

WATER RESOURCES PUBLICATION NO. 10

**SUNGAI TEKAM EXPERIMENTAL BASIN
REPORT NO.2 FOR SEPTEMBER, 1974
TO MARCH, 1977**

1978



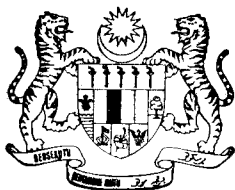
**JABATAN PENGAIRAN DAN SALIRAN
KEMENTERIAN PERTANIAN MALAYSIA**

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Bahagian Parit dan Taliair
Kementerian Pertanian
Malaysia



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KEMENTERIAN PERTANIAN**

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The Sg. Tekam Experimental Basin is a conjunct study between the Drainage and Irrigation Department (D.I.D.) of the Ministry of Agriculture and the Federal Land Development Authority (FELDA). The Engineering Export Association of New Zealand (ENEX) works in association with the D.I.D. on this project.

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TABLE OF CONTENTS

	PAGE
SUMMARY	
1. INTRODUCTION	1
2. PROJECT DETAILS	1
2.1 Objectives	1
2.2 Duration of Experiment	1
2.3 Project Organisation	1
2.4 Basin Details	1
3. LAND MANAGEMENT	3
3.1 Roading	3
3.2 Channel Clearing	3
3.3 Stream Realignment	3
4. INSTRUMENTATION	7
4.1 Rainfall	7
4.2 Flow	12
4.2.1 Structures	12
4.2.2 Records	15
4.3 Climate	30
4.4 Water Quality	30
5. DATA PROCESSING	30
5.1 Rainfall	30
5.1.1 Rainfall Intensity	31
5.2 Flow	31
5.3 Climate	31
5.3.1 Potential Evapotranspiration	31
5.4 Water Quality	33
6. ANALYSIS	33
6.1 Regression analysis of daily rainfall data	33
7. REFERENCES	33
Appendix 1	34
Appendix 2	46

List of figures

1. Sg. Tekam Experimental Basin location map.
2. Location map showing channel deviation at Basin A.
3. Location map showing channel deviation at Basin B.
4. Location map showing channel deviation at Basin C.
5. Tabulation of daily rainfall data for Basins A, B and C.

List of Tables

1. Basin details.
2. History of rainfall stations in Sg. Tekam Experimental Basin.
3. Water level station details.
4. History of water level station recorders at Sg. Tekam Experimental Basin.
- 5A, 5B, 5C. Tabulation of daily rainfall and runoff data for Basins A, B and C respectively.
6. Rainfall intensity values.
7. Mean monthly climate data.
8. Potential Forest Evapotranspiration at Tun Razak Agricultural Research Centre.
9. Regression analysis results of daily rainfall.

List of Plates

1. Rainfall Station No. 2 (3925001)—June 1976.
2. Storage gauge at Rainfall Station No. 4 (3925003) —September 1976.
3. Rainfall Station No. 2 (3925001) after forest clearing—February 1977.
4. Rainfall Station No. 4 (3925003) with OTA recorder and 203 mm check gauge—April 1977.
5. Rainfall Station No. 1 (3825001) with Hattori recorder and 203 mm check gauge—September 1976.
6. Rainfall Station No. 5 (3925004) with Hattori recorder and 203 mm check gauge—September 1976.
7. Storage gauge at Rainfall Station No. 3 (3925002)—June 1976.
8. HL flume at Site A—June 1976.
9. Exposed intake pipe at Site A—June 1976.
10. V-notch plate modification to the HL flume at Site A—March 1977.
11. V-notch plate modification to the HL flume at Site B—March 1977.

Summary

This second report on the Sg. Tekam Experimental Basin reviews the progress and problems encountered in the instrumentation of the Basin.

The streamflow and rainfall data recorded during the period covered by this report (September 1974 to March 1977) are tabulated, but due to the large amount of missing runoff data water balance analysis was not carried out. However, regression analysis of rainfall data was done and it was found that there was a high correlation between Rainfall Stations 1 and 2. Maximum rainfall intensity values obtained from graphical recorders are also presented.

Monthly potential forest evapotranspiration values were calculated by Penman's procedure using data recorded at the climate station in the Tun Razak Agricultural Research Centre.

1. INTRODUCTION

The Sg. Tekam Experimental Basin was set up in 1973, on the recommendation of the Engineering Export Association of New Zealand, in conjunction with the Drainage and Irrigation Department to study the effects of cultural change on the hydrological regimen. This second report covers the period from September 1974 to March 1977. It contains a description of the basin, its research objectives, basin instrumentation, analysis and summary of hydrological data taken during this period.

2. PROJECT DETAILS

2.1 Objectives

The Sg. Tekam Experimental Basin is located within the Tekam forest reserve of the Felda Tun Razak Agricultural Research Centre, in Jerantut District, Pahang. The basin lies within approximately 420 ha (1,040 acres) of selectively-logged forest land which is to be converted to oil palm and/or other agricultural crops.

The objectives of the study (Sarf, 1975) include:

- To study the effect of such a change in land use on the hydrological characteristics of the basin.
- To study how the soil moisture status can be improved to increase palm oil production and whether oil palm is the most suitable crop considering the hydrological conditions.
- To study different planting patterns and management techniques in relation to soil moisture behaviour and production.
- To train local personnel in experimental basin studies.

2.2 Duration of Experiment

The original date chosen for the start of basin calibration was 1st July, 1976, however as outlined later in this report many difficulties were encountered which pushed the starting date back to the 1st April, 1977. The duration of the experiment given below is only approximate and is influenced by many factors like continued climate normality, progress of surveys (land, geological, botanical, geomorphological) and studies which have to be done before deforestation and subsequent planting with crops. Also the duration of each period depends on the quality of records collected.

As a guide, the duration of each period is:

1. Calibration period under present forest condition from 1st April, 1977 to 30th June, 1980.
2. Transition period for forest clearing and planting and establishment of permanent crops in Basins A and B, from 1st July, 1980 to 30th June, 1981.
3. Evaluation period under crops (Basins A and B) from 1st July, 1981 to 30th June, 1985.

As stated above, these dates are only approximate depending on the progress of individual research projects.

2.3 Project Organisation

The experimental basin project is operated jointly by the Drainage and Irrigation Department (D.I.D.) of the Ministry of Agriculture and the Federal Land Development Authority (FELDA). Other agencies assisting include the Forestry Department, Soils Branch of the Department of Agriculture and the Geography Department of the University of Malaya.

2.4 Basin Details

The Sg. Tekam Experimental Basin lies between Latitude 3° 53' 45" N to 3° 55' 00" N and Longitude 102° 31' 30" E to 102° 33' 00" E and is at present covered with trees of the Dipterocarp type.

The basin consists of three catchments A, B and C. Basins A and B are operational catchments and are scheduled to be converted to permanent crops after an initial calibration period. Basin C will be retained in its original state (forest cover) as a control catchment.

Also different planting patterns and management techniques may be implemented within Basin B to study its effect on soil moisture behaviour and production.

Details of catchment location and areas are shown in Fig. 1 and are tabulated in Table 1.

TABLE 1
BASIN DETAILS

<i>Catchment</i>				<i>Approximate Catchment Area (ha)</i>	<i>Approximate Mean Elevation (m)</i>	<i>Map Reference Series 1: 63360</i>
Basin A	..	..	..	49.4	72.5	80:524720
Basin B	..	..	..	98.4	68.5	80:519716
Basin C	..	..	..	62.7	70.0	80:515728

3. LAND MANAGEMENT

3.1 Roading

The basins have good access with old logging tracks providing vehicular access to all raingauge and flow recorder sites.

3.2 Channel Clearing

The main channels are regularly cleared of dead logs and debris, disturbing as little as possible the natural vegetation and channel regime. Since the weirs were constructed the channels immediately upstream have been maintained free of debris and the bank vegetation cover regularly slashed to reduce any flow impediment in the weir approach.

3.3 Stream Realignment

Stream realignment was carried out prior to construction of the flumes as shown typically in Fig. 2. This realignment was done to improve the channel slope and hence to improve flow. This improvement of flow was essential to provide free flow conditions through the HL flumes (see Para. 4.2).

However additional downstream realignment works were found necessary after the construction of the flumes in Basins B (Fig. 3) and C (Fig. 4) and also at the confluence of the streams from Basins B and C.

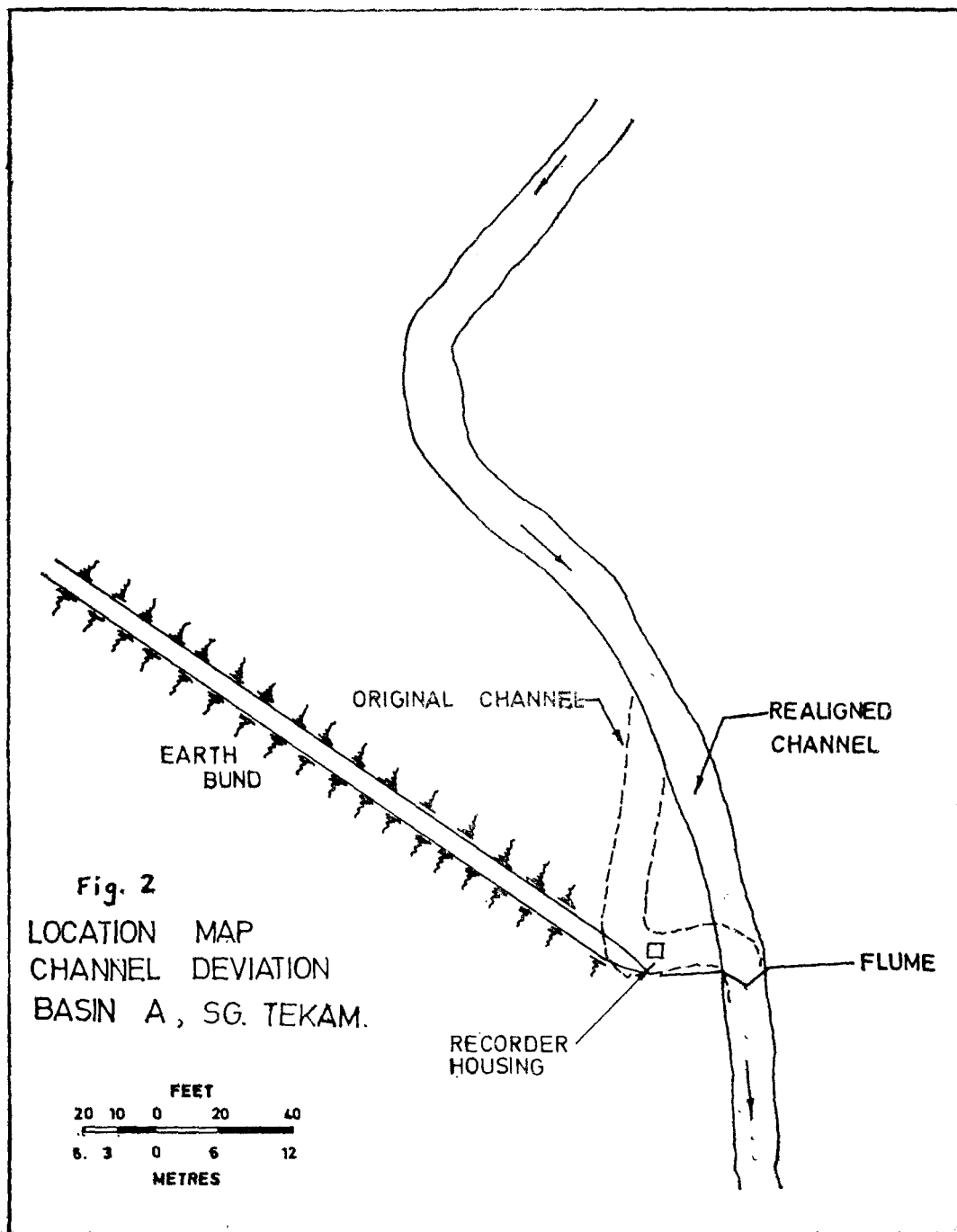
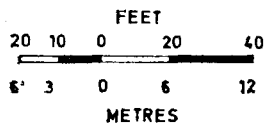
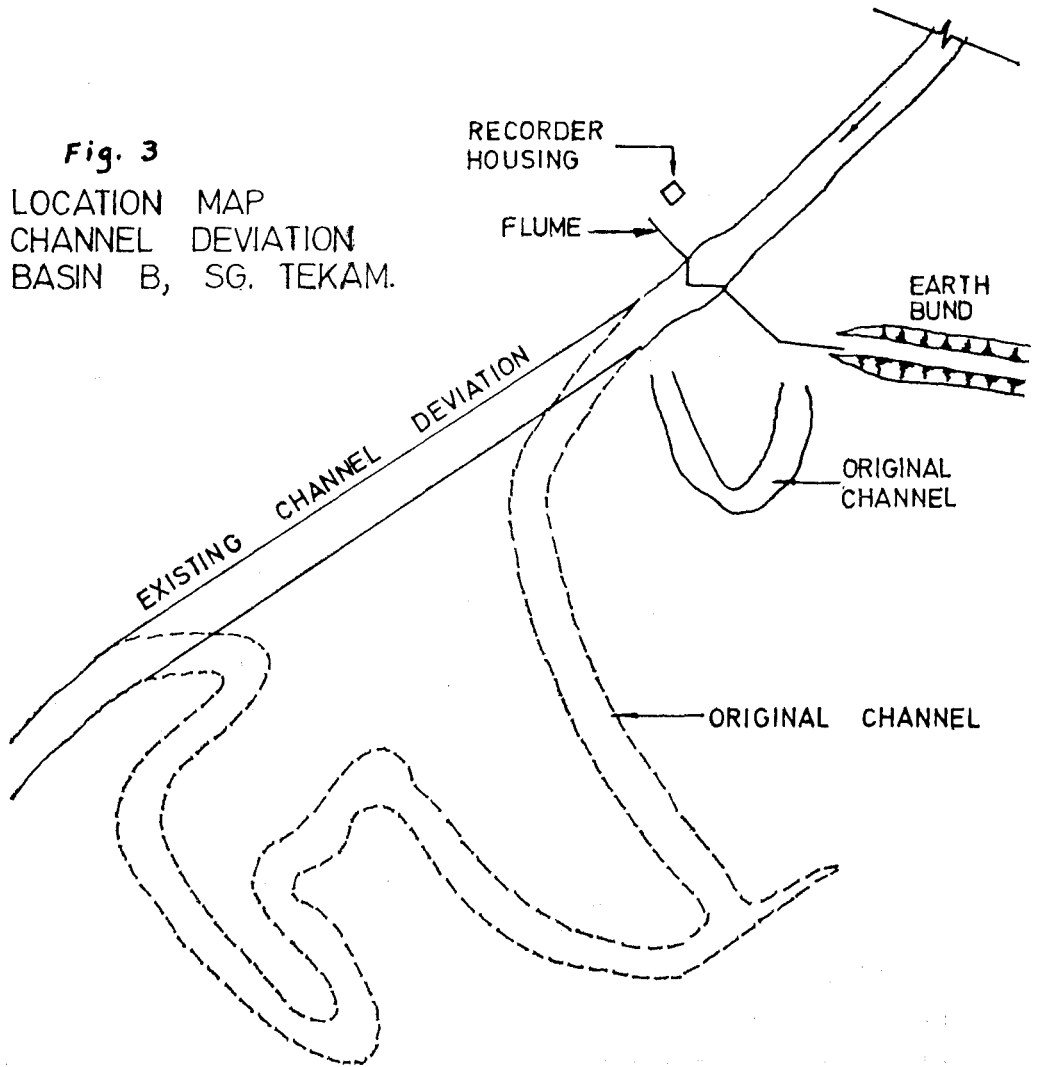
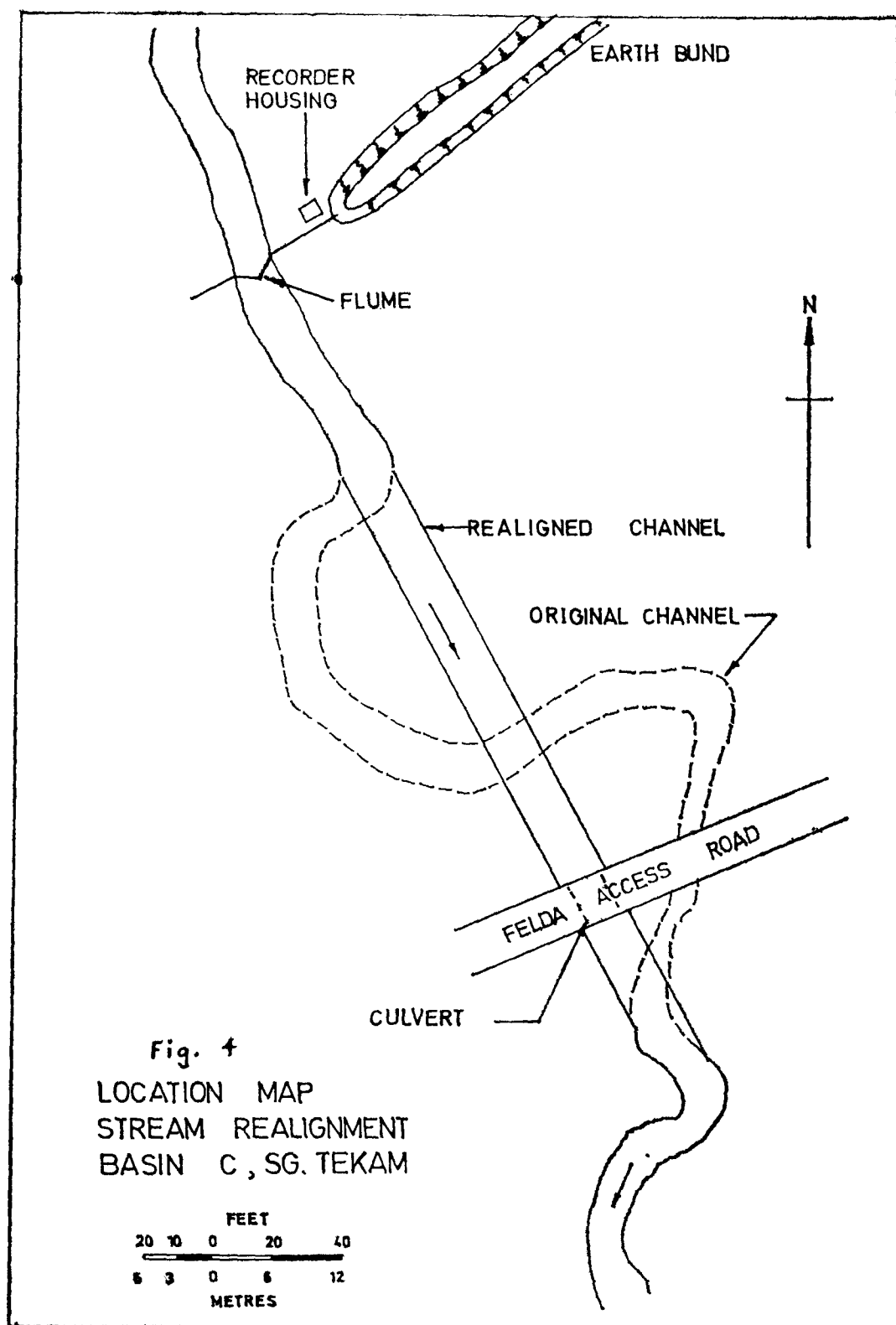


Fig. 3
 LOCATION MAP
 CHANNEL DEVIATION
 BASIN B, SG. TEKAM.





4. INSTRUMENTATION

4.1 Rainfall

There are five rainfall stations in the Sg. Tekam Experimental Basin and their instrument histories are found in Table 2.

The Hattori rainfall recorder was stolen from Station 2 in June 1976 (Plate 1). So from this time until the installation of an OTA rainfall recorder in February 1977 there are only weekly storage gauge records available. Prior to erection of fencing and installation of the new recorder at Station 2, substantial forest clearing was carried out in January 1977 to provide adequate exposure conditions (Plate 3).

Similar forest clearing was completed at Station 4 before the 203 mm dia. storage gauge (Plate 2) was replaced by a 0.5 mm Hattori tipping bucket rainfall sensor with OTA weekly recorder and 203 mm check gauge (Plate 4) in April 1977.

Stations 1 and 5 are also fully fenced automatic weekly recorder stations maintained under standard exposure conditions (Plates 5 and 6). The weekly storage gauge existing at Station 3 is shown in Plate 7.

TABLE 2

HISTORY OF RAINFALL STATIONS IN SUNGAI TEKAM EXPERIMENTAL BASIN

<i>Basin Station Number</i>	<i>D.I.D. Station Number</i>	<i>Type of Equipment</i>	<i>Date Installed</i>	<i>Date Removed</i>
1	3825001	Kent Weekly	13-8-74	2-9-75
		Hattori Weekly	5-2-75	
2	3925001	Hattori Weekly	5-10-74	28-6-76
		OTA Weekly	24-2-77	
3	3925002	Hattori Weekly	19-9-73	5-10-74
		203 mm Storage Gauge	5-10-74	
4	3925003	203 mm Storage Gauge	13-8-74	28-6-76
		OTA Weekly	4-4-77	
5	3925004	Kent Weekly	13-8-74	15-9-75
		Hattori Weekly	5-2-75	

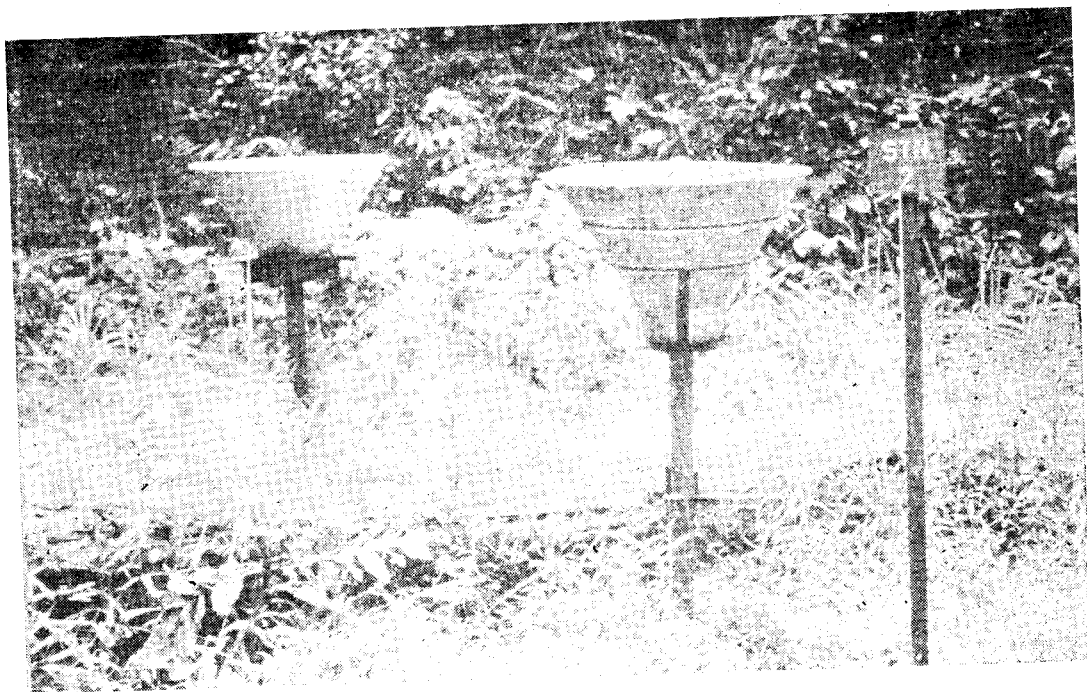


PLATE 1
Rainfall Station No. 2 (3925001)—June 1976



PLATE 2
Storage gauge at Rainfall Station No. 4
(3925003)—September 1976

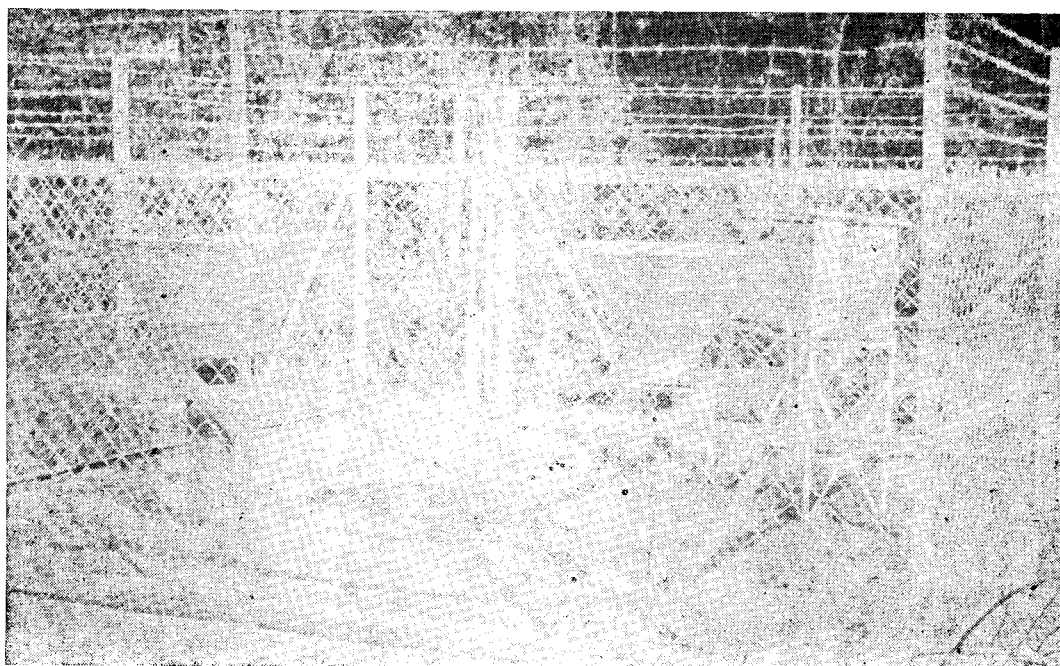


PLATE 3
Rainfall Station No. 2 (3925001) after forest clearing—February 1977

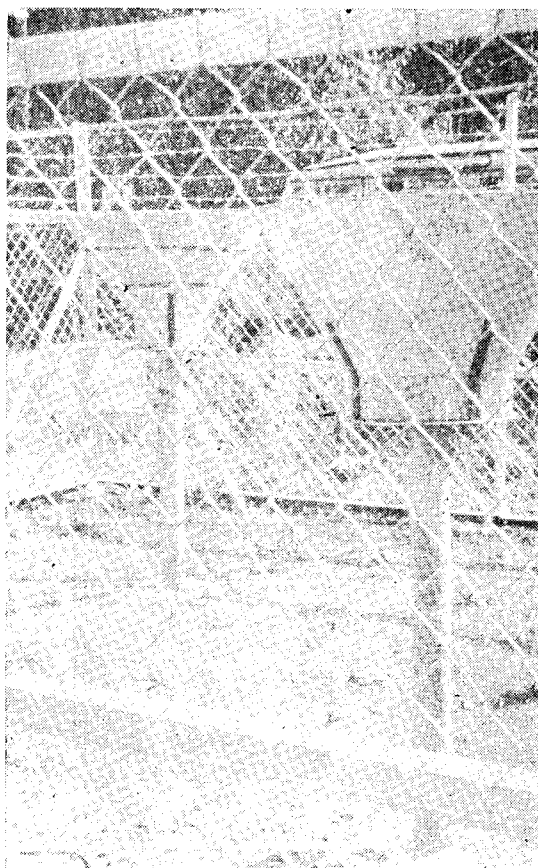


PLATE 4
Rainfall Station No. 4 (3925003) with OTA recorder and 203 mm check guage—April 1977

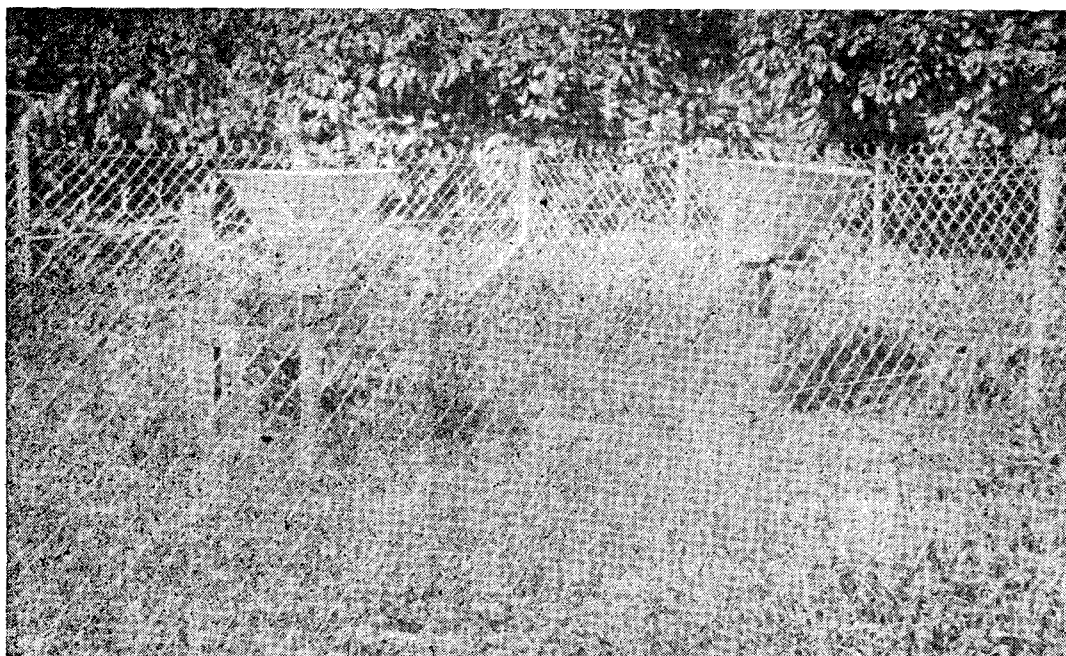


PLATE 5
Rainfall Station No. 1. (3825001) with Hattori recorder and 203 mm check gauge—
September 1976

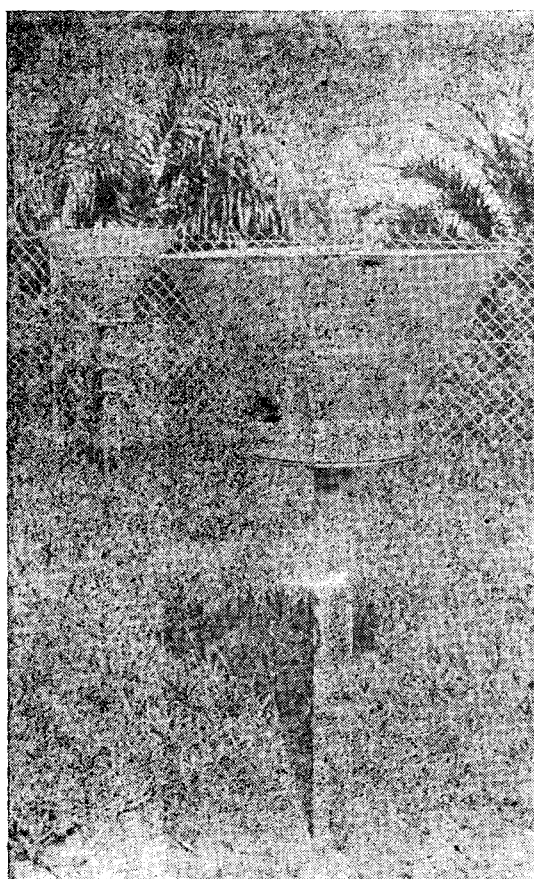


PLATE 6
Rainfall Station No. 5 (3925004) with Hattori
recorder and 203 mm check gauge—September 1976

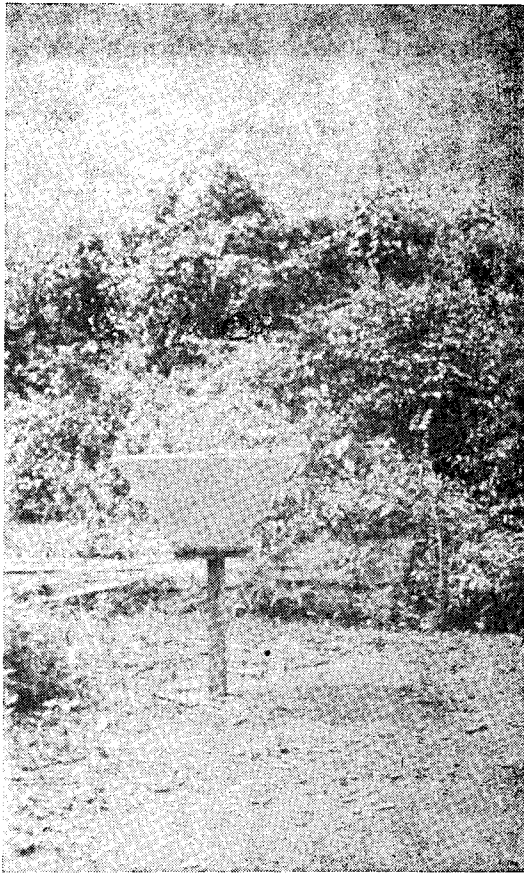


PLATE 7
Storage gauge at Rainfall Station No. 3 (3925002)—
June 1976

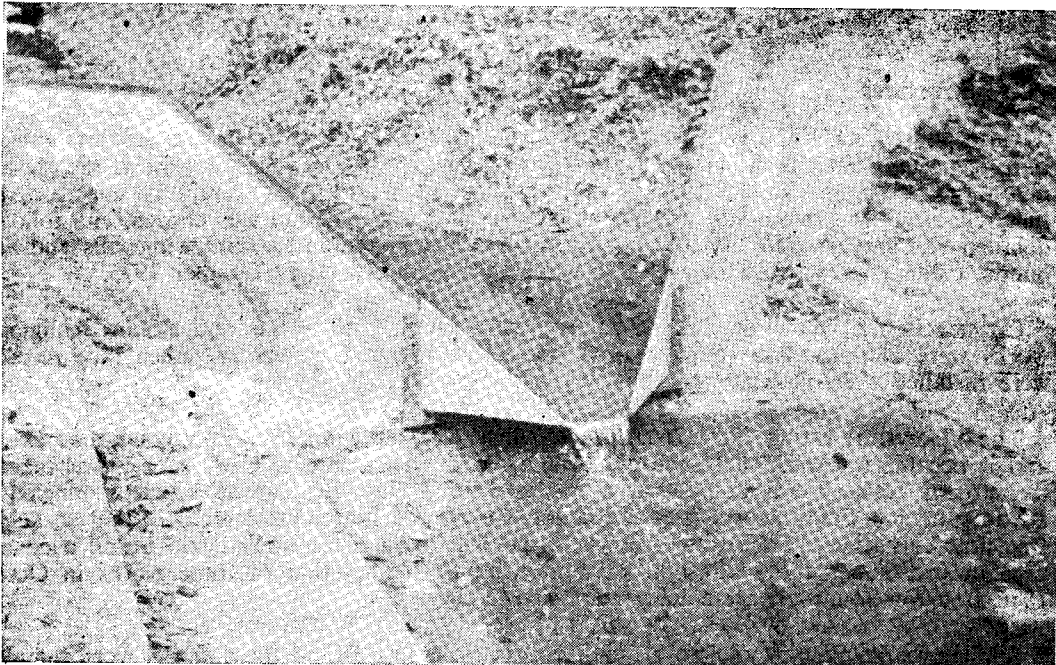


PLATE 8
HL Flume at Site A—June 1976

4.2 Flow

Details of the three water level stations are shown in Tables 3 and 4.

TABLE 3
WATER LEVEL STATION DETAILS

<i>Site</i>	<i>Station Number</i>	<i>Latitude</i>	<i>Longitude</i>	<i>Elevation m</i>	<i>Catchment Area, km²</i>
A ..	3925401	3° 54' 9"N	102° 32' 26"E	53.72	0.494
B ..	3925402	3° 54' 01"N	102° 32' 09"E	51.44	0.984
C ..	3925403	3° 54' 34"N	102° 31' 59"E	54.18	0.627

TABLE 4
HISTORY OF WATER LEVEL STATION RECORDERS AT SUNGEI TEKAM
EXPERIMENTAL BASIN

<i>Station Number</i>	<i>Type of Recorder</i>	<i>Date Installed</i>	<i>Date Removed</i>
3925401	Negretti and Zambra Pressure Bulb Recorder ..	21-9-73	16-2-76
(Site A)	Capricorder 1598	18-2-76	28-1-77
	OTT Weekly	28-1-77	
3925402	Negretti and Zambra Pressure Bulb Recorder ..	21-9-73	16-2-76
(Site B)	Capricorder 1598	15-2-76	27-1-77
	OTT Weekly	29-1-77	
3925403	Negretti and Zambra Pressure Bulb Recorder ..	20-9-73	13-2-76
(Site C)	Capricorder 1598	18-2-76	28-1-77
	OTT Weekly	29-1-77	

4.2.1 Structures

Since September 1973, river stage had been recorded using Negretti and Zambra pressure bulb recorders. Various difficulties were encountered in trying to gauge low flows (Scarf, 1975) and it was recognised as essential that permanent flow structures should be constructed so that reliable flow data could be collected. A 4 ft. HL flume design was chosen, and following detailed site surveys and the drawing of the flume plans complete with wingwalls and earth bunds, tenders were called in July 1975 and work commenced in October 1975.

Construction of the 4 ft. HL flumes and associated earth bunds and stream realignment works were completed in January 1976 (Plate 8) and the Capricorder punch tape recorders were installed the following month.

The theoretical rating for HL flumes assumes that there are free flow conditions existing and it became apparent that such conditions did not exist at Site C. A survey was taken of the stream between the flume and a downstream hollow log culvert which channeled the stream under a Felda access road. In order to improve the channel gradient and so achieve free flow conditions at the flume, it was decided to realign the stream and install a concrete pipe culvert under the road (Fig. 4). Following the completion of these works in October 1976, free flow conditions were achieved at Site C.

Similar realignment works were found necessary at Site B and these works were completed in November 1976 (Fig. 3). While these additional works provided free flow conditions during normal and low flows, the flood flows experienced in December 1976 were badly affected by backwater conditions. Hence in March 1977, further realignment works were carried out at the confluence of the streams from Basins B and C.

During the prolonged periods of dry weather experienced in 1976, it was found that the stream flow was so small that the intake pipe at Site A was often exposed (Plate 9) and it proved very difficult to record such shallow conditions. (Similar low flow observations could not be made at Sites B and C since these flumes, as mentioned above, were in a "drowned" condition).

To examine the probability of such low river stages, the flow duration data collected in the Sg. Tekam Basin during 1973-74 (Scarf, 1975) were compared with the theoretical rating of a 4 ft. HL flume. It was found for the smaller catchments A and C that theoretically the river stage at those sites would be less than or equal to the mid-barrel height of the intake tube for 50% of the time.



PLATE 9

Exposed intake pipe at Site A—June 1976.

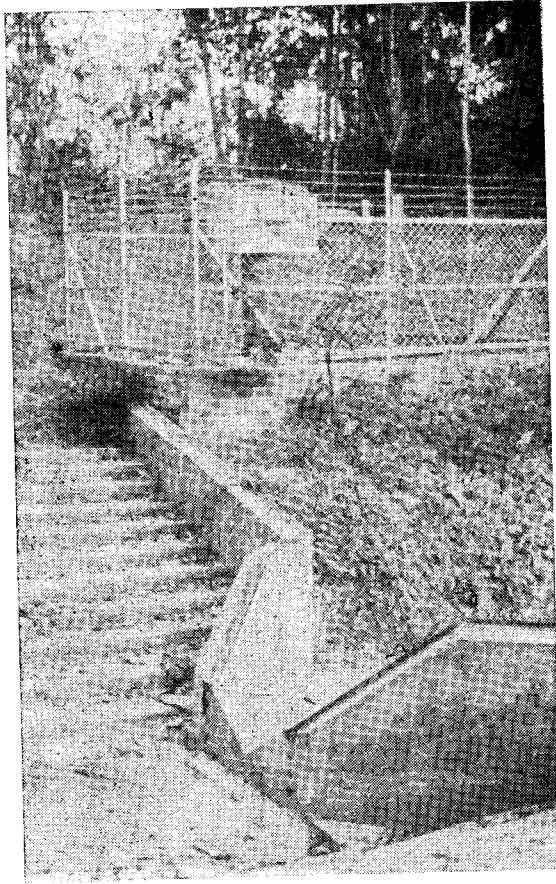


PLATE 10
V--notch plate modification to the HL flume at site B—March 1977.

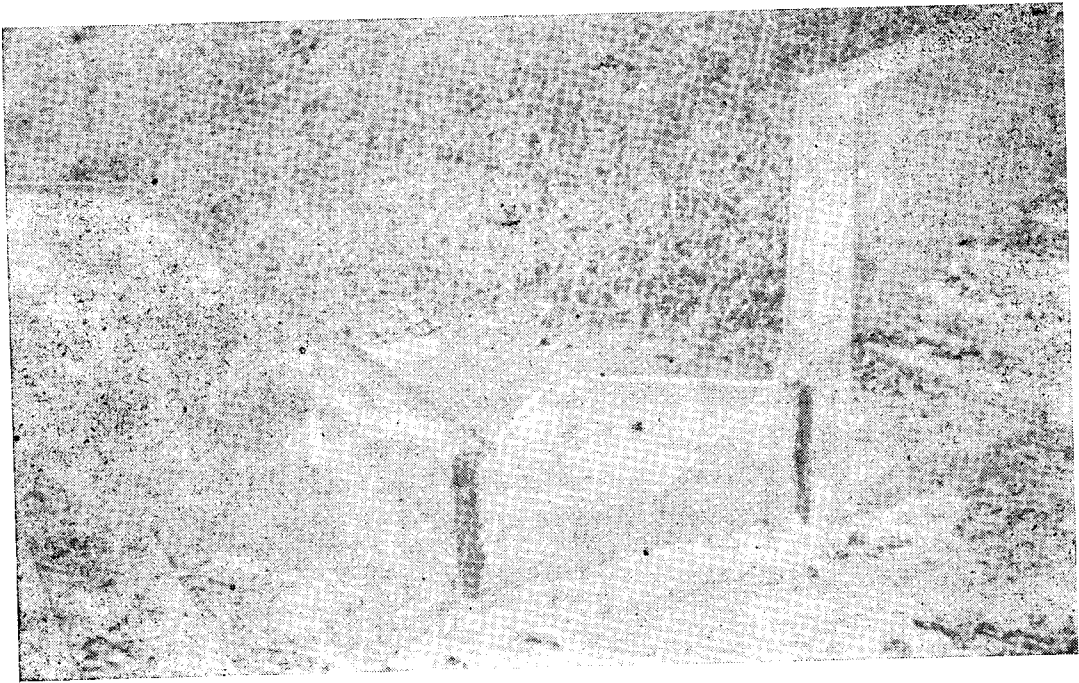


PLATE 11
V--notch plate modification to the HL flume at site A—March 1977.

Therefore to improve the sensitivity of the flumes it was decided to replace the front portions with 120° V-notch plates. The modification to all these three flumes was completed in March 1977 (Plates 10 and 11).

4.2.2 Records

As can be seen from the daily rainfall totals presented in Tables 5A, 5B and 5C, the Negretti and Zambra pressure bulb recorders did not prove to be very reliable over the period September 1974 to February 1976. These recorders had been chosen because of their cheap and easy installation prior to the design and construction of the permanent flow structures and their stilling wells. However, frequent leakages in both the tubing and the pressure bulb itself resulted in both poor and missing records totalling about 30% of the whole period for each recorder.

The subsequent change to Capricorder 1598 punched tape event recorders which were installed at all three flumes, was also not satisfactory and the length of records lost at each site was worse than with the pressure bulb recorders. However, as stated above, free flow conditions were not achieved at Site B until March 1977 and at Site C until October 1976 so even Capricorder river stage data collected from these Sites were unusable since no attempt was made to rate the flumes in their drowned condition. A combination of Capricorder malfunctions and inability to record the extremely shallow flows which existed for much of the year resulted in very little usable river stage data from Site A. In addition very little gauging was carried out at this Site because the small drop over the flume and the flat downstream gradient made volumetric gauging attempts very difficult.

Considering the difficulties that had been experienced with the Capricorders, it was decided to replace them at the same time as the installation of the V-notch plates. Therefore in January 1977 the Capricorder 1598 recorders were substituted with OTT weekly graphical recorders.

With the introduction of the V-notch plates in March 1977, it is anticipated that the above problems experienced with low flow recording will no longer exist since the induced ponding will ensure that the intake pipes are always submerged. Also the existence of the V-notch will provide a higher drop over the weirs make volumetric gauging of low flows easier.

TABLE 5A

BASIN A—TABULATION OF DAILY

1974—1975

Date	September		October		November		December		January		February	
	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q
1				1.17	25.5				2.0	1.36	0.0	
2				2.33	0.5				19.5	1.34	4.5	
3				1.23	0.5				0.5	0.45	0.0	
4					0.0			0.49	0.0	0.37	1.8	
5					0.0		0.0		11.5		0.0	
6			2.0		0.0		0.0		0.5		0.0	
7			2.0		2.0		0.0		0.0		7.5	
8			6.0		0.0		0.0		4.0		0.0	
9			34.0		5.8	2.73	0.0		5.0		2.0	
10			2.0		0.0		0.0		10.5		0.5	
11			0.0		0.0		0.0		10.5	0.75	0.0	
12			0.0		0.0		0.0	0.19	0.5	0.81	0.5	
13			3.0		0.0		0.0	0.08	0.0	0.53	5.0	
14			1.0	0.53	2.5	0.02	0.0	0.37	12.5	0.75	2.0	
15			2.0	0.57	1.0		6.0	2.23	0.0	0.44	5.8	
16			15.0	1.04	0.0		4.0	0.65	20.0	0.95	12.5	
17			3.5	0.51	0.0		9.0		1.5	0.23	0.0	
18			23.0	7.09	0.0		0.0		5.0	0.11	0.0	
19			0.0	1.39	6.5		14.0		0.5	0.15	0.5	
20		0.15	0.0	0.85	5.0		0.5		2.0		0.0	
21		0.12	0.0		18.0		0.0		0.0		0.0	
22		5.21	0.0		7.0	0.45	0.0		6.5		6.0	
23		0.37	3.0	0.18	1.5	1.84	0.0		0.0		111.0	
24		0.11	0.5		0.0		0.0		0.0		11.5	
25		0.24	0.0		4.5		0.0		0.0		3.0	
26		0.19	0.0		0.5		0.0		0.0		2.0	
27		0.20	3.0		0.0		36.5		0.0		0.0	
28		0.14	3.0				8.5		0.0		0.0	
29		1.39	0.0			2.47	2.5		0.0			
30		0.85	7.5			1.14	0.0		0.0			
31			0.0				5.5		0.0			
TOTAL ..			110.0						112.0		176.1	

N.B.: Blank denotes missing record.

RAINFALL AND RUNOFF DATA (mm)

1975

March		April		May		June		July		August	
P	Q	P	Q	P	Q	P	Q	P	Q	P	Q
0.0		6.0	0.10	0.0	0.67	0.0	0.08	0.0	0.05	0.0	0.02
0.0		0.5	0.13	0.0		0.0	0.09	0.0	0.05	0.0	0.03
18.0		7.0	0.18	0.0		1.0	0.08	0.0	0.03	0.0	0.04
5.5		1.5	0.08	0.0		0.0	0.08	0.0	0.02	0.0	0.04
0.0		0.0	0.13	6.0	0.27	22.5	0.98	8.3	0.04	0.0	0.05
0.0		0.0	0.13	0.5	0.19	0.0	7.98	0.0	0.05	0.0	0.05
5.0		0.0	0.13	40.0	2.94	37.0	3.04	0.0	0.05	3.5	0.04
1.0		0.0	0.12	16.0		0.0	0.08	8.5	0.08	2.3	0.03
0.0		0.0	0.12	6.0		28.3	3.29	0.0	0.08	11.0	0.07
0.0		0.0	0.08	0.0		0.5	0.45	2.5	0.04	0.0	0.07
0.0		0.0	0.09	0.0		0.0	0.11	0.0	0.02	0.0	0.05
1.5		0.0	0.10	0.0		0.0	0.08	0.0	0.02	0.0	0.03
0.0		7.5	0.10	0.0	0.05	1.0	0.08	14.5	0.04	0.0	0.03
0.0		33.8	3.71	11.5	0.04	0.5	0.08	1.0	0.06	6.0	0.02
0.0		57.0	15.35	13.8	0.01	0.0	0.08	0.0	0.05	0.0	0.02
0.0		19.5		5.8	0.00	30.0	3.21	0.5	0.06	0.0	0.02
1.8		35.0		0.5	0.00	0.0	0.23	0.5	0.05	0.0	0.01
1.5		4.0		4.8	0.00	0.5	0.08	0.5	0.03	15.8	0.04
33.3		15.0		0.0	0.89	3.8	3.08	0.0	0.03	0.0	0.04
59.3		0.0		2.0	0.30	0.0	0.08	0.0	0.05	2.8	0.03
28.0		0.0		6.5	0.13	0.0	0.08	0.0	0.05	0.0	0.00
12.0		0.0		0.0	0.08	0.0	0.08	1.0	0.05	0.0	0.00
2.0		0.0		0.0	0.08	0.0	0.08	0.5	0.05	0.0	0.00
0.5		0.0	0.18	6.0	0.08	0.5	0.08	0.0	0.03	0.0	0.00
0.0		11.0	0.46	0.0	0.08	0.0	0.08	0.0	0.01	0.0	0.01
6.0		7.3		10.0	0.08	0.0	0.08	1.0	0.05	0.0	0.01
0.0		0.0		0.0	0.08	0.0	0.08	5.8	0.08	0.0	0.01
0.0		0.0	0.31	1.5	0.11	27.0		0.0	0.08	20.3	0.05
1.0		7.8	0.48	0.0	0.08	13.0		0.0	0.08	34.0	2.30
2.0		0.0	0.15	1.5	0.08	0.0		0.0	0.07	10.8	0.08
0.0	0.10			1.5	0.08			0.0	0.05	0.5	0.05
178.4		212.9			6.32	165.6		44.6	2.40	107.0	3.24

TABLE 5A—(cont.)

BASIN A TABULATION OF DAILY

1975—1976

Date	September		October		November		December		January		February	
	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q
1	37.9	3.45	0.0	0.05	1.0	0.05	0.0	0.23	0.0	0.15	0.0	0.04
2	9.3	0.48	2.0	0.02	0.8	0.05	0.0	0.34	0.0	0.11	0.0	0.05
3	3.0	0.06	0.5	0.02	0.0	0.04	0.0	0.29	0.0	0.08	0.0	0.05
4	0.0	0.02	0.0	0.02	15.5	0.50	26.5	4.96	0.5	0.08	0.0	
5	0.5	0.02	0.0	0.02	29.0	3.41	1.0	0.15	0.0	0.08	2.3	
6	8.8	0.08	5.8	0.02	0.5	0.16	0.0	0.13	0.0	0.08	0.0	
7	1.8	0.08	3.5		18.3	0.11	14.0	2.77	12.0	0.57	0.0	
8	0.0	0.05	0.5		3.5	1.08	0.5	0.39	0.0	0.08	0.0	
9	12.3	0.04	0.0		0.8	0.08	0.5	0.37	0.0	0.08	0.0	0.08
10	0.5	0.07	16.5	0.00	0.0	0.09	35.3	13.90	0.0	0.08	0.0	0.08
11	6.5	0.01	0.8	0.03	17.0	1.68	4.8	4.40	0.0	0.08	0.0	
12	0.5	0.01	14.0	0.18	5.5	0.13	0.0	0.29	6.5	0.12	0.0	
13	0.0	0.01	13.8	0.05	0.0	0.13	4.5	0.39	0.5	0.08	0.0	
14	1.3	0.01	19.0	0.63	6.0	0.19	11.5	0.73	0.0	0.08	0.0	
15	0.0	0.01	2.0	0.11	12.0	0.76	11.8	1.29	0.0	0.08	0.0	
16	0.0	0.02	13.0	0.04	4.0	0.14	4.5	1.00	0.0	0.08	0.0	
17	6.8	0.02	0.0	0.24	4.3	0.13	0.0	0.39	0.0	0.08	0.0	
18	0.0	0.02	19.0	0.08	6.8	0.18	0.0	0.12	0.0	0.08	0.0	
19	8.8	0.00	0.0	0.11	0.5	0.14	0.0	0.30	0.0	0.08	0.0	
20	33.5	1.91	8.5	0.06	3.3	0.13	4.3	1.13	0.0	0.08	0.0	
21	0.5	0.05	3.3	0.04	11.3		0.5	1.02	0.0	0.08	0.0	
22	2.3	0.01	0.0	0.02	4.3		1.0	0.89	0.0	0.05	0.0	
23	0.5	0.01	0.0	0.01	7.5		46.3	9.18	2.0	0.05	0.0	
24	31.8	2.29	0.0	0.00	93.8		3.5	0.95	0.0	0.05	0.0	
25	3.3	0.05	7.3	0.02	1.0		3.5	0.26	0.0	0.03	0.0	
26	60.5	16.57	4.3	0.02	9.3	11.19	14.5	3.12	0.5	0.06	0.0	
27	0.5	0.11	0.0	0.04	40.3	6.60	6.0	0.50	0.0	0.08	2.0	
28	0.0	0.05	6.8	0.06	31.0	10.30	0.0	0.18	0.0	0.15	1.8	
29	0.0	0.03	9.3	0.08	0.5	9.15	20.9	3.93	2.0	0.05	2.3	
30	0.0	0.04	4.5	0.12	0.0	0.13	6.3	0.82	0.0	0.05		
31			0.5	0.05			1.0	0.50	0.0	0.04		
TOTAL	230.9	25.58	154.9		27.8		222.9	55.34	24.0	2.66	8.4	

N.B.: Blank denotes missing record—

No runoff data for March 1976 to March 1977.

RAINFALL AND RUNOFF DATA (mm)—(cont.)

1976—1977

<i>Mar.</i>	<i>Apr.</i>	<i>May</i>	<i>Jun</i>	<i>Jul.</i>	<i>Aug.</i>	<i>Sep.</i>	<i>Oct.</i>	<i>Nov.</i>	<i>Dec.</i>	<i>Jan.</i>	<i>Feb.</i>	<i>Mar.</i>
<i>P</i>	<i>P</i>	<i>P</i>	<i>P</i>	<i>P</i>	<i>P</i>	<i>P</i>	<i>P</i>	<i>P</i>	<i>P</i>	<i>P</i>	<i>P</i>	<i>P</i>
3.3	0.0	0.0	22.8	0.0	0.0	13.5	0.0	0.0		1.1	10.1	0.3
0.8	0.0	3.8	0.3	0.0	1.2	3.4	0.0	6.3		1.1	0.2	0.0
0.0	0.0	6.5	0.8	0.0	0.0	3.8	35.8	2.2		0.3	25.3	0.0
0.0	0.0	19.5	1.3	0.0	0.0	0.3	0.6			8.4	7.5	2.5
0.0	0.0	0.3	0.0	0.0	0.0	7.0	8.7			22.6	0.0	0.0
0.0	0.0	0.0	0.0	6.1	0.0	1.2	19.7			0.9	0.0	0.0
0.0	0.0	12.0	0.8	3.6	0.0	1.4	0.4		8.2	6.9	0.0	0.0
0.0	0.0	1.3	14.0	10.4	0.0	0.3	0.4		7.3	0.0	15.5	0.0
10.0	16.0	0.5	2.5	0.3	0.0	1.9	9.2		0.0	0.0	15.5	0.3
0.0	1.8	2.0	0.0	11.0	0.0	2.1	0.0		5.3	0.0	3.9	0.0
2.5	0.0	0.0	0.0	1.1	0.1	19.8	8.4			0.0	0.6	0.0
0.8		7.3	0.0		0.0	2.5	15.4			0.0	0.0	0.3
2.5		8.3	0.0		0.0	4.1	17.4			0.0	0.0	0.0
2.3		0.0	0.0		25.0	0.0	3.9			0.0	0.2	0.0
0.8		0.0	0.5		20.3	6.9				0.0	0.0	0.0
2.0		0.0	0.0	7.3	2.1	5.3		6.0		0.0	0.0	0.0
0.0		0.0	0.0	0.0	6.6	10.6		3.0		0.0		0.0
0.0		0.0	36.5	0.0	6.6	0.0		10.2		0.0		0.0
0.0		0.0	0.0	0.0	0.0	0.0	3.5			0.0		0.0
0.0	0.3	0.0	0.0	0.0	0.0	20.7				0.0		0.0
0.0	14.3	0.0	0.0	0.4	9.4	2.0			10.9	0.0		0.0
45.3	0.8	0.0	0.0	0.0	5.8	0.0			23.6	0.0	0.0	0.0
2.3	27.8	0.0	54.3	9.6	32.9	0.0		13.4		0.0	0.0	0.0
0.3	0.0	0.0	0.0	0.0	1.9	0.0		2.0		0.0	0.5	0.0
2.3	1.5	0.0	15.5	0.0	14.0	32.5		2.0		0.0	12.9	1.0
10.8	2.0	0.0	3.8	0.5	6.4	1.7		16.9		0.0	3.1	0.8
0.0	0.8	0.0	0.3	0.8	71.0	7.6	0.0	0.0		0.0	0.0	0.3
0.0	0.5	0.0	0.0	0.0	1.4	1.3	8.3	0.0	18.8	0.0	18.4	0.0
0.0	0.0	0.0	0.0	0.0	0.0	3.8	0.0	0.0	18.8	0.		0.0
0.0	0.0	0.8	0.0	0.0	6.1	0.0	0.0		2.8	0.0		0.0
0.0		30.2		0.0	26.1		0.0		21.7	2.0		0.0
86.0		92.5	153.4		236.9	153.7				43.3		5.5

TABLE 5B

BASIN B—TABULATION OF DAILY

1974—1975

Date	September		October		November		December		January		February	
	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q
1				0.26	25.5	0.00		0.97	2.0	2.46	0.0	0.09
2				0.08	0.5	0.00		0.97	19.5	2.29	4.5	0.09
3				0.09	0.5	0.00		0.97	0.5	1.97	0.0	0.09
4				0.09	0.0	0.00		0.62	0.0	0.97	1.8	0.09
5			0.0	0.09	0.0	0.00	0.0	0.00	11.5	0.97	0.0	0.09
6			2.0	0.09	0.0		0.0	0.00	0.5	0.97	0.0	0.00
7			2.0	0.40	2.0		0.0	0.00	0.0	0.53	7.5	0.35
8			6.0	0.00	0.0		0.0	0.00	4.0	0.53	0.0	0.35
9			34.0		5.8		0.0	0.00	5.0	0.44	2.0	0.35
10			2.0		0.0		0.0		10.5	0.88	0.5	0.18
11			0.0		0.0		0.0		10.5	1.06	0.0	0.00
12			0.0		0.0		0.0	0.0	0.5	0.62	0.5	0.00
13			3.0		0.0		0.0	0.00	0.0	0.18	5.0	0.00
14		0.26	1.0		2.5		0.0	0.00	12.5	0.44	2.0	0.00
15		0.09	2.0	0.09	1.0		6.0	1.58	0.0	0.26	5.8	0.09
16		0.09	15.0	0.26	0.0		4.0	0.62	20.0	2.29	12.5	0.18
17		0.00	3.5	0.00	0.0		9.0	4.58	1.5	0.62	0.0	0.18
18		0.00	23.0	0.00	0.0		0.0	0.53	5.0	0.70	0.0	0.00
19		0.00	0.0	0.00	6.5		14.0	0.40	0.5	0.79	0.5	0.00
20		0.09	0.0	0.00	5.0		0.5	0.18	2.0	0.33	0.0	0.00
21		0.15	0.0	0.00	18.0		0.0	0.00	0.0	0.15	0.0	0.09
22		0.15	0.0	0.00	7.0		0.0	0.00	6.5	0.31	6.0	0.18
23		0.26	3.0	0.00	1.5	0.97	0.0	0.00	0.0	0.15	111.0	34.76
24		0.26	0.5	0.00	0.0	0.97	0.0	0.00	0.0	0.18	11.5	
25		0.26	0.0	0.00	4.5	0.97	0.0	0.00	0.0	0.18	3.0	
26		0.40	0.0	0.00	0.5	0.97	0.0	0.00	0.0	0.18	2.0	
27		0.79	3.0	0.00	0.0	0.97	36.5	0.26	0.0	0.18	0.0	
28		0.79	3.0	0.00	0.0	0.97	8.5	59.84	0.0	0.18	0.0	
29		0.35	0.0	0.00		9.86	2.5	11.62	0.0	0.18		
30		0.62	7.5	0.00		0.97	0.0	3.26	0.0	0.09		
31			0.0	0.00			5.5	2.73	0.0	0.09		
TOTAL			110.0						112.5	21.14	176.1	

N.B.: Blank denotes missing record.

RAINFALL AND RUNOFF DATA (mm)

1975

March		April		May		June		July		August	
P	Q	P	Q	P	Q	P	Q	P	Q	P	Q
0.0		6.0	0.18	0.0	0.53	0.0	0.41	0.0		0.0	0.00
0.0		0.5	0.18	0.0	0.53	0.0	0.52	0.0		0.0	0.00
18.0		7.0	0.00	0.0	0.35	1.0	0.35	0.0		0.0	0.00
5.5		1.5	0.00	0.0		0.0	0.18	0.0		0.0	0.00
0.0	0.09	0.0	0.00	6.0		22.5	0.27	8.3		0.0	0.00
0.0	0.00	0.0	0.00	0.5	0.53	0.0	0.22	0.0		0.0	0.00
5.0	0.00	0.0	0.00	40.0	2.73	37.0	0.35	0.0		3.5	0.00
1.0		0.0	0.00	16.0	2.29	0.0	0.26	8.5	0.26	2.3	0.00
0.0		0.0	0.00	6.0	0.53	28.3	0.26	0.0	0.18	11.0	0.00
0.0		0.0	0.00	0.0	0.18	0.5	0.09	2.5	0.18	0.0	0.00
0.0	0.00	0.0	0.00	0.0	0.35	0.0	1.67	0.0	0.37	0.0	0.00
1.5	0.00	0.0	0.18	0.0	0.00	0.0	1.23	0.0	0.09	0.0	0.00
0.0	0.00	7.5	0.18	0.0	0.26	1.0	1.85	14.5	0.09	0.0	0.00
0.0	0.00	33.8	3.78	11.5	0.00	0.5	2.73	1.0	0.44	6.0	0.00
0.0	0.00	57.0	19.45	13.8	0.00	0.0	0.53	0.0	0.09	0.0	0.00
0.0	0.00	19.5	5.81	5.8	2.38	30.0	2.02	0.5	0.26	0.0	0.00
1.8	0.00	35.0	3.90	0.5	1.58	0.0	2.73	0.5	0.55	0.0	0.00
1.5	0.26	4.0	3.70	4.8	0.79	0.5	3.08	0.5	0.50	15.8	0.09
33.3	2.55	15.0		39.0	0.35	3.8	0.97	0.0	1.50	0.0	0.00
59.3	5.90	0.0		2.0	0.09	0.0	0.88	0.0		2.8	0.00
28.0	5.63	0.0		6.5	0.26	0.0	0.70	0.0		0.0	0.00
12.0	3.93	0.0	0.93	0.0	0.26	0.0	1.50	1.0	1.06	0.0	0.00
2.0	1.41	0.0	0.54	0.0	3.78	0.0	1.50	0.5	0.97	0.0	0.00
0.5		0.0	0.18	6.0	2.64	0.5	1.50	0.0	0.62	0.0	0.00
0.0		11.0	1.06	0.0	1.41	0.0		0.0	1.06	0.0	0.00
6.0		7.3	0.79	10.0	0.53	0.0		1.0		0.0	0.00
0.0		0.0	0.52	0.0	0.18	0.0		5.8		0.0	0.00
0.0	0.00	0.0	0.26	1.5	3.34	27.0		0.0		20.3	0.00
1.0	0.00	7.8	0.70	0.0	2.90	13.0		0.0		34.0	1.50
2.0	0.00	0.0	0.53	1.5	1.94	0.0		0.0	0.09	10.8	0.18
0.0	0.09			1.5	1.14			0.0	0.00	0.5	0.09
178.4		212.9				165.6		44.6		107.0	1.86

TABLE 5B—(cont.)

BASIN B—TABULATION OF DAILY

Date	September		October		November		December		January		February	
	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q
1	37.9	3.52	0.0	0.00	1.0	7.74	0.0		0.0	0.26		
2	9.3	0.35	2.0	0.00	0.8	10.21	0.0		0.0	0.00		
3	3.0	0.00	0.5	0.00	0.0	4.49	0.0		0.0	0.00		
4	0.0	0.00	0.0	0.00	15.5	5.37	26.5		0.5	0.00		
5	0.5	0.00	0.0	0.00	29.0	4.66	1.0		0.0	0.00		
6	8.8	0.00	5.8	0.00	0.5	4.66	0.0		0.0	0.00		
7	1.8	0.00	3.5	0.00	18.3	4.66	14.0		12.0	0.00		
8	0.0		0.5	0.00	3.5	8.27	0.5		0.0	0.00		
9	12.3		0.0	2.90	0.8	6.51	0.5		0.0	0.00		
10	0.5		16.5	0.70	0.0	8.71	35.3		0.0	0.00		
11	6.5		0.8	0.44	17.0	13.90	4.8		0.0	0.00		
12	0.5		14.0	0.09	5.5	9.86	0.0		6.5	0.00		
13	0.0		13.8	0.79	0.0	6.25	4.5		0.5	0.00		
14	1.3	0.00	19.0		6.0	6.25	11.5		0.0	0.00		
15	0.0	0.00	2.0		12.0	19.8	11.8		0.0	0.00		
16	0.0	0.00	13.0	58.5	4.0	6.69	4.5		0.0	0.00		
17	6.8	0.00	0.0	47.34	4.3	3.08	0.0		0.0			
18	0.0	0.00	19.0	47.08	6.8	2.99	0.0		0.0			
19	8.8	0.00	0.0	40.74	0.5	2.64	0.0		0.0			
20	33.5	0.09	8.5	13.2	3.3	3.43	4.3		0.0			
21	0.5	0.00	3.3	5.90	11.3	2.64	0.5		0.0			
22	2.3	0.00	0.0	7.13	4.3		1.0		0.0			
23	0.5	0.00	0.0	6.69	7.5		46.3		2.0			
24	31.8	1.67	0.0	3.96	93.8		3.5		0.0			
25	3.3	0.00	7.3	7.66	1.0		3.5		0.0			
26	60.5	0.70	4.3	8.10	9.3		14.5		0.5			
27	0.5	0.09	0.0	7.48	40.3		6.0		0.0			
28	0.0	0.00	6.8	8.71	31.0		0.0		0.0			
29	0.0	0.00	9.3	6.95	0.5		20.9		2.0			
30	0.0	0.00	4.5	6.42	0.0		6.3		0.0			
31			0.5	5.72			1.0		0.0			
TOTAL	230.9		154.9		327.8		222.7		24.0			

N.B.: Blank denotes missing record.

No runoff data for March 1976 to March 1977.

RAINFALL AND RUNOFF DATA (mm)---(cont.)

1976-1977

Mar.	Apr.	May	Jun	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
P	P	P	P	P	P	P	P	P	P	P	P	P
3.3	0.0	0.0	22.8	0.0	0.0	13.5	0.0	0.0		1.1	10.1	0.3
0.8	0.0	3.8	0.3	0.0	1.2	3.4	0.0	6.3		1.1	0.2	0.0
0.0	0.0	6.5	0.8	0.0	0.0	3.8	35.8	2.2		0.3	25.3	0.0
0.0	0.0	19.5	1.3	0.0	0.0	0.3	0.6			8.4	7.5	2.5
0.0	0.0	0.3	0.0	0.0	0.0	0.7	8.7			22.6	0.0	0.0
0.0	0.0	0.0	0.0	6.1	0.0	1.2	19.7			0.9	0.0	0.0
0.0	0.0	12.0	0.8	3.6	0.0	1.4	0.4		8.2	6.9	0.0	0.0
0.0	0.0	1.3	14.0	10.4	0.0	0.3	0.4		7.3	0.0	15.5	0.0
10.0	16.0	0.5	2.5	0.3	0.0	1.9	9.2		0.0	0.0	15.5	0.3
0.0	1.8	2.0	0.0	11.0	0.0	2.1	0.0		5.3	0.0	3.9	0.0
2.5	0.0	0.0	0.0	1.1	0.1	19.8	8.4			0.0	0.6	0.0
0.8		7.3	0.0		0.0	2.5	15.4			0.0	0.0	0.3
2.5		8.3	0.0		0.0	4.1	12.4			0.0	0.0	0.0
2.3		0.0	0.0		25.0	0.0	3.9			0.0	0.2	0.0
0.8		0.0	0.5		20.3	6.9				0.0	0.0	0.0
2.0		0.0	0.0	7.3	2.1	5.3		6.0		0.0	0.0	0.0
0.0		0.0	0.0	0.0	6.6	10.6		3.0		0.0		0.0
0.0		0.0	36.5	0.0	6.6	0.0		10.2		0.0		0.0
0.0		0.0	0.0	0.0	0.0	0.0	3.5			0.0		0.0
0.0	0.3	0.0	0.0	0.0	0.0	20.7				0.0		0.0
0.0	14.3	0.0	0.0	0.4	9.4	2.0			10.9	0.0		0.0
45.3	0.8	0.0	0.0	0.0	5.8	0.0			23.6	0.0	0.0	0.0
2.3	27.8	0.0	54.3	9.6	32.9	0.0		13.4		0.0	0.0	0.0
0.3	0.0	0.0	0.0	0.0	1.9	0.0		2.0		0.0	0.5	0.0
2.3	1.5	0.0	15.5	0.0	14.0	32.5		2.0		0.0	12.9	1.0
10.8	2.0	0.0	3.8	0.5	6.4	1.7		16.9		0.0	3.1	0.8
0.0	0.8	0.0	0.3	0.8	71.0	7.6	0.0	0.0		0.0	0.0	0.3
0.0	0.5	0.0	0.0	0.0	1.4	1.3	8.3	0.0	18.8	0.0	18.4	0.0
0.0	0.0	0.0	0.0	0.0	0.0	3.8	0.0	0.0	18.8	0.0		0.0
0.0	0.0	0.8	0.0	0.0	6.1	0.0	0.0		2.8	0.0		0.0
0.0		30.2		0.0	26.1		0.0		21.7	2.0		0.0
86.0		92.5	153.4		236.9	147.4				43.0		5.5

TABLE 5C

BASIN C—TABULATION OF DAILY

1974—1975

Date	September		October		November		December		January		February	
	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q
1	0.5		3.0	0.40	18.0	4.40	12.0	0.32	16.0		0.0	
2	6.0		21.8	1.00	0.0	1.40	11.0	0.09	0.0		5.0	
3	0.5		4.8	0.63	0.0	0.33	9.5	0.06	6.0		0.0	
4	0.5		0.5	0.08	0.0	0.33	0.0	0.51			0.0	
5	5.0		1.0		0.0	0.33	0.0	3.09			0.0	
6	0.5		1.0			0.22	0.0	2.94			0.0	
7	0.0		0.0			2.14	0.0	0.49			11.0	
8	0.0		2.0			0.49	0.0	3.97				
9	3.5		18.0			0.36	0.0	4.21				
10	13.5		0.0			0.07	0.0	0.26			0.0	
11	0.0		0.0			0.01	0.0		9.0		0.0	0.01
12	0.5		0.0			0.01	0.0		0.0		13.0	0.01
13	0.5	0.05	0.0				0.0		0.0		0.0	0.01
14	6.2	0.05	0.0	0.04	11.5		18.0		12.0		0.0	0.01
15	10.0	0.05	0.0	0.05	0.5	0.05	27.5		15.0		0.0	0.01
16	0.0	0.05	7.0	0.10	7.5	0.11	6.5		0.0		3.0	0.01
17	11.0	0.05	0.4	0.11	6.0	0.13	15.5		0.0			0.01
18	0.0	0.05	5.0		4.0		0.0		17.0			0.01
19	0.0	0.05	0.0		6.0		17.0	4.90	0.0			0.01
20	3.0	0.05	0.0		19.0			3.17	2.0			0.01
21	7.3	0.21	0.0		35.5			5.18	0.0			0.01
22	33.0	9.12	0.0		5.5	0.33		0.58	5.0			0.01
23	1.8	0.31	0.0		8.0	0.59		4.56	0.0		16.50	
24	0.5	0.01		0.13	3.5	0.46		4.57	0.0			
25	0.0	0.01		0.02	7.5							
26	5.0			0.01	0.0							
27	0.0	0.06		0.06	2.0							
28	0.5	0.01			9.0		0.0					
29	20.3	1.73			31.0		0.0					
30	8.0	0.49	0.0		0.0	0.44	0.0					
31			0.0	0.19			8.0					
TOTAL	137.6											

N.B.: Blank denotes missing record.

RAINFALL AND RUNOFF DATA (mm)

1975

March		April		May		June		July		August	
P	Q	P	Q	P	Q	P	Q	P	Q	P	Q
			0.01	0.0	0.01	0.0	0.02		0.01		0.01
			0.01	0.0	0.00	0.0	0.02		0.01		0.01
			0.01	0.0	0.00	2.0	0.02		0.01		0.01
	0.01		0.01	0.0	0.00	0.0	0.02		0.01	0.0	0.01
	0.01		0.01	20.5	0.24	29.0	0.22			0.0	0.01
	0.01		0.01		0.01		1.97			8.5	0.01
	0.01		0.01		2.06	0.0	2.88	29.0		0.0	0.01
	0.01		0.00		0.12	0.0	0.24		0.02	0.0	0.01
	0.01		0.00			24.5	0.25		0.01	0.0	0.01
	0.01		0.01			0.0	0.12		0.00	0.0	0.01
	0.01		0.29			0.0	0.05		0.00	0.0	0.01
	0.01		0.86			0.0	0.04		0.00	0.0	0.01
	0.01		0.86	0.0	0.01	0.0	0.01		0.02	0.0	0.01
	0.01		0.46	6.0	0.01	0.0	0.01		0.00	5.0	0.01
	0.01		7.35	18.4	0.03	0.0	0.01		0.01	0.0	0.01
	0.01		1.24	14.0	0.22	17.0	0.14		0.00	0.0	0.01
	0.01		4.44	0.0	0.08	0.0	0.04		0.00	0.0	0.01
	0.01		0.86	3.0	0.01	0.0	0.02		0.00		0.05
	0.01		0.86	0.0	0.01	0.0	0.01		0.00		0.00
	5.74		0.73	3.5	0.25	0.0	0.01		0.00		0.00
	1.32	0.0	0.29	5.0	0.08	0.0	0.01		0.00		0.00
	0.19	0.0	0.20	0.0	0.02	0.0	0.01	0.0	0.00		0.00
		0.0	0.23	0.0	0.01	0.0	0.01	1.0	0.00		0.00
		0.0	0.04	0.0	0.01		0.01	0.0	0.00		0.00
	0.01	11.0	0.03	5.0	0.01		0.02	0.0	0.01	0.0	0.00
	0.01	8.0	0.09	6.0	0.02		0.01	2.0	0.01	0.0	0.00
	0.01	0.0	0.12	0.0	0.02		0.00	7.5	0.01	0.0	0.00
	0.01	0.0	0.04	0.0	0.02		0.00		0.01	24.0	0.05
	0.01	14.0	0.28	1.0	0.02		0.36		0.01	32.5	0.27
	0.01	0.0	0.02	2.0	0.02		0.02		0.01	0.0	0.03
	0.01			3.0	0.02				0.01		0.01
		19.37				6.55				0.58	

TABLE 5C—(cont.)

BASIN C—TABULATION OF DAILY

1975—1976

Date	September		October		November		December		January		February	
	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q
1		1.36	0.0	0.00	0.5	0.01	0.0	0.02	0.0		0.0	
2	6.5	0.02	2.0	0.00	1.0	0.02	0.0	0.02	0.0		0.0	
3	2.0	0.01	0.0	0.00	0.0	0.04	0.0	0.01	0.0		1.0	
4	2.0	0.00	0.0	0.00	10.5	0.08	3.00	2.48	0.0		0.0	
5	0.5	0.01	1.0	0.00	46.0	4.00	0.5	0.05	0.0		4.8	
6	11.3	0.01	5.0		0.0	1.60	0.0	0.05	0.0		0.0	
7	1.5	0.01	4.0		5.8	0.43	28.3	0.84	10.0		0.0	
8	0.0	0.01	0.0		2.0	0.46	0.5	0.05	0.0		0.0	
9	13.0	0.00	0.0		0.5	0.10	0.0	0.01	0.0		0.0	
10	0.5	0.00	14.5	0.00	0.0	0.10	33.8	1.68	0.0		0.0	
11	2.0	0.00	0.0	0.00	22.8	1.00	10.0	0.33	0.0		0.0	
12	0.5	0.00	11.3	0.00	5.0	0.24	0.0	0.33	12.8		0.0	
13	0.0	0.00	19.0	0.01	0.0	0.09	4.0		0.0		0.0	
14	2.8	0.00	15.5	0.22	1.0	0.05	10.5		0.0		0.0	
15	0.0	0.00	3.5	0.13	10.3	0.39	11.0	0.47	0.0		0.0	
16	0.0	0.00	13.3	0.09	1.5	0.19	3.5		0.0		0.0	
17	4.5	0.00	0.0	0.03	7.3	0.15	0.0		0.0		0.0	
18	0.0	0.00	31.3	4.80	9.8	0.46	0.0		0.0		0.0	
19	5.0	0.00	0.0	0.34	0.0	0.40	0.0		0.0		0.0	
20	39.0	0.94	14.0	0.15	7.0	0.20	0.5		0.0		0.0	
21	1.0	0.01	2.0	0.07	12.0	0.36	0.0		0.0		0.0	
22	0.0	0.00	0.0	0.05	4.0		1.0		0.8		0.0	
23	0.0	0.00	0.0	0.04	1.5		42.8	5.39	0.0		0.0	
24	34.3	0.25	0.0	0.02	45.0		5.0	1.24	0.0		0.0	
25	0.0	0.14	10.3	0.08	1.6		4.0		0.0		0.0	
26	30.0	2.84	3.8	0.04	9.3		15.0		0.0		0.0	
27	0.0	0.21	0.0	0.04	37.3		0.5		0.0		4.8	
28	0.0	0.02	3.3	0.05	11.0		0.0		0.0		2.0	
29	0.0		10.5	0.18	0.5		44.0		0.1		4.0	
30	0.0		0.0	0.08	0.0		3.5		0.0			
31			0.0	0.01			0.1		0.0			
TOTAL			164.3		253.2		249.4		23 7		16.6	

N.B.: Blank denotes missing record.

No runoff data for March 1976 to March 1977.

RAINFALL AND RUNOFF DATA (mm)—(cont.)

1976—1977

Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
P	P	P	P	P	P	P	P	P	P	P	P	P
				0.0	0.0	13.2	0.0	0.0	2.6	0.8	9.0	0.2
				0.0	0.8	4.2	0.0	4.0	0.0	0.6	0.6	0.0
				0.0	0.0	2.8	37.2	11.9	0.0	0.0	40.4	0.0
				0.0	0.0	0.0	0.8	12.2	0.0	4.8	11.2	0.7
				0.0	0.0	7.1	9.7	8.0	0.4	13.3	0.0	0.0
				18.3	0.0	0.8	16.8	0.5	5.4	1.0	0.0	0.0
				9.8	0.0	0.6	0.1	45.6	15.6	3.6	0.0	0.0
				9.0	0.0	0.0	2.2	21.0	4.2	0.0	14.6	0.0
				0.0	0.0	0.9	10.4	3.0	0.0	0.0	12.6	0.0
				12.2	0.0	1.4	0.0	1.2	9.4	0.0	7.8	0.0
				1.0	0.1	6.9	8.8	18.2	0.0	0.0	0.8	0.0
				23.1	0.0	1.0	26.2	0.3	0.0	0.0	0.0	0.1
				2.2	0.0	2.6	8.7	0.5	1.6	0.0	0.0	0.0
				0.0	32.5	0.0	7.7	13.3	17.1	0.0	0.1	0.0
				30.4	25.0	5.1	0.7	1.3	2.4	0.0	0.0	0.0
				6.8	2.6	7.8	20.2	4.7	6.5	0.0	0.0	0.0
				0.0	8.2	10.2	1.1	6.3		0.0	0.0	0.0
				0.0	7.4	0.2	1.2	14.6		0.0	0.0	0.0
				0.0	0.0	0.0	3.3	29.0		0.0	11.8	0.0
				0.0	0.0	19.8	33.7	0.3		0.0	1.1	0.5
				1.4	9.0	1.5	1.8	0.1	10.1	0.0	0.0	2.7
				3.6	2.0	0.0	4.0	25.7	26.5	0.0	0.0	0.0
				9.2	25.5	0.0	2.9	7.8	21.9	0.0	0.0	0.1
				0.0	2.4	0.0	7.3	2.1	40.8	0.0	1.4	0.4
				0.4	16.1	32.4		2.5	16.2	0.0	13.0	0.3
				0.5	6.5	1.6		15.4	53.4	0.0	7.5	1.3
				0.0	73.1	8.7	0.0	0.0	4.7	0.0	0.0	0.1
				0.0	1.1	1.4	12.5	0.0	18.2	0.0	30.6	0.0
				0.0	0.0	2.7	0.0	0.0	19.1	0.0		0.0
				0.0	6.5	0.0	0.0	0.5	3.4	0.0		0.0
				0.0	17.5		0.0		19.4	0.0		0.0
				127.9	236.3	132.9		250.0		24.1		6.4

FIG. 5
TABULATION OF DAILY RAINFALL FOR BASINS A, B & C

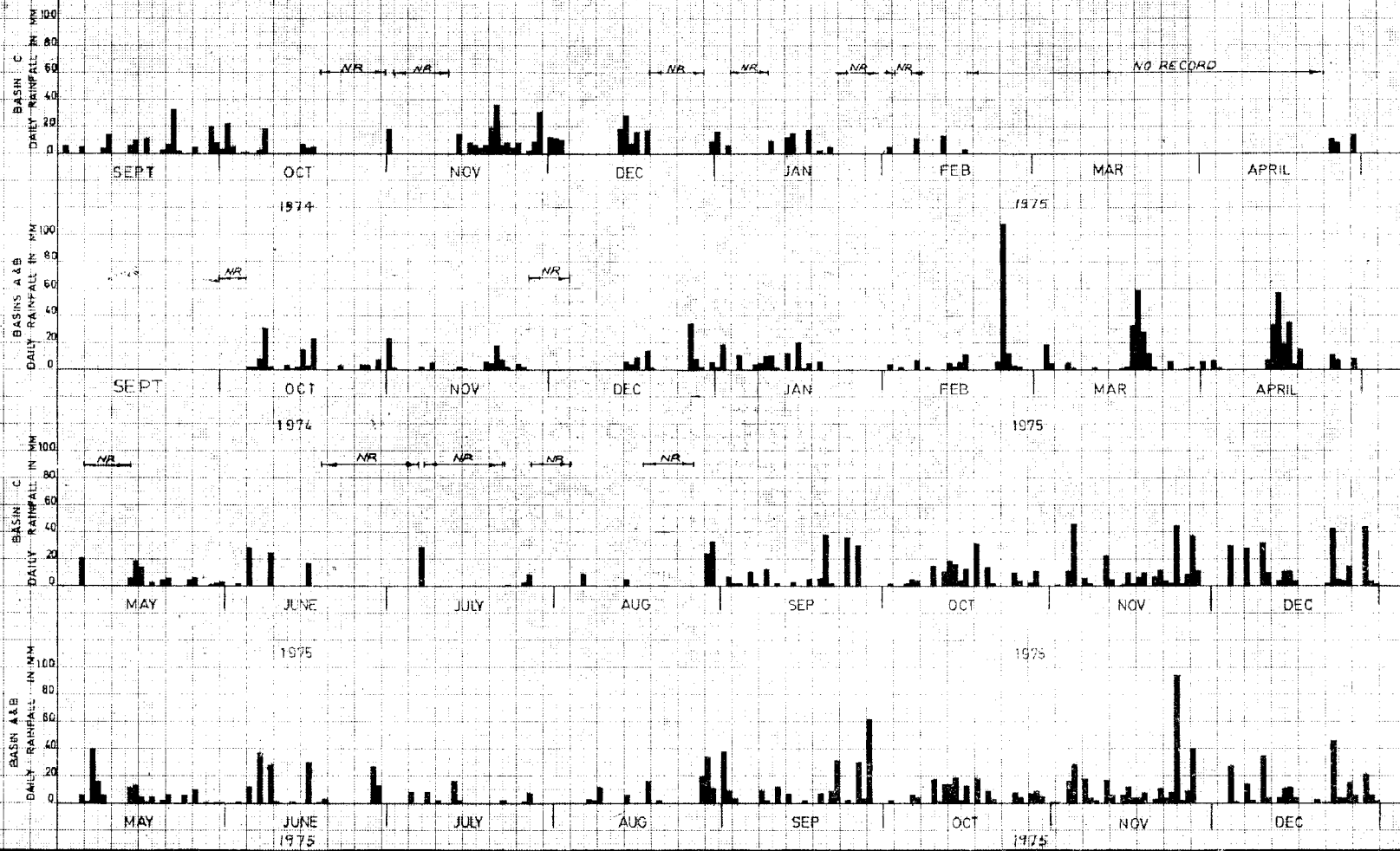
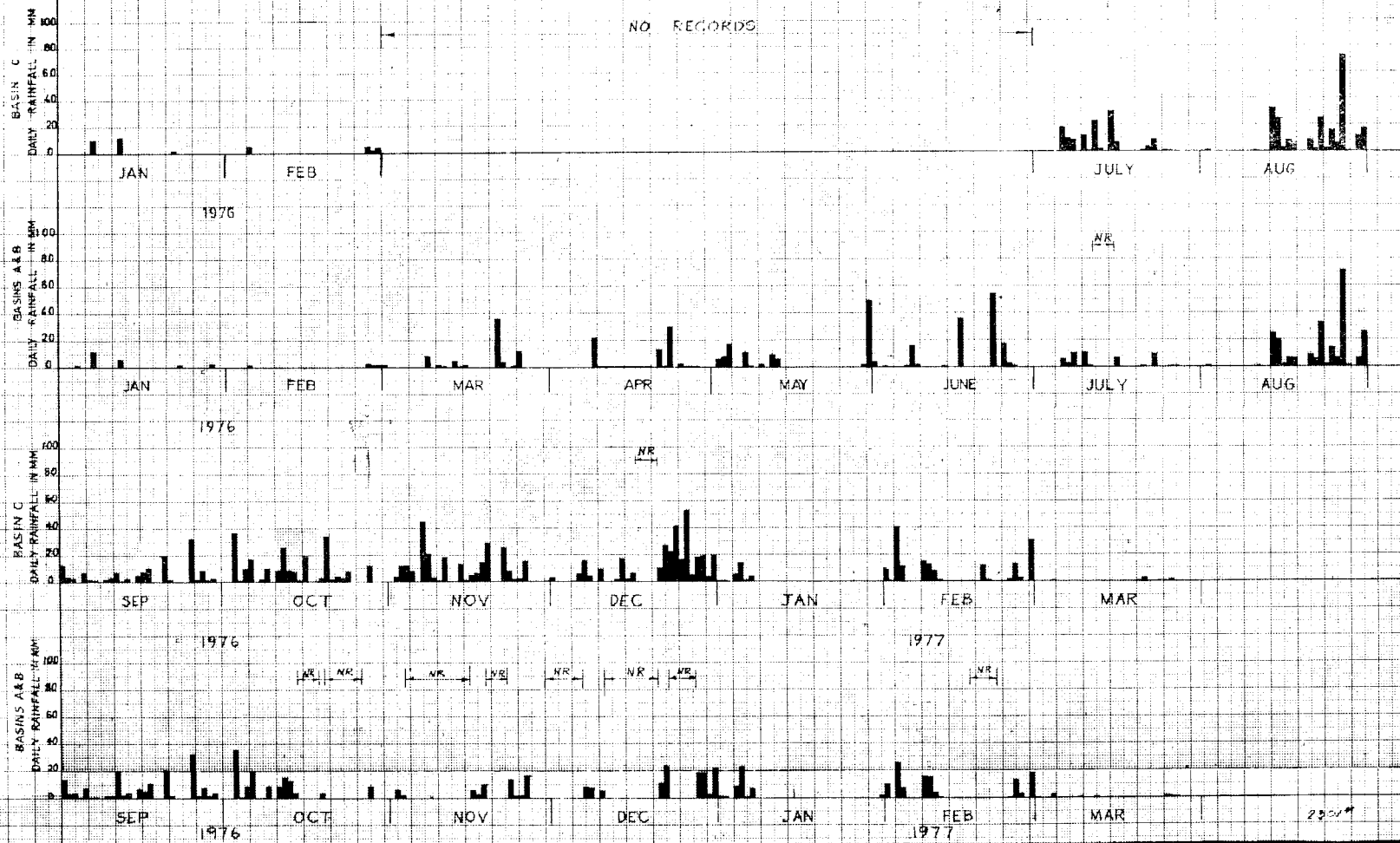


FIG. 5 (CONT'D)
TABULATION OF DAILY RAINFALL FOR BASINS A, B & C

NO RECORDS



4.3 Climate

Climate data is at present being recorded at the Tun Razak Agricultural Research Station, situated about 2¼ km from the Sg. Tekam Experimental Basin. It has been in operation since March 1969, and is operated by FELDA staff. The following instruments are installed :

- 1 manual raingauge, 125 mm capacity (5 inch).
- 1 recording raingauge: 0.5 mm tipping bucket rainfall sensor with Hattori weekly recorder.
- 1 cup anemometer (wind run only).
- 1 standard Stevenson screen containing maximum, minimum, wet and dry bulb thermometers.
- 1 US Class A white galvanised iron evaporation pan.
- 1 sunshine recorder.

Mean monthly climatic data are available from July 1973.

4.4 Water Quality

Since 2nd April, 1974, water quality samples have been collected upstream of each flow recorder site. All samples are taken from midstream at the surface and sampling frequency is usually fortnightly. Samples are delivered to the laboratory for analysis as soon as practicable but no attempt is made to preserve them. The analysis is performed by the Chemistry Department in the Petaling Jaya laboratory, Selangor.

5. DATA PROCESSING

5.1 Rainfall

The existing network was not considered sufficient to adopt the Thiessen or isohyetal methods and mean basin rainfalls were derived using the arithmetic mean of totals recorded at gauges 1 and 2 for both Basin A and Basin B, and gauges 3, 4 and 5 for Basin C.

Results are tabulated in Tables 5A, 5B and 5C and plotted in Fig. 5. The missing gaps for the 4 rainfall recorders are tabulated in Appendix B.

TABLE 6
RAINFALL INTENSITY DATA

Station Number			Station No. 1--3825001				Station No. 5--3925004			
Year			1975		1976		1975		1976	
Duration			Rainfall Intensity mm	Date	Rainfall Intensity mm	Date	Rainfall Intensity mm	Date	Rainfall Intensity mm	Date
15 mins.	..	..	37	20-3-75	15	22-3-76	22	18-10-75	15	14-11-76
30 mins.	..	..	43	20-3-75	31	22-3-76	29	18-10-75	23	31-5-76
1 hr.	..	..	43	20-3-75	53	22-3-76	38	18-10-75	45	31-5-76
2 hrs.	..	..	43	20-3-75	54	27-8-76	43	5-11-75	67	31-5-76
3 hrs.	..	..	52	15-4-75	59	27-8-76	51	23-12-75	67	31-5-76
6 hrs.	..	..	53	23-2-75	62	27-8-76	60	23-12-75	72	27-8-76
12 hrs.	..	..	104	23-2-75	62	27-8-76	62	24-11-75	72	27-8-76
24 hrs.	..	..	104	23-2-75	65	27-8-76	93	24-11-75	74	27-8-76
			to							
48 hrs.	..	..	122	23-2-75	67	26-8-76	97	24-11-75	85	25-12-76
			to							
			24-2-75							
72 hrs.	..	..	122	23-2-75	78	25-8-76	104	24-11-75	91	26-12-76
			to							
			25-2-75							
5 days	..	..	173	24-11-75	116	23-8-76	173	24-11-75	127	27-8-76
			to							
			28-11-75							
7 days	..	..	183	22-11-75	132	21-8-76	179	22-11-75	144	27-8-76
			to							
			28-11-75							
14 days	..	..	225	21-11-75	190	14-8-76	224	15-11-75	237	25-12-76
			to							
			4-12-75							
30 days	..	..	333	5-11-75	272	14-8-76	360	28-11-75	293	31-12-76
			to							
			4-12-75							
			to							
			12-9-76							
			4-12-75							

TABLE 6—(cont.)

RAINFALL INTENSITY DATA

Station Number			Station No. 2—3925001				Station No. 3—3925002			
Year			1974		1975		1976		1974	
Duration			Rainfall Intensity mm	Date	Rainfall Intensity mm	Date	Rainfall Intensity mm	Date	Rainfall Intensity mm	Date
15 mins	..	..	12	1-11-74	26	14-4-75	17	23-4-76	9	25-6-74
30 mins	..	..	22	1-11-74	31	14-4-75	30	23-4-76	17	25-6-74
1 hr.	..	..	28	9-10-74	31	14-4-75	46	31-5-76	32	25-6-74
2 hrs.	..	..	33	9-10-74	43	15-4-75	53	1-6-76	37	25-6-74
3 hrs.	..	..	33	9-10-74	53	15-4-75	53	1-6-76	38	1-8-74
6 hrs.	..	..	33	9-10-74	58	15-4-75	54	23-6-76	48	1-8-74
12 hrs.	..	..	34	9-10-74	94	23-2-75	54	23-6-76	54	1-8-74
24 hrs.	..	..	42	27-12-74	111	22-2-75	54	23-6-76	54	1-8-74
				to		to				
				28-12-74		23-2-75				
48 hrs.	..	..	43	27-12-74	123	22-2-75	58	23-6-76	54	1-8-74
				to		to		to		
				28-12-74		24-2-75		25-6-76		
72 hrs.	..	..	46	27-12-74	124	22-2-75	74	23-6-76	60	29-7-74
				to		to		to		to
				29-12-74		25-2-75		26-6-76		1-8-74
5 days	..	..	51	27-12-74	170	24-11-75	75	23-6-76	60	27-7-74
				to		to		to		to
				31-12-74		29-11-75		27-6-76		1-8-74
7 days	..	..	51	25-12-74	183	22-11-75	90	17-6-76	60	25-7-74
				to		to		to		to
				31-12-74		28-11-75		23-6-76		1-8-74
14 days	..	..	76	8-10-74	224	15-11-75	112	14-6-76	112	20-9-74
				to		to		to		to
				21-10-74		28-11-75		27-6-76		3-10-74
30 days	..	..	117	8-10-74	338	4-11-75	187	30-5-76	156	4-9-74
				to		to		to		to
				6-11-74		4-12-75		28-6-76		3-10-74

5.1.1 Rainfall Intensity

Yearly maximum rainfall intensities for each of the automatic rainfall recorders were extracted and are presented in Table 6. Since the records were not complete, it is possible that rainfall of higher intensities may have occurred during times of no record. For example, during the period February-April 1975, when maximum intensities from 15 minutes to 72 hours were recorded at Stations 1 and 2, there are no records available from station 5.

5.2 Flow

Daily runoff totals derived from chart records are found in Tables 5A, 5B and 5C. Flow data for the period September 1974 to February 1976 is obtained from the Negretti and Zambra pressure bulb recorders and the same stage-discharge tables used by Scarf (Scarf, 1975). The recorders were not reliable and over 30% of the flow data was missing or of poor quality.

As discussed in 4.2.2 a combination of Capricorder failures, drowned conditions at Sites B and C and extremely shallow flows registered at Site A resulted in mostly poor quality water level data. With no gauging possible at Sites B and C and gauging very difficult at Site A, no stage-discharge curves were produced for 1976. Hence even those few good quality tapes could not be processed and there is no runoff data available for the period February 1976-February 1977.

5.3 Climate

Mean monthly data from the Sg. Tekam Experimental Basin are tabulated in Table 7.

5.3.1 Potential Evapotranspiration

Monthly forest evapotranspiration data were derived using the climatic data in Table 7, and the Penman's procedure (Scarf, 1977) assuming conversion factors for sunshine hours to radiation of $a=0.22$ and $b=0.54$ and an albedo $r=0.18$. In the first report on Sg. Tekam Experimental Basin (Scarf, 1975), the author assumed a wind speed value of 0.82 m/s at a height of 13.5 m. Using the logarithmic equation recommended for wind velocity correction (Scarf, 1977) this value is equivalent to 0.22 m/s or 0.79 km/hr at a height of 2 m.

TABLE 7

MEAN MONTHLY CLIMATE DATA (PPPTR)

Year	Month	Air Temperature, °C			Wet and dry Bulb Temperature °F							Mean RH %	Sunshine Hours Total	Average Sunshine hrs/day	Rainfall mm	Wind run km/hr.	
		max.	min.	mean	1.30 p.m.			7.30 a.m.									
					wet	dry	RH%	wet	dry	RH%							
1974	September	..	..	32.2	22.4	27.3	77.6	87.7	64.0	72.2	73.1	95.5	79.8	144.0	4.8	160.7	—
	October	..	..	33.0	22.2	27.6	79.2	88.4	65.0	73.2	74.0	96.0	80.5	170.5	5.5	109.1	—
	November	..	..	31.0	22.0	26.5	77.8	86.0	71.0	72.8	73.3	97.5	84.3	114.0	3.8	227.5	—
	December	..	..	31.5	21.2	26.4	76.6	86.4	64.0	71.8	72.3	97.5	80.8	214.7	6.9	176.4	—
1975	January	..	..	31.0	20.8	25.9	76.3	84.4	69.5	70.2	70.6	98.0	83.8	160.9	5.2	121.3	—
	February	..	..	31.1	20.8	26.0	76.1	85.8	64.5	70.2	70.6	98.0	81.3	—	6.3	160.9	—
	March	..	..	33.1	21.5	27.3	77.7	88.7	61.5	71.6	72.1	97.5	79.5	—	7.0	204.2	—
	April	..	..	33.1	22.1	27.6	78.6	88.9	63.5	72.8	73.3	97.5	80.5	188.0	6.3	176.7	—
	May	..	..	32.9	22.5	27.7	78.9	88.5	66.0	73.4	73.8	98.0	82.0	190.0	6.1	167.7	—
	June	..	..	32.4	21.7	27.1	78.3	88.2	64.5	73.3	73.7	98.0	81.3	162.1	5.4	180.9	—
	July	..	..	31.9	21.5	26.7	77.6	87.7	63.5	71.4	72.0	97.0	80.3	210.1	6.7	58.0	—
	August	..	..	33.2	21.6	27.4	77.9	89.7	59.0	71.6	72.0	98.0	78.5	210.3	6.8	89.1	—
	September	..	..	32.7	22.0	27.3	77.7	88.3	62.5	72.2	72.8	97.0	79.8	160.9	5.3	205.6	—
	October	..	..	32.4	22.1	27.3	78.1	88.4	63.5	72.6	73.3	96.5	79.8	173.3	5.5	142.0	—
	November	..	..	30.2	21.6	25.9	77.5	84.6	73.5	72.0	72.3	98.0	85.8	126.7	4.2	313.6	—
	December	..	..	30.2	20.4	25.3	77.0	84.0	73.0	71.2	71.8	97.5	85.3	136.6	4.4	178.6	—
1976	January	..	..	30.6	18.9	24.8	73.9	85.3	59.0	67.5	67.8	96.0	77.5	201.9	6.9	15.1	—
	February	..	..	33.0	18.9	26.0	74.5	88.3	52.5	67.6	68.2	97.5	75.0	210.5	7.2	4.1	—
	March	..	..	33.8	20.7	27.3	76.3	90.5	51.5	71.1	71.41	96.0	73.8	220.0	7.1	140.6	—
	April	..	..	34.2	21.5	27.9	77.7	91.0	54.5	73.0	73.6	97.5	76.0	212.9	7.1	107.2	3.3
	May	..	..	33.5	21.6	27.6	78.3	90.5	57.5	73.2	73.6	98.5	78.0	235.6	7.6	169.0	3.1
	June	..	..	32.3	21.3	26.8	77.7	88.2	62.5	72.1	72.5	98.0	80.3	193.9	6.4	174.7	2.7
	July	..	..	32.9	21.3	27.1	77.5	88.9	60.0	72.3	72.5	99.0	79.5	230.5	7.4	105.3	2.9
	August	..	..	33.0	21.0	27.0	77.0	88.5	59.5	72.1	72.3	99.0	79.3	210.6	6.7	236.4	3.0
	September	..	..	32.3	21.5	26.9	78.3	88.2	66.0	72.7	72.9	99.0	82.5	184.0	6.1	194.6	2.6
	October	..	..	32.2	21.6	26.9	78.6	88.9	63.5	73.0	73.2	99.0	81.3	176.0	3.7	234.8	2.6
	November	..	..	30.4	21.3	25.9	77.7	85.1	72.5	72.9	72.9	100.0	86.3	101.9	3.4	216.1	2.4
	December	..	..	29.8	21.1	25.5	76.3	83.1	73.5	72.5	72.7	99.0	86.3	119.8	3.8	293.9	2.4
1977	January	..	..	31.5	19.4	25.5	75.4	86.7	59.5	68.9	69.3	99.0	79.3	216.4	7.0	43.1	3.3
	February	..	..	32.5	19.4	25.9	76.3	84.7	68.5	70.2	70.2	100.0	84.3	102.1	3.6	112.3	3.2
	March	..	..	32.5	19.4	25.9	75.7	88.3	55.5	69.8	70.3	97.5	76.5	207.3	6.7	12.6	4.1

However, it can be seen from Table 7 that the 1976-77 monthly values vary between 2.4 and 4.1 km/hr. If one assumes the same range over the period 1973-74, then Scarf's published values of Penman's monthly potential evapotranspiration are underestimated by 5-10%.

TABLE 8

POTENTIAL FOREST EVAPOTRANSPIRATION AT TUN RAZAK AGRICULTURAL RESEARCH CENTRE

Month	Apr. 1976	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan. 1977	Feb.	Mar.
Penman's Values.. (mm)	154	148	131	142	140	137	133	104	103	132	103	149

5.4 Water Quality

Water quality data are presented in Appendix A.

6. ANALYSIS

6.1 Regression Analysis of Daily Rainfall Data

Correlation analyses of rainfall data for stations Nos. 3825001 (Station 1), 3925001 Station 2) and 3925004 (Station 5) were done using linear regression by least squares. For the purpose of the analysis, missing data were not considered, i.e. only overlapping periods with records were used. The period of record used for the correlation analyses of stations 3825001 and 3925001 is 8th February, 1975 to 28th June, 1976, for stations 3925001 and 3925004, 8th February, 1975 to 27th June, 1976 for station 3825001 and 3925004, 9th April 1975 to 28th March, 1977.

The daily equations obtained were of the form $y = ax + c$ and the results are presented in Table 9.

From an inspection of Fig. 1, it could be seen that the results of the regression analyses were quite reasonable. The high correlation between station numbers 3825001 and 3925001 was due to the fact that they are situated close together with similar exposure conditions.

The relatively poor correlation between stations 3825001 and 3925004 may be due to the fact that station 3925004 has good exposure to the North-West monsoon winds while station 3825001 has a South-West aspect. The rainfall totals for stations 3825001 and 3925004 for the same period of record are 2,400 and 2,834 mm respectively.

TABLE 9

REGRESSION ANALYSIS RESULTS OF DAILY RAINFALL

X	3825001			3925001			3925004		
	Slope <i>a</i>	Intercept <i>c</i> mm	Correlation Coefficient <i>r</i>	Slope <i>a</i>	Intercept <i>c</i> mm	Correlation Coefficient <i>r</i>	Slope <i>a</i>	Intercept <i>c</i> mm	Correlation Coefficient <i>r</i>
3825001	0.854	0.452	0.92	0.935	0.929	0.82
3925001	0.983	0.310	0.92	..	1.035	0.144	0.90
3925004	0.704	0.690	0.82	0.779	0.650	0.90	..

7. REFERENCES

Scarf, F, 1975: Sg. Tekam Experimental Basin Annual Report No. 1 for 1973-74. Bahagian Parit and Taliair, Kementerian Pertanian, Malaysia.

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APPENDIX 1

BAHAGIAN PARIT DAN TALIAIR—DATA KUALITI AIR

STATION 3925601 SG. TEKAM EXPERIMENTAL BASIN SITE "A" 13/09/74 TO 05/03/77

Sampling Date	Discharge (In 0.1 of Litre/s)	Total Solids (Residue at 105°C) (mg/l)	Suspended Solids (Non-Filtrable Residue) (mg/l)	Specific Conductance (Micromhos/cm)	Alkalinity (mg/l) Calcium Carbonate	pH (Units)	Silica (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Sodium (mg/l)	Potassium (mg/l)	Chloride (mg/l)	Sulphate (mg/l)
13-10-74	30	131	30	45	24	7.1	20	4.4	1.7	3.3	1.1	1	0.7
10-11-74	30	87	22	45	28	6.3	22	4.8	2.9	3.9	1.1	1	0.8
4-12-74	30	45	6	50	28	6.5	20	5.6	3.2	3.5	1.6	NIL	NIL
20-12-74	0	73	15	47	25	6.7	14	5.2	2.7	2.8	1.5	6	0.9
11-1-75	15	69	6	65	29	6.8	20	6.4	2.9	2.6	1.1	1	0.8
24-1-75	10	55	1	65	30	7.0	18	5.6	3.4	2.0	0.7	1	0.6
7-2-75	0	78	7	65	30	6.8	14	6.4	3.4	4.6	1.5	2	0.7
13-3-75	7	101	24	65	28	9.0	20	8.0	5.1	2.0	0.6	2	1.1
28-3-75	4	60	6	65	40	7.4	20	9.2	4.9	3.4	1.1	3	1.0
11-4-75	7	87	7	60	35	7.0	20	11.6	9.2	5.5	1.5	3	8.9
25-4-75	30	69	9	55	35	6.4	20	6.0	2.9	2.4	1.0	3	3.8
17-5-75	30	64	3	60	36	6.7	24	6.8	4.1	4.6	1.7	4	1.3
30-5-75	7	60	5	65	37	6.7	22	11.2	2.9	3.7	0.9	4	NIL
7-6-75	30	77	9	45	27	6.8	14	8.4	4.1	3.8	1.7	5	NIL
8-6-75	7	67	1	55	34	6.6	10	9.6	2.7	4.2	1.3	4	NIL
17-6-75	15	94	19	55	31	6.7	12	13.2	3.2	3.7	1.0	4	1.4
7-8-75	0	81	7	75	42	6.9	8	8.4	3.2	3.2	1.1	2	1.3
17-1-76	10	65	5	57	54	6.5	18	5.6	3.9	1.6	0.3	2	4.3
28-1-76	7	46	1	63	64	6.7	16	4.4	3.9	3.6	0.8	2	0.3
13-2-76	3	67	4	50	53	6.8	18	5.2	2.2	2.6	0.5	1	1.5

Dashes Indicate laboratory analysis was not performed.

Nil Indicates a value below the lowest limits of detection.

The lowest limits of detection are: Magnesium less than 0.4 (mg/l).

Chloride less than 1 (mg/l).

Sulphate less than 0.3 (mg/l).

APPENDIX 1—(cont.)

BAHAGIAN PARIT DAN TALIAIR—DATA KUALITI AIR—(cont.)

BAHAGIAN PARIT DAN TALIAIR—DATA KUALITI AIR—(cont.)

STATION 3925601 SG. TEKAM EXPERIMENTAL BASIN SITE "A" 13/09/74 TO 05/03/77—(cont.)

Sampling Date	Colour (Hazen Units)	Turbidity (Fullers Earth)	Temperature (Degree C)	Dissolved Oxygen (% sat)	Biological Oxygen Demand (mg/l)	Chemical Oxygen Demand (mg/l)	Nitrate (mg/l)	Ammonia (mg/l)	Phosphate (Hydrolyzable) (mg/l)	Iron (mg/l)	Manganese (mg/l)	Fluoride (mg/l)
13-10-74	45	19	—	—	—	—	2.6	0.09	0.20	2.00	NIL	0.04
10-11-74	90	41	25.0	—	—	—	0.7	—	NIL	1.80	—	—
4-12-74	55	17	—	—	—	—	1.3	—	NIL	—	—	—
20-12-74	60	22	—	—	—	—	1.1	—	NIL	—	—	—
11-1-75	35	17	—	—	—	—	1.1	—	0.04	—	—	—
24-1-75	40	10	—	—	—	—	0.9	—	0.04	—	—	—
7-2-75	35	14	—	—	—	—	1.1	—	0.04	—	—	—
13-3-75	25	8	—	—	—	—	1.8	—	0.06	—	—	—
28-3-75	30	12	—	—	—	—	1.1	—	0.10	—	—	—
11-4-75	35	23	—	—	—	—	1.0	—	NIL	—	—	—
25-4-75	45	10	—	—	—	—	1.0	—	0.04	—	—	—
17-5-75	40	17	—	—	—	—	1.3	—	0.06	—	—	—
30-5-75	10	21	—	—	—	—	0.4	—	0.10	—	—	—
7-6-75	25	30	—	—	—	—	0.2	—	NIL	—	—	—
8-6-75	30	47	—	—	—	—	1.0	—	NIL	—	—	—
17-6-75	50	8	—	—	—	—	1.0	—	0.10	—	—	—
7-8-75	20	17	—	—	—	—	0.4	—	0.04	—	—	—
17-1-76	45	6	—	—	—	—	0.9	—	NIL	—	—	—
28-1-76	45	12	—	—	—	—	1.0	—	NIL	—	—	—
13-2-76	45	12	—	—	—	—	1.4	—	0.04	—	—	—

Dashes Indicate laboratory analysis was not performed.*Nil* Indicates a value below the lowest limits of detection.

The lowest limits of detection are: Colour less than 5 units.

Nitrate less than 0.1 (mg/l).

Ammonia less than 0.01 (mg/l).

Phosphate less than 0.01 (mg/l).

Iron: less than 0.01 (mg/l).

Manganese: Less than 0.01 (mg/l).

Fluoride: Less than 0.01 (mg/l).

APPENDIX 1—(cont.)

BAHAGIAN PARIT DAN TALIAIR—DATA KUALITI AIR—(cont.)

STATION 3925601 SG. TEKAM EXPERIMENTAL BASIN SITE “A” 13/09/74 TO 05/03/77—(cont.)

Sampling Date	Discharge (In 0.1 of Litre/s)	Total Solids (Residue at 105°C) (mg/l)	Suspended Solids (Non-Fil- terable Residue) (mg/l)	Specific Conductance (Micromhos/ cm)	Alkalinity (mg/l) Calcium Carbonate	pH (Units)	Silica (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Sodium (mg/l)	Potassium (mg/l)	Chloride (mg/l)	Sulphate (mg/l)
2-4-76	—	146	33	128	135	7.1	60	13.6	5.5	2.9	2.0	3	0.2
6-4-76	—	643	508	165	172	6.9	20	20.8	5.8	6.1	3.3	3	0.5
22-4-76	0	442	353	52	29	6.2	20	5.2	2.4	3.9	2.5	2	1.8
8-9-76	4	133	38	42	49	5.9	30	4.8	1.7	7.5	0.8	2	0.9
17-9-76	0	149	40	30	52	6.0	40	2.8	1.7	2.7	0.6	2	0.3
4-11-76	0	91	8	47	44	6.3	30	5.2	2.6	2.6	0.7	2	0.1
20-11-76	0	113	43	38	34	6.1	25	4.8	0.9	2.6	0.5	1	0.1
21-1-77	—	70	2	55	25	6.3	12	5.2	2.1	2.4	0.5	1	0.1
28-1-77	—	70	4	58	26	6.5	14	6.0	1.4	2.1	0.5	1	0.0
24-2-77	—	91	4	61	45	6.4	10	7.6	4.8	3.2	0.3	1	0.0
5-3-77	—	69	18	55	17	6.1	18	8.8	5.1	1.1	0.4	1	0.2

Dashes Indicate laboratory analysis was not performed.

Nil Indicates a value below the lowest limits of detection.

The lowest limits of detection are: Magnesium less than 0.4 (mg/l).

Chloride less than 1 (mg/l).

Sulphate less than 0.3 (mg/l).

APPENDIX 1—(cont.)

BAHAGIAN PARIT DAN TALIAIR—DATA KUALITI AIR—(cont.)

STATION 3925601 SG. TEKAM EXPERIMENTAL BASIN SITE "A" 13/09/74 TO 05/03/77—(cont.)

Sampling Date	Colour (Hazen Units)	Turbidity (Fullers Earth)	Temperature (Degree C)	Dissolved Oxygen (% sat)	Biological Oxygen Demand (mg/l)	Chemical Oxygen Demand (mg/l)	Nitrate (mg/l)	Ammonia (mg/l)	Phosphate (Hydrolyzable) (mg/l)	Iron (mg/l)	Manganese (mg/l)	Fluoride (mg/l)
2-4-76	100	21	—	—	—	—	1.4	—	0.20	—	—	—
6-4-76	55	143	—	—	—	—	3.1	—	0.42	—	—	—
22-4-76	130	134	—	—	—	—	2.5	—	0.38	—	—	—
8-9-76	150	62	—	—	—	—	2.9	—	0.04	—	—	—
17-9-76	250	100	—	—	—	—	1.8	—	0.14	—	—	—
4-11-76	200	55	—	—	—	—	2.6	—	0.04	—	—	—
20-11-76	225	74	—	—	—	—	1.8	—	0.04	—	—	—
21-1-77	60	17	—	—	—	—	1.5	—	0.04	—	—	—
28-1-77	70	24	—	—	—	—	2.6	—	0.10	—	—	—
24-2-77	80	24	—	—	—	—	1.3	—	0.08	—	—	—
5-3-77	60	17	—	—	—	—	0.9	—	0.08	—	—	—

Dashes Indicate laboratory analysis was not performed.*Nil* Indicates a value below the lowest limits of detection.

The lowest limits of detection are: Colour less than 5 units.

Nitrate less than 0.1 (mg/l).

Ammonia less than 0.01 (mg/l).

Phosphate less than 0.01 (mg/l).

Iron: less than 0.01 (mg/l).

Manganese: Less than 0.01 (mg/l).

Fluoride: Less than 0.01 (mg/l).

BAHAGIAN PARIT DAN TALIAIR—DATA KUALITI AIR—(cont.)

STATION 3925602 SG. TEKAM EXPERIMENTAL BASIN SITE "B" 13/09/74 TO 05/03/77

Sampling Date	Discharge (In 0.1 of Litre/s)	Total Solids (Residue at 105°C) (mg/l)	Suspended Solids (Non-Filtrable Residue) (mg/l)	Specific Conductance (Micromhos/cm)	Alkalinity (mg/l) Calcium Carbonate	pH (Units)	Silica (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Sodium (mg/l)	Potassium (mg/l)	Chloride (mg/l)	Sulphate (mg/l)
13-9-74	28	94	17	45	24	7.0	—	6.4	2.9	2.3	1.1	2	NIL
20-9-74	17	93	23	50	30	6.7	12	6.4	2.2	3.2	1.6	2	NIL
13-10-74	41	158	40	45	21	7.2	20	4.8	2.9	4.6	1.3	NIL	NIL
10-11-74	136	96	31	40	18	6.3	28	3.6	1.9	2.6	0.9	1	0.1
21-11-74	1,300	133	22	30	20	6.3	16	3.2	1.9	2.0	0.8	1	NIL
4-12-74	106	71	31	40	22	6.6	22	4.4	2.2	3.5	1.2	1	NIL
20-12-74	59	75	14	35	18	6.6	18	4.0	1.7	3.8	2.0	4	0.6
11-1-75	59	69	7	45	22	6.8	20	4.4	1.9	3.2	1.1	2	NIL
24-1-75	41	66	6	45	24	7.1	20	4.4	2.4	2.5	0.7	1	0.6
7-2-75	10	74	7	45	21	6.7	18	5.2	2.2	3.9	0.9	1	0.8
13-3-75	5	64	34	50	27	7.8	24	10.0	2.9	2.4	0.8	3	0.6
28-3-75	10	60	2	50	33	7.4	22	10.0	3.2	3.6	1.1	3	1.0
11-4-75	0	84	4	55	38	6.7	24	11.2	8.5	4.8	1.5	3	2.9
25-4-75	370	95	21	45	27	6.4	24	4.8	3.2	2.1	1.2	3	NIL
17-5-75	80	67	1	55	30	6.6	35	5.6	2.2	4.7	1.3	5	1.3
30-5-75	17	75	6	55	30	6.7	24	10.0	2.4	3.9	0.9	4	1.3
7-6-75	660	86	10	35	21	6.7	12	6.0	1.5	4.5	2.1	5	NIL
8-6-75	106	80	12	40	25	6.4	16	6.0	2.4	4.4	1.2	5	NIL
17-6-75	370	100	12	40	25	6.5	8	8.8	5.1	3.6	0.8	4	1.3
7-8-75	0	69	7	65	35	6.9	10	6.8	1.9	2.8	1.4	2	1.3

Dashes Indicate laboratory analysis was not performed.

Nil Indicates a value below the lowest limits of detection.

The lowest limits of detection are: Magnesium less than 0.4 (mg/l).

Chloride less than 1 (mg/l).

Sulphate less than 0.3 (mg/l).

APPENDIX 1—(cont.)

BAHAGIAN PARIT DAN TALIAIR—DATA KUALITI AIR—(cont.)

STATION 3925601 SG. TEKAM EXPERIMENTAL BASIN SITE "B" 13/09/74 TO 05/03/77—(cont.)

Sampling Date	Colour (Hazen Units)	Turbidity (Fullers Earth)	Temperature (Degree C)	Dissolved Oxygen (% sat)	Biological Oxygen Demand (mg/l)	Chemical Oxygen Demand (mg/l)	Nitrate (mg/l)	Ammonia (mg/l)	Phosphate (Hydrolyzable) (mg/l)	Iron (mg/l)	Manganese (mg/l)	Fluoride (mg/l)
13-9-74	—	—	29.0	—	—	—	2.9	0.17	—	—	—	—
20-9-74	65	10	24.0	—	—	—	1.4	—	NIL	—	—	—
13-10-74	70	28	—	—	—	—	1.8	0.09	0.12	2.00	0.10	0.54
10-11-74	90	67	25.0	—	—	—	0.9	—	NIL	1.80	—	—
21-11-74	175	91	25.0	—	—	—	1.0	—	NIL	—	—	—
4-12-74	65	36	—	—	—	—	1.4	—	NIL	—	—	—
20-12-74	80	45	—	—	—	—	0.6	—	NIL	—	—	—
11-1-75	35	23	—	—	—	—	0.6	—	NIL	—	—	—
24-1-75	35	21	—	—	—	—	0.7	—	0.04	—	—	—
7-2-75	35	21	—	—	—	—	0.7	—	0.04	—	—	—
13-3-75	25	10	—	—	—	—	1.1	—	0.06	—	—	—
28-3-75	25	17	—	—	—	—	0.4	—	0.04	—	—	—
11-4-75	50	21	—	—	—	—	1.3	—	NIL	—	—	—
25-4-75	65	38	—	—	—	—	1.1	—	0.16	—	—	—
17-5-75	60	30	—	—	—	—	0.5	—	0.06	—	—	—
30-5-75	15	25	—	—	—	—	1.0	—	0.06	—	—	—
7-6-75	25	47	—	—	—	—	0.7	—	0.06	—	—	—
8-6-75	40	65	—	—	—	—	0.7	—	NIL	—	—	—
17-6-75	25	25	—	—	—	—	1.3	—	0.14	—	—	—
7-8-75	15	8	—	—	—	—	1.5	—	0.06	—	—	—

Dashes Indicate laboratory analysis was not performed.

Nil Indicates a value below the lowest limits of detection.

The lowest limits of detection are: Colour less than 5 units.

Nitrate less than 0.1 (mg/l).

Ammonia less than 0.01 (mg/l).

Phosphate less than 0.01 (mg/l).

Iron: less than 0.01 (mg/l).

Manganese: Less than 0.01 (mg/l).

Fluoride: Less than 0.01 (mg/l).

APPENDIX 1—(cont.)

BAHAGIAN PARIT DAN TALIAIR—DATA KUALITI AIR—(cont.)

STATION 3925602 SG. TEKAM EXPERIMENTAL BASIN SITE "B" 13/09/74 TO 05/03/77—(cont.)

Sampling Date	Discharge (In 0.1 of Litre/s)	Total Solids (Residue at 105C) (mg/l)	Suspended Solids (Non-Fil- terable Residue) (mg/l)	Specific Conductance (Micromhos/ cm)	Alkalinity (mg/l) Calcium Carbonate	pH (Units)	Silica (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Sodium (mg/l)	Potassium (mg/l)	Chloride (mg/l)	Sulphate (mg/l)
17-1-76	1,200	55	3	43	—	—	14	—	1.7	1.8	0.3	—	4.3
28-1-76	1,500	54	1	50	51	6.9	14	5.2	3.9	4.2	0.9	2	0.3
13-2-76	260	74	8	65	62	6.6	20	6.8	3.4	2.0	0.4	1	3.1
2-4-76	—	183	19	192	202	7.1	60	27.2	3.8	3.7	6.9	4	NIL
6-4-76	—	275	70	220	231	7.0	18	33.6	2.4	8.1	10.8	4	0.8
22-4-76	0	230	87	63	37	6.2	60	6.4	3.4	3.8	2.4	4	1.5
8-9-76	0	140	8	54	71	6.5	8	5.6	1.7	9.2	1.3	1	0.3
17-9-76	0	183	17	43	75	6.4	30	4.8	1.7	4.2	1.2	2	0.5
4-11-76	0	105	11	50	34	6.4	30	4.8	1.7	3.2	0.7	1	0.2
20-11-76	0	143	41	32	25	6.0	25	2.8	1.2	2.6	0.8	1	0.2
21-1-77	—	69	9	45	20	6.5	14	4.0	1.7	2.6	0.6	1	0.0
28-1-77	—	57	9	48	21	6.6	16	5.2	1.2	2.2	0.4	1	0.0
24-2-77	—	85	6	50	36	6.6	20	8.0	3.8	3.3	0.4	1	0.0
5-3-77	—	72	11	48	15	6.3	20	8.0	6.8	1.1	0.6	2	1.3

Dashes Indicate laboratory analysis was not performed.*Nil* Indicates a value below the lowest limits of detection.

The lowest limits of detection are: Magnesium less than 0.4 (mg/l).

Chloride less than 1 (mg/l).

Sulphate less than 0.3 (mg/l).

APPENDIX 1—(cont.)

BAHAGIAN PARIT DAN TALIAIR—DATA KUALITI AIR—(cont.)

STATION 3925602 SG. TEKAM EXPERIMENTAL BASIN SITE "B" 13/09/74 TO 05/03/77—(cont.)

Sampling Date	Colour (Hazen Units)	Turbidity (Fullers Earth)	Temperature (Degree C)	Dissolved Oxygen (% sat)	Biological Oxygen Demand (mg/l)	Chemical Oxygen Demand (mg/l)	Nitrate (mg/l)	Ammonia (mg/l)	Phosphate (Hydrolyzable) (mg/l)	Iron (mg/l)	Manganese (mg/l)	Fluoride (mg/l)
17-1-76	40	6	—	—	—	—	1.1	—	NIL	—	—	—
28-1-76	55	12	—	—	—	—	1.3	—	0.04	—	—	—
13-2-76	50	17	—	—	—	—	0.6	—	0.04	—	—	—
2-4-76	120	21	—	—	—	—	1.4	—	0.16	—	—	—
6-4-76	65	53	—	—	—	—	3.7	—	0.36	—	—	—
22-4-76	275	143	—	—	—	—	2.1	—	0.28	—	—	—
8-9-76	250	55	—	—	—	—	3.4	—	0.04	—	—	—
17-9-76	350	143	—	—	—	—	3.4	—	0.10	—	—	—
4-11-76	200	67	—	—	—	—	3.9	—	0.10	—	—	—
20-11-76	275	112	—	—	—	—	3.4	—	0.10	—	—	—
21-1-77	50	21	—	—	—	—	1.8	—	0.10	—	—	—
28-1-77	60	29	—	—	—	—	2.3	—	0.10	—	—	—
24-2-77	90	33	—	—	—	—	1.5	—	0.12	—	—	—
5-3-77	90	24	—	—	—	—	1.4	—	0.14	—	—	—

Dashes Indicate laboratory analysis was not performed.

Nil Indicates a value below the lowest limits of detection.

The lowest limits of detection are: Colour less than 5 units.

Nitrate less than 0.1 (mg/l).

Ammonia less than 0.01 (mg/l).

Phosphate less than 0.01 (mg/l).

Iron: less than 0.01 (mg/l).

Manganese: Less than 0.01 (mg/l).

Fluoride: Less than 0.01 (mg/l).

APPENDIX 1—(cont.)

BAHAGIAN PARIT DAN TALIAIR—DATA KUALITI AIR—(cont.)

STATION 3925603 SG. TEKAM EXPERIMENTAL BASIN SITE "C" 13/09/74 TO 05/03/77

Sampling Date	Discharge (In 0.1 of Litre/s)	Total Solids (Residue at 105C) (mg/l)	Suspended Solids (Non-Filtrable Residue) (mg/l)	Specific Conductance (Micromhos/cm)	Alkalinity (mg/l) Calcium Carbonate	pH (Units)	Silica (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Sodium (mg/l)	Potassium (mg/l)	Chloride (mg/l)	Sulphate (mg/l)
13-9-74	5	71	6	45	26	6.6	—	4.8	2.9	2.8	1.6	1	—
20-9-74	2	113	30	45	27	6.9	14	6.4	2.2	3.8	1.8	2	NIL
13-10-74	2	112	4	45	26	7.1	28	5.6	2.4	3.6	1.5	1	NIL
10-11-74	10	97	20	35	25	6.4	28	4.0	1.2	3.0	1.1	1	0.9
21-11-74	44	152	43	30	18	5.6	18	3.6	0.7	2.2	1.0	NIL	0.7
4-12-74	10	64	8	38	22	6.6	24	5.2	1.5	3.7	1.6	NIL	0.6
20-12-74	10	94	10	30	16	6.5	24	4.0	0.7	4.1	2.0	4	1.5
11-1-75	5	76	6	40	19	6.7	26	4.0	1.7	3.3	1.1	1	NIL
24-1-75	2	70	15	40	22	7.0	24	4.0	1.5	2.6	0.7	2	0.6
7-2-75	0	65	2	40	19	6.8	22	4.8	1.5	4.2	0.8	2	0.8
13-3-75	0	84	5	40	26	7.7	24	7.2	4.9	2.5	0.8	3	0.7
28-3-75	0	55	6	40	27	7.4	26	8.0	2.4	4.0	1.1	3	0.8
11-4-75	0	83	13	40	29	6.8	24	10.4	7.5	4.6	1.3	4	1.3
25-4-75	5	77	1	40	28	6.4	24	4.0	2.4	2.5	1.3	3	NIL
17-5-75	5	94	5	40	28	6.6	25	4.0	2.2	4.2	1.1	4	1.3
30-5-75	1	69	4	45	33	6.7	24	6.4	3.9	4.5	1.5	5	NIL
7-6-75	30	128	30	35	24	6.7	16	6.4	0.7	4.7	1.4	5	NIL
17-6-75	5	111	18	40	23	6.6	12	7.6	4.6	4.0	1.9	4	1.3
8-7-75	2	76	5	35	25	6.5	8	6.0	3.4	4.9	1.4	6	NIL
7-8-75	0	77	1	45	27	6.9	10	5.2	1.2	4.0	0.6	2	1.3

Dashes Indicate laboratory analysis was not performed.*Nil* Indicates a value below the lowest limits of detection.

The lowest limits of detection are: Magnesium less than 0.4 (mg/l).

Chloride less than 1 (mg/l).

Sulphate less than 0.3 (mg/l).

APPENDIX 1—(cont.)

BAHAGIAN PARIT DAN TALIAIR—DATA KUALITI AIR—(cont.)

STATION 3925603 SG. TEKAM EXPERIMENTAL BASIN SITE "C" 13/09/74 TO 05/03/77—(cont.)

Sampling Date	Colour (Hazen Units)	Turbidity (Fullers Earth)	Temperature (Degree C)	Dissolved Oxygen (% sat)	Biological Oxygen Demand (mg/l)	Chemical Oxygen Demand (mg/l)	Nitrate (mg/l)	Ammonia (mg/l)	Phosphate (Hydrolyzable) (mg/l)	Iron (mg/l)	Manganese (mg/l)	Fluoride (mg/l)
13-9-74	—	—	25.0	—	—	—	6.3	0.12	—	—	—	—
20-9-74	80	25	24.0	—	—	—	1.9	—	NIL	—	—	—
13-10-74	60	34	—	—	—	—	1.5	0.14	NIL	2.00	0.06	0.05
10-11-74	90	69	25.0	—	—	—	0.9	—	NIL	1.20	—	—
21-11-74	175	100	24.8	—	—	—	1.3	—	NIL	—	—	—
4-12-74	65	41	—	—	—	—	1.4	—	NIL	—	—	—
20-12-74	90	45	—	—	—	—	0.6	—	NIL	—	—	—
11-1-75	45	30	—	—	—	—	1.1	—	NIL	—	—	—
24-1-75	35	17	—	—	—	—	0.9	—	0.04	—	—	—
7-2-75	30	17	—	—	—	—	1.4	—	0.04	—	—	—
13-3-75	25	10	—	—	—	—	0.2	—	0.10	—	—	—
28-3-75	20	12	—	—	—	—	0.4	—	0.08	—	—	—
11-4-75	35	21	—	—	—	—	0.5	—	NIL	—	—	—
25-4-75	45	12	—	—	—	—	1.1	—	0.04	—	—	—
17-5-75	75	43	—	—	—	—	0.5	—	0.10	—	—	—
30-5-75	10	25	—	—	—	—	0.4	—	0.06	—	—	—
7-6-75	25	39	—	—	—	—	0.9	—	0.04	—	—	—
17-6-75	25	21	—	—	—	—	0.6	—	0.06	—	—	—
8-7-75	40	78	—	—	—	—	1.3	—	0.04	—	—	—
7-8-75	30	21	—	—	—	—	1.6	—	0.06	—	—	—

Dashes Indicate laboratory analysis was not performed.

Nil Indicates a value below the lowest limits of detection.

The lowest limits of detection are: Colour less than 5 units.

Nitrate less than 0.1 (mg/l).

Ammonia less than 0.01 (mg/l).

Phosphate less than 0.01 (mg/l).

Iron: less than 0.01 (mg/l).

Manganese: Less than 0.01 (mg/l).

Fluoride: Less than 0.01 (mg/l).

APPENDIX 1—(cont.)

BAHAGIAN PARIT DAN TALIAIR—DATA KUALITI AIR—(cont.)

STATION 3925603 SG. TEKAM EXPERIMENTAL BASIN SITE "C" 13/09/74 TO 05/03/77—(cont.)

Sampling Date	Discharge (In 0.1 of Litre/s)	Total Solids (Residue at 105°C) (mg/l)	Suspended Solids (Non-Fil- terable Residue) (mg/l)	Specific Conductance (Micromhos/ cm)	Alkalinity (mg/l) Calcium Carbonate	pH (Units)	Silica (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Sodium (mg/l)	Potassium (mg/l)	Chloride (mg/l)	Sulphate (mg/l)
17-1-76	44	73	20	40	38	6.6	18	4.8	1.2	2.2	0.4	2	3.2
28-1-76	17	59	9	47	47	6.9	20	6.0	2.9	3.9	0.7	2	0.3
13-2-76	5	58	6	48	47	6.9	12	4.8	1.2	3.3	0.6	2	35.0
2-4-76	—	266	46	230	234	7.4	40	34.0	1.7	6.9	13.8	3	0.1
6-4-76	—	310	71	260	272	7.0	20	35.6	1.4	8.2	17.6	2	1.0
22-4-76	30	131	40	56	29	6.0	70	4.8	2.4	3.9	2.8	4	1.8
8-9-76	190	139	31	39	68	6.4	12	4.4	1.2	9.5	1.1	1	0.1
17-9-76	340	191	33	40	69	6.3	40	4.0	1.9	2.3	1.1	2	0.5
4-11-76	500	108	19	38	31	6.4	30	4.0	0.4	3.5	1.1	2	0.1
20-11-76	190	505	452	37	26	6.1	20	3.2	0.7	2.8	2.4	1	0.2
21-1-77	—	65	3	45	20	6.5	12	4.8	0.9	3.0	0.6	1	0.1
28-1-77	—	56	3	48	20	6.9	14	4.8	0.7	2.5	0.7	2	0.0
24-2-77	—	97	9	50	38	6.6	20	6.8	3.1	4.0	0.4	1	0.1
5-3-77	—	79	23	50	15	6.3	20	9.2	4.6	1.3	0.7	2	0.2

Dashes Indicate laboratory analysis was not performed.*Nil* Indicates a value below the lowest limits of detection.

The lowest limits of detection are: Magnesium less than 0.4 (mg/l).

Chloride less than 1 (mg/l).

Sulphate less than 0.3 (mg/l).

APPENDIX 1—(cont.)

BAHAGIAN PARIT DAN TALIAIR—DATA KUALITI AIR—(cont.)

STATION 3925603 SG. TEKAM EXPERIMENTAL BASIN SITE "C" 13/09/74 TO 05/03/77—(cont.)

Sampling Date	Colour (Hazen Units)	Turbidity (Fullers Earth)	Temperature (Degree C)	Dissolved Oxygen (% sat)	Biological Oxygen Demand (mg/l)	Chemical Oxygen Demand (mg/l)	Nitrate (mg/l)	Ammonia (mg/l)	Phosphate (Hydrolyzable) (mg/l)	Iron (mg/l)	Manganese (mg/l)	Fluoride (mg/l)
17-1-76	25	8	—	—	—	—	1.1	—	NIL	—	—	—
28-1-76	45	10	—	—	—	—	1.4	—	0.20	—	—	—
13-2-76	55	14	—	—	—	—	1.1	—	NIL	—	—	—
2-4-76	175	134	—	—	—	—	1.5	—	0.32	—	—	—
6-4-76	60	34	—	—	—	—	0.9	—	0.20	—	—	—
22-4-76	130	53	—	—	—	—	1.4	—	0.10	—	—	—
8-9-76	200	67	—	—	—	—	3.4	—	0.04	—	—	—
17-9-76	300	88	—	—	—	—	3.1	—	0.10	—	—	—
4-11-76	150	79	—	—	—	—	3.7	—	0.14	—	—	—
20-11-76	400	151	—	—	—	—	3.9	—	0.24	—	—	—
21-1-77	45	12	—	—	—	—	1.5	—	0.10	—	—	—
28-1-77	50	21	—	—	—	—	2.9	—	0.10	—	—	—
24-2-77	90	24	—	—	—	—	1.0	—	0.12	—	—	—
5-3-77	65	19	—	—	—	—	1.0	—	0.14	—	—	—

Dashes Indicate laboratory analysis was not performed.

Nil Indicates a value below the lowest limits of detection.

The lowest limits of detection are: Colour less than 5 units.

Nitrate less than 0.1 (mg/l).

Ammonia less than 0.01 (mg/l).

Phosphate less than 0.01 (mg/l).

Iron: less than 0.01 (mg/l).

Manganese: Less than 0.01 (mg/l).

Fluoride: Less than 0.01 (mg/l).

APPENDIX 2

PERIOD OF MISSING RECORD

<i>Station Number</i>			START		FINISH		DURATION IN	
			<i>Date</i>	<i>Time</i>	<i>Date</i>	<i>Time</i>	<i>Days</i>	<i>Hours</i>
3825001	..	..	25-2-75	300	4-3-75	1000	7	7
			24-3-75	1000	7-4-75	1100	14	1
			16-4-75	900	21-4-75	1000	5	1
			19-5-75	1800	27-5-75	900	7	15
			2-6-75	900	9-6-75	1200	7	3
			18-6-75	000	21-7-75	1000	33	10
			31-8-75	900	2-9-75	1000	2	1
			12-4-76	900	19-4-76	1400	7	5
			12-7-76	800	15-7-76	900	3	1
			15-10-76	1200	26-10-76	800	10	20
			28-10-76	2100	8-11-76	1000	10	13
			9-11-76	900	15-11-76	800	5	23
			19-11-76	900	22-11-76	700	2	22
			29-11-76	700	6-12-76	800	7	1
			11-12-76	000	20-12-76	1000	9	10
			23-12-76	1200	27-12-76	1100	3	23
			14-2-77	1000	21-2-77	900	6	23
3925001	..	..	28-11-74	1200	4-12-74	1200	6	0
			24-5-75	700	27-5-75	1000	3	3
			6-6-75	1200	9-6-75	1200	3	0
			26-9-75	1800	30-9-75	900	3	15
			23-12-75	1100	30-12-75	1000	6	23
			19-1-76	1000	26-1-76	1100	7	1
			12-4-76	900	19-4-76	1500	7	6
			28-6-76	1000	24-2-77	900	240	23
3925002	..	..	28-12-73	1200	16-1-74	1400	19	2
			23-1-74	1400	5-2-74	800	12	18
			10-7-74	900	22-7-74	900	12	0
			1-8-74	1500	13-8-74	800	11	17
3925004	..	..	5-2-75	1200	8-4-75	700	61	19
			15-4-75	700	21-4-75	700	6	0
			5-5-75	800	12-5-75	1300	7	5
			6-6-75	900	9-6-75	1000	3	1
			17-6-75	1000	7-7-75	900	19	23
			7-7-75	1600	22-7-75	900	14	17
			25-8-75	800	2-9-75	800	8	0
			12-4-76	800	19-4-76	1400	7	6
			17-12-76	600	20-12-76	900	3	3

WATER RESOURCES PUBLICATIONS PREVIOUSLY PUBLISHED

1.	Surface Water Resources Map (Provisional) of Peninsular Malaysia (1974) ...	\$5.00
2.	Hydrological Regions of Peninsular Malaysia (1974)	\$6.00
3.	Sungai Tekam Experimental Basin Annual Report No. 1 for 1973-1974 (1975)	\$5.00
4.	Notes on Some Hydrological Effects of Land Use Changes in Peninsular Malaysia (1975)	\$5.00
5.	Evaporation in Peninsular Malaysia (1976)	\$5.00
6.	Average Annual Surface Water Resources of Peninsular Malaysia—1976	\$5.00
7.	Sungei Lui Representative Basin Report No. 1 for 1971/72 to 1973/74 (1977)	\$5.00
8.	Water Resources for Irrigation of Upland Crops in South Kelantan	\$5.00
9.	Sungei Lui Representative Basin Report No. 2 for 1974/75 to 1975/76	\$5.00