WATER RESOURCES

OF THE

CLYDE VALLEY

SURVEY OF THIRTY TWO N.S.W. RIVER VALLEYS

REPORT Nº 21 — SEPTEMBER 1970

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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 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, which is the largest and most comprehensive study of its type ever undertaken, has recently been expanded to cover the Murray and Darling Basins in their entirety. It involves the preparation of twenty eight reports covering thirty two major river valleys of the State.

In the survey, studies are being made of the physiography, climate, groundwater potential and surface water resources of each valley. In addition to reviewing current water requirements, assessments are being undertaken of possible future water development.

Reports are being prepared progressively and those issued to date have covered twenty five major valleys and a number of minor valleys. This report on the water resources of the Clyde Valley is the twenty first to be issued.

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September 1970.

WATER RESOURCES OF THE CLYDE RIVER VALLEY

CONTENTS

SECTION	ITEM	PAGE
1	Introduction	1
2	Physiographic Features	3
3	Climatic Features	5
4	Groundwater Potential	9
5	Stream Gauging Stations	13
6	Catchment Yields	15
7	Average Annual Runoff	17
8	Variability of streamflows	18
9	Persistence of Streamflows	19
10	Occurrence of Flooding	21
11	Drought Periods	22
12	The 1964 to 1966 and 1968 Droughts	23
13	Water Requirements for Current Development	28
14	Possible Irrigation Development	30
15	Investigation of Storage Proposals	32
16	Acknowledgments	32

APPENDICES

Appendix 1	Monthly Rainfalls - Araluen	33
Appendix 2	Monthly Rainfalls - Batemans Bay	37
Appendix 3	Monthly Rainfalls - Braidwood	41
Appendix 4	Monthly Rainfalls - Jervis Bay	46
Appendix 5	Monthly Rainfalls - Majors Creek	50
Appendix 6	Monthly Rainfalls - Milton	53
Appendix 7	Monthly Rainfalls - Nelligen	58
Appendix 8	Monthly Rainfalls - Nowra	62
Appendix 9	Statistical Rainfall Data	66
Appendix 10	Minimum Rainfalls Recorded in Consecutive Months	68
Appendix 11	Median Rainfalls Recorded in Consecutive Months	70
Appendix 12	Streamflow Data - Clyde River at Brooman	72
Appendix 13	Streamflow Data - Currowan Creek at Shallow Crossing	76

FIGURES

Figure 1	River Valley Map	79
Figure 2	Land Slopes	80
Figure 3	Median Rainfall - Annual	81
Figure 4	Median Rainfall - January	82
Figure 5	Median Rainfall - February	83
Figure 6	Median Rainfall - March	84
Figure 7	Median Rainfall - April	85
Figure 8	Median Rainfall - May	86
Figure 9	Median Rainfall - June	87
Figure 10	Median Rainfall - July	88
Figure 11	Median Rainfall - August	89
Figure 12	Median Rainfall - September	90
Figure 13	Median Rainfall - October	91
Figure 14	Median Rainfall - November	92
Figure 15	Median Rainfall - December	93
Figure 16	Geological Formations	94
Figure 17	Gauging Stations	95
Figure 18	Monthly Discharge Hydrograph - Brooman	96
Figure 19	Monthly Discharge Hydrograph - Shallow Crossing	97

FIGURES (Cont.)

Figure 20	Distribution of Average Monthly Rainfalls - Braidwood and Jervis Bay	98
Figure 21	Distribution of Average Monthly Rainfall - Nelligen	99
Figure 22	Distribution of Average Monthly Rainfalls - Araluen and Batemans Bay	100
Figure 23	Distribution of Averave Monthly Rainfall - Milton	101
Figure 24	Distribution of Average Monthly Rainfall - Moruya Heads	102
Figure 25	Distribution of Average Monthly Rainfall - Nowra	103
Figure 26	Flow Duration Curve - Brooman	104
Figure 27	Flow Duration Curve - Shallow Crossing	105
Figure 28	Flow per Square Mile Flow Duration Curves	106
Figure 29	Annual Rainfall - Nowra	107
Figure 30	Annual Rainfall - Nelligen	108
Figure 31	Growth of Irrigation Licenses and Authorised Irrigation Area	109
Figure 32	Location of Water Conservation Dam Sites	110

WATER RESOURCES OF THE CLYDE RIVER VALLEY

1. INTRODUCTION

Water is one of man's most valuable natural resources. Without it life is not possible. The quantity of water on 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.

About three quarters of the Earth's surface is permanently covered by water in the oceans and polar ice caps, the remaining quarter comprising the land masses. The total volume of water on Earth, in all its forms, has been estimated to be about 320 million cubic miles. However, it is difficult to adequately relate the magnitude of this volume to other natural resources, particularly when it is considered that one cubic mile is equivalent to about a million million gallons.

The major part of water on Earth is contained in oceans, polar icecaps and underground resources and it has been estimated that only 0.004 percent of the total volume is contained as fresh water in lakes and streams. Furthermore the available fresh water resources are remarkably variable; river flows may vary from zero in drought periods to extremely high discharges during flood. In addition water resources are not evenly distributed over land areas, a significant proportion of these resources being located in remote, undeveloped areas.

The water resources of a continent therefore vary substantially with time and are usually unevenly located over the land areas. The aim of water conservation works is to reduce these variations by providing storage during flood periods for release during droughts and by constructing distribution works to supply flows to areas remote from river systems.

A modern community makes heavy demands on water for domestic, industrial and agricultural purposes. While man's absolute minimum daily requirement is less than one gallon per day, the average per capita consumption in a large modern city may be of the order of 300 gallons per day. However, it should be noted that average per capita consumption figures include demands due to industry, home gardens, public parks and community services such as hospitals.

Certain industrial and other demands can be comparatively high. It requires about 300 tons of water to make a ton of steel; whilst 2½ tons of water are required to grow the grain and produce a loaf of bread.

Irrigation requirements are even higher than industrial demands. The overall annual water requirement of a crop is usually of the order of two to three feet and during a drought it may be necessary to provide a major proportion of this demand by irrigation. The relative magnitude of this requirement can be assessed when it is realised that a depth of three feet over an area of only one acre is equivalent to over 800,000 gallons (more than 3,500 tons).

In comparison with all the other continents Australia has the least average annual precipitation, the average rainfall being only about 1½ feet whereas Africa, Asia, Europe and North America all receive about 2 feet and South America receives an average of nearly 4½ feet.

The natural processes of evaporation, transpiration and seepage deplete the gross water resources of all countries to some degree and when these losses are subtracted from the average rainfalls of the continents, the residuals (or surface water resources) indicate that Australia has a runoff much less than indicated by the average rainfalls. It has been estimated that the average annual surface water resources of the Australian mainland are of the order of 240 million acre feet which is equivalent to a depth of less than 2 inches over the area of the continent. Comparative runoffs for the other continents are about 7 inches in Africa, 9 inches in Asia and Europe, 11 inches in North America and about 19 inches in South America.

In addition to the low average runoffs, the prolonged duration of severe droughts and the extreme variability of flows in Australian streams makes it imperative that water conservation dams be constructed if assured water supplies are to be maintained over the full period of each drought.

Proper use of water resources is obviously of major importance to the national prosperity, the welfare of the community depending to a large extent on water resources development. Water conservation in Australia is therefore a service of prime national importance, increasing living standards and the overall national wealth.

The surface water resources of the Clyde River Valley which includes a number of minor coastal valleys have been assessed as averaging about 750,000 acre feet per annum. As the average annual rainfall over the valley is about 46 inches, the surface water resources are equivalent to a runoff of about 25 percent.

From the main Clyde River catchment, it has been estimated that a runoff of about 550,000 acre feet occurs each year which is equivalent to about 33 percent of the average annual rainfall over the catchment. On a square mile basis, these resources of the main Clyde River catchment are about twice the average for coastal areas of New South Wales and are more than eight times the average for the State.

2. PHYSIOGRAPHIC FEATURES

The external boundaries of the Clyde River Valley, adopted for the purposes of this report, are those enclosing the catchment areas of the Clyde River and its tributaries, together with the catchment areas of all sea-board streams discharging into the South Pacific Ocean between the Shoalhaven River in the north and the Moruya River in the south.

These adopted boundaries, together with the boundaries of the main Clyde River catchment, are shown at Figure 1, as well as the location of the principal topographic features and towns in the valley.

The overall Clyde River Valley, encompassing an area of 1,260 square miles is located on the mid southern coast of New South Wales and is bordered on the north and west by the Shoalhaven River Valley and on the south by the Moruya River Valley.

The main topographic feature of the valley is the Budawang Range which extends along the western and north-western boundaries of the catchment for a distance of some 40 miles. The average height of the range is about 2,500 feet with main peaks at Currockbilly Mountain (3,700 feet), Mount Budawang (3,700 feet) and, in the south, Sugar Loaf Mountain (approximately 3,000 feet). North of this range, the somewhat lower Turpentine Range extends towards the north of the catchment with heights averaging about 1,200 feet.

A plateau, with an average elevation of the order of 1,800 feet, branches toward the south east from the northern extremities of the Budawang Range, and includes Mount Tianjara (2,500 feet). The headwaters of the Clyde River rise in the mountainous terrain to the west of this plateau.

From its source, the Clyde flows in a southerly direction, draining the plateau area to the east, and is joined on the left, by several small streams rising in the rugged country to the north of Pigeon House Mountain (2,400 feet). After flowing through heavily forested, steep valleys for some 20 to 30 miles, and falling over 1,000 feet in elevation, the Clyde emerges into moderating country of undulating hills and valleys and is joined by two minor tributaries, Boyne Creek on the left bank, and Bimberamala Creek on the right bank.

The river continues in a southerly direction passing Brooman on the left bank and is joined on the right bank by a major tributary Currowan Creek, some 10 miles below Brooman.

Below the Currowan Creek junction, the Clyde is under tidal influence and flows another 6 miles in a southerly direction, passing Nelligen on the right bank, before entering the upper reaches of Batemans Bay.

Currowan Creek rises to the west of the Clyde River in the Budawang Range and drains a mid-western segment of the catchment. The stream flows initially through steep terrain before emerging into undulating hills and valleys some 10 miles above the Clyde River junction.

The Buckenbowra River, which drains the southern sector of the Clyde catchment, rises near Sugar Loaf Mountain in the Budawang Range. The river flows in a south-easterly direction for some 14 miles before turning to the north-east and flowing some 5 miles to its confluence with the Clyde River. The catchment of the Buckenbowra River comprises mountainous topography at the headwaters moderating to gentle valleys and finally to limited flood plains.

The lower sections of the Clyde Valley between Nelligen and Batemans Bay are featured by fertile river flats and undulating pastures which support an active dairying industry and a smaller cheese production industry. Although cultivation along the coastal plain is not a major pursuit, areas of maize, lucerne and oats are grown.

In the coastal areas extending from Ulladulla to Jervis Bay the main rural activity is dairying in areas of suitable soils and topography. On the alluvial flats in the Milton-Ulladulla area dairying is practised to a more intense degree. Secondary rural activities in the area include the growing of maize and lucerne.

The rugged densely forested upper sections of the valley are sparsely populated and are unsuitable for most forms of agricultural or grazing pursuits; timber getting being the main active industry. Cattle grazing and some dairying are undertaken along the Buckenbowra River, to the west of Batemans Bay, where the terrain moderates and small areas of alluvial flats have developed.

Land slopes in the Clyde Valley are shown at Figure 2. The flat areas in the valleys, comprising slopes less than 3 degrees are mostly situated along the seaboard and make up only about one quarter of the total catchment area. Undulating to hilly terrain (slopes between 3 to 8 degrees) comprises about 30 percent of the catchment and also occurs mainly in regions adjacent to the coast.

Rugged to mountainous terrain predominates throughout the inland areas and comprises about one third of the total catchment area. These mountainous regions contain land slopes greater than 15 degrees and, reference to Figure 2 indicates that these slopes also occur within close proximity of the coast. The remainder of the valley, some 12 percent of the total catchment, comprises hilly to steep terrain with land slopes between 8 to 15 degrees and is mostly situated between 5 to 10 miles inland, as a moderating strip between the mountainous country to the west and the undulating to flat seaboard.

The timber resources of the valley are extensive with large areas of private and crown land forests, together with a number of State Forests, providing good quantities of hardwoods and some brushwoods for commercial use. The area dedicated as State Forests covers more than 25 percent of the total catchment area of the valley with the largest forest being the Mogo State Forest with an area of approximately 33,000 acres.

Both wet and dry hardwood forests have developed, the former mainly on the moist mountain ranges on the western boundary of the catchment and the latter on the drier foothills and lower ranges towards the coast. Spotted Gum is the most predominant of the commercial hardwood species.

The occurrence of mixed Brushwood types is restricted and only occurs in narrow strips along the watercourses. The shore-line and tidal vegetation comprises mainly mangrove colonies however Yellow Box, Smooth Barked Apple and similar species are found along the tidal coastal streams.

3. CLIMATIC FEATURES

Rainfall

Annual median rainfall over the Clyde River Basin varies between 35 and 45 inches on the coastal plain to more than 50 inches over the range separating the Clyde Valley from the Upper Shoalhaven Valley. (The median is that rainfall equalled or exceeded on fifty percent of occasions). The distribution of annual median rainfall over the catchment is shown at Figure 3 whilst the distribution of monthly rainfalls are shown at Figures 4 to 15.

Although the region lies in latitudes in which the distribution of rainfall throughout the year would be expected to be uniform, in general higher monthly rainfall is received in the months December to July. In the period from August to November only about 25 percent of the annual rainfall is received.

The Australian Alps shelter the region from moist south to west air streams which are the predominant rain-producing systems over southern New South Wales in the winter and spring months. August is usually the driest month receiving about 5 percent of the annual rainfall. In this month median rainfalls vary from about 1½ to 2 inches over the basin. The wettest month varies from station to station in the area but occurs in one of the months January to April. Median rainfalls in the wettest month are between 2¾ and 4 inches.

Monthly and annual rainfalls recorded at Araluen, Batemans Bay, Braidwood, Jervis Bay, Majors Creek, Milton, Nelligen and Nowra are given in Appendices 1 to 8 respectively.

Very heavy storm rainfalls may occur over the area when an active depression is centred off the New South Wales coast north of the basin. Under these conditions heavy falls are recorded at most stations in the basin. Storms of this nature have occurred about twice per year on the average. The highest fall on record for a station in the catchment for a 24-hour period ending 9 a.m. is 14.30 inches at Batemans Bay on 9th April, 1945.

Highest monthly totals on record are generally less than 25 inches with the highest yearly totals between 95 and 120 inches. The tables at Appendix 9 show on a monthly and annual basis for Araluen, Batemans Bay, Braidwood, Jervis Bay, Majors Creek and Milton the following data:-

(1) the highest and lowest rainfalls on record;

(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).

Tables for Araluen, Batemans Bay, Braidwood and Jervis Bay indicating:-

(i) the minimum cumulative rainfalls on record commencing in any month of the year and continuing for up to 12 months;

(ii) the median cumulative rainfalls on record commencing in any month of the year and continuing for up to 12 months;

are shown at Appendices 10 and 11 respectively.

Although a few consecutive months may record low totals on occasions, it is rare for the valley to experience any prolonged dry spells. On 90 percent of occasions at least 8 inches are recorded in any consecutive six-month period. The corresponding median value is about 14 inches. Stations in the catchment rarely record an annual total of less than 27 inches.

Temperature.

No climatological stations are located in the Clyde River Valley. Nowra, situated in the adjacent northern Shoalhaven River Valley, is however representative of the lower parts of the catchment. Temperature averages for this station are presented at Table 1. An estimate of the average temperature at higher elevations may be obtained by decreasing the averages for Nowra by 4°F per 1,000 feet above Nowra.

TABLE 1

NOWRA (Elevation 50 feet)

Average temperature (°F) based on 16 years of record

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Average Maximum	81.3	81.1	78.3	73.0	67.1	62.4	61.9	65.2	70.1	74.9	77.2	79.6	72.7
Average Minimum	60.5	61.8	58.7	53.4	49.9	47.0	45.3	45.5	48.9	52.0	54.7	58.7	53.0
Average Daily	70.9	71.5	68.5	63.2	58.5	54.7	53.6	55.3	59.3	63.5	65.9	69.1	62.8
Highest on Record: 110.0°F.							Lowest on Record: 31.5°F.						

Warm weather is experienced from October to March with maximum temperatures varying from the mid-seventies to the low-eighties over the lower parts of the basin away from the coast. Somewhat cooler conditions occur over the higher parts of the basin and also on the coast where seabreezes tend to reduce maximum temperatures. Days are mild to cool for the remainder of the year except over the higher areas during the winter months where days are rather cold.

Very hot days with temperatures exceeding 100 degrees on the coast are experienced about once per year on the average when dry north-west winds blow from Central Australia. Very low overnight temperatures on occasions of clear skies and light winds can be expected in winter over the higher parts of the basin.

Frost

Frost incidence increases from almost nil on the coast to more than 50 per year over the higher parts of the hinterland where frosts can occur in any month.

Severe frosts, however, are usually confined to the months May through September over the higher parts of the catchment. The season shortens rapidly in length with decreasing elevation and decreasing distance from the coast.

Sunshine

Estimates of the average number of hours of bright sunshine per day in each month for the basin are shown in Table 2. These estimates are based on cloud amount observations.

TABLE 2.

Estimated Average Daily Hours of Bright Sunshine

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
8.1	7.9	7.4	7.3	6.5	5.8	6.4	6.8	7.3	8.2	8.3	8.4	7.4

Evaporation

Estimates of the average monthly and annual evaporation from an Australian Sunken Tank are shown in Table 3 together with estimates of the standard deviations. These estimates are based on radiation, air temperature and humidity considerations.

TABLE 3

Estimated Average Monthly and Annual Evaporation
(Inches)

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Evaporation	5.2	4.2	3.7	2.4	1.8	1.3	1.5	1.8	2.5	3.6	5.0	5.1	38.1
Standard Deviation	0.8	0.9	0.7	0.4	0.4	0.3	0.3	0.3	0.4	0.4	0.6	0.8	2.8

Wind

Strong winds occur over the region from time to time under the following meteorological conditions;

(1) easterly to southerly winds with mean speeds of up to 50 m.p.h. and gusts up to 70 m.p.h. or more may occur on the coast when a deep depression is located off the southern New South Wales coast;

(2) strong north to north-west winds with mean wind speeds of the order of 50 m.p.h., may occur as the pressure gradient tightens ahead of an approaching southerly change;

(3) the highest wind gusts are associated with severe local storms such as thunderstorms.

Table 4 gives the extreme wind gust likely to be experienced at a point in the region for various return periods.

TABLE 4

Estimated Extreme Wind Gusts to be Expected with Given Return Periods

Return Period (Years)	10	20	50	100
Extreme Wind Gust Equalled or Exceeded (m.p.h.)	85	90	100	105

4. GROUNDWATER POTENTIAL

The areal distribution of the main geological units is shown in Figure 16. Actual bore data is very scarce and the discussion which follows is based on general geological considerations, controlled where possible by specific information.

The oldest rocks in the area are belived to be of Cambrian and Ordovician age but in neither case is the age definitely known. They are highly folded, and complex minor folding and crumpling is often present, the general trend being in a north-south direction. Chert, conglomerate, siltstone, sandstone, slate, quartzite and phyllite form the bulk of the exposed rocks, which occur in a large area occupying most of the main Clyde River catchment.

During the Silurian period and the earlier part of the Devonian period, the whole area was part of a land mass and no sedimentary rocks were deposited. There were major igneous intrusions, however, and a few relatively large areas are underlain by granite, porphyry and related rocks in the southern part of the catchment.

Subsequent to the periods of folding and granite intrusion, sedimentation recommenced in Upper Devonian time, after a short period of volcanic activity during which rhyolites were extruded. The Devonian sediments overlying the rhyolite are a sequence of red beds including shale and sandstone, mainly of continental origin. These rocks have been stripped from most of the area by subsequent erosion and now crop out only in a small area in the north-west.

There was no deposition in Carboniferous time and the area remained a land mass until well into the Permian. Except for one very thin sequence containing coal at the base of the Permian section, deposition during this period was under marine conditions. The strata, consisting of sandstone, siltstone and conglomerate, are essentially unfolded, and dip at low angles to the north and east. They constitute the southernmost part of the geological structure known as the Sydney Basin.

A thick relatively resistant quartz sandstone which occurs near the top of the sequence has formed an extensive plateau. Because of the seaward dip of this tabular sandstone body, the land surface above it now falls slightly towards the sea, and most of the drainage from this part of the area is directly into the Pacific via a number of small streams. Headward erosion of the headwater streams of the Clyde River system into the Permian rocks has created a number of steep sided valleys in which the walls are composed of the Permian strata, and the floor is composed of Ordovician or lowest Permian rocks. Individual formations within the Permian system have not been differentiated in the geological map at Figure 16.

Sediments of Mesozoic age are not preserved in the catchment area, but there are several relatively large areas underlain by igneous rocks (monzonite and essexite) which were intruded during this era.

Deposits of Tertiary age occur at a number of localities along the coast, mainly in the form of high level river and beach deposits. They comprise mainly gravel, clay and sand, with partly consolidated sandstone and conglomerate except in the old beach deposits which are dominantly sand.

Tertiary-Recent deposits are restricted to the coastal area and are mainly in beach and dune areas, and in alluvium along the lower reaches of rivers and streams flowing into the Pacific. None of the rivers have extensive areas of alluvium however, small pockets being present along the Clyde and Tomaga Rivers. Coastal beach and dune areas occur at a number of localities but they are all small. The most extensive are the beach sands at St.Georges Basin and the dune area south of the Tomaga River.

Groundwater is available in varying quantities from most of the geological units discussed above, but wells and bores have been recorded in only four of them in this area.

In general groundwater potential may be considered in three main categories, based on the nature of the strata and openings in the rocks in which the groundwater is stored. The three usual categories are: Jointed Rocks, Porous Rocks and Unconsolidated Deposits.

Jointed Rocks contain water in cracks, joints and fractures in otherwise impervious strata. Porous Rocks, such as sandstones contain water in the pore spaces between the cemented sand grains. Unconsolidated Deposits store water in sands or gravels associated with river deposited alluvium or in accumulations of beach and dune sands near the coastline.

In the Clyde River Valley the extent of porous rocks is insignificant and they have virtually no groundwater potential. This category of rocks is therefore not considered in this report.

Jointed Rocks.

The Cambrian and Ordovician rocks, having been strongly folded, faulted and generally deformed, are highly jointed, and hence can be expected to hole useful quantities of groundwater. Bores at suitable sites would be expected to generally produce a few hundred gallons per hour but the water quality is known to be variable. In the very few bores known, salinity varied from 266 parts per hundred thousand (p.p.h.t.) to 3,000 p.p.h.t. i.e. from suitable for stock only to unsuitable for any purpose.

There are no bores on record which have been sunk in the granite and from which useful information is available. Prospects in this unit are likely to be quite variable, depending on the local topographic situation, and the degree of jointing and weathering present at each site. There are indications that small shallow supplies of low salinity water are sometimes available.

No bores are known from the areas underlain by Devonian rocks. However, their nature is such that small to moderate supplies of groundwater suitable for stock and probably also for domestic use are expected to be widely available.

The Permian rocks are generally quite highly indurated, have comparatively few water bearing joint systems and therefore they cannot be expected to produce large volumes of groundwater. Their marine origin in some cases still influences the salinity of water passing through them, due to the presence of connate salt.

Data is available for thirteen bores in the Permian strata; the salinity of water from twelve of these bores varies from quite good to suitable for stock and the water from the remaining bore was very salty and unsuitable for any purpose.

Yields were in all cases only a few hundred gallons per hour. Extrapolating from this meagre information, and taking into consideration the type of rocks represented, it is throught probable that stock supplies would be fairly widely available from Permian strata, and in some cases the salinity would be low enough for the water to be suitable for domestic use.

The groundwater potential of the Mesozoic intrusive igneous rocks is expected to be extremely low.

Unconsolidated Deposits.

Prospects in the Tertiary deposits are generally poor because the sand and gravel bodies are silty and clayey, probably have low permeabilities and in many cases they are quite elevated. The coastal sand deposits of this age are probably useful sources of small to moderate supplies of low salinity water.

Tertiary-Recent unconsolidated deposits commonly offer the best prospects for the development of groundwater resources, but in this particular area the prospects are poor. Firstly, the areal extent of the deposits is very small, and secondly a large proportion of the desposits which do occur are subject to intrusion of saline sea water. Bedload material in some of the streams, upstream beyond the tidal influence, is practically the only useful source of groundwater. A town supply for Batemans Bay was developed from this source by sinking a spear point in the bed of the Buckenbowra River when it ceased to flow in November-December, 1968.

The coastal sands associated with old beaches and with dune fields are probably the best available source of groundwater, although because of their relatively limited extent and height they cannot be regarded as major sources. There are records available for only a very few wells in these deposits, but they indicate that yields of around 300-500 gallons per hour of good quality water are available. The most likely use for water from this source is for small holiday homes, and some care should be exercised in its use since septic tanks are often located in these areas.

In summary, stock supplies are probably obtainable from one source or another over most of the area, and in a large part of the catchment small domestic supplies are also available. Supplies large enough for irrigation or town supply purposes are rare and there is very little potential for their development. The overall level of development of groundwater resources in the area at present is very low, with only about twenty recorded bores.

5. STREAM GAUGING STATIONS.

Streamflow results from precipitation of atmospheric moisture which is carried over the land masses by the circulating weather systems of the Earth. After subtracting losses due to evaporation, transpiration and deep seepage from the total precipitation, the remainder which occurs as streamflow is normally termed runoff.

Rainfall records have been obtained for most areas of New South Wales over comparatively long periods of time. If satisfactory estimates could be made of evaporation, transpiration and deep seepage losses then it should be possible to derive accurate estimates of the remaining part of the precipitation, or runoff. Although a considerable volume of research has been undertaken in estimation of these losses no sufficiently accurate method has yet been derived for the estimation of runoff using only rainfall data.

However, various approximate methods are often employed to extend streamflow records using concurrent streamflow and rainfall information. As the application of these methods depends upon the availability of streamflow data over a reasonable period, it is apparent that the most essential basic element in water resources investigations is actual streamflow measurement. It is also desirable that these measurements extend over as long a period as possible.

Streamflow measurement involves two basic steps, the first being the measurement of river level or gauge height in relation to a fixed datum and the second being the correlation of the measured height with stream discharge.

River levels are obtained by the periodic observation of the level of the water surface on a graduated scale or staff gauge which is generally erected either on the stream bank or on bridge piers. As these measurements only indicate instantaneous water levels at a certain time, it is desirable to record the continuous variation of river height by means of either a float or a pressure actuated automatic stream height recorder.

Stream discharge measurements are obtained by use of a current meter, to measure flow velocities, in conjunction with survey methods to determine the effective area of flow. Calculations are made combining the flow velocities, in feet per second, with cross sectional areas, in square feet, to give the discharge of the stream in cubic feet per second or cusecs.

The correlation between gauge height and discharge is obtained by plotting graphs of all available streamflow measurements against the corresponding gauge heights. This is known as the stage-discharge relationship or rating curve and tends to remain constant for stable channel conditions at the gauging station. This relationship enables estimates of discharge to be obtained for periods when only gauge heights at the gauging station are available.

In catchment yield studies, the volume of runoff over the total catchment is required and is usually expressed in units of acre feet per annum. This unit is obtained by a direct relationship with discharge; one cusec flowing for one day being approximately equal to two acre feet. This yearly runoff figure is frequently expressed in inches depth over the total catchment area.

Streamflow records commenced in the Clyde River Valley in 1954 with the establishment of a staff gauge station on Currowan Creek at Shallow Crossing. This installation was followed in 1960 by a staff gauge on the Clyde River at Brooman. Two further stations were recently installed on Currambene Creek and Parma Creek.

Because of the sparse population in the area, difficulties have been experienced in obtaining permanent gauge readers, particularly at the Shallow Crossing gauging station. Consequently, in 1961, after some 7 years of intermittent and incomplete records had been obtained at Currowan Creek at Shallow Crossing, the station was discontinued. To prevent a similar occurrence of intermittent records at the Clyde River at Brooman gauging station, the Commission recently installed a long term automatic recorder at the gauging station which enables continuous stream height records of a high quality to be obtained.

The existing gauging station on the Clyde River at Brooman is so located as to record the runoff from about 27 percent of the total catchment area. However, if the 560 square miles catchment of the independent coastal streams is excluded, the Brooman gauging station can then be considered to drain nearly 50 percent of the main Clyde River catchment. This location at Brooman is the lowest practicable site upstream of tidal influence, at which a gauging station can be installed on the Clyde River.

It is preferable to delete the catchment area of the coastal strip in the determination of the effective percentage of the total catchment served by the Brooman gauging station, as these coastal streams have limited potential for the development of water resources projects as well as not being actual tributaries of the Clyde River.

The existing density of gauging stations in the valley of 2.4 stations per thousand square miles of catchment is approximately equal to the average density for New South Wales.

The locations of the existing and discontinued gauging stations in the Clyde River Valley are shown at Figure 17 and the relevant details concerning each station are given in Table 5.

TABLE 5

Stream	Station	Catchment Area (Square Miles)	Type of Gauge	Period of Operation
Currambene Creek	Falls Creek	31	Servo Manometer Pressure Recorder	1969 to date
Parma Creek	Falls Creek	25	Pressure Recorder	1969 to date
Clyde River	Brooman	340	Servo Manometer Pressure Recorder	1960 to date
Currowan Creek	Shallow Crossing*	80	Staff Gauge	1954 to 1961

* Discontinued.

It is proposed to increase the number of stream gauging stations in the Clyde River Valley to four stations so as to provide adequate basic data for the majority of water resources investigations which are likely to be required for the valley.

6. CATCHMENT YIELDS

The systematic recording of streamflow within a valley provides the basic data required for the determination of the water yield from various sections of the valley. Yield of a catchment is normally considered in terms of total volume over a yearly period and is necessarily influenced by the catchment

characteristics and other factors affecting the catchment, the main ones being precipitation, topography, geology, vegetation and area.

At the gauging station located on the Clyde River at Brooman the average flow over a 7 year period has been 626,000 acre feet or 858 cusecs (321,000 gallons per minute).

For the gauging station on Currowan Creek at Shallow Crossing, which was discontinued in 1961, only four years of complete records are available. The average annual flow over this period was found to be about 116,400 acre feet or 159 cusecs (59,600 gallons per minute).

For comparative purposes the yields at the two abovementioned gauging stations, based on available computed records, are given in Table 6.

Details of monthly maximum, minimum and mean flows for the gauging stations located on the Clyde River at Brooman and Currowan Creek at Shallow Crossing are shown in Appendices 12 and 13.

TABLE 6

Stream	Station	Years of Complete Records	Yield		
			Acre Feet Per Annum	Cusecs	Gallons Per Minute
Clyde River	Brooman	7	626,000	858	321,000
Currowan Creek	Shallow Crossing	4	116,400	159	59,600

7. AVERAGE ANNUAL RUNOFF

In order to derive an estimate of the long term average annual runoff of the Clyde Valley, streamflow records for the Clyde River at Brooman, which are only available since 1960, were correlated with streamflow records in the adjacent Shoalhaven River Valley which commenced in 1909.

The results of these correlations indicate that the average annual surface water resources of the Clyde Valley are of the order of 750,000 acre feet per annum which is equivalent to an average rate of flow of about 1,030 cusecs. On a square mile of catchment basis, these resources are about one and a half times the average for the coastal basins of New South Wales and almost six times the average for Australia.

If the catchment of the coastal areas is not included, the actual area drained by the Clyde River is about 700 square miles. On this basis, the long term runoff for the Clyde River proper, has been estimated at 550,000 acre feet per annum which is equivalent to about 750 cusecs. It also represents about 33 percent of the average annual rainfall over the Clyde River catchment.

The runoff statistics of the Clyde Valley are listed in Table 7 and are compared with the estimated runoff statistics for the adjoining Shoalhaven, Moruya, Tuross and Bega coastal basins.

TABLE 7

	Catchment Area in Square Miles	Estimated Long Term Average Annual Runoff		
		Acre Feet per Annum	Acre Feet per Annum per Square Mile	Percentage Runoff
Clyde River Valley including Coastal Streams	1,260 [3260 km²	750,000 932000	600 (286 m³/km²	25%
Clyde River Valley	700	550,000	790	33%
Shoalhaven River Valley	2,820	1,460,000	520	28%
Moruya River Valley	600	340,000	570	32%
Tuross River Valley	840	420,000	500	28%
Bega River Valley	740	400,000	540	27%

As indicated in Table 7, the percentage runoff for the Clyde River Valley is greater than the corresponding runoff from adjacent coastal valleys.

However, the low yields produced from the sandy, pervious catchments of the coastal streams, that drain directly into the South Pacific Ocean, tend to reduce the overall catchment runoff to the relatively low value of 25 percent.

A previous estimate of the long term annual runoff for the Clyde River Valley was given in the 1963 publication "Review of Australia's Water Resources" as 520,000 acre feet. This estimate was based on a period covering only three years of record whereas the current estimate is based on a period of seven years and is therefore considered to be more reliable than the earlier assessment.

8. VARIABILITY OF STREAMFLOWS

It is important to stress that whilst average annual discharges are commonly used for the comparison of long term yields from a catchment, they do not indicate the variability of flows from year to year.

This variability is of utmost importance in the planning of water resources projects; the greater the variability, the more difficult it is to economically utilise the available surface water resources of a valley.

An indication of the variability of streamflows in the Clyde Valley is given in Table 8. This table shows the maximum, minimum and mean discharges recorded at current and discontinued gauging stations over the period of available records.

TABLE 8

Stream	Station	Period of Computed Records	Recorded Discharges		
			Maximum	Minimum	Mean
Clyde River	Brooman	July, 1960 to date.	142,000 cusecs (53,200,000 g.p.m.)	0	858 cusecs (321,000 g.p.m.)
Currowan Creek	Shallow Crossing	July, 1954 to June, 1961	31,600 cusecs (11,800,000 g.p.m.)	0	159 cusecs (59,600 g.p.m.)

The streamflow records indicate a wide variability in the annual water resources in the Clyde Valley. This is illustrated when considering the annual flows for the years 1961 and 1965 at the Clyde River at Brooman; the 1961 flows being at least ten times greater than the low flows of 1965.

During the flood months of March and November 1961, the monthly discharges at the Clyde River at Brooman were about 417,000 and 423,000 acre feet respectively which approximate to about 70 percent of the average recorded annual flow for the station of 626,000 acre feet. The peak discharge at this station during the November 1961 flood was 142,000 cusecs which was over 160 times greater than the average daily flow for the station.

As opposed to these flood flows at Brooman, a period of 8 consecutive days recorded zero flow in November-December 1968, clearly indicating the wide variability of daily streamflows in the valley.

Monthly discharge hydrographs of streamflows for the Clyde River at Brooman and Currowan Creek at Shallow Crossing are shown at Figures 18 and 19 respectively and further illustrate the degree of variability of streamflows in the Clyde Valley.

The variations in average monthly rainfalls at Braidwood, Jervis Bay, Nelligen, Araluen, Batemans Bay, Milton, Moruya Heads and Nowra are shown at Figures 20 to 25. Figure 22 indicates the average monthly rainfalls for Araluen and Batemans Bay, which can be considered to represent the rainfall pattern for coastal and inland regions respectively of the Valley. Reference to Figure 22 shows that the highest average monthly rainfall occurs in the autumn period of March to May with the lowest occurring in August.

9. PERSISTENCE OF STREAMFLOWS

Records for the existing stream gauging station on the Clyde River at Brooman indicate that most of the Clyde Valley, excluding the coastal plain areas, has a relatively high groundwater flow which is able to sustain flow in the stream channels for extended periods of time after the cessation of rainfall.

An indication of the persistence of dry weather flows in the valley may be gained from the flow duration curves at Figures 26 and 27 for the gauging stations on the Clyde River at Brooman and Currowan Creek at Shallow Crossing. These graphs indicate the percentage of time for the period of records, during which the flow indicated was equalled or exceeded.

The flow duration curve of the Clyde River at Brooman is given at Figure 26 and the frequencies of flow at this station are given in the following Table 9:-

TABLE 9

Percentage of Time Flow Equalled or Exceeded	Corresponding Flows	
	Cusecs	Gallons Per Minute
10%	1,600	600,000
30%	298	111,500
50%	145	54,200
70%	79	29,600
90%	12	4,500
95%	7	2,600
100%	0	0

Flow duration characteristics for Currowan Creek at Shallow Crossing are also appended at Figure 27 and the flow frequency data corresponding to the curve are given in the following Table 10.

TABLE 10

Percentage of Time Flow Equalled or Exceeded	Corresponding Flows	
	Cusecs	Gallons Per Minute
10%	185	69,300
30%	28	11,000
50%	11	4,100
70%	7	2,600
90%	2	740
95%	1	370
100%	0	0

To enable a comparison of the flow duration characteristics of the various sections of the valley, the flow duration curves for the two stations have been replotted in the form of flow per square mile of catchment area and are shown at Figure 28. The curves at Figure 28 indicate that the best low flow persistence is obtained at the Brooman gauging station which drains the higher rainfall regions to the north of the valley. The persistence of low flows from this region is attributed to

sustained groundwater flow from the rugged uplands in the north of the valley.

10. OCCURRENCE OF FLOODING

Major or critical floods are of infrequent occurrence in the Clyde River Valley. Upstream of the town of Batemans Bay on the Clyde River, there are no major centres of population and flooding does not create any great degree of hardship except for the inundation of low-lying areas adjacent to the river. The disruption of the timber getting industry in the upper reaches of the valley can result following the inundation of roads in the forest areas.

Flood heights and discharges for the two highest recorded floods on the Clyde River at Brooman are listed in the following Table 11.

TABLE 11

Stream	Station	Month	Maximum Flood Height	Estimated Maximum Flow (Cusecs)
Clyde River	Brooman	November, 1961	43'-3"	142,000
		April, 1963	40'-0"	124,000

Earlier floods in the Clyde River occurred in 1860, 1914, 1925, 1934 and 1945. During the 1860 flood, Currowan was inundated and houses and shops destroyed at Nelligen. All local bridges were washed out and roads became impassable.

The 1934 flood was reported to have been much more severe than the 1925 flood, which was the highest flood on record in many south coast valleys in the State.

Flooding in coastal regions, from Ulladulla to Jervis Bay, is usually confined to localised areas and normally does not result in major flood damage. However, during periods of intense rainfall, particularly when active weather systems are located off the coast, significant disruptions to roads and communications can occur.

11. DROUGHT PERIODS

Because of the variety of needs for water, it is not practical to specifically define a drought. In general terms, a drought could be considered as a sustained period of time without significant rainfall. A relatively short period without precipitation may be a serious matter for agricultural operations, particularly if the weather is hot and the humidity low. Conversely, an irrigation project with adequate storage may operate for many months without rain and be unaffected by short dry periods. In New South Wales, an area can be considered to be under drought conditions when the soil moisture is insufficient for the requirements of the majority of crops during the growing season or when water shortages for domestic, industrial or municipal purposes are experienced. A prime indicator of these conditions is a diminished or exhausted rate of streamflow.

Graphs showing recorded annual rainfalls at Nowra and Nelligen are given at Figures 29 and 30. These rainfall stations may be considered representative of the coastal and inland rainfalls of the valley respectively and indicate that the lowest calendar year rainfalls were 20.62 inches at Nowra in 1944 and 21.34 inches at Nelligen in 1905.

As indicated on Figures 29 and 30, extended periods of low annual rainfalls are not uncommon in the Clyde Valley. The periods 1901 to 1909 and 1935 to 1942 appear to be the longest droughts experienced in the valley. Other shorter periods of below average rainfalls have occurred at frequent intervals but the effect has been relieved by above average rainfalls in the preceding or following years.

Since the recording of stream heights commenced on the Clyde River at Brooman in 1960, the lowest flow over any twelve monthly period occurred from December 1967 to November 1968 inclusive. The total runoff in this period was 14,300 acre feet (only about 2½ percent of the estimated average annual runoff) and the average discharge over the same period was about 20 cusecs (7,500 gallons per minute).

Available streamflow records for Currowan Creek at Shallow Crossing are insufficient to enable the determination of minimum twelve monthly flows with any significance.

As previously indicated, streams in the Clyde Valley display good persistency of flows. Analysis of extended periods of zero or low flow will give a guide to stream persistency, and, as well, give an indication of the severity of a drought in an area.

Over the period of available records on the Clyde River at Brooman, there have been four occasions on which the stream has ceased to flow. The most significant period of zero flow occurred between November and December 1968 and consisted of 8 successive days.

The short period of records, available since 1960, for Brooman, would probably not cover the most critical drought period and lower flows could have occurred in earlier years. As indicated previously rainfall records reveal that droughts of some magnitude have occurred prior to the commencement of streamflow records.

The minimum thirty day and sixty day volumes of flow that have been recorded at the Clyde River at Brooman gauging station are shown in the following Table 12.

TABLE 12

Stream	Station	Minimum Recorded Flow (acre feet)	
		Thirty Days	Sixty Days
Clyde River	Brooman	117 acre feet (10th October to 8th November 1968	256 acre feet (10th September to 8th November 1968)

12. THE 1964-1966 and 1968 DROUGHTS

During the period from mid-1964 to 1968, the Clyde River Valley, in common with many other valleys in the State, experienced extended periods of below average rainfalls. The minimum twelve monthly rainfall recorded within this period at Nowra commenced in November, 1967 and totalled about 17½ inches. This is only 14 percent more than the minimum twelve monthly value recorded for the Nowra rainfall station of 15.36 inches from April 1939 to March 1940.

At Batemans Bay, the lowest recorded twelve monthly rainfall during the dry periods from 1964 to 1968 occurred from September 1964 to August 1965 and totalled 23.90 inches. This may be compared with the lowest twelve monthly

rainfall since commencement of records of 18.06 inches from October 1904 to September 1905. However, it should be realised that a lower minimum twelve monthly rainfall may have occurred from late 1967 into 1968 but no records are available for Batemans Bay for 1967.

The recorded monthly rainfalls at Nowra and Batemans Bay, over the period from June 1964 to November 1968 are shown in Table 13.

TABLE 13

Month		Nowra	Batemans Bay
June	1964	No Records	718
July	1964	46	43
August	1964	216	399
September	1964	146	77
October	1964	300	153
November	1964	148	437
December	1964	256	318
January	1965	154	65
February	1965	65	168
March	1965	6	203
April	1965	336	236
May	1965	216	278
June	1965	279	231
July	1965	292	184
August	1965	45	40
September	1965	93	159
October	1965	765	841
November	1965	70	100
December	1965	386	272
Total	1965	2,707	2,548
January	1966	84	192
February	1966	313	339
March	1966	298	173
April	1966	39	36
May	1966	29	37
June	1966	626	817
July	1966	106	118
August	1966	133	140
September	1966	215	291
October	1966	451	284
November	1966	857	1,200
December	1966	312	536
Total	1966	3,463	4,161
January	1967	588	
February	1967	161	
March	1967	257	
April	1967	91	
May	1967	90	No
June	1967	497	
July	1967	180	
August	1967	306	
September	1967	594	Records
October	1967	255	
November	1967	128	
December	1967	64	
Total	1967	3,211	
January	1968	447	306
February	1968	16	115
March	1968	253	115
April	1968	103	41
May	1968	445	540
June	1968	22	47
July	1968	116	71
August	1968	66	84
September	1968	61	0
October	1968	23	130
November	1968	281	219
Minimum Twelve Monthly Rainfall During 1964-1968		17.44 (November 1967 to October 1968)	23.90 (September 1964 to August 1965)
Minimum Twelve Monthly Rainfall on Record		15.36 (April 1939 to March 1940)	18.06 (October 1904 to September 1905)

During the twenty-seven month period from July 1964 to September 1966, only on four monthly occasions was the respective monthly rainfall average exceeded at Nowra. Two of these above-average rainfall months occurred in October and December 1965 and only gave minor and temporary relief to drought conditions as rainfalls were only marginally above-average.

The 1964-66 drought conditions were relieved in October and November 1966 when above-average rainfalls, of up to 12 inches in November, were recorded in some parts of the valley.

Improved conditions continued, with good rainfalls in January 1967 and although below average rainfalls were recorded in the months from February to May 1967, above-average rainfalls in June, August and September maintained streamflows at reasonable levels in the valley almost to the end of 1967.

However, during the fourteen month period from October 1967 to November 1968 only two months registered above-average falls and resulted in severe drought conditions again occurring in the valley during the latter part of 1968. Rainfall and streamflow figures indicate the 1968 drought, although of much lesser duration, to be more severe than that occurring in the 1964-1966 period.

Prior to June 1964 when substantial rises in streamflows occurred, moderate flows had been experienced for the first five months of 1964. Flows gradually depleted over the balance of the year and into the next year, until October 1965, when good rainfalls produced rises in the various streams in the valley.

Flows did not persist at high levels and during early 1966, all streams in the valley experienced a diminishing rate of flow. Minor rises occurred in June 1966 but only temporarily relieved drought conditions. Streamflows further diminished in 1966 until a major flood in November 1966 (with a maximum flow of the order of 52,000 cusecs at the Brooman gauging station), improved streamflows and catchment conditions throughout the entire valley.

Flows again diminished during 1967 but were maintained at reasonable levels up to October 1967 by above-average rainfalls in the months of January, June, August and September.

From November 1967 to November 1968 the valley experienced a period of almost continuously diminishing streamflows; conditions being only temporarily relieved by a minor fresh in May. Extremely low flows were recorded from June to November, 1968, with some of the streams in the valley ceasing to flow for the first time since the commencement of systematic records.

Rain during early December 1968 resulted in moderate runoff and relieved the critical drought conditions that existed since June 1968.

As previously indicated, twelve monthly streamflows in the Clyde River Valley during the dry periods through 1964 to 1968 were the lowest experienced since the commencement of streamflow records in the valley.

At the gauging station on the Clyde River at Brooman the total flow over the twelve monthly period from December 1967 to November 1968 was about 14,300 acre feet which was only about 2½ percent of the average annual flow recorded over the period of records.

The previous lowest twelve monthly flow at Brooman occurred during the 1964-1966 drought and was some 36,400 acre feet or more than 2½ times the December 1967 - November 1968 flow.

In addition to very low twelve monthly flows being experienced during the dry spells of 1964-68, extremely low discharges were recorded for shorter durations.

During November - December 1968, the flow at the Brooman gauging station was reduced to zero for a continuous period of 8 days with seven other daily occasions of zero flow occurring during 1968. Over the period of available records at the Brooman gauging station, these occurrences of zero flow during 1968 are the only periods during which the Clyde River ceased to flow.

The minimum thirty days and sixty days discharges during the period 1964 to 1968 were also the minimum on record and are indicated in Table 14.

TABLE 14

Stream	Station	Minimum Total Flow During the Period 1964 - 1968	
		Thirty Days	Sixty Days
Clyde River	Brooman	117 acre feet (10th October to 8th November 1968)	256 acre feet (10th September to 8th November 1968)

During early December 1968 runoff-producing rainfall occurred and increased the flow in the Clyde River at Brooman from zero to about 120 cusecs, temporarily relieving the critical streamflow conditions in the Clyde River.

Above average rainfalls in April, June and November 1969 resulted in minor flooding at Brooman and enabled streamflows to continue at reasonable proportions throughout the year.

13. WATER REQUIREMENTS FOR CURRENT DEVELOPMENT

Both topography and soil types are unsuitable for intensive farming in most parts of the Clyde Valley. Dairying is a main rural pursuit in the lower regions of the valley and is most prominent in the coastal areas surrounding Milton and Ulladulla. Wholemilk production is the major concern of the dairying industry, and a growing beef cattle industry has become established in recent years. Relatively minor areas near the coast are sown for fodder crops, to supplement pasture with feeding; the main crops being maize, lucerne and oats.

The western areas of the valley are too rugged for general agricultural or pastoral use and only in small pockets where the terrain moderates is grazing carried out.

The area authorised for irrigation by license under the Water Act in the Clyde Valley has increased from nil in June 1944 to 492 acres in June 1970, the corresponding number of licenses increasing from nil in 1944 to eighteen in 1970. The variations in the total number of irrigation licenses issued, and corresponding areas, over the twenty-seven year period from 1944 to 1970 are indicated at Figure 31. This figure shows a general increase in the number of licenses from 1954 to 1969, with the only decrease occurring in the period 1959 to 1962. A significant increase has occurred from 1969 to 1970 when the licensed area almost doubled.

The average area per license varied somewhat since 1949 being 10 acres in June 1949 and about 27 acres in June 1970.

At the end of June 1970 there was a total of 12 licenses in the Clyde Valley for the diversion of up to 8,390 gallons per minute for industrial, town and stock water supply purposes.

No major water conservation or flood mitigation storages exist in the valley.

The Shoalhaven Shire operates a minor storage comprising a concrete and earthen dam and associated diversion works on a small tributary, Porters Creek, in the upper reaches of the Clyde River catchment. The storage has a maximum capacity of 415,000,000 gallons (1,520 acre feet) and provides by gravitation, water supplies for the coastal towns of Milton, Ulladulla and Burrill Lake. The diversion works are licensed to divert up to 7,500 gallons per minute.

The Eurobodalla Shire provides water supplies to the town of Batemans Bay and surrounding areas, requirements being obtained by pumping at rates up to 600 gallons per minute from the Buckenbowra River at a site approximately 5 miles upstream from the headwaters of the Batemans Bay estuary. The present pumping and reticulation scheme is not proposed to be enlarged in the future; any increases in demand are planned to be met by augmentation to the Batemans Bay reticulation system from the adjoining Moruya River Valley.

The estimated maximum requirements in the Clyde River Valley under present conditions for irrigation under license, water supply, and riparian usage (not including transmission losses) are given in Table 15, and are separated into the requirements for the Clyde River and tributaries and for the minor coastal streams.

TABLE 15

Requirement	Cusecs	Gallons per Minute
Clyde River and Tributaries		
Irrigation under license (260 acres at 2 feet per 8 month season)	1.1	410
Town, Commercial and Stock Water Supply	21.6	8,060
Riparian Usage	1.8	670
SUB-TOTAL	24.5	9,140
Minor Coastal Streams		
Irrigation under license (232 acres at 2 feet per 8 month season)	1.0	370
Town, Commercial and Stock Water Supply	0.9	330
Riparian Usage	1.1	410
SUB-TOTAL	3.0	1,110
TOTAL	27.5	10,250

The total demand in acre feet per annum for the Clyde Valley is about 20,000, of which about 1,000 acre feet is required for irrigation under license.

The foregoing requirements given in Table 15 do not include any allowance for transmission losses due to evaporation from the stream surface and seepage into the bed and banks of the channels. Such losses may be of substantial magnitudes during drought periods, and are directly related to flow levels within the streams and groundwater conditions. Therefore these losses vary widely depending on antecedent meteorological conditions.

14. POSSIBLE IRRIGATION DEVELOPMENT

The Clyde River flows through rugged, heavily timbered country for the greater part of its length and hence opportunities for irrigation are limited. The tidal influence extends upstream for 25 miles with the result that on the main stream fresh water supplies are available to less than 50 percent of the area considered suitable for irrigation.

Most of the tributary streams likewise are tidal over considerable portions of their lengths and this therefore places a limit on the area of ultimate irrigation development.

Considerable areas of irrigable land also occur on minor coastal streams between Sussex Inlet and Moruya Heads. These minor streams have independent outlets, some discharging into coastal lakes which are frequently interconnected with the sea. In such instances the streams are tidal in their lower reaches and as the greater part of their courses is on the coastal plain suitable storage sites are not available. Because the catchment areas are small there is only a limited potential for development.

Due to the generally steep and rugged inland topography of the valley, suitable sites for the construction of farm dams are limited to the undulating regions near the coast. There has been negligible development of farm dams in the valley, however where suitable soil types and satisfactory sites exist, the temporal rainfall pattern is such as to make farm water storages economically feasible and it is expected that limited water supplies for supplemental irrigation will be provided by these works in the future.

The areas of potential irrigable land in the Clyde Valley and adjacent minor coastal streams as assessed from inspections and aerial surveys are summarised in Table 16.

TABLE 16

Stream	Assessed Areas Suitable for Irrigation (Acres)	
	Above Tidal Limit	Below Tidal Limit
Clyde River Valley		
Clyde River and Tributaries	1,370	900
Buckenbowra River	340	170
Minor Coastal Streams		
Tomaga River, Reedy, Stoney, Croobyar, Yackungarrah, Narrawallee, Conjola, Wandandian and Ballerang Creeks	3,020	850
Totals	4,730	1,920

It is evident from Table 16 that approximately 30 percent of the irrigable land in the valley is situated below tidal limits.

15. INVESTIGATION OF STORAGE PROPOSALS

Although detailed investigations of storages have not been undertaken in the Clyde River Valley examination of aerial photographs indicates a suitable dam site on the Clyde River downstream of Pigeon House Creek. This site appears topographically suitable and of adequate storage potential. Only a small area of agricultural land would be flooded by the storage.

Field investigations comprising surveys, geological investigations, foundation drilling and testing of construction materials will be necessary to determine whether a storage can be economically constructed at the site.

In addition to the provision of head storages to regulate the flows of major coastal rivers, proposals are in hand for the construction of weirs for water conservation and to create pools for stock watering and for irrigation by pumping on the main rivers and minor streams.

The sites of possible dam and weirs in the Clyde River Valley and minor coastal streams are shown in Figure 32.

16. ACKNOWLEDGMENTS

The Water Conservation and Irrigation Commission gratefully acknowledges the assistance provided by the Director, Bureau of Meteorology, in supplying the section on Climatic Features, the Rainfall Statistical Data and the Median Rainfall maps for inclusion in this report and by the Department of Public Works and the Forestry Commission for providing the information on town water supply schemes and timber resources respectively.

Appendix 1
Sheet 1

ARALUEN MONTHLY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1891				NO RECORDS					405	110	306	90	
1892	557	72	763	119	124	45	63	278	1514	580	130	206	4451
1893	381	114	471	758	60	745	347	64	58	533	395	124	4050
1894	766	483	1313	325	62	353	0	94	321	312	6	248	4283
1895	1070	301	56	71	90	0	15	128	287	39	22	145	2224
1896	212	350	200	30	777	739	9	210	3	70	520	112	3232
1897	439	55	17	153	112	478	175	391	193	277	46	359	2695
1898	70	2905	22	37	191	735	79	702	71	248	0	37	5097
1899	183	22	63	621	281	569	713	966	150	162	232	66	4028
1900	200	219	326	427	1094	433	1022	85	160	8	571	172	4717
1901	300	34	240	115	0	64	116	931	118	301	103	6	2328
1902	274	7	190	42	14	45	324	175	145	433	78	618	2345
1903	53	79	109	110	80	153	335	283	486	229	123	494	2534
1904	273	286	85	578	116	10	482	8	44	88	23	97	2090
1905	272	184	157	252	212	240	23	16	19	294	34	245	1948
1906	64	14	804	42	175	36	26	674	161	192	234	97	2519
1907	265	134	246	167	39	471	18	53	37	15	198	105	1748
1908	122	574	76	462	146	8	30	742	174	68	266	49	2717
1909	126	504	46	14	64	859	258	106	42	145	21	296	2481

Appendix 1
Sheet 2

ARALUEN MONTHLY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1910	1146	63	336	85	29	128	343	3	131	193	159	489	3105
1911	1575	125	485	53	467	95	193	213	369	124	111	199	4009
1912	92	425	633	117	137	239	903	81	66	51	210	85	3039
1913	13	28	326	373	1356	1319	83	51	78	247	17	65	3956
1914	47	55	1540	190	122	34	672	10	364	222	169	714	4139
1915	366	58	142	215	80	160	100	54	607	21	20	342	2165
1916	84	345	227	337	51	70	236	98	787	2056	368	272	4931
1917	260	346	60	223	143	120	26	77	229	181	592	165	2422
1918	713	385	77	108	20	9	652	86	87	58	119	29	2343
1919	32	976	208	161	433	11	62	77	144	151	443	798	3496
1920	835	200	462	93	57	70	103	196	162	184	285	1416	4063
1921	326	391	191	780	614	190	236	81	139	214	114	943	4219
1922	645	299	150	90	47	238	2734	137	448	85	28	154	5055
1923	217	20	259	71	32	389	222	167	443	355	153	364	2692
1924	186	395	354	207	65	115	282	80	97	127	490	440	2838
1925	405	254	182	37	4740	808	111	139	35	115	252	48	7126
1926	169	32	496	118	330	337	51	121	80	82	6	237	2059
1927	348	56	149	832	197	26	47	17	207	237	503	69	2688
1928	257	1023	903	117	49	460	212	32	30	44	35	107	3269
1929	21	1529	328	314	127	20	94	643	173	363	546	286	4510

Appendix 1
Sheet 3

ARALUEN MONTHLY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1930	50	97	169	138	632	742	110	52	12	339	24	319	1684
1931	105	21	106	871	633	209	153	14	246	190	137	259	3044
1932	5	188	459	142	218	29	164	536	469	67	199	111	2587
1933	399	5	140	302	238	152	341	16	229	256	395	261	2734
1934	925	1113	116	554	281	824	909	427	106	285	448	224	6212
1935	334	467	120	441	31	169	66	22	250	534	116	313	2863
1936	335	598	473	213	130	823	184	136	71	36	60	418	3477
1937	504	236	485	73	53	429	51	328	167	331	276	233	3165
1938	723	278	231	157	228	38	99	1173	135	615	251	29	3957
1939	376	114	646	765	158	74	36	329	143	199	185	97	3122
1940	217	32	4	646	89	25	43	30	422	28	221	439	2196
1941	812	417	263	117	92	42	31	114	288	122	58	118	2474
1942	47	480	760	67	206	193	58	48	53	1090	622	260	3884
1943	426	130	65	223	1813	57	4	299	271	421	414	310	4433
1944	76	82	164	184	1419	20	115	63	11	126	61	226	2547
1945	440	288	161	2104	59	1159	96	85	56	271	226	253	5198
1946	401	242	215	407	106	403	16	39	61	127	366	32	2415
1947	37	1020	137	315	66	201	57	240	91	51	198	761	3174
1948	720	416	112	94	939	611	20	3	102	253	113	332	3715

ARALUEN MONTHLY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1949	303	268	870	48	648	1125	149	22	304	209	297	72	4315
1950	493	636	1040	756	517	977	388	115	103	684	237	88	6034
1951	956	753	12	15	107	1231	62	290	660	278	121	50	4535
1952	176	316	548	781	311	1140	420	879	78	491	483	372	5995
1953	235	299	58	51	1420	0	30	146	91	310	60	201	2901
1954	224	763	11	33	9	106	76	35	120	284	259	84	2004
1955	238	648	332	171	886	87	81	130	113	191	178	427	3482
1956	311	1074	954	174	660	990	347	90	34	392	37	80	5143
1957	36	410	128	22	0	354	898	417	55	33	114	309	2776
1958	392	799	347	188	28	853	139	142	227	129	18	262	3524
1959	349	469	563	316	51	1099	1137	52	128	1705	690	137	6696
1960	141	53	376	82	225	80	1068	57	447	254	201	1135	4119
1961	221	363	1331	136	40	430	693	516	318	411	1670	819	6948
1962	541	804	133	83	282	0	224	213	1143	213	133	623	4392
1963	268	299	727	798	842	382	281	183	448	86	218	746	5278
1964	46	146	276	732	189	352	129	421	114	312	110	183	3010
1965	44	56	5	74	13	154	106	49	327	681	62	241	1812
1966	134	331	190	11	82	379	151	140	304	309	1247	387	3665
1967	327	119	209	65	108	344	88	732	658	208	72	58	2988

Appendix 2
Sheet 1

BATEMAN'S BAY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1895						NO	RECORDS				40	73	
1896	244	448	343	12	439	1061	77	239	78	111	259	191	3502
1897	414	186	52	354	348	681	73	441	257	199	42	329	3376
1898	85	1134	86	78	379	603	67	560	103	260	25	68	3448
1899	145	14	111	573	275	932	248	996	390	490	271	66	4511
1900	330	165	269	478	1421	717	748	70	221	121	535	265	5240
1901	279	72	273	146	35	106	147	1139	251	158	116	64	2786
1902	264	46	173	70	138	91	600	262	127	291	104	913	3079
1903	65	63	95	47	168	188	411	223	797	196	226	692	3171
1904	243	90	256	705	172	33	1309	55	53	113	62	105	3196
1905	216	266	139	360	178	213	61	60	33	336	30	267	2159
1906	143	99	1175	53	175	13	30	578	310	176	123	99	2974
1907	431	181	304	253	76	720	26	46	32	45	179	107	2400
1908	104	616	86	604	123	60	75	697	80	128	162	15	2750
1909	243	733	45	17	28	579	378	76	92	183	71	431	3876
1910	1582	47	344	82	24	175	361	37	152	298	270	552	3924
1911	1376	179	422	30	489	98	326	283	262	53	228	185	3931
1912	133	570	861	27	252	315	964	47	45	80	320	71	3685

Appendix 2
Sheet 2

BATEMAN'S BAY MONTHLY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1913	49	43	411	894	1767	1600	118	12	303	171	65	93	5526
1914	75	52	1686	557	224	155	659	35	804	229	300	583	5359
1915	413	128	76	428	175	304	211	56	459	92	99	355	2796
1916	385	350	611	395	105	86	353	145	871	1247	461	533	5542
1917	305	254	670	590	475	194	40	70	324	160	570	217	3869
1918	916	400	97	471	80	32	746	147	115	73	248	62	3387
1919	79	1564	195	187	849	18	72	158	170	149	388	471	4300
1920	1485	129	350	113	85	91	192	102	206	88	275	1606	4722
1921	237	570	265	661	570	340	145	45	257	141	105	1106	4442
1922	823	421	50	205	106	249	1263	119	489	352	49	188	4314
1923	220	123	89	207	20	350	147	156	675	276	203	469	2935
1924	245	269	349	420	159	201	535	96	128	129	564	615	3710
1925	535	405	261	102	3749	585	102	76	23	110	280	68	6296
1926	376	48	677	348	266	339	171	54	178	100	2	265	2824
1927	235	53	174	1312	358	29	110	42	381	275	436	81	3486
1928	171	782	1027	206	194	679	280	80	28	74	49	179	3749
1929	84	1885	265	540	310	15	107	892	136	536	669	291	5730
1930	185	59	300	202	875	852	103	43	71	550	98	457	3795

Appendix 2
Sheet 3

BATEMAN'S BAY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1931	136	139	254	1372	626	228	383	17	429	319	278	227	4408
1932	14	411	759	138	285	31	542	559	346	345	510	375	4315
1933	860	70	339	607	310	302	406	76	239	261	552	305	4327
1934	2230	950	209	922	556	823	1168	437	165	256	258	222	8196
1935	322	418	215	445	169	350	125	37	260	307	409	348	3405
1936	251	365	665	199	153	293	180	107	125	79	109	597	3123
1937	331	142	893	116	52	783	68	507	104	300	105	129	3530
1938	356	436	202	75	237	44	178	666	76	684	148	53	3155
1939	442	115	805	443	129	75	121	272	229	221	402	131	3385
1940	204	61	19	667	128	24	47	12	415	69	116	438	2200
1941	409	396	215	431	90	64	62	277	392	224	83	162	2805
1942	56	309	863	89	235	148	42	0	89	628	1011	127	3597
1943	271	58	118	151	1620	81	14	421	244	604	536	530	4648
1944	122	79	74	283	746	42	102	187	21	80	91	207	2034
1945	387	454	119	2235	195	838	115	21	57	230	97	217	2965
1946	292	244	95	338	137	619	0	104	98	134	677	49	2787
1947	55	461	63	293	45	382	20	453	79	85	380	586	2902
1948	1057	426	117	115	581	523	7	15	74	261	243	220	3639

Appendix 2
Sheet 4

BATEMAN'S BAY MONTHLY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1949	524	319	558	142	402	1218	233	86	195	202	489	176	4544
1950	656	490	1333	983	728	787	751	185	296	478	181	180	7048
1951	596	492	25	31	261	1321	146	346	945	395	124	55	4737
1952	105	106	651	1477	266	1507	317	619	113	740	543	452	6896
1953	207	109	78	108	1510	7	36	127	88	288	61	135	2754
1954	301	948	40	34	8	97	112	14	63	289	178	238	2322
1955	342	1059	247	112	954	172	117	71	132	227	203	285	3921
1956	165	1132	1269	194	749	1003	467	120	150	595	222	142	6208
1957	22	502	124	13	2	374	824	481	48	16	55	365	2826
1958	701	391	401	131	32	897	137	127	120	130	31	239	3337
1959	433	485	787	247	52	421	674	156	123	1494	618	243	5733
1960	314	116	670	146	176	104	491	101	495	302	187	959	4061
1961	341	362	1171	90	45	367	641	678	409	356	1392	1060	6912
1962	551	472	309	122	213	0	122	252	706	195	158	528	3628
1963	303	270	593	1022	1736	667	568	226	451	86	279	884	7085
1964	60	168	203	1190	196	718	43	399	77	153	437	318	3962
1965	65	168	203	236	278	231	184	40	159	841	100	272	2548
1966	192	339	173	36	37	817	118	140	291	284	1200	536	4161
1967	NO RECORDS												

Appendix 3
Sheet 1

BRAIDWOOD MONTHLY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1887					NO RECORDS							480	
1888	170	80	170	0	55	24	92	23	177	110	50	776	1727
1889	247	106	17	195	558	146	63	172	200	190	401	44	2339
1890	122	741	769	57	303	349	214	82	190	235	242	143	3447
1891					NO RECORDS								
1892	357	226	455	200	205	55	90	195	1174	524	144	173	3798
1893	395	138	115	646	149	379	137	82	16	392	228	174	2851
1894	N.R.	288	694	345	59	319	2	118	139	195	10	213	
1895	654	161	45	45	69	9	3	131	144	104	16	166	1547
1896	176	350	210	59	622	684	11	200	27	68	248	38	2693
1897	343	80	50	107	145	463	104	327	212	195	46	201	2273
1898	65	1274	34	17	172	392	51	448	52	242	5	33	2785
1899	102	32	53	301	87	374	413	766	169	178	373	54	2902
1900	183	159	307	398	735	317	655	113	124	20	482	155	3648
1901	232	27	138	101	8	63	63	695	102	299	165	40	1933
1902	165	0	150	24	31	69	223	154	123	272	87	761	2059
1903	92	102	173	105	80	133	403	114	356	317	53	343	2271
1904	218	267	100	402	141	25	497	23	75	193	68	225	2234

Appendix 3
Sheet 2

BRAIDWOOD MONTHLY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1905	225	170	87	276	163	206	68	22	37	266	69	147	1736
1906	123	13	689	66	107	8	19	378	269	154	145	153	2144
1907	357	142	113	143	32	298	39	28	73	69	293	61	1648
1908	160	263	64	287	170	28	54	456	123	89	389	63	2146
1909	173	564	39	53	39	366	291	145	67	225	51	266	2279
1910	675	26	298	39	9	135	396	9	186	180	282	260	2495
1911	803	110	617	10	337	120	227	143	222	130	153	118	2990
1912	101	454	472	116	87	226	614	131	108	63	97	167	2636
1913	112	62	401	282	884	645	83	87	92	221	17	215	3101
1914	93	50	1145	178	35	67	321	10	241	149	409	535	3233
1915	300	86	184	193	64	332	94	124	559	60	11	307	2314
1916	132	452	266	374	82	163	251	190	482	1123	317	253	4085
1917	222	373	100	134	82	230	96	155	238	246	518	120	2514
1918	495	308	98	162	41	24	422	191	50	99	156	49	2095
1919	3	582	104	170	392	43	52	126	186	94	261	641	2654
1920	759	159	271	120	21	121	231	163	193	146	158	1093	3435
1921	192	225	254	375	455	232	125	102	150	265	69	749	3193
1922	453	275	82	83	75	195	1356	102	263	84	23	200	3191

Appendix 3
Sheet 3

BRAIDWOOD MONTHLY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1923	161	14	83	64	32	405	229	133	279	306	187	278	2171
1924	199	245	184	206	55	93	272	67	149	152	405	390	2417
1925	218	208	207	44	2614	513	126	144	72	123	328	33	4630
1926	161	26	495	248	335	262	141	142	118	68	16	256	2268
1927	429	35	123	541	274	43	23	54	211	288	448	196	2665
1928	185	581	404	140	59	298	158	83	46	75	45	119	2193
1929	28	749	218	246	133	16	82	324	208	125	335	193	2657
1930	31	119	93	104	346	463	158	71	70	342	37	271	2105
1931	44	23	200	510	730	332	226	69	262	182	345	285	3208
1932	6	45	708	247	159	38	224	429	220	110	207	280	2673
1933	264	6	97	240	187	113	296	39	190	163	376	350	2321
1934	784	697	104	334	99	644	624	272	155	439	406	307	4865
1935	310	350	107	415	26	86	81	45	204	440	70	348	2482
1936	317	375	463	124	77	489	214	179	120	46	34	415	2853
1937	399	53	416	60	67	239	67	379	194	349	212	345	2780
1938	392	227	270	101	134	71	83	767	124	444	258	26	2897
1939	219	58	609	489	150	103	93	303	76	349	163	134	2746
1940	201	21	23	550	125	43	23	52	337	36	76	327	1814

Appendix 3
Sheet 4

BRAIDWOOD MONTHLY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1941	690	384	274	104	122	112	19	112	378	106	84	82	2467
1942	50	199	490	19	281	235	118	76	102	441	452	198	2661
1943	220	43	50	255	1015	39	42	223	222	327	339	251	3026
1944	81	72	303	197	430	10	91	29	17	125	59	166	1580
1945	451	218	82	977	75	481	61	125	25	251	231	211	3188
1946	357	230	253	340	81	345	22	39	65	108	368	116	2324
1947	37	512	151	184	70	138	76	270	144	79	299	590	2550
1948	563	512	95	142	557	346	24	19	111	163	125	336	2993
1949	273	281	348	68	325	549	164	32	225	278	435	87	3057
1950	360	384	938	555	528	479	401	94	100	496	299	174	4808
1951	507	449	24	32	104	830	82	290	570	287	105	76	3356
1952	89	118	531	549	168	767	268	313	184	484	517	555	4743
1953	257	139	47	19	852	14	31	99	122	229	144	150	2103
1954	214	523	17	47	31	60	72	39	116	190	309	101	1719
1955	149	483	300	139	649	93	61	183	74	281	225	204	2851
1956	327	818	621	221	549	652	300	106	123	262	37	53	4069
1957	9	153	144	34	7	268	527	248	49	29	131	287	1886
1958	288	286	169	127	67	432	174	165	144	239	44	290	2425

BRAIDWOOD MONTHLY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1959	276	479	461	261	25	662	564	63	141	1110	738	244	5024
1960	356	88	227	87	201	49	553	74	477	221	232	820	3385
1961	279	358	573	97	34	250	497	388	286	385	634	556	4337
1962	599	464	170	59	185	2	211	193	569	154	113	535	3254
1963	377	321	449	545	362	223	252	166	342	129	148	291	3605
1964	58	77	137	495	138	291	201	291	174	399	153	253	2667
1965	7	53	1	44	31	154	86	68	279	603	62	276	1664
1966	81	374	146	13	91	335	118	152	261	393	598	746	3308
1967	321	44	159	26	106	158			NO RECORDS				

JERVIS BAY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1899				NO RECORDS			657	1341	282	84	348	215	
1900	314	181	761	1652	1685	756	1186	134	601	38	851	147	8306
1901	319	152	552	1240	135	305	697	1371	309	348	153	0	5581
1902	385	208	681	213	268	255	807	809	90	632	136	611	5095
1903	94	439	260	135	1062	205	726	931	351	318	248	680	5449
1904	348	490	579	1004	209	93	935	150	477	282	38	111	4716
1905	151	173	228	484	753	461	94	185	115	457	121	496	3718
1906	96	76	718	178	170	133	22	444	291	132	118	153	2531
1907	509	164	240	279	304	927	139	105	92	55	325	117	3256
1908	165	738	222	390	283	221	683	744	313	191	99	160	4209
1909	290	798	83	55	214	475	348	215	365	159	52	540	3594
1910	458	86	548	90	151	245	477	155	152	281	316	510	3469
1911	1266	165	777	145	372	83	511	690	171	108	324	318	4930
1912	176	404	476	210	530	532	994	172	91	51	207	172	4015
1913	59	70	410	466	1516	926	173	19	460	409	111	53	4672
1914	149	75	2253	283	547	247	1051	309	526	219	434	862	6955
1915	392	165	379	1062	343	567	604	139	325	219	15	435	4645
1916	124	320	415	410	236	283	421	177	841	1086	544	874	5731

Appendix 4
Sheet 2

JERVIS BAY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1917	456	277	290	661	328	388	52	116	669	441	918	510	5106
1918	1490	466	126	1360	81	61	1905	339	307	102	164	8	6409
1919	15	1084	451	210	1243	150	239	189	318	473	241	923	5536
1920	678	70	371	243	59	99	241	182	320	82	214	1026	3585
1921	271	269	278	1247	1507	495	333	103	148	92	144	391	5278
1922	422	650	62	343	598	208	791	282	507	361	40	483	4747
1923	302	213	303	487	107	604	640	514	334	201	118	332	4155
1924	360	239	527	518	673	301	386	77	162	178	368	282	4071
1925	483	247	316	100	2030	863	294	458	705	141	329	63	5394
1926	496	28	349	458	785	326	296	215	314	55	20	427	3769
1927	441	102	262	747	423	348	193	61	283	213	394	223	3690
1928	460	639	1088	514	194	1072	572	186	140	175	76	93	5209
1929	19	1497	249	593	997	150	271	391	188	354	414	246	5369
1930	207	103	262	498	343	604	237	221	60	316	126	425	3402
1931	203	182	405	401	303	305	1272	81	525	163	465	343	4648
1932	17	199	414	511	206	142	263	569	443	244	160	520	3688
1933	743	89	262	304	214	132	351	95	199	214	376	301	3280
1934	1485	849	241	1380	579	1317	764	630	538	358	374	343	8858

JERVIS BAY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1935	347	419	275	349	324	520	210	42	227	292	319	443	3767
1936	196	516	603	249	239	445	246	193	105	83	80	609	3664
1937	361	171	638	371	52	1437	313	410	92	266	299	214	4624
1938	412	208	260	181	288	47	458	862	131	453	164	30	3494
1939	208	25	589	603	196	80	413	381	250	322	212	124	3403
1940	93	19	42	311	352	221	173	56	340	45	269	383	2304
1941	531	413	128	419	166	184	168	357	446	232	255	32	3331
1942	26	223	431	135	232	446	257	93	45	432	504	223	3047
1943	195	86	202	166	1845	181	39	479	300	723	442	327	4985
1944	62	49	64	414	623	217	194	521	74	119	125	117	2579
1945	485	289	152	1181	379	521	286	96	77	120	194	157	3937
1946	128	345	352	373	112	617	14	19	147	224	305	63	2699
1947	163	241	155	640	405	419	73	418	91	262	554	691	4112
1948	968	213	190	276	542	529	194	160	127	236	211	243	3889
1949	730	543	389	252	437	870	293	108	878	300	533	138	5471
1950	620	721	958	1188	803	1388	983	300	402	623	431	128	8545
1951	440	365	442	233	725	1446	641	357	832	301	139	128	6049
1952	164	97	517	1779	236	1180	271	1720	49	924	299	329	7565

Appendix 4
Sheet 4

JERVIS BAY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1953	243	161	638	78	1119	93	298	399	156	422	180	136	3923
1954	200	1002	95	205	123	301	168	426	294	430	286	405	3935
1955	915	751	595	156	954	633	445	77	90	169	291	513	5589
1956	298	1065	1223	293	1362	841	475	230	199	604	169	143	6902
1957	72	396	108	3	23	167	1218	598	105	34	101	254	3079
1958	311	1680	802	1115	74	926	208	444	160	213	85	696	6714
1959	385	656	1732	168	458	951	781	81	418	2125	274	379	8408
1960	347	237	777	289	223	799	432	854	605	849	270	777	6459
1961	279	533	2128	488	260	365	762	1074	345	218	2627	738	9817
1962	726	339	113	337	723	21	171	765	558	257	184	820	5014
1963	640	379	1001	1046	1085	1656	837	686	279	280	161	604	8654
1964	306	85	210	1103	359	766	62	252	223	385	498	254	4503
1965	212	134	48	695	583	354	191	114	217	739	108	214	3609
1966	202	655	719	171	129	734	290	468	180	602	784	340	5274
1967	417	87	257	84	263	415	331	322	542	238	340	45	3341

Appendix 5
Sheet 1

MAJORS CREEK MONTHLY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1898	N.R.	2208	50	53	202	645	52	698	141	329	12	58	
1899	161	65	96	593	177	491	664	1222	229	237	379	119	4433
1900	261	329	423	408	1137	540	997	95	168	19	630	261	5268
1901	476	107	281	155	3	94	107	890	131	363	180	50	2837
1902	214	12	133	94	42	56	330	151	97	419	130	710	2388
1903	91	141	211	132	69	212	385	250	453	388	136	678	3146
1904	282	600	133	463	157	15	705	14	114	158	58	100	2799
1905	308	274	139	311	171	238	59	12	50	259	55	297	2173
1906	141	67	881	102	199	47	8	471	206	228	263	174	2787
1907	395	146	275	230	28	446	28	47	70	23	359	138	2185
1908	141	729	94	349	143	10	63	603	143	106	346	113	2840
1909	179	634	85	66	50	704	231	122	65	201	26	299	2662
1910	1209	63	378	79	24	150	430	40	169	236	183	406	3367
1911	1267	337	453	32	518	122	273	226	307	141	123	164	3963
1912	120	486	615	84	109	258	868	83	102	74	225	87	3111
1913	30	40	524	443	1234	1096	104	57	129	243	29	88	4017
1914	97	88	1446	284	95	71	476	0	263	256	214	686	3976
1915	260	98	193	167	95	225	76	60	571	47	10	421	2223

Appendix 5
Sheet 2

MAJORS CREEK MONTHLY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1916	65	442	316	313	49	101	212	95	496	1274	114	183	3660
1917	318	162	160	120	91	125	0	96	220	186	441	48	1967
1918	855	609	88	68	0	0	441	49	60	13	10	13	2206
1919	45	595	NO RECORDS										
1920 to 1946			NO RECORDS										
1947	50	956	152	327	35	167	69	281	NO RECORDS				
1948			NO RECORDS				25	0	44	223	95	472	
1949	435	351	719	63	516	925	122	40	295	175	285	30	3956
1950	508	773	1086	615	535	908	376	37	52	622	342	203	6057
1951	1009	0	738	45	87	1255	103	365	718	232	108	55	4715
1952	65	180	768	733	265	997	473	1064	130	310	730	415	6130
1953	337	217	67	36	1300	55	50	42	95	25	30	219	2473
1954	205	550	35	68	12	105	91	64	195	314	301	106	2046
1955	259	881	472	227	842	122	66	197	142	207	192	398	4005
1956	358	1460	1116	374	523	917	481	125	98	474	26	31	5983
1957	58	527	214	32	6	432	768	445	35	38	81	353	2989
1958	396	698	310	180	55	661	254	194	230	190	91	247	3506
1959	447	530	679	391	3	1101	777	23	184	1708	780	238	6861

MAJORS CREEK MONTHLY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1960	355	169	572	96	321	90	1250	57	584	276	246	1101	5111
1961	245	400	984	121	19	505	629	560	312	455	1285	840	6355
1962	727	863	245	108	337	0	284	192	1209	198	173	839	5175
1963	325	476	850	804	684	363	316	188	596	71	267	874	5814
1964	35	93	354	672	155	527	164	310	173	378	236	218	3315
1965	52	57	10	133	10	189	142	69	378	779	97	375	2291
1966	286	442				NO RECORDS							
1967						NO RECORDS							

Appendix 6
Sheet 1

MILTON MONTHLY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1877	185	156	763	356	945	67	581	17	726	645	176	225	4842
1878	28	1578	114	234	07	156	365	361	444	33	459	325	4164
1879	756	666	371	89	1284	277	95	597	1510	255	330	290	6520
1880	127	585	984	1060	104	34	504	25	274	339	551	96	4683
1881	549	328	247	122	610	204	153	74	232	1124	277	200	4120
1882	118	51	427	1312	229	490	46	257	51	1141	469	315	4906
1883	396	912	96	1013	1565	45	39	43	329	286	100	143	4967
1884	194	85	218	954	316	468	744	24	108	368	351	82	3912
1885	603	67	148	201	104	535	563	86	64	134	248	455	3208
1886	399	112	149	431	26	140	260	250	81	536	295	341	3020
1887	675	545	268	1086	512	840	282	479	461	201	724	1051	7124
1888	227	238	104	13	79	203	10	169	173	258	134	1192	2800
1889	572	229	252	189	881	112	791	298	346	164	484	183	4501
1890	219	1235	2516	200	373	803	1098	105	249	250	245	197	7490
1891 to 1898	NO RECORDS												
1899	214	48	274	549	365	1616	548	1082	238	460	427	141	5962
1900	363	489	434	428	1240	677	959	218	255	45	877	270	6255
1901	210	115	328	250	0	233	344	1028	321	217	70	16	3132
1902	601	101	171	110	315	137	681	397	90	704	176	605	4088

Appendix 6
Sheet 2

MILTON MONTHLY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1903	154	109	163	80	218	60	330	315	620	280	181	452	2962
1904	144	295	368	1116	187	33	1453	37	132	106	48	73	3992
1905	327	385	203	404	341	453	43	46	59	376	87	345	3069
1906	120	155	937	34	285	31	30	592	203	146	185	134	2852
1907	450	209	512	780	323	724	27	45	60	31	263	222	3646
1908	187	836	105	645	148	62	156	1021	97	154	188	101	3700
1909	413	1360	38	163	305	645	355	193	131	219	101	629	4552
1910	1162	138	499	139	321	186	568	29	244	308	344	943	4881
1911	2040	259	395	16	547	44	613	534	161	111	162	150	5032
1912	187	342	854	307	454	437	1413	74	55	85	627	145	4980
1913	96	88	583	965	1231	1700	174	15	242	351	324	50	5819
1914	113	72	1680	496	390	251	859	135	787	402	760	876	6821
1915	350	137	168	848	121	1044	456	137	169	169	41	364	4004
1916	252	492	758	441	346	140	319	213	694	2639	435	541	7270
1917	566	468	297	1062	720	247	42	32	428	167	773	296	5098
1918	917	479	160	398	76	143	1678	111	258	87	362	68	4737
1919	28	1930	685	306	1238	33	175	161	226	409	205	491	5887
1920	798	73	275	117	76	57	224	190	285	104	245	1699	4143

Appendix 6
Sheet 3

MILTON MONTHLY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1921	281	666	306	966	1444	240	325	81	227	156	354	542	5588
1922	1070	571	128	411	281	161	1032	138	638	473	105	298	5306
1923	293	203	257	608	22	561	496	254	509	198	149	592	4142
1924	355	280	360	708	323	436	615	28	180	137	378	478	4278
1925	921	393	305	45	3743	663	76	163	62	207	578	185	7341
1926	487	29	1004	767	515	420	321	65	344	72	0	314	4338
1927	386	83	198	2117	421	106	130	9	415	278	590	151	4884
1928	343	1150	1535	489	241	1665	342	87	77	128	82	236	6375
1929	98	2577	292	504	823	49	245	668	144	469	549	182	6600
1930	315	90	670	654	498	1156	141	181	79	427	218	644	5073
1931	270	228	438	935	409	157	617	0	473	202	411	176	4316
1932	26	383	750	385	210	76	539	378	644	284	464	378	4517
1933	798	74	506	443	409	295	386	40	173	332	490	543	4489
1934	965	1117	442	1245	592	1164	741	634	396	321	363	407	8387
1935	372	505	288	498	128	376	95	43	225	437	421	373	3761
1936	473	482	1359	332	188	490	144	140	170	66	109	592	4545
1937	414	252	1129	103	30	1248	198	503	85	486	312	160	4920
1938	484	290	212	179	416	30	79	831	48	750	303	76	3698

Appendix 6
Sheet 4

MILTON MONTHLY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1939	358	45	1091	639	237	95	154	192	342	332	325	96	3906
1940	198	39	20	489	225	194	145	36	511	100	394	357	2708
1941	573	398	126	294	69	126	33	218	591	255	249	112	3044
1942	81	263	778	195	247	164	82	29	44	974	1361	218	4436
1943	331	137	152	241	2484	73	44	574	374	1025	570	422	6427
1944	197	90	59	453	562	43	117	250	22	79	98	129	2099
1945	527	340	266	1507	459	810	195	21	26	281	381	257	5070
1946	241	395	114	601	67	755	0	22	169	183	578	114	3239
1947	152	523	135	860	130	309	22	374	49	240	591	924	4309
1948	1364	347	211	113	748	732	69	37	78	152	195	476	4522
1949	492	737	756	222	519	1433	186	210	433	167	848	191	6194
1950	1026	918	1998	1906	1655	1322	1363	229	386	682	273	260	12018
1951	1013	676	131	23	695	1920	261	427	1680	469	186	76	7557
1952	133	188	1192	1243	369	1278	432	1435	98	1030	325	499	8222
1953	235	252	318	151	1757	12	179	139	142	373	164	173	3895
1954	236	1040	47	63	48	110	222	420	209	366	265	205	3231
1955	679	1205	597	248	1134	374	117	55	177	174	206	527	5493
1956	416	1447	1118	238	679	1213	365	284	175	553	155	114	6757

MILTON MONTHLY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1957	93	498	350	11	0	299	936	657	79	39	85	368	3415
1958	402	1187	1071	486	54	818	242	238	162	256	104	490	5510
1959	448	657	1168	310	83	547	473	196	118	2512	498	327	7337
1960	379	213	497	148	248	415	532	290	482	410	186	923	4723
1961	207	381	1646	80	132	390	585	946	331	477	1970	1290	8435
1962	733	575	177	472	576	0	170	398	657	236	193	773	4960
1963	528	438	1204	1125	1414	610	247	331	611	154	204	1050	7916
1964	59	40	259	1318	169	972	38	288	72	332	279	382	4208
1965	254	42	15	317	159	330	251	45	155	1330	113	314	3325
1966	143	763	387	68	44	787	182	177	310	320	739	420	4340
1967	456	183	270	313	145	528	198	385	585	311	387	74	3835

Appendix 7
Sheet 1

NELLIGEN MONTHLY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1898			NO RECORDS							8	31	42	
1899	167	26	157	580	286	848	310	931	189	483	428	107	4512
1900	380	239	329	508	1510	712	885	80	229	30	671	294	5867
1901	275	136	222	149	20	83	174	1360	234	194	123	45	3015
1902	283	97	130	93	139	80	625	278	88	321	106	1075	3315
1903	121	86	180	69	109	226	493	254	841	300	222	938	3839
1904	224	160	322	1262	139	28	884	17	70	87	33	81	3307
1905	230	219	158	368	133	219	30	37	31	330	55	324	2134
1906	121	128	1175	53	114	10	35	652	265	195	99	98	2945
1907	421	252	326	262	132	641	10	7	17	16	228	109	2421
1908	86	1102	109	533	77	35	55	687	137	123	194	30	3168
1909	314	757	49	39	20	794	350	96	73	161	62	361	3076
1910	1588	37	305	100	24	151	478	27	188	294	257	641	4090
1911	1730	307	472	0	613	115	268	308	349	95	209	206	4672
1912	78	527	1030	43	236	228	868	57	20	92	386	35	3600
1913	68	42	513	1063	1342	1553	150	0	302	316	35	135	5519
1914	80	65	2157	634	293	115	799	8	1080	152	264	681	6328
1915	375	120	108	351	127	315	181	20	485	60	16	257	2415

Appendix 7
Sheet 2

NEILIGEN MONTHLY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1916	128	458	436	353	58	30	265	120	502	2188	537	173	5248
1917	305	254	470	590	370	80	0	15	370	140	681	158	3433
1918	1151	503	48	204	0	15	1017	120	73	27	217	20	3395
1919	97	1066	195	229	821	21	31	153	203	115	925	615	4471
1920	1471	142	255	188	200	58	137	112	235	114	207	1605	4724
1921	365	519	273	779	645	363	165	20	369	233	215	1167	5113
1922	1078	475	65	195	74	252	1622	110	591	550	30	128	5170
1923	206	151	84	158	10	457	145	180	719	290	175	498	3073
1924	250	395	253	465	145	140	505	85	152	137	545	540	3612
1925	545	485	340	10	5004	642	100	210	0	120	310	10	7776
1926	285	55	690	250	365	240	185	65	250	95	32	250	2762
1927	362	0	237	1235	420	32	98	40	370	271	440	84	3589
1928	140	786	1032	209	184	671	231	66	26	78	54	126	3603
1929	48	1298	235	306	113	0	93	875	265	339	745	291	4608
1930	185	60	300	202	829	694	94	46	70	363	301	259	3403
1931	163	55	187	872	102	140	181	4	265	339	745	291	3344
1932	96	295	351	101	0	181	305	420	363	244	408	78	2842
1933	624	43	290	413	239	152	275	52	208	244	410	594	3544

Appendix 7
Sheet 3

NELLIGEN MONTHLY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1934	2405	928	98	645	353	559	1282	421	168	203	531	232	7825
1935	774	26	65	728	70	248	72	39	220	343	422	326	3333
1936	272	310	649	182	179	297	178	120	135	88	345	807	3562
1937	381	170	938	10	52	445	43	148	20	82	19	148	2456
1938	360	443	208	86	253	41	176	674	76	768	350	28	3463
1939	433	153	501	413	83	22	85	250		NO	RECORDS		
1940	NO	RECORDS		569	64	69	NO	RECORDS			64	203	
1941	N.R.	433	50	462	N.R.	57	37			NO	RECORDS		
1942			NO	RECORDS									
1943			NO	RECORDS		66	29	398	295	522	435	353	
1944	359	60	82	191	834	14	94	134	23	77	215	108	2191
1945	515	237	0	2307	107	1000				NO	RECORDS		
1946			NO	RECORDS									
1947	152	770	183	141	50	82	112			NO	RECORDS		
1948	1036	371	NO	RECORDS							196	224	
1949	424	219	610	155	438	1218	200	75	156	153	502	169	4319
1950	483	597	649	883	884	792	679	138	197	453	202	259	6216
1951	668	535	18	5	237	1529	10	219	746	315	125	85	4555

NELLIGEN MONTHLY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1952	103	191	624	1140	180	1281	321	470	111	652	627	644	6344
1953	189	166	93	100	1682	2	27	139	114	314	83	136	3045
1954	227	1014	58				NO RECORDS						
1955 to 1958			NO RECORDS										
1959	435	189	523	60	0	583	759	52	51	2552	187	668	6059
1960	233	89	685	117	142	N.R.	723	33	313	15	N.R.	1435	
1961	78	385	1440	12	0	298	686	585	404	1453	1580	1133	7054
1962	649	698	365	203	86	0	163	227	1164	197	165	747	4664
1963					NO RECORDS								
1964	54	116	429	1025	100	910	370	45	47	289	310	287	3982
1965	118	19	20	210	134	144	157	43	172	807	57	381	2262
1966	218	387	239	0	18			NO RECORDS					
1967					NO RECORDS								

Appendix 8
Sheet 1

NOWRA P.O. RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1896			NO RECORDS					195	30	316	420	240	
1897	398	98	49	757	537	1147	292	207	415	100	29	451	4480
1898	587	929	67	56	533	510	147	368	77	275	0	364	3913
1899	59	2	111	409	191	668	362	1351	199	425	277	47	4101
1900	154	68	443	285	1718	697	810	70	227	62	827	78	5439
1901	273	136	322	290	25	124	297	639	308	283	109	33	2839
1902	440	49	126	25	76	69	420	438	79	555	186	542	3005
1903	136	147	148	176	300	181	403	529	525	315	136	358	3354
1904	190	418	308	936	107	0	1850	68	170	370	48	14	4479
1905	186	126	103	511	478	466	37	40	86	283	109	574	2999
1906	123	117	946	17	137	0	3	689	128	194	138	105	2597
1907	385	56	303	216	415	760	11	21	19	5	179	129	2499
1908	160	923	81	120	194	8	259	827	67	78	92	25	2834
1909	112	551	0	0	167	551	281	169	77	183	28	581	2700
1910	710	24	472	92	149	119	727	0	126	197	215	532	3363
1911	2021	265	478	106	411	21	376	372	194	121	162	274	4801
1912	67	412	582	217	316	354	1091	74	50	143	300	37	3643
1913	44	64	701	604	1509	1105	138	26	151	336	72	58	4808

Appendix 8
Sheet 2

NOWRA P.O. RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1914	76	35	1899	206	223	209	576	155	754	243	436	834	5646
1915	114	94	305	375	152	951	638	114	225	100	25	250	3343
1916	82	273	437	358	258	177	302	197	662	1537	383	572	5238
1917	444	460	297	896	189	211	48	67	432	239	696	221	4200
1918	1624	324	155	465	38	21	1106	123	144	122	186	8	4316
1919	47	1003	428	171	768	17	112	105	109	310	271	708	4049
1920	797	69	189	48	0	62	135	194	299	124	196	1787	3900
1921	554	267	207	752	1521	85	330	20	86	101	144	588	4655
1922	654	462	54	233	156	130	1255	72	361	149	8	163	3697
1923	282	323	198	314	46	511	458	215	424	188	179	250	3388
1924	262	272	275	735	346	263	558	199	143	199	234	390	3876
1925	825	379	96	143	2512	639	54	200	0	66	394	33	5341
1926	235	30	554	531	382	265	262	73	193	67	19	243	2854
1927	318	62	274	1539	273	80	86	0	214	236	439	137	3658
1928	286	552	611	333	94	859	616	79	52	109	28	157	3776
1929	55	1727	238	235	388	89	214	691	225	495	414	145	4916
1930	119	59	186	196	430	1654	177	85	49	316	80	699	4050
1931	134	144	370	542	324	118	782	3	817	192	341	548	4315

Appendix 8
Sheet 3

NOWRA P.O. RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1932	48	156	575	410	186	57	342	230	585	141	272	302	3304
1933	986	27	256	391	300	143	348	39	250	205	377	325	3647
1934	827	1388	162	1195	331	758	560	366	391	188	286	413	6865
1935	351	494	196	381	93	366	129	25	219	340	181	543	3318
1936	296	480	712	168	82	299	94	85	166	75	30	471	2958
1937	404	153	454	92	58	665	196	267	133	399	245	183	3249
1938	241	237	155	151	346	12	132	1379	118	588	102	47	3508
1939	290	38	762	329	86	33	101	157	190	300	142	46	2474
1940	105	37	10	475	83	126	67	28	451	64	179	459	2084
1941	422	263	25	290	114	164	62	157	481	202	135	65	2380
1942	10	177	521	133	147	247	89	47	17	678	678	137	2881
1943	161	167	159	84	2105	84	13	339	301	608	477	260	4758
1944	95	17	12	386	723	88	150	220	94	103	81	93	2062
1945	391	251	176	1243	339	520	120	56	30	172	130	145	3573
1946	196	351	84	556	128	511	0	7	114	132	508	103	2690
1947	93	553	152	491	201	199	23	223	55	186	430	625	3231
1948	902	221	162	94	694	842	66	24	94	95	68	232	3494
1949	423	349	624	107	529	1155	206	121	413	257	586	153	4923

Appendix 8
Sheet 4

NOWRA P.O. RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1950	844	835	1039	799	1037	1949	765	155	213	682	385	147	8850
1951	632	937	241	16	327	1700	438	201	966	136	38	56	5688
1952	317	144	627	1318	147	1090	343	1200	18	672	240	343	6459
1953	159	269	241	125	1040	0	145	130	149	290	101	133	2782
1954	438	968	43	47	116	98	182	139	244	315	370	195	3155
1955	540	836	237	202	896	282	46	63	77	167	313	399	4058
1956	292	1971	1056	346	689	638	259	234	120	585	213	27	6430
1957	164	447	120	12	10	241	828	391	59	28	106	344	2750
1958	342	1450	642	575	45	694	216	168	142	116	50	423	4863
1959	471	671	1148	229	57	370	560	117	198	2600	306	266	6993
1960	317	238	594	161	329	295	421	302	348	450	241	746	4442
1961	208	327	1149	191	44	318	392	920	195	318	2290	956	7308
1962	868	490	212	261	725	3	95	364	547	206	49	762	4582
1963	693	292	1092	1239	706	545	227	569	257	208	144	934	6906
1964	125	39	301	953	119	N.R.	46	216	146	300	148	256	
1965	154	65	6	336	216	279	292	45	93	765	70	386	2707
1966	84	313	298	39	29	626	106	133	215	451	857	312	3463
1967	588	161	257	91	90	497	180	306	594	255	128	64	3211

STATISTICAL RAINFALL DATA
(Points)

Station	Rainfall Statistic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
	Minimum	5	5	4	14	0	0	0	3	3	8	0	6	1748
	10%	45	30	51	40	29	16	22	17	36	42	22	50	2181
Araluen	30%	173	114	139	94	65	72	63	60	89	127	107	112	2690
(Period 74	50%	270	287	221	164	134	197	116	115	144	214	174	235	3203
years	70%	396	417	418	316	281	247	270	213	248	298	256	316	4129
Computed	90%	789	890	837	762	913	984	806	659	459	557	512	730	5238
to 1965)	Maximum	1575	2905	1540	2104	4740	1319	2734	1173	1514	2056	1670	1416	7126
	Minimum	14	14	19	12	2	0	0	0	21	16	2	15	2034
	10%	65	53	63	34	35	29	36	21	48	74	49	66	2754
Bateman's Bay	30%	185	123	124	116	137	98	102	70	98	130	109	162	3171
(Period 69	50%	279	270	265	207	213	302	147	127	165	221	222	239	3685
years	70%	387	436	422	445	379	603	378	272	296	298	320	431	4408
Computed	90%	860	948	893	983	954	932	748	619	495	595	564	692	6208
to 1964)	Maximum	2230	1885	1686	2235	3749	1600	1309	1139	945	1494	1392	1606	8196
	Minimum	3	0	17	10	7	2	3	9	17	20	5	26	1547
	10%	45	26	47	34	31	24	23	29	50	68	34	53	1891
Braidwood	30%	160	87	101	98	71	88	77	84	109	125	85	151	2289
(Period 70	50%	219	213	184	142	129	224	149	132	146	191	164	220	2663
years	70%	338	356	302	259	252	341	252	192	212	276	306	291	3048
Computed	90%	595	560	605	508	646	634	524	425	355	440	447	556	4083
to 1964)	Maximum	803	1274	1145	977	2614	830	1356	767	570	1123	738	1093	5024

STATISTICAL RAINFALL DATA
(Points)

Computed to 1964

Station	Rainfall Statistic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Jervis Bay (Period 65 years)	Minimum	15	19	42	3	23	21	14	19	45	34	15	0	2304
	10%	68	73	111	135	110	93	86	77	85	71	78	63	3185
	30%	196	165	258	248	230	220	239	154	151	177	151	156	3757
	50%	314	241	379	373	343	388	333	252	283	257	241	327	4645
	70%	444	423	557	515	603	607	611	444	346	355	324	486	5405
	90%	735	818	975	1209	1291	1115	987	827	575	627	516	754	7861
	Maximum	1490	1680	2253	1779	2030	1656	1905	1720	878	2125	2627	1026	9817
Majors Creek (Period 36 years)	Minimum	30	0	35	32	0	0	0	0	35	13	10	13	1967
	10%	63	56	87	42	5	13	43	20	58	24	26	43	2181
	30%	163	141	195	94	50	101	104	57	115	160	109	114	2803
	50%	271	333	335	161	126	231	278	109	171	230	187	218	3436
	70%	391	530	611	345	315	525	470	223	260	307	283	393	4391
	90%	901	800	1015	632	930	1027	804	689	503	518	660	839	6079
	Maximum	1267	1460	1446	804	1300	1255	1250	1222	1209	1708	1285	1101	6861
Milton (Period 80 Years	Minimum	26	29	20	11	0	0	0	0	22	31	0	16	2099
	10%	99	72	114	80	67	43	39	25	59	85	98	96	3075
	30%	211	166	211	207	195	140	147	76	131	168	187	182	4127
	50%	356	341	323	419	332	297	260	192	225	268	287	306	4703
	70%	490	518	648	643	539	595	502	310	345	394	418	470	5505
	90%	921	1183	1190	1124	1280	1244	928	655	636	745	623	918	7341
	Maximum	2040	2577	2516	2117	3743	1920	1678	1435	1680	2639	1970	1699	12018

MINIMUM RAINFALL RECORDED IN CONSECUTIVE PERIODS OF UP TO TWELVE MONTHS
COMMENCING IN THE MONTH INDICATED
(Points)

Station	Number of Months	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Araluen (Computed to 1965)	1	5	5	4	14	0	0	0	3	3	8	0	6
	2	41	36	27	22	29	15	23	35	52	41	37	61
	3	105	135	53	101	105	90	58	105	109	186	129	126
	4	179	148	159	176	187	209	123	141	216	207	154	154
	5	192	298	232	259	346	335	321	248	237	387	305	362
	6	346	408	270	379	559	396	426	269	453	553	472	375
	7	452	457	390	630	581	622	481	534	624	784	485	529
	8	501	784	674	352	726	820	643	860	898	797	639	635
	9	828	987	708	797	912	949	1130	1125	911	951	745	684
	10	1445	1009	853	1009	1161	1316	1428	1229	1065	1057	794	1011
	11	1571	1154	1065	1359	1474	1428	1461	1486	1171	1106	1121	1542
	12	1748	1366	1415	1559	1518	1813	1615	1592	1220	1433	1758	1733
Batemans Bay (Computed to 1964)	1	14	14	19	12	2	0	0	0	21	16	2	15
	2	92	80	56	15	105	43	22	77	64	71	93	104
	3	223	205	82	139	199	83	96	123	119	280	233	163
	4	270	373	179	251	211	258	149	231	330	386	252	338
	5	438	518	291	265	294	432	328	388	414	456	363	617
	6	626	779	305	328	583	523	435	494	608	623	733	755
	7	1037	958	368	617	761	730	539	655	726	891	871	846
	8	1162	1222	657	795	999	1043	889	1009	1142	1029	962	1281
	9	1526	1356	835	1033	1321	1242	1232	1369	1280	1120	1393	1293
	10	1646	1558	1073	1375	1420	1571	1706	1547	1371	1713	1549	1631
	11	1762	1912	1415	1780	1837	2065	1843	1760	1766	1773	1693	1777
	12	2034	2073	1919	2185	2378	2073	2028	1821	1826	1806	2029	1893

MINIMUM RAINFALL RECORDED IN CONSECUTIVE PERIODS OF UP TO TWELVE MONTHS
COMMENCING IN THE MONTH INDICATED
(Pōints)
Computed to 1964

Station	Number of Months	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Braidwood	1	3	0	17	10	7	2	3	9	17	20	5	26
	2	51	44	51	41	65	12	43	46	78	71	38	52
	3	187	161	95	123	81	118	126	170	166	239	99	167
	4	322	193	155	126	202	147	209	230	285	267	172	220
	5	347	274	171	249	318	272	321	368	313	414	225	379
	6	439	332	266	365	460	331	487	396	466	467	430	400
	7	632	463	382	505	476	497	554	677	519	629	437	479
	8	816	607	550	521	642	749	745	887	815	661	644	702
	9	939	711	566	687	818	951	1018	921	822	943	867	856
	10	1211	727	732	863	1114	1248	1172	928	1045	1166	1021	979
	11	1298	893	908	1213	1378	1368	1228	1196	1268	1320	1144	1251
	12	1547	1069	1258	1423	1437	1621	1496	1526	1422	1443	1416	1338
Jervis Bay	1	15	19	42	3	23	21	14	19	45	34	15	0
	2	111	61	111	26	142	155	33	138	139	75	149	23
	3	154	372	134	193	325	450	180	252	240	274	187	236
	4	465	530	301	503	581	777	391	487	435	289	388	278
	5	602	697	892	824	901	835	709	644	503	559	490	589
	6	769	1083	1155	1144	983	1104	772	689	650	812	801	745
	7	1211	1174	1495	1226	1197	1293	935	822	1060	1123	914	912
	8	1267	1514	1540	1440	1463	1552	1176	1232	1373	1475	1081	1335
	9	1607	1559	1809	1641	1664	1793	1331	1698	1717	1685	1547	1391
	10	1652	1828	2192	2037	1905	1936	1971	1947	1884	1869	1603	1731
	11	1921	2211	2389	2278	2060	2247	2240	2114	2119	1925	1943	1776
	12	2304	2734	2630	2433	2443	2599	2589	2500	2175	2265	1988	2045

MEDIAN RAINFALL RECORDED IN CONSECUTIVE PERIODS OF UP TO TWELVE MONTHS COMMENCING IN THE MONTH INDICATED
(Points)

Station	Number of Months	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec
Araluen (Computed to 1965)	1	270	287	221	164	134	197	116	115	144	214	174	235
	2	576	561	547	386	448	476	349	329	410	388	397	550
	3	928	834	809	698	720	723	508	545	599	685	749	906
	4	1275	1182	1079	1026	958	944	868	821	885	1058	1126	1199
	5	1603	1519	1289	1264	1267	1253	1044	1140	1220	1393	1447	1518
	6	1775	1804	1692	1524	1486	1435	1357	1502	1633	1738	1744	1850
	7	1995	2020	1865	1692	1651	1675	1795	1873	1984	2034	2036	2114
	8	2186	2239	2075	1891	2052	2102	2154	2159	2237	2283	2257	2370
	9	2370	2435	2204	2214	2466	2488	2413	2465	2508	2524	2541	2531
	10	2687	2665	2505	2665	2801	2847	2614	2682	2739	2902	2807	2675
	11	2943	2980	2907	3038	3082	3089	2960	2960	3131	3185	2894	2961
	12	3203	3459	3318	3348	3374	3386	3196	3225	3358	3279	3173	3139
Batemans Bay (Computed to 1964	1	279	270	265	207	213	302	147	127	165	221	222	239
	2	612	633	684	551	587	611	442	394	421	430	502	568
	3	1101	1022	1086	951	939	832	726	617	679	792	820	1008
	4	1451	1339	1353	1197	1126	1067	955	976	1038	1079	1246	1400
	5	1715	1675	1598	1526	1367	1364	1205	1255	1321	1469	1579	1802
	6	2158	1989	1855	1673	1624	1632	1486	1556	1780	1948	2006	2144
	7	2432	2135	2183	1930	1856	1981	1975	2077	2245	2254	2377	2448
	8	2734	2433	2360	2108	2252	2334	2313	2455	2480	2683	2746	2858
	9	2922	2610	2617	2503	2572	2623	2791	2770	3011	2989	3113	3092
	10	3082	3067	2863	2938	3217	3165	3170	3196	3266	3400	3396	3307
	11	3372	3258	3317	3545	3520	3453	3424	3508	3621	3641	3617	3532
	12	3685	3667	3821	3820	3809	3739	3700	3769	3830	3814	3812	3746

MEDIAN RAINFALL RECORDED IN CONSECUTIVE PERIODS OF UP TO TWELVE MONTHS
COMMENCING IN THE MONTH INDICATED
(Points)
Computed to 1964

Station	Number of Months	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Braidwood	1	219	213	184	142	129	224	149	132	146	191	164	220
	2	512	471	390	363	382	411	371	298	369	378	428	450
	3	747	696	623	585	623	577	540	526	568	635	671	800
	4	929	913	877	809	828	744	739	756	782	861	941	998
	5	1219	1103	1050	1005	1058	975	974	1068	1071	1178	1215	1186
	6	1348	1340	1207	1177	1225	1184	1244	1294	1305	1404	1414	1472
	7	1569	1483	1398	1364	1363	1487	1485	1532	1629	1624	1674	1654
	8	1803	1761	1664	1564	1687	1707	1746	1793	1797	1954	1833	1839
	9	1979	1880	1776	1884	1973	1966	2014	2015	2176	2101	2070	2050
	10	2185	2081	2080	2178	2235	2282	2141	2279	2324	2346	2228	2289
	11	2424	2509	2497	2397	2449	2425	2428	2498	2573	2572	2419	2504
	12	2663	2773	2638	2639	2643	2630	2624	2673	2744	2710	2700	2689
Jervis Bay	1	314	241	379	373	343	388	333	252	283	257	241	327
	2	599	697	807	841	844	828	697	595	544	529	628	651
	3	1072	1111	1294	1377	1351	1118	898	867	789	884	905	1016
	4	1502	1620	1750	1842	1680	1455	1278	1165	1115	1215	1276	1395
	5	2063	2089	2226	2222	1997	1722	1515	1414	1475	1548	1690	1871
	6	2423	2537	2578	2529	2339	1975	1891	1788	1877	1908	2059	2434
	7	2912	2892	2800	2825	2534	2310	2302	2190	2185	2310	2669	2828
	8	3195	3202	3152	3005	2803	2708	2720	2618	2633	2960	3039	3368
	9	3585	3460	3383	3337	3254	3180	3222	3046	3235	3398	3587	3608
	10	3950	3842	3853	3749	3816	3617	3668	3678	3699	3905	3890	3905
	11	4249	4253	4160	4163	4279	4035	4202	4129	4052	4098	4211	4352
	12	4645	4573	4567	4600	4587	4556	4590	4469	4406	4451	4530	4638

CLYDE RIVER AT BROOMAN

LOCATION:	Latitude 35°28' Longitude 150°14'
PERIOD OF ESTABLISHMENT:	July 1960 to date.
COMPLETE YEARS OF COMPUTED RECORDS:	7 years.
ZERO OF GAUGE:	R.L. 61.46 Assumed Datum.
CATCHMENT AREA:	340 square miles.
CONTROL:	Gravel.
EQUIPMENT:	Staff Gauge, range 0 to 40 feet.
CURRENT METER OBSERVATIONS:	(a) Number obtained : 58
	(b) Maximum observation in cusecs : 2,523
	(c) Minimum observation in cusecs : 3.4
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	142,000 cusecs.
MEAN DAILY DISCHARGE FOR 7 YEARS:	858 cusecs.
MEAN ANNUAL DISCHARGE FOR 7 YEARS:	626,000 acre feet.

CLYDE RIVER AT BROOMAN

Year 1960

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	..	..	..	..
Feb.	..	..	..	..
Mar.	..	..	..	..
Apr.	..	..	..	..
May	..	..	..	..
June	..	..	..	..
July	27000	58	2237	138,704
Aug.	700	72	165	10,260
Sept.	1730	58	505	30,308
Oct.	248	53	121	7,508
Nov.	116	58	800	4,800
Dec.	2050	64	1767	109,578
Total	..	..	..	..

Year 1961

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	330	82	139	8,596
Feb.	150	90	119	6,660
Mar.	72000	90	8476	416,760
Apr.	3200	182	504	30,230
May	230	100	140	8,706
June	395	91	148	8,858
July	1980	108	679	42,108
Aug.	11350	176	3363	208,528
Sept.	3800	228	898	53,894
Oct.	15000	152	2451	151,968
Nov.	142000	141	1038	422,900
Dec.	20000	600	4365	270,610
Total	..	..	..	1,629,818

Year 1962

Jan.	3875	460	1489	92,310
Feb.	20000	320	1919	107,460
Mar.	1830	132	487	30,202
Apr.	980	170	449	26,946
May	8850	165	2365	146,610
June	760	91	276	16,586
July	1010	91	317	19,664
Aug.	1490	91	271	16,814
Sept.	22000	83	1883	116,764
Oct.	330	108	215	13,310
Nov.	350	99	157	9,446
Dec.	4500	99	954	59,136
Total	..	..	..	655,248

Year 1963

Jan.	410	136	240	14,874
Feb.	580	258	378	21,164
Mar.	32500	222	2850	176,716
Apr.	124000	300	3378	91,960
May	67000	765	4494	201,050
June	13800	191	2311	138,676
July	8570	155	1838	113,966
Aug.	162	76	104	6,424
Sept.	25000	155	2569	154,130
Oct.	2740	178	509	31,528
Nov.	190	172	181	10,848
Dec.	20000	230	1155	71,584
Total	..	..	..	1,032,920

CLYDE RIVER AT BROOMAN

Year 1964

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	286	81	162	10,062
Feb.	78	52	65	3,744
Mar.	1580	52	164	10,172
Apr.	13250	53	1107	66,414
May	555	71	142	8,812
June	43000	71	4411	269,788
July	234	121	169	10,484
Aug.	400	102	157	9,724
Sept.	335	56	95	5,680
Oct.	108	69	70	4,356
Nov.	600	69	209	12,554
Dec.	230	69	89	5,536
Total	..	..	..	417,326

Year 1965

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	76	30	51	3,188
Feb.	30	14	19	1,086
Mar.	14	8	10	605
Apr.	4	4	4	240
May	9	4	6	374
June	58	3	10	614
July	750	11	92	5,708
Aug.	22	5	13	806
Sept.	47	7	22	1,306
Oct.	19000	3	1877	116,368
Nov.	615	22	131	7,836
Dec.	1240	130	481	29,848
Total	..	..	..	167,979

Year 1966

Jan.	130	9	43	2,692
Feb.	565	5	90	5,048
Mar.	128	32	64	3,974
Apr.	25	15	20	1,200
May	15	10	12	770
June	4700	7	538	32,252
July	110	29	46	2,856
Aug.	29	11	22	1,362
Sept.	241	9	60	3,626
Oct.	250	16	48	2,984
Nov,	52000	135	3329	199,766
Dec.	2110	95	424	26,312
Total	..	..	..	282,842

Year 1967

Jan.	1000	47	146	9,048
Feb.	740	64	152	8,494
Mar.	905	95	234	14,534
Apr.	184	45	101	6,054
May	72	32	45	2,762
June	1,520	26	411	24,656
July	660	66	154	9,550
Aug.	7,775	72	520	32,224
Sept.	23,000	48	1,208	74,920
Oct.	400	62	148	9,180
Nov.	136	25	65	3,882
Dec.	36	6	19	1,202
Total	..	..	..	196,508

CLYDE RIVER AT BROOMAN

Year 1968.

Month	Discharge in Cusecs			Discharge For Month Acre Feet
	Max.	Min.	Mean	
Jan.	90	4	31	1,946
Feb.	28	3	15	874
Mar.	14	0	4.5	274
Apr.	11	0.8	3.3	198
May	4,124	0	110	6,834
June	11	7	8	505
July	9.3	3.8	6.8	423
Aug.	9.6	4.0	6.7	419
Sept.	7.4	1.4	3.8	226
Oct.	1.3	0	0.4	26
Nov.	9.6	0.1	1.1	67
Dec.	184	0	37	2,308
Total				14,100

CURROWAN CREEK AT SHALLOW CROSSING

LOCATION:	Latitude 35°34' Longitude 150°10'
PERIOD OF ESTABLISHMENT:	July 1954 to June 1961
COMPLETE YEARS OF COMPUTED RECORDS:	4
ZERO OF GAUGE:	R.L. 77.22 Assumed Datum
CATCHMENT AREA:	80 square miles.
CONTROL:	Concrete Causeway
EQUIPMENT:	Staff Gauge, range 0 to 20 feet.
CURRENT METER OBSERVATIONS:	(a) Number obtained : 49
	(b) Maximum observation in cusecs : 478
	(c) Minimum observation in cusecs : 0
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	31,600 cusecs.
MEAN DAILY DISCHARGE FOR 4 YEARS:	159 cusecs.
MEAN ANNUAL DISCHARGE FOR 4 YEARS:	116,400 acre feet.

CURROWAN CREEK AT SHALLOW CROSSING

Year 1954

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge For Month Acre Feet
Jan.				
Feb.				
Mar.				
Apr.				
May				
June				
July	NO	RECORDS		
Aug.	1.6	0.3	0.5	32
Sept.	0.3	0.1	0.2	13
Oct.	0.4	0	0.1	4
Nov.	34	0.2	9	564
Dec.	2	0	0.4	26
Total				

Year 1955

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge For Month Acre Feet
Jan.	117	0	19	1150
Feb.	2400	20	155	8670
Mar.	730	34	212	13130
Apr.	2280	20	107	6416
May	4980	6	261	16166
June		NO	RECORDS	
July	24	13	18	1082
Aug.	13	13	13	806
Sept.	13	6	7	394
Oct.	6	6	6	372
Nov.	24	3.5	7	402
Dec		NO	RECORDS	
Total				

Year 1956

Jan.	13	6	7	428
Feb.	1780	1	468	27154
Mar.	1780	50	600	37206
Apr.	535	0.5	68	4066
May	14800	50	595	36896
June	9180	0.6	1479	88746
July	2120	34	357	22124
Aug.	34	9	17	1022
Sept.	9	0.6	3.4	208
Oct.	1520	0.6	115	7104
Nov.	15	9	11	652
Dec.	6	0.6	2.5	152
Total				225,776

Year 1957

Jan.				
Feb.				
Mar	NO	RECORDS		
Apr.				
May				
June				
July	4710	2	194	12024
Aug.	690	9	86	5338
Sept.	100	9	35	2102
Oct.	9	2	2	138
Nov.	20	0.4	2	120
Dec.	34	0	0.8	48
Total				

CURROWAN CREEK AT SHALLOW CROSSING

Year 1958

Month	Discharge in Cusecs			Discharge For Month Acre Feet
	Max.	Min.	Mean	
Jan.	422	0.5	16	968
Feb.	8300	20	309	17302
Mar.	422	9	72	4312
Apr.	20	9	14	848
May	9	2	4	250
June	8300	2	98	5850
July	8300	9	161	10008
Aug.	9	2	7	432
Sept.	9	2	4	260
Oct.	9	2	6	348
Nov.	2	0.5	1.5	89
Dec.	20	2	6	398
Total				41053

Year 1959

Month	Discharge in Cusecs			Discharge For Month Acre Feet
	Max.	Min.	Mean	
Jan.	169	2	35	2196
Feb.	572	9	43	2400
Mar.	3590	20	192	11884
Apr.	1200	34	127	7596
May	34	2	10	598
June	1280	9	98	5896
July	26200	20	461	28600
Aug.	72	9	22	1372
Sept.	20	2	9	542
Oct.	31600	2	1224	75860
Nov.	1520	93	263	15772
Dec.	119	34	60	3716
Total				156432

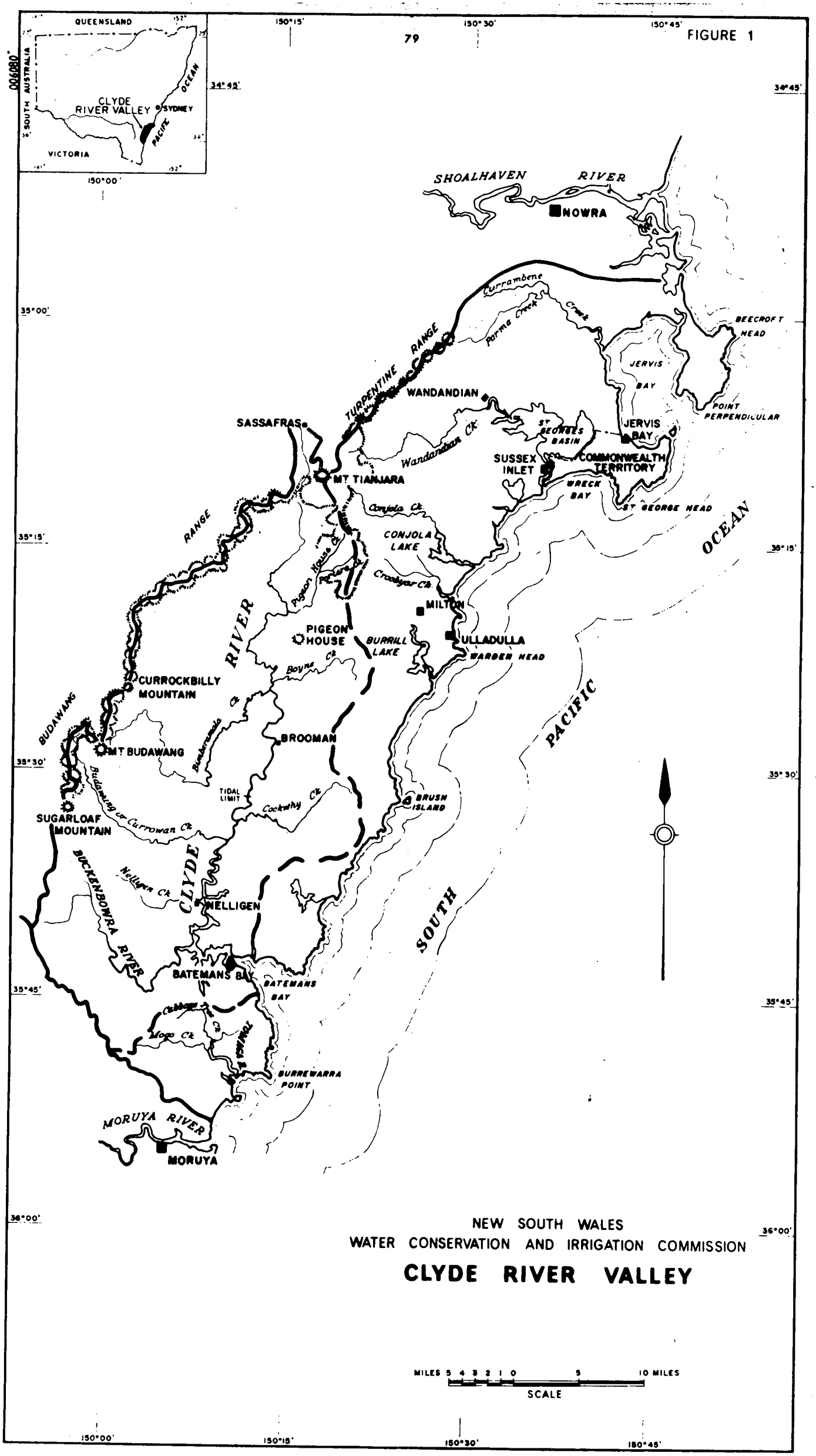
Year 1960

Jan.	34	9	19	1190
Feb.	18	3	9	534
Mar.	318	3	72	4482
Apr.	93	9	29	1726
May	51	3	12	718
June	9	9	9	540
July	5000	3	280	17368
Aug.	9	0.5	2.6	166
Sept.	215	0.5	40	2394
Oct.	51	9	20	1222
Nov.	19	9	11	680
Dec.	6500	9	184	11390
Total				42410

Year 1961

Jan.	311	9	44	2750
Feb.	19	9	14	784
Mar.	15300	19	577	35800
Apr.	158	19	57	3418
May	19	9	17	1058
June	645	9	70	4220
Total				

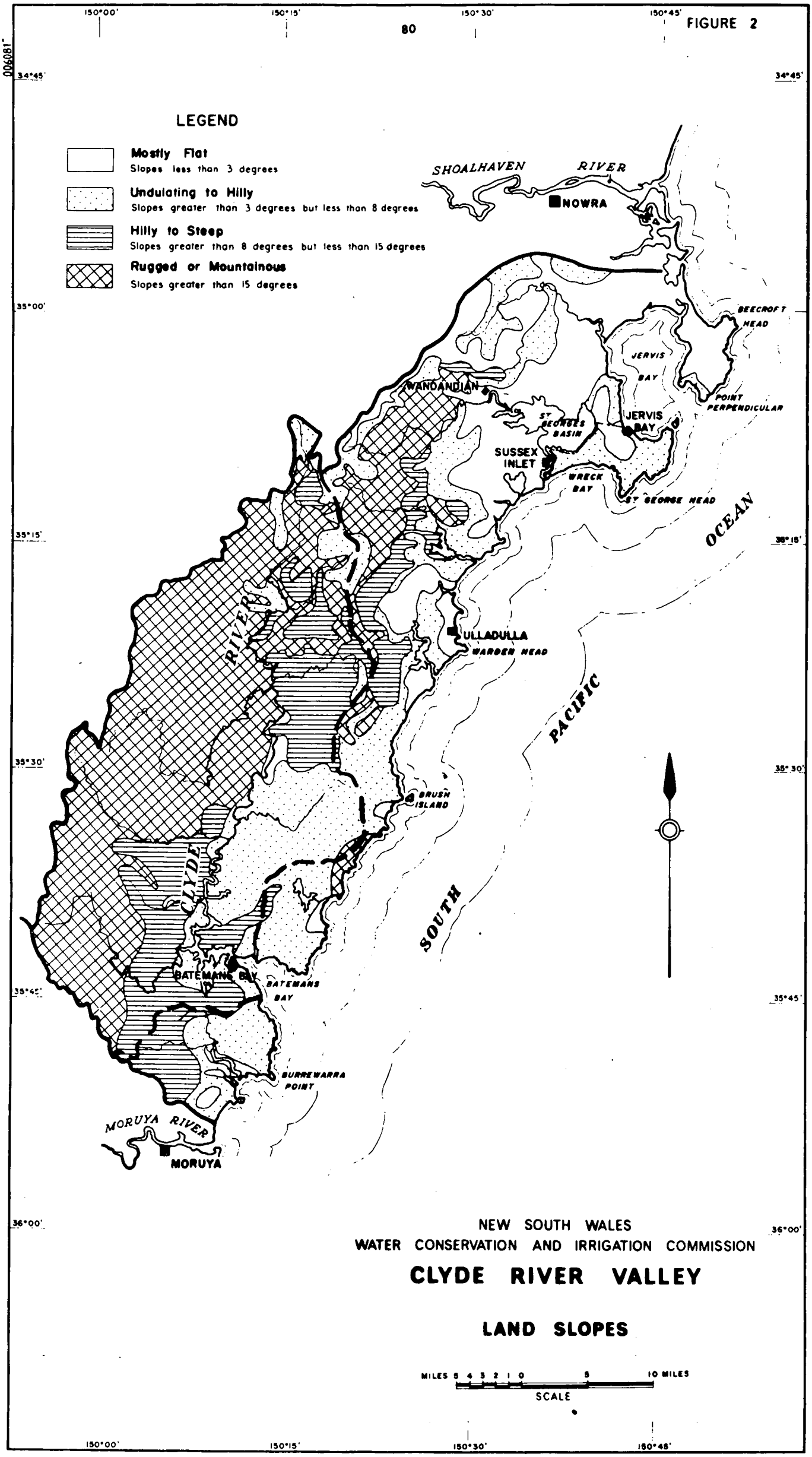
FIGURE 1



NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

CLYDE RIVER VALLEY

FIGURE 2

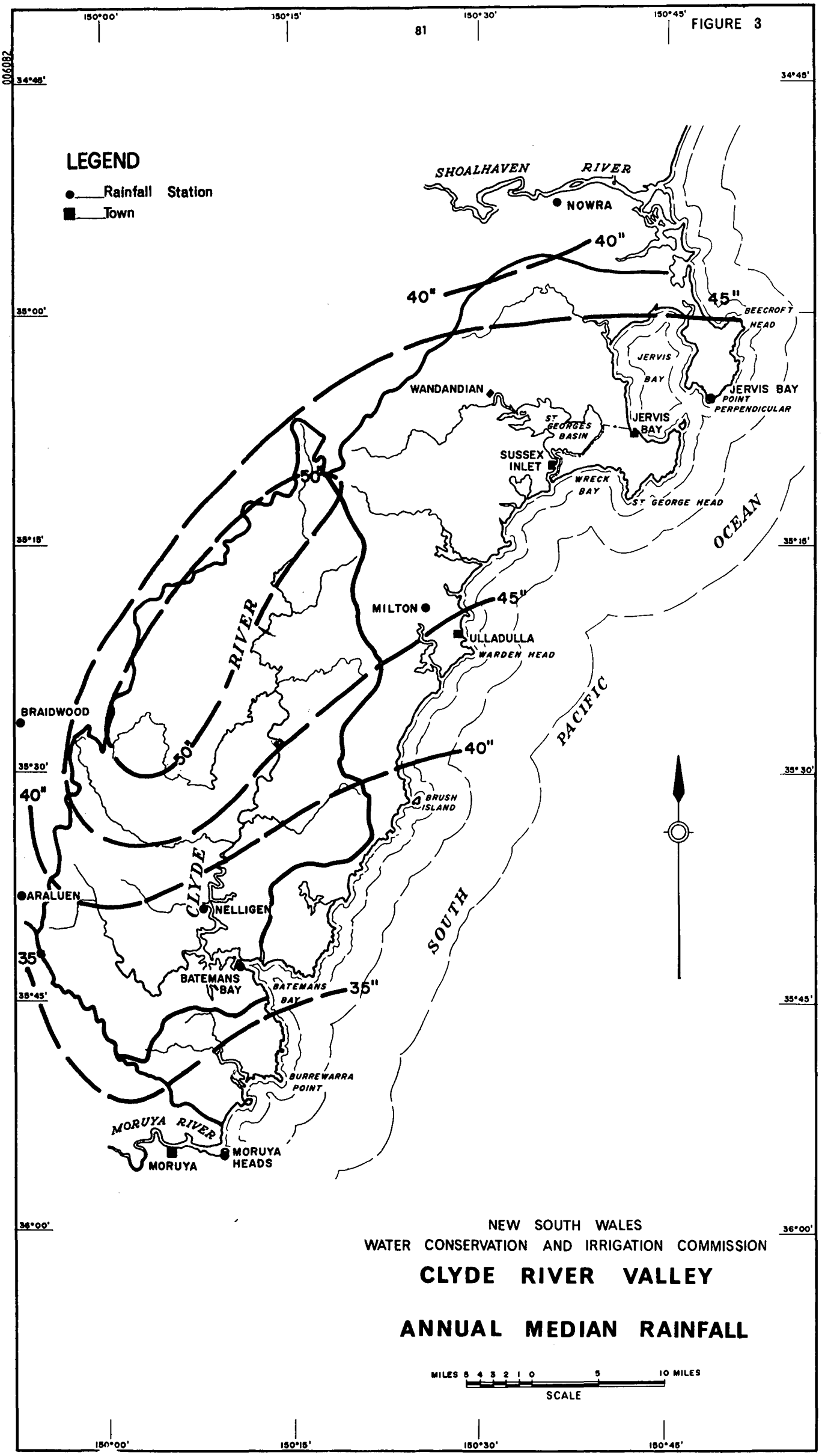


NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

CLYDE RIVER VALLEY

LAND SLOPES

FIGURE 3



NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

CLYDE RIVER VALLEY

ANNUAL MEDIAN RAINFALL

MILES 5 4 3 2 1 0 5 10 MILES
SCALE

FIGURE 4

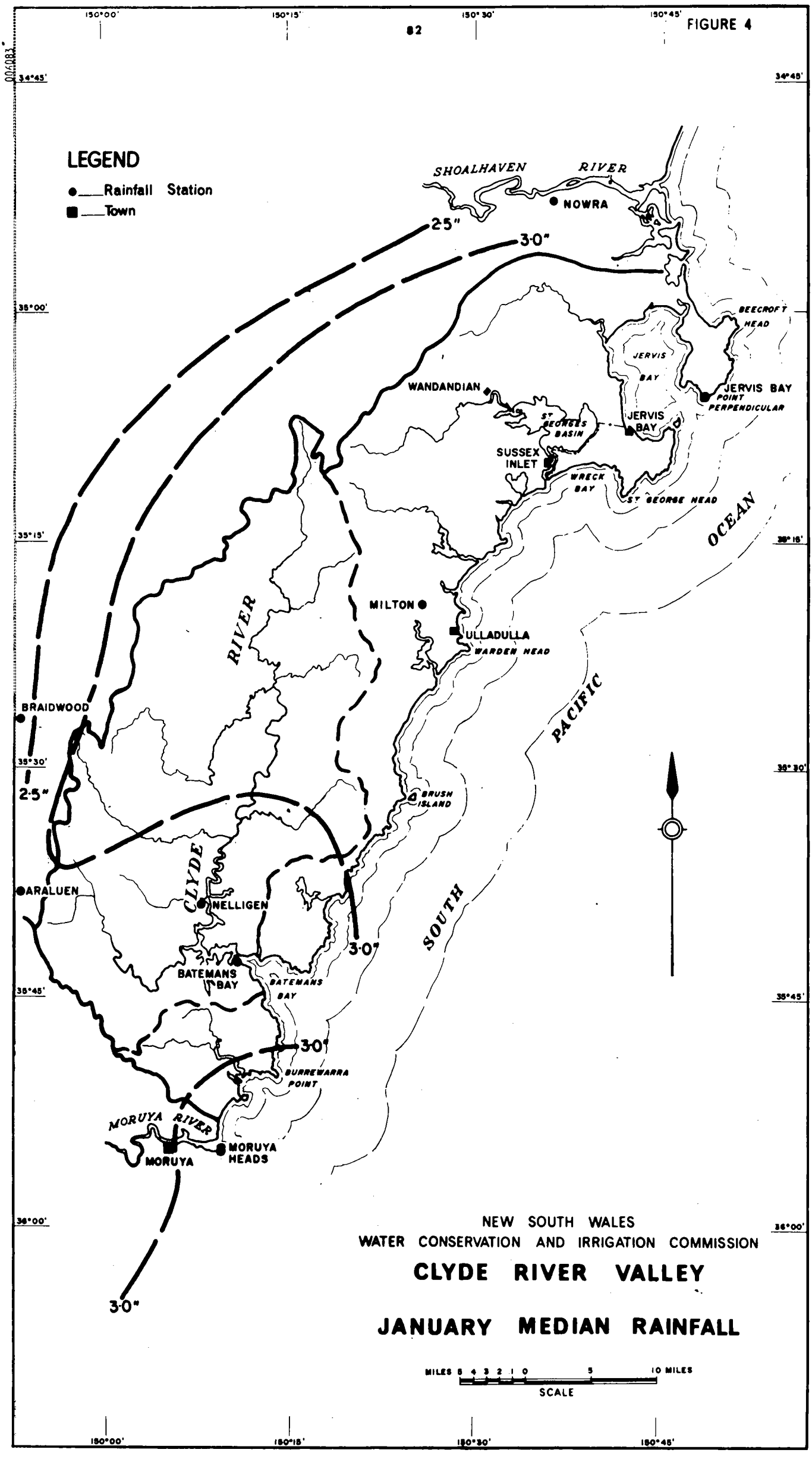
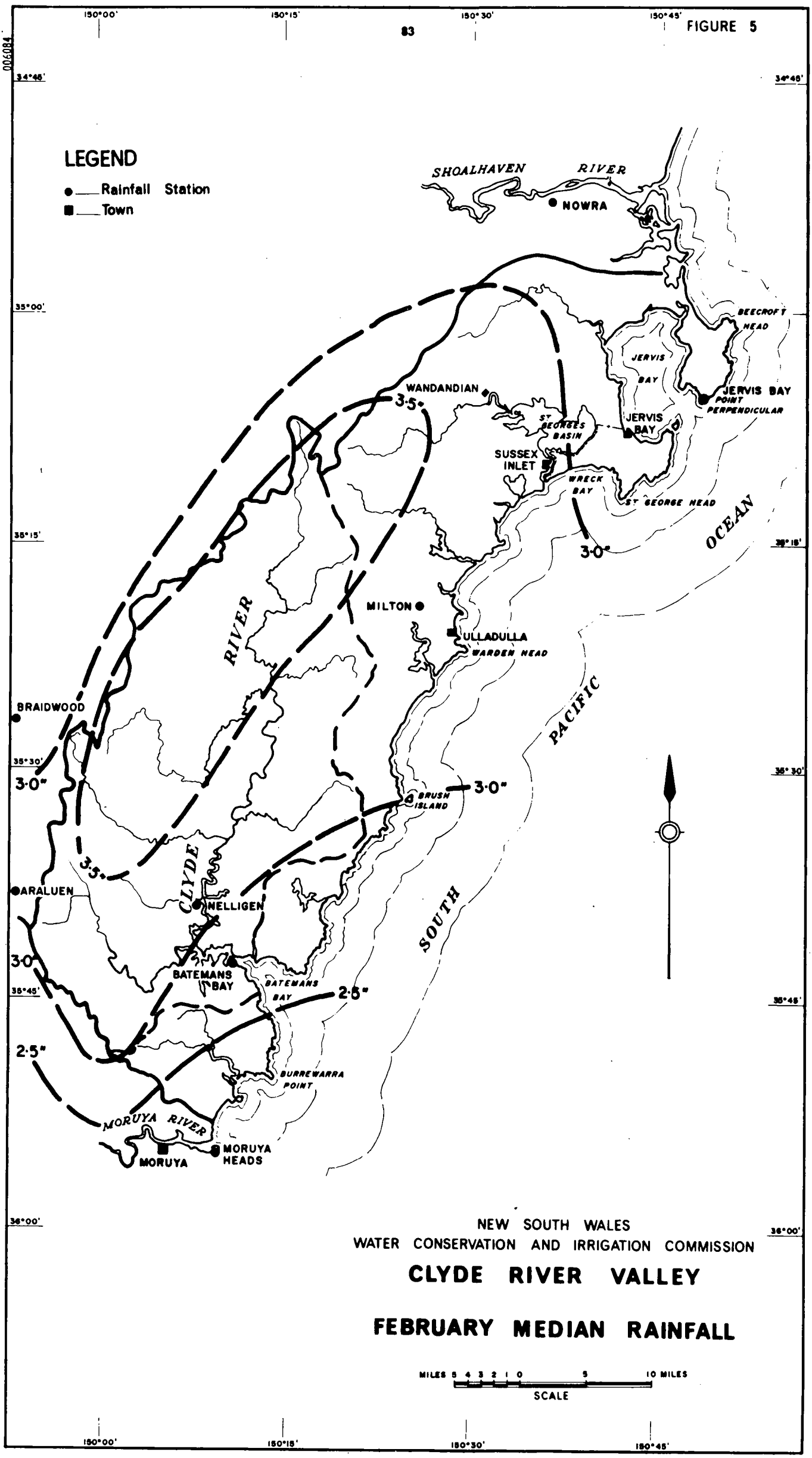

150°00'
150°15'
150°30'
150°45'
34°45'
35°00'
35°15'
35°30'
35°45'
36°00'
LEGEND
Rainfall Station
Town
SHOALHAVEN RIVER
NOWRA
2·5"
3·0"
BEECROFT HEAD
JERVIS BAY
JERVIS BAY
POINT PERPENDICULAR
WANDANDIAN
ST GEORGES BASIN
JERVIS BAY
SUSSEX INLET
WRECK BAY
ST GEORGE HEAD
OCEAN
MILTON
ULLADULLA
WARDEN HEAD
RIVER
PACIFIC
BRAIDWOOD
BRUSH ISLAND
ARALUEN
CLYDE
NELLIGEN
SOUTH
BATEMANS BAY
BATEMANS BAY
BURREWARRA POINT
MORUYA RIVER
MORUYA
MORUYA HEADS
NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION
CLYDE RIVER VALLEY
JANUARY MEDIAN RAINFALL
MILES 5 4 3 2 1 0 5 10 MILES
SCALE

FIGURE 5

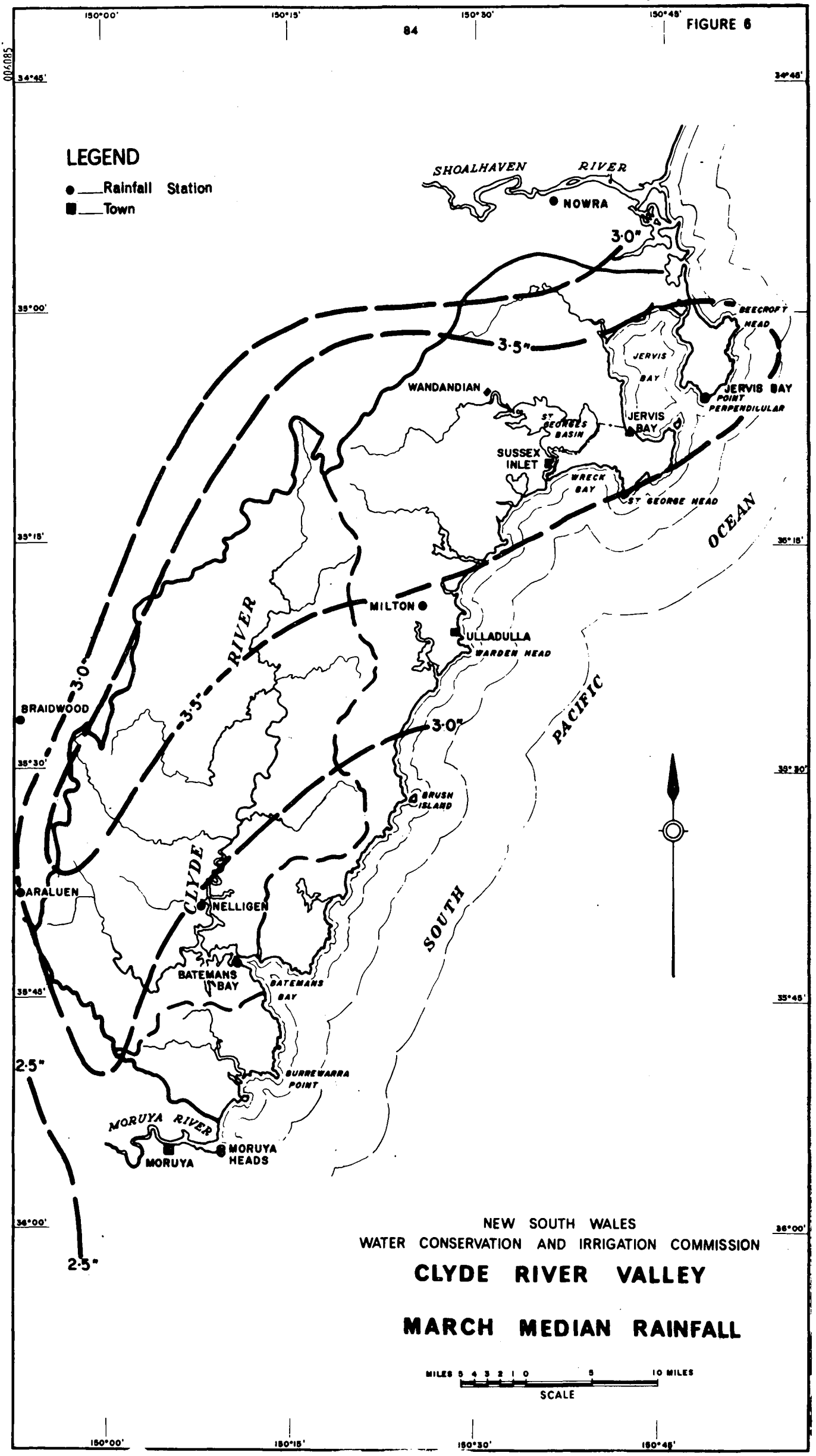


NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

CLYDE RIVER VALLEY

FEBRUARY MEDIAN RAINFALL

FIGURE 6

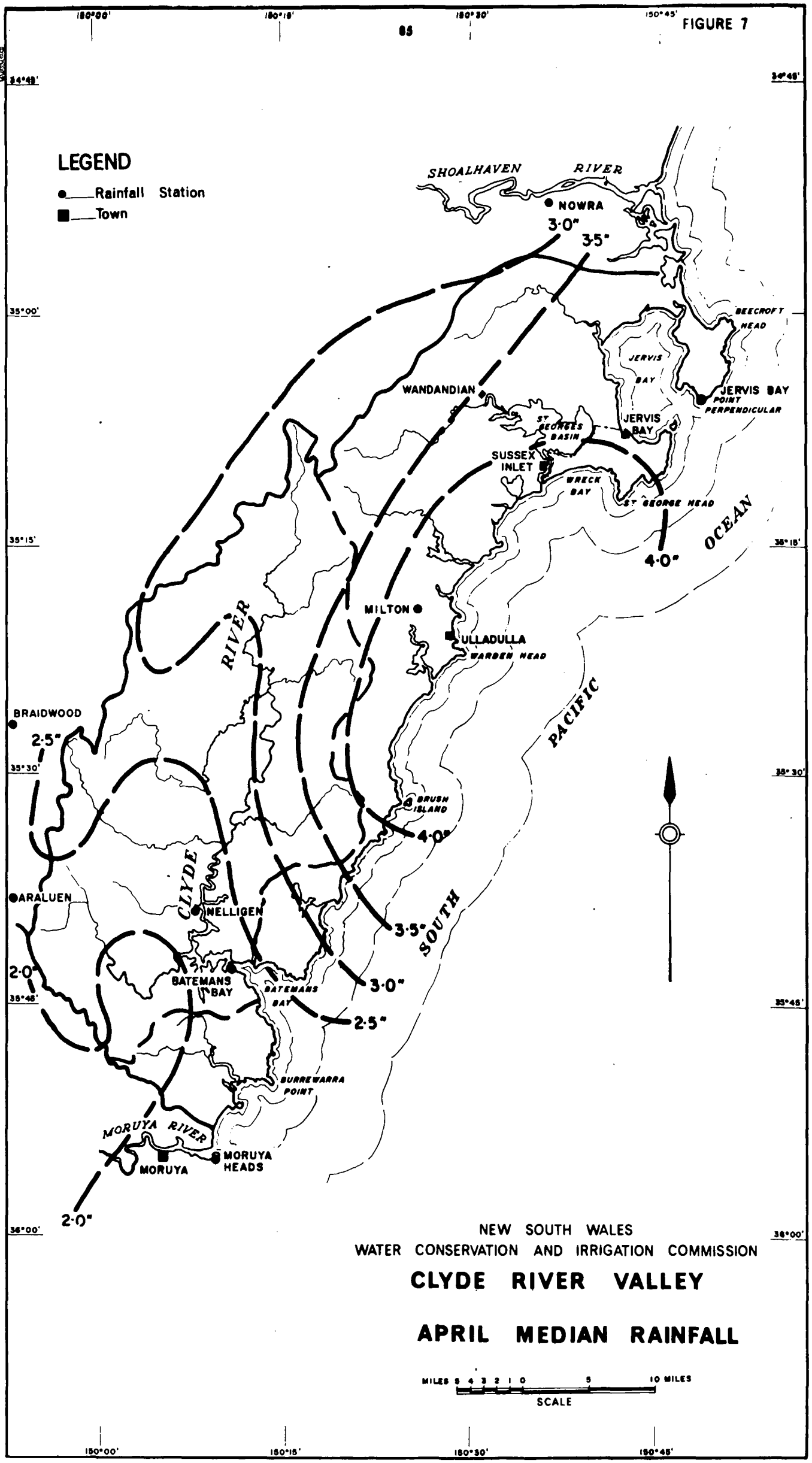


NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

CLYDE RIVER VALLEY

MARCH MEDIAN RAINFALL

FIGURE 7

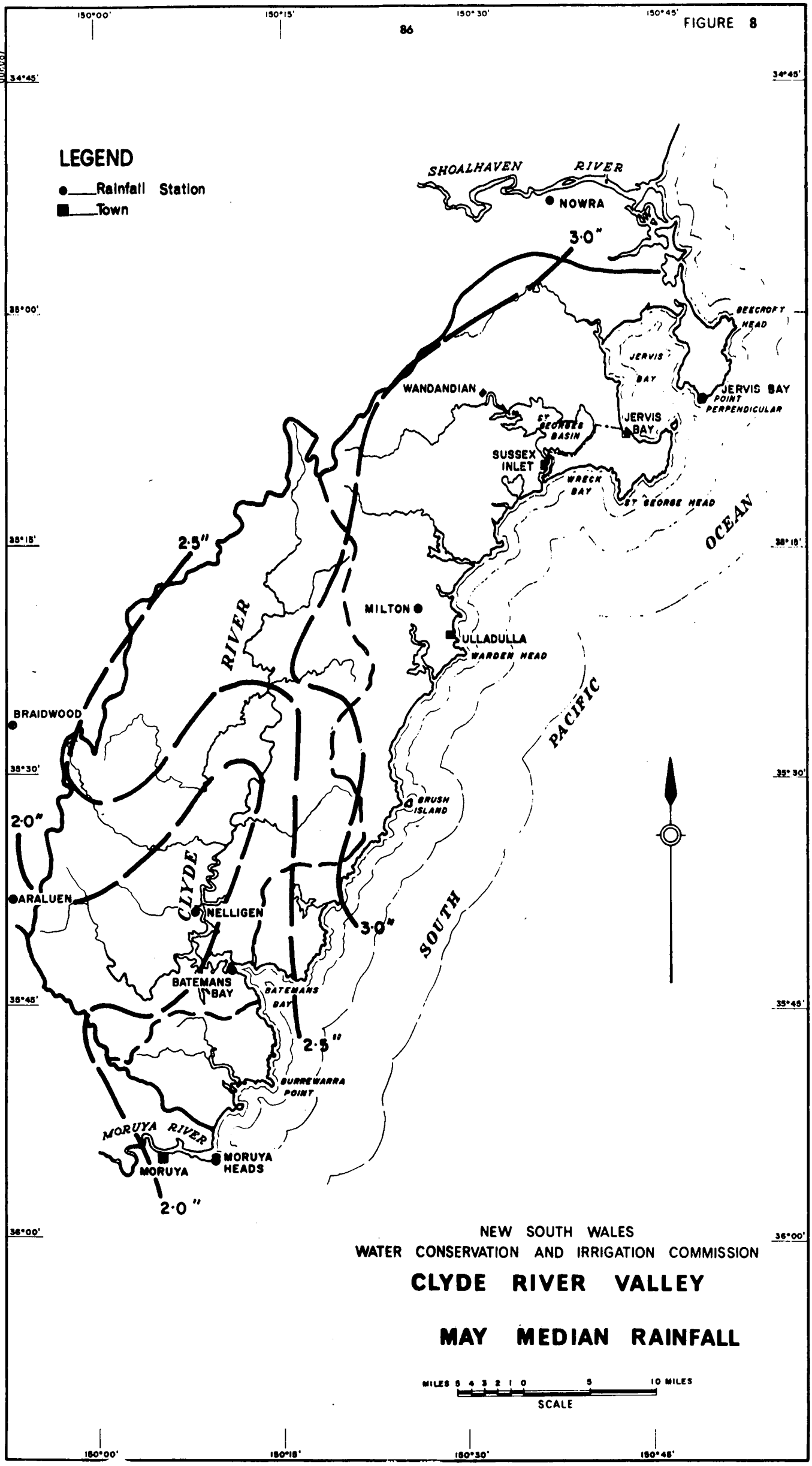


NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

CLYDE RIVER VALLEY

APRIL MEDIAN RAINFALL

FIGURE 8

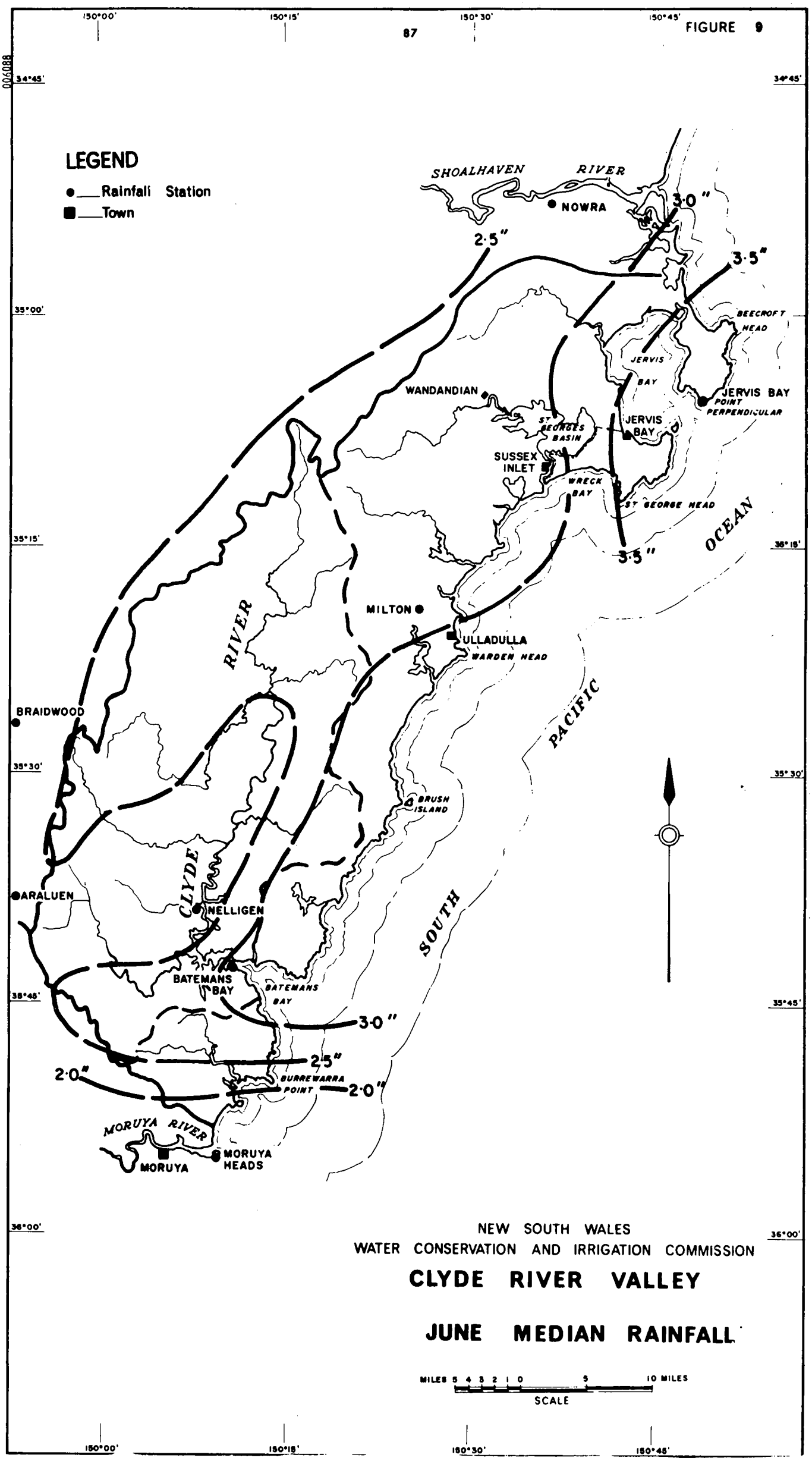


NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

CLYDE RIVER VALLEY

MAY MEDIAN RAINFALL

FIGURE 9

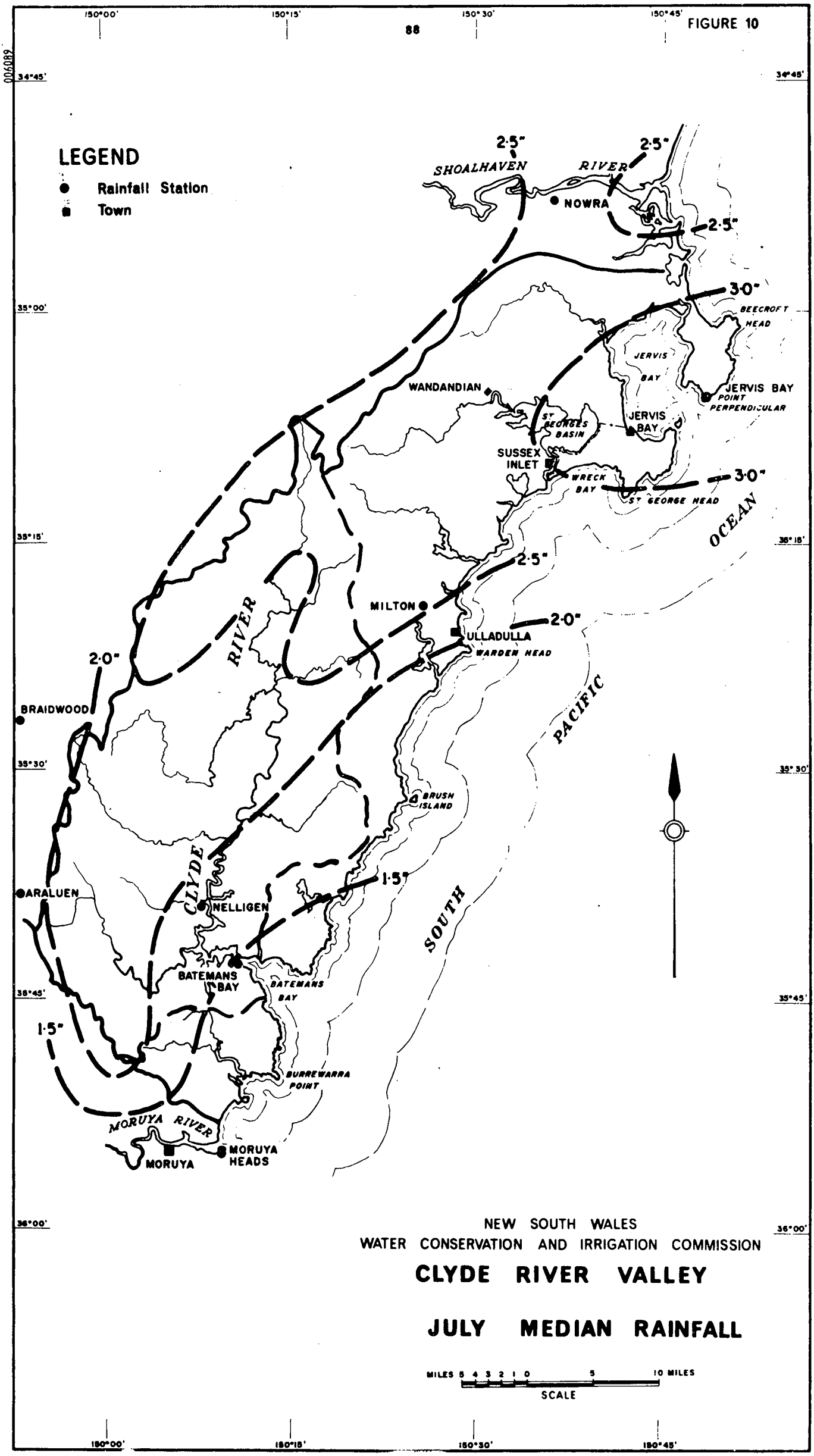


NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

CLYDE RIVER VALLEY

JUNE MEDIAN RAINFALL

FIGURE 10



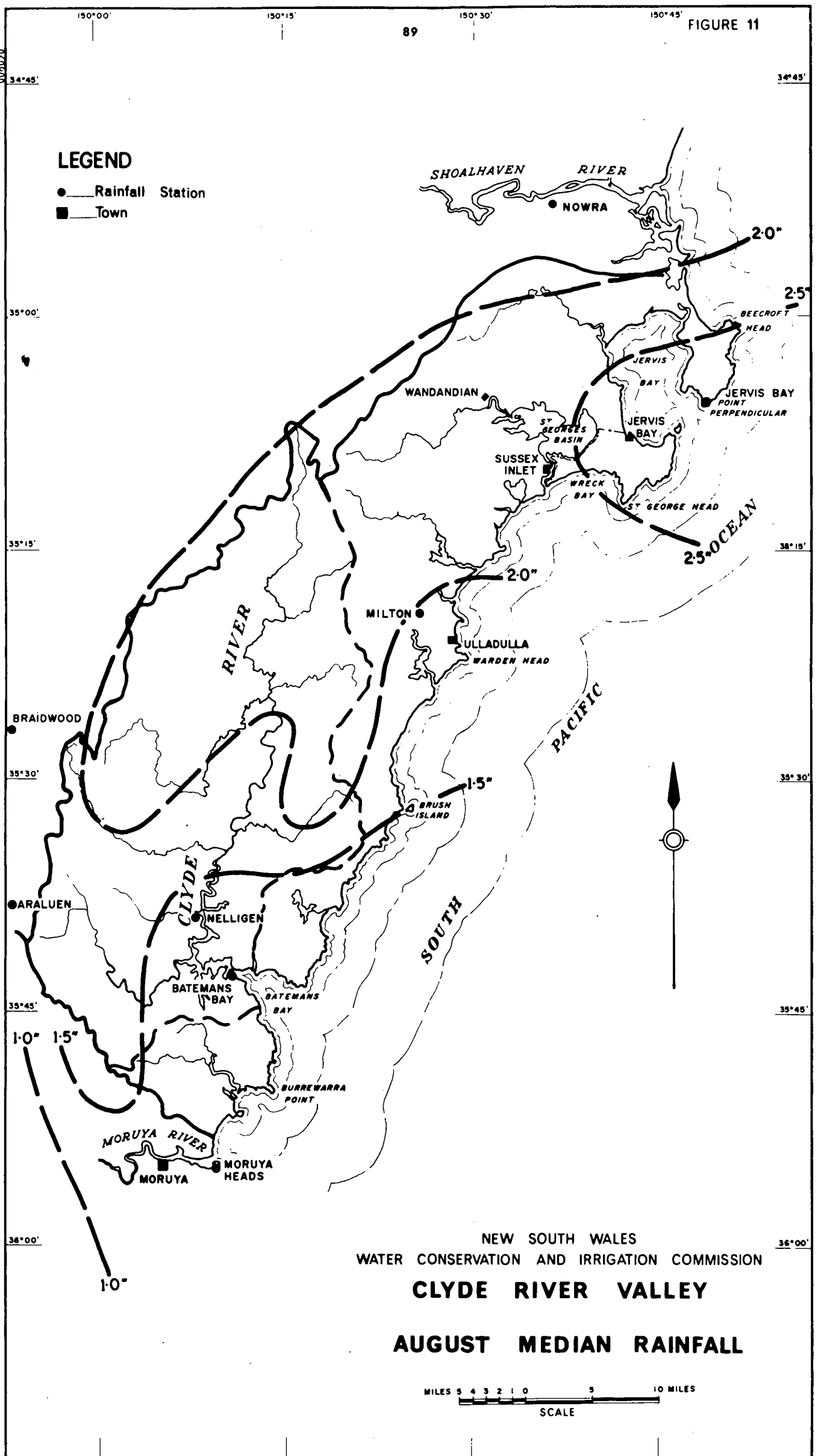
NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

CLYDE RIVER VALLEY

JULY MEDIAN RAINFALL

MILES 5 4 3 2 1 0 5 10 MILES
SCALE

FIGURE 11

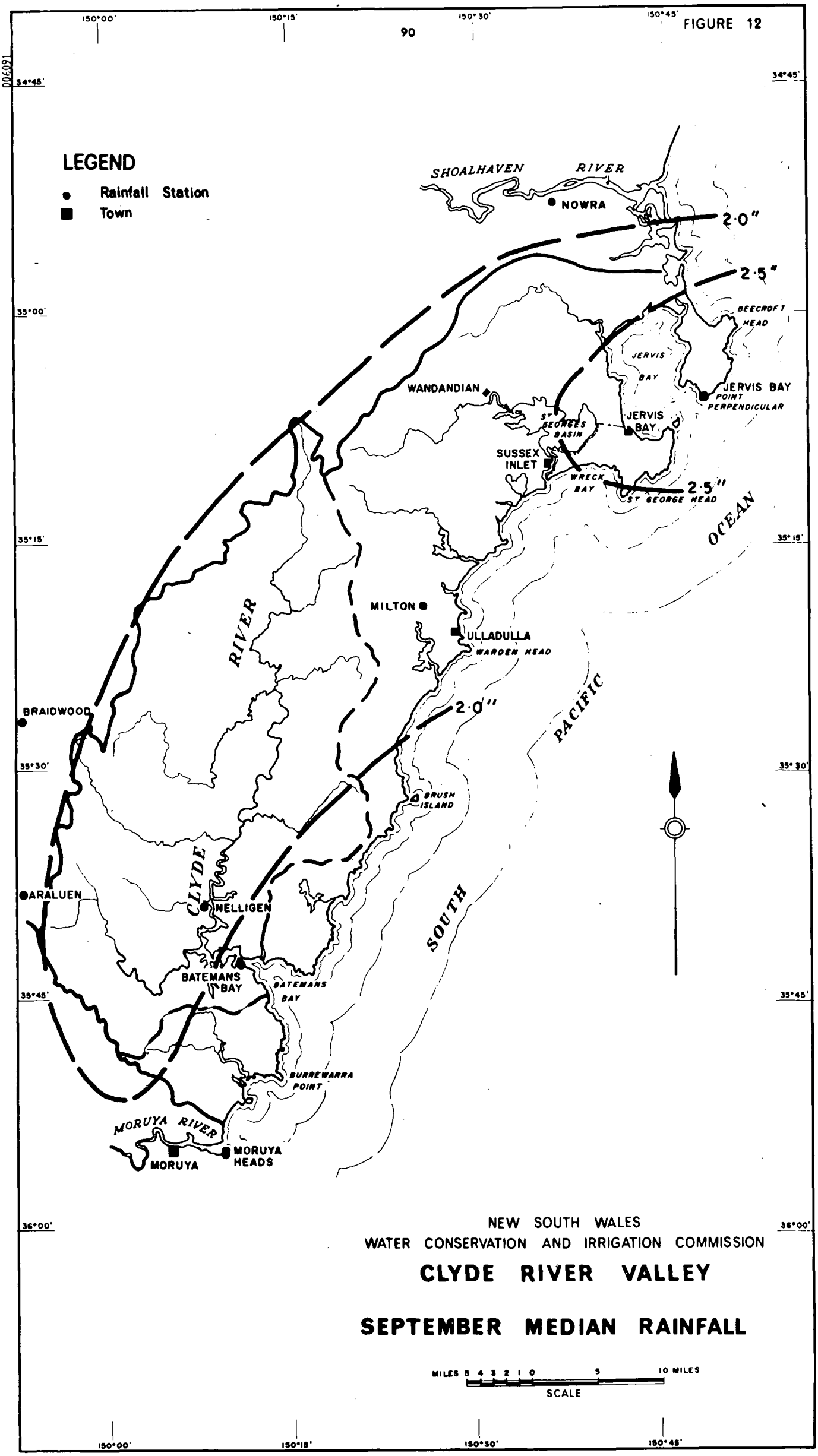


NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

CLYDE RIVER VALLEY

AUGUST MEDIAN RAINFALL

FIGURE 12

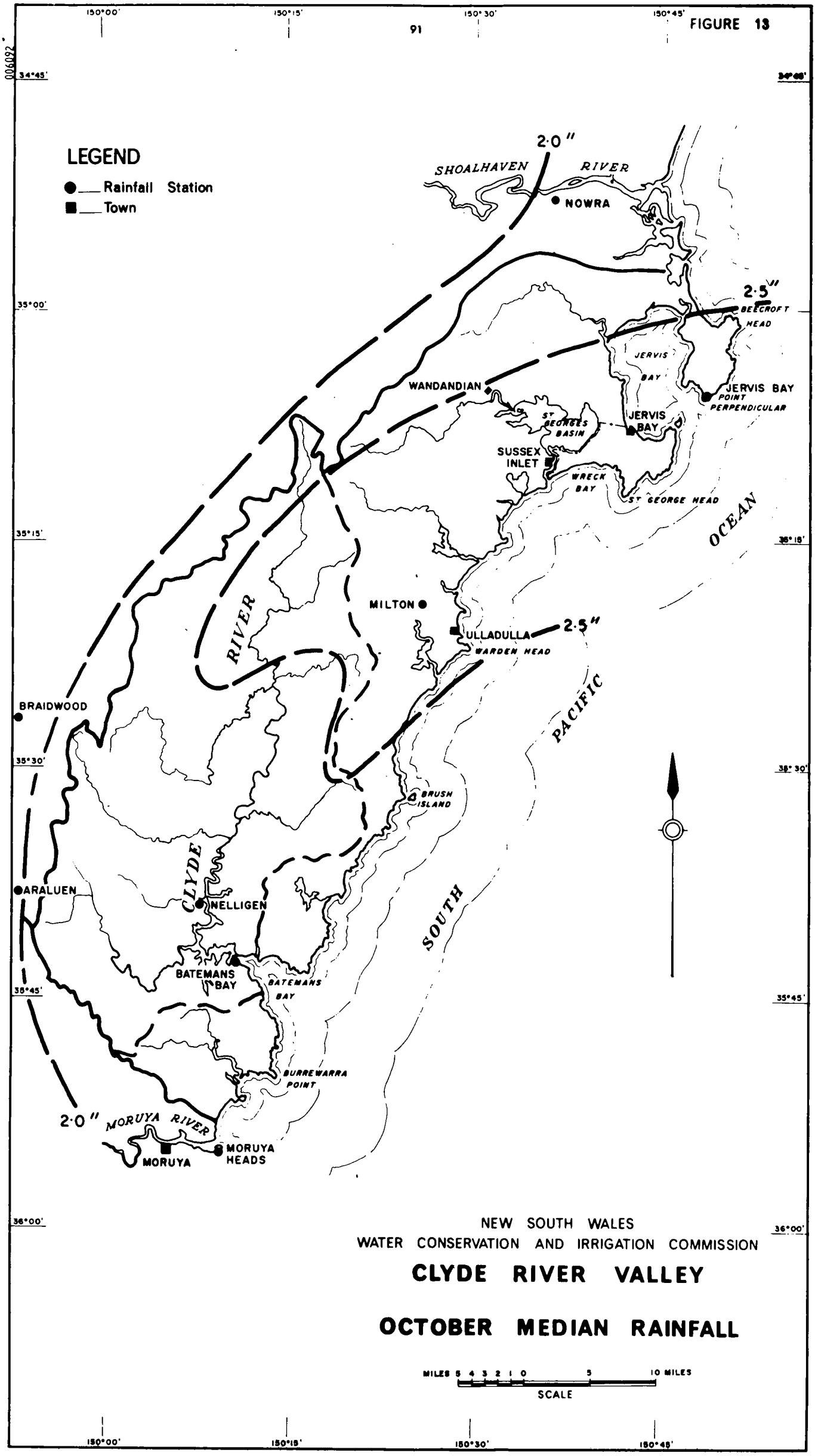


NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

CLYDE RIVER VALLEY

SEPTEMBER MEDIAN RAINFALL

FIGURE 13

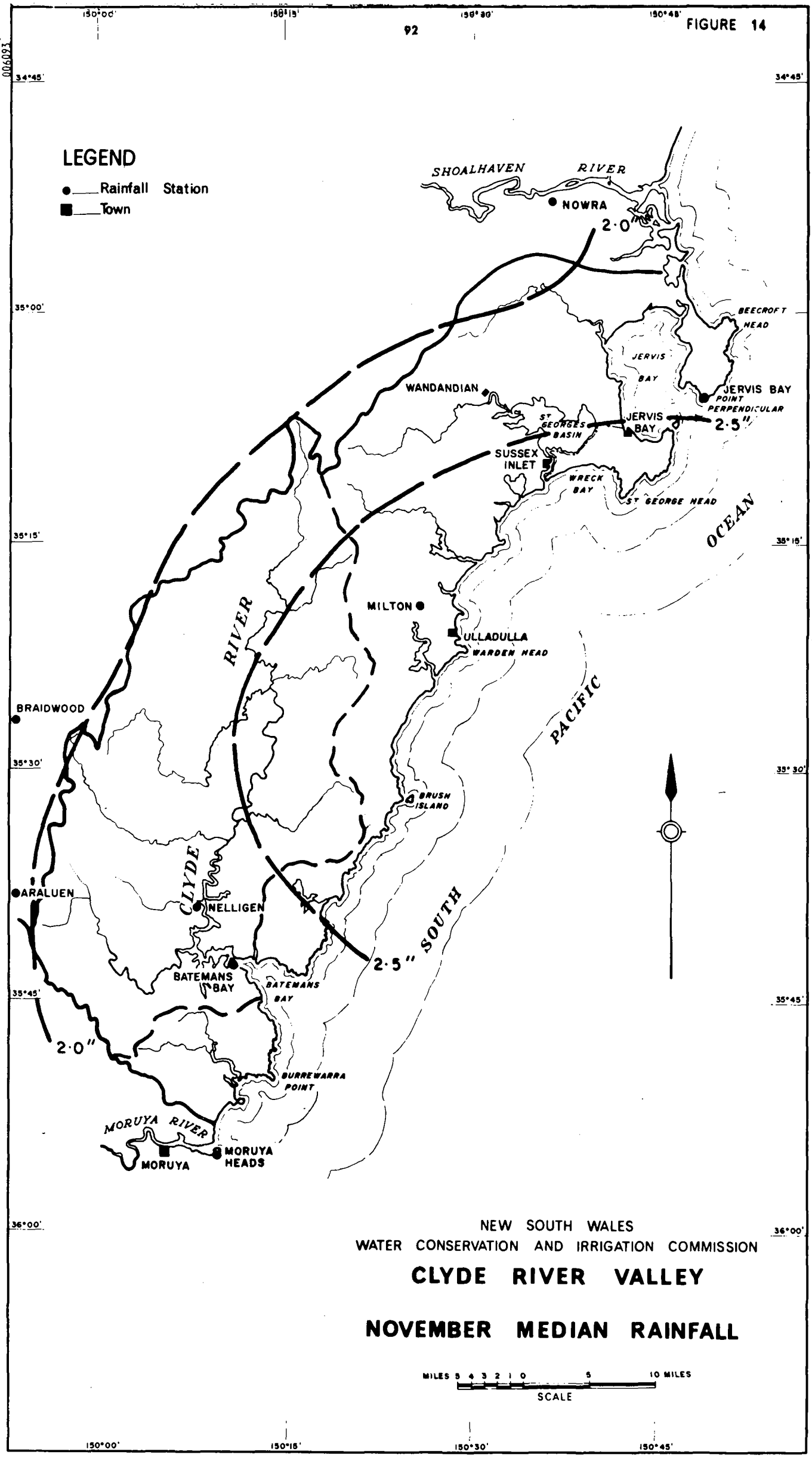


NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

CLYDE RIVER VALLEY

OCTOBER MEDIAN RAINFALL

FIGURE 14

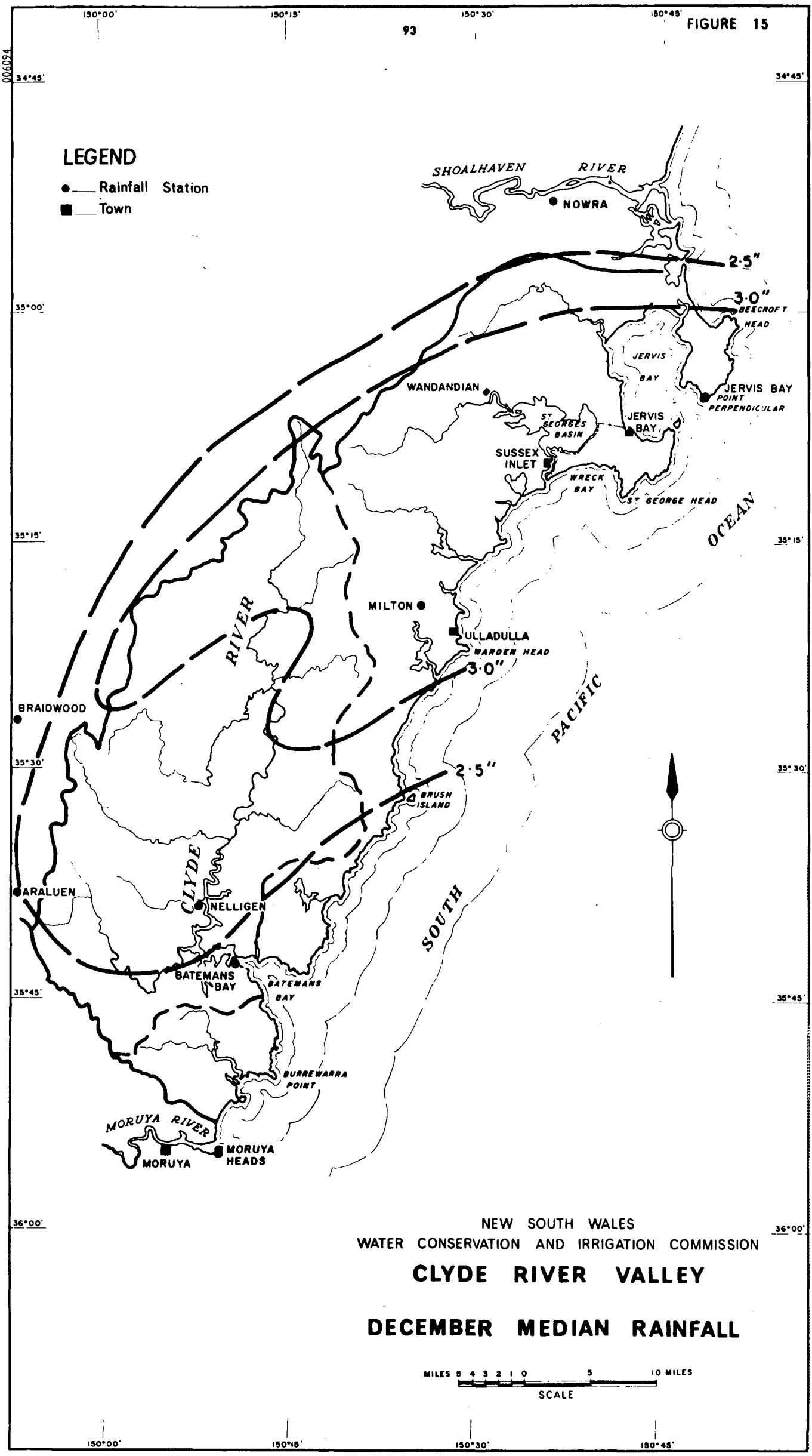


NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

CLYDE RIVER VALLEY

NOVEMBER MEDIAN RAINFALL

FIGURE 15



NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

CLYDE RIVER VALLEY

DECEMBER MEDIAN RAINFALL

NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

FIGURE 16

CLYDE RIVER VALLEY GEOLOGICAL FORMATIONS

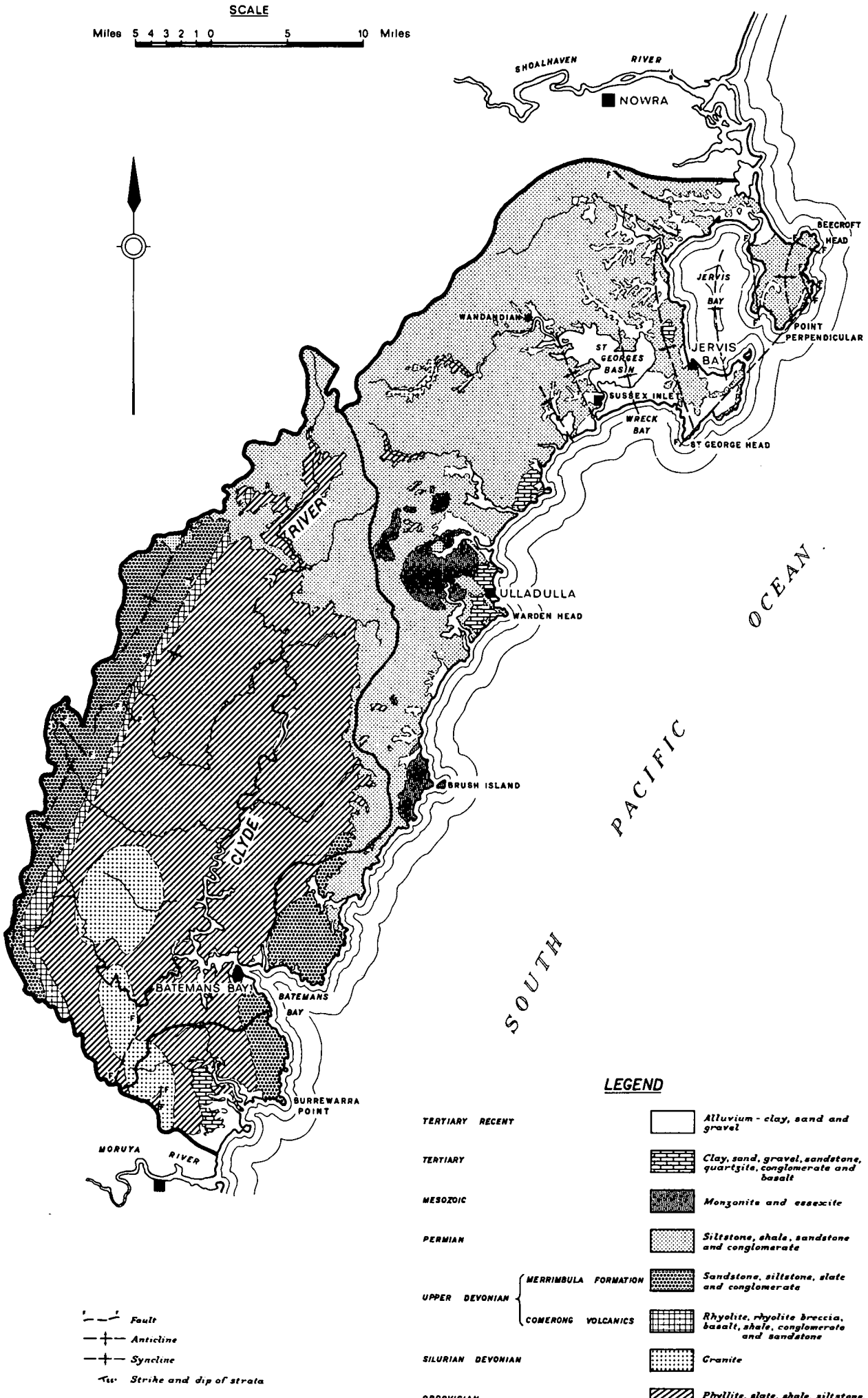
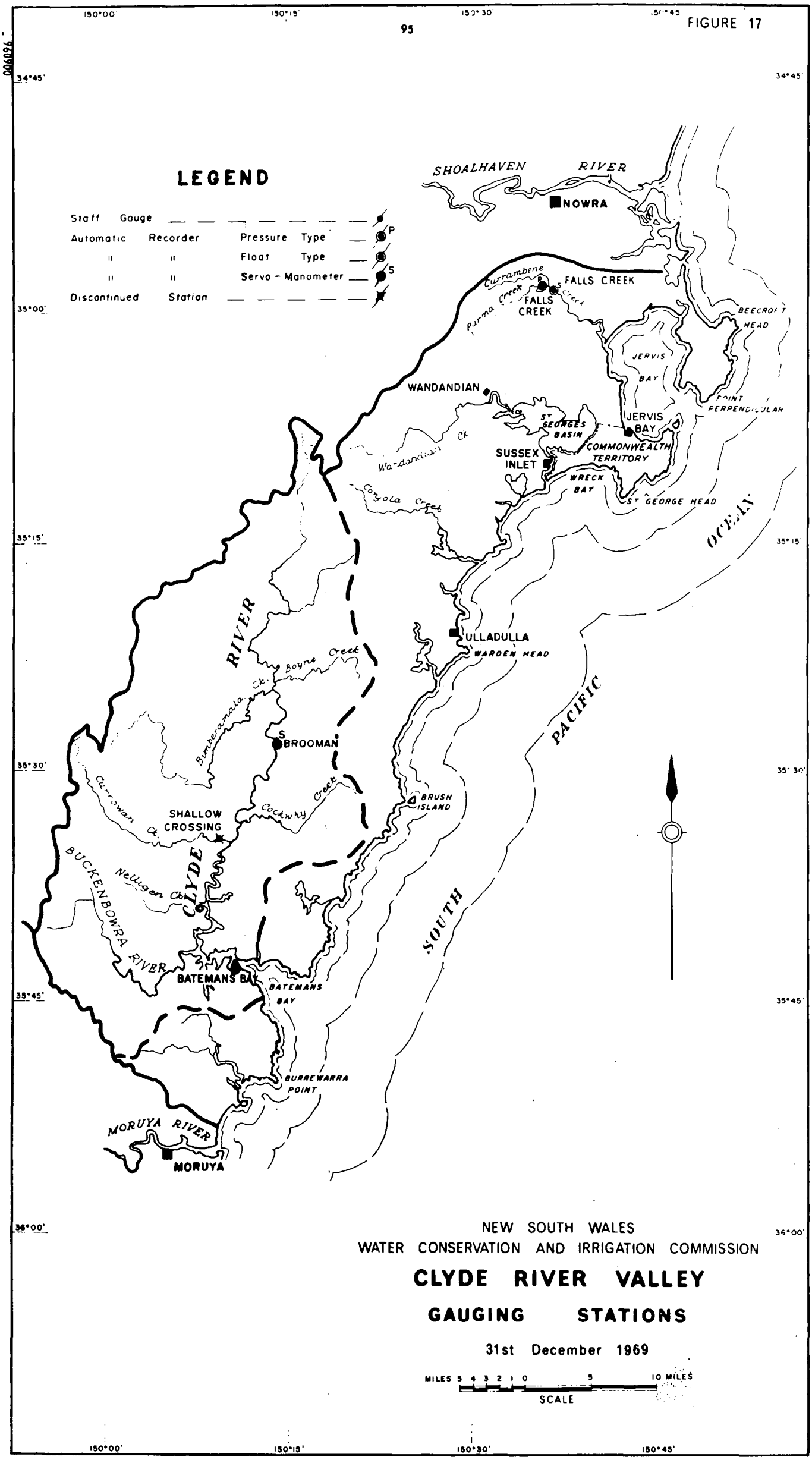


FIGURE 17



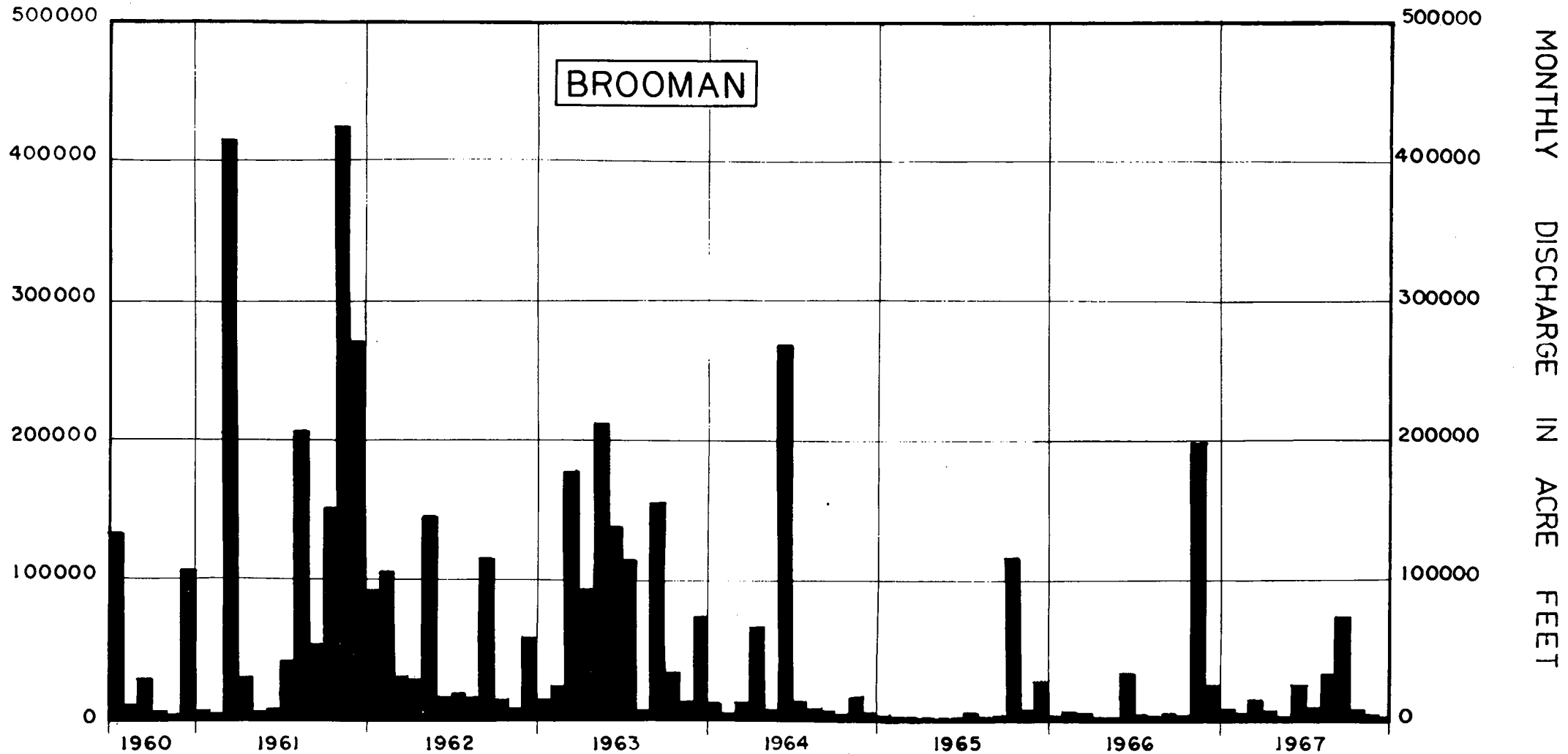
NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

CLYDE RIVER VALLEY

GAUGING STATIONS

31st December 1969

MILES 5 4 3 2 1 0 5 10 MILES
SCALE

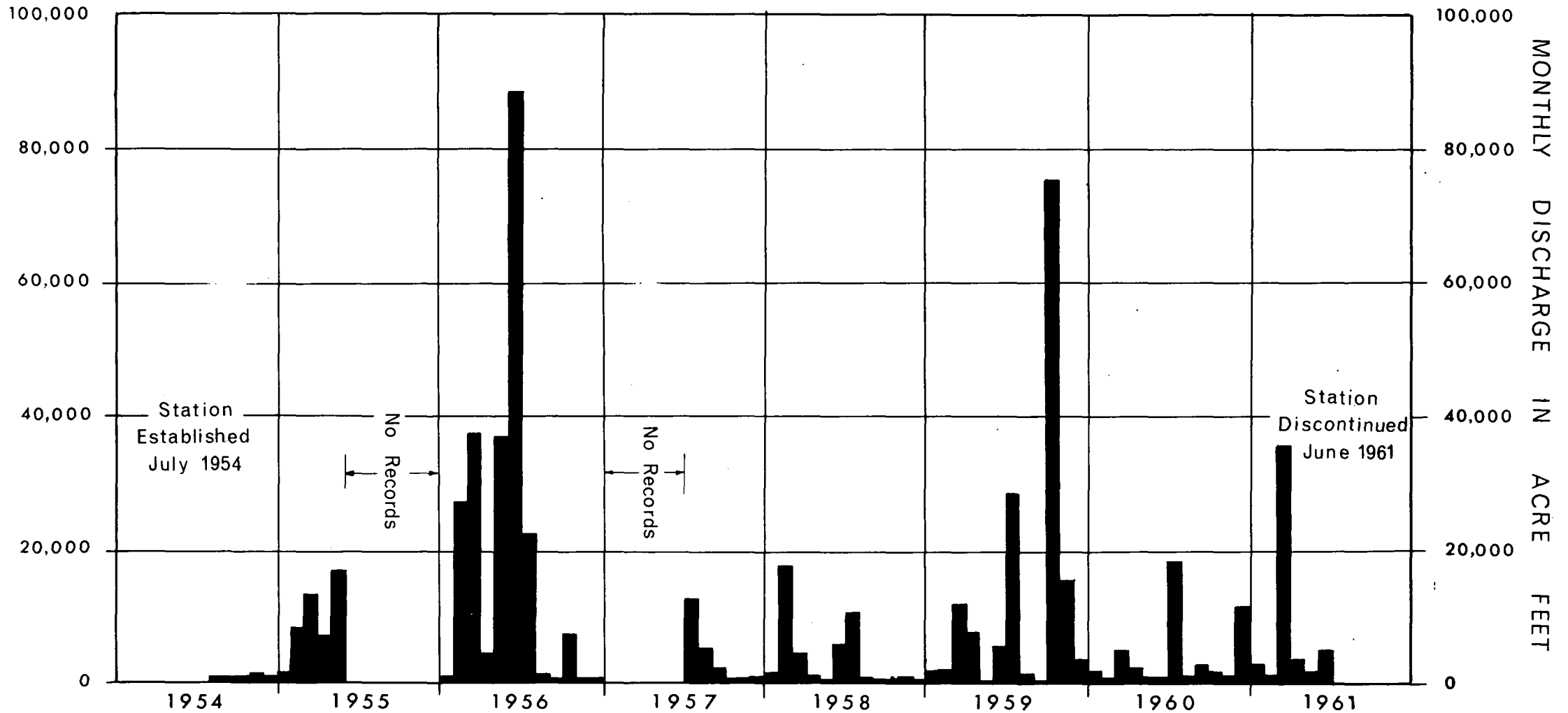


HYDROGRAPH OF MONTHLY DISCHARGE

CLYDE RIVER AT BROOMAN

FIGURE 18

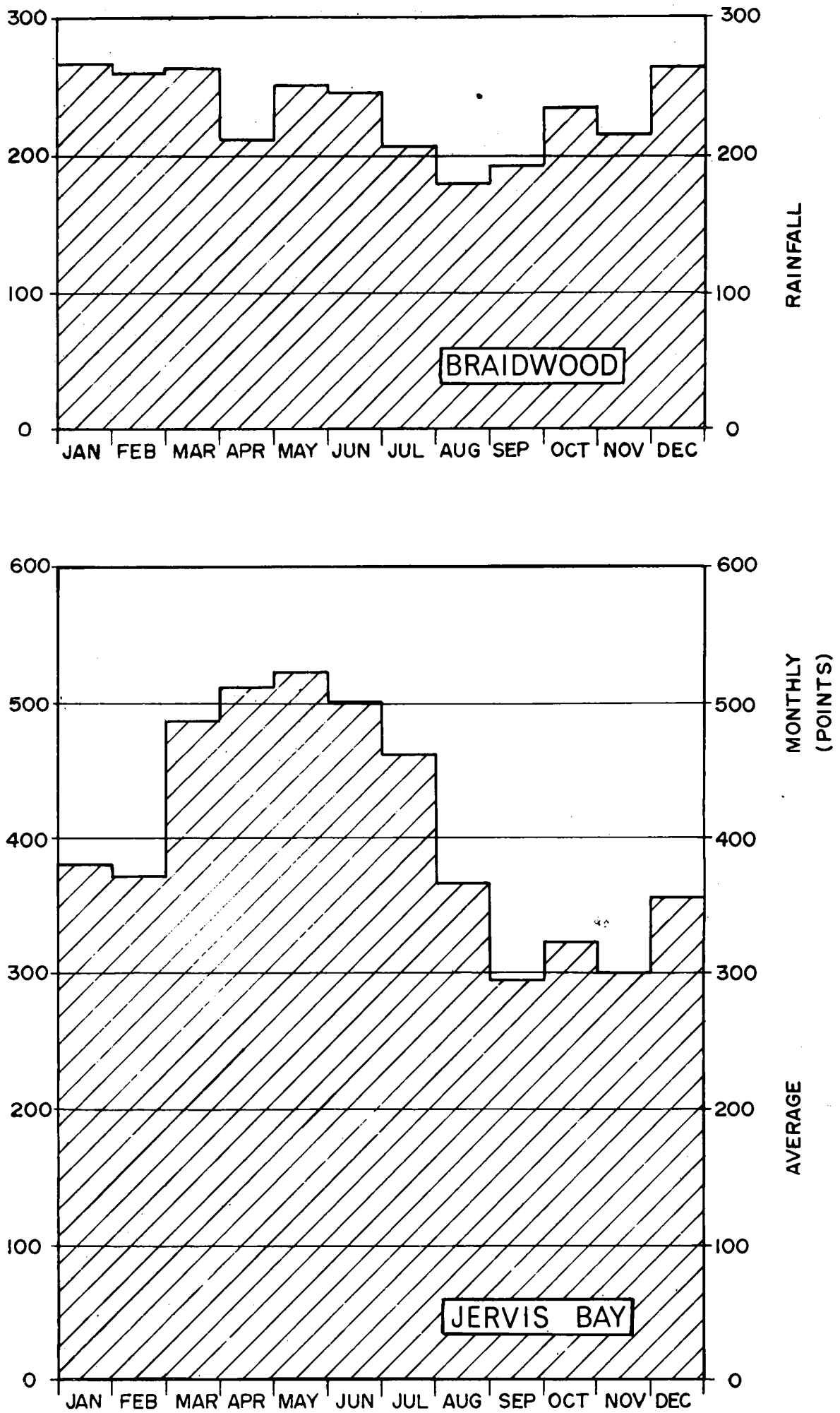
006098



HYDROGRAPH OF MONTHLY DISCHARGE CURROWAN CREEK AT SHALLOW CROSSING

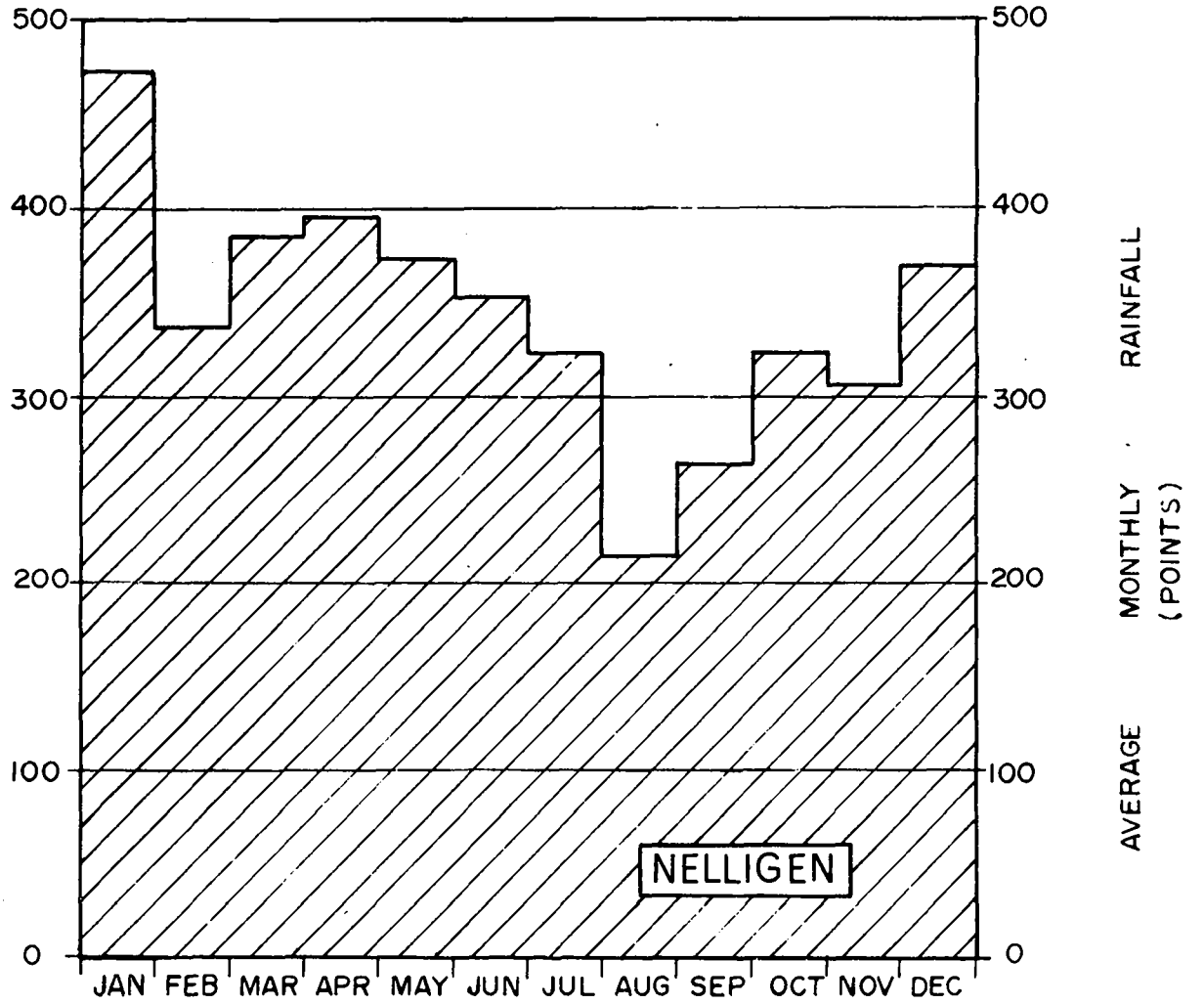
FIGURE 19

FIGURE 20



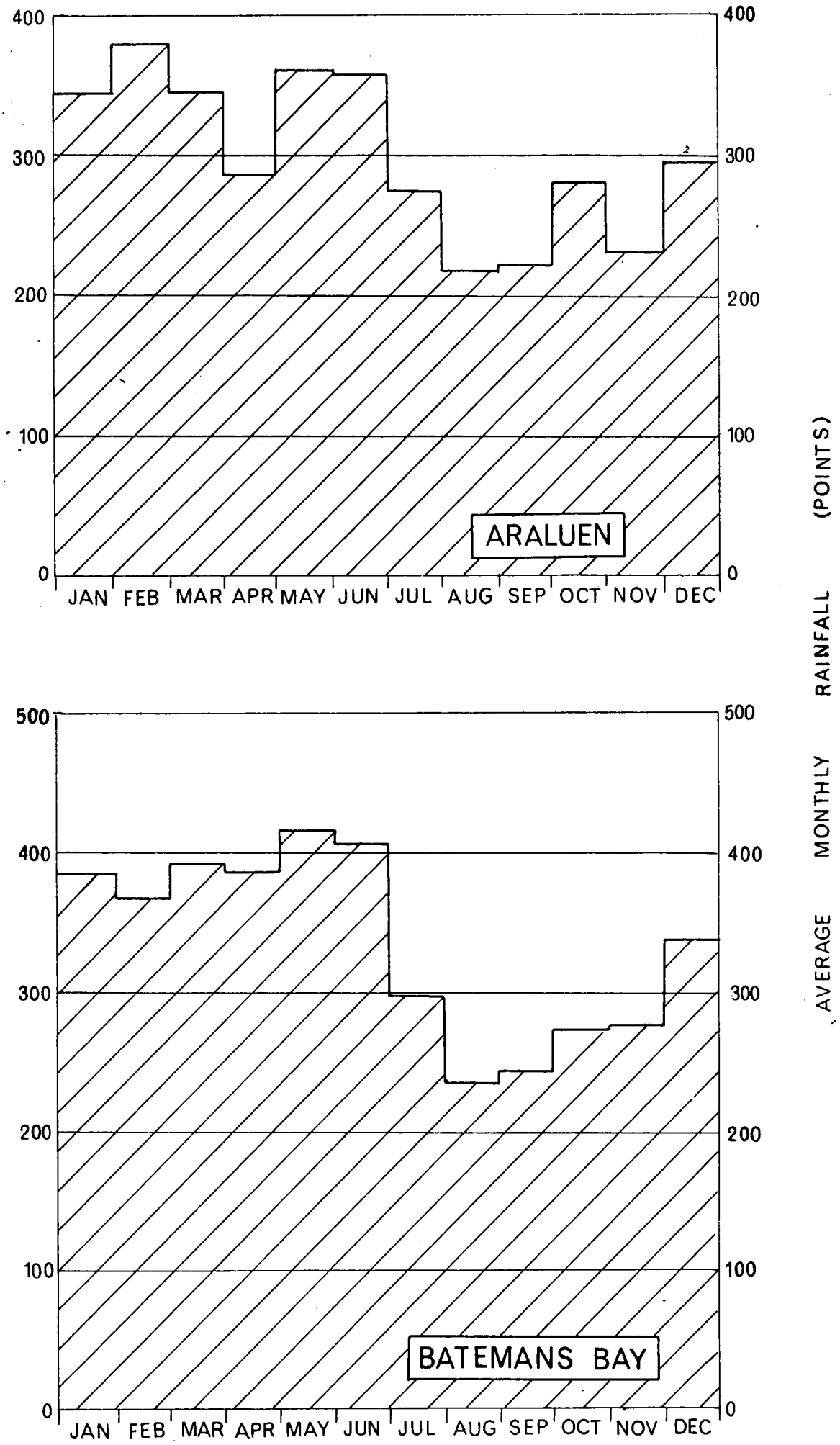
DISTRIBUTION OF AVERAGE MONTHLY RAINFALLS AT BRAIDWOOD AND JERVIS BAY

FIGURE 21



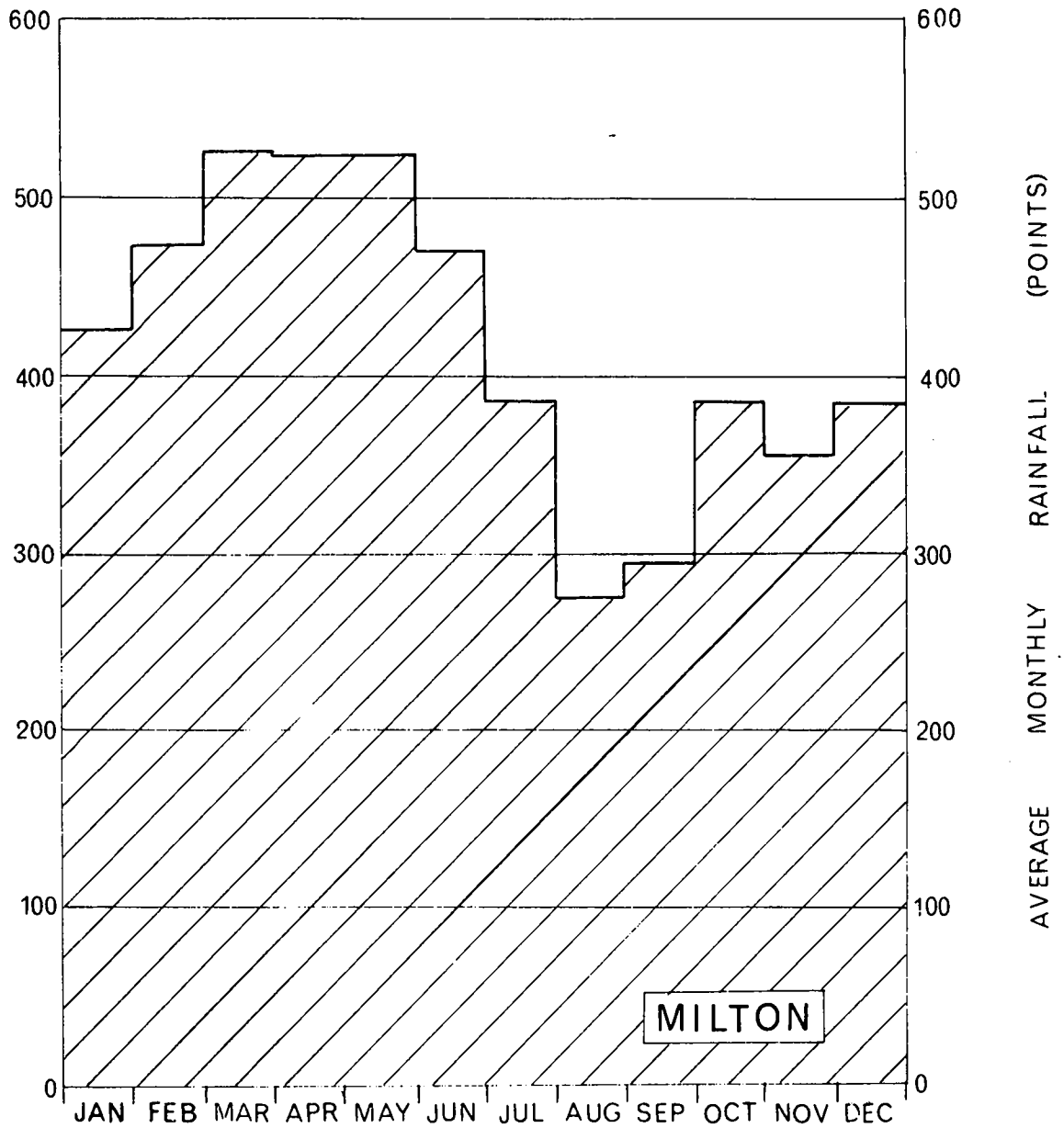
DISTRIBUTION OF AVERAGE MONTHLY RAINFALLS AT NELLIGEN

FIGURE 22



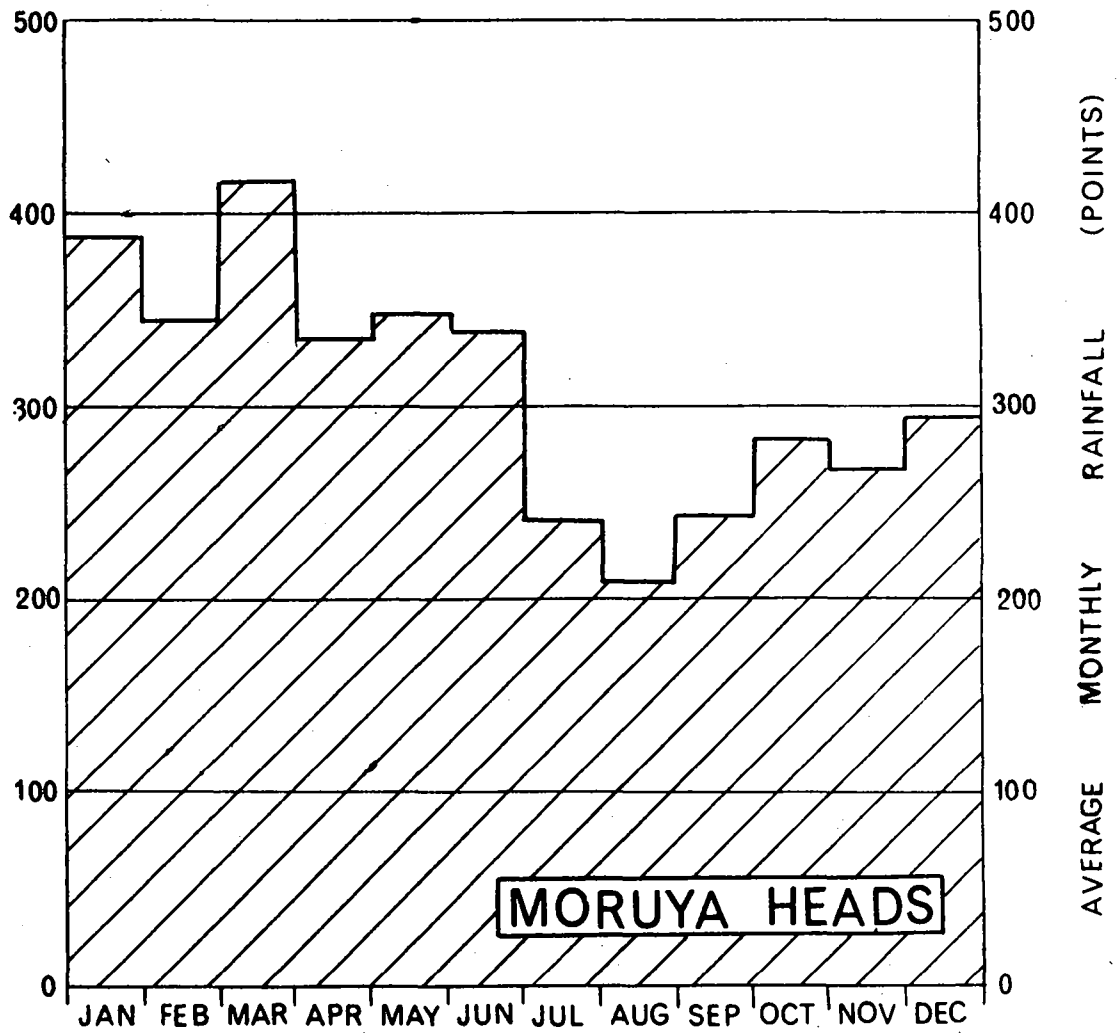
DISTRIBUTION OF AVERAGE MONTHLY RAINFALLS AT ARALUEN AND BATEMANS BAY

FIGURE 23



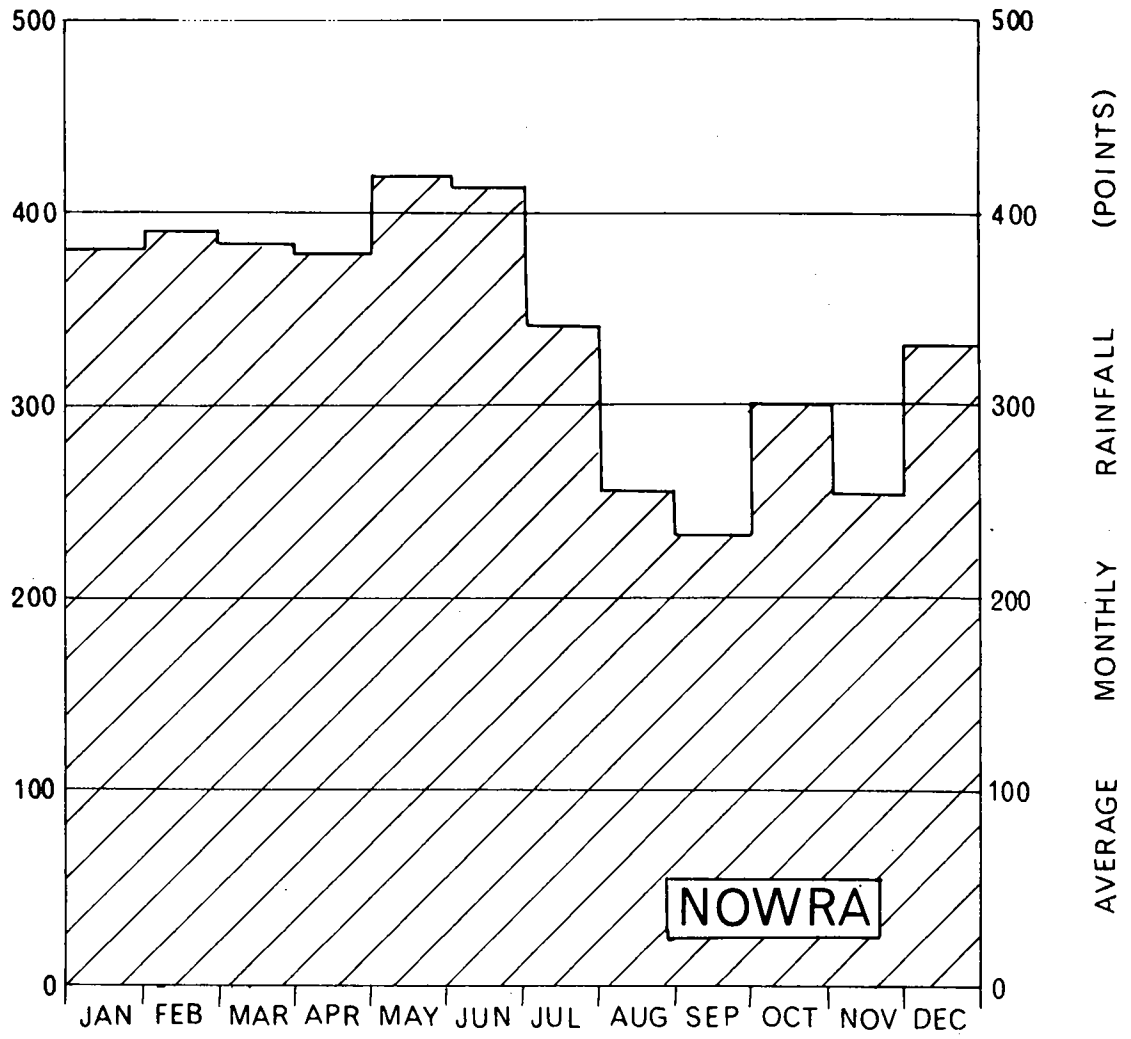
DISTRIBUTION OF AVERAGE MONTHLY RAINFALLS AT MILTON

FIGURE 24



DISTRIBUTION OF AVERAGE MONTHLY RAINFALLS AT MORUYA HEADS

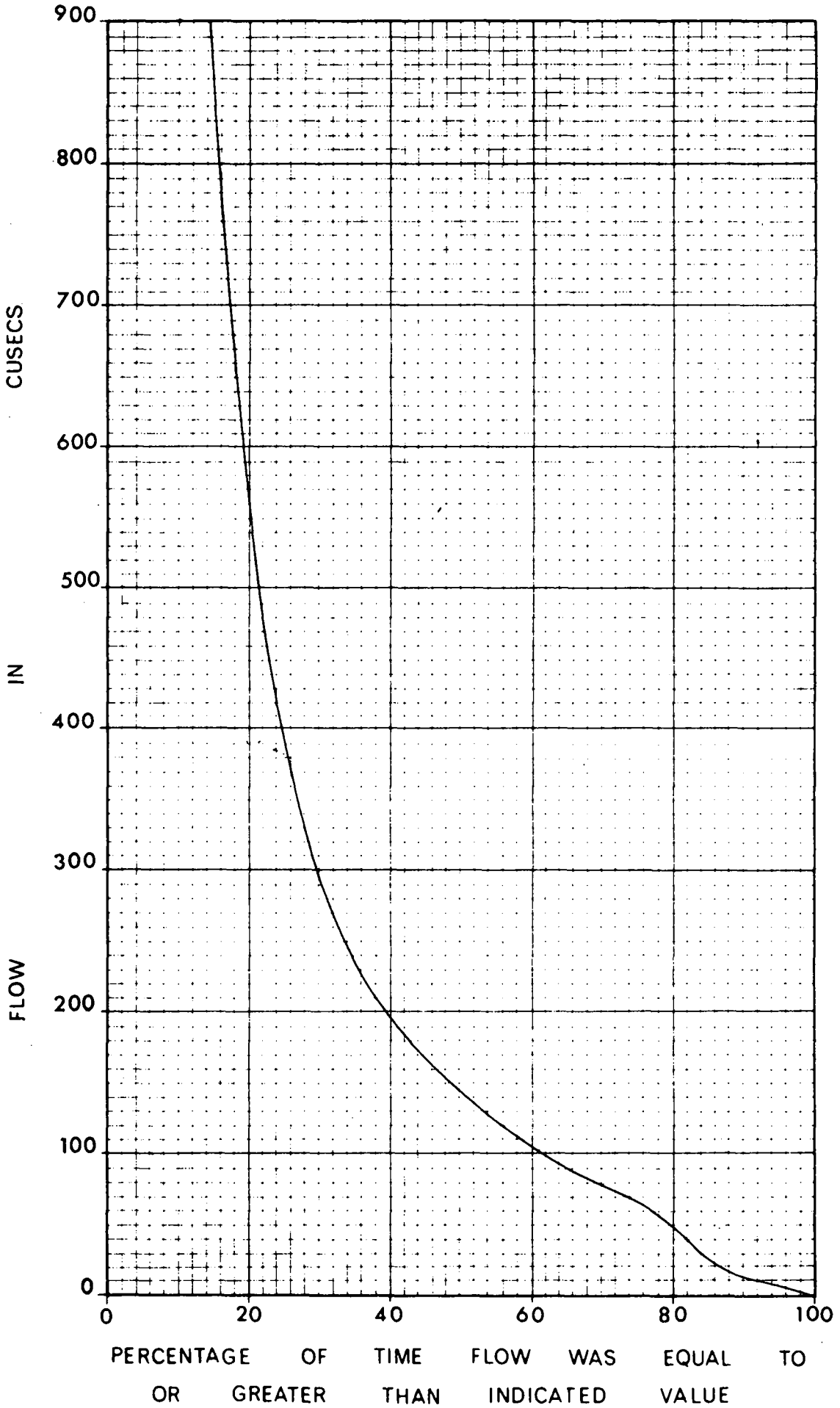
FIGURE 25



DISTRIBUTION OF AVERAGE MONTHLY RAINFALLS AT NOWRA

FIGURE 26

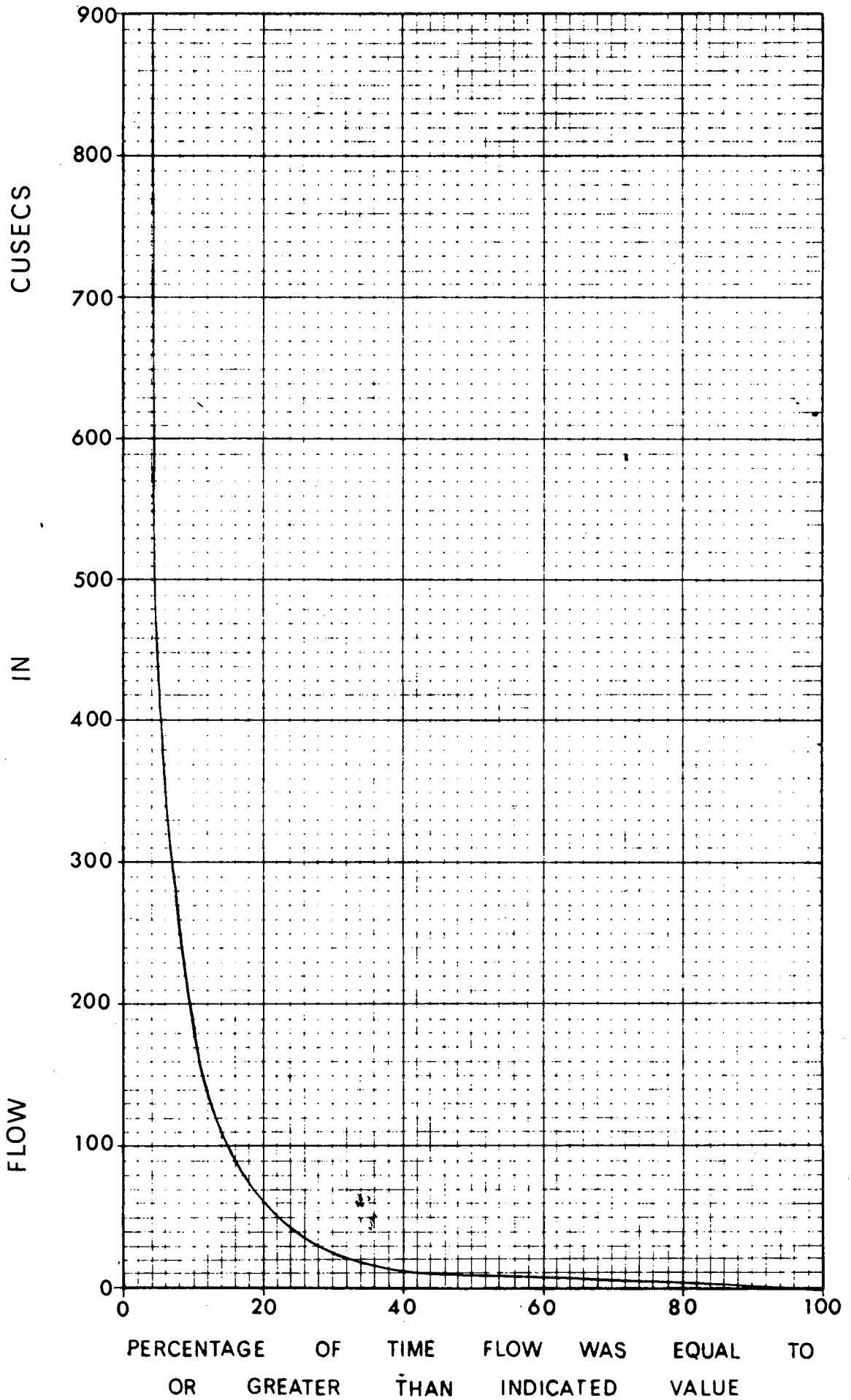
006104



FLOW DURATION CURVE FOR CLYDE RIVER AT BROOMAN

FIGURE 27

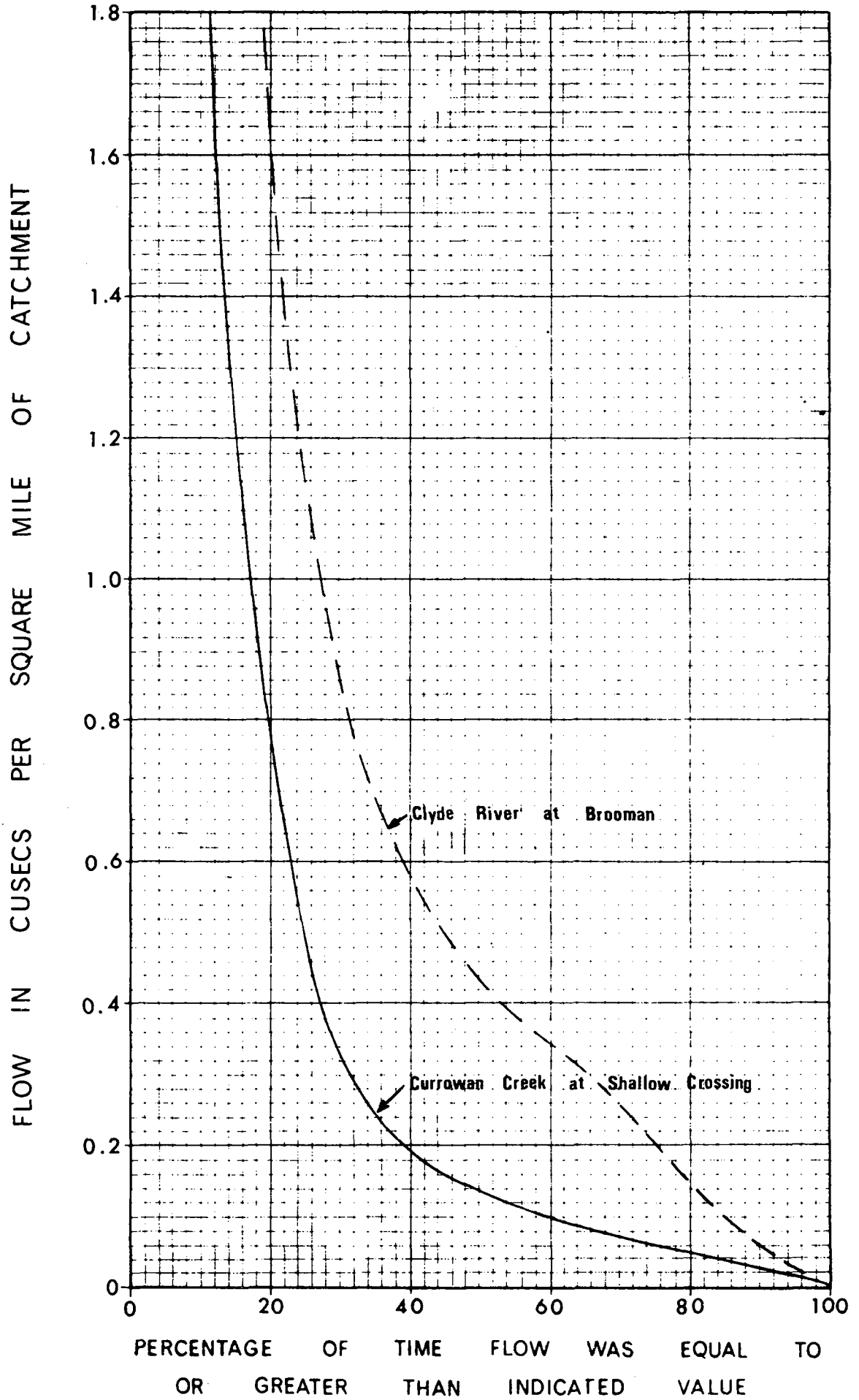
006105



FLOW DURATION CURVE FOR CURROWAN CREEK AT SHALLOW CROSSING

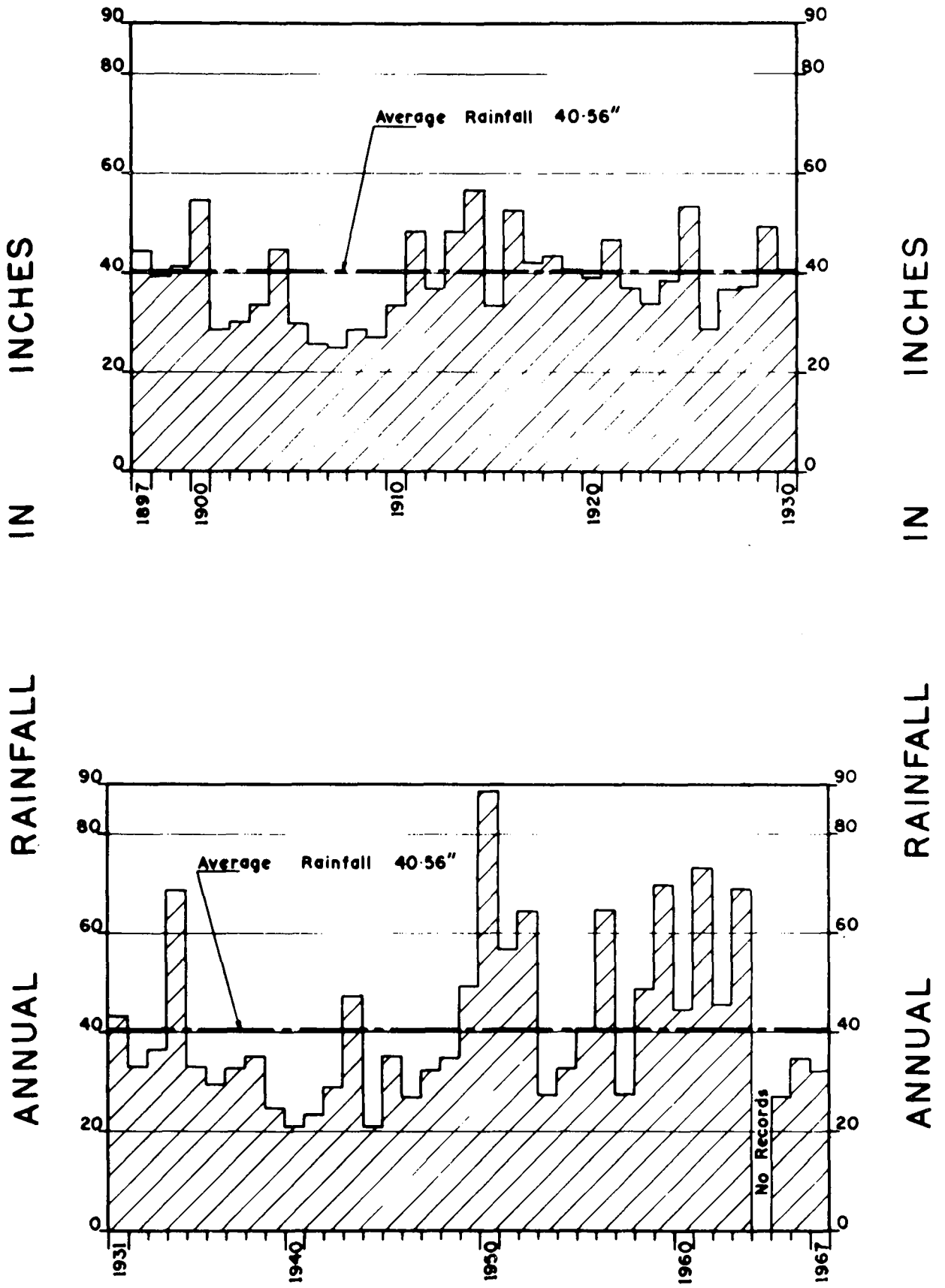
FIGURE 28

006106



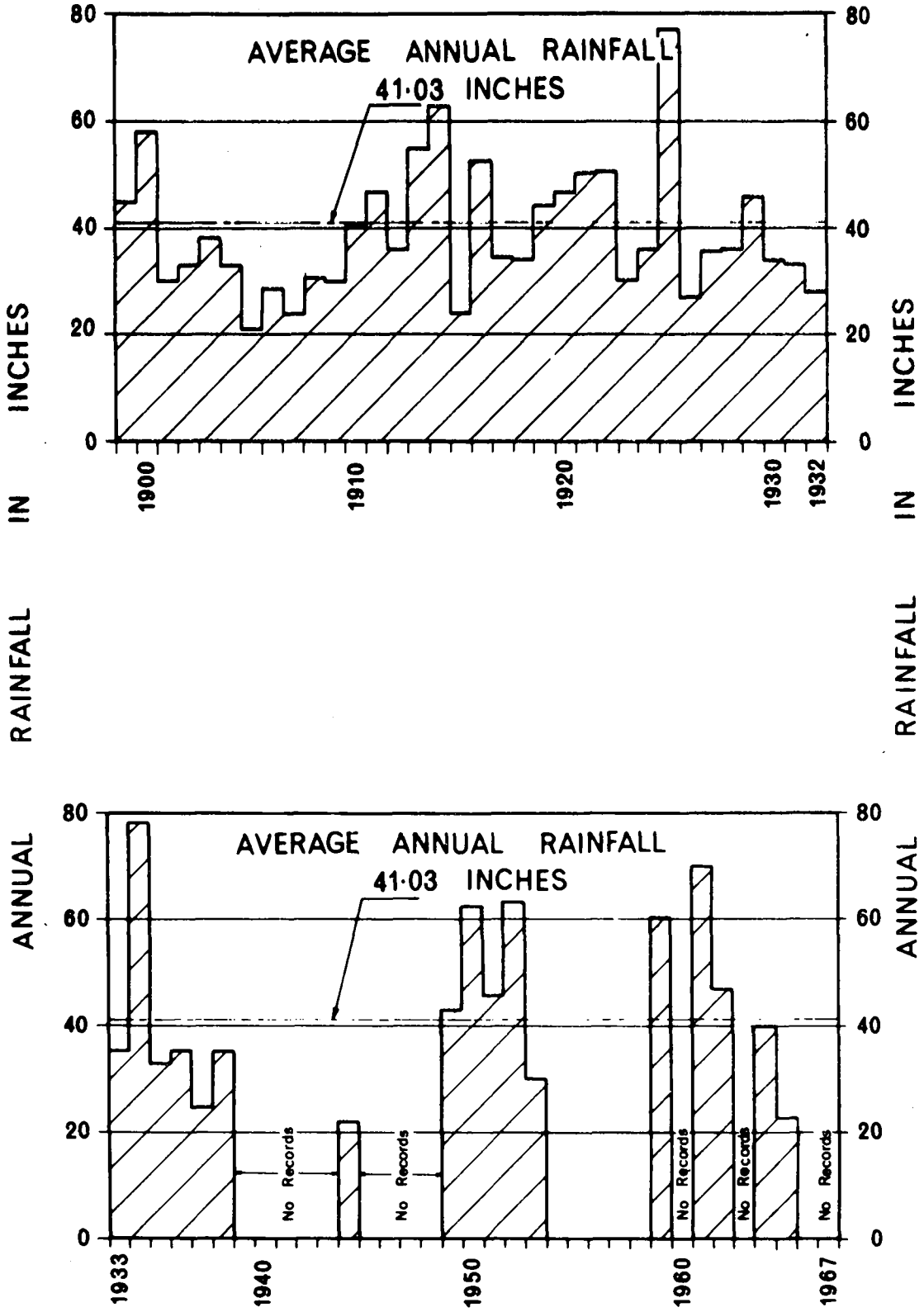
FLOW DURATION CURVE FOR CLYDE RIVER VALLEY

FIGURE 29



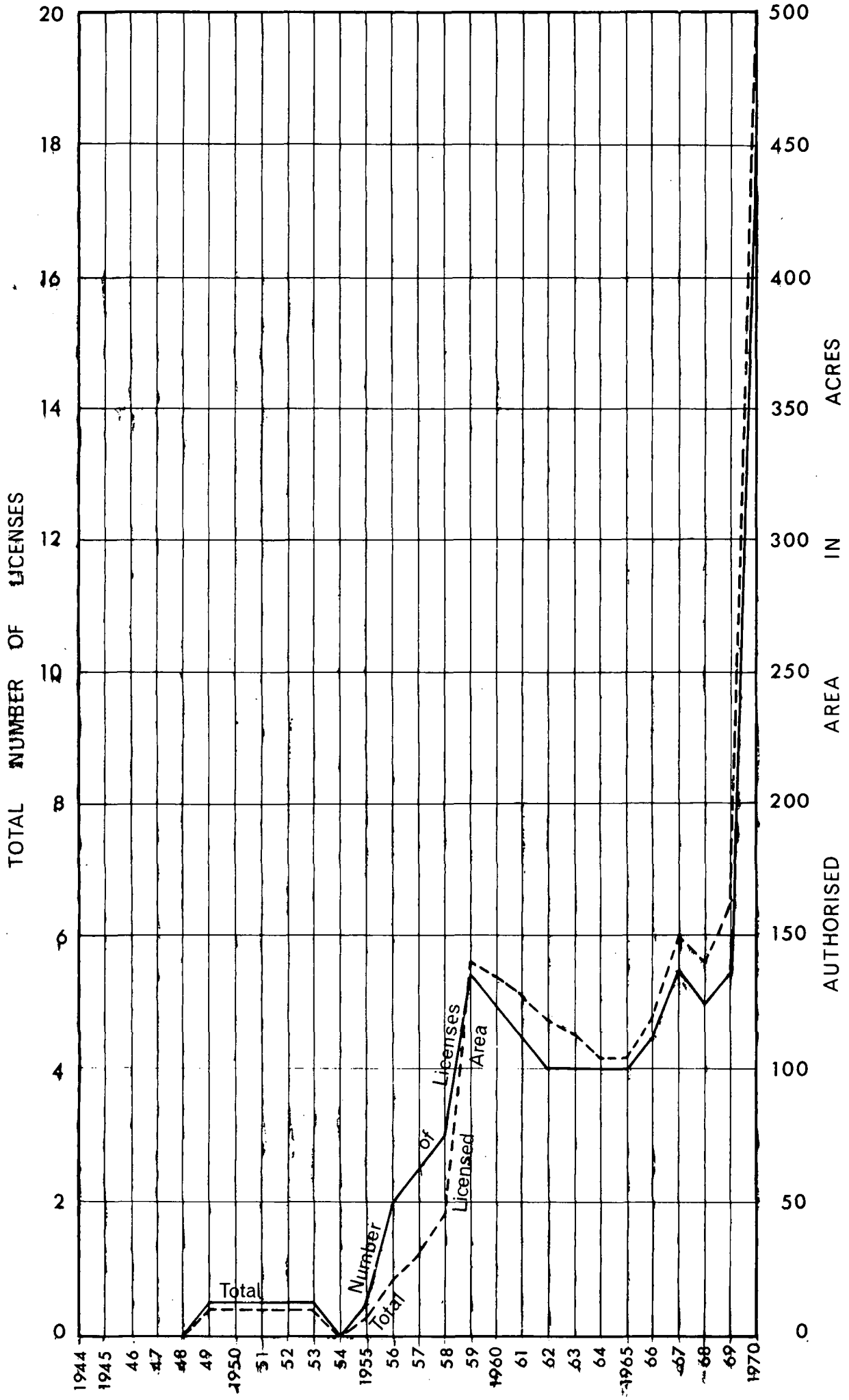
ANNUAL RAINFALL AT NOWRA

FIGURE 30



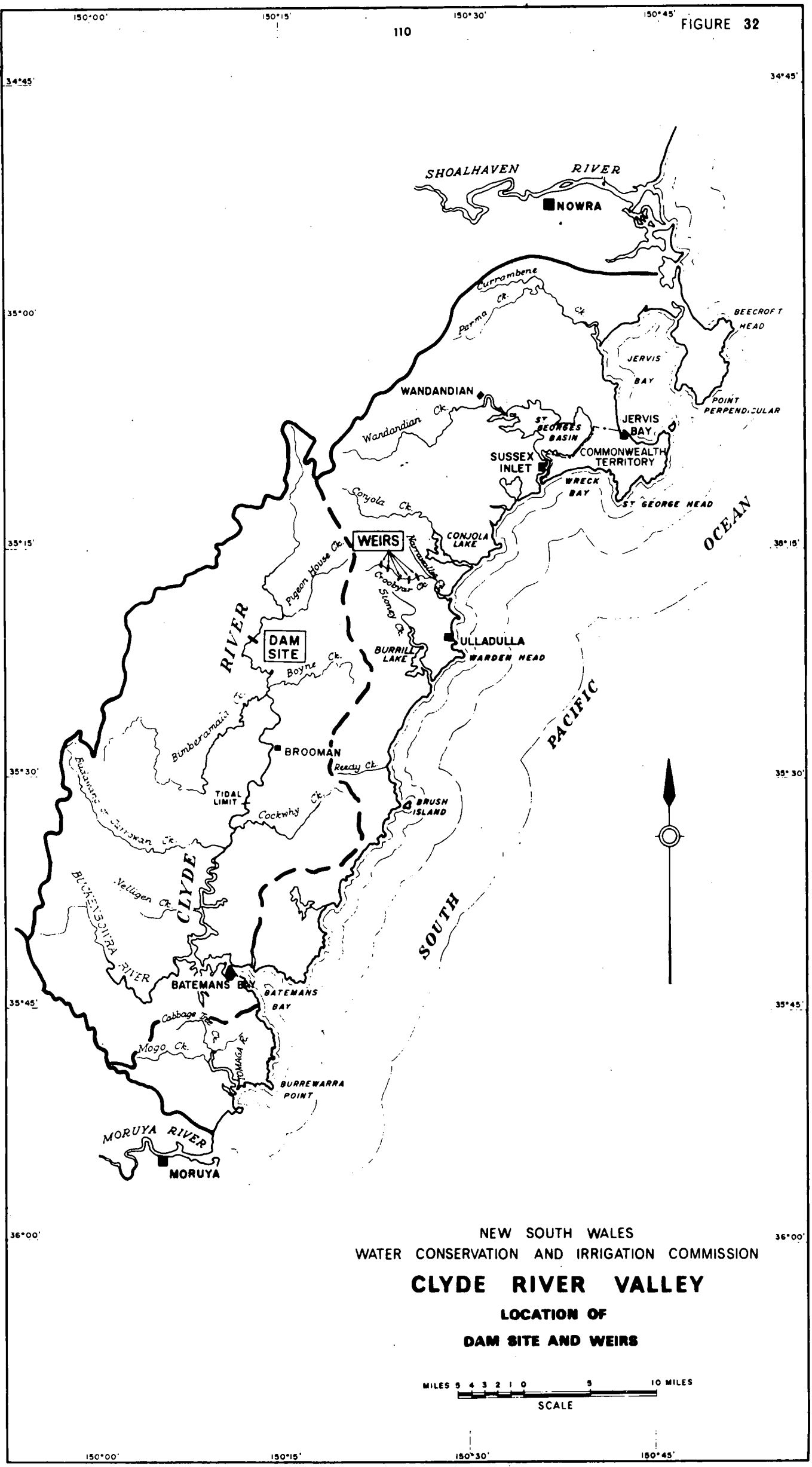
ANNUAL RAINFALL AT NELLIGEN

FIGURE 31



CLYDE RIVER VALLEY
AREA AUTHORISED FOR IRRIGATION
AND TOTAL NUMBER OF LICENSES AT
30th. JUNE FOR EACH YEAR INDICATED

FIGURE 32



NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

CLYDE RIVER VALLEY

LOCATION OF

DAM SITE AND WEIRS

MILES 5 4 3 2 1 0 5 10 MILES
SCALE