	81	28	44	2,662
July	1492	138	443	27,472	July	93	28	41	2,548
Aug.	1700	138	402	24,902	Aug.	117	36	59	3,674
Sept.	11860	138	1186	71,182	Sept.	337	44	132	7,948
Oct.	870	110	232	14,362	Oct.	410	93	167	10,348
Nov.	1700	24	187	11,258	Nov.	2000	144	508	30,472
Dec.	18	4	13	824	Dec.	153	20	70	4,362
Total	..	..	..	162,902	Total	..	..	..	67,760

MACQUARIE RIVER AT BATHURST

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.	153	15	33	2,058	Jan.	347	0	28	1,724
Feb.	70	1	19	1,046	Feb.	0	0	0	0
Mar.	20	0	7	464	Mar.	2410	0	266	16,502
Apr.	11	5	6	372	Apr.	4060	153	673	40,380
May	153	11	39	2,404	May	5900	550	1673	103,730
June	3050	29	252	15,116	June	2880	550	1182	70,898
July	830	90	218	13,514	July	4060	645	1182	73,286
Aug.	376	70	138	8,550	Aug.	3450	416	988	61,282
Sept.	120	63	89	5,358	Sept.	1580	222	510	30,614
Oct.	505	34	83	5,154	Oct.	890	105	291	18,284
Nov.	297	29	83	4,966	Nov.	70	25	50	3,010
Dec.	90	5	23	1,432	Dec.	55	5	22	1,386
Total	..	..	..	60,434	Total	..	..	..	421,096

Year 1927

Year 1928

Jan.	153	11	38	2,384	Jan.	263	1	32	1,970
Feb.	16	0	1	76	Feb.	2800	0	315	18,272
Mar.	34	0	14	886	Mar.	1180	35	175	10,530
Apr.	347	20	72	4,324	Apr.	1250	119	266	16,002
May	40	29	37	2,260	May	202	105	130	8,038
June	55	24	36	2,144	June	580	105	204	12,250
July	47	20	31	1,938	July	2410	187	651	40,394
Aug.	80	30	46	2,852	Aug.	750	146	321	19,882
Sept.	112	16	41	2,488	Sept.	218	95	145	8,726
Oct.	263	35	89	5,558	Oct.	287	86	129	8,002
Nov.	287	8	63	3,816	Nov.	95	9	50	3,006
Dec.	84	8	28	1,748	Dec.	146	0	14	874
Total	..	..	..	30,474	Total	..	..	..	147,946

Year 1929

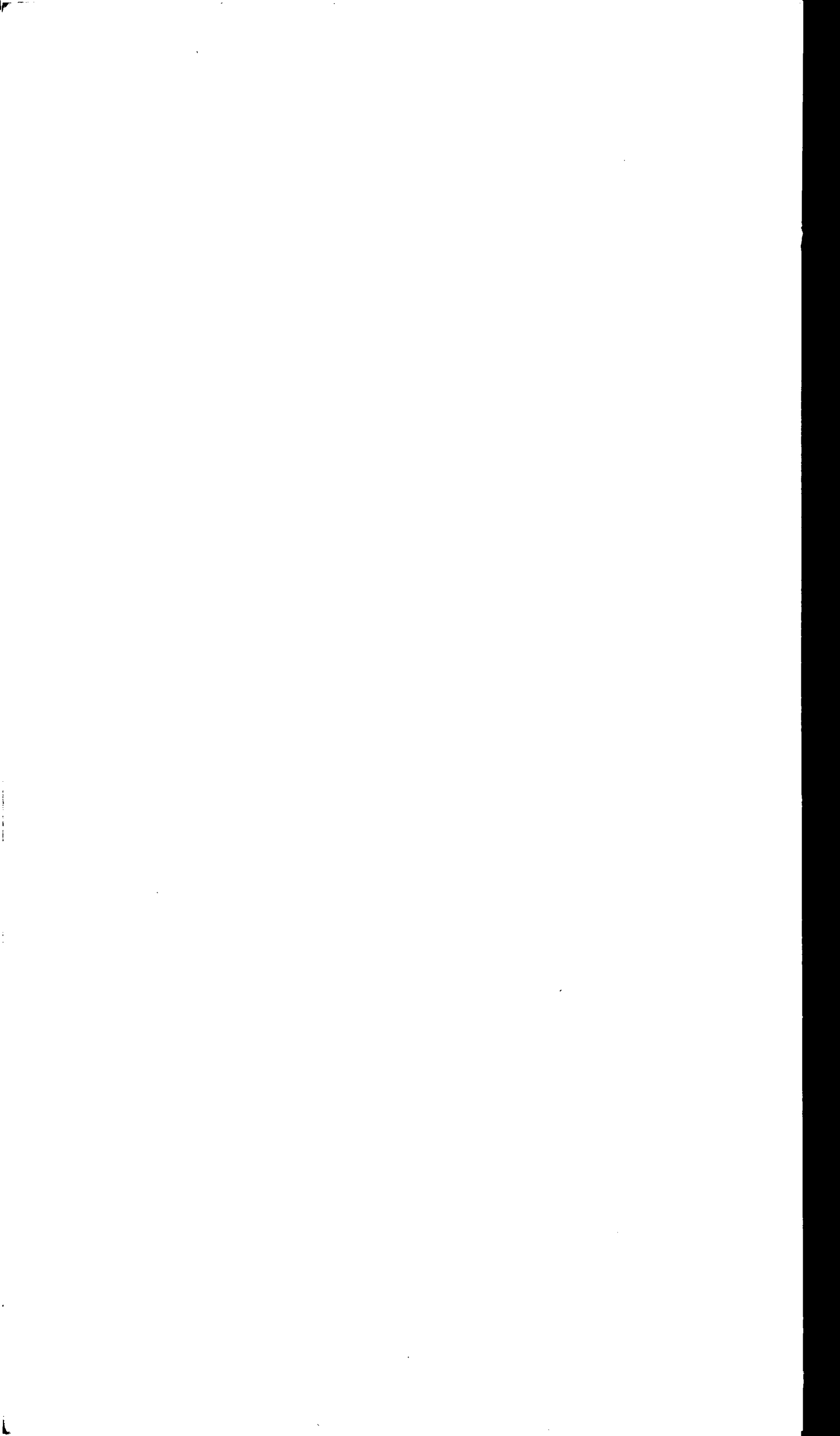
Year 1930

Jan.	0	0	0	0	Jan.	64	1	15	934
Feb.	800	0	120	6,738	Feb.	775	1	36	2,018
Mar.	104	4	38	2,340	Mar.	95	1	14	848
Apr.	362	4	72	4,340	Apr.	64	0	6	396
May	30	15	25	1,578	May	95	4	30	1,852
June	95	30	43	2,588	June	246	4	72	4,346
July	45	31	36	2,244	July	345	64	164	10,198
Aug.	121	31	63	3,926	Aug.	800	138	284	17,620
Sept.	287	40	96	5,750	Sept.	262	40	99	5,942
Oct.	532	35	109	6,780	Oct.	1800	83	565	35,050
Nov.	910	40	157	9,446	Nov.	447	72	150	9,028
Dec.	95	0	30	1,882	Dec.	422	43	88	5,400
Total	..	..	..	47,612	Total	..	..	..	93,632

Year 1931

Year 1932

Jan.	107	35	59	3,642	Jan.	253	95	161	9,994
Feb.	95	11	38	2,228	Feb.	2610	43	488	28,324
Mar.	181	21	39	2,440	Mar.	596	35	215	13,372
Apr.	1750	72	295	17,684	Apr.	198	107	164	9,858
May	6600	149	747	46,324	May	107	62	75	4,632
June	14400	180	1780	106,810	June	149	62	81	4,888
July	3080	596	1312	81,362	July	433	59	171	10,572
Aug.	2350	447	684	47,252	Aug.	336	98	136	8,418
Sept.	1100	234	468	27,994	Sept.	1200	134	317	19,022
Oct.	1700	134	271	16,794	Oct.	211	52	114	7,046
Nov.	2750	120	371	22,232	Nov.	745	35	100	6,048
Dec.	2750	149	539	33,420	Dec.	63	16	29	1,812
Total	..	..	..	408,182	Total	..	..	..	123,986



MACQUARIE RIVER AT BATHURST

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.	880	0	59	3,692	Jan.	3060	24	179	10,944
Feb.	22	0	6	340	Feb.	4100	38	378	21,188
Mar.	28	0	1	56	Mar.	214	31	71	4,378
Apr.	28	1	9	514	Apr.	121	31	47	2,854
May	28	8	16	1,000	May	38	31	36	2,216
June	63	22	28	1,674	June	154	38	60	3,614
July	540	22	114	7,074	July	2335	68	240	14,882
Aug.	374	52	115	7,116	Aug.	3410	214	556	34,548
Sept.	4130	63	439	26,368	Sept.	452	121	222	13,326
Oct.	452	68	183	11,352	Oct.	25700	91	1025	63,562
Nov.	378	38	99	5,934	Nov.	2200	144	478	28,686
Dec.	330	57	116	7,206	Dec.	2470	164	363	22,526
Total	..	..	..	72,326	Total	..	..	..	222,724

Year 1935

Year 1936

Jan.	1290	105	346	21,458	Jan.	1490	30	133	8,282
Feb.	632	70	160	8,948	Feb.	327	30	56	3,242
Mar.	70	43	53	3,294	Mar.	255	40	87	5,408
Apr.	352	40	104	6,256	Apr.	303	40	89	5,368
May	124	56	68	4,212	May	327	56	88	5,442
June	70	56	57	3,444	June	528	70	123	7,366
July	327	70	125	7,780	July	3060	185	781	48,398
Aug.	2075	124	341	21,154	Aug.	7940	158	682	42,282
Sept.	303	105	173	10,366	Sept.	1030	93	194	11,650
Oct.	710	56	174	10,782	Oct.	93	58	68	4,256
Nov.	124	40	68	4,102	Nov.	58	16	35	2,132
Dec.	670	30	116	7,170	Dec.	610	11	94	5,860
Total	..	..	..	108,966	Total	..	..	..	149,686

Year 1937

Year 1938

Jan.	93	9	36	2,230	Jan.	3410	6	113	7,404
Feb.	30	6	10	646	Feb.	195	9	31	1,752
Mar.	240	6	37	2,262	Mar.	12	0	5	300
Apr.	22	11	13	766	Apr.	570	0	30	1,870
May	38	16	25	1,568	May	39	15	22	1,302
June	58	30	39	2,344	June	49	15	25	1,512
July	47	38	39	2,428	July	154	19	46	2,840
Aug.	195	22	54	3,344	Aug.	755	49	169	10,462
Sept.	388	58	139	8,364	Sept.	340	49	104	6,260
Oct.	93	30	55	3,430	Oct.	950	24	99	6,146
Nov.	410	38	117	7,028	Nov.	312	31	85	5,100
Dec.	1595	9	135	8,374	Dec.	31	0	8	538
Total	..	..	..	42,784	Total	..	..	..	45,486

Year 1939

Year 1940

Jan.	39	0	2	98	Jan.	34	0	3	164
Feb.	0	0	0	0	Feb.	0	0	0	0
Mar.	0	0	0	0	Mar.	0	0	0	0
Apr.	265	0	47	2,850	Apr.	6	0	0.8	48
May	24	15	21	1,270	May	15	6	10	626
June	39	19	25	1,520	June	58	11	15	902
July	312	31	79	4,884	July	22	11	12	742
Aug.	7280	31	523	32,418	Aug.	11	11	11	682
Sept.	240	39	102	6,146	Sept.	139	3	29	1,722
Oct.	4580	49	368	22,836	Oct.	36	0	6	358
Nov.	384	34	118	7,096	Nov.	241	0	10	640
Dec.	218	6	29	1,826	Dec.	430	4	67	4,128
Total	..	..	..	80,944	Total	..	..	..	10,012

MACQUARIE RIVER AT BATHURST

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.	2000	22	217	13,428	Jan.	0	0	0	0
Feb.	325	4	59	3,306	Feb.	0	0	0	0
Mar.	191	6	37	2,288	Mar.	0	0	0	0
Apr.	6	1	4	212	Apr.	0	0	0	0
May	122	1	16	998	May	71	0	5	280
June	260	60	120	7,176	June	4540	26	280	16,808
July	88	45	71	4,372	July	6270	90	677	41,980
Aug.	207	30	65	4,034	Aug.	770	90	217	13,484
Sept.	88	30	51	3,060	Sept.	1990	135	576	34,584
Oct.	260	15	73	4,540	Oct.	3940	135	403	24,958
Nov.	30	6	18	1,098	Nov.	1720	135	322	19,304
Dec.	30	0	2	140	Dec.	815	53	183	11,352
Total	44,652	Total	162,750

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Year 1943

Year 1944

Jan.	540	45	124	7,658	Jan.	57	8	23	1,406
Feb.	45	26	33	1,846	Feb.	8	0	3	180
Mar.	22	2	9	538	Mar.	8	0	2	122
Apr.	77	14	28	1,730	Apr.	27	2	12	718
May	8610	8	639	39,628	May	62	14	29	1,820
June	450	143	245	14,728	June	27	27	27	1,620
July	450	162	225	13,950	July	50	27	35	2,174
Aug.	1810	530	883	54,770	Aug.	90	27	43	2,664
Sept.	17600	330	1094	65,642	Sept.	50	22	29	1,724
Oct.	3100	200	601	37,282	Oct.	22	1	8	512
Nov.	1280	143	283	16,992	Nov.	4	0	0.6	38
Dec.	181	57	117	7,252	Dec.	0	0	0	0
Total	..	..	..	262,016	Total	..	..	..	12,978

Year 1945

Year 1946

Jan.	165	0	6	342	Jan.	150	0	9	534
Feb.	612	0	21	1,202	Feb.	33	0	3	194
Mar.	22	0	3	176	Mar.	5	0	1	46
Apr.	9	0	2	140	Apr.	65	0	13	770
May	222	1	31	1,892	May	26	14	19	1,204
June	5350	15	687	41,208	June	33	20	27	1,596
July	390	124	205	12,730	July	77	26	46	2,856
Aug.	1330	160	419	25,996	Aug.	307	26	61	3,796
Sept.	160	70	106	6,380	Sept.	26	14	20	1,230
Oct.	135	26	49	3,014	Oct.	262	5	51	3,162
Nov.	77	14	29	1,770	Nov.	307	6	40	2,394
Dec.	90	0	13	798	Dec.	440	0	53	3,288
Total	..	..	..	95,648	Total	..	..	..	21,070

Year 1947

Year 1948

Jan.	33	0	1.7	108	Jan.	845	116	290	18,004
Feb.	1810	0	160	8,984	Feb.	5330	63	448	25,978
Mar.	150	6	32	1,986	Mar.	215	45	81	5,024
Apr.	49	6	21	1,266	Apr.	370	36	102	6,098
May	520	8	48	2,964	May	2210	75	433	26,868
June	39	19	27	1,630	June	8130	101	869	52,140
July	790	26	184	11,436	July	880	173	352	21,834
Aug.	370	69	134	8,342	Aug.	705	110	188	11,644
Sept.	1060	105	309	18,558	Sept.	1140	126	295	17,698
Oct.	282	49	107	6,602	Oct.	226	60	106	6,586
Nov.	2610	53	296	17,758	Nov.	110	32	59	3,568
Dec.	7640	66	1153	71,518	Dec.	188	0	22	1,348
Total	..	..	..	151,152	Total	..	..	..	196,790

MACQUARIE RIVER AT BATHURST

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.	82	6	27	1,692	Jan.	1025	5	123	7,650
Feb.	126	0	24	1,354	Feb.	1965	23	374	20,970
Mar.	2040	5	70	4,364	Mar.	18670	82	1376	85,290
Apr.	15	3	7	396	Apr.	28925	282	2999	179,952
May	39	6	12	762	May	4500	149	635	39,378
June	1475	13	230	13,788	June	8680	438	2174	130,432
July	325	63	128	7,958	July	10480	1275	3346	207,476
Aug.	172	51	88	5,428	Aug.	12050	820	2421	150,116
Sept.	1415	75	397	23,826	Sept.	5790	367	847	50,842
Oct.	1573	118	529	32,794	Oct.	14150	438	2937	182,072
Nov.	880	72	207	12,392	Nov.	6230	367	1495	89,722
Dec.	238	19	72	4,444	Dec.	920	83	274	17,006
Total	..	..	..	109,198	Total	..	..	..	1,160,906

Year 1951

Year 1952

Jan.	1385	78	380	23,538	Jan.	294	6	44	2,752
Feb.	402	78	172	9,642	Feb.	59	8	14	816
Mar.	203	59	94	5,834	Mar.	2750	12	217	13,432
Apr.	78	53	64	3,834	Apr.	1810	70	238	14,262
May	149	50	80	4,948	May	1810	210	623	38,642
June	2940	67	1057	63,408	June	25500	520	3376	202,584
July	9770	635	1954	121,160	July	69500	593	3456	214,374
Aug.	15760	680	2721	168,712	Aug.	7460	1070	3057	189,558
Sept.	4760	261	712	42,694	Sept.	3220	420	975	58,526
Oct.	2910	230	633	39,264	Oct.	3080	318	854	52,974
Nov.	294	88	150	8,982	Nov.	700	204	375	22,502
Dec.	153	38	79	4,886	Dec.	1900	102	285	17,668
Total	..	..	..	496,902	Total	..	..	..	828,090

Year 1953

Year 1954

Jan.	3220	121	491	30,444	Jan.	329	13	72	4,472
Feb.	420	79	129	7,208	Feb.	870	13	195	10,929
Mar.	85	48	63	3,908	Mar.	180	26	65	4,030
Apr.	163	52	72	4,320	Apr.	180	26	52	3,140
May	600	74	189	11,722	May	96	46	51	3,168
June	402	108	163	9,784	June	82	46	66	3,948
July	275	141	170	10,524	July	180	58	89	5,508
Aug.	1247	148	330	20,486	Aug.	156	58	86	5,306
Sept.	540	140	203	12,154	Sept.	156	46	68	4,062
Oct.	920	110	273	16,952	Oct.	1330	22	236	14,634
Nov.	2080	124	444	26,656	Nov.	3010	156	651	39,056
Dec.	172	9	56	3,486	Dec.	520	36	125	7,720
Total	..	..	..	157,644	Total	..	..	..	105,973

Year 1955

Year 1956

Jan.	188	13	39	2,446	Jan.	1960	70	256	15,890
Feb.	1840	22	412	23,072	Feb.	4720	110	1406	81,532
Mar.	1900	89	333	20,672	Mar.	12430	652	2929	181,578
Apr.	89	70	80	4,824	Apr.	4370	458	1083	64,982
May	845	117	255	15,808	May	4540	550	1930	118,844
June	418	148	203	12,176	June	6350	687	2329	139,732
July	580	140	197	12,244	July	5060	1266	2809	174,162
Aug.	3150	172	1463	90,712	Aug.	3820	759	1589	98,496
Sept.	800	188	394	23,664	Sept.	6080	582	1452	87,100
Oct.	21000	172	1640	101,652	Oct.	12100	687	2251	139,572
Nov.	6355	255	1026	61,590	Nov.	1514	192	501	30,060
Dec.	913	192	357	22,128	Dec.	255	58	133	8,266
Total	..	..	..	390,988	Total	..	..	..	1,140,214

MACQUARIE RIVER AT BATHURST

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.	301	30	77	4,764	Jan.	913	14	83	5,176
Feb.	95	18	48	2,666	Feb.	1730	40	181	10,140
Mar.	50	18	34	2,136	Mar.	50	14	21	1,310
Apr.	150	40	65	3,894	Apr.	206	14	36	2,146
May	40	24	29	1,816	May	78	14	32	1,974
June	63	24	35	2,108	June	78	27	46	2,752
July	150	30	70	4,322	July	953	78	216	13,402
Aug.	550	40	145	8,960	Aug.	3900	95	609	37,760
Sept.	194	30	61	3,662	Sept.	1386	206	444	26,920
Oct.	35	14	26	1,586	Oct.	2940	206	766	47,518
Nov.	38	18	29	1,786	Nov.	186	40	91	5,470
Dec.	131	13	25	1,562	Dec.	990	37	137	8,510
Total	..	..	..	39,262	Total	..	..	..	163,078

Year 1959

Year 1960

Jan.	2450	14	171	10,586	Jan.	291	45	84	5,220
Feb.	610	37	145	8,142	Feb.	465	37	95	5,482
Mar.	1040	45	218	13,546	Mar.	53	24	37	2,324
Apr.	3150	72	343	20,582	Apr.	316	24	57	3,430
May	105	45	65	4,018	May	402	45	154	9,550
June	1480	62	225	13,494	June	186	94	121	7,266
July	3970	116	801	49,664	July	14500	94	1174	72,794
Aug.	1420	128	444	27,550	Aug.	25800	375	2524	156,464
Sept.	417	72	133	7,982	Sept.	5570	301	1167	70,030
Oct.	990	83	278	17,248	Oct.	2380	278	638	39,556
Nov.	770	116	309	18,520	Nov.	1266	110	245	14,694
Dec.	316	45	111	6,900	Dec.	1730	110	419	25,956
Total	..	..	..	198,232	Total	..	..	..	412,766

Year 1961

Year 1962

Jan.	1567	60	239	14,842	Jan.	1218	112	332	20,556
Feb.	96	50	65	3,644	Feb.	722	131	306	17,114
Mar.	301	50	84	5,192	Mar.	131	62	78	4,832
Apr.	217	42	60	3,610	Apr.	57	31	47	2,820
May	52	42	50	3,104	May	287	31	64	3,980
June	84	52	62	3,744	June	150	52	85	5,092
July	582	62	174	10,772	July	835	52	187	11,572
Aug.	2870	150	703	43,562	Aug.	3220	287	849	52,658
Sept.	1218	97	410	24,584	Sept.	1266	171	399	23,910
Oct.	1314	62	206	12,770	Oct.	369	62	140	8,676
Nov.	5670	62	892	53,502	Nov.	112	31	60	3,632
Dec.	2450	112	525	32,558	Dec.	3300	36	488	30,260
Total	..	..	..	211,884	Total	..	..	..	185,102

Year 1963

Year 1964

Jan.	10880	72	908	56,304	Jan.	212	100	115	7,176
Feb.	12700	112	1073	60,076	Feb.	112	69	89	4,984
Mar.	660	78	183	11,348	Mar.	69	69	69	4,278
Apr.	1150	78	158	9,522	Apr.	455	69	124	7,450
May	1110	250	517	31,728	May	89	69	70	4,318
June	5500	480	1085	65,080	June	74000	69	3155	189,282
July	3080	405	1280	79,390	July	6980	660	2653	164,456
Aug.	10000	356	1377	85,412	Aug.	5080	263	823	51,054
Sept.	4160	405	1294	77,660	Sept.	7510	375	1300	77,980
Oct.	2940	230	653	40,490	Oct.	14500	500	2657	164,742
Nov.	480	69	213	12,806	Nov.	7950	172	1104	66,214
Dec.	950	69	241	14,914	Dec.	172	88	121	7,484
Total	..	..	..	544,730	Total	..	..	..	749,418

MACQUARIE RIVER AT BATHURST

Year 1965

Year 1966

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.	88	46	65	4,028	Jan.	64	9.5	21	1,291
Feb.	46	32	40	2,244	Feb.	34	9.5	22	1,215
Mar.	46	32	38	2,352	Mar.	326	5.5	56	3,460
Apr.	114	38	52	3,126	Apr.	101	52	69	4,118
May	51	37	42	2,586	May	81	25	48	3,008
June	51	51	51	3,060	June	107	33	59	3,518
July	172	51	86	5,346					
Aug.	52	32	40	2,460					
Sept.	114	32	55	3,306					
Oct.	564	27	118	7,306					
Nov.	78	27	43	2,600					
Dec.	208	17	58	3,564					
Total	..	..	..	41,978		..	..	..	..

MACQUARIE RIVER AT BRUINBUN

LOCATION: Latitude 33°08' Longitude 149°26'

PERIOD OF ESTABLISHMENT: September 1947 to date.

COMPLETE YEARS OF COMPUTED RECORDS: 18 years.

ZERO OF GAUGE: R.L. 71.87 Assumed Datum.
Approximately 1,500 feet above sea level.

CATCHMENT AREA: 1,720 square miles.

CONTROL: Rock.

EQUIPMENT: Pressure Recorder February 1949 to 1956.
Float Recorder August 1955 to date.
Staff gauge 0 to 30 feet.

CURRENT METER OBSERVATIONS:

(a) Number obtained	:	134
(b) Maximum observation in cusecs	:	27,400
(c) Minimum observation in cusecs	:	0.6

MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS: 69,500 cusecs

MEAN DAILY DISCHARGE FOR 18 YEARS: 670 cusecs.

MEAN ANNUAL DISCHARGE FOR 18 YEARS: 490,000 acre feet

MACQUARIE RIVER AT BRUINBUN

Year 1947

Year 1948

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.	868	215	389	23,354
Feb.	..	..	..	..	Feb.	3040	51	549	31,822
Mar.	..	..	..	..	Mar.	396	51	136	8,418
Apr.	..	..	..	..	Apr.	511	51	131	8,144
May	..	..	..	..	May	3540	92	477	29,544
June	..	..	..	..	June	4180	75	870	52,174
July	..	..	..	..	July	1430	202	456	28,276
Aug.	..	..	..	..	Aug.	954	102	217	13,470
Sept.	1550	105	370	22,188	Sept.	1750	163	392	23,546
Oct.	300	51	151	9,346	Oct.	330	56	131	8,092
Nov.	2650	68	426	26,400	Nov.	75	29	54	3,256
Dec.	5210	75	1457	90,322	Dec.	75	4	18	1,054
Total	..	..	..	..	Total	..	..	..	231,150

Year 1949

Year 1950

Jan.	92	4	35	2,178	Jan.	2010	15	232	14,402
Feb.	92	0.7	25	1,384	Feb.	8450	35	832	46,598
Mar.	1230	8	50	3,076	Mar.	32500	138	2074	128,588
Apr.	46	12	22	1,308	Apr.	28925	282	3086	185,176
May	51	21	29	1,794	May	3740	215	626	38,782
June	1750	35	289	17,316	June	11400	653	2646	158,774
July	757	61	196	12,164	July	18470	1290	4756	294,850
Aug.	189	75	110	6,826	Aug.	16670	982	3310	205,272
Sept.	2150	113	627	37,602	Sept.	4760	555	1349	80,976
Oct.	2650	270	773	47,942	Oct.	14160	757	3500	217,028
Nov.	868	113	269	16,130	Nov.	11550	679	2298	137,882
Dec.	653	35	108	6,680	Dec.	1750	242	522	32,334
Total	..	..	..	154,400	Total	..	..	..	1,540,662

Year 1951

Year 1952

Jan.	511	75	279	17,280	Jan.	653	7	53	3,298
Feb.	555	61	173	9,692	Feb.	29	5	16	906
Mar.	189	92	144	8,908	Mar.	2430	12	163	10,128
Apr.	138	56	90	5,390	Apr.	1360	61	216	12,938
May	163	42	61	3,778	May	1165	138	523	32,396
June	3650	113	910	54,624	June	21100	812	3798	227,872
July	5440	511	1874	116,214	July	69500	593	3380	209,550
Aug.	17180	896	3425	212,330	Aug.	5776	1275	3152	195,452
Sept.	3470	362	829	49,722	Sept.	2592	518	1029	61,758
Oct.	3560	215	812	50,356	Oct.	3380	425	1000	62,012
Nov.	300	75	152	9,140	Nov.	660	209	399	23,938
Dec.	215	29	88	5,432	Dec.	2150	118	303	18,794
Total	..	..	..	542,866	Total	..	..	..	859,042

Year 1953

Year 1954

Jan.	4760	141	778	48,240	Jan.	425	20	111	6,876
Feb.	420	108	168	9,430	Feb.	3560	60	471	26,240
Mar.	118	60	79	4,920	Mar.	425	23	74	4,610
Apr.	163	38	72	4,330	Apr.	192	23	49	2,914
May	245	81	208	12,902	May	75	48	55	3,392
June	425	142	197	11,822	June	95	50	70	4,230
July	393	118	180	11,190	July	760	54	80	4,934
Aug.	810	142	334	20,716	Aug.	142	75	92	5,718
Sept.	425	95	185	11,114	Sept.	166	48	83	4,984
Oct.	723	60	222	13,768	Oct.	2380	29	300	18,622
Nov.	1940	118	399	23,928	Nov.	3560	258	721	43,238
Dec.	245	23	101	6,284	Dec.	258	118	176	10,940
Total	..	..	..	178,644	Total	..	..	..	136,698

MACQUARIE RIVER AT BRUINBUN

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.	188	11	47	2,904	Jan.	2210	72	323	20,022
Feb.	10200	16	1057	59,190	Feb.	5105	166	1554	90,152
Mar.	1940	142	493	30,552	Mar.	28100	790	4777	296,172
Apr.	142	67	94	5,636	Apr.	5395	945	1797	107,798
May	570	75	237	14,702	May	5860	1028	2543	157,690
June	425	166	249	14,924	June	21720	865	3031	187,900
July	393	160	241	14,946	July	11200	2120	4354	269,950
Aug.	3833	245	1661	102,988	Aug.	9100	1295	2607	161,608
Sept.	1165	320	688	41,298	Sept.	8485	1000	2050	123,018
Oct.	23950	280	2167	134,380	Oct.	15500	1263	3058	189,574
Nov.	13000	305	1302	78,130	Nov.	1860	251	722	43,294
Dec.	1300	232	494	30,602	Dec.	267	70	164	10,180
Total	..	..	..	530,252	Total	..	..	..	1,657,358

Year 1957

Year 1958

Jan.	300	31	88	5,470	Jan.	4165	5	88	5,460
Feb.	169	87	129	7,222	Feb.	4165	31	320	17,894
Mar.	105	55	74	4,582	Mar.	235	17	40	2,460
Apr.	181	59	88	5,252	Apr.	590	14	60	3,014
May	106	46	60	3,726	May	NO RECORDS			3,300*
June	120	46	60	3,630	June	NO RECORDS			5,300*
July	175	96	118	7,326	July	NO RECORDS			18,000*
Aug.	640	92	187	11,604	Aug.	4450	130	716	44,412
Sept.	221	49	102	6,110	Sept.	1860	300	670	40,218
Oct.	49	14	33	2,060	Oct.	3950	267	912	57,254
Nov.	52	14	23	1,400	Nov.	235	87	150	9,020
Dec.	36	4	14	896	Dec.	1820	62	279	17,298
Total	..	..	..	59,278	Total	..	..	..	223,634*

Year 1959

Year 1960

Jan.	3400	19	285	17,684	Jan.	337	27	84	5,220
Feb.	1230	62	239	13,362	Feb.	1110	24	140	8,106
Mar.		NO RECORDS		27,000*	Mar.		NO RECORDS		2,300*
Apr.		NO RECORDS		34,000*	Apr.	540	20	72	4,328
May	157	96	116	7,182	May	460	60	202	12,540
June	1780	96	265	15,928	June	244	128	158	9,502
July	5265	181	938	58,060	July	5175	130	1045	64,816
Aug.	1795	228	617	38,232	Aug.	30046	639	3348	207,558
Sept.	567	154	218	13,088	Sept.	5115	455	1360	81,620
Oct.	3484	145	451	27,986	Oct.	2745	390	822	50,980
Nov.	1330	158	411	24,688	Nov.	1517	197	385	23,104
Dec.	500	57	151	9,358	Dec.	3097	171	634	39,300
Total	..	..	..	286,568*	Total	..	..	..	509,374*

Year 1961

Year 1962

Jan.	1306	68	277	17,154	Jan.	970	148	345	21,388
Feb.	117	42	63	3,508	Feb.	1194	120	315	17,652
Mar.	639	35	93	5,768	Mar.	140	69	92	5,716
Apr.	314	43	80	4,778	Apr.	115	27	61	3,646
May	94	56	68	4,206	May	377	27	101	6,240
June	120	63	91	5,446	June	224	71	110	6,616
July	699	92	216	13,384	July	704	54	189	11,726
Aug.	2734	178	742	46,056	Aug.	3130	241	806	49,976
Sept.	1338	86	234	14,522	Sept.	1380	211	382	22,970
Oct.	1159	157	426	25,610	Oct.	282	107	173	10,614
Nov.	7972	94	885	53,086	Nov.	156	26	83	5,006
Dec.	1800	187	496	29,754	Dec.	3700	39	521	32,320
Total	..	..	..	223,272	Total	..	..	..	193,870

* Estimated.

MACQUARIE RIVER AT BRUINBUN

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.	7485	100	879	54,528	Jan.	348	72	148	9,186
Feb.	12295	103	1041	58,340	Feb.	124	45	75	4,322
Mar.	736	107	200	12,452	Mar.	117	13	51	3,168
Apr.	946	105	176	10,602	Apr.	700	29	119	7,148
May	1444	226	587	36,390	May	276	62	96	5,966
June	5464	502	1461	87,642	June	52500	79	2255	195,233
July	4290	538	1621	100,558	July	7590	1039	3012	186,724
Aug.	8990	445	1495	92,694	Aug.	4330	439	1038	64,378
Sept.	5965	565	1545	92,798	Sept.	6270	526	1306	78,394
Oct.	3176	344	786	48,788	Oct.	10890	525	2597	161,034
Nov.	605	135	314	18,844	Nov.	15560	256	1598	95,928
Dec.	730	135	279	17,280	Dec.	256	87	154	9,564
Total	..	..	..	630,916	Total	..	..	..	821,045

Year 1965

Year 1966

Jan.	87	26	46	2,866	Jan.	74	4.5	14	864
Feb.	42	25	34	1,913	Feb.	23	0	6.6	368
Mar.	45	25	36	2,222	Mar.	2587	0.3	119	7,357
Apr.	129	34	63	3,786	Apr.	97	46	69	4,164
May	72	45	51	3,160	May	140	55	75	4,648
June	76	58	67	4,012	June	440	59	99	5,936
July	199	67	111	6,908					
Aug.	108	53	66	4,080					
Sept.	159	47	101	6,084					
Oct.	550	34	123	7,614					
Nov.	142	12	49	2,920					
Dec.	500	6.6	78	4,820					
Total	..	..	..	50,385	Total	..	..	..	..

TURON RIVER AT SOFALA

LOCATION: Latitude 33°07' Longitude 149°42'

PERIOD OF ESTABLISHMENT: September, 1947 to date.

COMPLETE YEARS OF COMPUTED RECORDS: 18 years.

ZERO OF GAUGE: R.L. 74.48 Assumed Datum.
Approximately 1,500 feet above sea level.

CATCHMENT AREA: 320 square miles.

CONTROL: Gravel.

EQUIPMENT: Float recorder installed November 1956.
Staff gauge 0 to 20 feet.

CURRENT METER OBSERVATIONS:

- (a) Number obtained : 123
- (b) Maximum observation
in cusecs : 602
- (c) Minimum observation
in cusecs : zero

MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS: 17,000 cusecs.

MEAN DAILY DISCHARGE FOR 18 YEARS: 161 cusecs.

MEAN ANNUAL DISCHARGE FOR 18 YEARS: 117,000 acre feet.

TURON RIVER AT SOFALA

Year 1947

Year 1948

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.	364	16	69	4,264
Feb.	..	..	..	..	Feb.	2230	3	337	19,570
Mar.	..	..	..	..	Mar.	2230	20	315	19,518
Apr.	..	..	..	..	Apr.	247	10	32	1,948
May	..	..	..	..	May	1930	16	246	15,262
June	..	..	..	..	June	2230	5	268	16,068
July	..	..	..	..	July	90	5	40	2,460
Aug.	..	..	..	..	Aug.	133	2	25	1,560
Sept.	..	..	..	..	Sept.	1170	0	147	8,820
Oct.	710	13	35	2,168	Oct.	32	5	11	708
Nov.	1650	13	194	11,640	Nov.	32	5	18	1,054
Dec.	3700	68	656	40,644	Dec.	2860	1	104	6,480
Total	..	..	..	..	Total	..	..	..	97,712

Year 1949

Year 1950

Jan.	364	2	45	2,822	Jan.	No	Records	9,000*
Feb.	174	2	19	1,054	Feb.	10670	32 974	54,524
Mar.	915	2	90	5,572	Mar.	13535	54 734	45,496
Apr.	5	2	3	196	Apr.	6860	228 1217	73,016
May	32	2	6	346	May	196	32 82	5,110
June	3575	5	546	32,782	June	4330	68 788	47,258
July	1170	23	204	12,648	July	14740	174 1555	96,398
Aug.	196	16	59	3,646	Aug.	3120	260 760	47,110
Sept.	1930	54	414	24,818	Sept.	260	210 229	13,750
Oct.	840	43	194	12,028	Oct.	5840	210 1198	74,276
Nov.	247	23	62	3,694	Nov.	5840	260 1033	61,958
Dec.	68	2	21	1,304	Dec.	210	76 113	6,980
Total	..	..	..	100,910	Total	..	..	534,876*

Year 1951

Year 1952

Jan.	239	42	61	3,784	Jan.	5	2	3	194
Feb.	42	29	30	1,688	Feb.	3	2	2	126
Mar.	35	19	27	1,650	Mar.	235	2	16	968
Apr.	No	Records		1,320*	Apr.	162	4	27	1,630
May	No	Records		1,320*	May	42	19	32	1,966
June	No	Records		3,140*	June	4440	42	695	41,744
July	No	Records		3,680*	July	5140	125	544	33,710
Aug.	1795	29	569	35,260	Aug.	4440	235	837	51,888
Sept.	289	13	52	3,108	Sept.	330	45	180	10,784
Oct.	58	19	39	2,436	Oct.	410	20	77	4,790
Nov.	19	5	9	534	Nov.	123	12	43	2,584
Dec.	8	4	6	376	Dec.	205	6	23	1,404
Total	..	..	..	58,296*	Total	..	..	..	151,788

Year 1953

Year 1954

Jan.	892	12	95	5,900	Jan.	74	6	19	1,164
Feb.	33	12	16	888	Feb.	3020	6	251	14,078
Mar.	12	4	6	396	Mar.	65	2	17	1,036
Apr.	6	6	6	360	Apr.	12	4	6	374
May	273	21	56	3,480	May	9	6	6	396
June	48	6	15	894	June	12	6	8	468
July	17	9	12	746	July	12	6	7	444
Aug.	102	9	27	1,690	Aug.	27	6	10	638
Sept.	21	12	16	962	Sept.	12	4	7	402
Oct.	412	12	44	2,940	Oct.	4010	2	264	16,370
Nov.	147	9	33	1,956	Nov.	1140	35	159	9,568
Dec.	16	1	5	324	Dec.	41	6	17	1,066
Total	..	..	..	20,536	Total	..	..	..	46,004

* Estimated

TURON RIVER AT SOFALA

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.	127	1	19	1,186	Jan.	882	0	48	2,998
Feb.	17000	9	1173	65,716	Feb.	4290	0	531	30,772
Mar.	1160	80	263	16,322	Mar.	12840	8	1344	83,310
Apr.	67	19	35	2,090	Apr.	1260	14	133	7,984
May	565	24	72	4,496	May	10760	19	717	44,456
June	80	42	58	3,488	June	14840	3	1028	61,686
July	232	30	60	3,738	July	5670	200	1214	75,428
Aug.	1940	54	357	22,158	Aug.	3630	75	469	29,078
Sept.	185	67	115	6,890	Sept.	1070	42	240	14,392
Oct.	3680	54	306	18,960	Oct.	1830	61	373	23,108
Nov.	5000	54	298	17,900	Nov.	112	24	47	2,812
Dec.	119	40	67	4,150	Dec.	26	12	19	1,180
Total	..	..	..	167,094	Total	..	..	..	377,204

Year 1957

Year 1958

Jan.	19	8	12	768	Jan.	1100	0	10	621
Feb.	50	12	24	1,362	Feb.	3767	5	92	5,154
Mar.	50	11	17	1,056	Mar.	7	0	1.5	100
Apr.	42	12	19	1,134	Apr.	56	0	15	452
May	26	14	17	1,058	May	26	0	6	376
June	19	14	15	922	June	168	2	8	508
July	24	15	18	1,140	July	180	13	30	1,862
Aug.	58	14	26	1,638	Aug.	219	12	45	2,812
Sept.	29	16	19	1,152	Sept.	397	33	92	5,522
Oct.	26	7	18	1,088	Oct.	510	41	113	7,016
Nov.	11	0	3	162	Nov.	109	5	26	1,582
Dec.	0	0	0	0	Dec.	2282	9	164	10,166
Total	..	..	..	11,480	Total	..	..	..	36,171

Year 1959

Year 1960

Jan.	3575	33	184	10,288	Jan.	70	3	12	738
Feb.	600	15	59	3,276	Feb.	121	6	22	1,294
Mar.	2585	28	148	9,148	Mar.	18	2	5	326
Apr.	490	20	69	3,806	Apr.	116	1	13	758
May	22	15	17	1,074	May	91	18	35	2,162
June	385	18	48	2,892	June	25	17	19	1,144
July	3100	24	194	11,996	July	380	18	120	7,466
Aug.	136	25	53	3,238	Aug.	5120	40	314	19,448
Sept.	21	14	17	1,040	Sept.	648	23	98	5,852
Oct.	1660	12	99	6,172	Oct.	151	17	60	3,720
Nov.	4420	35	244	14,628	Nov.	62	13	21	1,250
Dec.	121	13	36	2,210	Dec.	585	16	81	5,020
Total	..	..	..	69,768	Total	..	..	..	49,178

Year 1961

Year 1962

Jan.	154	12	35	2,182	Jan.	702	19	83	5,120
Feb.	10	0	3	174	Feb.	159	12	42	2,374
Mar.	187	0	9	556	Mar.	12	1	3	220
Apr.	87	1	10	598	Apr.	4	1	3	184
May	11	2	5	322	May	87	2	17	1,028
June	16	5	11	686	June	40	6	15	906
July	340	12	44	2,752	July	501	7	38	2,372
Aug.	1725	20	159	9,856	Aug.	1712	24	187	11,606
Sept.	87	18	37	2,196	Sept.	70	24	38	2,292
Oct.	2440	14	124	7,730	Oct.	25	10	15	940
Nov.	4070	30	325	19,510	Nov.	14	1	6	386
Dec.	790	23	92	5,690	Dec.	3766	1	432	26,828
Total	..	..	..	52,252	Total	..	..	..	54,256

TURON RIVER AT SOFALA

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.	9800	36	428	26,560	Jan.	87	1.3	13	812
Feb.	3792	29	292	16,376	Feb.	8	0.2	2.2	128
Mar.	66	16	26	1,582	Mar.	5	0.2	2.3	144
Apr.	40	12	16	1,014	Apr.	1100	0.2	54	3,212
May	3571	37	207	12,848	May	217	9	27	1,694
June	3805	96	408	24,502	June	8780	17	633	38,000
July	1946	95	337	20,880	July	2310	115	432	26,814
Aug.	2310	49	267	16,550	Aug.	2115	56	206	12,756
Sept.	1116	52	177	10,598	Sept.	455	63	118	7,052
Oct.	895	40	134	8,182	Oct.	3246	52	285	17,638
Nov.	224	15	49	2,930	Nov.	6495	26	344	20,622
Dec.	200	10	45	2,816	Dec.	28	10	17	1,048
Total	..	..	..	144,838	Total	..	..	..	129,920

Year 1965

Year 1966

Jan.	10	2	5.4	332	Jan.	0.4	0	0	1
Feb.	1.8	0	0.7	39	Feb.	0	0	0	0
Mar.	0	0	0	0	Mar.	53	0	5.2	321
Apr.	22	0	0.6	36	Apr.	2.7	0	0.4	23
May	9	0.6	3.7	228	May	14	0	4.4	271
June	13	6	7.7	460	June	69	6.2	27	1,600
July	60	9	19	1,178					
Aug.	18	14	16	982					
Sept.	56	8	22	1,332					
Oct.	199	2.8	32	2,010					
Nov.	38	0.5	9.2	550					
Dec.	184	0.5	36	2,232					
Total	..	..	..	9,379	Total	..	..	..	..

CUDGEGONG RIVER AT YAMBLE BRIDGE

LOCATION: Latitude 32°25' Longitude 149°20'

PERIOD OF ESTABLISHMENT: August, 1939 to date.

COMPLETE YEARS OF COMPUTED RECORDS: 26 years.

ZERO OF GAUGE: R.L. 80.27 Assumed Datum.
Approximately 1,200 feet above sea level.

CATCHMENT AREA: 1,520 square miles

CONTROL: Rock.

EQUIPMENT: Pressure recorder installed October 1939.
Float recorder installed December 1955.
Staff gauge 0 to 30 feet.

CURRENT METER OBSERVATIONS:

(a) Number obtained	:	135
(b) Maximum observation in cusecs	:	52,300
(c) Minimum observation in cusecs	:	Zero

MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS: 73,000 cusecs.

MEAN DAILY DISCHARGE FOR 26 YEARS: 224 cusecs.

MEAN ANNUAL DISCHARGE FOR 26 YEARS: 164,000 acre feet.

CUDGEGONG RIVER AT YAMBLE BRIDGE

Year 1939

Year 1940

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.	0	0	0	0
Feb.	..	..	..	..	Feb.	0	0	0	0
Mar.	..	..	..	..	Mar.	0	0	0	0
Apr.	..	..	..	..	Apr.	147	0	14	832
May	..	..	..	..	May	0.5	0	0.1	6
June	..	..	..	..	June	0	0	0	0
July	..	..	..	..	July	0	0	0	0
Aug.	780	8	147	9,118	Aug.	0	0	0	0
Sept.	153	2	29	1,734	Sept.	5	0	0.5	31
Oct.	14	1	4	236	Oct.	4765	0	39	2,392
Nov.	377	0	12	722	Nov.	2700	0	94	5,614
Dec.	0	0	0	0	Dec.	1500	0	69	4,290
Total	..	..	..	..	Total	..	..	..	13,165

Year 1941

Year 1942

Jan.	20100	47	800	49,602	Jan.	0	0	0	0
Feb.	147	5	36	2,030	Feb.	0	0	0	0
Mar.	545	8	33	2,014	Mar.	0	0	0	0
Apr.	8	1	3	188	Apr.	0	0	0	0
May	5	1	2.7	166	May	0	0	0	0
June	147	5	24	1,448	June	1165	0	101	6,062
July	12	3	8	460	July	11350	22	1120	69,452
Aug.	5	3	4	242	Aug.	190	22	70	4,342
Sept.	22	3	7	390	Sept.	285	28	92	5,496
Oct.	3	0.5	1.7	104	Oct.	212	22	50	3,074
Nov.	235	0.5	13	776	Nov.	2830	22	408	24,500
Dec.	0	0	0	0	Dec.	147	16	49	3,048
Total	..	..	..	57,420	Total	..	..	..	115,974

Year 1943

Year 1944

Jan.	147	12	27	1,692	Jan.	16	0	4	266
Feb.	8	0	1	79	Feb.	285	0	25	1,445
Mar.	0	0	0	0	Mar.	0.5	0	0	2
Apr.	0	0	0	0	Apr.	0	0	0	0
May	212	0	23	1,440	May	0	0	0	0
June	16	8	10	628	June	0	0	0	0
July	8	3	6	354	July	0	0	0	0
Aug.	285	5	40	2,458	Aug.	87	0	12	746
Sept.	28	10	22	1,346	Sept.	47	0	12	706
Oct.	147	1	39	2,436	Oct.	2	0	0.5	28
Nov.	505	0	60	3,576	Nov.	0	0	0	0
Dec.	87	3	25	1,532	Dec.	0	0	0	0
Total	..	..	..	15,541	Total	..	..	..	3,193

Year 1945

Year 1946

Jan.	285	0	19	1,184	Jan.	5	0	0.4	24
Feb.	585	0	20	1,122	Feb.	1	0	0.3	17
Mar.	212	0	12	794	Mar.	0	0	0	0
Apr.	87	0	9	530	Apr.	0	0	0	0
May	16	0.5	3	168	May	0	0	0	0
June	5700	0.5	332	19,894	June	0	0	0	0
July	190	47	93	5,742	July	0	0	0	0
Aug.	6925	87	671	41,590	Aug.	0	0	0	0
Sept.	680	42	124	7,416	Sept.	0	0	0	0
Oct.	58	6	22	1,374	Oct.	0	0	0	0
Nov.	8	0	3.5	210	Nov.	22	0	2	100
Dec.	1300	0	24	1,516	Dec.	1900	0	48	2,978
Total	..	..	..	81,540	Total	..	..	..	3,119

CUDGEGONG RIVER AT YAMBLE BRIDGE

Year 1947

Year 1948

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.	545	47	124	7,680
Feb.	1300	0	34	1,854	Feb.	780	30	289	16,758
Mar.	58	0	7	460	Mar.	185	18	86	5,304
Apr.	0	0	0	0	Apr.	70	18	29	1,754
May	0	0	0	0	May	108	18	42	2,626
June	0	0	0	0	June	655	18	191	11,448
July	8	0	2	100	July	185	30	76	4,692
Aug.	3	0.5	0.8	48	Aug.	161	23	38	2,380
Sept.	2500	3	164	9,944	Sept.	161	18	59	3,512
Oct.	68	5	16	1,004	Oct.	143	7	31	1,930
Nov.	1965	16	156	9,334	Nov.	10	0	3	180
Dec.	2900	28	782	48,456	Dec.	0	0	0	0
Total	..	..	..	71,200	Total	..	..	..	58,264

Year 1949

Year 1950

Jan.	3	0	0.5	30	Jan.	1960	0	295	18,266
Feb.	28	0	8	434	Feb.	25670	28	2281	127,718
Mar.	2840	1	28	1,704	Mar.	477	147	246	15,232
Apr.	1.0	0	0.6	34	Apr.	18600	167	2590	155,370
May	1	0	0.2	14	May	405	167	222	13,742
June	4530	0.5	156	9,376	June	7365	147	2006	120,334
July	1040	22	246	15,274	July	26190	600	3743	232,056
Aug.	72	37	53	3,278	Aug.	13630	780	2464	152,780
Sept.	780	72	338	20,308	Sept.	940	306	600	36,058
Oct.	1200	105	322	19,958	Oct.	19520	370	3195	198,110
Nov.	167	37	71	4,256	Nov.	21120	341	3972	238,334
Dec.	259	16	80	4,954	Dec.	1030	337	452	28,005
Total	..	..	..	79,620	Total	..	..	..	1,336,005

Year 1951

Year 1952

Jan.	571	212	431	26,758	Jan.	4	1	2	128
Feb.	248	76	132	7,402	Feb.	1	0	0	5
Mar.	156	35	79	4,886	Mar.	405	0	14	832
Apr.	76	0	30	1,780	Apr.	1400	6	54	3,268
May	59	19	35	2,162	May	95	2	25	1,524
June	275	26	131	7,856	June	3100	95	447	26,812
July	780	95	263	16,328	July	4530	76	672	41,694
Aug.	2700	156	594	36,812	Aug.	10750	552	1843	114,248
Sept.	741	95	207	12,404	Sept.	840	19	201	12,090
Oct.	405	23	164	10,150	Oct.	515	115	230	14,274
Nov.	26	1	17	994	Nov.	177	0	70	4,206
Dec.	46	4	12	772	Dec.	156	2	18	1,112
Total	..	..	..	128,304	Total	..	..	..	220,193

Year 1953

Year 1954

Jan.	337	59	140	8,714	Jan.	46	0.5	22	1,338
Feb.	59	26	46	2,576	Feb.	7365	2	878	49,182
Mar.	95	13	72	4,494	Mar.	200	9	70	4,336
Apr.	34	9	14	862	Apr.	26	9	18	1,108
May	441	9	93	5,780	May	19	19	19	1,178
June	135	9	54	3,272	June	177	19	45	2,786
July	59	4	25	1,576	July	35	6	21	1,296
Aug.	177	13	70	4,322	Aug.	26	9	18	1,118
Sept.	115	9	32	1,898	Sept.	26	13	18	1,090
Oct.	59	9	23	1,420	Oct.	2265	13	236	14,616
Nov.	46	1	18	1,078	Nov.	860	59	284	17,048
Dec.	53	0	14	886	Dec.	59	9	28	1,736
Total	..	..	..	36,878	Total	..	..	..	96,832

CUDGEGONG RIVER AT YAMBLE BRIDGE

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.	200	4	32	1,958	Jan.	2850	14	107	6,532
Feb.	71500	9	3885	217,552	Feb.	4643	41	1159	67,214
Mar.	No Records			27,000*	Mar.	73000	320	4694	291,088
Apr.	No Records			3,740*	Apr.	2166	340	583	34,986
May	No Records			4,500*	May	3883	590	1327	82,262
June	No Records			5,600*	June	19000	325	2327	139,646
July	No Records			7,400*	July	22090	655	2752	170,668
Aug.	No Records			53,280*	Aug.	15050	360	1075	65,506
Sept.	No Records			14,700*	Sept.	610	209	302	18,128
Oct.	No Records			49,360*	Oct.	610	157	246	15,278
Nov.	No Records			20,220*	Nov.	180	51	102	6,116
Dec.	No Records			6,740*	Dec.	56	22	40	2,482
Total	..	..	..	412,050*	Total	..	..	..	899,906

Year 1957

Year 1958

Jan.	29	9	17	1,080	Jan.	337	0	11	674
Feb.	45	7	21	1,172	Feb.	1216	25	197	11,058
Mar.	18	7	12	768	Mar.	33	8	15	936
Apr.	73	7	18	1,086	Apr.	14	5	7	418
May	25	22	23	1,436	May	54	5	17	1,024
June	32	22	24	1,442	June	49	13	16	976
July	45	30	35	2,166	July	110	28	46	2,834
Aug.	38	25	31	1,932	Aug.	65	27	37	2,700
Sept.	32	7	17	1,018	Sept.	742	38	140	8,396
Oct.	7	1	3	188	Oct.	4852	70	509	31,538
Nov.	1.1	0	0.3	19	Nov.	55	14	29	1,722
Dec.	0	0	0	0	Dec.	4030	24	108	6,670
Total	..	..	..	12,307	Total	..	..	..	68,946

Year 1959

Year 1960

Jan.	4400	30	288	17,864	Jan.	51	11	20	1,226
Feb.	885	25	108	6,066	Feb.	15	6	9	563
Mar.	1640	56	265	16,420	Mar.	10	5	6.7	413
Apr.	5200	55	305	18,330	Apr.	39	3	7.6	457
May	65	46	54	3,358	May	29	11	18	1,099
June	122	46	58	3,490	June	20	15	17	1,037
July	415	50	125	7,774	July	183	14	59	3,684
Aug.	120	40	67	4,134	Aug.	850	69	239	14,818
Sept.	53	30	38	2,278	Sept.	244	49	78	4,668
Oct.	2305	28	102	6,294	Oct.	139	33	66	4,120
Nov.	1710	57	233	14,004	Nov.	146	15	34	2,026
Dec.	178	26	66	4,096	Dec.	83	10	33	2,040
Total	..	..	..	104,108	Total	..	..	..	36,151

Year 1961

Year 1962

Jan.	38	2	13	826	Jan.	304	32	67	4,130
Feb.	3	0	0.7	37	Feb.	43	9	21	1,164
Mar.	485	1	18	1,138	Mar.	14	3	6.4	396
Apr.	20	1.6	7.4	446	Apr.	5	1.4	3.2	192
May	15	6	10	628	May	213	0.4	46	2,844
June	23	10	17	1,026	June	1328	42	140	8,388
July	56	15	24	1,510	July	3120	32	282	17,508
Aug.	1480	21	190	11,800	Aug.	3350	95	440	27,280
Sept.	150	25	57	3,418	Sept.	166	72	102	6,108
Oct.	36	11	19	1,198	Oct.	465	36	60	3,690
Nov.	485	12	119	7,126	Nov.	27	6	15	928
Dec.	1456	34	175	10,836	Dec.	118	7	28	1,762
Total	..	..	..	39,989	Total	..	..	..	74,390

* Estimated.

CUDGEGONG RIVER AT YAMBLE BRIDGE

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.	7372	24	477	29,568	Jan.	47	8	23	1,410
Feb.	6240	72	527	29,540	Feb.	19	0	1.1	63
Mar.	93	36	55	3,416	Mar.	6.9	0.5	2.6	162
Apr.	72	25	37	2,250	Apr.	363	9	16.6	1,030
May	638	46	203	12,614	May	23	2.9	12.4	767
June	2456	104	464	27,858	June	4888	18.9	824	49,420
July	670	130	224	13,896	July	1416	146	380	23,572
Aug.	1240	106	260	16,136	Aug.	464	84	157	9,728
Sept.	1280	86	265	15,942	Sept.	378	83	119	7,118
Oct.	704	108	216	13,410	Oct.	758	59	213	13,216
Nov.	170	41	94	5,610	Nov.	596	33	130	7,774
Dec.	650	28	122	7,546	Dec.	34	8.9	18.6	1,156
Total	..	..	..	177,786	Total	..	..	..	115,416

Year 1965

Year 1966

Jan.	8.5	0	2.6	166	Jan.	0	0	0	0
Feb.	0	0	0	0	Feb.	0	0	0	0
Mar.	0	0	0	0	Mar.	57	0	1.8	115
Apr.	0	0	0	0	Apr.	0.8	0	0.1	4
May	0	0	0	0	May	0	0	0	0
June	0	0	0	0	June	0	0	0	0
July	0	0	0	0					
Aug.	1.3	0	0.6	40					
Sept.	2.1	0.6	1	62					
Oct.	66	0	3.6	220					
Nov.	26	0	5.7	340					
Dec.	239	0	16.6	1,030					
Total	..	..	..	1,858	Total	..	..	..	..

MACQUARIE RIVER AT WELLINGTON

LOCATION: Latitude 32°33' Longitude 148°56'

PERIOD OF ESTABLISHMENT: May 1894 to date.

COMPLETE YEARS OF COMPUTED RECORDS: 57 years.

ZERO OF GAUGE: R.L. 913.98 Water Conservation Datum.

CATCHMENT AREA: 5,500 Square Miles.

CONTROL: Gravel.

EQUIPMENT: Staff gauge, range 0 to 50 feet.

CURRENT METER OBSERVATIONS:

(a) Number obtained	:	311
(b) Maximum observation in cusecs	:	140,000
(c) Minimum observation in cusecs	:	0

MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS: 150,000 cusecs.

MEAN DAILY DISCHARGE FOR 57 YEARS: 1,100 cusecs.

MEAN ANNUAL DISCHARGE FOR 57 YEARS: 802,000 acre feet.

REMARKS: Monthly discharges available for January 1909 to date.
Gauge height records available from May 1894 to December 1908.

MACQUARIE RIVER AT WELLINGTON

Year 1909

Year 1910

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.	3100	3	287	17,768	Jan.	37900	113	2244	139,114
Feb.	1325	26	191	10,680	Feb.	240	26	79	4,402
Mar.	710	10	184	11,386	Mar.	41	26	33	2,058
Apr.	10	6	7	400	Apr.	33	20	26	1,540
May	33	6	13	814	May	80	20	23	1,452
June	710	20	406	24,346	June	202	20	41	2,480
July	362	80	238	14,786	July	2060	260	579	35,858
Aug.	2770	80	662	41,026	Aug.	409	97	265	16,410
Sept.	4650	320	1195	71,676	Sept.	240	20	124	7,418
Oct.	300	184	234	14,480	Oct.	130	80	89	5,494
Nov.	202	26	74	4,456	Nov.	384	10	103	6,190
Dec.	6960	6	671	41,616	Dec.	17	4	11	686
Total	..	..	..	253,434	Total	..	..	..	223,102

Year 1911

Year 1912

Jan.	1500	4	329	20,408	Jan.	74	12	28	1,732
Feb.	11810	148	1949	109,136	Feb.	12	0	5	282
Mar.	640	113	203	15,078	Mar.	0	0	0	0
Apr.	3200	33	220	13,192	Apr.	0	0	0	0
May	130	20	51	3,168	May	0	0	0	0
June	710	80	173	11,378	June	0	0	0	0
July	3100	184	582	36,084	July	13100	0	1286	79,706
Aug.	280	97	159	9,832	Aug.	15400	317	2487	153,888
Sept.	7500	184	657	39,410	Sept.	2660	233	838	50,252
Oct.	1035	80	351	21,734	Oct.	366	74	150	9,288
Nov.	570	33	134	8,056	Nov.	293	43	99	5,916
Dec.	49000	74	3706	229,744	Dec.	65	16	30	1,854
Total	..	..	..	517,220	Total	..	..	..	302,918

Year 1913

Year 1914

Jan.	197	12	44	2,710	Jan.	25	12	18	1,092
Feb.	84	16	29	1,636	Feb.	12	0	5	276
Mar.	1075	12	219	13,556	Mar.	4220	0	233	14,458
Apr.	1375	84	245	14,722	Apr.	272	36	125	9,518
May	5730	65	666	41,314	May	127	43	73	4,530
June	7500	342	1393	83,592	June	127	50	73	4,488
July	1675	215	507	31,444	July	1245	127	313	19,422
Aug.	488	167	221	13,704	Aug.	181	50	103	6,400
Sept.	317	104	162	9,736	Sept.	140	36	57	3,428
Oct.	825	84	186	11,506	Oct.	115	36	72	4,436
Nov.	562	50	179	10,724	Nov.	425	65	140	8,414
Dec.	57	5	20	1,260	Dec.	342	84	142	8,820
Total	..	..	..	235,904	Total	..	..	..	85,282

Year 1915

Year 1916

Jan.	1200	30	246	15,238	Jan.	293	5	93	5,742
Feb.	1675	8	118	6,590	Feb.	488	20	121	7,012
Mar.	1900	5	88	5,488	Mar.	140	20	59	3,634
Apr.	2770	25	309	18,524	Apr.	57	12	21	1,280
May	5400	25	604	37,424	May	65	16	33	2,046
June	2770	57	363	21,812	June	16600	16	4634	278,054
July	15400	181	1247	77,310	July	57500	825	8314	515,472
Aug.	7500	342	1262	78,228	Aug.	41700	1375	7129	442,024
Sept.	1075	140	357	21,434	Sept.	12730	570	2356	141,398
Oct.	2150	94	362	22,440	Oct.	50100	1325	9914	614,686
Nov.	115	16	49	2,932	Nov.	6400	780	1779	106,770
Dec.	16	1	8	492	Dec.	8050	825	2819	176,760
Total	..	..	..	307,912	Total	..	..	..	2,294,878

MACQUARIE RIVER AT WELLINGTON

Year 1917

Year 1918

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.	825	167	408	25,326	Jan.	1285	120	337	20,884
Feb.	990	184	417	23,376	Feb.	1900	120	405	22,694
Mar.	221	60	117	7,298	Mar.	290	51	100	6,224
Apr.	120	51	82	4,934	Apr.	60	42	48	2,898
May	243	51	92	5,720	May	135	51	81	5,014
June	1435	81	396	23,998	June	290	60	117	7,046
July	11450	167	2244	139,154	July	341	81	143	8,872
Aug.	12180	905	3804	235,830	Aug.	8600	266	2290	142,014
Sept.	15600	825	4044	242,620	Sept.	825	202	465	27,922
Oct.	27300	700	3554	220,360	Oct.	184	60	122	7,596
Nov.	15030	428	2562	153,744	Nov.	290	34	87	5,242
Dec.	4110	266	1375	85,232	Dec.	34	0.5	8	526
Total	..	..	..	1,167,592	Total	..	..	..	256,932

Year 1919

Year 1920

Jan.	0.5	0	0.1	9	Jan.	3700	5	260	16,112
Feb.	0	0	0	0	Feb.	27	0	8	458
Mar.	740	0	69	4,312	Mar.	6400	0	313	23,908
Apr.	5	0.2	2	134	Apr.	7	1	3	182
May	21	0.5	4	275	May	1	0.2	0.5	37
June	120	34	55	3,324	June	20550	1.2	776	46,550
July	42	21	27	1,678	July	68800	398	8027	497,666
Aug.	34	21	22	1,404	Aug.	43400	428	3566	220,934
Sept.	167	21	54	3,466	Sept.	16600	950	3619	217,170
Oct.	16	5	10	600	Oct.	825	184	410	25,400
Nov.	5	0	1	43	Nov.	243	51	123	7,396
Dec.	60	0	16	1,000	Dec.	44460	398	3921	243,118
Total	..	..	..	16,245	Total	..	..	..	1,298,931

Year 1921

Year 1922

Jan.	780	93	250	15,534	Jan.	7330	341	1740	107,900
Feb.	243	21	78	4,350	Feb.	905	70	234	13,140
Mar.	1435	42	389	24,132	Mar.	290	21	84	5,240
Apr.	6060	42	789	47,326	Apr.	21	12	16	964
May	23600	106	1507	93,474	May	70	12	42	2,594
June	47900	1075	6910	414,490	June	60	27	42	2,500
July	32000	865	4379	271,480	July	45240	60	3168	196,420
Aug.	45240	1075	5015	310,910	Aug.	2770	460	979	60,726
Sept.	1745	494	895	53,698	Sept.	494	243	365	21,902
Oct.	780	266	474	29,398	Oct.	290	60	137	8,514
Nov.	1160	120	363	21,794	Nov.	135	9	42	2,538
Dec.	26050	60	2172	134,656	Dec.	5730	7	660	40,956
Total	..	..	..	1,421,242	Total	..	..	..	463,394

Year 1923

Year 1924

Jan.	2160	7	190	11,788	Jan.	221	3	29	1,806
Feb.	7	1	3	180	Feb.	780	12	205	11,908
Mar.	3	0.5	1	73	Mar.	202	7	39	2,408
Apr.	1	0	1	23	Apr.	81	5	42	3,520
May	0	0	0	0	May	60	16	24	1,512
June	2880	0	289	17,366	June	135	60	84	5,088
July	6960	494	1846	114,484	July	460	42	86	5,334
Aug.	7680	266	1905	118,116	Aug.	612	70	183	11,366
Sept.	24000	221	3461	207,690	Sept.	2880	120	602	36,110
Oct.	905	151	399	24,720	Oct.	3400	221	664	41,196
Nov.	1555	60	420	25,206	Nov.	26815	243	5348	320,862
Dec.	60	7	17	1,060	Dec.	1160	93	402	24,912
Total	..	..	..	520,706	Total	..	..	..	466,022

MACQUARIE RIVER AT WELLINGTON

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.	530	70	128	7,972	Jan.	1245	5	139	8,596
Feb.	338	42	122	6,844	Feb.	20	0	7	412
Mar.	42	5	19	1,180	Mar.	137000	0	6792	421,120
Apr.	4	1	3	170	Apr.	25380	692	4174	250,460
May	60	1	8	518	May	49350	1565	5826	361,214
June	4430	51	579	34,776	June	13280	1038	3251	195,084
July	2332	270	707	43,848	July	9830	1038	2278	141,284
Aug.	554	154	273	16,912	Aug.	9500	763	2135	143,528
Sept.	270	78	147	8,812	Sept.	8580	428	1527	91,636
Oct.	113	40	64	3,966	Oct.	5570	226	1063	65,936
Nov.	1380	49	295	17,684	Nov.	206	68	114	6,872
Dec.	140	9	40	2,480	Dec.	1290	22	160	9,942
Total	..	..	..	145,162	Total	..	..	..	1,696,084

Year 1927

Year 1928

Jan.	1203	100	419	25,990	Jan.	904	23	228	14,162
Feb.	172	5	38	2,158	Feb.	35900	70	2605	151,114
Mar.	12	4	6	386	Mar.	1425	140	479	29,728
Apr.	458	4	81	4,872	Apr.	3266	294	829	49,788
May	88	34	45	2,792	May	370	140	227	14,080
June	68	34	42	2,534	June	1080	125	342	20,544
July	68	49	57	3,508	July	6900	458	1835	113,800
Aug.	113	49	74	4,636	Aug.	2083	331	795	49,268
Sept.	49	27	41	2,436	Sept.	311	142	235	14,114
Oct.	480	30	145	8,968	Oct.	428	128	214	13,282
Nov.	15360	23	1005	60,300	Nov.	172	20	85	5,106
Dec.	790	37	195	12,128	Dec.	20	0	6	352
Total	..	..	..	130,708	Total	..	..	..	475,338

Year 1929

Year 1930

Jan.	0	0	0	0	Jan.	3665	2	433	26,860
Feb.	1518	0	276	15,488	Feb.	998	14	115	6,446
Mar.	998	14	147	9,134	Mar.	840	19	160	9,952
Apr.	490	25	113	6,810	Apr.	89	2	17	1,030
May	25	19	23	1,406	May	188	5	57	3,522
June	100	25	50	3,034	June	1380	100	332	19,948
July	48	39	43	2,670	July	3266	142	978	60,632
Aug.	128	32	70	4,306	Aug.	5650	490	1543	95,690
Sept.	311	57	126	7,522	Sept.	428	100	236	14,146
Oct.	620	89	206	12,766	Oct.	5100	78	1165	72,210
Nov.	3800	78	557	33,452	Nov.	1203	78	280	16,774
Dec.	1474	25	186	11,504	Dec.	9320	39	840	52,110
Total	..	..	..	108,092	Total	..	..	..	379,320

Year 1931

Year 1932

Jan.	100	10	46	2,836	Jan.	114	10	36	2,246
Feb.	114	0	7	390	Feb.	331	7	94	5,474
Mar.	1618	5	235	14,554	Mar.	3800	10	454	28,134
Apr.	16400	142	1266	75,948	Apr.	1762	157	438	26,302
May	39860	204	3735	231,546	May	222	83	116	7,188
June	82240	1425	8762	525,756	June	273	83	147	8,816
July	12170	1518	4720	292,678	July	1380	180	476	29,510
Aug.	2832	658	1230	76,278	Aug.	291	167	222	13,798
Sept.	1290	351	743	44,590	Sept.	6070	222	1210	72,634
Oct.	1810	157	484	29,986	Oct.	1203	130	498	30,886
Nov.	1080	89	254	15,220	Nov.	5400	118	649	38,952
Dec.	7240	89	868	53,818	Dec.	193	17	66	4,096
Total	..	..	..	1,363,600	Total	..	..	..	268,036

MACQUARIE RIVER AT WELLINGTON

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.	1038	6	141	8,772	Jan.	1518	32	230	14,224
Feb.	214	5	38	2,150	Feb.	6570	39	1366	76,530
Mar.	32	1	7	404	Mar.	1080	67	242	15,016
Apr.	25	3	7	404	Apr.	188	39	86	5,144
May	25	3	13	794	May	78	39	54	3,334
June	113	19	40	2,372	June	204	39	69	4,132
July	920	39	191	11,824	July	6730	142	586	36,344
Aug.	1162	100	332	20,568	Aug.	8950	644	2606	161,556
Sept.	1954	114	974	58,448	Sept.	4650	311	1165	69,894
Oct.	4800	89	800	49,596	Oct.	76420	238	5217	323,478
Nov.	3266	48	523	31,378	Nov.	6900	373	1980	118,826
Dec.	1162	89	339	21,060	Dec.	2234	291	676	41,910
Total	..	..	..	207,770	Total	..	..	..	870,388

Year 1935

Year 1936

Jan.	4030	255	1159	71,856	Jan.	693	6	142	8,802
Feb.	5400	128	809	45,316	Feb.	162	8	29	1,678
Mar.	128	48	70	4,376	Mar.	598	32	161	9,974
Apr.	485	32	125	7,538	Apr.	293	39	101	6,078
May	221	78	133	8,238	May	800	32	146	9,026
June	89	78	80	4,790	June	629	48	131	7,886
July	415	114	213	13,216	July	9830	316	2133	132,246
Aug.	1810	188	591	36,648	Aug.	30760	394	2727	169,124
Sept.	644	172	297	17,842	Sept.	2580	196	714	42,876
Oct.	11100	78	964	59,766	Oct.	179	48	99	6,108
Nov.	351	48	141	8,432	Nov.	57	8	32	1,920
Dec.	671	32	141	8,738	Dec.	760	16	215	13,316
Total	..	..	..	286,756	Total	..	..	..	409,034

Year 1937

Year 1938

Jan.	800	16	177	10,970	Jan.	1050	6	168	10,408
Feb.	32	3	12	710	Feb.	340	4	88	4,950
Mar.	660	3	85	5,284	Mar.	4	0	2	108
Apr.	26	4	10	624	Apr.	26	0	1	72
May	32	6	16	986	May	173	10	36	2,240
June	79	21	44	2,664	June	49	3	20	1,174
July	48	26	33	2,074	July	280	33	93	5,790
Aug.	850	32	138	8,580	Aug.	930	129	350	21,750
Sept.	3270	147	722	43,332	Sept.	840	41	203	12,190
Oct.	132	57	95	5,892	Oct.	3800	15	393	23,998
Nov.	598	57	312	18,748	Nov.	617	48	244	14,682
Dec.	253	12	80	4,928	Dec.	39	0	11	654
Total	..	..	..	104,792	Total	..	..	..	98,016

Year 1939

Year 1940

Jan.	19	0	0.6	40	Jan.	10	0	2	120
Feb.	14	0	2	94	Feb.	0	0	0	0
Mar.	0	0	0	0	Mar.	0	0	0	0
Apr.	699	0	216	12,988	Apr.	25	0	5	282
May	89	14	34	2,084	May	19	2	8	484
June	67	25	38	2,282	June	39	2	8	506
July	510	39	194	11,848	July	39	10	16	974
Aug.	9670	67	1790	111,002	Aug.	19	7	13	830
Sept.	728	100	289	17,338	Sept.	238	1	37	2,194
Oct.	5730	157	891	55,258	Oct.	89	1	22	1,372
Nov.	2300	114	440	26,410	Nov.	1396	1	90	5,394
Dec.	114	10	32	1,982	Dec.	4270	1	372	23,096
Total	..	..	..	241,326	Total	..	..	..	35,252

MACQUARIE RIVER AT WELLINGTON

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.	78500	157	4774	295,964	Jan.	10	0	2	108
Feb.	385	33	162	9,056	Feb.	0	0	0	0
Mar.	360	27	95	5,886	Mar.	0	0	0	0
Apr.	58	0	12	738	Apr.	0	0	0	0
May	6	0	3	198	May	1690	0	115	7,116
June	2915	6	452	27,136	June	46460	48	2680	160,776
July	311	78	137	8,512	July	45260	625	6990	433,430
Aug.	172	32	62	3,820	Aug.	2366	360	820	50,812
Sept.	373	48	117	7,002	Sept.	10170	410	2237	134,238
Oct.	536	25	167	10,326	Oct.	2832	280	716	44,414
Nov.	89	10	27	1,638	Nov.	26080	260	2566	153,986
Dec.	699	0	73	4,504	Dec.	1630	129	355	21,994
Total	..	..	..	374,780	Total	..	..	..	1,006,874

Year 1943

Year 1944

Jan.	5570	56	600	36,896	Jan.	373	10	59	3,614
Feb.	354	14	80	4,484	Feb.	92	2	15	864
Mar.	19	1	7	396	Mar.	1	0	0.1	4
Apr.	4	1	3	160	Apr.	0	0	0	0
May	9830	2	994	61,646	May	80	0	13	830
June	699	238	416	24,936	June	68	32	43	2,564
July	393	238	297	18,402	July	119	39	58	3,622
Aug.	8950	331	2614	162,052	Aug.	596	32	119	7,374
Sept.	23250	699	2047	122,838	Sept.	197	32	75	4,514
Oct.	17720	461	2587	160,380	Oct.	32	4	14	840
Nov.	8950	273	1058	63,500	Nov.	10	0	4	238
Dec.	373	67	225	13,974	Dec.	0	0	0	0
Total	..	..	..	669,664	Total	..	..	..	24,464

Year 1945

Year 1946

Jan.	119	0	16	1,004	Jan.	553	0	78	4,820
Feb.	940	32	183	10,242	Feb.	126	11	33	1,838
Mar.	371	14	88	5,458	Mar.	11	0	1.5	86
Apr.	231	25	86	5,132	Apr.	0	0	0	0
May	1520	32	185	11,498	May	26	0	14	852
June	35430	49	3052	183,154	June	49	15	31	1,846
July	2060	356	813	50,424	July	90	40	66	4,118
Aug.	11630	583	3393	210,366	Aug.	141	26	60	3,748
Sept.	3020	158	530	31,796	Sept.	26	11	18	1,064
Oct.	158	40	87	5,404	Oct.	261	3	55	3,404
Nov.	113	15	44	2,652	Nov.	648	3	78	4,708
Dec.	195	11	35	2,148	Dec.	785	20	187	11,560
Total	..	..	..	519,278	Total	..	..	..	38,044

Year 1947

Year 1948

Jan.	261	0	35	2,168	Jan.	10170	329	1332	82,596
Feb.	4850	0	294	16,450	Feb.	12570	174	2017	116,980
Mar.	1460	20	245	15,194	Mar.	8030	110	644	39,950
Apr.	110	2	21	1,250	Apr.	816	95	251	15,050
May	492	14	65	4,020	May	4280	210	643	39,884
June	141	9	45	2,716	June	12960	210	2317	139,002
July	4000	27	530	32,858	July	2440	371	829	51,386
Aug.	783	125	281	17,442	Aug.	2000	192	464	28,744
Sept.	9800	308	1796	109,558	Sept.	1810	350	641	38,462
Oct.	517	125	310	19,210	Oct.	308	68	198	12,260
Nov.	25600	192	1773	106,374	Nov.	81	35	63	3,776
Dec.	9980	192	3955	245,188	Dec.	27	0	10	594
Total	..	..	..	572,428	Total	..	..	..	568,684

MACQUARIE RIVER AT WELLINGTON

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.	718	15	104	6,476	Jan.	17700	41	1377	85,398
Feb.	783	10	120	6,700	Feb.	67460	141	7342	411,136
Mar.	543	15	119	7,348	Mar.	90600	543	6293	390,214
Apr.	71	15	28	1,690	Apr.	94300	820	16195	971,716
May	110	26	42	2,600	May	10420	499	1571	97,382
June	10530	60	1316	78,968	June	57640	1070	10953	657,154
July	11450	157	1358	84,168	July	100700	3920	19252	1,193,644
Aug.	816	157	326	20,232	Aug.	61600	3130	12948	802,800
Sept.	15550	329	3263	195,768	Sept.	16500	1520	3278	196,700
Oct.	9070	492	2198	136,252	Oct.	87800	2380	18658	1,156,826
Nov.	2310	228	560	33,578	Nov.	76420	1640	13680	820,800
Dec.	718	71	220	13,612	Dec.	5180	529	1477	91,550
Total	..	..	..	587,392	Total	..	..	..	6,875,320

Year 1951

Year 1952

Jan.	1126	370	587	36,418	Jan.	186	15	51	3,170
Feb.	654	237	361	20,204	Feb.	15	6	8	456
Mar.	416	186	275	17,054	Mar.	1770	7	168	10,444
Apr.	254	143	181	10,860	Apr.	5500	88	644	38,610
May	330	156	204	12,620	May	1180	330	656	40,672
June	5820	203	1391	83,452	June	96550	930	11993	719,602
July	32400	820	5253	325,678	July	59200	1235	9187	569,636
Aug.	36830	1345	7417	459,860	Aug.	38930	3230	11691	724,830
Sept.	8160	529	1452	87,092	Sept.	6620	891	2433	145,952
Oct.	4880	470	1119	69,358	Oct.	4730	654	1458	90,418
Nov.	416	143	228	13,684	Nov.	1460	330	613	36,788
Dec.	291	71	154	9,552	Dec.	1770	156	338	20,940
Total	..	..	..	1,145,832	Total	..	..	..	2,401,518

Year 1953

Year 1954

Jan.	12730	237	1516	94,022	Jan.	850	22	215	13,312
Feb.	470	156	236	13,246	Feb.	24440	145	4277	239,528
Mar.	237	97	124	7,706	Mar.	1345	83	322	19,942
Apr.	237	88	116	6,936	Apr.	455	48	127	7,624
May	891	156	364	22,556	May	111	83	94	5,806
June	416	170	229	13,750	June	383	83	164	9,810
July	310	203	230	14,286	July	250	117	157	9,704
Aug.	3680	186	719	44,586	Aug.	313	130	182	11,266
Sept.	505	270	339	20,312	Sept.	290	83	147	8,792
Oct.	1180	212	378	23,460	Oct.	15820	83	2159	133,870
Nov.	3230	212	748	44,856	Nov.	11240	406	2074	124,462
Dec.	505	18	140	8,704	Dec.	520	105	274	16,998
Total	..	..	..	314,420	Total	..	..	..	601,114

Year 1955

Year 1956

Jan.	1235	28	172	10,680	Jan.	13280	170	956	59,260
Feb.	150000	73	13841	775,120	Feb.	22580	330	6274	363,894
Mar.	13830	442	3182	197,280	Mar.	138500	1400	16480	1,021,770
Apr.	485	272	333	19,982	Apr.	12510	1840	4348	260,900
May	930	203	475	29,466	May	33100	1980	8108	502,676
June	891	330	571	34,276	June	87800	2220	12121	727,290
July	1910	370	694	43,040	July	60000	5180	14627	906,880
Aug.	19200	622	5137	318,672	Aug.	51600	2300	7288	451,870
Sept.	2740	820	1627	97,600	Sept.	14270	1350	3487	209,150
Oct.	45020	622	4267	264,132	Oct.	15600	1575	5555	344,440
Nov.	19650	499	2366	141,964	Nov.	3680	450	1293	77,586
Dec.	3340	350	823	51,028	Dec.	450	166	299	18,532
Total	..	..	..	1,983,240	Total	..	..	..	4,944,248

MACQUARIE RIVER AT WELLINGTON

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.	215	80	136	8,440	Jan.	425	12	49	3,012
Feb.	235	80	160	8,982	Feb.	3920	98	854	47,820
Mar.	175	98	119	7,356	Mar.	195	26	64	3,982
Apr.	340	80	148	8,876	Apr.	425	17	103	6,158
May	195	117	144	8,930	May	310	30	107	6,632
June	169	98	122	7,310	June	117	32	46	2,764
July	280	175	219	13,550	July	1390	136	464	28,746
Aug.	1150	195	355	22,014	Aug.	5180	215	1079	66,878
Sept.	438	117	219	13,158	Sept.	6140	675	1714	102,830
Oct.	117	36	82	5,086	Oct.	15820	610	3077	190,790
Nov.	36	10	23	1,400	Nov.	510	117	240	14,404
Dec.	36	8	15	938	Dec.	5820	175	791	49,060
Total	..	..	..	106,040	Total	..	..	..	523,076

Year 1959

Year 1960

Jan.	14930	117	1463	90,710	Jan.	325	98	200	12,374
Feb.	3230	175	563	31,520	Feb.	1030	117	286	16,602
Mar.	6790	235	1171	72,592	Mar.	117	32	51	3,166
Apr.	51870	280	4209	252,524	Apr.	425	24	80	4,808
May	255	175	203	12,580	May	1390	155	442	27,410
June	2000	175	359	21,560	June	425	215	269	16,150
July	9060	280	2081	129,040	July	10400	215	2197	136,200
Aug.	2000	340	857	53,158	Aug.	57120	880	6787	420,810
Sept.	510	225	297	17,830	Sept.	8880	540	2198	131,850
Oct.	6790	255	731	45,334	Oct.	2380	510	1022	63,336
Nov.	5420	365	1138	68,250	Nov.	1670	180	453	27,188
Dec.	1030	117	320	19,842	Dec.	3030	225	833	51,634
Total	..	..	..	814,940	Total	..	..	..	911,528

Year 1961

Year 1962

Jan.	1390	90	360	22,326	Jan.	1598	275	558	34,600
Feb.	78	34	45	2,530	Feb.	670	180	427	23,888
Mar.	540	56	145	8,992	Mar.	200	104	146	9,060
Apr.	420	56	136	8,150	Apr.	160	56	104	6,222
May	225	84	115	7,136	May	980	40	194	12,052
June	200	90	144	8,628	June	3130	180	585	35,100
July	1620	140	385	23,884	July	14930	120	1297	80,438
Aug.	15150	330	2054	127,374	Aug.	17620	510	3264	202,340
Sept.	1295	250	636	38,166	Sept.	2380	405	766	45,960
Oct.	3130	180	455	28,208	Oct.	540	275	351	21,732
Nov.	22580	250	2452	147,104	Nov.	330	160	230	13,814
Dec.	2740	330	1069	66,290	Dec.	5180	140	1031	63,920
Total	..	..	..	488,788	Total	..	..	..	549,126

Year 1963

Year 1964

Jan.	14710	390	1970	122,110	Jan.	275	120	165	10,204
Feb.	16720	330	3482	195,010	Feb.	140	34	81	4,682
Mar.	850	140	274	16,960	Mar.	58	25	40	2,510
Apr.	540	140	247	14,834	Apr.	1340	14	166	9,950
May	7130	180	1449	89,820	May	485	90	179	10,748
June	11870	1130	3607	216,420	June	24680	102	6155	369,272
July	14490	950	3786	234,760	July	16270	1600	6333	392,630
Aug.	11240	660	3045	188,786	Aug.	9820	840	2091	129,664
Sept.	9970	660	2683	160,980	Sept.	No Records			153,000*
Oct.	4180	510	1360	84,330	Oct.	18070	1110	5518	342,100
Nov.	1560	200	535	32,100	Nov.	16720	430	3409	204,524
Dec.	1380	180	466	28,902	Dec.	430	163	250	15,482
Total	..	..	..	1,385,012	Total	..	..	..	1,644,766*

* Estimated

MACQUARIE RIVER AT WELLINGTON

Year 1965

Year 1966

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.	163	34	88	5,286	Jan.	100	64	75	4,646
Feb.	48	30	42	2,368	Feb.	82	76	78	4,378
Mar.	34	6	23	1,416	Mar.	96	56	69	4,302
Apr.	34	14	26	1,590	Apr.	65	56	60	3,608
May	36	26	30	1,830	May	75	60	68	4,190
June	45	35	38	2,258	June	92	47	66	3,938
July	44	34	40	2,468					
Aug.	47	42	46	2,882					
Sept.	54	47	50	3,024					
Oct.	66	52	58	3,566					
Nov.	80	67	77	4,626					
Dec.	120	64	69	4,262					
Total	..	..	..	35,576					

BELL RIVER AT NEWREA

LOCATION: Latitude 32°42' Longitude 148°58'

PERIOD OF ESTABLISHMENT: July 1939 to date.

COMPLETE YEARS OF COMPUTED RECORDS: 26 years

ZERO OF GAUGE: R.L. 82.43 Assumed Datum.
Approximately 1,000 feet above sea level.

CATCHMENT AREA: 620 square miles.

CONTROL: Concrete causeway.

EQUIPMENT: Float recorder installed September 1957.
Staff gauge 0 to 25 feet.

CURRENT METER OBSERVATIONS:

(a) Number obtained	:	164
(b) Maximum observation in cusecs	:	5,908
(c) Minimum observation in cusecs	:	0.3

MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS: 70,000 cusecs.

MEAN DAILY DISCHARGE FOR 26 YEARS: 204 cusecs.

MEAN ANNUAL DISCHARGE FOR 26 YEARS: 149,000 acre feet.

BELL RIVER AT NEWREA

Year 1939

Year 1940

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.	2	1	1.3	82
Feb.	..	..	..	..	Feb.	1	0.5	1	46
Mar.	..	..	..	..	Mar.	1	0.5	0.6	42
Apr.	..	..	..	..	Apr.	463	0.5	18	1,118
May	..	..	..	..	May	5	2	2	136
June	..	..	..	..	June	2	2	2	120
July	..	..	..	..	July	2	1	1.5	90
Aug.	1400	12	203	12,582	Aug.	2	1	2	104
Sept.	80	5	22	1,336	Sept.	350	1	26	1,536
Oct.	2125	5	124	7,712	Oct.	5	1	2	118
Nov.	390	12	53	3,194	Nov.	1	0.5	1	40
Dec.	12	2	4	228	Dec.	23	0.5	2	106
Total	..	..	..	..	Total	..	..	..	3,538

Year 1941

Year 1942

Jan.	28000	47	1121	69,522	Jan.	2	0.7	1	48
Feb.	34	12	21	1,184	Feb.	5	0.7	2	116
Mar.	12	6	10	624	Mar.	2	0.2	1	48
Apr.	12	6	6	372	Apr.	5	0.7	2	112
May	6	6	6	372	May	810	0.7	43	2,680
June	268	6	46	2,748	June	12150*	2*	668*	40,076*
July	34	22	24	1,508	July	5144*	68*	748*	46,412*
Aug.	40	12	21	1,286	Aug.	303*	61*	117*	7,262*
Sept.	79	22	25	1,532	Sept.	574*	49*	142*	8,542*
Oct.	283	5	26	1,536	Oct.	75	12	33	2,074
Nov.	40	0.7	3	190	Nov.	3070	5	135	8,092
Dec.	351	0.7	8	530	Dec.	317	2	33	2,032
Total	..	..	..	81,404	Total	..	..	..	117,494

Year 1943

Year 1944

Jan.	1540	5	116	7,222	Jan.	5	2	3	184
Feb.	92	3	19	1,054	Feb.	5	2	5	284
Mar.	5	0.7	2	140	Mar.	12	5	6	400
Apr.	5	0.7	3	172	Apr.	5	2	2	150
May	14	2	5	280	May	5	2	2	138
June	27	5	15	906	June	1	1	1	60
July	252	14	23	1,444	July	3	1	1	82
Aug.	640	55	244	15,140	Aug.	8	1	3	180
Sept.	2125	40	106	6,366	Sept.	3	1	3	156
Oct.	2125	12	149	9,252	Oct.	3	0	1	56
Nov.	1600	2	119	7,130	Nov.	2	0	0.5	24
Dec.	12	0	7	428	Dec.	1	0	0.6	42
Total	..	..	..	49,534	Total	..	..	..	1,756

Year 1945

Year 1946

Jan.	244	1	17	1,034	Jan.	532	1	16	994
Feb.	5820	1	106	5,954	Feb.	316	1	12	700
Mar.	281	2	69	4,308	Mar.	3	1	1	82
Apr.	251	2	9	516	Apr.	3	1	1	80
May	163	2	9	582	May	8	1	2.4	150
June	5500	2	253	15,188	June	3	1	1.2	70
July	810	55	103	6,400	July	1	1	1	62
Aug.	6810	27	289	17,912	Aug.	1	0.5	1	59
Sept.	80	27	37	2,206	Sept.	3	0.5	1.6	98
Oct.	27	16	17	1,014	Oct.	3	1	1	70
Nov.	42	3	9	518	Nov.	1865	1	24	1,484
Dec.	3	3	3	186	Dec.	2038	1	95	5,888
Total	..	..	..	55,818	Total	..	..	..	9,737

* Estimated

BELL RIVER AT NEWREA

Year 1947

Year 1948

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.	8	1	2	132	Jan.	1190	4	44	3,114
Feb.	208	1	6	348	Feb.	1190	2.5	89	5,160
Mar.	1600	1	76	4,690	Mar.	758	2.5	41	2,444
Apr.	1	1	1	60	Apr.	135	2	9	556
May	810	1	23	1,408	May	135	2.5	11	692
June	8	3	3.5	210	June	444	16	178	10,672
July	4170	3	128	7,896	July	290	16	86	5,302
Aug.	125	8	30	1,866	Aug.	325	0.5	25	1,546
Sept.	8350	27	338	20,312	Sept.	1240	16	259	15,562
Oct.	109	16	38	2,364	Oct.	30	10	18	1,136
Nov.	9200	16	366	21,950	Nov.	10	4.7	7	420
Dec.	2710	42	362	22,482	Dec.	10	0.7	1.5	92
Total	..	..	..	83,718	Total	..	..	..	46,696

Year 1949

Year 1950

Jan.	853	0.7	67	4,184	Jan.	1670	4.7	524	32,518
Feb.	4.7	0.7	1.7	98	Feb.	3730	14	367	20,560
Mar.	10	0.7	2.6	161	Mar.	31980	9	1230	76,250
Apr.	4.7	0.7	2.2	134	Apr.	27540	182	1940	116,680
May	1240	2.2	49	3,044	May	980	95	229	14,196
June	19	0.7	6	362	June	4125	95	1130	67,660
July	1240	0.7	158	9,302	July	12350	261	1685	104,474
Aug.	30	2.2	9	546	Aug.	21160	351	2320	143,720
Sept.	1036	10	195	11,720	Sept.	5300	119	680	40,760
Oct.	357	63	199	12,316	Oct.	49000	351	3410	211,420
Nov.	106	19	45	2,682	Nov.	19860	109	1800	108,008
Dec.	1670	10	110	6,838	Dec.	655	139	237	14,678
Total	..	..	..	51,887	Total	..	..	..	950,924

Year 1951

Year 1952

Jan.	139	48	82	5,076	Jan.	16	3.5	11	700
Feb.	48	1.5	17	929	Feb.	6	3.5	5	313
Mar.	139	10	39	2,396	Mar.	235	6	26	1,622
Apr.	48	6	26	1,564	Apr.	2840	6	141	8,540
May	48	10	30	1,852	May	1170	24	102	6,340
June	202	24	63	3,808	June	28280	581	2984	179,054
July	6215	48	709	43,964	July	27540	350	2429	150,600
Aug.	16620	109	1727	107,076	Aug.	1520	168	713	44,226
Sept.	350	85	157	9,422	Sept.	1300	48	287	17,210
Oct.	139	24	63	3,890	Oct.	308	24	112	6,976
Nov.	34	10	26	1,556	Nov.	200	34	87	5,232
Dec.	109	16	31	1,896	Dec.	1595	16	201	12,486
Total	..	..	..	183,429	Total	..	..	..	433,299

Year 1953

Year 1954

Jan.	6700	65	1171	72,626	Jan.	2970	22	221	13,718
Feb.	24	16	16	912	Feb.	780	27	157	8,768
Mar.	24	10	16	996	Mar.	76	27	35	2,162
Apr.	34	10	19	1,140	Apr.	225	27	76	2,550
May	65	24	44	2,748	May	39	27	28	1,746
June	65	16	30	1,826	June	57	27	35	2,100
July	24	16	23	1,424	July	39	27	30	1,842
Aug.	1025	24	138	8,582	Aug.	76	18	31	1,920
Sept.	85	29	57	3,398	Sept.	39	18	24	1,414
Oct.	109	24	38	2,376	Oct.	565	18	131	8,116
Nov.	1520	24	170	10,214	Nov.	890	39	291	17,436
Dec.	98	39	65	4,054	Dec.	98	10	40	2,452
Total	..	..	..	110,296	Total	..	..	..	64,224

BELL RIVER AT NEWREA

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.	196	5	57	3,538	Jan.	1515	18	73	4,526
Feb.	25500	27	1824	102,150	Feb.	1055	39	278	16,130
Mar.	No	Records		12,000*	Mar.	70000	120	2650	164,380
Apr.	27	27	27	1,620	Apr.	5380	180	974	58,450
May	57	39	42	2,598	May	4280	243	1130	70,100
June	120	39	59	3,524	June	27910	210	1847	110,800
July	156	39	83	5,154	July	14500	120	1530	95,080
Aug.	2155	76	461	28,570	Aug.	33240	210	1610	99,800
Sept.	225	76	143	8,296	Sept.	3975	76	470	28,140
Oct.	No	Records		64,000*	Oct.	6500	76	727	45,070
Nov.	No	Records		6,000*	Nov.	565	100	207	12,420
Dec.	1055	27	110	6,842	Dec.	100	56	81	5,024
Total	..	..	..	244,292*	Total	..	..	..	709,920

Year 1957

Year 1958

Jan.	76	36	69	4,272	Jan.	1268	0.8	400	2,478
Feb.	56	36	40	2,232	Feb.	565	3.5	28	1,546
Mar.	27	27	27	1,674	Mar.	174	2.8	14	886
Apr.	62	27	29	1,720	Apr.	338	2.2	19	1,156
May	27	27	27	1,674	May	152	5.5	25	1,521
June	27	27	27	1,620	June	42	10	13	779
July	68	27	34	2,088	July	174	26	42	2,600
Aug.	170	27	43	2,688	Aug.	2405	23	164	10,146
Sept.	51	7	32	1,908	Sept.	892	70	178	10,660
Oct.	30	16	23	1,416	Oct.	1273	60	234	14,546
Nov.	34	5.5	12	689	Nov.	114	10	33	1,994
Dec.	5.5	2.2	3.7	228	Dec.	322	6	25	1,567
Total	..	..	..	22,209	Total	..	..	..	49,879

Year 1959

Year 1960

Jan.	338	3.5	34	2,084	Jan.	100	2	13	824
Feb.	2060	8	146	8,188	Feb.	479	2	31	1,798
Mar.	733	34	109	6,756	Mar.	8	2	4	254
Apr.	38410	115	1752	105,122	Apr.	102	4	13	808
May	140	91	106	6,544	May	205	16	56	3,476
June	980	91	144	8,656	June	76	34	42	2,520
July	3885	75	349	21,644	July	3016	34	239	14,840
Aug.	425	68	150	9,284	Aug.	14830	114	912	56,624
Sept.	122	66	74	4,444	Sept.	2048	94	324	19,428
Oct.	137	56	73	4,520	Oct.	272	59	114	7,102
Nov.	92	19	48	2,900	Nov.	280	32	65	3,882
Dec.	50	10	20	1,216	Dec.	640	26	96	5,964
Total	..	..	..	181,358	Total	..	..	..	117,520

Year 1961

Year 1962

Jan.	50	4	16	968	Jan.	201	13	40	2,464
Feb.	28	3	6	328	Feb.	193	7	39	2,174
Mar.	128	8	17	1,136	Mar.	8	3.6	5.8	357
Apr.	105	3	12	744	Apr.	6.8	3.6	5.4	322
May	15	7.6	11	682	May	296	4.4	31	1,926
June	34	9	20	1,202	June	400	23	77	4,600
July	525	23	72	4,482	July	1033	15	93	5,780
Aug.	2936	50	292	18,124	Aug.	3696	63	308	19,082
Sept.	759	37	112	6,704	Sept.	545	42	82	4,888
Oct.	134	13	34	2,124	Oct.	42	18	27	1,666
Nov.	6150	10	259	15,510	Nov.	55	3	12	711
Dec.	272	24	51	3,172	Dec.	1880	3	51	3,179
Total	..	..	..	55,176	Total	..	..	..	47,149

* Estimated.

BELL RIVER AT NEWREA

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.	169	4	16	1,004	Jan.	18	4.4	7.4	458
Feb.	380	2	45	2,512	Feb.	350	3	7.3	426
Mar.	545	2.4	23	1,438	Mar.	6.2	3.5	4.2	258
Apr.	18	2.8	6.5	398	Apr.	22	2.1	6.5	392
May	1427	7.6	77	4,756	May	52	10	17	1,044
June	970	43	201	12,050	June	2426	23	190	11,368
July	3290	48	434	26,882	July	2720	58	384	23,820
Aug.	1460	60	261	16,208	Aug.	2510	48	167	10,382
Sept.	580	58	153	9,192	Sept.	2864	75	301	18,072
Oct.	290	39	86	5,312	Oct.	5528	90	515	31,918
Nov.	88	15	38	2,272	Nov.	976	23	146	8,736
Dec.	58	8	25	1,528	Dec.	26	11	18	1,110
Total	..	..	..	83,546	Total	..	..	..	107,984

Year 1965

Year 1966

Jan.	11	1.7	4	248	Jan.	17	0.1	1.3	78
Feb.	3.6	1.2	2.5	140	Feb.	1.8	0	0.5	30
Mar.	7.3	1	3.4	212	Mar.	144	0	15	907
Apr.	4	1.3	2.3	138	Apr.	1.5	1.1	1.2	73
May	11	1.5	3.0	188	May	7.2	0.9	1.2	74
June	23	7	9.6	578	June	48	0.9	13	759
July	14	8	11	656					
Aug.	38	8	19	1,144					
Sept.	30	5	16	960					
Oct.	77	0.4	9	582					
Nov.	20	0.6	2.9	176					
Dec.	234	0.8	8.7	538					
Total	..	..	..	5,560	Total	..	..	..	..

MACQUARIE RIVER AT DUBBO

LOCATION: Latitude 32°16' Longitude 148°36'

PERIOD OF ESTABLISHMENT: June, 1885 to date

COMPLETE YEARS OF COMPUTED RECORDS: 80

ZERO OF GAUGE: Station No. 4 - R.L. 822.40 North West Water Conservation Datum

CATCHMENT AREA: 7,700 square miles

CONTROL: Stations Nos. 1, 2 and 3 - Gravel bars
Station No. 4 - Concrete weir

EQUIPMENT: Automatic Recorder (Manometer-Servo) installed May, 1966
Staff gauge, range 0 to 40 feet

CURRENT METER OBSERVATIONS:

(a) Number obtained	:	314
(b) Maximum Observation in Cusecs	:	120,900
(c) Minimum Observation in Cusecs	:	0.13

MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS: 207,350 cusecs

MEAN DAILY DISCHARGE FOR 80 YEARS: 1,220 cusecs

MEAN ANNUAL DISCHARGE FOR 80 YEARS: 890,000 acre feet

REMARKS: Station No. 1 - at Dubbo, June, 1885 to February, 1892
Station No. 2 - at Dubbo Railway Bridge, March, 1892 to June, 1929
Station No. 3 - at Dundullimal, July, 1929 to June, 1944
Station No. 4 - at Dubbo Town Water Supply Weir, July, 1944 to date

MACQUARIE RIVER AT DUBBO

Year 1885

Year 1886

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.	340	29	82	4,708
Feb.	...	..	..	..	Feb.	198	4	30	1,706
Mar.	..	..	..	..	Mar.	0	0	0	0
Apr.	..	..	..	..	Apr.	165	0	24	1,454
May	..	..	..	..	May	1170	0	104	6,454
June	277	29	78	4,686	June	277	0	92	5,494
July	214	44	81	5,028	July	5860	0	457	28,380
Aug.	29	29	29	1,798	Aug.	30080	515	6875	426,250
Sept.	29	19	24	1,440	Sept.	3320	277	968	58,074
Oct.	214	19	57	3,558	Oct.	3060	123	618	38,298
Nov.	24	0	7	432	Nov.	21320	165	2566	147,946
Dec.	744	0	156	9,648	Dec.	51900	426	7962	493,652
Total	..	..	..	..	Total	..	..	..	1,212,416

Year 1887

Year 1888

Jan.	21760	123	3041	188,576	Jan.	7280	165	1364	84,584
Feb.	31120	513	3904	218,650	Feb.	744	88	243	14,120
Mar.	5380	214	1377	85,374	Mar.	744	123	203	12,604
Apr.	4010	398	1492	89,534	Apr.	123	59	79	4,760
May	398	165	245	15,206	May	59	59	59	3,658
June	6700	148	2226	133,560	June	59	29	33	1,980
July	20880	1060	4743	294,110	July	29	29	29	1,798
Aug.	9870	629	2950	182,890	Aug.	29	29	29	1,798
Sept.	57520	1115	8912	534,730	Sept.	29	29	29	1,740
Oct.	1120	277	510	31,604	Oct.	29	14	24	1,498
Nov.	879	214	462	27,730	Nov.	14	1	4	254
Dec.	14960	214	1970	121,544	Dec.	59	0	117	1,066
Total	..	..	..	1,923,508	Total	..	..	..	129,860

Year 1889

Year 1890

Jan.	1	0	0	14	Jan.	340	59	107	6,632
Feb.	0	0	0	0	Feb.	18200	59	3367	188,590
Mar.	0	0	0	0	Mar.	67200	1010	10289	637,940
Apr.	1440	0	221	13,260	Apr.	16250	750	3134	188,070
May	19100	59	1419	87,976	May	10740	277	1259	78,118
June	15900	2030	5806	348,360	June	40600	2290	8926	535,540
July	2290	340	870	53,936	July	30600	2800	8039	498,460
Aug.	1500	214	594	36,802	Aug.	19100	1320	5199	322,340
Sept.	5900	340	1010	60,604	Sept.	9270	1010	2646	158,740
Oct.	10450	340	2535	157,178	Oct.	7840	744	2313	143,404
Nov.	1770	214	586	35,168	Nov.	879	398	573	34,372
Dec.	4350	340	982	60,868	Dec.	398	123	224	13,870
Total	..	..	..	854,152	Total	..	..	..	2,806,076

Year 1891

Year 1892

Jan.	16600	123	1697	105,196	Jan.	1060	165	385	23,852
Feb.	1010	88	359	20,106	Feb.	165	88	172	9,986
Mar.	513	59	156	9,670	Mar.	340	88	109	6,732
Apr.	426	59	133	7,958	Apr.	879	88	199	11,966
May	256	88	125	7,758	May	744	88	137	8,522
June	13000	340	3574	214,432	June	4350	744	1638	98,268
July	36820	2290	8533	529,030	July	22300	744	4194	260,044
Aug.	20980	2290	7081	439,000	Aug.	5380	513	1030	63,850
Sept.	20320	1770	6883	412,980	Sept.	52660	1770	10360	621,610
Oct.	4870	629	1520	94,228	Oct.	19660	2290	6872	426,040
Nov.	2540	513	803	48,202	Nov.	5900	744	2623	157,404
Dec.	1770	277	668	41,442	Dec.	744	277	452	27,994
Total	..	..	..	1,930,002	Total	..	..	..	1,716,268

2818
2832

MACQUARIE RIVER AT DUBBO

Year 1893

Year 1894

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.	2800	277	789	48,930	Jan.	2800	136	702	43,518
Feb.	513	214	271	15,162	Feb.	1010	123	313	17,534
Mar.	19000	214	2364	146,568	Mar.	12070	123	1714	106,262
Apr.	2290	340	607	36,400	Apr.	16030	590	2386	143,132
May	28570	340	1492	92,520	May	7780	455	1310	81,182
June	28240	1320	6110	366,600	June	7460	744	2076	124,542
July	24280	1010	3735	231,580	July	12730	879	3836	237,824
Aug.	4870	1010	1875	116,240	Aug.	9430	1010	3144	194,950
Sept.	8430	744	2044	122,646	Sept.	23950	1270	4787	287,200
Oct.	1770	398	888	55,060	Oct.	17680	924	2722	168,756
Nov.	10860	319	1806	108,342	Nov.	924	214	501	30,084
Dec.	629	165	280	17,384	Dec.	1010	181	312	19,350
Total	..	..	..	1,357,432	Total	..	..	..	1,454,334

Year 1895

Year 1896

Jan.	10740	165	1254	77,748	Jan.	59	49	53	3,288
Feb.	4610	426	1004	56,232	Feb.	7560	44	690	40,004
Mar.	484	111	176	10,930	Mar.	165	88	129	8,004
Apr.	98	79	95	5,682	Apr.	165	111	125	7,478
May	136	79	89	5,540	May	398	111	175	10,822
June	235	123	131	7,836	June	4350	181	968	58,054
July	277	136	169	10,468	July	1120	298	491	30,450
Aug.	277	123	188	11,658	Aug.	7130	198	825	51,154
Sept.	235	88	140	8,416	Sept.	3320	298	918	55,066
Oct.	924	111	358	22,194	Oct.	513	198	287	17,824
Nov.	123	59	94	5,642	Nov.	3580	181	592	35,542
Dec.	513	49	106	6,598	Dec.	1320	256	660	40,936
Total	..	..	..	228,944	Total	..	..	..	358,622

Year 1897

Year 1898

Jan.	552	111	230	14,269	Jan.	3660	79	556	34,502
Feb.	111	69	78	4,376	Feb.	2290	69	347	19,414
Mar.	69	39	54	3,348	Mar.	148	88	106	6,596
Apr.	39	39	39	2,340	Apr.	88	59	65	3,894
May	39	39	39	2,418	May	59	54	54	3,368
June	2200	69	279	16,714	June	18950	54	700	42,018
July	10420	69	994	61,610	July	552	111	209	12,982
Aug.	1380	214	536	33,222	Aug.	426	123	210	13,036
Sept.	706	148	326	19,550	Sept.	15700	214	2326	139,548
Oct.	964	165	433	26,816	Oct.	3060	123	505	31,232
Nov.	298	88	132	7,920	Nov.	1220	123	326	19,578
Dec.	455	59	98	6,080	Dec.	123	79	103	6,356
Total	..	..	..	198,662	Total	..	..	..	332,524

Year 1899

Year 1900

Jan.	111	79	81	5,036	Jan.	706	88	177	10,889
Feb.	79	69	72	4,044	Feb.	181	111	122	7,028
Mar.	69	54	59	3,648	Mar.	2450	98	387	23,816
Apr.	398	54	107	6,454	Apr.	1014	148	297	17,655
May	69	59	60	3,718	May	11100	181	2324	144,060
June	59	59	59	3,540	June	8450	789	2781	166,864
July	398	59	154	9,518	July	37120	2319	9593	594,778
Aug.	6480	111	949	58,814	Aug.	5770	744	1503	92,366
Sept.	1010	148	302	18,148	Sept.	3300	744	1235	73,484
Oct.	148	111	138	8,534	Oct.	1116	148	381	23,419
Nov.	513	98	249	14,968	Nov.	198	88	124	7,387
Dec.	256	88	130	8,056	Dec.	111	59	81	4,969
Total	..	..	..	144,478	Total	..	..	..	1,166,715

MACQUARIE RIVER AT DUBBO

Year 1901

Year 1902

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.	59	34	44	2,725	Jan.	39	34	36	2,219
Feb.	34	29	33	1,828	Feb.	34	24	29	1,630
Mar.	4150	29	502	30,848	Mar.	24	34	24	1,475
Apr.	14370	49	881	52,856	Apr.	24	24	24	1,428
May	4450	79	436	26,796	May	24	24	24	1,475
June	969	123	312	18,533	June	24	24	24	1,428
July	277	181	211	12,989	July	44	24	28	1,753
Aug.	15455	165	2835	175,760	Aug.	44	34	36	2,199
Sept.	5870	398	1240	73,748	Sept.	79	39	50	3,004
Oct.	5020	198	572	35,147	Oct.	79	44	62	3,776
Nov.	1616	136	493	29,305	Nov.	44	34	41	2,419
Dec.	136	39	57	3,520	Dec.	4150	29	403	24,754
Total	..	..	..	464,055	Total	..	..	..	47,560

Year 1903

Year 1904

Jan.	111	29	53	3,250	Jan.	340	34	118	7,228
Feb.	29	1	6	335	Feb.	44	24	31	1,757
Mar.	340	1	33	2,040	Mar.	59	24	29	1,812
Apr.	15020	29	920	55,230	Apr.	54	29	31	1,854
May	513	111	171	10,534	May	165	29	42	2,588
June	744	59	261	15,505	June	39	39	39	2,320
July	123	54	80	4,940	July	11600	39	1245	77,212
Aug.	1675	98	463	28,492	Aug.	879	165	359	22,083
Sept.	18270	123	2483	149,008	Sept.	369	98	192	11,404
Oct.	3590	484	1172	72,032	Oct.	1498	98	340	20,915
Nov.	1014	69	309	18,392	Nov.	426	44	85	5,063
Dec.	9800	29	657	40,708	Dec.	59	29	34	2,080
Total	..	..	..	400,466	Total	..	..	..	156,316

Year 1905

Year 1906

Jan.	39	14	27	1,644	Jan.	44	19	32	1,951
Feb.	879	4	69	3,847	Feb.	19	2	10	575
Mar.	29	14	17	1,079	Mar.	44	2	5	317
Apr.	629	14	134	7,930	Apr.	123	44	59	3,496
May	165	49	84	5,184	May	54	29	36	2,187
June	4750	123	914	54,388	June	165	29	62	3,690
July	12600	369	1628	100,918	July	165	59	93	5,709
Aug.	2750	165	489	30,037	Aug.	4450	59	439	27,012
Sept.	513	136	243	14,480	Sept.	26650	744	3302	198,112
Oct.	1167	88	261	16,025	Oct.	40000	319	4163	258,084
Nov.	879	88	270	16,062	Nov.	2057	148	415	24,716
Dec.	88	44	66	4,069	Dec.	298	69	134	8,225
Total	..	..	..	255,663	Total	..	..	..	534,074

Year 1907

Year 1908

Jan.	165	49	65	3,992	Jan.	484	29	57	3,530
Feb.	744	44	99	5,509	Feb.	6410	39	591	34,256
Mar.	513	44	103	6,356	Mar.	59	39	45	2,784
Apr.	40	34	38	2,280	Apr.	39	34	35	2,102
May	49	34	43	2,635	May	34	24	26	1,594
June	513	49	139	8,295	June	29	24	25	1,507
July	123	79	86	5,304	July	29	29	29	1,783
Aug.	9870	79	1040	64,458	Aug.	924	29	235	14,462
Sept.	744	79	193	11,497	Sept.	590	111	256	15,204
Oct.	123	29	66	4,077	Oct.	198	49	82	5,021
Nov.	5570	29	617	36,687	Nov.	590	39	96	5,705
Dec.	398	19	78	4,775	Dec.	484	24	102	6,246
Total	..	..	..	155,865	Total	..	..	..	94,194

MACQUARIE RIVER AT DUBBO

Year 1909

Year 1910

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.	2650	14	274	16,871	Jan.	32160	123	2868	177,914
Feb.	3000	49	487	27,268	Feb.	235	44	88	4,916
Mar.	2254	34	237	14,551	Mar.	69	44	57	3,492
Apr.	34	29	30	1,765	Apr.	54	49	51	3,054
May	44	29	33	2,031	May	79	44	50	3,091
June	1167	39	425	25,277	June	79	49	59	3,361
July	590	88	221	13,574	July	1675	79	573	35,254
Aug.	2460	59	596	36,606	Aug.	484	111	268	16,459
Sept.	6191	369	1269	76,144	Sept.	340	79	183	10,912
Oct.	455	123	199	12,273	Oct.	136	59	108	6,629
Nov.	277	49	99	5,878	Nov.	123	69	107	6,375
Dec.	4150	24	432	26,360	Dec.	69	49	61	3,756
Total	..	..	..	258,598	Total	..	..	..	275,213

Year 1911

Year 1912

Jan.	1320	49	341	20,946	Jan.	244	0	69	4,270
Feb.	9270	214	1711	95,836	Feb.	0	0	0	0
Mar.	369	136	260	15,979	Mar.	144	0	17	1,026
Apr.	5205	98	379	22,578	Apr.	0	0	0	0
May	165	79	109	6,714	May	0	0	0	0
June	667	98	205	12,183	June	19	0	7	422
July	2450	484	806	49,547	July	15456	9	1931	119,750
Aug.	706	123	277	17,122	Aug.	11900	201	1921	119,118
Sept.	3960	148	369	21,968	Sept.	3100	341	956	57,338
Oct.	2057	148	452	27,823	Oct.	316	0	123	7,650
Nov.	744	111	214	12,737	Nov.	201	9	25	1,500
Dec.	33200	98	2246	139,250	Dec.	9	0	0.6	18
Total	..	..	..	442,579	Total	..	..	..	311,092

Year 1913

Year 1914

Jan.	30	0	1.2	78	Jan.	19	0	2	112
Feb.	0	0	0	0	Feb.	0	0	0	0
Mar.	781	0	123	7,602	Mar.	1484	0	155	9,634
Apr.	1202	41	215	12,900	Apr.	181	0	53	3,192
May	3640	30	484	30,020	May	66	0	15	930
June	5860	367	1299	77,962	June	66	0	16	940
July	1755	222	604	37,464	July	1255	53	298	18,504
Aug.	544	111	219	13,606	Aug.	127	19	48	2,982
Sept.	291	66	114	6,870	Sept.	66	9	19	1,176
Oct.	860	30	100	6,216	Oct.	267	0	39	2,438
Nov.	819	130	159	9,526	Nov.	609	30	125	7,522
Dec.	30	0	11	698	Dec.	341	80	149	9,236
Total	..	..	..	202,942	Total	..	..	..	56,666

Year 1915

Year 1916

Jan.	7560	45	449	27,756	Jan.	579	52	114	7,080
Feb.	465	22	114	6,378	Feb.	611	38	124	7,214
Mar.	134	38	60	3,732	Mar.	198	45	83	5,160
Apr.	2510	45	517	30,992	Apr.	180	45	71	4,266
May	6700	45	793	49,202	May	69	52	56	3,490
June	2350	60	332	19,946	June	14100	52	4660	279,572
July	11900	235	1342	83,208	July	32600	1685	8745	542,202
Aug.	8700	412	1468	91,012	Aug.	28520	1898	7441	461,346
Sept.	915	147	374	22,462	Sept.	11600	870	2423	145,358
Oct.	1826	78	332	20,560	Oct.	38900	1365	9484	588,036
Nov.	99	38	59	3,554	Nov.	9270	965	2591	155,452
Dec.	38	38	38	2,356	Dec.	10450	1309	3319	205,806
Total	..	..	..	361,158	Total	..	..	..	2,404,982

MACQUARIE RIVER AT DUBBO

Year 1917

Year 1918

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.	1484	275	547	33,920	Jan.	1140	198	409	25,356
Feb.	870	235	499	27,924	Feb.	1685	162	481	26,922
Mar.	295	78	136	8,440	Mar.	255	78	160	9,904
Apr.	134	69	84	5,050	Apr.	134	69	84	5,040
May	295	69	140	8,650	May	162	78	114	7,070
June	1140	110	422	25,338	June	295	99	150	8,990
July	10450	198	2083	129,146	July	295	99	168	10,392
Aug.	9960	1020	3805	235,904	Aug.	10450	339	2606	161,588
Sept.	14000	965	4014	240,836	Sept.	1255	237	596	35,482
Oct.	17900	965	3572	221,462	Oct.	213	47	99	6,152
Nov.	12760	518	2455	147,312	Nov.	315	17	66	3,970
Dec.	4205	412	1475	91,438	Dec.	13	4	7	452
Total	..	..	..	1,175,420	Total	..	..	..	301,318

Year 1919

Year 1920

Jan.	3	0	2	146	Jan.	2750	4	292	18,116
Feb.	0	0	0	0	Feb.	235	2	27	1,550
Mar.	315	1	43	2,674	Mar.	11600	1	600	37,196
Apr.	3	2	3	172	Apr.	5	1	2	136
May	78	1	11	676	May	3	2	2	144
June	78	17	31	1,872	June	16900	2	730	43,798
July	47	21	27	1,692	July	59500	659	8419	521,986
Aug.	26	21	22	1,402	Aug.	28520	620	3691	228,832
Sept.	171	26	61	3,684	Sept.	13700	1170	3611	216,690
Oct.	26	7	17	1,072	Oct.	1018	395	605	37,486
Nov.	7	0	1.5	94	Nov.	423	118	205	12,318
Dec.	1866	0	101	6,264	Dec.	30000	118	4310	267,190
Total	..	..	..	19,748	Total	..	..	..	1,385,442

Year 1921

Year 1922

Jan.	739	162	373	23,118	Jan.	8120	513	1770	109,758
Feb.	274	51	134	7,502	Feb.	825	146	277	15,564
Mar.	1960	71	445	27,578	Mar.	483	44	159	9,846
Apr.	4430	71	833	49,982	Apr.	44	30	37	2,248
May	14300	146	1150	71,272	May	118	30	82	5,096
June	36030	1290	7081	424,880	June	118	61	87	5,254
July	26720	1018	4116	255,172	July	30390	118	2800	173,582
Aug.	30800	1290	4856	301,050	Aug.	2830	659	1035	64,176
Sept.	1810	868	1047	62,824	Sept.	659	395	491	29,432
Oct.	968	423	655	40,612	Oct.	369	118	222	13,780
Nov.	1018	214	458	27,486	Nov.	162	30	80	4,786
Dec.	26360	118	1721	106,722	Dec.	3590	30	785	48,676
Total	..	..	..	1,398,198	Total	..	..	..	482,198

Year 1923

Year 1924

Jan.	1170	25	178	11,014	Jan.	136	11	27	1,690
Feb.	30	7	13	746	Feb.	1290	36	310	17,964
Mar.	30	6	12	720	Mar.	181	16	61	3,786
Apr.	10	8	8	490	Apr.	80	15	43	2,584
May	8	8	8	496	May	44	26	34	2,092
June	4490	8	534	32,010	June	145	48	100	5,990
July	7080	739	2174	134,740	July	528	60	128	7,924
Aug.	7560	330	2240	138,914	Aug.	705	90	219	13,596
Sept.	20000	278	3369	202,132	Sept.	2280	130	764	45,794
Oct.	810	190	438	27,198	Oct.	3495	224	812	50,384
Nov.	1740	93	468	28,076	Nov.	24560	248	5373	322,368
Dec.	81	15	28	1,744	Dec.	1870	90	583	36,096
Total	..	..	..	578,280	Total	..	..	..	510,268

MACQUARIE RIVER AT DUBBO

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.	1540	60	171	10,568	Jan.	810	22	137	8,512
Feb.	490	31	98	5,424	Feb.	44	7	17	946
Mar.	31	15	21	1,292	Mar.	109700	3	7346	455,458
Apr.	16	15	16	916	Apr.	19700	924	4769	286,116
May	26	15	20	1,234	May	36030	1890	5920	367,070
June	12580	22	1361	81,622	June	11020	1350	3385	203,090
July	6310	655	1470	91,152	July	8700	1290	2448	154,270
Aug.	655	248	441	27,332	Aug.	9570	986	2562	158,842
Sept.	450	145	218	13,060	Sept.	6990	610	1419	85,156
Oct.	114	69	90	5,564	Oct.	6130	400	1386	85,962
Nov.	2280	69	552	33,096	Nov.	360	90	183	11,006
Dec.	310	22	99	6,128	Dec.	1230	56	209	12,948
Total	..	..	..	277,388	Total	..	..	..	1,829,376

Year 1927

Year 1928

Jan.	1290	112	517	32,074	Jan.	1170	45	358	22,196
Feb.	260	28	80	4,516	Feb.	28520	130	3399	197,128
Mar.	32	24	27	1,704	Mar.	1108	166	449	27,842
Apr.	725	24	170	10,222	Apr.	2550	290	719	43,136
May	480	63	190	11,808	May	400	148	217	13,480
June	71	71	71	4,260	June	924	130	281	16,902
July	90	71	80	5,018	July	5860	360	1612	95,946
Aug.	148	71	100	6,212	Aug.	2280	290	797	49,460
Sept.	71	50	60	3,678	Sept.	260	112	193	11,630
Oct.	810	71	255	15,824	Oct.	235	71	129	8,012
Nov.	10830	71	745	44,708	Nov.	337	93	186	11,154
Dec.	1480	63	473	29,348	Dec.	93	51	63	3,930
Total	..	..	..	169,372	Total	..	..	..	504,816

Year 1929

Year 1930

Jan.	57	16	40	2,490	Jan.	16480	21	1270	78,760
Feb.	3870	10	760	42,544	Feb.	1390	28	186	10,428
Mar.	1170	51	244	15,114	Mar.	2400	21	287	17,792
Apr.	525	51	157	9,458	Apr.	84	21	29	1,758
May	93	46	57	3,502	May	590	21	97	6,048
June	133	20	60	3,602	June	5500	102	618	37,112
July	38	38	38	2,356	July	3370	148	1099	68,118
Aug.	102	38	64	3,944	Aug.	7960	720	1919	118,960
Sept.	270	52	98	5,902	Sept.	670	102	300	17,988
Oct.		No Records		13,000*	Oct.	4700	38	1252	77,616
Nov.		No Records		38,000*	Nov.		No Records		17,000*
Dec.	1300	38	182	11,302	Dec.		No Records		63,000*
Total	..	..	..	151,214*	Total	..	..	..	516,580*

Year 1931

Year 1932

Jan.	148	28	79	4,906	Jan.	164	51	101	6,262
Feb.	236	6	26	1,476	Feb.	372	61	129	7,500
Mar.	5340	4	668	41,408	Mar.	4700	51	545	33,764
Apr.	9620	176	1259	75,546	Apr.	1220	71	387	23,202
May	32000	236	4361	270,412	May	329	133	166	10,296
June	70350	2050	9326	559,578	June	329	133	174	10,438
July	15380	2160	6575	407,680	July	1370	153	479	29,700
Aug.	3920	940	1723	106,850	Aug.	358	176	266	16,506
Sept.	1480	606	950	57,018	Sept.	5340	222	1286	77,170
Oct.	1950	300	678	42,062	Oct.	1020	176	543	33,644
Nov.	860	222	383	22,964	Nov.	5820	153	909	54,568
Dec.	7400	176	983	60,962	Dec.	246	48	110	6,810
Total	..	..	..	1,650,862	Total	..	..	..	309,860

* Estimated.

MACQUARIE RIVER AT DUBBO

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.	1540	14	187	11,590	Jan.	1600	50	288	17,890
Feb.	416	10	70	3,932	Feb.	8360	78	1874	104,922
Mar.	39	5	10	632	Mar.	1475	93	354	21,948
Apr.	45	8	21	1,244	Apr.	430	50	164	9,864
May	45	10	23	1,442	May	63	39	45	2,740
June	108	30	46	2,760	June	236	29	66	3,972
July	700	39	170	10,544	July	8360	177	574	35,576
Aug.	1600	146	429	26,602	Aug.	9620	990	3280	203,384
Sept.	3680	146	1117	67,004	Sept.	6860	461	1561	93,664
Oct.	5180	146	992	61,516	Oct.	55050	370	5555	344,402
Nov.	3405	78	566	33,978	Nov.	8600	670	2597	155,798
Dec.	1225	127	417	25,862	Dec.	2810	430	1027	63,662
Total	..	..	..	247,106	Total	..	..	..	1,057,822

Year 1935				Year 1936					
Jan.	5420	400	1437	89,098	Jan.	700	39	201	12,466
Feb.	5820	211	878	49,182	Feb.	164	38	63	3,636
Mar.	211	63	98	6,072	Mar.	606	71	195	12,106
Apr.	770	29	173	10,370	Apr.	272	71	116	6,948
May	461	127	233	14,454	May	606	38	146	9,084
June	127	118	126	7,570	June	606	71	136	8,192
July	493	146	273	16,934	July	11160	542	2509	155,566
Aug.	2100	211	778	48,242	Aug.	23320	495	2969	184,092
Sept.	750	211	344	20,654	Sept.	2200	230	698	41,892
Oct.	9380	110	1243	77,058	Oct.	222	51	97	6,036
Nov.	870	85	249	14,938	Nov.	40	7	20	1,222
Dec.	634	44	196	12,126	Dec.	600	7	174	10,768
Total	..	..	..	366,698	Total	..	..	..	452,008

Year 1937				Year 1938					
Jan.	1100	25	217	13,468	Jan.	1100	10	122	7,544
Feb.	22	6	16	898	Feb.	670	19	134	7,528
Mar.	455	0	67	4,141	Mar.	15	0	2	106
Apr.	25	4	12	726	Apr.	134	0	10	624
May	22	5	12	712	May	94	33	48	3,008
June	65	19	33	1,958	June	80	18	34	2,050
July	36	25	29	1,822	July	540	37	122	7,550
Aug.	1100	28	175	10,892	Aug.	1165	181	421	26,092
Sept.	5550	100	954	57,244	Sept.	830	46	250	15,022
Oct.	180	80	99	6,142	Oct.	2730	21	291	18,032
Nov.	560	80	273	16,346	Nov.	760	56	259	15,552
Dec.	156	15	48	2,982	Dec.	No Records			700*
Total	..	..	..	117,331	Total	..	..	..	103,808*

Year 1939				Year 1940					
Jan.	46	0	3	188	Jan.	29	0	6	350
Feb.	0	0	0	0	Feb.	0	0	0	0
Mar.	46	0	17	1,036	Mar.	0	0	0	0
Apr.	940	0	242	14,528	Apr.	870	0	109	6,536
May	71	29	52	3,240	May	20	6	13	828
June	71	38	52	3,144	June	20	6	6	388
July	510	38	233	14,446	July	39	20	30	1,854
Aug.	10100	71	9198	136,246	Aug.	29	12	23	1,404
Sept.	1020	115	316	18,962	Sept.	314	2	53	3,168
Oct.	4620	133	780	48,380	Oct.	127	6	49	3,010
Nov.	1550	261	703	42,182	Nov.	750	0	70	4,214
Dec.	236	12	63	3,884	Dec.	1800	0	410	25,394
Total	..	..	..	286,236	Total	..	..	..	47,146

* Estimated.

MACQUARIE RIVER AT DUBBO

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.	66750	110	6500	403,004	Jan.	34	0	5	318
Feb.	740	71	260	14,548	Feb.	222	0	29	1,434
Mar.	510	71	216	13,372	Mar.	115	0	10	626
Apr.	143	4	39	2,352	Apr.	11	0	1	72
May	14	4	8	520	May	3480	0	294	18,206
June	1430	71	483	29,006	June	35490	77	3049	182,946
July	300	115	171	10,622	July	44250	980	7781	482,412
Aug.	176	43	77	4,782	Aug.	2670	622	1364	84,542
Sept.	329	53	143	8,598	Sept.	11280	574	2658	159,480
Oct.	542	29	209	12,986	Oct.	2430	416	822	50,986
Nov.	222	11	50	3,002	Nov.	18300	387	2480	148,810
Dec.	628	0	71	4,416	Dec.	2400	300	705	43,712
Total	..	..	..	507,208	Total	..	..	..	1,173,544

Year 1943

Year 1944

Jan.	5180	59	862	53,418	Jan.	285	3	85	5,298
Feb.	387	29	122	6,804	Feb.	62	3	18	1,070
Mar.	29	9	18	1,088	Mar.	3	1	1	82
Apr.	20	9	15	896	Apr.	1	1	1	60
May	8300	14	998	61,904	May	45	1	6	398
June	No Records			25,200*	June	80	25	48	2,864
July	430	240	317	19,660	July	55	30	37	2,296
Aug.	7260	283	2562	158,876	Aug.	510	37	101	6,242
Sept.	3650	760	1486	89,160	Sept.	230	46	82	4,992
Oct.	22660	490	2984	184,990	Oct.	37	8	20	1,236
Nov.	6225	285	1013	66,160	Nov.	3	0	0.5	36
Dec.	430	175	276	17,130	Dec.	0	0	0	0
Total	..	..	..	685,286	Total	..	..	..	24,574

Year 1945

Year 1946

Jan.	4630	0	246	15,282	Jan.	510	0	58	3,586
Feb.	1650	3	179	10,026	Feb.	202	1.8	52	2,916
Mar.	690	1.8	90	5,570	Mar.	3	0	2	112
Apr.	890	1.8	81	4,874	Apr.	0	0	0	0
May	1350	1.8	191	11,818	May	11	0	4	257
June	27460	55	3312	198,708	June	11	1.8	4	216
July	2000	440	1030	63,880	July	65	5	18	1,098
Aug.	10500	790	3813	236,380	Aug.	202	5	55	3,410
Sept.	6160	172	963	59,732	Sept.	11	5	7	439
Oct.	172	30	100	6,228	Oct.	202	0	38	2,376
Nov.	121	7.5	36	2,272	Nov.	440	3	104	6,247
Dec.	172	1.8	27	1,676	Dec.	1090	15	196	12,172
Total	..	..	..	616,446	Total	..	..	..	32,829

Year 1947

Year 1948

Jan.	230	0	44	2,745	Jan.	6850	380	1383	85,750
Feb.	2930	0	276	15,476	Feb.	12400	172	1918	111,276
Mar.	990	11	240	14,888	Mar.	6850	172	811	50,280
Apr.	23	1.8	6	330	Apr.	790	121	279	16,766
May	690	5	75	4,658	May	4210	202	687	42,592
June	202	11	54	3,264	June	12000	230	2267	136,000
July	4830	23	686	42,552	July	3800	380	1084	67,220
Aug.	1090	145	295	18,210	Aug.	2000	202	394	24,434
Sept.	11050	320	1922	115,300	Sept.	2000	440	785	47,080
Oct.	510	172	325	20,160	Oct.	380	95	215	13,352
Nov.	16600	230	2118	127,110	Nov.	95	55	74	4,450
Dec.	10300	230	4318	267,730	Dec.	46	0.5	9	544
Total	..	..	..	632,423	Total	..	..	..	599,744

* Estimated.

MACQUARIE RIVER AT DUBBO

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.	510	4	91	5,667	Jan.	12600	173	1685	104,476
Feb.	990	23	157	8,766	Feb.	49240	234	6970	390,328
Mar.	510	23	157	9,756	Mar.	47628	273	4544	281,722
Apr.	38	11	16	942	Apr.	120000	4320	23203	1,392,148
May	202	11	38	2,350	May	10580	880	2219	137,600
June	9300	55	1360	81,586	June	47440	2700	12130	727,830
July	11550	202	1485	89,136	July	93815	6110	21948	1,360,760
Aug.	690	145	345	21,332	Aug.	57540	5800	16477	1,021,580
Sept.	13500	380	3492	209,500	Sept.	15290	1800	4067	244,000
Oct.	7800	510	2602	161,340	Oct.	90000	2960	22118	1,371,300
Nov.	2700	172	523	31,370	Nov.	92835	3450	18076	1,084,564
Dec.	590	121	268	16,608	Dec.	8550	980	2470	153,170
Total	..	..	..	638,353	Total	..	..	..	8,269,478

Year 1951

Year 1952

Jan.	1410	690	1031	63,922	Jan.	320	75	175	10,858
Feb.	880	510	689	38,578	Feb.	65	46	54	3,152
Mar.	690	510	565	35,040	Mar.	1500	46	249	15,468
Apr.	645	510	525	31,500	Apr.	No Records			51,600*
May	510	440	504	31,270	May	2020	510	886	54,904
June	6810	440	1653	99,200	June	No Records			900,000*
July	33000	980	4887	302,984	July	No Records			732,000*
Aug.	51145	1080	10925	677,350	Aug.	No Records			878,000*
Sept.	7900	1030	2070	124,230	Sept.	No Records			178,000*
Oct.	5400	600	1633	101,250	Oct.	4510	880	1835	113,770
Nov.	600	273	371	22,238	Nov.	1500	510	840	50,390
Dec.	320	202	265	16,420	Dec.	510	273	374	23,160
Total	..	..	..	1,543,982	Total	..	..	..	3,011,302

Year 1953

Year 1954

Jan.	6810	440	2047	126,900	Jan.	6260	55	659	40,854
Feb.	600	273	429	24,058	Feb.	25060	320	4193	234,824
Mar.	273	145	185	11,500	Mar.	980	173	464	28,792
Apr.	234	145	169	10,150	Apr.	202	119	189	11,332
May	690	234	365	22,668	May	202	145	166	10,312
June	510	202	286	17,156	June	440	145	234	14,038
July	440	273	319	19,754	July	202	173	177	10,988
Aug.	3880	273	843	52,260	Aug.	202	173	188	11,628
Sept.	510	320	365	21,900	Sept.	234	145	183	10,978
Oct.	3400	273	578	35,844	Oct.	14650	119	1911	118,458
Nov.	4200	320	1039	62,330	Nov.	11150	600	3173	190,356
Dec.	510	55	229	14,178	Dec.	600	173	403	24,984
Total	..	..	..	418,698	Total	..	..	..	707,544

Year 1955

Year 1956

Jan.	1080	38	200	12,420	Jan.	9750	202	1293	80,146
Feb.	208000	173	18427	1,031,900	Feb.	19250	1405	7127	413,376
Mar.	16000	785	3685	228,450	Mar.	138000	2440	21386	1,325,940
Apr.	785	273	445	27,584	Apr.	12610	3000	5871	352,250
May	980	273	542	33,622	May	28100	4040	11050	685,090
June	1410	600	752	45,122	June	84800	3200	12609	756,546
July	2270	600	901	55,880	July	61800	6900	17830	1,105,466
Aug.	17380	690	5048	312,990	Aug.	42800	4040	9220	571,658
Sept.	3200	1080	1931	115,860	Sept.	13250	2270	4485	269,140
Oct.	34960	980	5559	344,660	Oct.	18950	2620	6821	422,900
Nov.	20000	880	2275	136,524	Nov.	5200	600	1807	108,430
Dec.	3550	510	1088	67,456	Dec.	690	320	533	33,060
Total	..	..	..	2,412,468	Total	..	..	..	6,124,002

* Estimated.

MACQUARIE RIVER AT DUBBO

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.	320	273	299	18,524	Jan.	1800	22	146	9,078
Feb.	320	202	269	15,048	Feb.	6670	202	1434	80,328
Mar.	320	202	252	15,612	Mar.	273	75	204	12,634
Apr.	202	202	202	12,120	Apr.	320	55	154	9,212
May	202	202	202	12,524	May	510	75	215	13,314
June	202	202	202	12,120	June	173	119	151	8,464
July	380	234	289	17,936	July	1290	160	455	28,222
Aug.	380	234	270	16,726	Aug.	6000	273	1285	79,684
Sept.	380	234	325	19,516	Sept.	6900	790	2191	131,440
Oct.	320	95	217	13,424	Oct.	12150	990	3721	230,704
Nov.	75	22	45	2,724	Nov.	890	132	341	20,444
Dec.	38	22	31	1,908	Dec.	4660	132	858	53,188
Total	..	..	..	158,182	Total	..	..	..	676,704

Year 1959

Year 1960

Jan.	15550	132	1827	113,280	Jan.	410	97	193	11,954
Feb.	6000	157	902	50,518	Feb.	1160	132	317	18,410
Mar.	5330	345	1454	90,146	Mar.	122	57	77	4,746
Apr.	78670	545	7970	478,174	Apr.	545	51	118	7,098
May	545	410	445	27,610	May	2020	173	519	32,208
June	3400	317	623	37,406	June	378	240	280	17,378
July	10860	442	2556	158,462	July	5265	240	2518	156,110
Aug.	4280	510	1352	83,810	Aug.	53200	1340	7920	491,050
Sept.	545	317	413	24,758	Sept.	9070	890	2747	164,810
Oct.	4200	317	768	47,590	Oct.	3560	780	1481	91,880
Nov.	7970	410	1492	89,504	Nov.	2620	335	713	44,264
Dec.	1560	173	401	24,880	Dec.	4660	390	1091	67,700
Total	..	..	..	1,226,138	Total	..	..	..	1,107,608

Year 1961

Year 1962

Jan.	1555	130	605	37,488	Jan.	2530	335	724	44,874
Feb.	118	81	94	5,268	Feb.	1100	285	607	33,980
Mar.	455	81	149	9,208	Mar.	262	98	149	9,236
Apr.	455	98	175	10,502	Apr.	170	70	102	6,130
May	363	130	178	11,064	May	475	57	165	10,200
June	310	118	208	12,478	June	3720	240	779	46,750
July	2110	203	499	30,948	July	12490	170	1341	83,138
Aug.	12860	455	2769	171,664	Aug.	16550	605	3600	223,190
Sept.	2110	390	980	58,776	Sept.	3560	525	1066	63,944
Oct.	2620	203	526	32,612	Oct.	780	335	432	26,772
Nov.	15500	310	2597	155,848	Nov.	390	98	211	12,646
Dec.	4510	455	1357	84,160	Dec.	4940	118	1023	63,400
Total	..	..	..	620,016	Total	..	..	..	624,260

Year 1963

Year 1964

Jan.	12950	310	1975	122,440	Jan.	310	142	209	12,930
Feb.	15650	490	3364	188,404	Feb.	203	45	101	5,840
Mar.	880	170	348	21,560	Mar.	290	45	73	4,506
Apr.	647	186	320	19,232	Apr.	1280	33	165	9,904
May	6670	221	1542	95,630	May	475	112	217	13,468
June	12450	1100	4123	247,360	June	23420	132	5875	352,502
July	15200	1100	4445	275,590	July	15850	1640	6882	421,750
Aug.	12700	990	3328	206,360	Aug.	10350	840	2395	148,500
Sept.	12530	990	3718	223,090	Sept.	8960	1220	2890	173,530
Oct.	4810	690	1903	118,030	Oct.	17600	1220	6202	384,540
Nov.	1630	285	728	43,702	Nov.	15750	620	3962	237,730
Dec.	1350	240	563	34,932	Dec.	545	190	298	18,488
Total	..	..	..	1,596,330	Total	..	..	..	1,783,688

MACQUARIE RIVER AT DUBBO

Year 1965

Year 1966

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.	190	33	82	5,084	Jan.	73	33	50	3,076
Feb.	33	21	28	1,564	Feb.	69	53	63	3,504
Mar.	27	8	13	800	Mar.	620	53	117	7,232
Apr.	46	8	25	1,480	Apr.	61	42	52	3,065
May	43	19	29	1,836	May	77	53	67	4,147
June	53	30	41	2,472	June	105	46	70	4,176
July	53	42	50	3,088					
Aug.	69	46	55	3,446					
Sept.	73	39	59	3,550					
Oct.	78	39	53	3,278					
Nov.	78	39	48	2,896					
Dec.	3400	36	231	14,328					
Total	..	..	..	43,822	Total	..	..	..	..

TALBRAGAR RIVER AT NARRANMORE

LOCATION: Latitude 32°07' Longitude 149°09'

PERIOD OF ESTABLISHMENT: December 1955 to date.

COMPLETE YEARS OF COMPUTED RECORDS: 10 years.

ZERO OF GAUGE: R.L. 65.10 Assumed Datum.
Approximately 1,100 feet above sea level.

CATCHMENT AREA: 1,100 square miles.

CONTROL: Earth.

EQUIPMENT: Staff gauge 0 to 35 feet.

CURRENT METER OBSERVATIONS:

(a) Number obtained	:	52
(b) Maximum observation in cusecs	:	3,672
(c) Minimum observation in cusecs	:	0

MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS: 16,750 cusecs.*

MEAN DAILY DISCHARGE FOR 10 YEARS: 108 cusecs.

MEAN ANNUAL DISCHARGE FOR 10 YEARS: 79,200 acre feet.

REMARKS: * Peak discharge during February 1955 flood estimated at 82,000 cusecs.

TALBRAGAR RIVER AT NARRANMORE

Year 1956

Year 1957

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.	274	49	76	4,696	Jan.	41	26	33	2,062
Feb.	8825	54	1126	65,332	Feb.	36	24	29	1,636
Mar.	10250	132	1243	77,090	Mar.	29	16	22	1,392
Apr.	762	230	375	22,516	Apr.	24	16	18	1,096
May	4620	300	1067	66,164	May	16	16	16	992
June	16750	308	1778	106,680	June	16	13	14	852
July	10590	505	1805	111,928	July	22	13	17	1,064
Aug.	9950	300	1270	78,776	Aug.	54	14	17	1,042
Sept.	No Records			21,600*	Sept.	44	13	22	1,314
Oct.	No Records			11,200*	Oct.	13	2	6	350
Nov.	130	58	84	5,050	Nov.	3	1	1.7	100
Dec.	62	38	49	3,058	Dec.	1	0.8	0.8	50
Total	..	..	..	574,090*	Total	..	..	..	11,950

Year 1958

Year 1959

Jan.	280	0.1	20	1,272	Jan.	434	8	56	3,466
Feb.	550	5	123	6,898	Feb.	42	6	10	546
Mar.	5	1	3	188	Mar.	158	12	52	3,246
Apr.	1	1	1	60	Apr.	565	23	114	6,828
May	77	1	9	560	May	20	12	15	938
June	5	1	1.7	102	June	20	14	17	1,026
July	610	5	70	4,300	July	476	17	63	3,894
Aug.	No Records			1,500*	Aug.	57	18	26	1,638
Sept.	No Records			6,000*	Sept.	10	7	9	516
Oct.	2280	28	235	14,564	Oct.	39	3	6.6	410
Nov.	28	12	21	1,274	Nov.	476	7	27	1,658
Dec.	30	4	15	928	Dec.	174	3	25	1,542
Total	..	..	..	37,646*	Total	..	..	..	25,708

Year 1960

Year 1961

Jan.	16	1	3.4	216	Jan.	1	0	0.2	12
Feb.	1	0.2	0.6	32	Feb.	0	0	0	0
Mar.	0.2	0.2	0.2	12	Mar.	0	0	0	0
Apr.	151	0.2	10	618	Apr.	0	0	0	0
May	6	3	4	244	May	0	0	0	0
June	3.5	3	3.3	198	June	0	0	0	0
July	12	3	7.6	470	July	0	0	0	0
Aug.	109	10	26	1,630	Aug.	210	0	72	4,466
Sept.	334	0.6	32	1,906	Sept.	24	2	10	590
Oct.	20	5	7	420	Oct.	1	0	0.6	36
Nov.	182	2	12	744	Nov.	89	0	14	854
Dec.	14	2	4	244	Dec.	1275	0.6	180	11,196
Total	..	..	..	6,734	Total	..	..	..	17,154

Year 1962

Year 1963

Jan.	13	3	6	372	Jan.	565	7	102	6,294
Feb.	3	0	0.8	43	Feb.	No Records			8,000*
Mar.	0	0	0	0	Mar.	24	0	5.1	316
Apr.	0	0	0	0	Apr.	49	0.1	4.8	290
May	1	0	0.1	6	May	1650	24	219	13,548
June	1	1	1	60	June	2160	30	378	22,702
July	151	0	13	798	July	610	64	123	7,628
Aug.	565	1	54	3,332	Aug.	890	41	147	9,152
Sept.	30	10	14	864	Sept.	520	49	98	5,854
Oct.	7	0	2.3	140	Oct.	109	41	48	2,970
Nov.	0	0	0	0	Nov.	76	21	38	2,302
Dec.	5	0	1.5	92	Dec.	870	9	194	12,006
Total	..	..	..	5,707	Total	..	..	..	91,062*

* Estimated.

TALBRAGAR RIVER AT NARRANMORE

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.	52	1	15	906	Jan.	0	0	0	0
Feb.	2.0	0	1	55	Feb.	0	0	0	0
Mar.	930	6	25	1,556	Mar.	0	0	0	0
Apr.	462	6	44	2,628	Apr.	0	0	0	0
May	23	10	12	770	May	0	0	0	0
June	565	12	72	4,328	June	0	0	0	0
July	127	23	40	2,494	July	0	0	0	0
Aug.	62	17	27	1,654	Aug.	0	0	0	0
Sept.	520	20	64	3,864	Sept.	0	0	0	0
Oct.	130	9	35	2,140	Oct.	0	0	0	0
Nov.	109	9	28	1,688	Nov.	0	0	0	0
Dec.	6	0	1.4	89	Dec.	0	0	0	0
Total	..	..	..	22,172	Total	..	..	..	0

Year 1966

Jan.	0	0	0	0
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
Total	..	..	..	..

MACQUARIE RIVER AT NARROMINE.

LOCATION: Latitude 32°14' Longitude 148°15'

PERIOD OF ESTABLISHMENT: December 1900

COMPLETE YEARS OF COMPUTED RECORDS: 64 years.

ZERO OF GAUGE: 729.69 North West Water Conservation Datum (Bridge and town gauge).

CATCHMENT AREA: 10,100 Square Miles.

CONTROL: Weir.

EQUIPMENT: Staff Gauge, range 0 to 45 feet (Bridge Gauge)
range 0 to 50 feet (Town Gauge)

CURRENT METER OBSERVATIONS:

(a) Number obtained	:	304
(b) Maximum observation in cusecs	:	90,124
(c) Minimum observation in cusecs	:	0.5

MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS: 250,000 cusecs.

MEAN DAILY DISCHARGE FOR 64 YEARS: 1,300 cusecs.

MEAN ANNUAL DISCHARGE FOR 64 YEARS: 970,000 acre feet.

REMARKS:

From August 1954 the gauge at Narromine Bridge has been used for the computation of records; however during major floods this gauge becomes inaccessible and the town gauge, which is approximately one mile upstream from the Bridge gauge, is then used.

The weir gauge is approximately 200 yards downstream from the Bridge gauge. (The weir was constructed in February 1942).

Records commenced in June 1901 and were obtained from the following stations:

- Town gauge (No. 1 Station) June 1901 - June 1944
- Weir gauge (No. 2 Station) July 1944 - December 1950
- Town gauge January 1951 - July 1954
- Bridge gauge August 1954 to date.

MACQUARIE RIVER AT NARROMINE

Year 1901

Year 1902

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.	71	43	49	3,052
Feb.	..	..	..	..	Feb.	43	8	19	1,072
Mar.	..	..	..	..	Mar.	7	3	4	244
Apr.	..	..	..	..	Apr.	3	0	1	28
May	..	..	..	..	May	0	0	0	0
June	1654	321	550	32,984	June	0	0	0	0
July	522	263	365	22,628	July	71	0	11	710
Aug.	14108	230	2825	175,168	Aug.	86	43	57	3,528
Sept.	7104	495	1612	96,704	Sept.	185	53	99	5,936
Oct.	4566	297	598	36,934	Oct.	86	34	56	3,500
Nov.	2736	230	686	41,146	Nov.	43	19	21	1,286
Dec.	207	71	111	6,856	Dec.	4099	19	625	38,750
Total	..	..	..	..	Total	..	..	..	58,106

Year 1903

Year 1904

Jan.	162	16	46	2,840	Jan.	No Records			16,700*
Feb.	12	0	6	334	Feb.	No Records			1,900*
Mar.	86	0	12	716	Mar.	No Records			18,600*
Apr.	11580	12	989	59,324	Apr.	2430	71	269	16,164
May	No	Records		29,900*	May	132	71	75	4,644
June	No	Records		23,300*	June	71	53	54	3,234
July	No	Records		11,000*	July	No Records			97,500*
Aug.	No	Records		42,500*	Aug.	No Records			37,000*
Sept.	No	Records		134,500*	Sept.	No Records			26,300*
Oct.	No	Records		88,700*	Oct.	No Records			31,200*
Nov.	No	Records		26,200*	Nov.	No Records			8,200*
Dec.	No	Records		39,500*	Dec.	No Records			2,100*
Total	..	..	..	458,814*	Total	..	..	..	263,542*

Year 1905

Year 1906

Jan.	No	Records		1,300*	Jan.	8	4	6	348
Feb.	370	19	44	2,466	Feb.	0	0	0	0
Mar.	19	1	6	394	Mar.	0	0	0	0
Apr.	2797	1	257	15,412	Apr.	117	17	14	856
May	230	34	78	4,858	May	11	11	11	682
June	5100	132	822	49,342	June	297	11	36	2,168
July	No	Records		114,400*	July	230	27	96	5,928
Aug.	No	Records		40,300*	Aug.	3409	27	485	30,054
Sept.	No	Records		20,500*	Sept.	21130	1266	3315	198,922
Oct.	No	Records		18,100*	Oct.	32000	394	4408	273,312
Nov.	No	Records		22,200*	Nov.	No	Records		36,000*
Dec.	No	Records		2,600*	Dec.	No	Records		13,800*
Total	..	..	..	291,872*	Total	..	..	..	562,070*

Year 1907

Year 1908

Jan.	No	Records		8,900*	Jan.	2098	11	159	9,838
Feb.	No	Records		9,100*	Feb.	5500	11	710	41,200
Mar.	No	Records		9,900*	Mar.	783	16	90	5,360
Apr.	No	Records		2,500*	Apr.	16	11	12	734
May	16	14	15	928	May	11	8	10	622
June	321	14	105	6,326	June	27	10	12	738
July	86	53	65	4,044	July	11	10	11	696
Aug.	6375	53	841	52,114	Aug.	800	11	240	14,862
Sept.	370	86	163	9,804	Sept.	850	124	302	18,146
Oct.	71	34	50	3,116	Oct.	207	34	86	5,302
Nov.	4099	34	549	32,974	Nov.	1266	19	105	6,296
Dec.	575	23	84	5,244	Dec.	668	12	96	5,974
Total	..	..	..	144,950*	Total	..	..	..	109,768

* Estimated.

MACQUARIE RIVER AT NARROMINE

Year 1909

Year 1910

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		12,500*	Jan.	32000	495	3217	199,458
Feb.	2736	53	577	32,338	Feb.	602	62	272	15,252
Mar.	2153	17	267	16,580	Mar.	53	53	53	3,286
Apr.	No	Records		1,200*	Apr.	53	43	46	2,740
May	No	Records		700*	May	43	34	36	2,216
June	No	Records		25,300*	June	86	34	49	2,914
July	No	Records		20,600*	July	2098	86	734	45,514
Aug.	No	Records		42,600*	Aug.	602	117	326	20,232
Sept.	No	Records		88,600*	Sept.	297	53	139	8,340
Oct.	No	Records		18,200*	Oct.	185	43	109	6,742
Nov.	252	27	101	6,042	Nov.	162	43	95	5,718
Dec.	5500	10	836	51,848	Dec.	53	27	35	2,196
Total	..	..	..	316,508*	Total	..	..	..	314,608

Year 1911

Year 1912

Jan.	1266	19	360	22,342	Jan.	230	16	57	3,538
Feb.	6375	442	1417	79,370	Feb.	16	12	14	808
Mar.	668	185	360	22,310	Mar.	252	12	64	3,950
Apr.	2264	162	360	21,604	Apr.	27	11	17	1,000
May	394	53	154	9,532	May	10	0	4	254
June	950	147	310	18,606	June	0	0	0	0
July	635	230	418	25,902	July	17230	1	2182	135,298
Aug.	345	207	255	15,838	Aug.	9093	668	2270	140,754
Sept.	2797	230	383	22,952	Sept.	2614	800	1606	96,386
Oct.	2981	230	1084	65,000	Oct.	297	19	108	6,708
Nov.	495	27	160	9,614	Nov.	34	16	21	1,234
Dec.	29700	86	1827	113,260	Dec.	19	6	10	646
Total	..	..	..	426,330	Total	..	..	..	390,576

Year 1913

Year 1914

Jan.	6	1	3	166	Jan.	10	4	7	426
Feb.	2	2	2	112	Feb.	4	1	2	128
Mar.	345	2	130	8,072	Mar.	No	Records		15,400*
Apr.	No	Records		13,000*	Apr.	No	Records		7,800*
May	No	Records		31,300*	May	No	Records		4,300*
June	8758	602	1065	63,928	June	No	Records		3,000*
July	No	Records		50,100*	July	900	19	324	20,070
Aug.	No	Records		17,700*	Aug.	147	71	117	7,266
Sept.	No	Records		9,500*	Sept.	71	38	56	3,396
Oct.	No	Records		7,100*	Oct.	117	34	69	4,306
Nov.	No	Records		8,300*	Nov.	442	43	132	7,954
Dec.	12	10	11	682	Dec.	230	53	122	7,582
Total	..	..	..	209,960*	Total	..	..	..	81,628*

Year 1915

Year 1916

Jan.	No	Records		27,800*	Jan.	1266	6	174	10,812
Feb.	No	Records		6,400*	Feb.	469	19	81	4,676
Mar.	No	Records		3,300*	Mar.	No	Records		4,900*
Apr.	800	297	526	31,582	Apr.	418	27	88	5,300
May	No	Records		49,200*	May	43	12	22	1,368
June	No	Records		19,900*	June	15630	12	5331	319,880
July	No	Records		83,200*	July	30250	1987	8707	539,828
Aug.	No	Records		91,000*	Aug.	27630	2098	7410	459,444
Sept.	No	Records		22,500*	Sept.	17230	770	3409	204,524
Oct.	No	Records		20,600*	Oct.	31570	1987	9482	587,924
Nov.	147	16	68	4,060	Nov.	4699	1100	2465	148,038
Dec.	16	6	9	586	Dec.	9260	1599	4225	262,480
Total	..	..	..	360,128*	Total	..	..	..	2,549,174*

* Estimated.

MACQUARIE RIVER AT NARROMINE

Year 1917

Year 1918

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		42,400*	Jan.	No	Records	17,300*	
Feb.	No	Records		28,500*	Feb.	No	Records	22,000*	
Mar.	No	Records		9,700*	Mar.	No	Records	10,300*	
Apr.	No	Records		6,300*	Apr.	No	Records	5,700*	
May	No	Records		6,500*	May	No	Records	6,700*	
June	No	Records		25,000*	June	No	Records	9,000*	
July	No	Records		123,700*	July	No	Records	10,800*	
Aug.	No	Records		293,800*	Aug.	No	Records	170,000*	
Sept.	No	Records		311,800*	Sept.	No	Records	39,900*	
Oct.	No	Records		234,300*	Oct.	No	Records	11,800*	
Nov.	No	Records		194,200*	Nov.	No	Records	5,600*	
Dec.	No	Records		110,600*	Dec.	No	Records	900*	
Total	..	..	..	1,386,800*	Total	..	..	310,000*

Year 1919

Year 1920

Jan.	No	Records		0*	Jan.	10	3	7	478
Feb.	No	Records		0*	Feb.	1322	1	145	8,426
Mar.	No	Records		4,500*	Mar.	35	10	22	1,378
Apr.	No	Records		200*	Apr.	141	10	47	2,800
May	No	Records		400*	May	25	4	13	808
June	No	Records		1,100*	June	2850	0	499	29,962
July	No	Records		2,200*	July	87900	1800	12200	756,440
Aug.	No	Records		1,100*	Aug.	25410	1100	3438	213,146
Sept.	No	Records		2,200*	Sept.	5260	1150	2252	135,140
Oct.	No	Records		500*	Oct.	1037	239	563	34,910
Nov.	No	Records		0*	Nov.	380	180	247	14,826
Dec.	No	Records		6,300*	Dec.	25983	160	4407	273,248
Total	..	..	..	18,500*	Total	..	..	..	1,471,562

Year 1921

Year 1922

Jan.	733	219	402	24,950	Jan.	8070	291	1894	117,398
Feb.	No	Records		8,660*	Feb.	No	Records		13,180*
Mar.	No	Records		26,670*	Mar.	No	Records		9,670*
Apr.	No	Records		56,900*	Apr.	No	Records		2,640*
May	12050	318	1181	73,232	May	105	52	75	4,690
June	47000	1605	999	599,940	June	140	52	87	5,236
July	30452	1465	6692	414,908	July	40000	105	2663	165,142
Aug.	30174	1341	5044	312,716	Aug.	3915	640	1299	80,516
Sept.	No	Records		69,230*	Sept.	640	278	391	23,486
Oct.	822	448	604	37,568	Oct.	No	Records		9,670*
Nov.	912	265	484	30,024	Nov.	No	Records		3,530*
Dec.	17350	180	2131	132,120	Dec.	No	Records		46,700*
Total	..	..	..	1,786,918*	Total	..	..	..	481,858*

Year 1923

Year 1924

Jan.	1160	29	220	13,560	Jan.	160	12	28	1,762
Feb.	No	Records		870*	Feb.	1630	75	302	17,480
Mar.	18	2	6	350	Mar.	118	22	61	3,766
Apr.	9	4	5	310	Apr.	71	18	46	2,718
May	12	3	6	384	May	53	26	37	2,242
June	4350	3	429	25,758	June	118	35	81	4,826
July	7580	822	2355	146,004	July	400	62	114	7,034
Aug.	7340	500	2537	157,314	Aug.	400	99	215	13,302
Sept.	24300	380	3514	210,858	Sept.	4269	200	883	52,930
Oct.	822	333	538	33,368	Oct.	4590	273	1089	67,508
Nov.	1958	180	540	32,390	Nov.	31000	289	6095	365,654
Dec.	No	Records		3,650*	Dec.	1630	150	518	32,104
Total	..	..	..	624,816*	Total	..	..	..	571,326

* Estimated.

MACQUARIE RIVER AT NARROMINE

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.	1025	120	234	14,470	Jan.	625	46	129	8,024
Feb.	537	88	185	10,378	Feb.	53	18	36	2,008
Mar.	77	25	44	2,694	Mar.	87725	3	5703	465,218
Apr.	25	18	23	1,344	Apr.	17633	1040	5553	333,146
May	32	18	26	1,556	May	57500	2000	8583	532,152
June	8918	30	1115	66,898	June	14340	1570	4032	241,900
July	6100	494	1200	74,382	July	8800	1510	2849	176,620
Aug.	625	219	368	22,806	Aug.	10300	980	2672	165,620
Sept.	377	135	206	12,344	Sept.	5100	537	1398	83,822
Oct.	135	62	98	6,070	Oct.	6340	377	1392	86,266
Nov.	1900	62	402	24,096	Nov.	342	150	194	11,654
Dec.	207	46	89	5,502	Dec.	8200	106	583	36,122
Total	..	..	..	242,540	Total	..	..	..	2,142,552

Year 1927

Year 1928

Jan.	1370	200	559	34,680	Jan.	No	Records	22,200*
Feb.	275	60	149	8,338	Feb.	37340	496 | 5390	312,640
Mar.	55	21	37	2,308	Mar.	1300	198 | 466	28,910
Apr.	400	24	115	6,882	Apr.	2960	291 | 820	49,202
May	155	78	96	5,954	May	321	158 | 214	13,296
June	90	66	80	4,788	June	770	139 | 240	14,412
July	104	90	94	5,874	July	5600	460 | 1860	115,316
Aug.	120	104	110	6,816	Aug.	No	Records	49,460*
Sept.	90	66	77	4,644	Sept.	220	139 | 190	11,420
Oct.	820	90	260	16,150	Oct.	265	91 | 137	8,496
Nov.	13640	90	1202	72,100	Nov.	188	41 | 91	5,684
Dec.	1700	77	305	18,968	Dec.	32	3 | 17	1,040
Total	..	..	..	187,502	Total	..	..	632,076*

Year 1929

Year 1930

Jan.	3	0	1	64	Jan.	No	Records	78,760*
Feb.	No	Records		42,540*	Feb.	440	48 | 151	8,462
Mar.	No	Records		15,110*	Mar.	No	Records	17,790*
Apr.	440	60	151	9,046	Apr.	No	Records	1,760*
May	60	3	30	1,836	May	No	Records	6,050*
June	160	3	53	3,178	June	No	Records	37,110*
July	No	Records		2,350*	July	No	Records	68,120*
Aug.	No	Records		3,940	Aug.	4930	630 | 2051	127,200
Sept.	160	49	84	5,020	Sept.	580	173 | 306	18,400
Oct.	No	Records		13,140*	Oct.	No	Records	77,610*
Nov.	No	Records		38,490*	Nov.	No	Records	19,150*
Dec.	970	49	149	9,236	Dec.	No	Records	62,870*
Total	..	..	..	143,950*	Total	..	..	523,282*

Year 1931

Year 1932

Jan.	173	38	86	5,368	Jan.	227	69	120	7,402
Feb.	38	0	13	738	Feb.	227	94	154	8,956
Mar.	5570	0	660	40,958	Mar.	4430	69	604	37,436
Apr.	15930	257	1650	99,052	Apr.	1330	330	542	32,538
May	43300	292	5976	370,566	May	440	150	206	12,808
June	78100	2220	13660	819,600	June	292	150	189	11,314
July	28000	3830	9454	586,140	July	1890	257	580	35,954
Aug.	4030	1380	2357	146,160	Aug.	440	257	319	19,762
Sept.	1260	800	997	59,800	Sept.	7280	257	1661	99,696
Oct.	1680	330	667	41,392	Oct.	1680	220	758	47,038
Nov.	1070	227	420	25,246	Nov.	5780	220	579	34,764
Dec.	No	Records		60,960*	Dec.	290	60	149	9,244
Total	..	..	..	2,255,980*	Total	..	..	..	356,912

* Estimated.

MACQUARIE RIVER AT NARROMINE

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.	6720	23	465	28,834	Jan.	1510	63	253	15,724
Feb.	580	22	107	5,980	Feb.	13300	76	2217	124,154
Mar.	23	8	12	782	Mar.	2200	126	488	30,264
Apr.	52	11	31	1,870	Apr.	940	76	238	14,286
May	63	18	31	1,932	May	145	76	98	6,094
June	76	43	51	3,080	June	167	63	78	4,686
July	1890	63	265	16,424	July	2390	167	377	23,378
Aug.	1750	160	465	28,838	Aug.	9200	940	315	195,236
Sept.	4230	160	1295	77,702	Sept.	9600	454	1799	107,964
Oct.	6010	126	987	61,184	Oct.	55260	414	6479	401,692
Nov.	4290	76	651	39,094	Nov.	8010	665	2776	166,580
Dec.	1440	145	451	27,966	Dec.	2720	454	1003	62,220
Total	..	..	..	293,686	Total	..	..	..	1,152,278

Year 1935				Year 1936					
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.	5340	414	1548	95,966	Jan.	710	43	217	13,450
Feb.	4600	217	788	44,106	Feb.	145	52	77	4,446
Mar.	217	90	128	7,958	Mar.	2083	112	290	17,940
Apr.	378	76	152	9,138	Apr.	294	30	82	4,944
May	308	145	223	13,816	May	460	30	137	8,500
June	145	90	121	7,282	June	294	49	94	5,554
July	536	145	252	15,594	July	9890	294	2095	129,862
Aug.	2050	217	723	44,850	Aug.	32000	621	3587	222,402
Sept.	665	246	320	19,184	Sept.	2860	342	981	58,844
Oct.	10000	108	1134	70,324	Oct.	454	190	273	16,936
Nov.	578	90	192	11,490	Nov.	190	63	128	7,706
Dec.	665	43	185	11,440	Dec.	621	52	294	18,230
Total	..	..	..	351,148	Total	..	..	..	508,814

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.	414	167	328	20,358	Jan.	521	21	88	5,428
Feb.	167	52	94	5,268	Feb.	855	30	181	10,146
Mar.	578	5	120	7,436	Mar.	30	0	9	578
Apr.	145	14	57	3,420	Apr.	0	0	0	0
May	63	14	28	1,708	May	167	0	69	4,254
June	167	63	113	6,786	June	90	18	35	2,082
July	145	108	121	7,500	July	414	52	89	5,510
Aug.	968	108	232	14,374	Aug.	800	217	375	23,254
Sept.	5100	187	888	52,292	Sept.	890	63	305	18,326
Oct.	187	88	116	7,200	Oct.	2530	14	298	18,458
Nov.	553	67	274	16,418	Nov.	845	76	298	17,892
Dec.	136	21	45	2,760	Dec.	63	0	12	746
Total	..	..	..	146,520	Total	..	..	..	106,674

Year 1939				Year 1940					
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.	145	0	10	600	Jan.	13	0	3	164
Feb.	11	0	1	58	Feb.	0	0	0	0
Mar.	342	0	23	1,424	Mar.	0	0	0	0
Apr.	2660	0	532	31,944	Apr.	2050	0	327	19,646
May	223	17	75	4,656	May	62	22	38	2,336
June	77	28	44	2,662	June	22	10	13	794
July	472	36	228	14,152	July	94	13	65	4,006
Aug.	9400	132	2265	140,428	Aug.	94	36	59	3,658
Sept.	1300	153	429	25,728	Sept.	298	2	46	2,760
Oct.	5010	132	836	51,862	Oct.	326	0	88	5,478
Nov.	2200	223	533	31,960	Nov.	795	0	62	3,728
Dec.	198	5	54	3,340	Dec.	2000	0	442	27,416
Total	..	..	..	308,814	Total	..	..	..	69,986

MACQUARIE RIVER AT NARROMINE

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.	58200	298	10113	627,034	Jan.	No Records			130*
Feb.	10000	119	588	32,958	Feb.	No Records			790*
Mar.	424	140	228	14,162	Mar.	No Records			290*
Apr.	185	23	70	4,204	Apr.	No Records			30*
May	23	16	19	1,160	May	No Records			18,200*
June	865	38	402	24,128	June	No Records			217,700*
July	342	140	195	12,098	July	No Records			588,500*
Aug.	140	59	87	5,374	Aug.	No Records			97,220*
Sept.	209	71	138	8,294	Sept.	No Records			188,200*
Oct.	514	47	202	12,504	Oct.	No Records			56,600*
Nov.	140	16	51	3,084	Nov.	No Records			175,600*
Dec.	865	0	94	5,808	Dec.	No Records			48,000*
Total	..	..	..	750,808	Total	..	..	..	1,391,260*

Year 1943

Year 1944

Jan	No Records			60,000*	Jan.	200	15	86	5,308
Feb.	200	31	106	5,934	Feb.	330	5	29	1,748
Mar.	31	7	23	1,426	Mar.	5	0	0.2	10
Apr.	31	7	18	1,108	Apr.	0	0	0	0
May	5740	23	741	45,914	May	23	0	5	310
June	715	263	441	26,442	June	100	31	59	3,512
July	507	263	331	20,522	July	110	42	60	3,708
Aug.	4480	263	2115	131,156	Aug.	810	42	133	8,250
Sept.	2750	800	1384	83,060	Sept.	360	42	91	5,478
Oct.	23500	630	2985	185,068	Oct.	42	11	20	1,202
Nov.	4820	263	1002	60,106	Nov.	11	0	1	66
Dec.	470	172	262	16,264	Dec.	0	0	0	0
Total	..	..	..	637,000*	Total	..	..	..	29,592

Year 1945

Year 1946

Jan.	7620	0	298	18,506	Jan.	500	6	86	5,340
Feb.	2387	25	347	19,400	Feb.	70	13	32	1,784
Mar.	500	6	86	5,316	Mar.	13	0	4	242
Apr.	3400	6	410	24,624	Apr.	0	0	0	0
May	1164	23	206	12,748	May	31	0	6	362
June	35100	70	4609	276,550	June	40	15	16	950
July	3400	110	1235	76,574	July	152	21	42	2,600
Aug.	14290	598	4593	284,756	Aug.	40	29	35	2,186
Sept.	4866	110	895	53,720	Sept.	30	2	12	744
Oct.	202	70	143	8,876	Oct.	110	2	17	1,076
Nov.	70	23	32	1,950	Nov.	327	2	76	4,574
Dec.	70	6	28	1,732	Dec.	2200	40	278	17,218
Total	..	..	..	784,752	Total	..	..	..	37,076

Year 1947

Year 1948

Jan.	260	0	68	4,224	Jan.	No Records			104,000*
Feb.	2574	0	439	24,578	Feb.	No Records			112,000*
Mar.	1880	21	328	20,328	Mar.	No Records			57,000*
Apr.	21	0	3	190	Apr.	No Records			17,000*
May	598	2	89	5,548	May	No Records			46,000*
June	231	2	69	4,142	June	No Records			130,000*
July	6000	2	609	37,752	July	No Records			78,000*
Aug.	598	152	223	13,850	Aug.	No Records			29,000*
Sept.	13100	327	2787	167,204	Sept.	No Records			62,000*
Oct.	598	202	331	20,534	Oct.	No Records			17,000*
Nov.	No Records			129,400*	Nov.	No Records			4,530*
Dec.	No Records			272,600*	Dec.	No Records			530*
Total	..	..	..	700,350*	Total	..	..	..	657,060*

* Estimated.

MACQUARIE RIVER AT NARROMINE

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.	No	Records		6,200*	Jan.	No	Records	129,300*	
Feb.	No	Records		9,900*	Feb.	No	Records	486,300*	
Mar.	No	Records		11,000*	Mar.	No	Records	291,400*	
Apr.	No	Records		1,020*	Apr.	No	Records	1,506,200*	
May	No	Records		2,570*	May	No	Records	157,600*	
June	No	Records		100,300*	June	No	Records	802,000*	
July	No	Records		109,880*	July	No	Records	1,438,700*	
Aug.	No	Records		25,300*	Aug.	No	Records	1,177,800*	
Sept.	No	Records		260,500*	Sept.	No	Records	281,400*	
Oct.	No	Records		193,350*	Oct.	No	Records	1,626,300*	
Nov.	No	Records		37,850*	Nov.	No	Records	1,533,100*	
Dec.	No	Records		19,470*	Dec.	No	Records	196,800*	
Total	..	..	..	777,340*	Total	..	..	9,626,900*

Year 1951

Year 1952

Jan.	2110	990	1372	85,040	Jan.	221	74	149	9,262
Feb.	1080	548	764	42,782	Feb.	69	44	54	3,126
Mar.	810	390	541	33,550	Mar.	1245	53	234	14,530
Apr.	559	370	427	25,626	Apr.	3710	128	784	47,060
May	570	380	473	29,320	May	1360	537	877	54,368
June	5500	461	1577	94,626	June	74830	990	13562	813,726
July	38300	1360	6268	388,624	July	75880	2030	14553	902,274
Aug.	40900	2030	9477	587,582	Aug.	54500	4750	18367	1,138,764
Sept.	7070	950	2020	121,210	Sept.	7160	1695	3317	199,014
Oct.	4030	875	1542	95,626	Oct.	4190	1202	1891	117,218
Nov.	810	272	402	24,084	Nov.	2270	622	1063	63,796
Dec.	420	205	293	18,156	Dec.	870	371	490	30,394
Total	..	..	..	1,546,226	Total	..	..	..	3,393,532

Year 1953

Year 1954

Jan.	9830	387	1883	116,770	Jan.	1590	110	498	30,900
Feb.	585	277	361	20,198	Feb.	27680	376	5392	302,000
Mar.	319	172	220	13,628	Mar.	1590	166	521	32,330
Apr.	263	160	191	11,450	Apr.	408	150	196	11,786
May	1095	185	506	31,352	May	168	141	151	9,390
June	724	291	352	21,144	June	408	141	236	14,148
July	664	363	431	26,728	July	360	188	228	14,136
Aug.	3350	371	1118	69,316	Aug.	392	184	273	16,912
Sept.	641	312	416	24,956	Sept.	416	133	246	14,772
Oct.	1115	263	424	26,272	Oct.	No	Records		136,200*
Nov.	4280	344	1045	62,704	Nov.	No	Records		228,400*
Dec.	980	110	273	16,922	Dec.	No	Records		28,700*
Total	..	..	..	441,440	Total	..	..	..	839,674*

Year 1955

Year 1956

Jan.	No	Records		14,280*	Jan.	11530	245	1534	95,126
Feb.	250000	No	Records	1,503,150*	Feb.	19600	473	8880	515,062
Mar.	No	Records		334,000*	Mar.	206000	2560	24154	1,497,580
Apr.	No	Records		31,720*	Apr.	12170	3060	5997	339,830
May	No	Records		38,660*	May	33300	4490	12623	782,640
June	No	Records		51,900*	June	117000	3220	15238	914,260
July	No	Records		64,260*	July	47500	8300	22393	1,388,390
Aug.	No	Records		361,360*	Aug.	42800	5200	10777	668,200
Sept.	No	Records		151,660*	Sept.	18310	2560	4965	297,920
Oct.	No	Records		332,800*	Oct.	18660	2640	6796	421,330
Nov.	No	Records		137,010*	Nov.	4730	960	2188	131,260
Dec.	No	Records		74,790*	Dec.	880	352	609	37,782
Total	..	..	..	3,095,590*	Total	..	..	..	7,089,380

* Estimated.

MACQUARIE RIVER AT NARROMINE

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.	352	218	306	18,898	Jan.	130	11	60	3,696
Feb.	405	264	317	17,772	Feb.	5600	220	1487	83,280
Mar.	284	245	271	16,774	Mar.	2500	120	299	18,520
Apr.	540	254	317	19,040	Apr.	510	120	200	12,000
May	364	274	311	19,276	May	590	120	233	14,460
June	352	294	311	18,678	June	220	170	182	10,900
July	565	352	427	26,446	July	1900	220	645	40,020
Aug.	1290	340	516	31,998	Aug.	5300	360	1324	82,100
Sept.	800	227	377	22,616	Sept.	6500	1100	2077	124,600
Oct.	218	77	152	9,440	Oct.	18080	1200	3884	240,782
Nov.	85	34	56	3,390	Nov.	1200	220	442	26,520
Dec.	47	11	24	1,466	Dec.	4300	220	868	53,840
Total	..	..	..	205,794	Total	..	..	..	710,718

Year 1959

Year 1960

Jan.	13560	170	1665	103,240	Jan.	510	170	280	17,360
Feb.	4000	220	868	48,580	Feb.	1100	220	407	23,640
Mar.	6500	510	1515	93,930	Mar.	170	120	152	9,440
Apr.	55200	900	7561	453,660	Apr.	510	72	138	8,284
May	780	510	592	36,680	May	1800	220	571	35,400
June	2700	430	600	36,020	June	430	290	330	19,780
July	9400	510	221 ^a	137,500	July	4000	290	1972	122,280
Aug.	3600	680	1566	97,080	Aug.	41900	1600	7786	482,720
Sept.	780	430	527	31,640	Sept.	7900	1000	2486	149,200
Oct.	2800	430	742	46,000	Oct.	4400	680	1548	96,000
Nov.	5500	510	1282	76,900	Nov.	1900	360	727	43,600
Dec.	2200	290	555	34,400	Dec.	2900	510	959	59,440
Total	..	..	..	1,195,630	Total	..	..	..	1,067,144

Year 1961

Year 1962

Jan.	1400	120	453	28,080	Jan.	2200	470	745	46,220
Feb.	120	80	87	4,880	Feb.	1160	390	710	39,780
Mar.	510	80	178	11,040	Mar.	390	68	155	9,594
Apr.	430	80	173	10,380	Apr.	120	92	98	5,856
May	430	120 ^o	195	12,120	May	390	92	167	10,384
June	220	120	172	10,300	June	3300	240	788	47,260
July	1840	175	439	27,210	July	10500	175	1352	83,840
Aug.	11400	550	2616	162,180	Aug.	17000	840	3634	225,320
Sept.	2320	510	1141	68,460	Sept.	2780	310	1060	63,620
Oct.	2780	175	515	31,910	Oct.	940	310	463	28,700
Nov.	17610	240	2599	155,920	Nov.	310	92	179	10,756
Dec.	4060	550	1521	94,280	Dec.	4280	92	1001	62,078
Total	..	..	..	616,760	Total	..	..	..	633,408

Year 1963

Year 1964

Jan.	11300	310	1844	114,340	Jan.	275	106	190	11,782
Feb.	13600	550	3046	170,560	Feb.	106	58	83	4,816
Mar.	1380	175	386	23,940	Mar.	470	48	94	5,818
Apr.	740	120	369	22,110	Apr.	1490	32	178	10,660
May	5800	120	1590	98,560	May	550	120	233	14,478
June	13100	840	3964	237,840	June	22920	120	5390	323,390
July	12600	1270	4074	252,580	July	14300	1780	5828	361,310
Aug.	10100	1270	3035	188,140	Aug.	9800	1105	2327	144,280
Sept.	11500	1300	3543	212,580	Sept.	6990	1270	2594	155,620
Oct.	4800	840	1930	119,640	Oct.	16360	1435	5634	349,320
Nov.	1600	390	837	50,200	Nov.	14100	740	3584	215,070
Dec.	1840	240	664	41,190	Dec.	640	92	273	16,924
Total	..	..	..	1,531,680	Total	..	..	..	1,613,468

MACQUARIE RIVER AT NARROMINE

Year 1965

Year 1966

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.	106	48	73	4,512	Jan.	39	3	20	1,258
Feb.	48	32	40	2,272	Feb.	39	39	39	2,184
Mar.	18	0	2.2	134	Mar.	730	7	104	6,472
Apr.	24	1	5	306	Apr.	60	13	26	1,530
May	39	0	19	1,142	May	80	42	67	4,164
June	46	27	36	2,130	June	100	30	60	3,628
July	55	42	50	3,106					
Aug.	54	32	42	2,592					
Sept.	65	26	49	2,962					
Oct.	80	14	39	2,312					
Nov.	80	3.4	25	1,478					
Dec.	2200	14	319	19,772					
Total	..	..	..	42,718	Total	..	..	..	..

GUNNINGBAR CREEK AT REGULATOR

LOCATION: Latitude 31°45' Longitude 147°52'

PERIOD OF ESTABLISHMENT: December 1899.

COMPLETE YEARS OF COMPUTED RECORDS: 64 years.

ZERO OF GAUGE: R.L. 631.79 North West Water Conservation Datum.

CATCHMENT AREA: Effluent.

CONTROL: Rectangular weir.

EQUIPMENT: Staff gauge, range 0 to 15 feet.

CURRENT METER OBSERVATIONS:

(a) Number obtained	:	210
(b) Maximum observation in cusecs	:	1,580
(c) Minimum observation in cusecs	:	0

MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS: 17,000 cusecs.

MEAN DAILY DISCHARGE FOR 64 YEARS: 100 cusecs.

MEAN ANNUAL DISCHARGE FOR 64 YEARS; 72,800 acre feet.

REMARKS:

1. Records commenced in April 1901 and were obtained from:-
No. 1 gauge from April 1901 to May 1933;
Kamilaroi gauge from June 1933 to March 1942;
Regulator gauge from April 1942 to date.
2. High flow records are approximate only.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1901				5810	5250	6542	5896	14670	12032	4652	3134	0	
1902	0	0	0	0	0	0	0	0	0	0	0	0	0
1903	0	0	0	4072	1250	0	0	0	16824	21904	11978	3474	59502
1904	0	0	0	2808	0	0	4662	0	0	812	0	0	8282
1905	0	0	0	9920	1212	1408	13694	8360	124	0	0	0	34718
1906	0	0	0	0	0	0	326	0	8968	30538	0	0	39832
1907	1546	0	0	0	0	0	0	4110	1064	0	0	1686	8406
1908	160	3196	0	0	0	0	0	0	0	0	0	462	3818
1909	0	0	0	0	0	0	0	0	0	0	0	856	856
1910	14750	0	0	0	0	0	0	0	0	0	0	0	14750
1911	0	3316	0	0	0	0	296	0	0	0	0	8478	12090
1912	0	0	0	0	0	0	2862	4496	2018	0	0	0	9376
1913	0	0	0	400	2338	3704	4166	0	0	0	0	0	10608
1914	0	0	1926	20	0	0	554	0	0	0	0	0	2500
1915	778	0	0	1276	3814	884	6278	6138	0	0	0	0	19168
1916	0	0	0	0	0	25712	55520	115616	68064	315758	4048	9178	593896
1917	0	0	0	0	0	0	6324	11596	15788	14348	7726	0	55782
1918	0	0	0	0	0	0	0	7400	170	0	0	0	7570
1919	0	0	0	0	0	0	0	0	0	0	0	0	0
1920	0	0	0	0	0	0	144380	46950	48508	0	0	68710	308548
1921	0	0	0	570	0	140146	97360	16312	0	0	0	5760	260148
1922	3636	0	0	0	0	0	25060	1158	0	0	0	0	29854
1923	0	0	0	0	0	0	2930	5150	9124	0	1608	0	18812
1924	0	0	0	0	0	0	0	0	164	462	27898	8	28532
1925	0	0	0	0	0	2784	1138	0	0	0	0	0	3922
1926	0	0	66000	24636	44122	4548	3728	4034	0	0	0	0	147068
1927	2204	0	0	0	0	0	0	0	0	0	3016	656	5876
1928	254	16056	0	360	0	0	2858	490	0	0	0	0	20018
1929	0	1286	0	0	0	0	0	0	0	146	776	0	2208
1930	3292	0	0	0	0	0	576	2120	0	2302	0	1696	9986
1931	0	0	776	2742	8872	136482	48016	260	0	776	124	3434	201482
1932	0	0	2082	0	0	0	0	0	994	104	442	0	3622
1933	0	0	0	0	0	0	0	220	1226	2034	1060	124	4664
1934	0	7196	558	0	0	0	0	6010	4174	12818	6116	672	37554
1935	1690	794	0	0	0	0	0	334	8	3376	88	0	6290
1936	0	0	0	0	0	0	5508	12026	570	0	0	0	18104

GUNNINGBAR CREEK AT REGULATOR
 Monthly Discharges in Acre Feet

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1937	0	0	0	0	0	0	0	0	2174	0	0	0	2174
1938	0	0	0	0	0	0	0	0	0	204	310	0	514
1939	0	0	0	638	0	0	0	1534	0	1136	246	0	3554
1940	0	0	0	10	0	0	0	0	0	0	0	214	224
1941	30336	0	0	0	0	0	0	0	0	0	0	48	30384
1942	574	0	0	0	0	15700	34112	5160	0	3294	11488	5548	75876
1943	5480	1360	594	262	4896	2880	2462	12790	6872	16736	6702	718	61752
1944	584	658	172	0	0	404	618	996	1360	318	0	0	5110
1945	1914	1708	1714	1124	42	17828	6410	23106	4960	52	688	426	59972
1946	366	580	152	0	0	0	309	468	281	24	524	1649	4353
1947	1288	2256	3298	224	306	1102	4462	2156	13404	2470	10930	22514	64410
1948	9954	7471	6328	2676	5172	8660	4210	1257	5784	989	1106	422	54029
1949	494	1761	1908	706	788	7764	5684	1226	11556	5708	5060	3024	45679
1950	10526	18732	0	62496	0	9924	36940	38936	0	40694	37518	7900	263666
1951	0	0	0	0	0	604	14682	28840	7152	8366	1186	1520	62350
1952	933	478	1138	5448	6212	34128	26370	14652	10846	7110	6982	4202	118499
1953	11818	3012	828	1918	3922	2776	2630	7004	3424	3394	5942	2610	49278
1954	3202	22130	5354	2030	2096	2608	2326	2494	2146	13462	23378	4102	85328
1955	1590	56838	5056	4080	3984	4758	5426	33074	8114	30992	14462	11854	180228
1956	11088	58654	122736	27860	74472	67880	171606	52510	32020	35354	3412	3842	661434
1957	1592	2120	2552	2316	2638	2246	3228	3716	3304	1482	650	346	26190
1958	354	9018	2694	1724	2088	1766	4978	9216	14274	24434	4612	5576	80734
1959	12834	6898	10734	36824	4976	3990	14486	9034	4284	5670	7372	5222	122324
1960	2352	2886	1280	978	4220	2970	13018	37554	15240	13160	5950	8124	107732
1961	5028	1350	1950	1680	1924	1780	3772	17596	9518	4070	16932	13344	78944
1962	6640	5120	1748	1218	1434	6718	7726	22882	9974	5182	2550	9212	80404
1963	15456	20306	3618	3758	13356	29764	32800	23170	29360	11066	5530	5068	193252
1964	2044	1072	1118	680	2712	28316	30498	12550	16516	27398	18400	3266	144570
1965	1044	242	0	0	0	264	628	1248	2238	368	182	2260	8474
1966	7	202	970	419	1812	1740							

GUNNINGBAR CREEK AT REGULATOR
Monthly Discharges in Acre Feet

MARRA CREEK AT YARRAWIN

LOCATION: Latitude 30°16' Longitude 147°13'

PERIOD OF ESTABLISHMENT: November 1945 to date.

COMPLETE YEARS OF COMPUTED RECORDS: 20 years.

ZERO OF GAUGE: R.L. 95.34 Assumed Datum.
Approximately 400 feet above sea level.

CATCHMENT AREA: Effluent from Macquarie River.

CONTROL: Timber weir.

EQUIPMENT: Staff gauge 0 to 10 feet.

CURRENT METER OBSERVATIONS:

- (a) Number obtained : 33
- (b) Maximum observation
in cusecs : 1,246
- (c) Minimum observation
in cusecs : zero

MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS: 5,500 cusecs.

MEAN DAILY DISCHARGE FOR 20 YEARS: 315 cusecs.

MEAN ANNUAL DISCHARGE FOR 20 YEARS: 230,000 acre feet.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1945												0	-
1946	0	0	0	0	0	0	0	0	0	0	0	0	0
1947	0	3015	736	0	0	0	0	0	2246	2672	1442	2928	13042
1948	10482	1266	3288	358	3856	115302	18300*	2506	336	240	0	0	155934**
1949	0	1246	5092	1228	594	452	176	1704	1306	10382	6066	138	28304
1950	514	7718	32234	13440	81086	34196	248640	107410	213280	218320	277320	274020	1827078
1951	35510	4956	454	0	0	356	21262	103276	82882	5256	520	4	259476
1952	0	0	0	0	0	3540	79516	202240	158190	15240	2522	98	461346
1953	90	1174	6466	444	464	0	0	0	0	0	0	0	8638
1954	0	668	6760	0	0	0	46	28	0	24	11040	7816	26382
1955	670	4152	220190	7690	1342	230	406	474	42298	7962	19188	2858	307460
1956	300	15000	157250	173170	72400	102140	200580	215200	71300	41766	46638	992	1096736
1957	36	0	0	0	0	0	0	0	0	0	0	0	36
1958	0	0	0	0	250	70	0	0	0	3634	3988	6	7948
1959	324	1548	2400	91792	6372	444	252	7968	1134	118	0	0	112352
1960	0	0	0	0	0	0	0	18580	14644	10698	1340	142	45404
1961	20	0	0	488	100	0	0	0	2522	618	0	5120	8868
1962	1898	92	1074	0	0	0	0	450	930	636	168	896	14294
1963	8292	15606	3062	416	0	4864	12772	18664	24152	11108	2200	670	101806
1964	218	0	0	0	0	0	30984	3358	9414	31330	26072	2326	137702
1965	84	0	0	0	0	0	0	0	0	0	0	60	720
1966	265	0	0	0	0	0	0	0	0	0	0	0	0

* Estimated.

Monthly Discharges in Acre Feet

MARRA CREEK AT YARRAWIN

MACQUARIE RIVER AT CARINDA

LOCATION: Latitude 30°28' Longitude 147°35'

PERIOD OF ESTABLISHMENT: April 1926 to date (See Remarks)

COMPLETE YEARS OF COMPUTED RECORDS: 27 years.

ZERO OF GAUGE: R.L. 93.16 Assumed Datum.
Approximately 400 feet above sea level.

CATCHMENT AREA: 12,700 square miles.

CONTROL: Earth.

EQUIPMENT: Staff gauge, range 0 to 12'-6"

CURRENT METER OBSERVATIONS:

(a) Number obtained	:	66
(b) Maximum observation in cusecs	:	1,004
(c) Minimum observation in cusecs	:	0

MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS: Not estimated, see remarks.

MEAN DAILY DISCHARGE FOR 27 YEARS: 219 cusecs.

MEAN ANNUAL DISCHARGE FOR 27 YEARS: 160,000 acre feet.

REMARKS: No records from April 1926 to November 1938.
Flows above 1,300 cusecs are very approximate as the river breaks its banks and joins Marthaguy Creek. The Gauge Reader is unable to read the gauge above 12 feet (1,400 cusecs).

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1938												0	-
1939	0	0	0	0	0	1076	7268	10208	13536	9670	3768	4862	50388
1940	926	0	0	0	0	0	0	0	0	0	0	0	926
1941	10846	3116	1072	846	708	666	1564	3200	2502	246	0	0	24766
1942	0	0	0	0	0	80	19466	30058	10722	4982	3260	3774	72342
1943	3478	3026	690	0	0	2456	5274	7234	12966	16244	13128	6206	70702
1944	1364	0	0	0	0	0	0	0	1262	36	0	0	2662
1945	0	0	0	0	640	2876	9598	18900	14380	3610	524	0	50528
1946	0	0	0	0	0	0	0	0	0	0	0	0	0
1947	0	0	0	0	0	0	32	1292	3502	5072	5330	5532	20760
1948	7500	9882	13288	14346	17936	36176	58440	47556	19174	1666	0	0	225964
1949	0	0	0	0	0	0	2722	13498	8828	1924	0	0	26972
1950	1106	8622	25560	75000*	102000*	101000*	107000*	109000*	103000*	104000*	96000*	99000*	931288*
1951	99000*	44884	10772	1700*	1600*	9800*	31000*	43000*	15000*	14000*	1800*	200*	272756*
1952	0*	0*	0*	4200*	6324	13150	48702	85972	66200	30014	14128	2728	271418*
1953	1612	2550	0	1288	4190	6428	7968	8624	15704	7376	3236	894	59870
1954	758	2016	6552	3306	2998	3560	5908	5456	5096	2820	5966	8970	53406
1955	1122	1664	58316	19824	16980	26604	26046	29972	34198	40200	41702	15988	312616
1956	2944	6442	43910	71000*	96000*	95000*	100000*	102000*	97000*	98000*	48000*	17734	778030*
1957	4776	2758	2836	2640	3170	4244	4664	5600*	6000*	3548	854	28	41118
1958	0	858	2100	414	1046	2628	3852	5694	16780	24870	14960	2270	75472
1959	2070	3358	8204	29556	44792	16142	18958	31198	24892	15802	7444	4000	206416
1960	1793	918	1362	46	556	2798	5484	24806	41516	38746	19012	6282	143319
1961	4028	906	394	540	1550	1988	2710	4898	13300	7642	1902	4746	44604
1962	8024	5570	8298	3620	832	3572	7798	16024	24294	11402	4578	619	94631
1963	6334	11122	13058	9972	9014	21504	31692	38812	38514	42984	18060	5668	246734
1964	3478	757	450	326	460	2038	29792	52732	31704	45666	43704	14984	226091
1965	1250	0	0	0	0	0	0	0	0	0	0	0	1250
1966	0	0	0	0	0	0	0	0	0	0	0	0	0

* Estimated

MACQUARIE RIVER AT CARINDA
 Monthly Discharges in Acre Feet

MARTHAGUY CREEK AT CARINDA

LOCATION: Latitude 30°27' Longitude 147°41'

PERIOD OF ESTABLISHMENT: September 1944 to date.

COMPLETE YEARS OF COMPUTED RECORDS: 18 years.

ZERO OF GAUGE: R.L. 89.55 Assumed Datum.
Approximately 400 feet above sea level.

CATCHMENT AREA: 2,500 square miles*

CONTROL: Sand.

EQUIPMENT: Staff gauge, range 0 to 15 feet.

CURRENT METER OBSERVATIONS:

(a) Number obtained	:	38
(b) Maximum observation in cusecs	:	1,130
(c) Minimum observation in cusecs	:	0

MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS: 3,100 cusecs.

MEAN DAILY DISCHARGE FOR 18 YEARS: 222 cusecs.

MEAN ANNUAL DISCHARGE FOR 18 YEARS: 162,000 acre feet.

REMARKS: No records available for the period April 1926 to October 1939.
* During major floods Macquarie River water enters Marthaguy Creek.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1944										0	0	0	-
1945	0	0	0	0	86	12024	11038	6312	17950	1274	0	0	48684
1946	0	0	0	0	0	0	0	0	0	0	0	0	0
1947	0	0	0	0	0	0	0	0	762	44	0	0	806
1948	0	0	0	0	0	55658	95340	25152	428	0	0	0	176578
1949	0	0*	0*	3858	54	0	0	0	0	624	1352	7	5895*
1950	824	8682	65560	103202	102840	99270	96380	94740	78624	102700	81260	44530	878612
1951					NO	RECORDS					0	0	-
1952	0	0	0	0	0	NO	RECORDS	134000*	NR	20000*	18000*	0	-
1953	0	0	0	0	4398	26	0	0	0	0	120*	0	4544*
1954	0	6095	4004	0	0	0	0	0	0	1406	4756	13166	29426
1955	17810	11572	103900	9562	168	0	1356	688	1050	7160	11440	8448	173154
1956	5376	51288	82400	164810	154000	133050	176850	159560	79320	46436	18128	4002	1,075220
1957	240	0	0	0	0	0	0	0	0	0	0	0	240
1958	0	0	0	0	0	0	0	0	3858	9782	7644	0	21284
1959	10	1802	8554	42116	13200	226	1784	25134	4240	0	0	0	97066
1960	0	0	0	0	0	0	0	33450	25162	17058	2296	176	78142
1961	0	0	0	0	0	0	0	0	6032	414	0	11362	17813
1962	1568	0	0	0	0	0	0	1098	14036	368	16	630	17716
1963	8248	4290	1760	108	44	16298	22128	27256	29228	21324	5710	424	136818
1964	0	0	0	144	0	0	43036	42934	16786	30116	22030	6960	162006
1965	0	0	0	0	0	0	0	0	0	0	0	14	14
1966	0	0	0	0	0	0	0						

* Estimated

Monthly Discharges in Acre Feet

MARTHAGUY CREEK AT CARINDA

BOGAN RIVER AT PEAK HILL

LOCATION: Latitude 32°44' Longitude 148°08'

PERIOD OF ESTABLISHMENT: January 1925 to date

COMPLETE YEARS OF COMPUTED RECORDS: 41 years

ZERO OF GAUGE: 807.06 Standard Datum

CATCHMENT AREA: 210 square miles

CONTROL: Weir

EQUIPMENT: Staff gauge, range 5 feet to 21 feet 3 inches

CURRENT METER OBSERVATIONS:

(a) Number obtained	:	15
(b) Maximum observation in cusecs	:	39
(c) Minimum observation in cusecs	:	Zero

MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS: 4,685 cusecs

MEAN DAILY DISCHARGE FOR 41 YEARS: 22 cusecs

MEAN ANNUAL DISCHARGE FOR 41 YEARS: 16,000 acre feet

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1925	493	1772	0	0	0	16232	7934	0	0	0	0	0	26431
1926	0	0	9372	12902	778	2802	824	48	0	0	0	0	26726
1927	1154	0	0	0	0	0	0	0	0	0	0	0	1154
1928	0	13646	310	0	0	0	0	0	0	0	0	0	13956
1930	0	0	326	0	0	240	72	680	78	840	0	702	2938
1931	0	0	0	190	1246	12316	11198	42	0	0	0	2276	27268
1932	0	0	0	0	0	0	0	0	0	182	0	0	182
1933	0	0	0	0	0	0	0	0	0	42	0	0	42
1934	0	566	14	0	0	0	80	1510	84	6192	126	798	9370
1936	0	164	912	0	0	0	1388	3584	0	0	0	0	6048
1938	0	0	0	0	0	44	142	412	0	2334	42	0	2974
1939	0	0	1446	780	0	0	0	578	0	0	0	0	2804
1941	8060	58	0	0	0	0	0	0	0	0	0	0	8118
1942	0	0	0	0	2598	11430	5000	0	0	0	0	0	19028
1943	70	0	0	0	0	0	0	0	0	0	2958	0	3028
1945	28	290	646	0	1440	4782	84	1956	70	0	0	0	9296
1946	0	0	1340	0	0	0	0	0	0	0	0	0	1340
1947	0	3836	932	0	518	616	4730	1716	4004	48	8250	3860	28510
1948	414	1958	484	0	0	7566	1582	0	0	0	0	0	12004
1949	0	0	0	0	0	0	0	0	0	450	288	0	738
1950	1402	6504	14106	5848	0	8604	25284	7726	4168	18622	19200	816	112280
1951	0	0	0	0	0	0	0	1784	114	0	0	0	1898
1952	0	0	0	1378	1124	3136	11940	7840	2068	1922	114	0	29522
1954	1154	12574	140	0	0	0	0	0	0	2502	1178	0	17548
1955	20836	31632	60990	0	0	0	1864	2162	3182	2062	666	0	123394
1956	6222	6648	14314	11372	11632	9990	15424	4298	2756	4436	1332	0	88424
1958	1740	1848	4334	1250	1316	136	820	1988	1320	5942	0	0	20694
1959	0	4464	2104	16210	750	0	544	156	0	0	0	0	24228
1960	0	0	0	0	0	0	0	6062	2390	1972	870	9	11303
1961	0	0	0	0	0	0	0	2796	910	0	3048	1172	7926
1962	0	0	0	0	0	0	0	1744	1236	0	0	0	2980
1963	0	0	746	1678	3946	3298	2286	270	6	738	122	0	13090
1964	0	0	0	0	0	0	0	0	0	1648	69	0	1717

No flow was recorded in the years 1929, 1935, 1937, 1940, 1944, 1953, 1957 and 1965, and in the six months from January to June 1966.

BOGAN RIVER AT PEAK HILL
Monthly Discharges in Acre Feet

4745
18962
17
29

BOGAN RIVER AT GONGOLGON

LOCATION: Latitude 30°21' Longitude 146°54'

PERIOD OF ESTABLISHMENT: May 1926; November 1945 to date.

COMPLETE YEARS OF COMPUTED RECORDS: 20

ZERO OF GAUGE: 94.56 Assumed Datum.
Approximately 400 feet above sea level.

CATCHMENT AREA: 10,800 square miles.

CONTROL: Concrete weir.

EQUIPMENT: Staff gauge 0 to 10 feet.

CURRENT METER OBSERVATIONS:

- (a) Number obtained : 34
- (b) Maximum observation
in cusecs : 678
- (c) Minimum observation
in cusecs : zero

MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS: 3,700 cusecs.

MEAN DAILY DISCHARGE FOR 20 YEARS: 249 cusecs.

MEAN ANNUAL DISCHARGE FOR 20 YEARS: 182,000 acre feet.

BOGAN RIVER AT GONGOLGON.
Monthly Discharges in Acre Feet

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1945											0	0	-
1946	0	0	0	0	0	0	0	0	0	0	0	0	0
1947	0	19088	6546	576	0	0	2500	2270	8422	6684	15122	8412	69620
1948	16274	3776	8110	1080	8992	50234	37720	1128	204	564	0	0	128082
1949	0	3656	14514	2572	786	470	1956	6460	13746	10878	11816	102	66956
1950	0	31904	41952	124442	44346	27706	139536	172070	115000*	117036	169370	112548	1095910*
1951	162	0	0	0	0	0	0	75838	34944	66	0	0	111010
1952	0	0	0	0	0	15832	54402	129850	66270	26258	4310	2220	299142
1953	1132	394	0	0	0	216	452	1008	570	0	0	0	3772
1954	0	0	20234	164	0	0	0	202	0	0	52322	7230	80152
1955	700	3202	148028	22502	0	0	0	10628	22050	10430	27664	7772	252976
1956	1182	36516	134334	169938	93342	94848	148236	165502	41490	35628	19700*	270*	940986*
1957	166	0	0	0	0	0	396	594	712	194	0	0	2062
1958	0	0	5590	6882	914	3810	1106	1232	8726	14498	5102	184	48044
1959	4382	880	31198	110126	22518	1828	3508	10396	1804	690	900*	930*	189160*
1960	741	0	0	0	0	0	0	26426	9634	9626	2268	1328	50023
1961	780	51	0	1920	18	0	0	0	6806	394	0	34412	44381
1962	4542	844	892	75	0	0	0	3206	11966	2968	578	156	25227
1963	25806	17460	4606	4182	754	17306	16806	11076	17772	6450	3600	1282	127100
1964	114	0	0	0	0	3356	23848	16746	10228	25020	16064	3060	98436
1965	82	0	0	0	0	0	0	0	0	0	0	0	82
1966	0	0	0	0	0	0	0	0	0	0	0	0	

* Estimated.

NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION
MACQUARIE RIVER VALLEY
INCLUDING BOGAN RIVER VALLEY

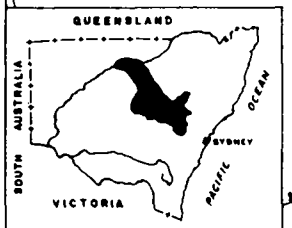
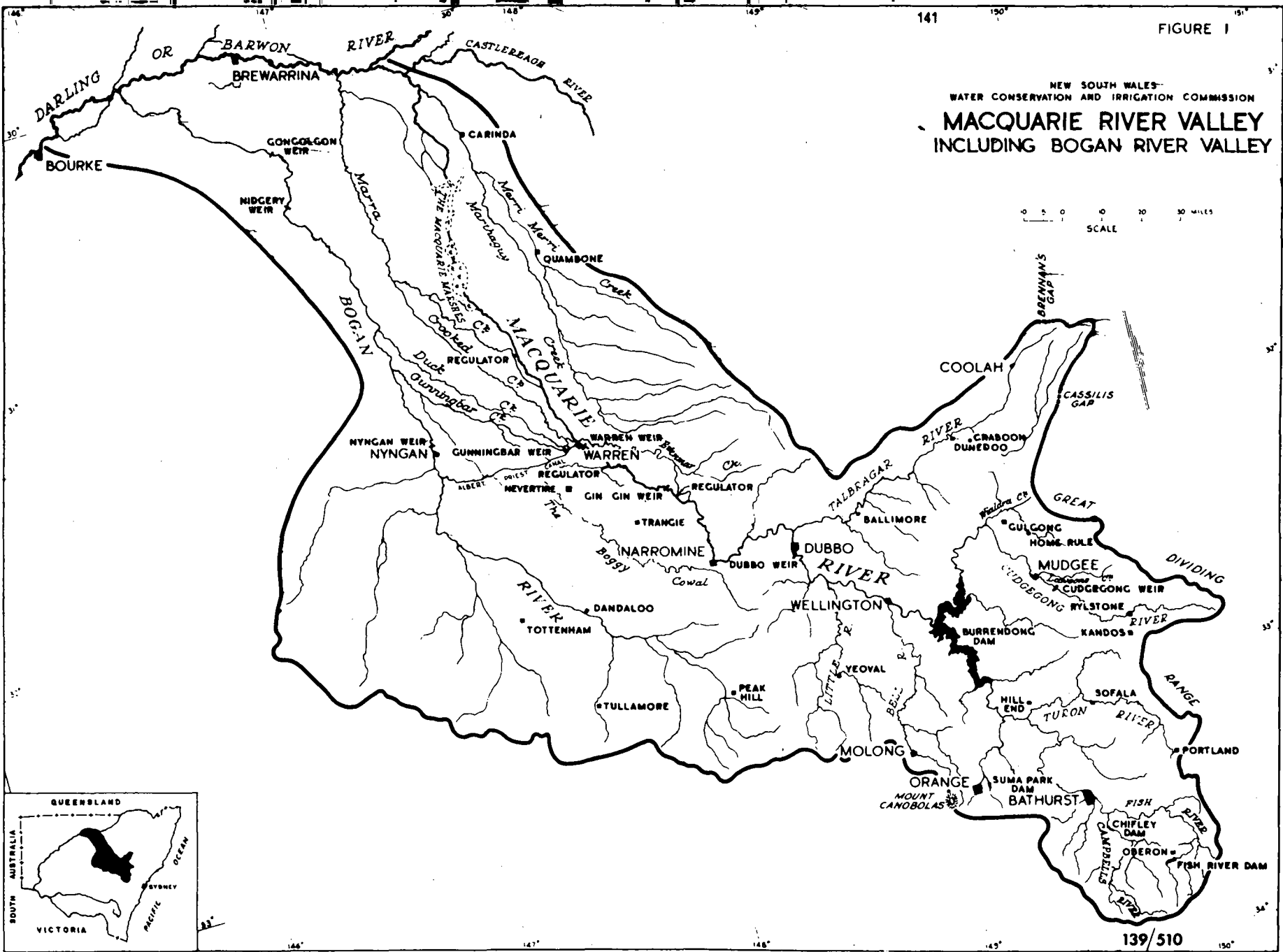


FIGURE 3

WATER CONSERVATION & IRRIGATION COMMISSION
MACQUARIE RIVER VALLEY
INCLUDING BOGAN RIVER VALLEY
ANNUAL MEDIAN RAINFALL

MILES 0 10 20 30 40 50
SCALE

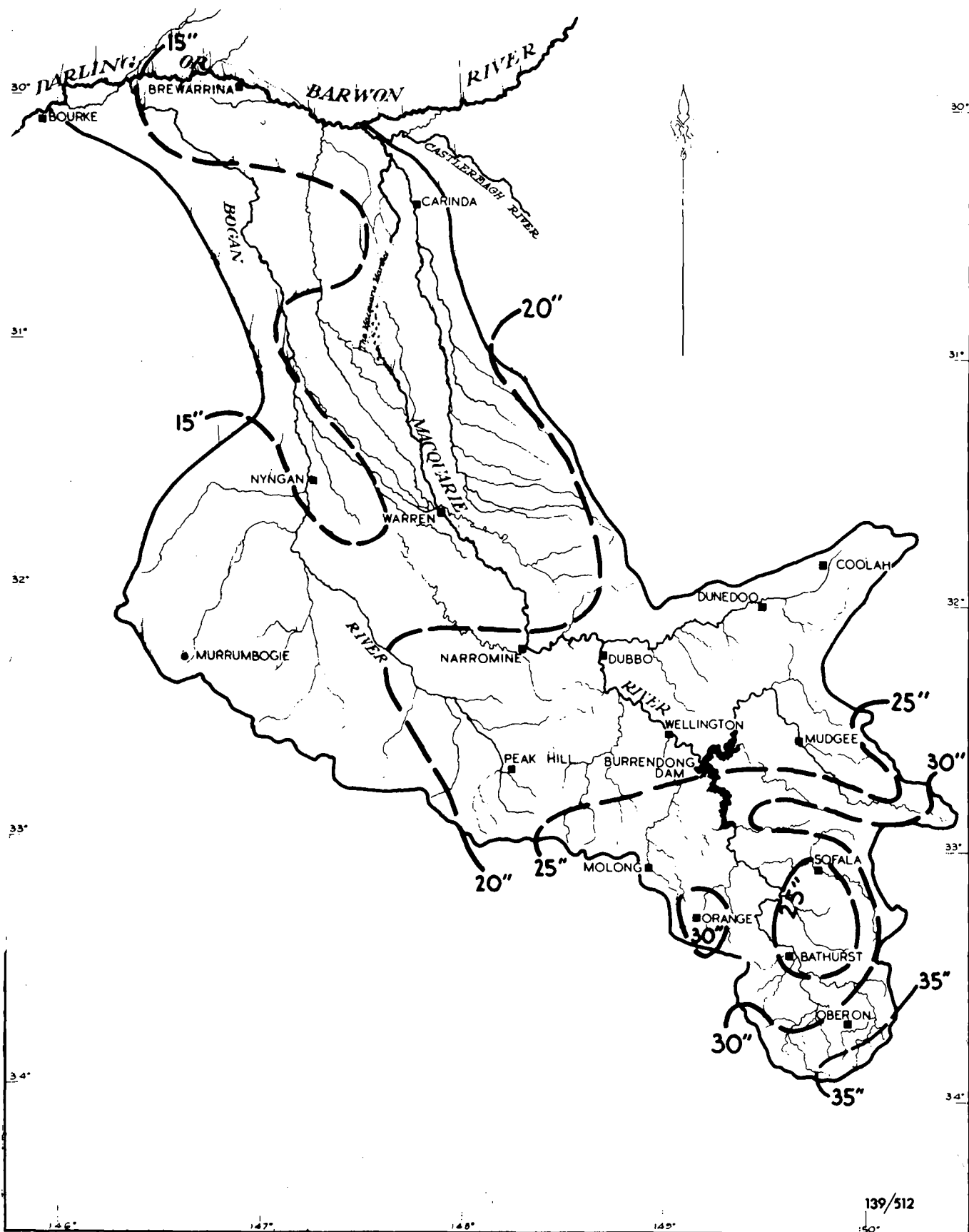
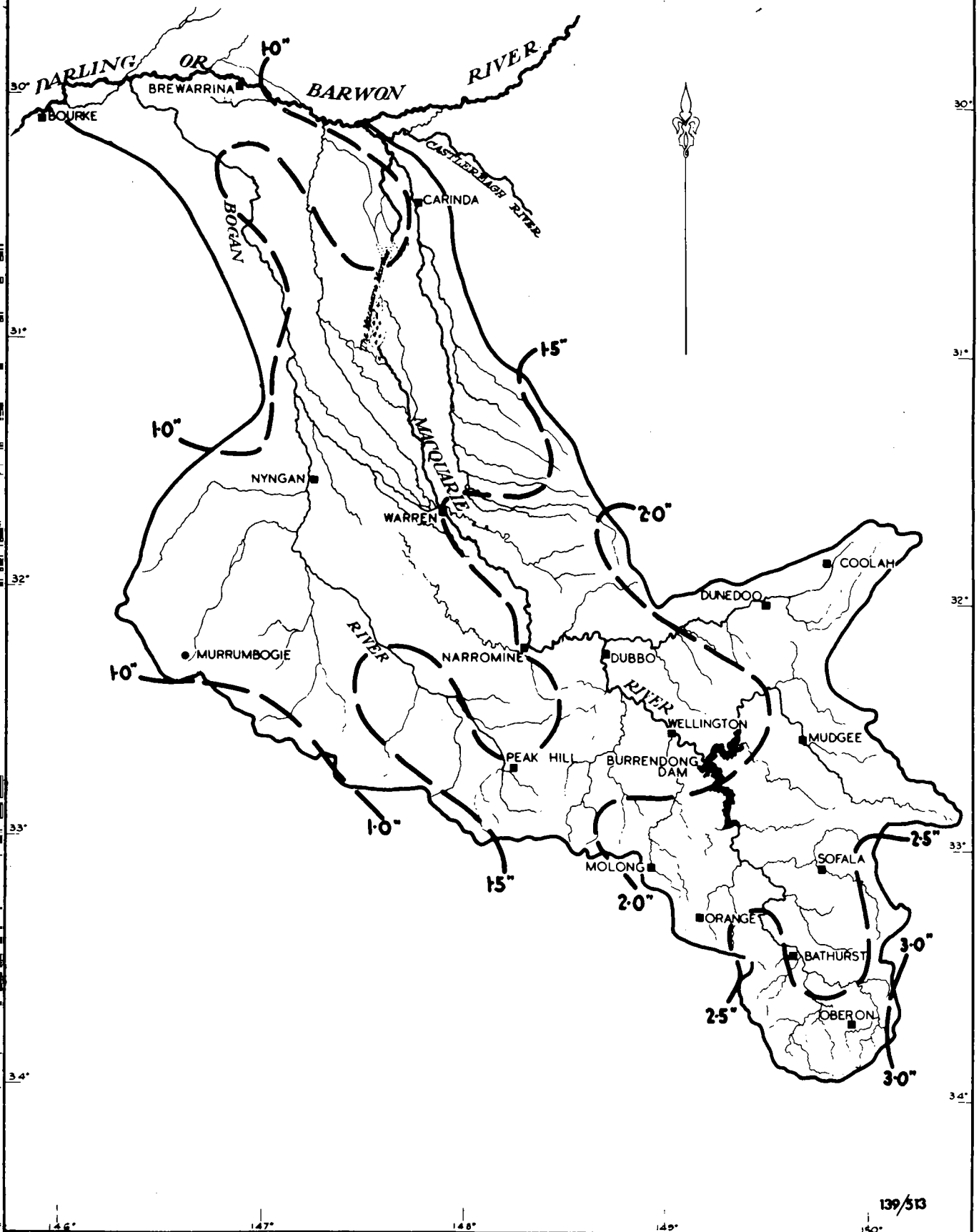


FIGURE 4

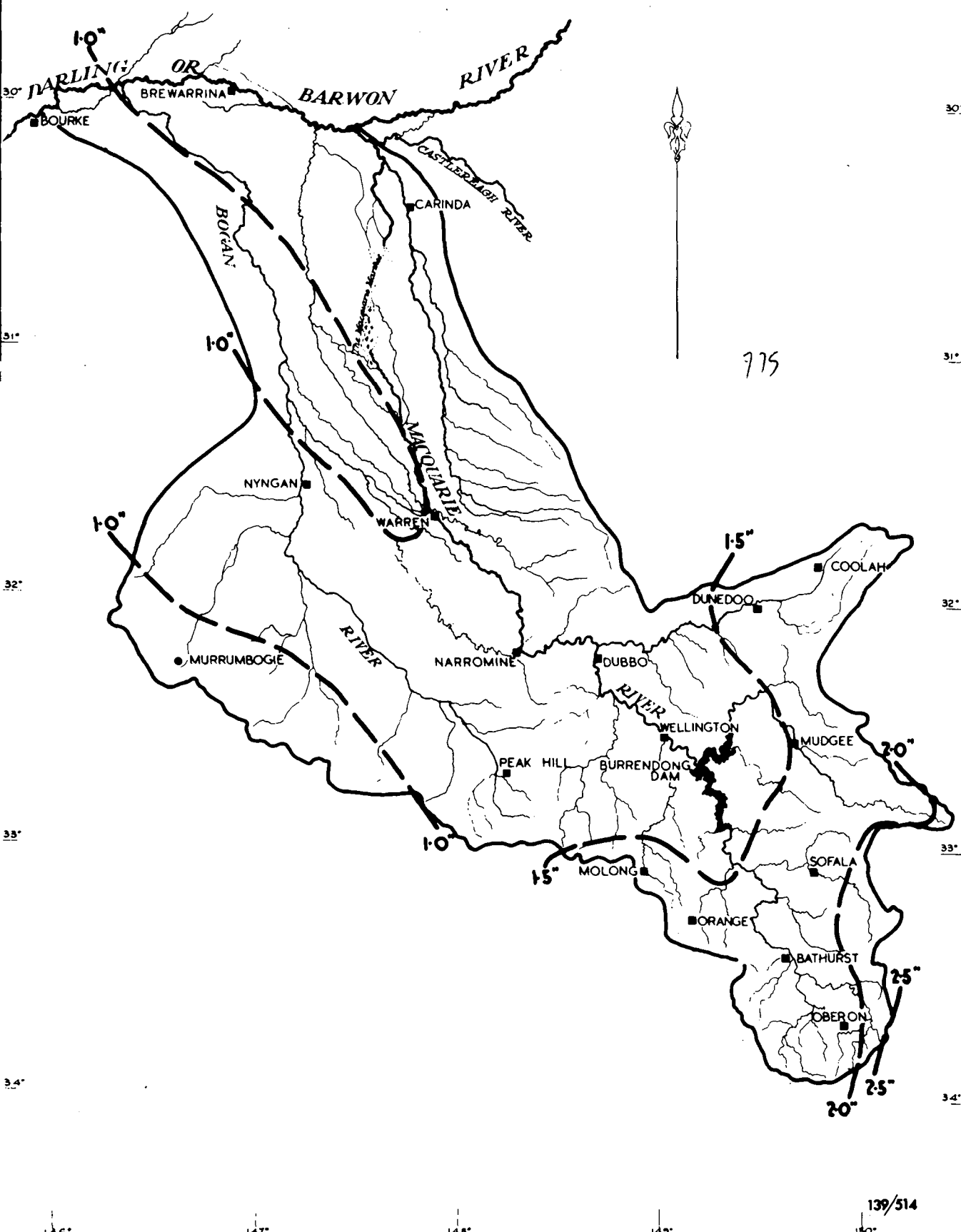
WATER CONSERVATION & IRRIGATION COMMISSION
MACQUARIE RIVER VALLEY
INCLUDING BOGAN RIVER VALLEY
JANUARY MEDIAN RAINFALL

MILES 0 10 20 30 40 50
SCALE



WATER CONSERVATION & IRRIGATION COMMISSION
MACQUARIE RIVER VALLEY
INCLUDING BOGAN RIVER VALLEY
FEBRUARY MEDIAN RAINFALL

MILES 10 20 30 40 50
SCALE



775

WATER CONSERVATION & IRRIGATION COMMISSION
MACQUARIE RIVER VALLEY
INCLUDING BOGAN RIVER VALLEY
MARCH MEDIAN RAINFALL

MILES 10 20 30 40 50
SCALE

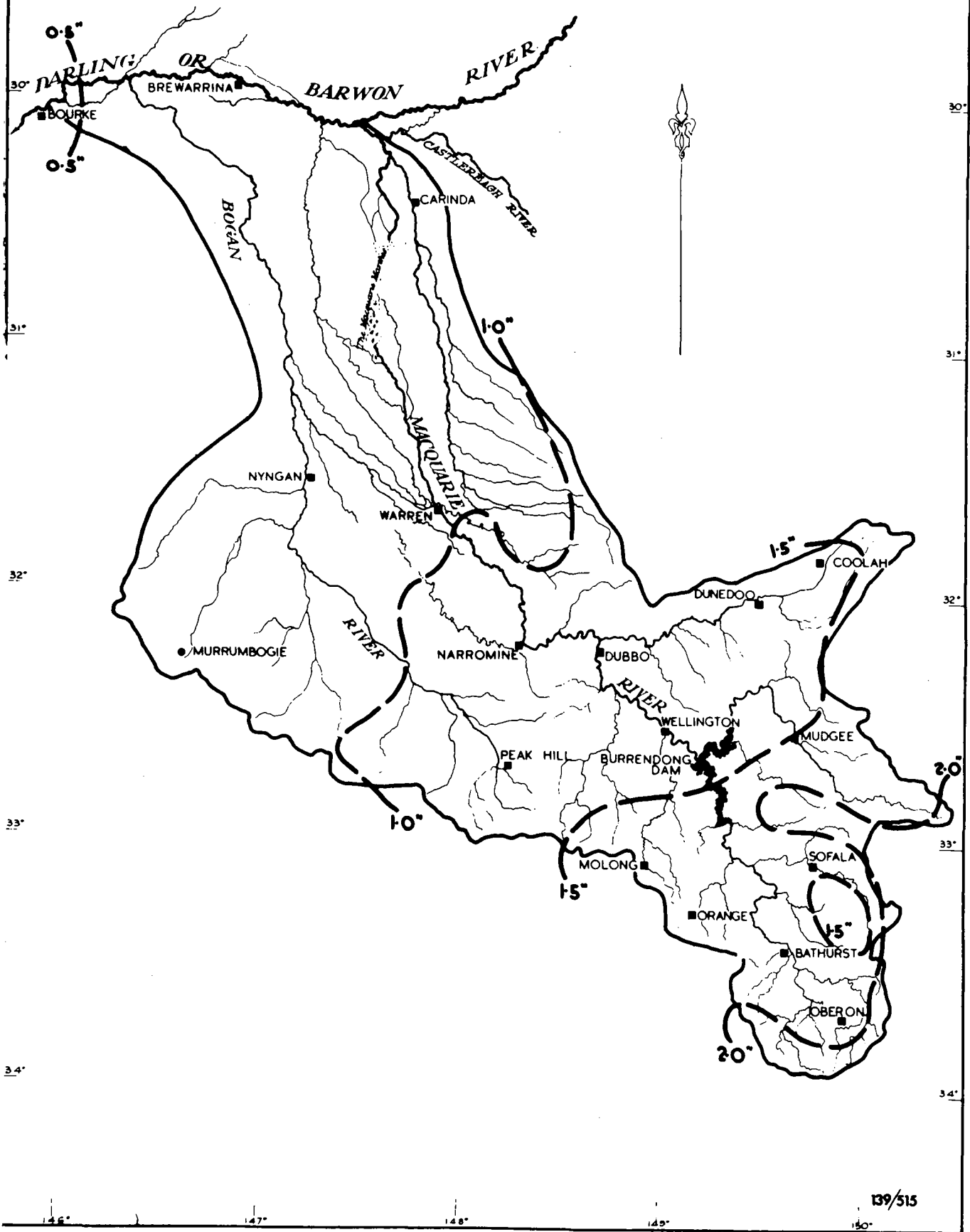


FIGURE 7

WATER CONSERVATION & IRRIGATION COMMISSION
MACQUARIE RIVER VALLEY
INCLUDING BOGAN RIVER VALLEY
APRIL MEDIAN RAINFALL

MILES 10 20 30 40 50
SCALE

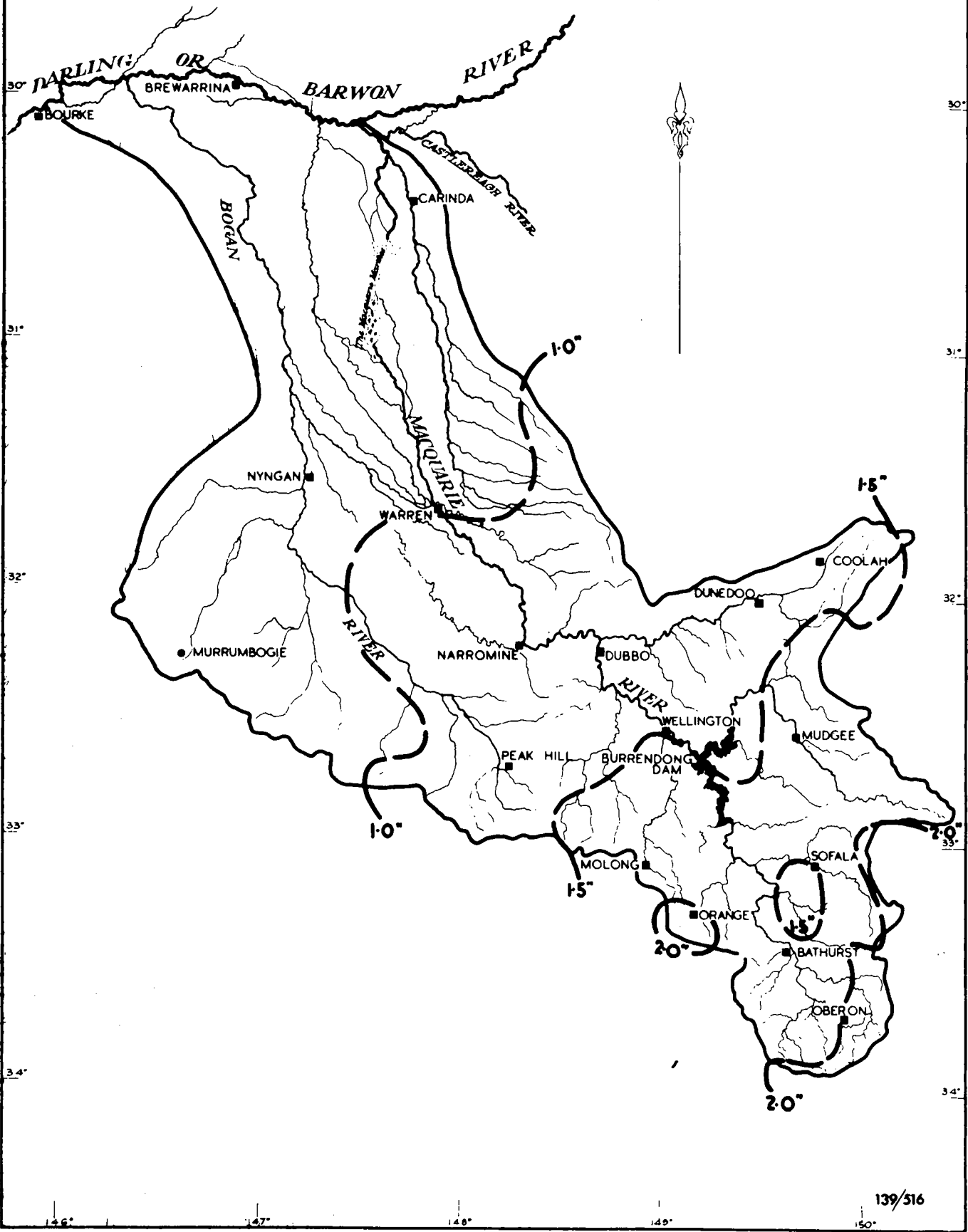


FIGURE 8

WATER CONSERVATION & IRRIGATION COMMISSION
MACQUARIE RIVER VALLEY
INCLUDING BOGAN RIVER VALLEY
MAY MEDIAN RAINFALL

MILES 10 20 30 40 50 MILES
SCALE

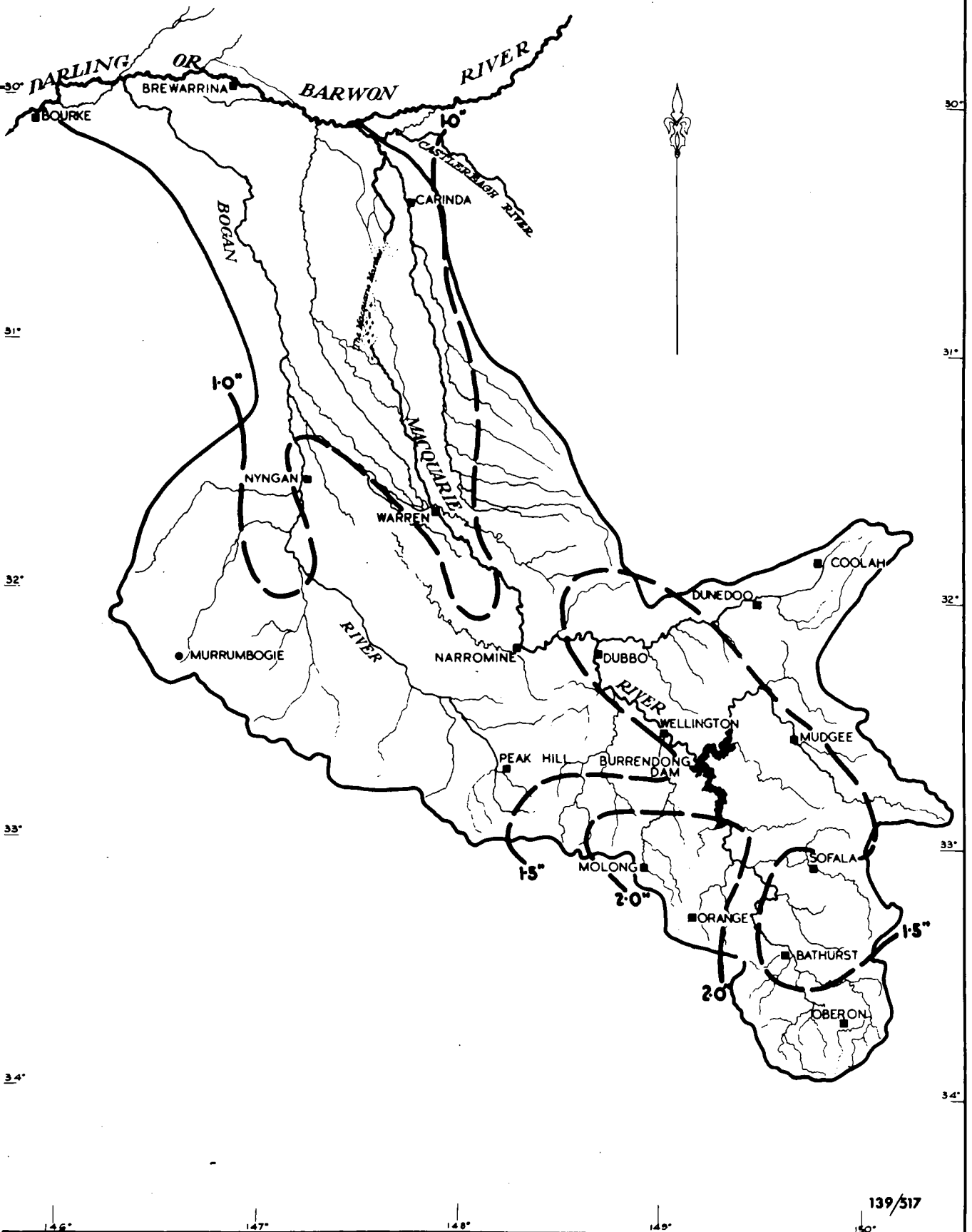


FIGURE 9

WATER CONSERVATION & IRRIGATION COMMISSION
MACQUARIE RIVER VALLEY
INCLUDING BOGAN RIVER VALLEY
JUNE MEDIAN RAINFALL

MILES 10 20 30 40 50
SCALE

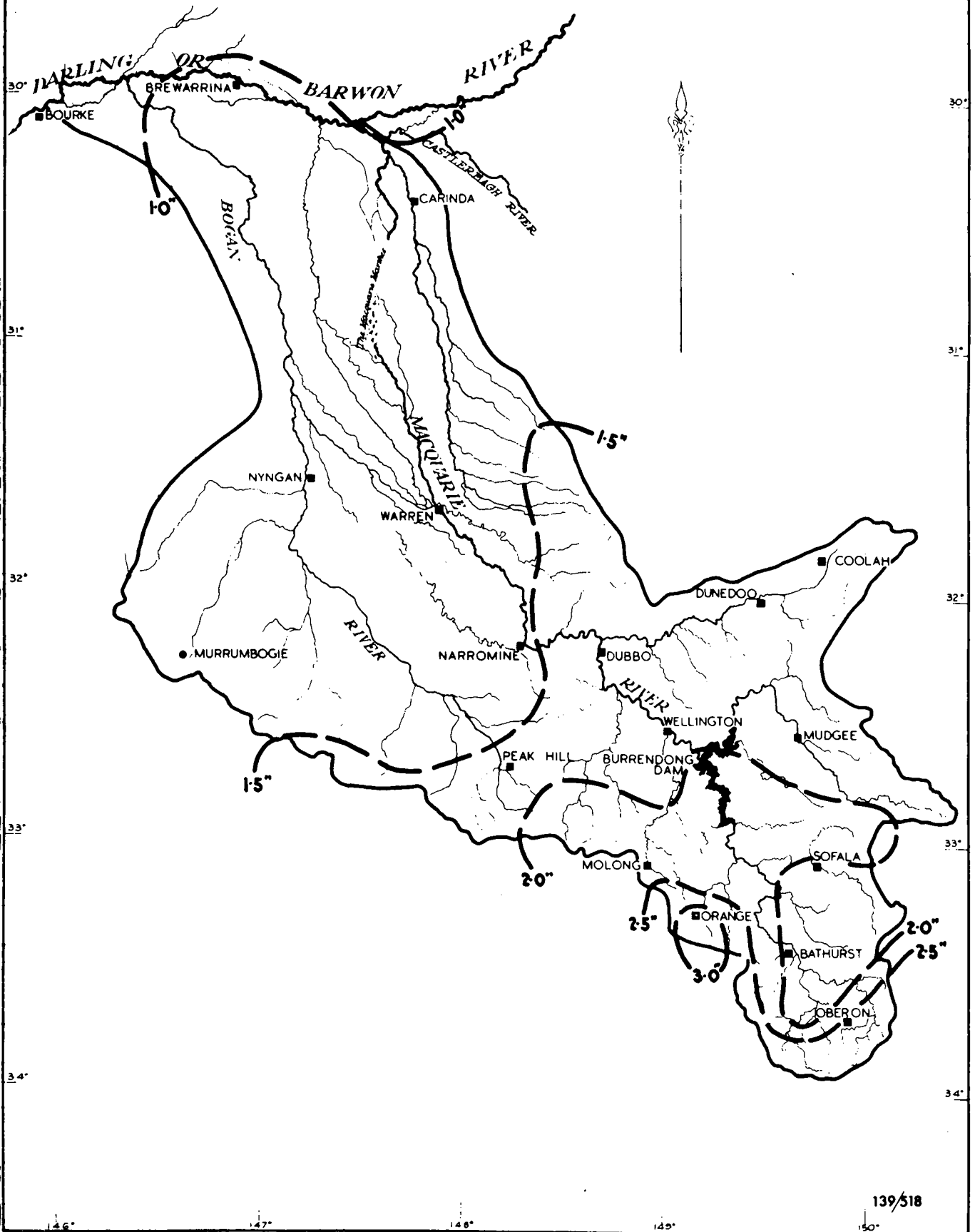


FIGURE 10

WATER CONSERVATION & IRRIGATION COMMISSION
MACQUARIE RIVER VALLEY
INCLUDING **BOGAN RIVER VALLEY**
JULY MEDIAN RAINFALL

MILES 10 20 30 40 50
SCALE

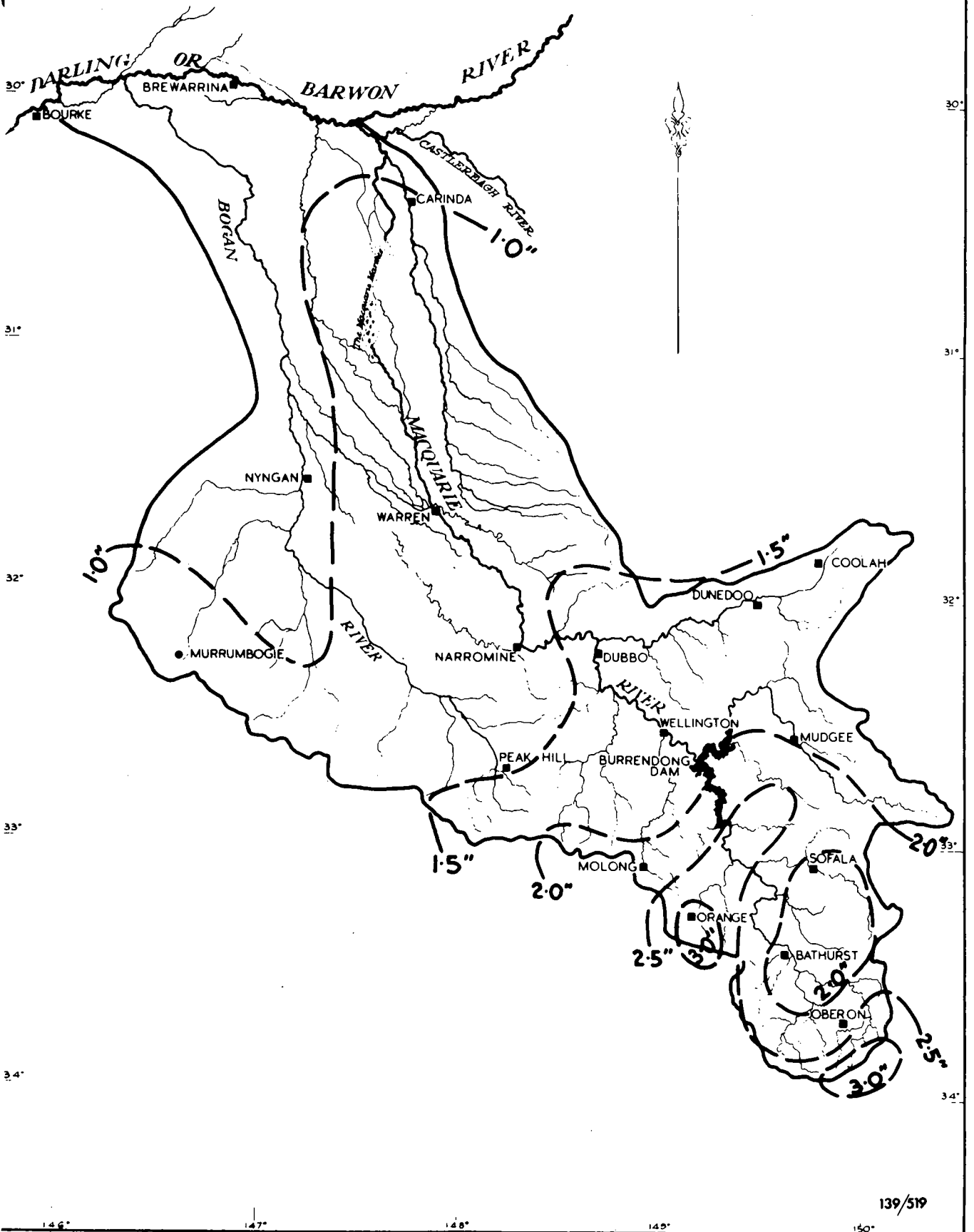
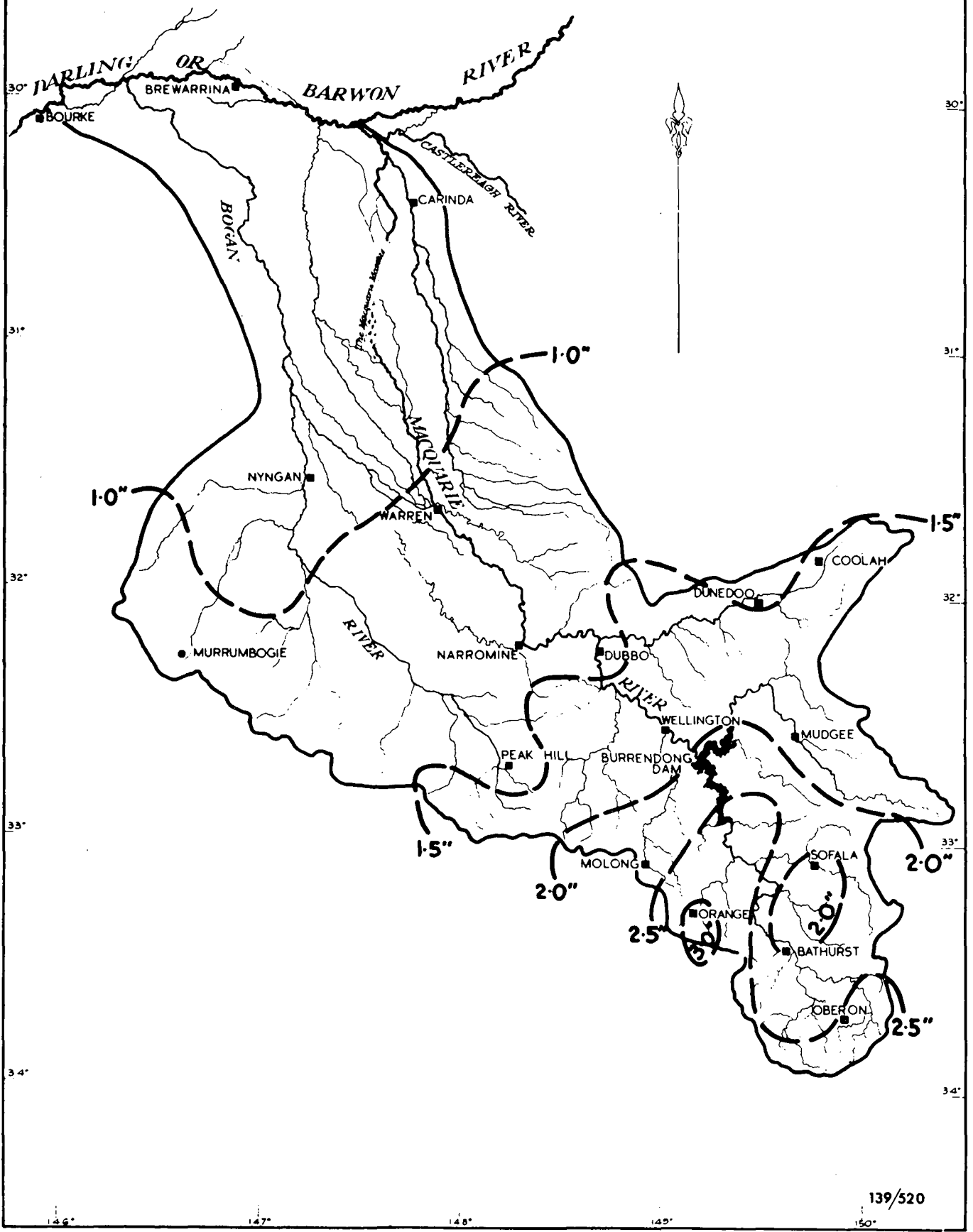


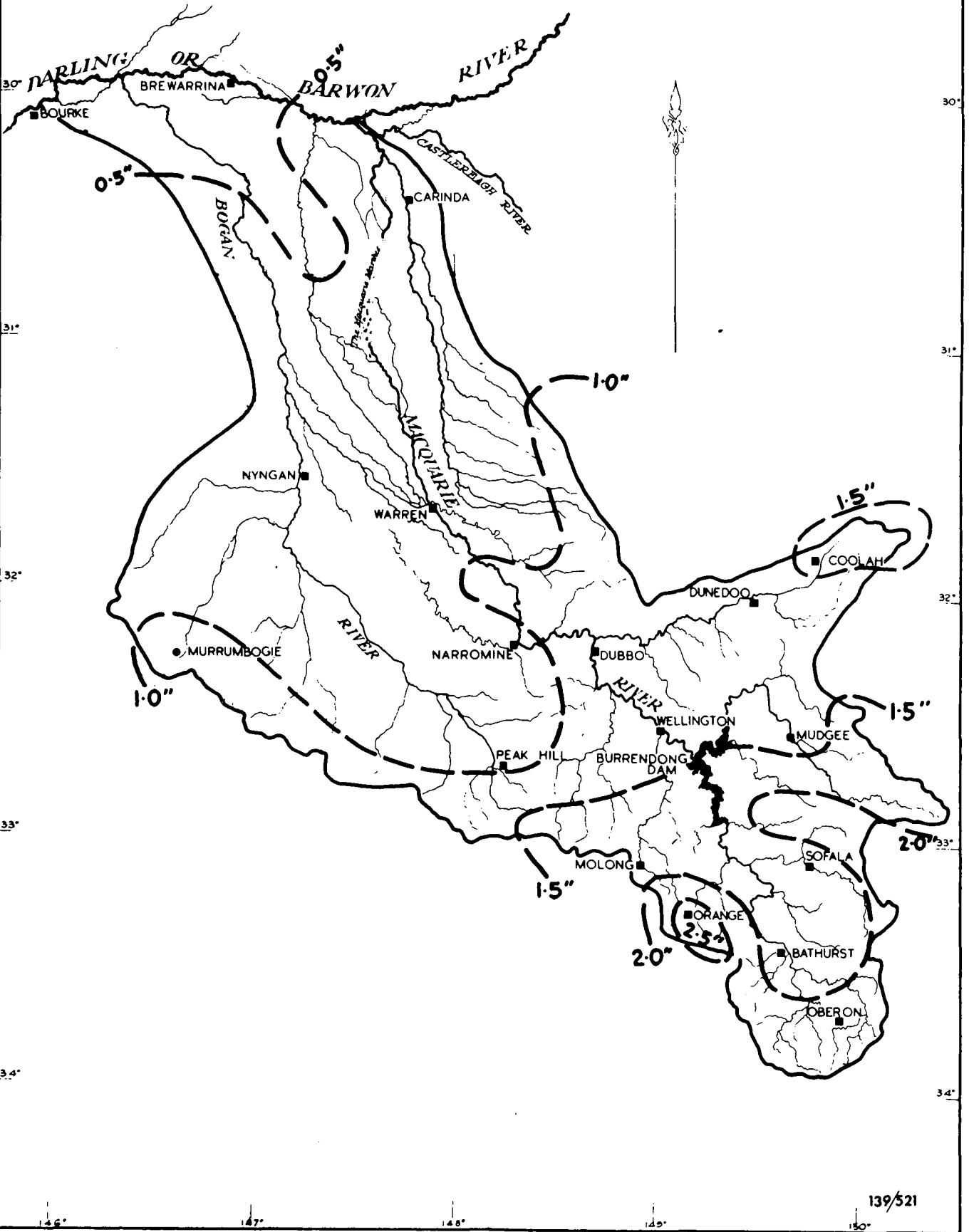
FIGURE 11

WATER CONSERVATION & IRRIGATION COMMISSION
MACQUARIE RIVER VALLEY
INCLUDING BOGAN RIVER VALLEY
AUGUST MEDIAN RAINFALL
MILES 10 20 30 40 50
SCALE



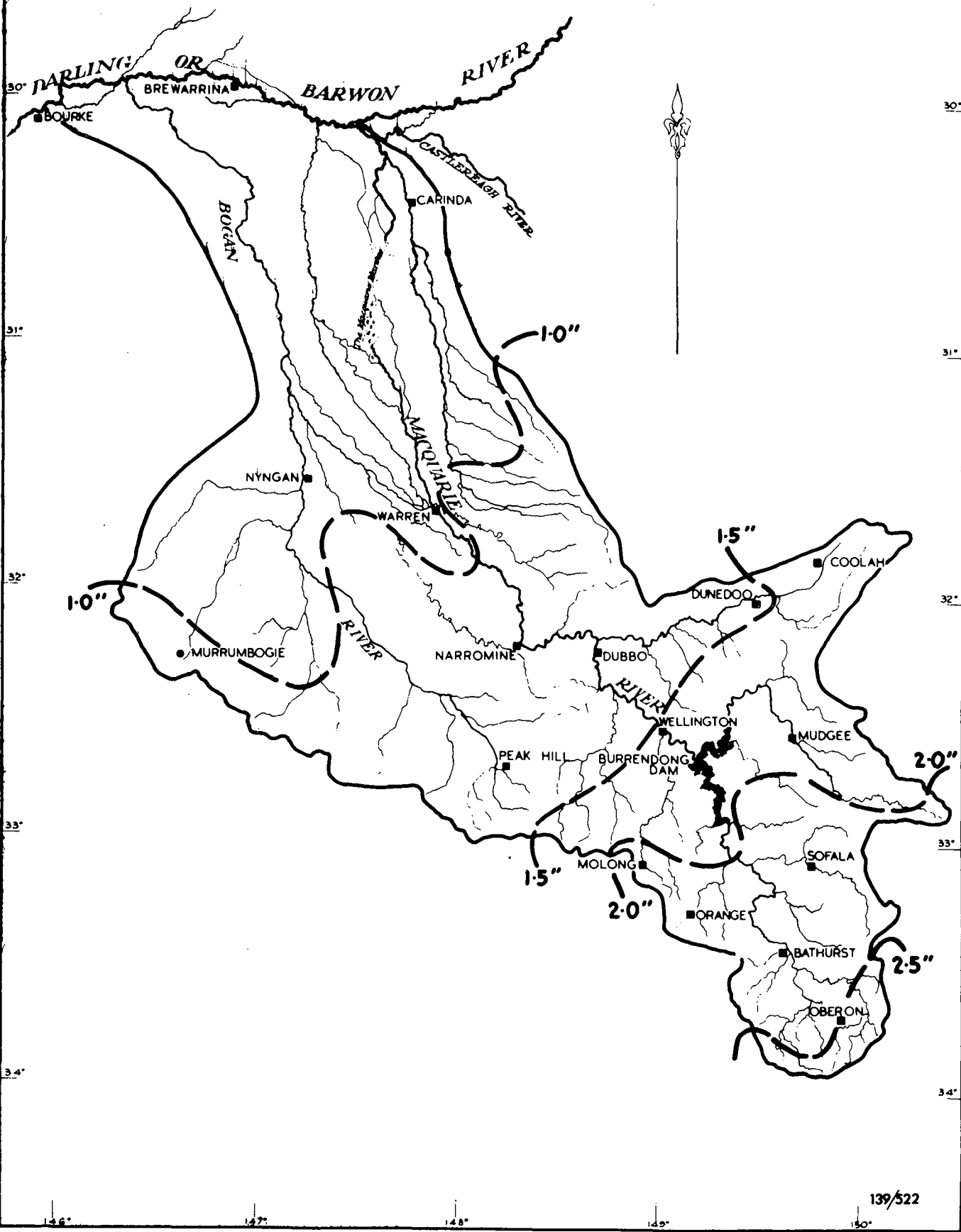
WATER CONSERVATION & IRRIGATION COMMISSION
MACQUARIE RIVER VALLEY
 INCLUDING BOGAN RIVER VALLEY
SEPTEMBER MEDIAN RAINFALL

MILES 10 20 30 40 50
 SCALE



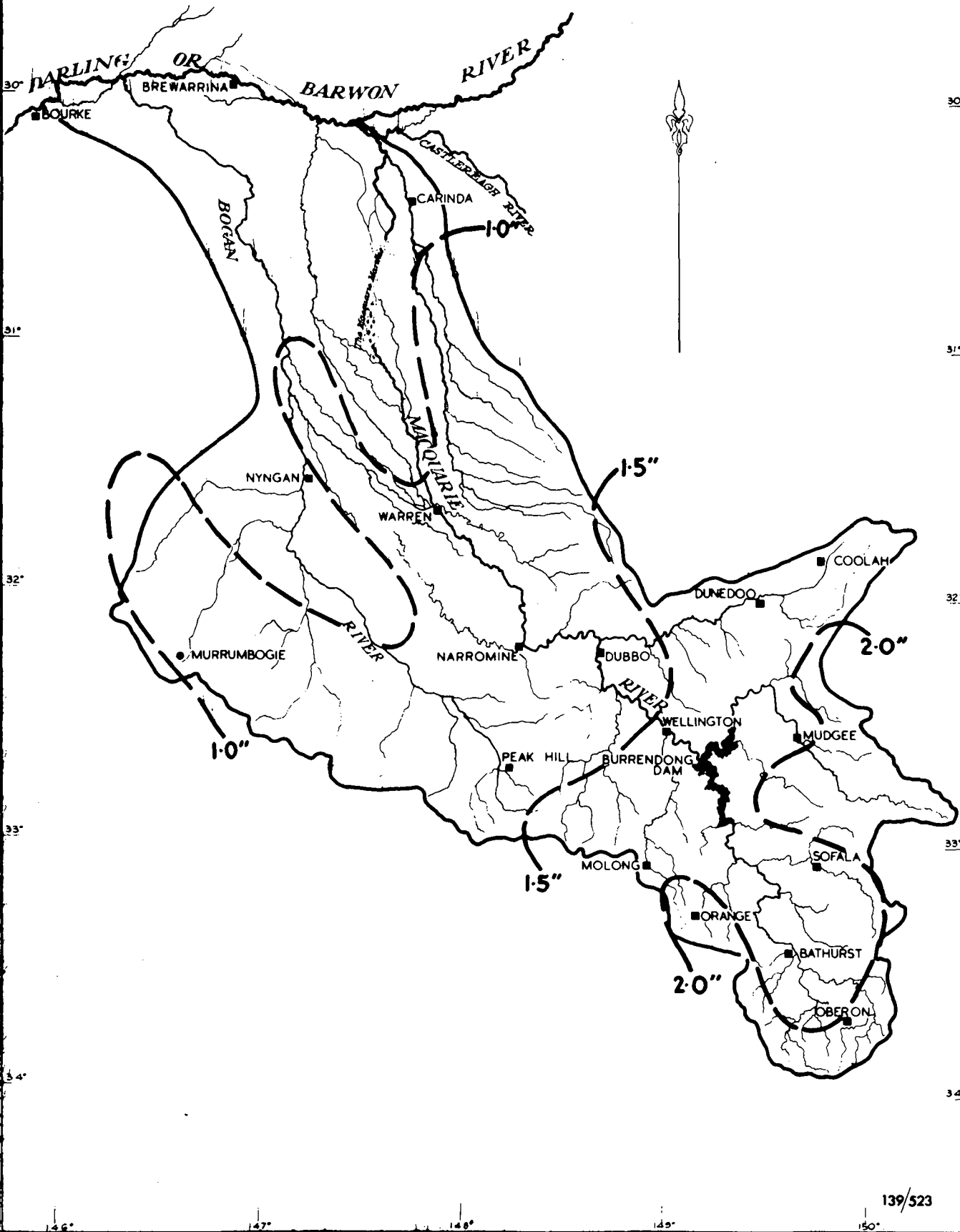
WATER CONSERVATION & IRRIGATION COMMISSION
MACQUARIE RIVER VALLEY
INCLUDING BOGAN RIVER VALLEY
OCTOBER MEDIAN RAINFALL

MILES 0 10 20 30 40 50
SCALE



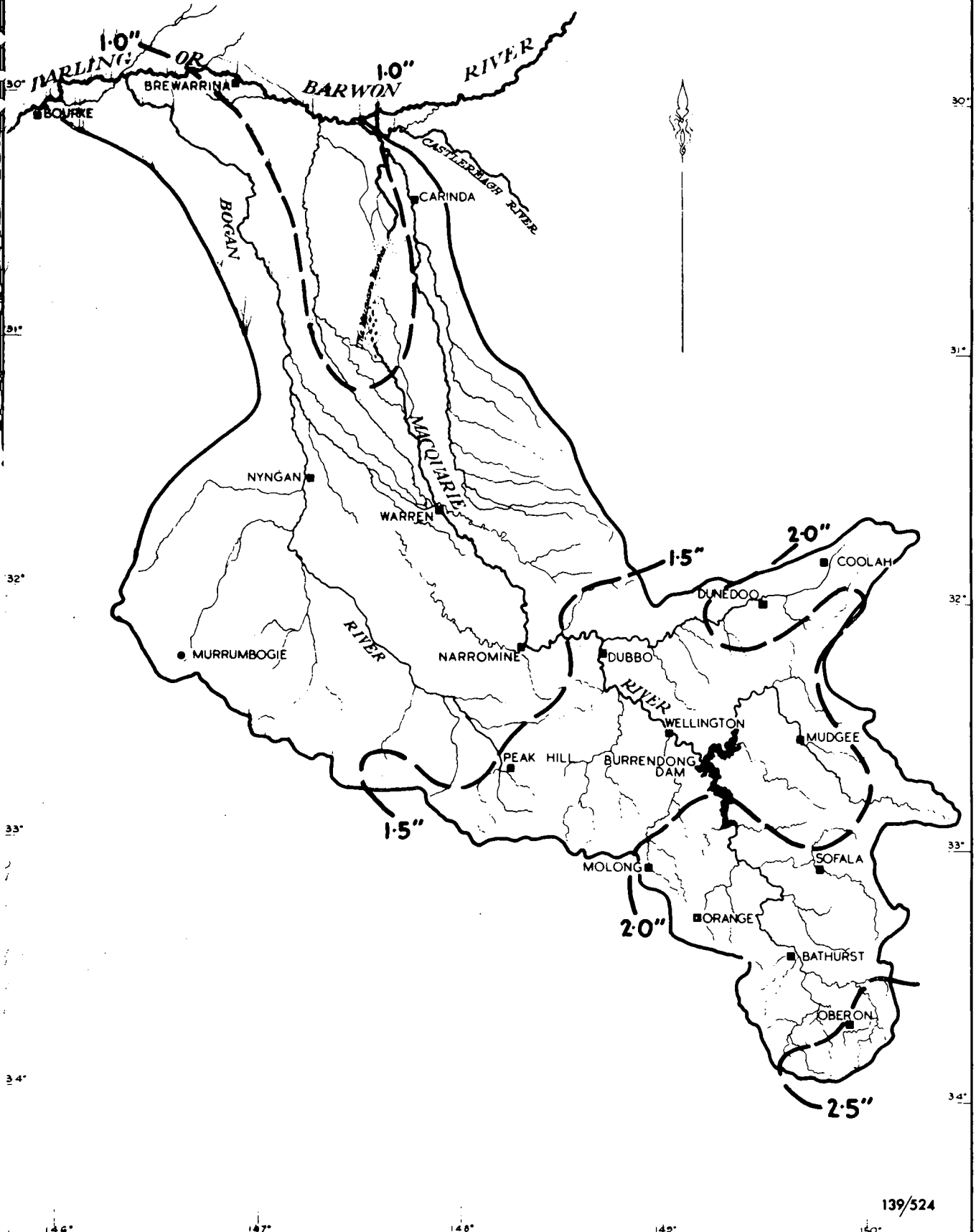
WATER CONSERVATION & IRRIGATION COMMISSION
MACQUARIE RIVER VALLEY
INCLUDING BOGAN RIVER VALLEY
NOVEMBER MEDIAN RAINFALL

MILES 10 20 30 40 50 MILES
SCALE



WATER CONSERVATION & IRRIGATION COMMISSION
MACQUARIE RIVER VALLEY
INCLUDING BOGAN RIVER VALLEY
DECEMBER MEDIAN RAINFALL

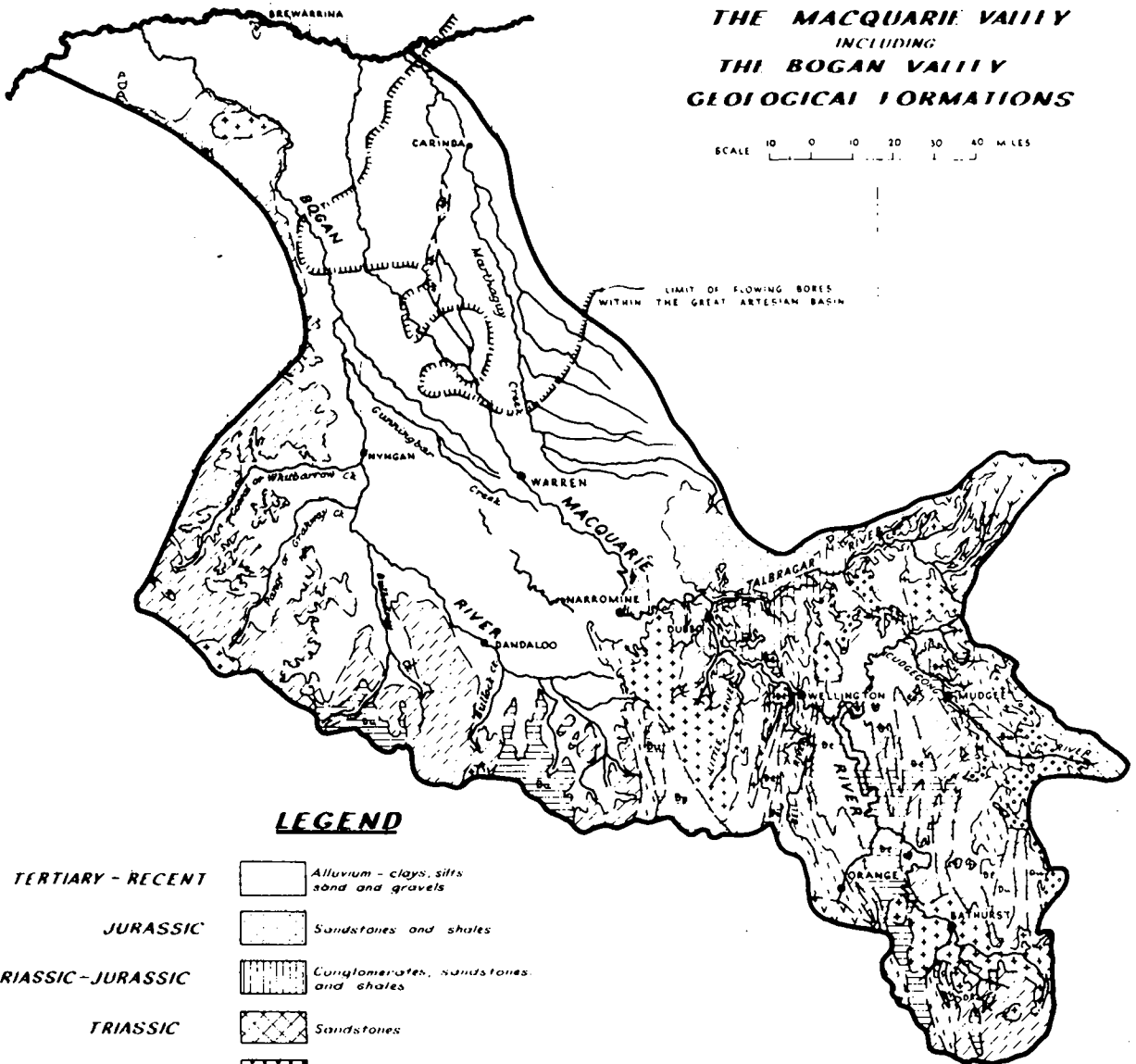
MILES 10 20 30 40 50 MILES
SCALE



NEW SOUTH WALES
WATER CONSERVATION & IRRIGATION COMMISSION
THE MACQUARIE VALLEY
INCLUDING
THE BOGAN VALLEY
GEOLOGICAL FORMATIONS

SCALE 10 0 10 20 30 40 MILES

LIMIT OF FLOWING BORES
WITHIN THE GREAT ARTESIAN BASIN

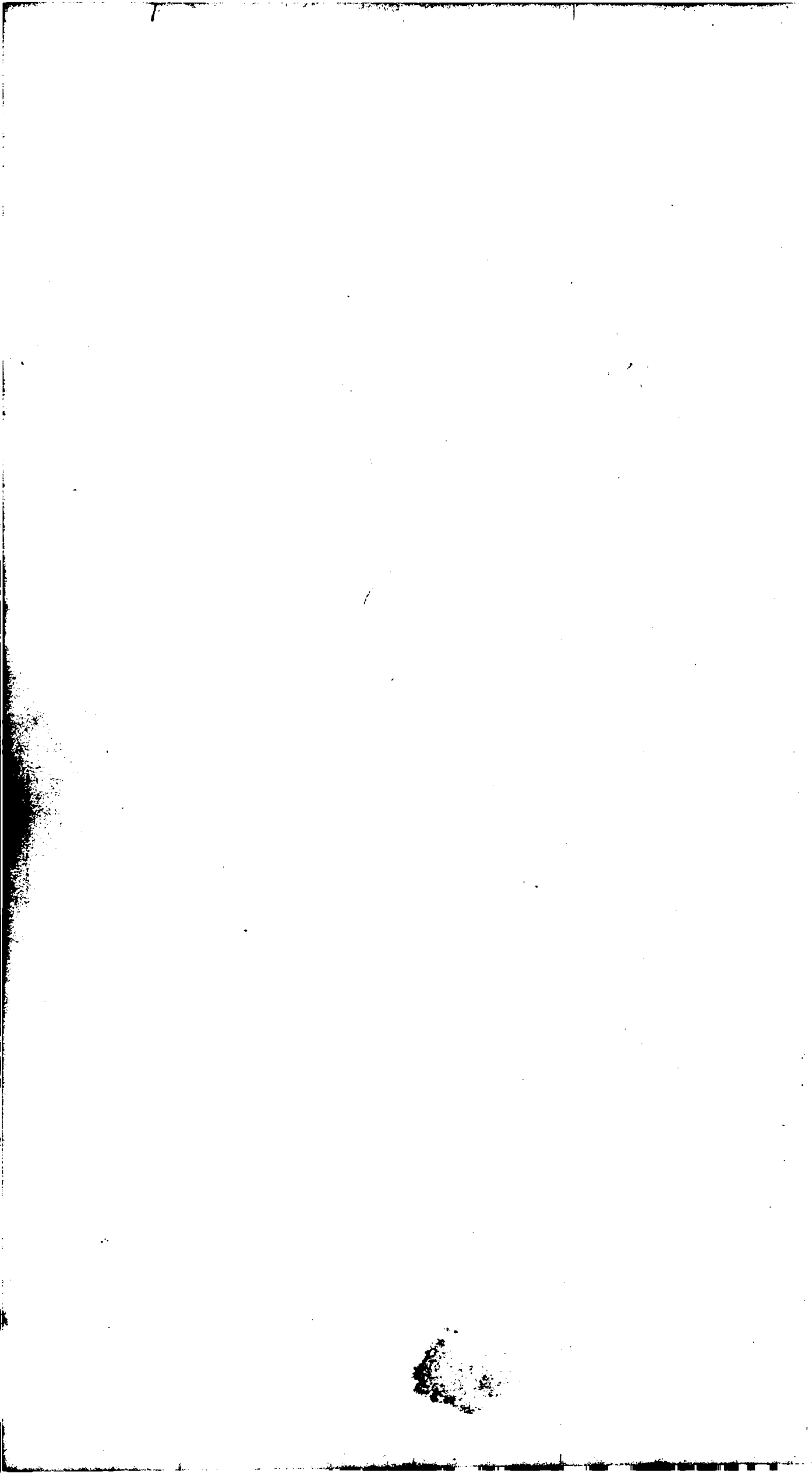


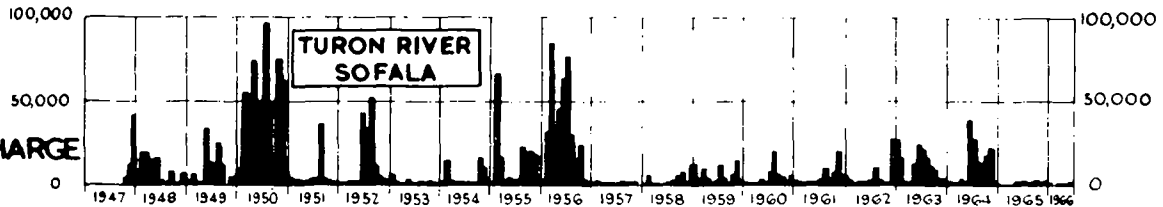
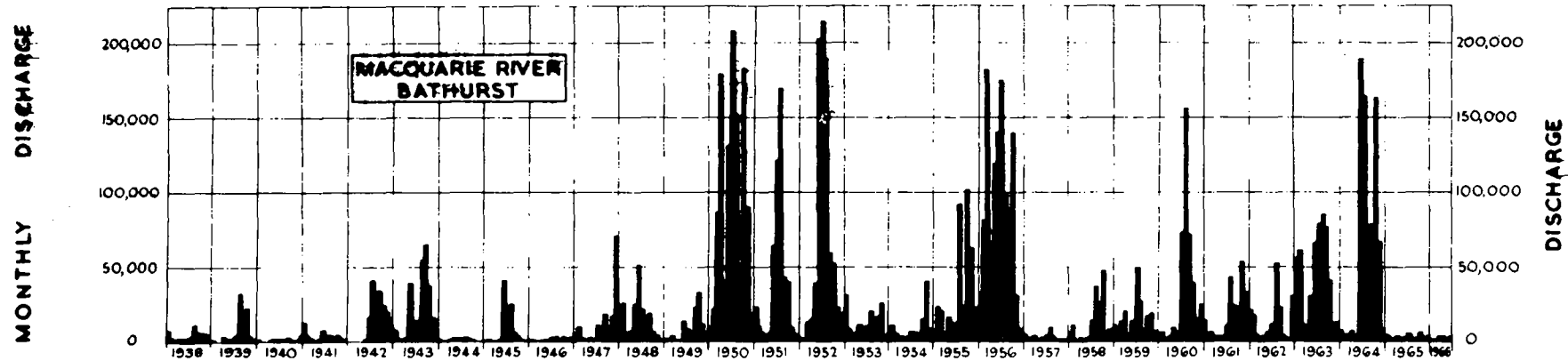
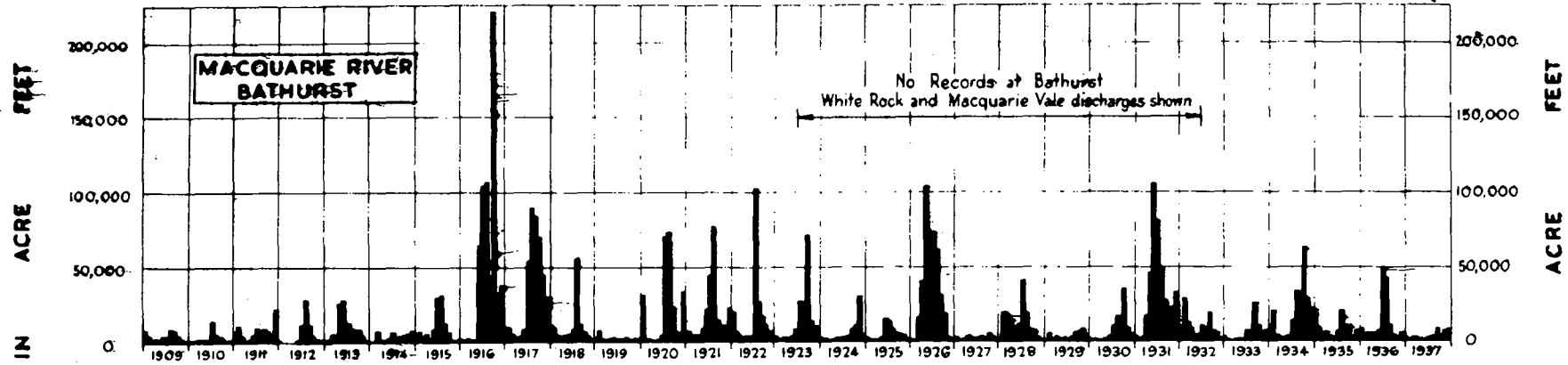
LEGEND

TERTIARY - RECENT		Alluvium - clays, silts, sand and gravels
JURASSIC		Sandstones and shales
TRIASSIC - JURASSIC		Conglomerates, sandstones, and shales
TRIASSIC		Sandstones
PERMIAN		Conglomerates, sandstones, shales and coal
DEVONIAN		Conglomerates, quartzites, sandstones and shales
		Volcanics and porphyries
		Shales and limestones
SILURIAN		Lavas, tuffs, slates, shales and limestones
ORDOVICIAN		Slates, schists and quartzites

IGNEOUS

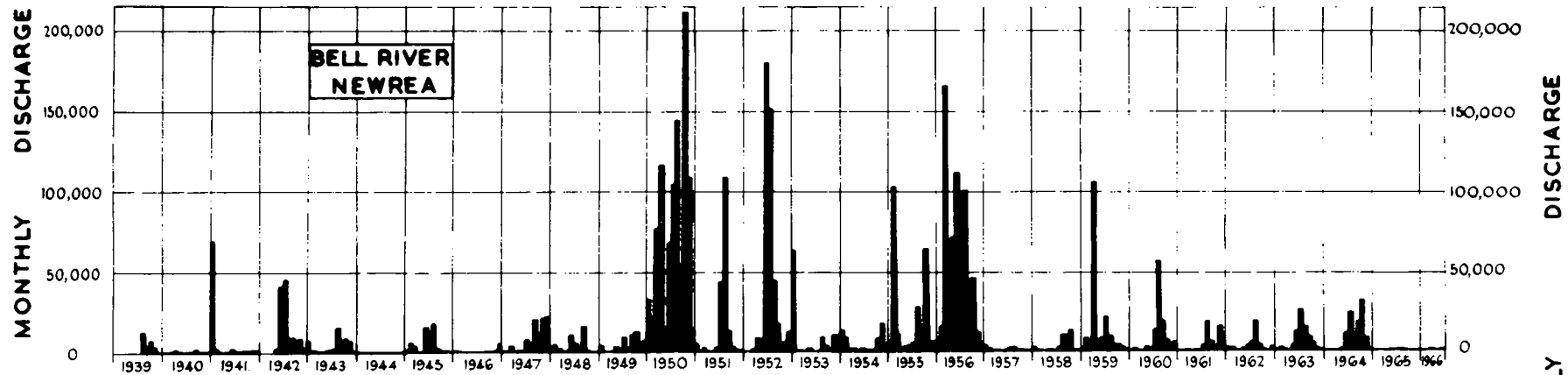
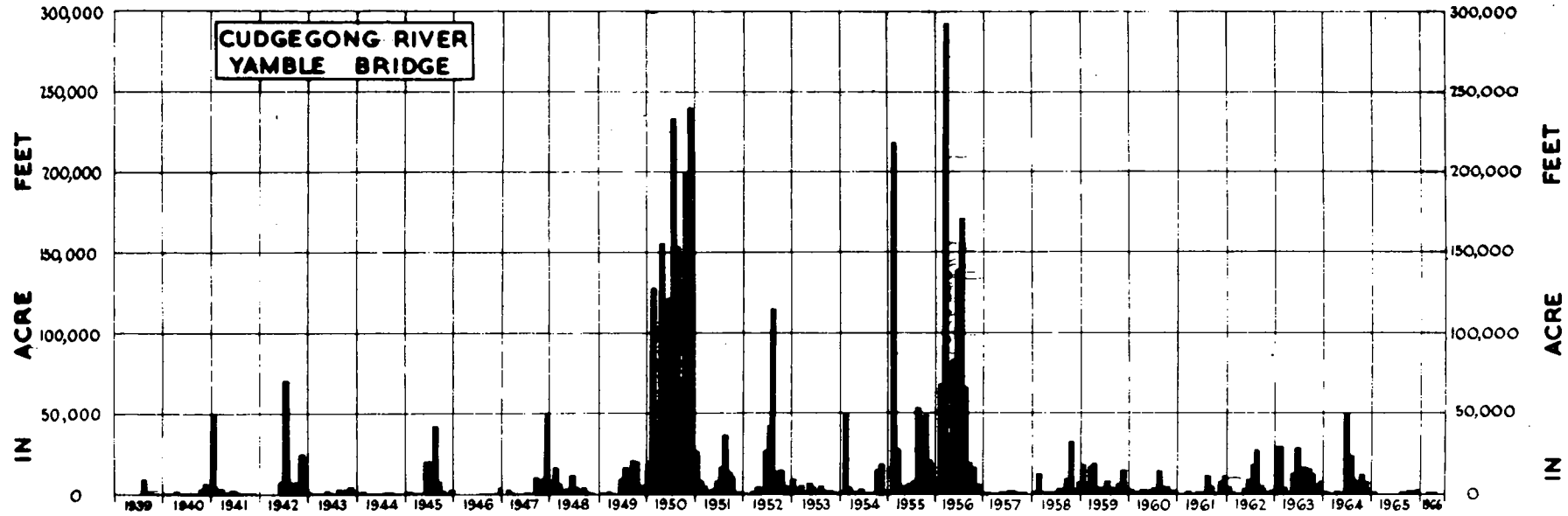
TERTIARY		Basalt
		Granite





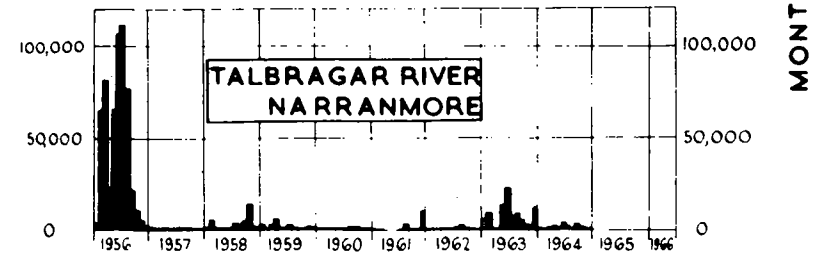
HYDROGRAPHS OF MONTHLY DISCHARGE

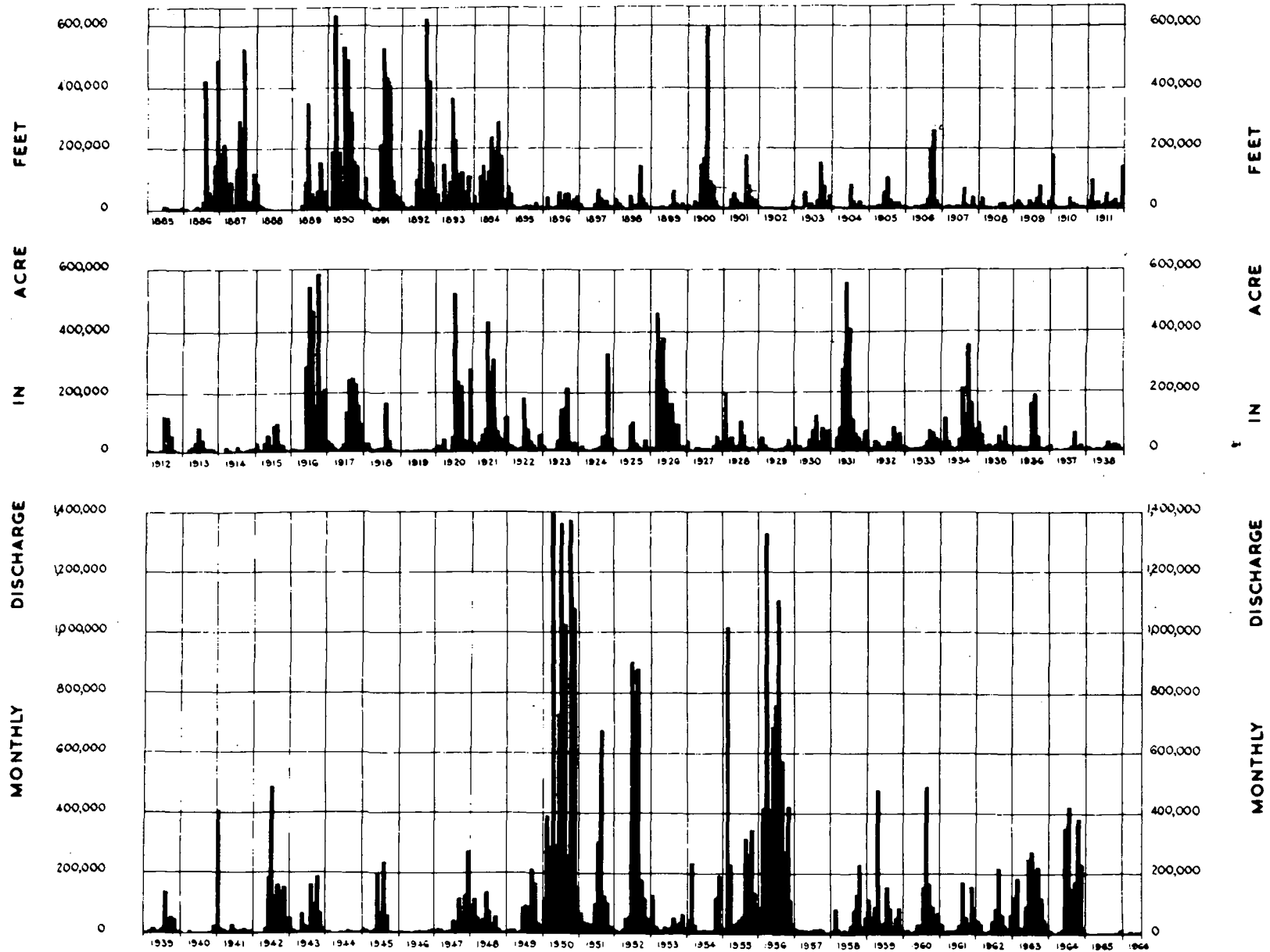
MACQUARIE RIVER AT BATHURST
TURON RIVER AT SOFALA



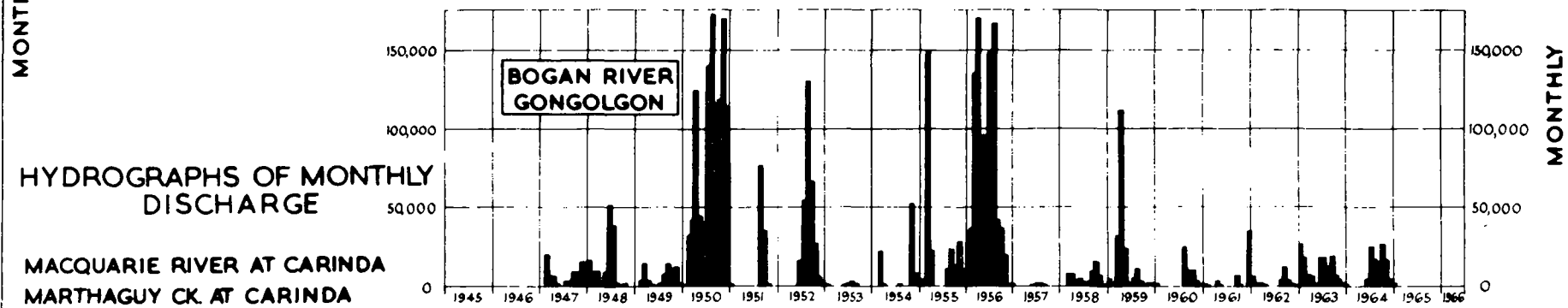
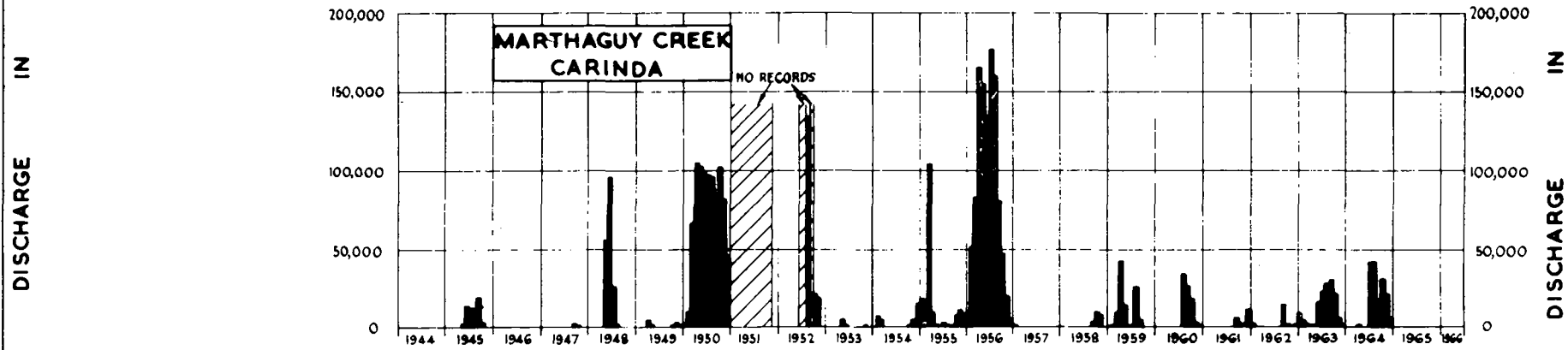
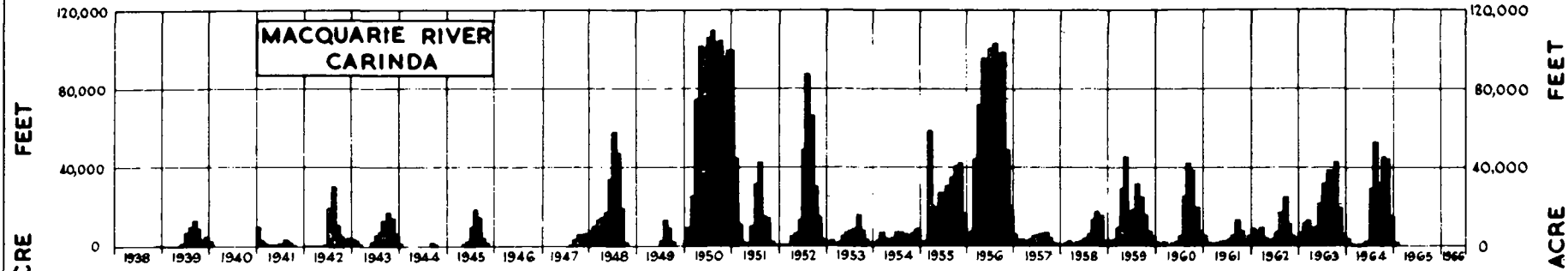
HYDROGRAPHS OF MONTHLY DISCHARGE

CUDGEGONG RIVER AT YAMBLE BRIDGE
 BELL RIVER AT NEWREA
 TALBRAGAR RIVER AT NARRANMORE



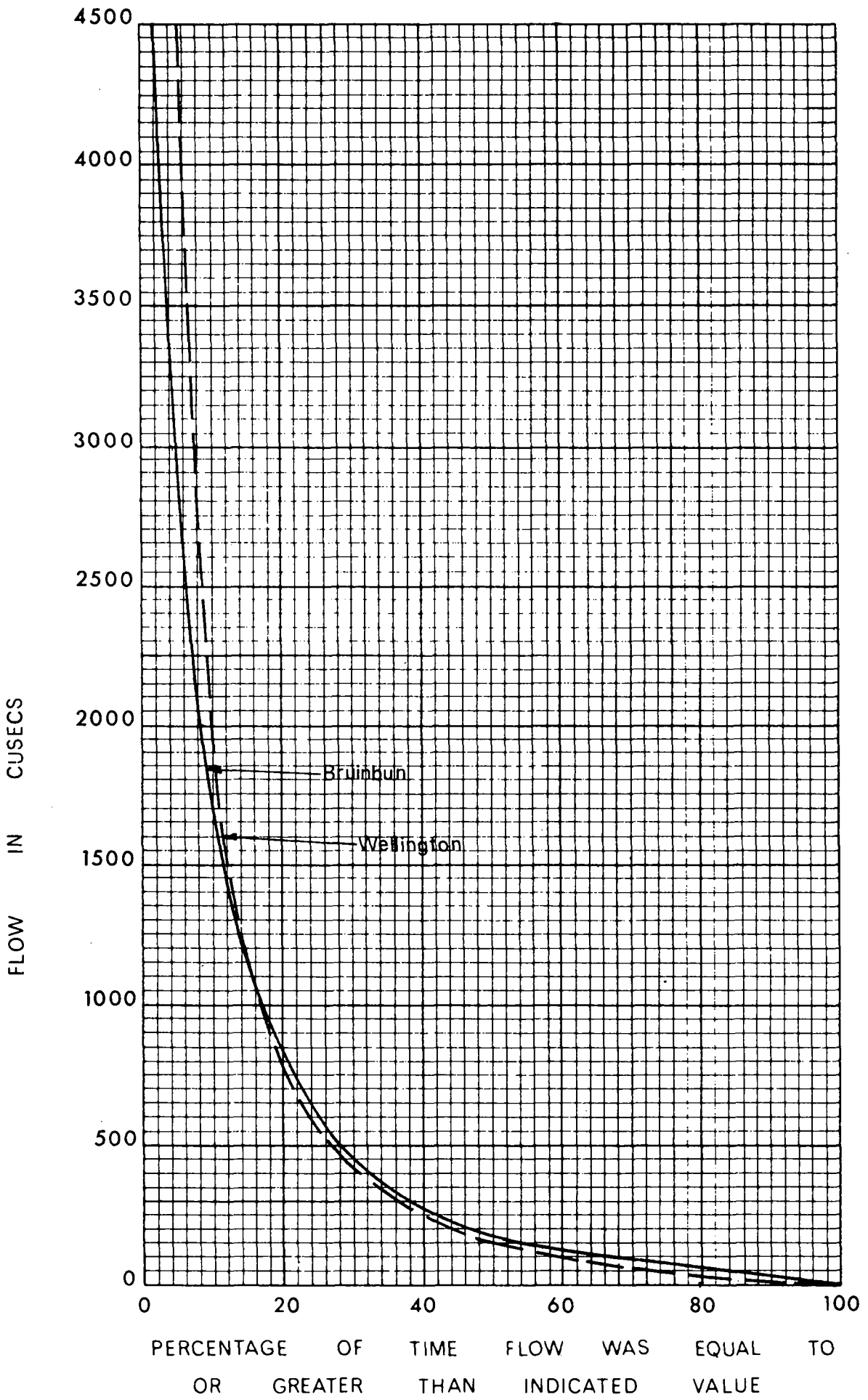


HYDROGRAPH OF MONTHLY DISCHARGES FOR MACQUARIE RIVER AT DUBBO

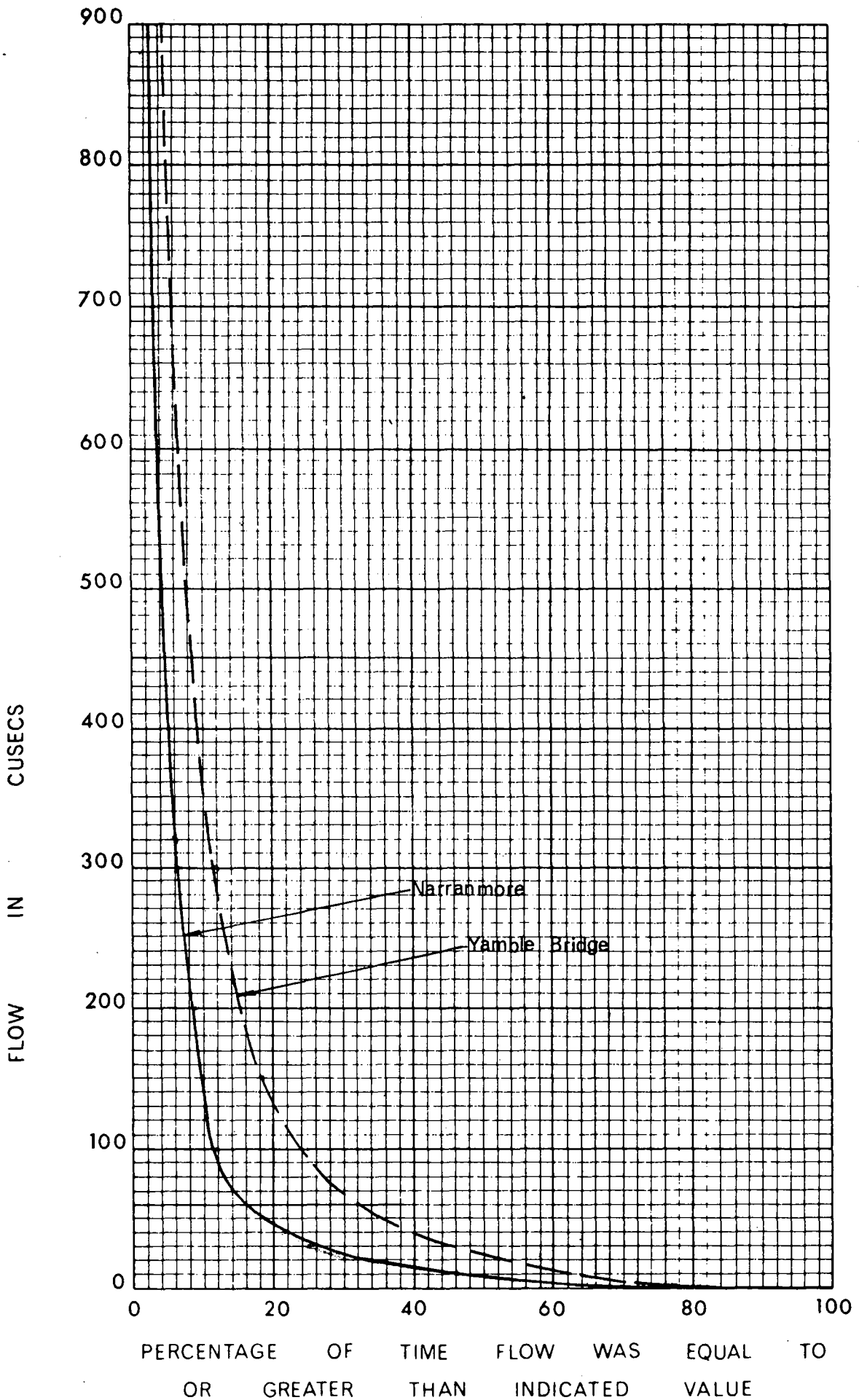


HYDROGRAPHS OF MONTHLY DISCHARGE

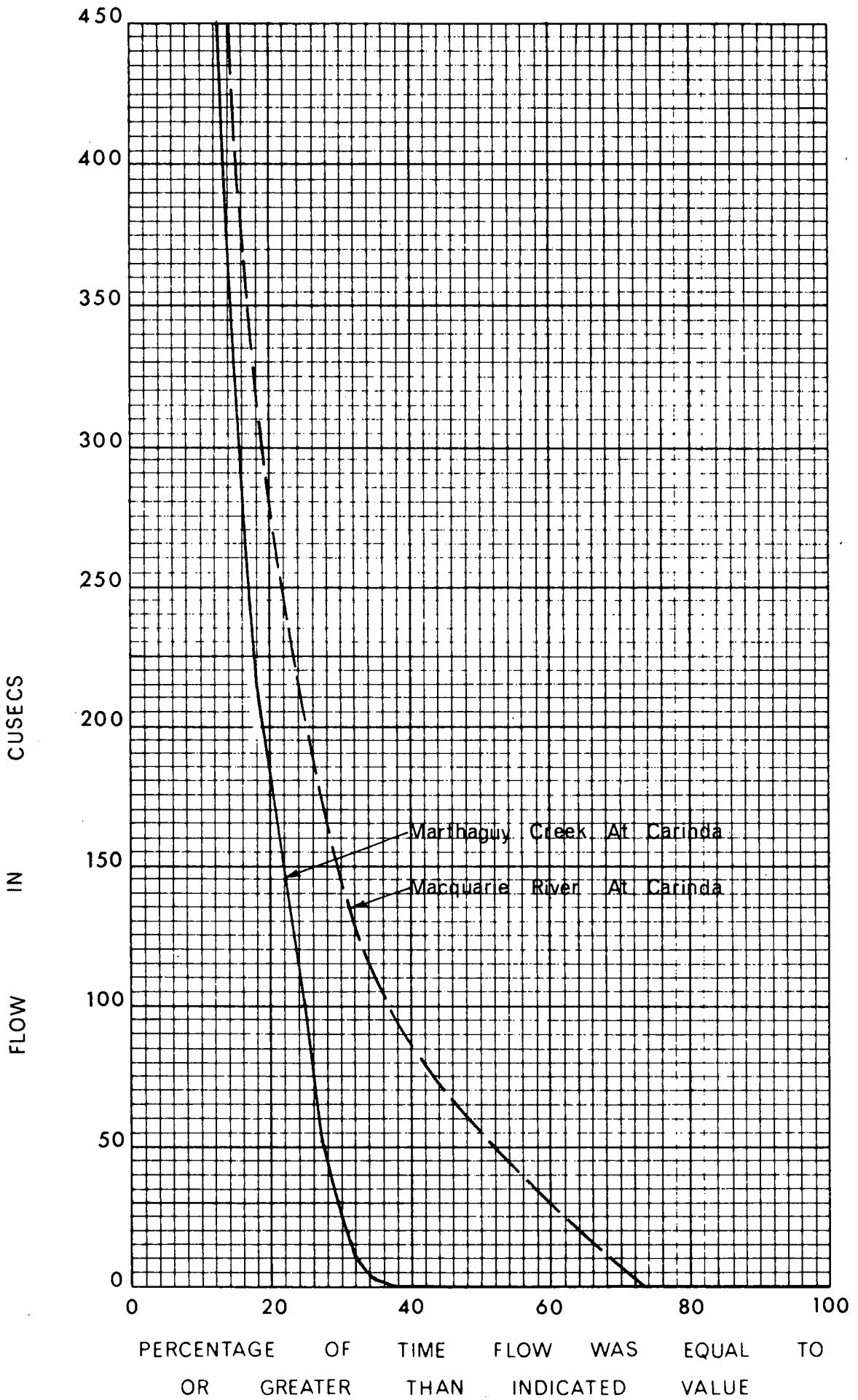
- MACQUARIE RIVER AT CARINDA
- MARTHAGUY CK. AT CARINDA
- BOGAN RIVER AT GONGOLGON



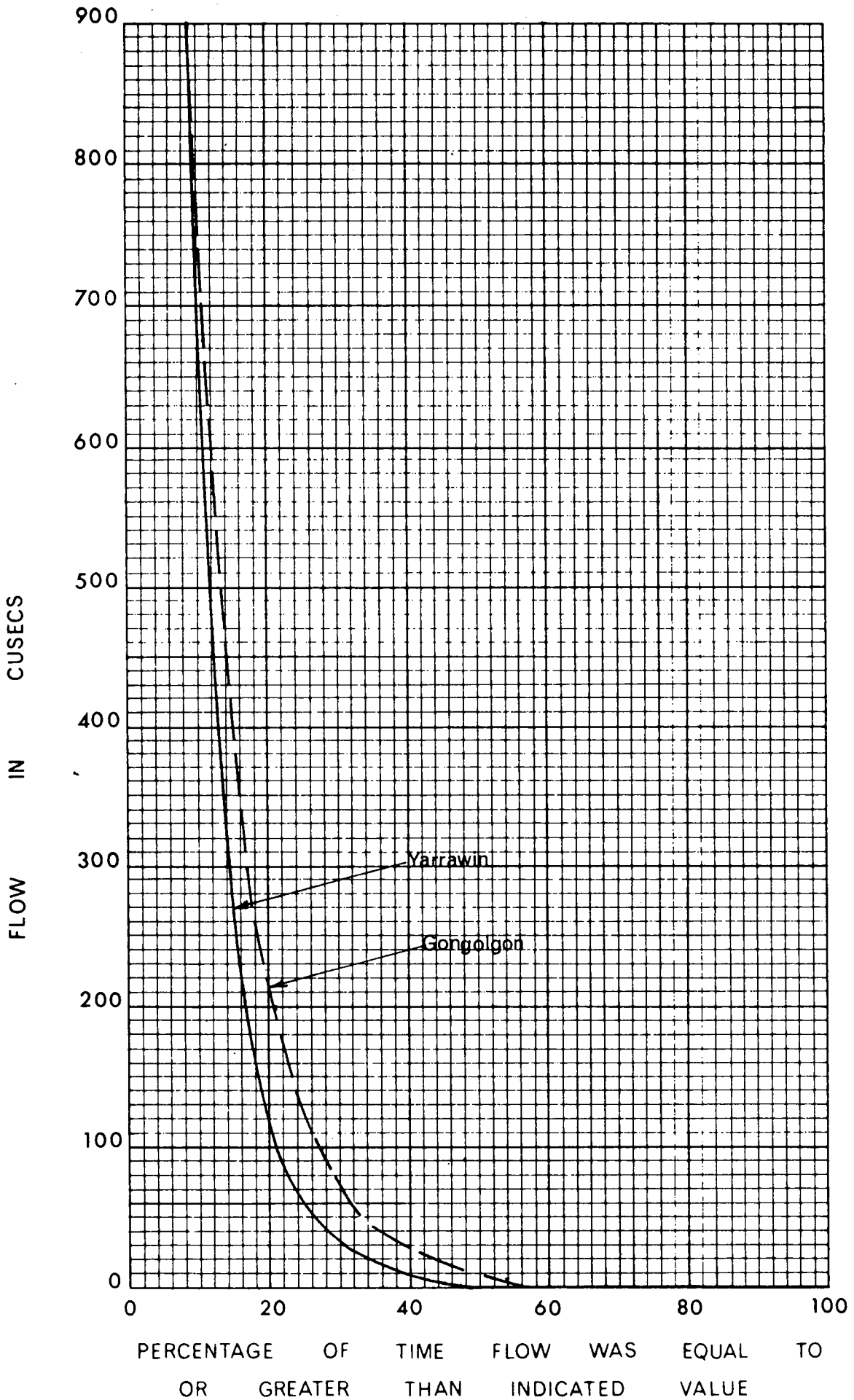
**FLOW DURATION CURVES FOR
MACQUARIE RIVER AT WELLINGTON
AND BRUINBUN**



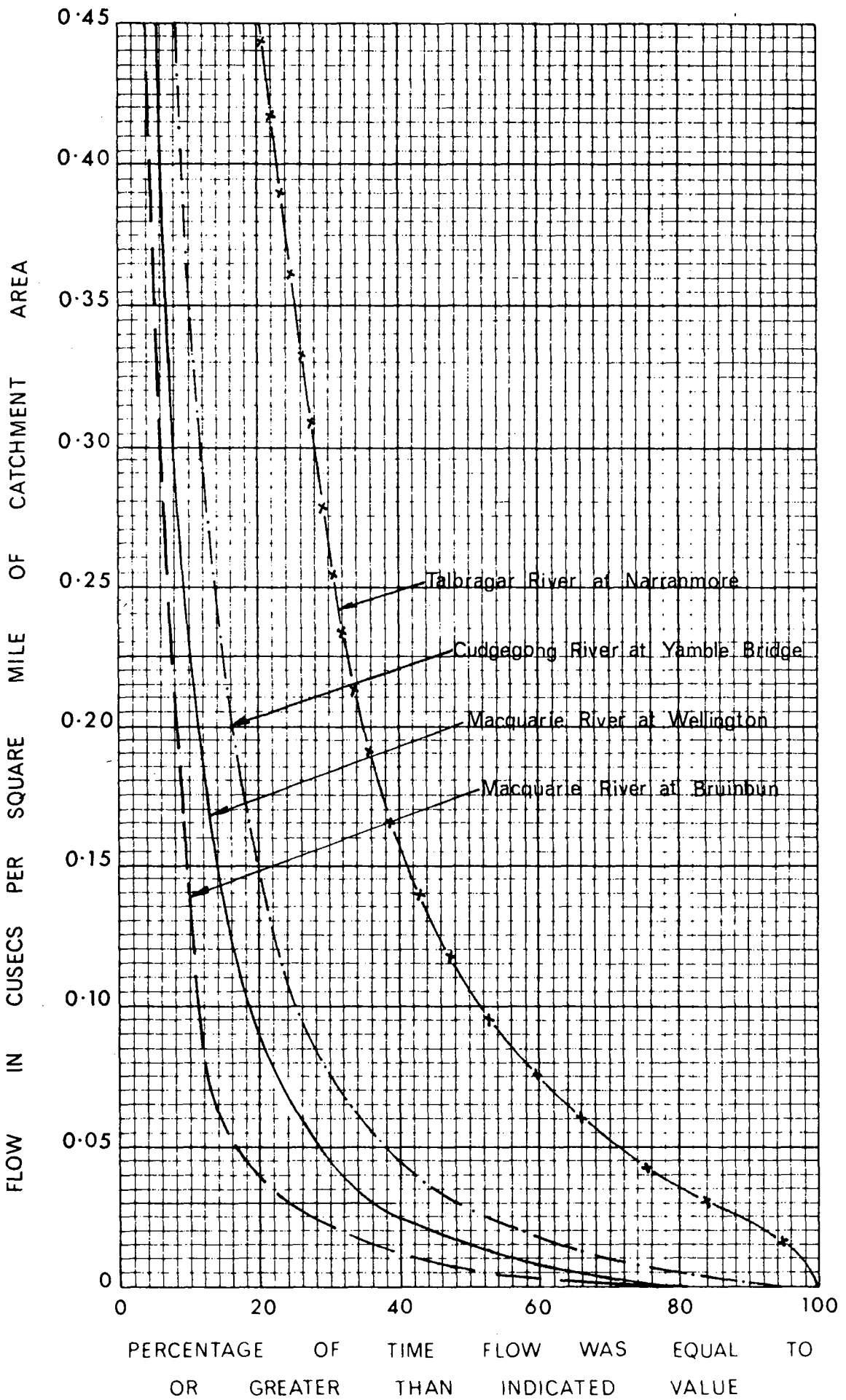
**FLOW DURATION CURVES FOR
TALBRAGAR RIVER AT NARRANMORE
AND
CUDGONG RIVER AT YAMBLE BRIDGE**



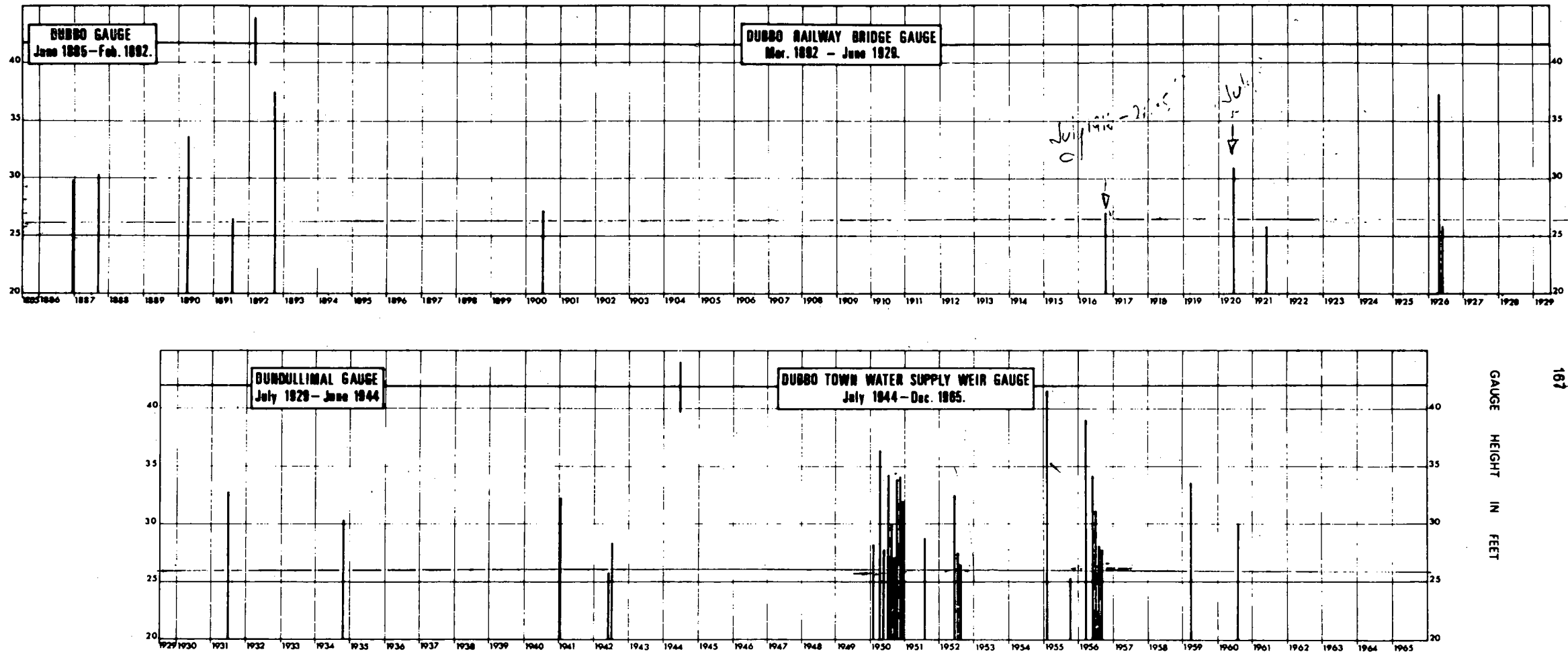
**FLOW DURATION CURVES FOR
MARTHAGUY CREEK AT CARINDA
AND
MACQUARIE RIVER AT CARI DA**



**FLOW DURATION CURVES FOR
MARRA CREEK AT YARRAWIN
AND
BOGAN RIVER AT GONGOLGON**

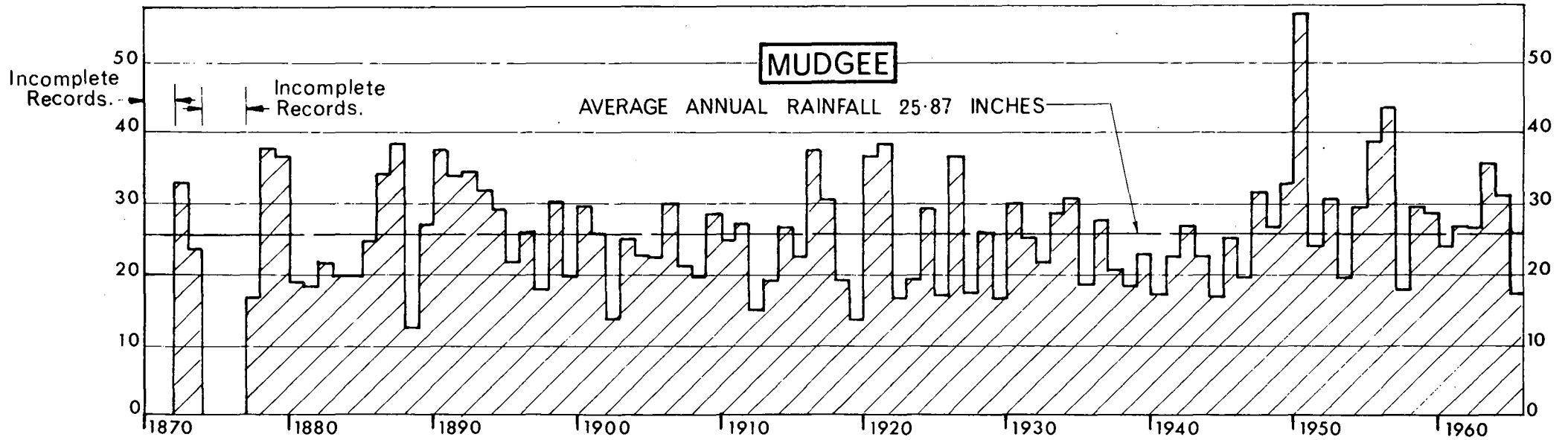
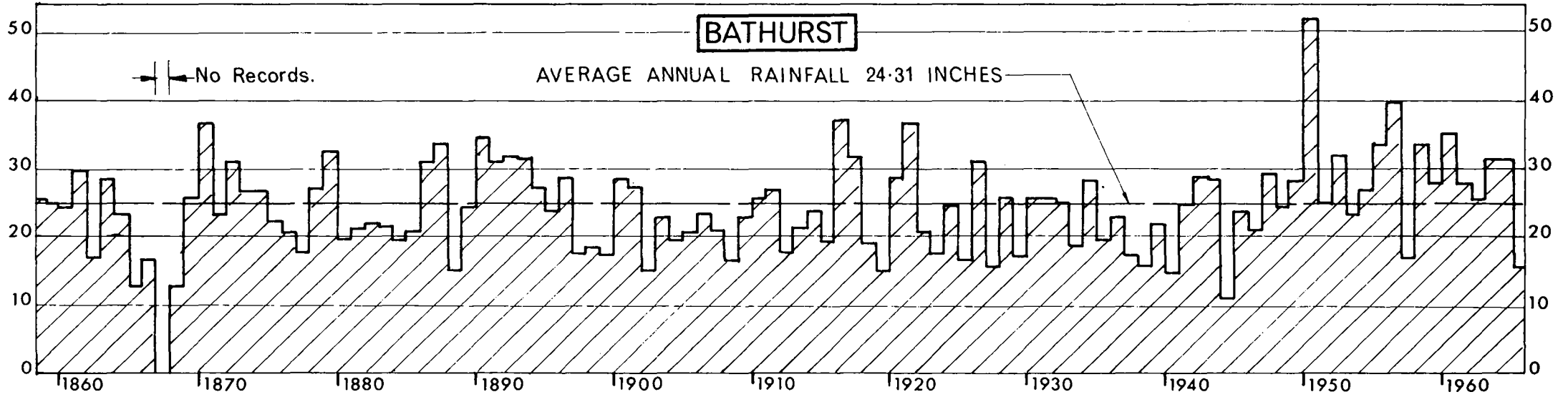


FLOW DURATION CURVES FOR MACQUARIE VALLEY



- NOTES : 1. Original flood records were obtained at the various gauges during the periods shown.
 2. Plotted flood peaks prior to 1944 are the equivalent levels under present conditions at Dubbo.
 3. Flood of 22nd June 1870 reached a peak height equivalent to a gauge height of approximately 38'-0" at Dubbo Town Water Supply Weir Gauge.

FLOOD PEAKS EXCEEDING 25 FEET AT DUBBO



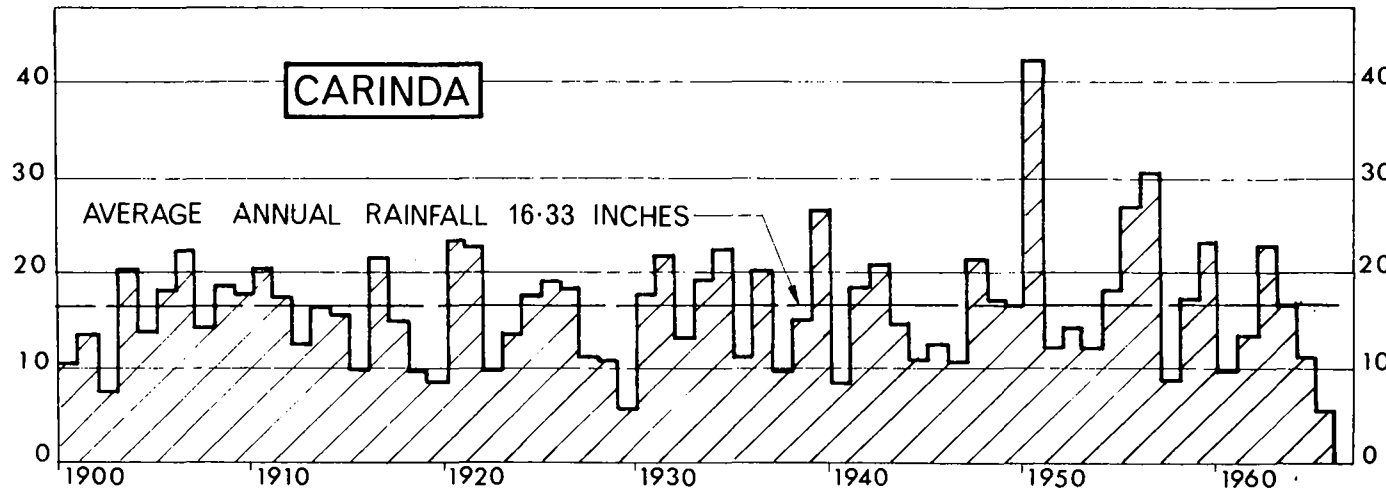
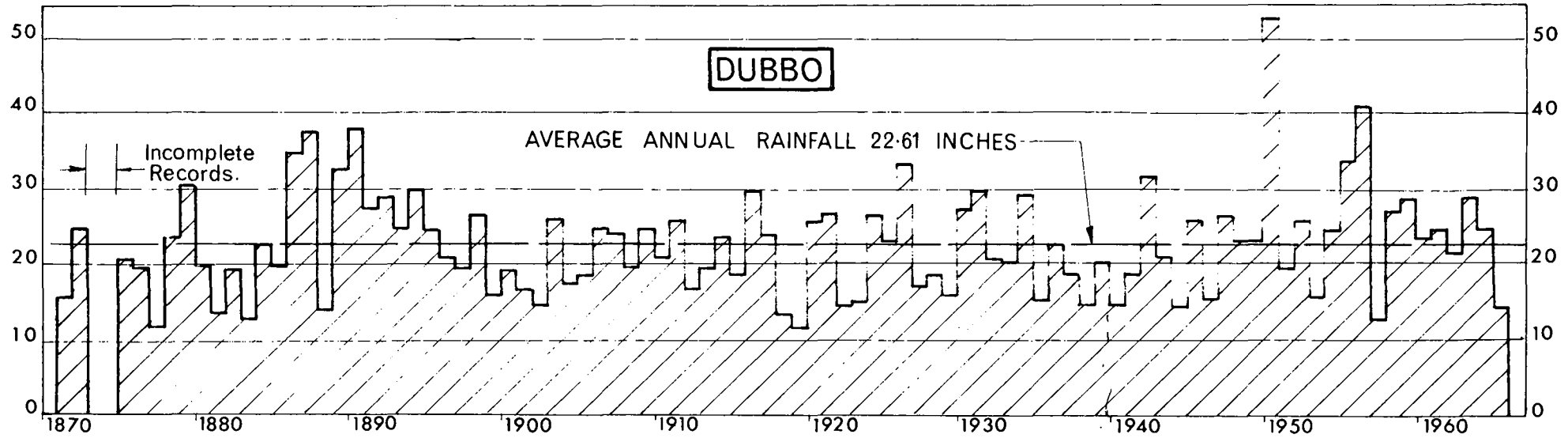
ANNUAL RAINFALLS AT BATHURST & MUDGEE

ANNUAL RAINFALL IN INCHES

168

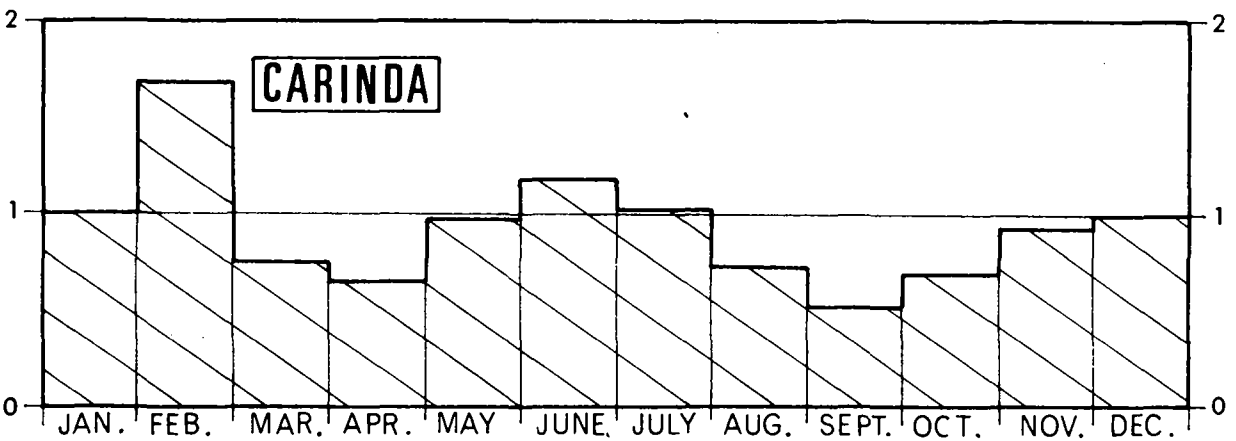
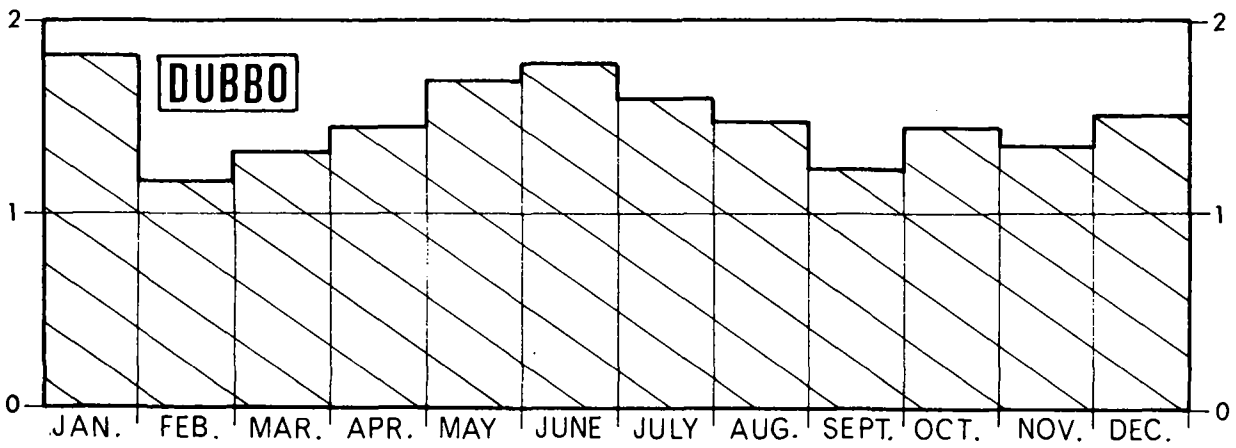
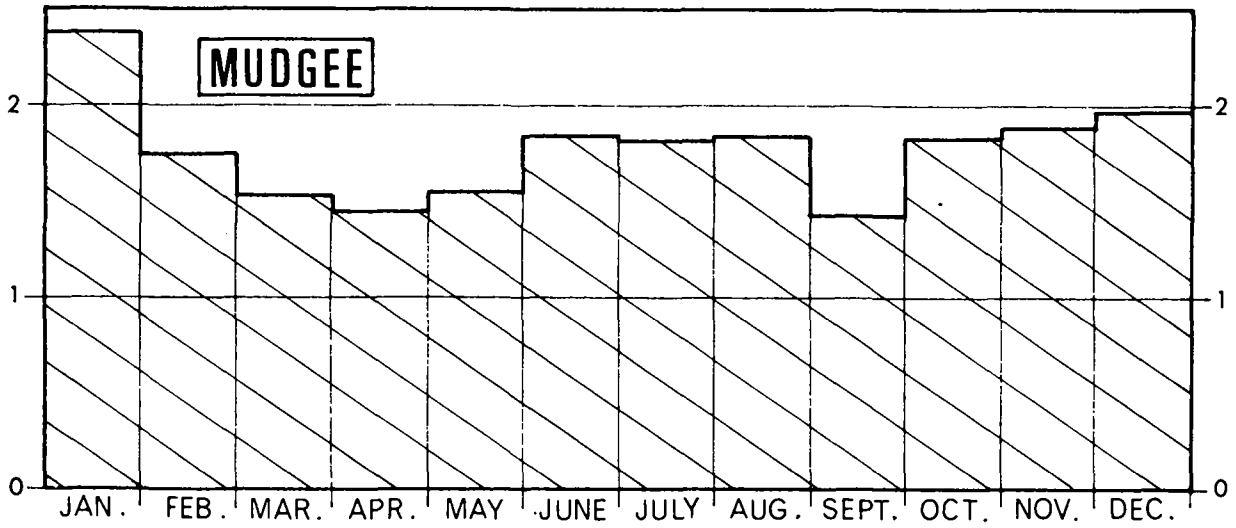
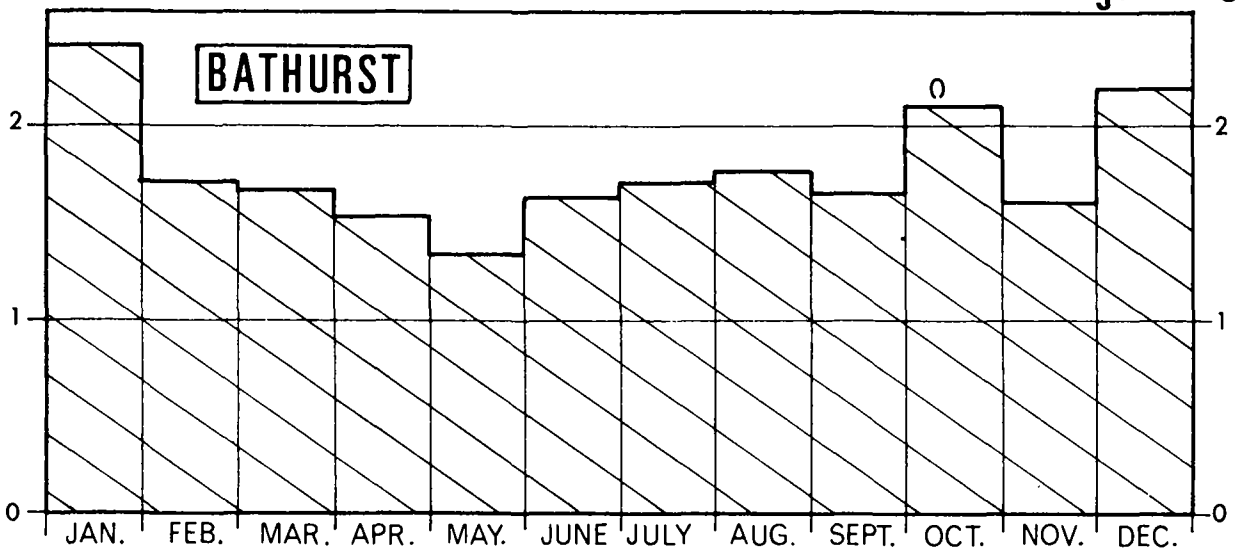
Figure 28

139/537



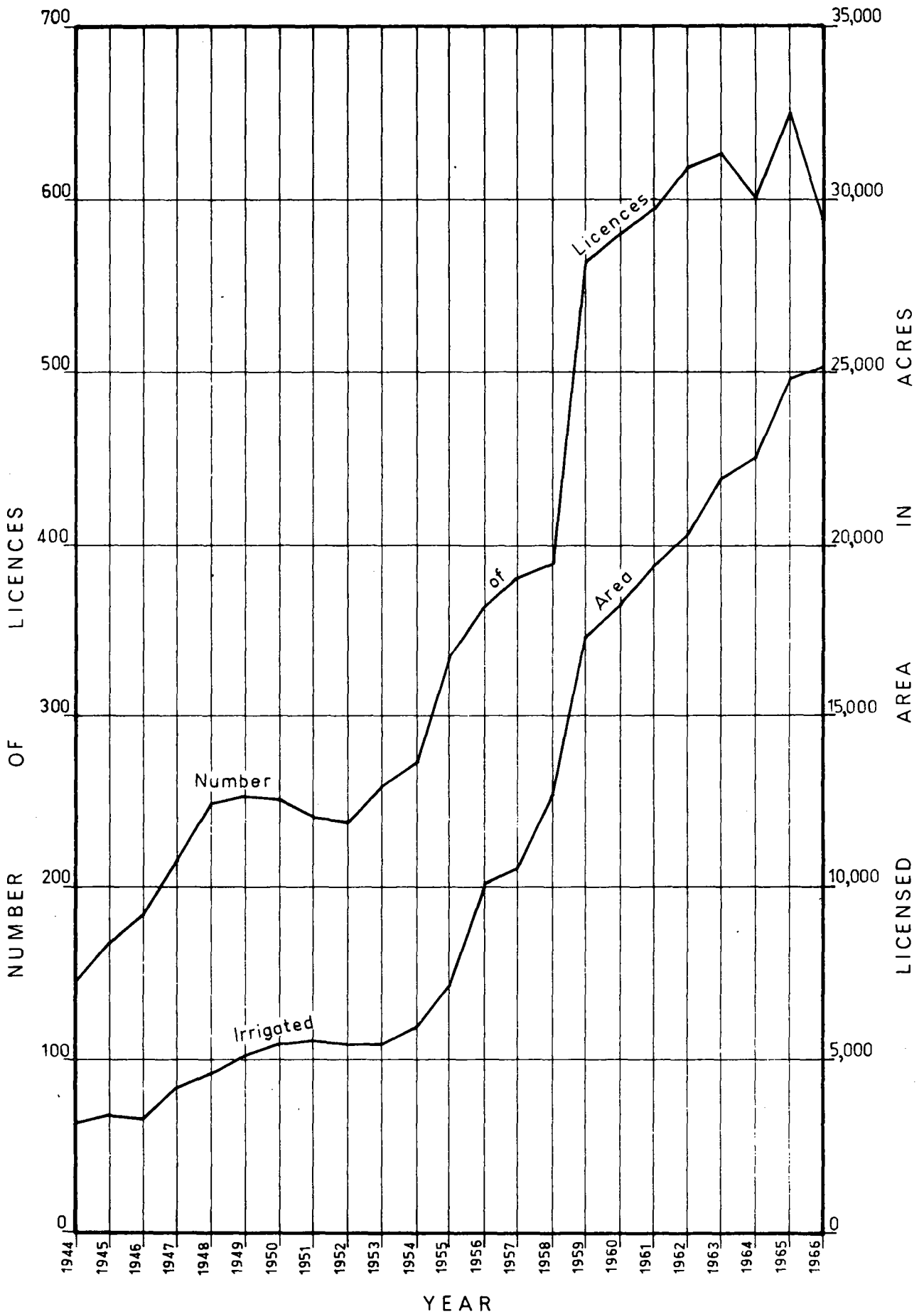
ANNUAL RAINFALLS AT DUBBO & CARINDA

ANNUAL RAINFALL IN INCHES



INCHES
IN
RAINFALL

MEDIAN MONTHLY RAINFALLS



IRRIGATION LICENCES
AT 30th JUNE EACH YEAR
IN
MACQUARIE AND BOGAN RIVER VALLEYS

NEW SOUTH WALES
 WATER CONSERVATION AND IRRIGATION COMMISSION
MACQUARIE RIVER VALLEY
 INCLUDING BOGAN RIVER VALLEY
POSSIBLE DAM SITES

