

HONG KONG RAINFALL AND LANDSLIDES IN 1995

GEO REPORT No. 59

C.K.L. Wong

**GEOTECHNICAL ENGINEERING OFFICE
CIVIL ENGINEERING DEPARTMENT
THE GOVERNMENT OF THE HONG KONG
SPECIAL ADMINISTRATIVE REGION**

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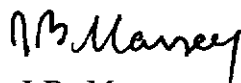
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PREFACE

In keeping with our policy of releasing information of general technical interest, we make available some of our internal reports in a series of publications termed the GEO Report series. The reports in this series, of which this is one, are selected from a wide range of reports produced by the staff of the Office and our consultants. A charge is made to cover the cost of printing.

The Geotechnical Engineering Office also publishes guidance documents and presents the results of research work of general interest in GEO Publications. These publications and the GEO Reports may be obtained from the Government's Information Services Department. Information on how to purchase these publications is given on the last page of this report.

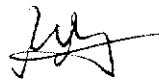


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September 1997

FOREWORD

This report presents a review of the rainfall and landslides in Hong Kong throughout 1995. Geotechnical engineers of the District Divisions of the Geotechnical Engineering Office provided details of the notable landslides. Supplementary landslide data were provided by the Agriculture and Fisheries Department, Architectural Services Department, Drainage Services Department, Fire Services Department, Highways Department, Housing Department and Water Supplies Department. The Royal Observatory provided rainfall information. All contributions are gratefully acknowledged.



P.L.R. Pang
Chief Geotechnical Engineer/Special Projects

ABSTRACT

This report reviews the rainfall and landslides in Hong Kong throughout 1995. Rainfall information has been obtained from the Geotechnical Engineering Office (GEO) automatic raingauge system and from the Royal Observatory (RO). Most of the landslide data have been taken from the records of incidents reported to the GEO during the year. Supplementary data have been obtained from other Government departments.

The annual rainfall in 1995 was about 24% above the annual mean. A total of 303 incidents was reported to the GEO. Of these, 295 were classified as genuine landslides. Many of them occurred during periods of heavy rainfall in August.

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1. INTRODUCTION

This report reviews rainfall and landslide occurrences in Hong Kong throughout 1995. Rainfall information has been obtained from the Geotechnical Engineering Office (GEO) and the Royal Observatory (RO). Most of the landslide data have been taken from the records of incidents reported to the GEO during the year. Supplementary data have been obtained from other Government departments. Only landslides reported to the GEO are analyzed and described in detail in this report, since they were inspected by the geotechnical engineers of the GEO and detailed information is available.

In this report, a landslide is defined as the collapse of a soil or rock mass, and includes the failure of fill slopes, cut slopes, natural slopes, retaining structures, and rock or boulder falls. A 'major' landslide is defined as a failure in which the volume of the collapsed mass is 50 m³ or above, or where a fatality occurs.

A total of 303 incidents was reported to the GEO in 1995. Of these, 295 were landslides, and 27 of them were major. Seventy landslides were reported to have occurred during the heaviest rainstorm from 12 to 13 August.

The arrangement of this report is similar to the previous annual rainfall and landslides reports (Premchitt, 1991a-1991e; Siu, 1991; Tang, 1992; Evans, 1992; Chen, 1993; Chan, 1994 & 1995). This report reviews rainfall and landslides throughout the whole year rather than emphasising any one specific rainstorm.

2. RAINFALL

2.1 The Raingauge System

In the rugged terrain of Hong Kong, the distribution and intensity of rainfall during a storm can vary dramatically with respect to both geography and time. In order to provide sufficient coverage for a meaningful analysis of rainfall distribution, the RO has installed a network of raingauges which, in 1995, comprised 21 automatic and 104 manual raingauges at 82 locations. A 'principal' raingauge is located at the RO's headquarters in Tsim Sha Tsui, and a continuous rainfall record has been kept at this location since 1884.

Since 1978, the GEO, in cooperation with the RO, has established an automatic raingauge system (comprising 48 GEO and 21 RO automatic raingauges in 1995) which transmits real-time rainfall data via telephone lines to the GEO and to the RO at five-minute intervals. The locations of the GEO automatic raingauges (Figure 1) were selected to supplement the network of other types of raingauges and to provide specific information in areas of particular geotechnical interest.

In this report, where a comparison is being made for 'daily' rainfalls, the 24-hour maximum rainfall will be used instead of daily rainfall, since the latter is based on an arbitrary fixed period of midnight to midnight, which does not necessarily represent the maximum rainfall over a 24-hour period. In addition, when rainfall is quoted without reference to the location of measurement, this refers to that recorded at the RO headquarters in Tsim Sha Tsui.

2.2 Royal Observatory Records

The year's weather for 1995 was described in RO (1995). Their comments on rainfall are as follows :

"In 1995, ... The first half of the year was particularly dry with rainfall amounting to only 427.6 millimetres, 57 per cent below the normal of 992.5 millimetres for the same period and the fourth lowest on record. However, the heavy rainfall in July and August ... contributed to an overall annual total of 2 754.4 millimetres, 24 per cent above the annual mean of 2 214.3 millimetres".

"July was very wet with above average monthly rainfall registered for the first time this year. The total rainfall in the month, 668.7 millimetres, was more than twice the average, making it the seventh wettest July on record ... there were seven days with rainfall of over 50 millimetres".

"August was extremely wet. The total rainfall of 1 090.1 millimetres, about two point eight times the normal of 391.4 millimetres, was the highest for the month of August and the third highest for any month since records began in 1884 ... Torrential rain fell from 12 to 14 August amounted to 448.3 millimetres".

A summary of heavy rainstorms in 1995 and the landslides reported to have occurred in the rainstorms is given in Table 1. This Table shows all periods in which the 24-hour rainfall at the RO exceeded 50 mm. The four-day and fifteen-day antecedent rainfalls which occurred prior to these 24-hour periods are also shown in this Table.

The rainfall data recorded at the RO for 1995 are presented in Figures 2 to 5. Cumulative rainfall since 1 January is shown in Figure 2. Daily and monthly rainfalls are shown in Figures 3 and 4 respectively. Figure 5 shows the hourly rainfalls for the four heavy 24-hour rainfalls in 1995.

2.3 Geotechnical Engineering Office Records

Rainfall data from the 48 GEO automatic raingauges are kept in the Civil Engineering Library on the First Lower Ground Floor of the Civil Engineering Building.

The maximum 24-hour, five-hour and one-hour rainfalls recorded by the GEO raingauges during heavy rainstorms in 1995 are given in Table 1.

Appendix A contains hourly rainfall data recorded by the GEO raingauges for the four heavy 24-hour rainstorms.

2.4 Rainfall Distribution

Rainfall distribution with time and location can be assessed by referring to detailed GEO and RO records.

The isohyets of 24-hour rainfalls for the four heavy rainstorms in 1995 are shown in Figures 6 to 9.

2.5 Warnings Issued by the Royal Observatory

Relevant warnings issued by the RO and Landslip Warnings jointly issued by the GEO and the RO are summarised in Table 2. A total of six Landslip Warnings was issued in 1995 on the basis of predetermined rainfall criteria, after consultation between the GEO and the RO.

2.6 Comparison with Past Rainstorms

The return periods of the heavy rainstorms in 1995 were estimated for rainfall durations of one-hour to fifteen-day based on the rainfall recorded at the RO (Table 3). The estimated return periods range from 1 to 20 years. It is noted that the maximum rainfalls for all durations were recorded in the rainstorm ending around mid-August 1995.

In Figure 2, the cumulative rainfall for 1995 is shown in comparison with the wettest year (1982), the driest year (1963) and the mean value (from 1961 to 1990) since records began in 1884. The 1995 annual rainfall was 2754.4 mm, which is 24% higher than the mean value of 2214.3 mm. Figure 4 shows monthly rainfalls in 1995 in comparison with the recorded maximum (since 1884) and mean (1961-1990) monthly rainfalls. The monthly rainfall in August was the highest ever recorded for the month. The monthly rainfalls in July and October were also above the mean values for the months.

3. LANDSLIDES

3.1 Landslide Occurrence in 1995

The numbers of incidents reported to various Government departments in 1995 are shown in Table 4.

Details of all 303 incidents reported to the GEO are summarized in Appendix B. In total, 295 incidents were classified as genuine landslides. The rest of them were either not failure incidents or incidents which were of no geotechnical concern, such as fallen trees. They were therefore not considered in the statistical analysis described below. The locations of all the reported incidents are shown in Drawing No. GCSP 8/16, which is attached to this report. Selected incidents are illustrated in Plates 1 to 14. Further details of these incidents can be found in the incident files of the District Divisions of the GEO.

A summary of the 27 major landslides is given in Table 5.

Wherever possible, the dates and times of the landslides were assessed by the geotechnical engineers during site inspections. Some cases were not reported to the GEO until several days or weeks after the incidents. For these, it was difficult to determine the exact time of occurrence. Out of the 295 reported landslides, the date of failure was recorded for 225 landslides. The daily numbers of these landslides are plotted in Figure 3. Of these 225 landslides, the time of landslide was given to within one hour for 91 incidents.

The numbers of reported landslides which occurred during periods of heavy rain are shown in Table 1, where the number of incidents reported in the newspapers and by the Fire Services Department are also shown for comparison. Apart from the events listed in Table 1, eight incidents were reported to have occurred on 4 August, and fewer incidents were reported to have occurred on any other day of the year.

The numbers of landslide incidents occurred during the Landslip Warning periods are shown in Table 6.

Based on GEO's landslide inspection reports, 83 landslide incidents in 1995 were considered by the inspecting geotechnical engineer to be associated with poor maintenance. This amounted to about 28% of all the reported landslides in 1995.

It is possible that there were other landslides which were not reported to the GEO. These are likely to be landslides which involved less significant consequence, such as failures affecting remote areas and open spaces.

3.2 Facilities Affected by Landslides

The numbers of landslides affecting various types of facility (building lot, road, etc.) in Hong Kong, Kowloon and the New Territories are shown in Table 7. The numbers of major failures affecting different types of facility are also given in Table 7. It should be noted that a failure may affect more than one type of facility. Landslide consequences, classified according to failure type, are shown in Table 8.

3.2.1 Squatter Areas

A total of 37 landslides affected squatter areas and one of them was a major landslide (Table 7). These landslides led to the permanent evacuation of 87 squatter huts and temporary evacuation of 30 huts (Table 8). Two of the landslides, K 8/7 and K 8/16, are described in Sections 4.4 and 4.10 respectively.

3.2.2 Building Lots

There were 46 landslides affecting building lots and private properties, nine of which were major (Table 7). These landslides resulted in the temporary evacuation of five buildings, eight houses and 53 flats in part or in total (Table 8). Four selected examples : MW 3/1, HK 7/1, HK 8/73 and HK 8/49 are described in Sections 4.1, 4.2, 4.5, and 4.8 respectively.

3.2.3 Roads and Access

A total of 163 sections of roads, access, footpaths and pedestrian pavements were affected by landslides. Twenty-seven of these were major (Table 7). Eight selected examples, ME 8/7, HK 8/73, HK 8/43, HK 8/19, HK 8/49, ME 8/11, MW 8/21 and MW 10/2 are described in Sections 4.3, 4.5, 4.6, 4.7, 4.8, 4.9, 4.11 and 4.12 respectively.

3.2.4 Construction Sites

Four landslides affected construction sites, of which one was major (Table 7). Two of them, MW 3/1 and MW 8/21, are described in Sections 4.1 and 4.11.

3.2.5 Catchwaters and Reservoirs

Landslides affecting catchwaters and reservoirs were usually dealt with separately by the Water Supplies Department and not reported to the GEO. In 1995, only one minor landslide of this category was reported to the GEO.

3.2.6 Country Parks and Open Areas

A total of 68 areas within the country parks, open areas, carpark and playgrounds were reported to have been affected by landslides. Three of them were major.

3.3 Types of Landslides

Landslides reported to the GEO have been classified into six types of failure, i.e. fill slopes, cut slopes, natural slopes, retaining walls, rock/boulder falls and others. The numbers of different types of landslide are shown in Table 9.

3.4 Landslide Volume Distribution

Table 10 shows the distribution of landslide volume for all landslide incidents which were reported to the GEO. The approximate volume of failure was recorded for 279 out of the total of 295 reported landslides. Of the landslides for which the volume was recorded, 142 (about 50%) landslides involved less than 5 m³ of material. Twenty-six landslides (about 9%) of the reported landslides involved a failure volume of 50 m³ or above.

3.5 Rainfall-Landslide Relationships

The relationship between rainfall and landslides in 1995 can be seen from the plot of daily rainfall and daily number of landslide in Figure 3. The majority of the recorded landslides occurred at times of heavy rainfall. The geographical distribution of rainfall had a considerable influence on the occurrence of landslide. Figures 6 to 9 show the location of

landslides for which dates of occurrence are known (see Section 3.1), and the 24-hour rainfall isohyets for the four heavy rainstorms in 1995.

4. NOTABLE LANDSLIDES

Out of the 295 landslides reported to the GEO, twelve are described in more detail in the following Sections in chronological order. These landslides have been selected mainly on the basis of their failure volume, consequence and technical interest.

4.1 Incident MW 95/3/1 : Sham Shui Kok Sub-station, Lantau

(Date : Not certain. Major failure of a soil cut slope affecting a building lot construction site, Plates 1, 2 & 3)

An extensive slow moving failure of a soil cut slope at the site of Sham Shui Kok Sub-station, North Lantau was reported to the GEO in 1995. It was observed from aerial photographs and site photographs that slope movement probably commenced in 1992. The failure involved part of a 42 m high cut slope with an average slope angle of 29° and a 24° steep natural slope above the cut slope. Both the natural and cut slopes were covered by vegetation. The failure mass has been moving slowly. The landslide volume was estimated to be about 20 000 m³ to 30 000 m³ over an area of about 60 m in height and 80 m in width. Although the failed portion of the cut slope had not exhibited significant displacement, tension cracks were found to be opening up on the natural slope above and the surface channels on the cut slope had been damaged. The failure was probably associated with the cutting of the natural slope.

4.2 Incident HK 95/7/1 : Behind Kingsford Garden, 202-216 Tin Hau Temple Road, Braemar Hill

(Date : 4 July 1995. Boulder fall from a natural slope into a building lot resulting in the damage of four cars, Plate 4)

At about 8:15 a.m. on 4 July, three boulders fell down from a natural slope behind Kingsford Garden, 202-216 Tin Hau Temple Road, Braemar Hill. The natural slope was above a 25 m high soil cut slope. It is possible that the three boulders originated from one big boulder that broke into three pieces when rolling down the slope. The average dimension of the boulders was about 1 m. The boulders damaged four cars. The failure was probably caused by loosening of the ground supporting the boulders, as a result of the rain that preceded the failure.

4.3 Incident ME 95/8/7 : Pak Shek Toi Road, Sai Kung

(Date : 5 August 1995. Major failure of a fill slope resulting in the closure of an access road and a pedestrian pavement, Plate 5)

At about 8:30 a.m. on 5 August, about 600 m³ of fill slipped as a result of failure of a fill slope together with a 2 m high retaining wall at its crest which was supporting Pak Shek Toi Road. The fill slope was about 20 m high and was covered by vegetation before the landslide. The portion that failed was about 13 m high and 30 m wide. The maximum depth of failure was about 4 m. This resulted in the closure of Pak Shek Toi Road and the pedestrian pavement alongside the road. The failure was probably due to stormwater overflow from Pak Shek Toi Road onto the fill slope.

4.4 Incident K 95/8/7 : 33 Fan Wa Street, Cha Kwo Ling

(Date : 12 August 1995. Failure of a soil/rock cut slope resulting in the permanent evacuation of 40 huts with 152 residents, Plate 6)

At about 5:00 p.m. on 12 August, a failure took place at 33 Fan Wa Street, Cha Kwo Ling, resulting in the permanent evacuation of 40 squatter huts with 152 residents. The portion that failed was an old quarry face and about 30 m high and 20 m wide. The landslide was probably triggered by heavy rain.

4.5 Incident HK 95/8/73 : 18 Shouson Hill Road, Shouson Hill

(Date : 12 August 1995. Major failure of a soil cut slope resulting in the temporary evacuation of four flats and blockage of a building access, Plate 7)

On 12 August 1995, about 400 m³ of weathered rock slipped from a soil cut slope (No. 11SW-D/CR160) below No. 18, Shouson Hill Road. The slope was about 10 m high and covered by stone-pitching before the landslide. The portion that failed was about 10 m high and 15 m wide. This resulted in the temporary evacuation of four flats and the blockage of an access road to No. 12 Shouson Hill Road. The landslide was probably triggered by the intense rain preceding the failure.

4.6 Incident HK 95/8/43 : Chai Wan Baptist Church, 30 Fei Tsui Road, Chai Wan

(Date : 13 August 1995. Major failure of a soil/rock cut slope resulting in one fatality, one injury and closure of Fei Tsui Road and part of a building, Plate 8)

On 13 August 1995, a landslide occurred at the slope opposite Chai Wan Baptist Church, Fei Tsui Road. The landslide involved the sudden collapse of part of a registered cut slope No. 11SE-D/C42 and the land above the crest of the cut slope adjacent to the Chai Wan Salt Water Service Reservoir. The cut slope was about 27 m high with an average slope angle of 60°. Rock was exposed at the lower part of the cut slope, and the upper portion was covered in chunam.

The portion of the slope that failed was about 23 m high and 70 m wide. The average depth of the landslide was about 15 m. The landslide released about 14 000 m³ of debris and was the largest reported fast-moving failure of a permanent cut slope in weathered tuff in Hong Kong. The landslide debris covered the lower part of the cut slope, the open space in

front of the slope and Fei Tsui Road, with some deposited onto the playground across the road. Part of the debris piled up against the south-western corner of the Chai Wan Baptist Church building to a maximum height of about 6 m. This resulted in one fatality, one injury, and closure of Fei Tsui Road and part of the Chai Wan Baptist Church building.

A comprehensive investigation into the landslide was carried out by the Geotechnical Engineering Office (GEO) during the period August to December 1995. Details of the investigation and its findings are given in GEO (1996a).

4.7 Incident HK 95/8/19 : 24 Shouson Hill Road, Shouson Hill

(Date : 13 August 1995. Major failures of a soil cut slope and a natural slope resulting in the blockage of a road and fencing off of a carpark area, Plate 9)

Two slope failures took place at about 2:00 a.m. near 24 Shouson Hill Road, Shouson Hill. One of the failure involved 230 m³ of colluvium slipping down from a soil cut slope (No. 11SW-D/C147) onto Shouson Hill Road. The slope was about 10 m high and was covered by vegetation. This resulted in the blockage of two lanes of Shouson Hill Road. Another failure involved 80 m³ of colluvium slipping down from a natural slope below Shouson Hill Road and resting against the back wall of a carpark below the road. The slope was about 12 m high and was covered by vegetation. This resulted in the partial collapse of Shouson Hill Road and the fencing off of a carpark area. Both failures were probably triggered by infiltration and wash out during heavy rain.

4.8 Incident HK 95/8/49 : Shum Wan Road, Aberdeen

(Date : 13 August 1995. Major failure of the hillside above Shum Wan Road, resulting in two fatalities, five injuries, damage to three shipyards and a factory and closure of two roads, Plate 10)

On 13 August 1995, a landslide took place at the hillside above Shum Wan Road, Aberdeen. It caused the collapse of a 30 m long section of Nam Long Shan Road. Nam Long Shan Road was about 5 m wide at the location of the landslide, and there was a passing bay on the downhill side of the road. The passing bay was about 5 m wide and was supported by a fill embankment about 10 m high from toe to crest. The hillside was about 70 m high. Prior to the landslide, the hillside was densely vegetated and had an overall gradient of about 27°.

The failure was preceded by a minor failure of the fill embankment which occurred at a time between 11 p.m., 12 August, and 3 a.m., 13 August, followed by the collapse of Nam Long Shan Road at about 4:30 a.m. The landslide resulted in a 70 m high scar, with a width varying from 50 m to 90 m. The landslide released about 26 000 m³ of soil and rock. The landslide debris crossed Shum Wan Road and damaged three shipyards and a factory near the seafront. The landslide resulted in two fatalities, five injuries, and the closure of Nam Long Shan Road and Shum Wan Road.

A comprehensive investigation into the landslide was carried out by the Geotechnical

Engineering Office (GEO) during the period August 1995 to March 1996. Details of the investigation and its findings are given in GEO (1996b).

4.9 Incident ME 95/8/11 : Junction of Sai Sha Road and Tai Mong Tsai Road, Sai Kung

(Date : 13-14 August 1995. Major failure of a soil cut slope resulting in the closure of a road, Plate 11)

Between 13 and 14 August, about 2 000 m³ of weathered rock slipped progressively from a soil cut slope (No. 8SW-A/C8) at the junction of Sai Sha Road and Tai Mong Tsai Road, Sai Kung. The slope was about 20 m high, with an average slope gradient of 40°, and was covered by chunam. The portion that failed was about 14 m high and 60 m wide. The failure was probably due to infiltration resulting from prolonged and intense rainfall.

4.10 Incident K 95/8/16 : 503 Ma Wan Village, Lei Yue Mun

(Date : 14 August 1995. Major failure of a soil/rock cut slope resulting in the permanent evacuation of 24 huts, Plate 12)

At about 8:00 a.m. on 14 August, about 400 m³ of weathered rock slipped from a soil rock cut slope (No. 11SE-B/C113) above No. 503 Ma Wan Village, Lei Yue Mun. The slope was an old quarry face about 30 m high and was covered by chunam and vegetation before failure. This resulted in the permanent evacuation of 24 squatter huts. The failure was probably due to infiltration resulting from prolonged and intense rainfall.

4.11 Incident MW 95/8/21 : Road Widening Project Site near Siu Lam, Tuen Mun Highway

(Date : 18 August 1995. Boulder fall from a construction site resulting in one fatality, one injury and closure of the three Kowloon-bound lanes of Tuen Mun Highway, Plate 13)

At about 6:50 p.m. on 18 August, a boulder about 2 m x 2 m x 2.5 m in size fell down from a soil/rock cut slope (No. 6SW-D/C18) alongside Tuen Mun Highway near Siu Lam. Before the failure, slope works were being carried out at the location as part of the Tuen Mun Highway road widening project. The boulder hit a car and resulted in one fatality and one injury. The three Kowloon-bound lanes of Tuen Mun Highway were closed after the failure.

4.12 Incident MW 95/10/2 : Dragonville, 21-25 Castle Peak Road

(Date : 6 October 1995. Failure of a soil/rock cut slope resulting in two injuries and blockage of a road, Plate 14)

At about 7:30 a.m. on 6 October, about 2 m³ of weathered rock slipped from a soil/rock cut slope near 21-25 Castle Peak Road. The debris hit a bus and resulted in injuries

of two bus passengers. The slope was about 9 m high and was covered by vegetation before the landslide. The failure was probably due to infiltration from preceding rainfall. Insufficient maintenance resulting in the loosening of soil due to tree root action might also have contributed to the failure.

5. CONCLUSIONS

Rainfall at the RO in 1995 was 24% higher than the Hong Kong annual average. The intense rainstorms in July, August and October brought most of the rainfall.

Six Landslip Warnings were issued in 1995. There were 295 genuine landslides reported to the GEO. The landslides resulted in four fatalities and ten injuries. According to the data given in GEO's landslide inspection reports, and supplementary information provided by GEO's District Divisions, damages resulting from the landslides included : temporary evacuation of 30 squatter huts, permanent evacuation of 87 squatter huts, five buildings, eight houses and 53 flats and blockage of 163 sections of road, pedestrian pavement and access.

About 28% of the landslides were judged to be related to poor slope maintenance.

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Table 1 - Rainfall-Landslide Events in 1995 with 24-hour Rainfall Greater than 50 mm

| Date ⁽¹⁾ of Event | Maximum Rainfall | | | | | | | | Landslide Consequences | | | | |
|--|--|-------|------|------------|---------|-------------------------------|------------|------------|------------------------|--------------------------|-----|--------------------------------|---|
| | Royal Observatory | | | | | GEO Raingauges ⁽²⁾ | | | Number of Landslides | | | Persons Killed (Injured) | Number of Huts Evacuated Permanently |
| | 24-hr | 5-hr | 1-hr | Antecedent | | 24-hours | 5-hours | 1-hour | GEO ⁽³⁾ | Newspaper ⁽⁴⁾ | FSD | | |
| | | | | 4 days | 15 days | | | | | | | | |
| 12-13 Aug 95 ⁽⁵⁾ | 325.7 | 128.8 | 43.8 | 56.9 | 416.8 | 467.5(H08) | 225.0(H14) | 81.5(H13) | 70 | 66 | 9 | 3 (6) | 40 |
| 5-6 Oct 95 ⁽⁵⁾ | 258.7 | 180.2 | 56.7 | 195.8 | 196.5 | 406.5(N14) | 208.5(K01) | 75.0(K01) | 12 | - | - | 0(2) | - |
| 2-3 Aug 95 ⁽⁵⁾ | 187.3 | 71.6 | 21.2 | 37.1 | 184.1 | 318.0(H19) | 117.5(H19) | 69.0(N09) | 16 | 17 | 1 | - | 2 |
| 2-3 Oct 95 ⁽⁵⁾ | 168.6 | 81.0 | 28.1 | 2.6 | 6.9 | 284.5(N14) | 122.5(H22) | 44.5(H22) | 4 | - | - | - | 1 |
| 31 Aug-1 Sep 95 ⁽⁵⁾ | 127.6 | 61.8 | 23.8 | 51.8 | 155.7 | 216.5(N02) | 117.0(N06) | 46.0(N17) | 6 | - | 1 | - | - |
| 15-16 Jul 95 ⁽⁵⁾ | 121.8 | 74.9 | 31.2 | 191.7 | 372.2 | 164.0(H13) | 99.0(H02) | 53.5(H02) | 3 | 3 | - | - | - |
| 12-13 Jul 95 ⁽⁵⁾ | 96.2 | 43.0 | 23.5 | 51.2 | 219.2 | 192.0(H09) | 143.0(N09) | 80.5(H09) | 7 | 8 | - | - | - |
| 14-15 Aug 95 ⁽⁵⁾ | 92.8 | 50.8 | 15.5 | 387.6 | 743.3 | 366.5(N14) | 264.5(N14) | 106.0(N14) | 43 | 32 | 2 | - | 31 |
| 26-27 Aug 95 | 91.5 | 53.2 | 32.7 | 39.3 | 502.8 | 116.0(K05) | 68.5(K05) | 42.0(K05) | - | - | - | - | - |
| 17-18 Jun 95 | 82.0 | 78.6 | 38.2 | 38.6 | 134.0 | 121.0(N01) | 115.5(N01) | 72.5(N01) | 4 | 2 | - | - | - |
| 5-6 Aug 95 ⁽⁵⁾ | 80.7 | 49.4 | 11.3 | 250.4 | 417.7 | 173.0(K03) | 121.0(N08) | 58.5(N08) | 6 | 1 | - | - | - |
| 26-27 Jul 95 | 77.9 | 40.2 | 13.9 | 64.7 | 386.5 | 197.5(N17) | 122.5(N17) | 39.0(N17) | 2 | - | - | - | - |
| 13-14 Jul 95 ⁽⁵⁾ | 69.0 | 52.7 | 19.9 | 123.0 | 310.1 | 106.5(H21) | 93.5(H21) | 54.5(H21) | 10 | 16 | - | - | 3 |
| 4-5 Jul 95 | 59.0 | 28.8 | 21.4 | 85.6 | 109.2 | 112.5(H06) | 72.5(H06) | 47.0(H06) | 4 | 2 | - | - | - |
| 8-9 Jun 95 | 58.2 | 30.8 | 12.7 | 6.5 | 10.1 | 124.5(N15) | 57.0(N15) | 31.5(N12) | 1 | - | - | - | - |
| 24-25 Jul 95 | 55.8 | 51.1 | 35.3 | 7.9 | 330.0 | 90.0(N02) | 85.5(H14) | 64.0(N09) | - | - | - | - | - |
| 2-3 Jul 95 | 54.8 | 35.7 | 14.5 | 34.9 | 132.7 | 93.5(H08) | 62.0(H08) | 42.0(K07) | 2 | 1 | - | - | 2 |
| 11-12 Aug 95 | 53.9 | 33.6 | 15.3 | 5.1 | 418.5 | 87.5(H08) | 69.5(N14) | 22.5(N14) | - | 12 | 2 | - | - |
| Selected Previous Major Rainstorms (for comparison only) | | | | | | | | | | | | | |
| 29 May 82 | 394 | 153 | 44 | 1 | 11 | 430 | 237 | 111 | 551 | 498 | 15 | 22(26) | 1153 |
| 20-21 May 89 | 388 | 149 | 37 | 28 | 42 | 566 | 224 | 51 | 340 | 100 | 3 | 2(3) | 199 |
| 8 May 92 | 324 | 196 | 110 | 65 | 71 | 385 | 244 | 110 | 350 | 40 | 9 | 3(5) | 92 |
| Notes: | (1) The events are arranged in order of the intensity of 24-hour rainfall recorded at the Royal Observatory, Tsim Sha Tsui. (2) The maxima are selected from the 48 GEO Raingauges for the rainstorms. The GEO Raingauge reference number is shown in brackets. (3) Reported totals are for genuine reported landslides known to have occurred on specific dates. (4) The newspapers that have been searched include the South China Morning Post, the Hongkong Standard, the Sing Tao Daily and the Ming Po Daily News. (5) Landslip warnings were issued for these events. (6) GEO = Geotechnical Engineering Office; FSD = Fire Services Department. | | | | | | | | | | | | |

Table 2 - Warnings Issued by the Royal Observatory in 1995

| Month | Monthly Rainfall (mm) | Dates on Which Warnings Were in Effect | | | | |
|--|-----------------------|--|------------------------|---|---|--------------|
| | | Thunderstorm | Flood | Landslip | Tropical Storm | Rainstorm |
| January | 21.1 | 3 | - | - | - | - |
| February | 33.1 | 13-14 | - | - | - | - |
| March | 32.4 | 17 | - | - | - | - |
| April | 76.3 | 7, 19, 30 | 19 | - | - | - |
| May | 20.8 | 4, 21 | 4 | - | - | - |
| June | 243.9 | 5, 8-11, 14-19, 27-28, 30 | 8, 10, 14-15, 18 | - | - | 14, 18 (Red) |
| July | 668.7 | 1-7, 9, 12-16, 24-27, 30-31 | 3-5, 9, 12-15, 25, 27 | 13(10:55)-15(21:00) | 28-31 (Signal 1, Gary) | - |
| August | 1090.1 | 1-5, 7, 12-15, 24-27, 31 | 3, 5, 12-15, 24-27, 31 | 3(11:30)-6(09:00), 12(08:00)-15(14:45), 31Aug(18:00) - 1Sep(16:30) | 9-12 (Signals 1-8, Helen) 18-19 (Signal 1, Irving) 27-28 (Signal 1, Lois) 31Aug-1Sep (Signals 1-8, Kent) | 12-13 (Red) |
| September | 81.4 | 1, 14, 16 | 1 | - | 6-7 (Signal 1, Nina) 19-21 (Signal 1, Ryan) | - |
| October | 476.9 | 5-6, 14 | 3, 5-6 | 3(04:00)-4(08:30) 5(22:00)-6(10:15) | 1-3 (Signals 1-8, Sibyl) | 5-6 (Red) |
| November | 1.8 | - | - | - | - | - |
| December | 7.9 | - | - | - | - | - |
| Total | 2754.4 | 63 days | 32 days | 6 Warnings | 8 Warnings | 6 days |
| Notes : (1) Landslip Warnings were issued after consultation between GEO and RO. (2) Information in this Table is based on RO (1995). | | | | | | |

Table 3 - Maximum Rainfalls Recorded at the Royal Observatory in 1995 and Their Estimated Return Periods

| Duration | Rainfall ⁽²⁾ (mm) | Ending Time | | Estimated Return Period (Years) ⁽¹⁾ |
|---|---------------------------------|--------------|-------|---|
| | | Date | Time | |
| 1 hour | 43.8 | Aug 13, 1995 | 03:00 | 1 |
| 2 hours | 82.7 | Aug 13, 1995 | 04:00 | 2 |
| 5 hours | 128.8 | Aug 13, 1995 | 04:00 | 2 |
| 12 hours | 207.7 | Aug 13, 1995 | 04:00 | 3 |
| 24 hours | 325.7 | Aug 13, 1995 | 04:00 | 6 |
| 2 days | 383.1 | Aug 13, 1995 | 10:00 | 6 |
| 4 days | 477.9 | Aug 15, 1995 | 03:00 | 7 |
| 7 days | 481.1 | Aug 16, 1995 | 02:00 | 5 |
| 15 days | 836.6 | Aug 15, 1995 | 03:00 | 20 |
| Notes : (1) Return periods were assessed from the Gumbel equation, after Lam & Leung (1994), to the nearest year. (2) Rainfall maxima as recorded at the Royal Observatory, Tsim Sha Tsui. | | | | |

Table 4 - Number of Incidents Reported to Various Departments in 1995

| Department | Total Number | Type of Incident | | |
|--|--------------|------------------|----------|--------|
| | | Landslide | Flooding | Others |
| Agriculture & Fisheries Department | 5 | 5 | 0 | 0 |
| Architectural Services Department | 17 | 13 | 0 | 4 |
| Drainage Services Department | 202 | 0 | 202 | 0 |
| Fire Services Department | 29 | 14 | 15 | 0 |
| Geotechnical Engineering Office, Civil Engineering Department | 303 | 295 | 0 | 8 |
| Highways Department | 602 | 161 | 109 | 332 |
| Housing Department | 8 | 5 | 0 | 3 |
| Water Supplies Department | 62 | 51 | 5 | 6 |
| Note : "Others" includes minor signs of distress and incidents of no geotechnical concerns such as fallen trees. | | | | |

Table 5 - List of Major Landslides Reported to GEO in 1995 (Sheet 1 of 4)

| Incident No. | Location (Slope No.) | Failure | | | Facility Affected | Consequence | Plate No. |
|--------------|---|-------------|---|-------------------------|---|--|-----------|
| | | Date (Time) | Type | Scale (m ³) | | | |
| HK 8/2 | Opposite 99 Peak Road, The Peak (11SW-D/CR237) | 3/8 (19:30) | Soil/rock cut slope | Major (50) | Road | 2 lanes of road closed | -- |
| HK 8/16 | Near 52 Peak Road, Magazine Gap | 13/8 (1:30) | Soil cut slope | Major (60) | Road | 2 lanes of road closed | -- |
| HK 8/19 | 24 Shouson Hill Road, Shouson Hill (11SW-D/C147) | 13/8 (2:00) | Soil cut slope Natural slope | Major (310) | Building lot Road Carpark | 2 lanes of road blocked and carpark closed | 9 |
| HK 8/20 | Opposite 65 Repulse Bay Road and Above 46 Island Road, Repulse Bay | 13/8 | Soil cut slope Retaining wall | Major (250) | Building lot Road Building access | 3 houses evacuated, 2 roads closed and building access affected | -- |
| HK 8/21 | 73 to 91 Repulse Bay Road / Belleview Drive, Repulse Bay (15NE-A/C34) | 13/8 (4:00) | Soil/rock cut slope | Major (300) | Building lot Road | 3 houses evacuated and 1 road closed | -- |
| HK 8/31 | Near Cape Collinson Road, Shek O Road, Tai Tam Gap | 13/8 (2:30) | Fill/soil cut slope | Major (120) | Road | 1 lane of road closed | -- |
| HK 8/43 | Chai Wan Baptist Church, 30 Fei Tsui Road, Chai Wan (11SE-D/C42) | 13/8 (1:15) | Soil/rock cut slope Fill slope Retaining wall | Major (14000) | Road Pedestrian pavement Open space Playground | 1 person killed, 1 person injured, 1 road closed and part of a building temporarily closed | 8 |

Table 5 - List of Major Landslides Reported to GEO in 1995 (Sheet 2 of 4)

| Incident No. | Location (Slope No.) | Failure | | | Facility Affected | Consequence | Plate No. |
|--------------|---|-----------------------|--|-------------------------|--|---|-----------|
| | | Date (Time) | Type | Scale (m ²) | | | |
| HK 8/49 | Shum Wan Road, Aberdeen | 13/8 (4:00-4:30) | Hillside Fill slope Retaining wall | Major (26000) | Building lot Road Pedestrian pavement Building access | 2 persons killed, 5 persons injured, 3 shipyards and 1 factory damaged and 2 roads closed | 10 |
| HK 8/51 | Cut Slope Behind Island Garden, 33, 35, 41 Chai Wan Road, Chai Wan | 13/8 (3:30) | Soil/rock cut slope | Major (100) | Building lot | 40 flats temporarily evacuated | -- |
| HK 8/67 | 8 A Kung Ngam Tsuen Road, Shau Kei Wan (11SE-B/C101) | 14/8 (before 6:00) | Soil/rock cut slope Natural slope | Major (80) | Building lot | A closure order recommended | -- |
| HK 8/73 | 12 Shouson Hill Road, Shouson Hill (11SW-D/CR160) | 12/8 (night) | Soil cut slope | Major (400) | Building lot Building access | 4 flats evacuated, access road blocked | 7 |
| HK 9/1 | Adjacent to 47A Stubbs Road, Wan Chai Gap (11SW-D/C340) | 31/8 (22:45) | Soil cut slope | Major (130) | Road | 3 lanes of road closed | -- |
| K 8/16 | 503 Ma Wan Village, Lei Yue Mun (11SE-B/C113) | 14/8 (8:00) | Soil/rock cut slope Rock fall | Major (400) | Squatter hut | 24 huts permanently evacuated | 12 |
| K 8/17 | Opposite Lui Ming Choi Secondary School, Kwun Tong Road, Kwun Tong (11NE-A/C35) | 13/8 (18:30) | Rock slope Boulder fall | Major (150) | Road Pedestrian pavement | 2 lanes of road closed and pedestrian pavement closed | -- |

Table 5 - List of Major Landslides Reported to GEO in 1995 (Sheet 3 of 4)

| Incident No. | Location (Slope No.) | Failure | | | Facility Affected | Consequence | Plate No. |
|--------------|---|--------------|---------------------------|-------------------------|---------------------------------|---|-----------|
| | | Date (Time) | Type | Scale (m ³) | | | |
| ME 7/1 | Behind Kam Ying Court, Ma On Shan | 26/5 | Soil cut slope | Major (150) | Pedestrian pavement | Pedestrian pavement affected | -- |
| ME 7/2 | Yan Kwong Lutheran Church, Ma On Shan Tsuen Upper | July 1994 | Soil cut slope | Major (200) | Building lot | Building damaged | -- |
| ME 8/7 | Pak Shek Toi Road, Sai Kung | 5/8 (8:00) | Fill slope Retaining wall | Major (600) | Access road Pedestrian pavement | Access road closed and pedestrian pavement closed | 5 |
| ME 8/10 | Sai Sha Road, Kei Ling Ha Lo Wai, Sai Kung (8NW-C/C15) | 13/8 | Soil/rock cut slope | Major (240) | Road | 2 lanes of road closed | -- |
| ME 8/11 | Junction of Sai Sha Road and Tai Mong Tsai Road, Sai Kung (8SW-A/C8) | 13-14/8 | Soil cut slope | Major (2000) | Road | 2 lanes of road closed | 11 |
| ME 8/19 | Near Ta Kin Ling San Tsuen, Clear Water Bay Road, Sai Kung (11NE-B/C 142) | 12/8 (15:00) | Soil cut slope | Major (80) | Road | 4 lanes of road closed | -- |
| ME 8/21 | Footpath to Rock Carving, Nam Tong, Tung Lung Chau | 13/8 | Natural slope | Major (100) | Pedestrian pavement | Pedestrian pavement closed | -- |
| ME 9/6 | Old Turret Hill Quarry Site, Shatin | August | Soil cut slope | Major (50) | Abandoned quarry | - | -- |

Table 5 - List of Major Landslides Reported to GEO in 1995 (Sheet 4 of 4)

| Incident No. | Location (Slope No.) | Failure | | | Facility Affected | Consequence | Plate No. |
|--------------|--|----------------------|---------------------------------|-------------------------|-----------------------------------|--|-----------|
| | | Date (Time) | Type | Scale (m ³) | | | |
| ME 10/1 | Near Lamp Post No. EB1020-8, Brides Pool Road, Tai Po | 6/10 (early morning) | Rock fall | Major (50) | Road | 1 lane of road closed | -- |
| ME 10/3 | Near Muk Wu Pumping Station, Lin Ma Hang Road, Sha Tau Kok | 6/10 (12:30) | Natural slope | Major (50) | Road | 2 lanes of road blocked | -- |
| ME 10/12 | Next House No. Ma Yau Tong Village, Hang Hau, Sai Kung | August | Fill slope | Major (50) | Access road | - | -- |
| MW 3/1 | Sham Shui Kok Substation, Lantau | Uncertain | Soil cut slope Natural slope | Major (30000) | Building lot Construction site | - | 1,2,3 |
| MW 8/21 | Road Widening Project Site, Near Siu Lam, Tuen Mun Highway | 18/8 (18:50) | Rock fall | Major (10) | Road | 1 person killed, 1 person injured and 3 lanes of road closed | 13 |

Table 6 - Number of Landslides Occurred during Landslip Warning Periods in 1995

| Landslip Warning Period | No. of Landslides with Dates of Occurrence Known | No. of Landslides with Time of Occurrence Known to within One Hour | | | |
|--|--|--|------------------------------------|--|--|
| | Occurred on the Days of Warning | Occurred within 24 hours before Warning Issued | Occurred when Warning Was in Force | Occurred within 24 hours after Warning Cancelled | Occurred in the Period from 24 Hours before Warning Issued to 24 Hours after Warning Cancelled |
| 13/7 (10:55) to 15/7 (21:00) | 13 | 1 | 8 | 1 | 10 |
| 3/8 (11:30) to 6/8 (09:00) | 29 | 2 | 19 | 0 | 21 |
| 12/8 (08:00) to 15/8 (14:45) | 113 | 0 | 97 | 0 | 97 |
| 31/8 (18:00) to 1/9 (16:30) | 6 | 1 | 4 | 0 | 5 |
| 3/10 (04:00) to 4/10 (08:30) | 6 | 0 | 1 | 1 | 2 |
| 5/10 (22:00) to 6/10 (10:15) | 19 | 2 | 5 | 1 | 8 |
| <p>Notes : (1) Total number of landslides reported to the GEO in 1995 was 295.</p> <p>(2) 225 landslides were recorded with known dates of occurrence.</p> <p>(3) 91 landslides were recorded with the time of occurrence given to within one hour.</p> <p>(4) The above was based on the time and date estimated by GEO's Inspection Officers, which might not be accurate.</p> | | | | | |

Table 7 - Number of Landslides Reported to GEO Affecting Different Facilities in 1995

| Affected Facility | Districts ⁽⁴⁾ | | | | All |
|---|---|---------|-----------------|---------------|--------|
| | Hong Kong | Kowloon | New Territories | | |
| | | | Mainland East | Mainland West | |
| Squatters | 1(0) | 12(1) | 10(0) | 14(0) | 37(1) |
| Building Lots/Properties | 20(7) | 1(0) | 17(1) | 8(1) | 46(9) |
| Roads | 46(9) | 9(1) | 19(7) | 14(0) | 88(17) |
| Pedestrian Pavements | 20(2) | 6(1) | 16(3) | 11(0) | 53(6) |
| Footpaths/Lanes/ Private Access/ Footbridges | 12(4) | 1(0) | 7(0) | 2(0) | 22(4) |
| Construction Sites | 1(0) | 0(0) | 2(0) | 1(1) | 4(1) |
| Country/Urban Parks | 2(0) | 1(0) | 1(0) | 1(0) | 5(0) |
| Open Areas/Hillside | 16(1) | 9(0) | 12(0) | 10(0) | 47(1) |
| Catchwaters/Conduits/ Culvert | 0(0) | 0(0) | 1(0) | 0(0) | 1(0) |
| Carpark/Playground Garden/Yard | 12(2) | 2(0) | 2(0) | 0(0) | 16(2) |
| Cemetery/Urns | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) |
| Legend: | | | | | |
| 12(3) | Twelve landslides of which three were <u>major</u> failures | | | | |
| Notes : | | | | | |
| (1) Incidents which were not genuine landslides have been excluded. | | | | | |
| (2) One landslide may affect more than one type of facility. | | | | | |
| (3) The numbers of landslides affecting different types of facility were taken from Sections 11 & 12 of GEO's Incident Reports. | | | | | |
| (4) Based on GEO's district boundaries, which are shown in Drawing No. GCSP 8/16. | | | | | |

Table 8 - Consequence Related to Type of Failure in 1995

| Type of Failure | | No. of Squatter Huts Evacuated ⁽¹⁾ | | No. of Blocks, Houses or Flats Evacuated or Partially Closed ⁽¹⁾ | No. of Landslides Involving Blockage or Closure ⁽¹⁾ | | | Deaths (Injuries) |
|--------------------------|-----------|---|-----------|---|--|----------------------|---------------------------------------|--------------------------------------|
| | | Permanent | Temporary | | Roads | Pedestrian Pavements | Footpaths, Back Lanes, Private Access | |
| Fill Slope | | 2 | 2 | - | 5 | 4 | 2 | - |
| Cut Slope | Soil | 10 | 18 | 1 block 3 houses 11 flats | 32 | 9 | 1 | 0(1 ⁽²⁾) |
| | Soil/Rock | 64 | 2 | 4 houses 40 flats | 17 | 2 | - | 1(3) |
| | Rock | - | - | - | 2 | 1 | 1 | - |
| Natural Slope | | 8 | 2 | 4 blocks | 4 | 3 | 1 | 2(5) |
| Retaining Wall | | 1 | 4 | 2 flats | 2 | 2 | - | - |
| Rock/Boulder Fall | | 2 | 1 | 1 house | 17 | 3 | 1 | 1 ⁽²⁾ (1 ⁽²⁾) |
| Others (e.g. subsidence) | | - | 1 | - | - | - | - | |

Notes : (1) Based on Sections 11 & 12 of GEO's Incident Reports.
(2) Possibly associated with construction activity.
(3) A failure may give rise to more than one consequence.

Table 9 - Number of Landslides Reported to GEO in 1995 Classified by Type of Failure

| Type of Failure ⁽¹⁾ | | Number | Percentage (%) |
|--|-----------|---------|----------------|
| Fill Slope | | 21(3) | 7.1 |
| Cut Slope | Soil | 129(11) | 43.7 |
| | Soil/Rock | 43(7) | 14.6 |
| | Rock | 5(1) | 1.7 |
| Retaining Wall | | 21(0) | 7.1 |
| Natural Slope | | 26(3) | 8.8 |
| Rock/Boulder Fall | | 45(2) | 15.3 |
| Others (e.g. subsidence) | | 5(0) | 1.7 |
| Total | | 295(27) | 100.0 |
| Legend: 21(3) Twenty one Landslides of which three were <u>major</u> failure | | | |
| Notes : (1) Data shown in this Table were based on Section 5 & 6 of GEO's Incident Reports. Where a landslide involved more than one type of failure, the predominant type has been adopted. (2) Incidents which were not genuine landslides have been excluded. | | | |

Table 10 - Landslide Volume Distribution

| Volume of Failure (m ³) | Districts | | | | |
|---|-----------|---------|-----------------|---------------|-----------|
| | Hong Kong | Kowloon | New Territories | | All |
| | | | Mainland East | Mainland West | |
| < 5 | 53 | 16 | 41 | 32 | 142(48%) |
| ≥ 5 to < 10 | 9 | 2 | 19 | 5 | 35(12%) |
| ≥ 10 to < 20 | 15 | 4 | 8 | 7 | 34(12%) |
| ≥ 20 to < 50 | 10 | 11 | 7 | 14 | 42(14%) |
| ≥ 50 | 12 | 2 | 11 | 1 | 26(9%) |
| Not Recorded | 5 | 4 | 3 | 4 | 16(5%) |
| Total | 104 | 39 | 89 | 63 | 295(100%) |
| <p>Legend :</p> <p>142(48%) 142 landslides, which amount to 48% of the 295 landslides reported to the GEO.</p> | | | | | |
| <p>Notes : (1) Incidents which were not genuine landslides have been excluded. (2) Based on GEO's district boundaries which are shown in Drawing No. GCSP 8/16.</p> | | | | | |

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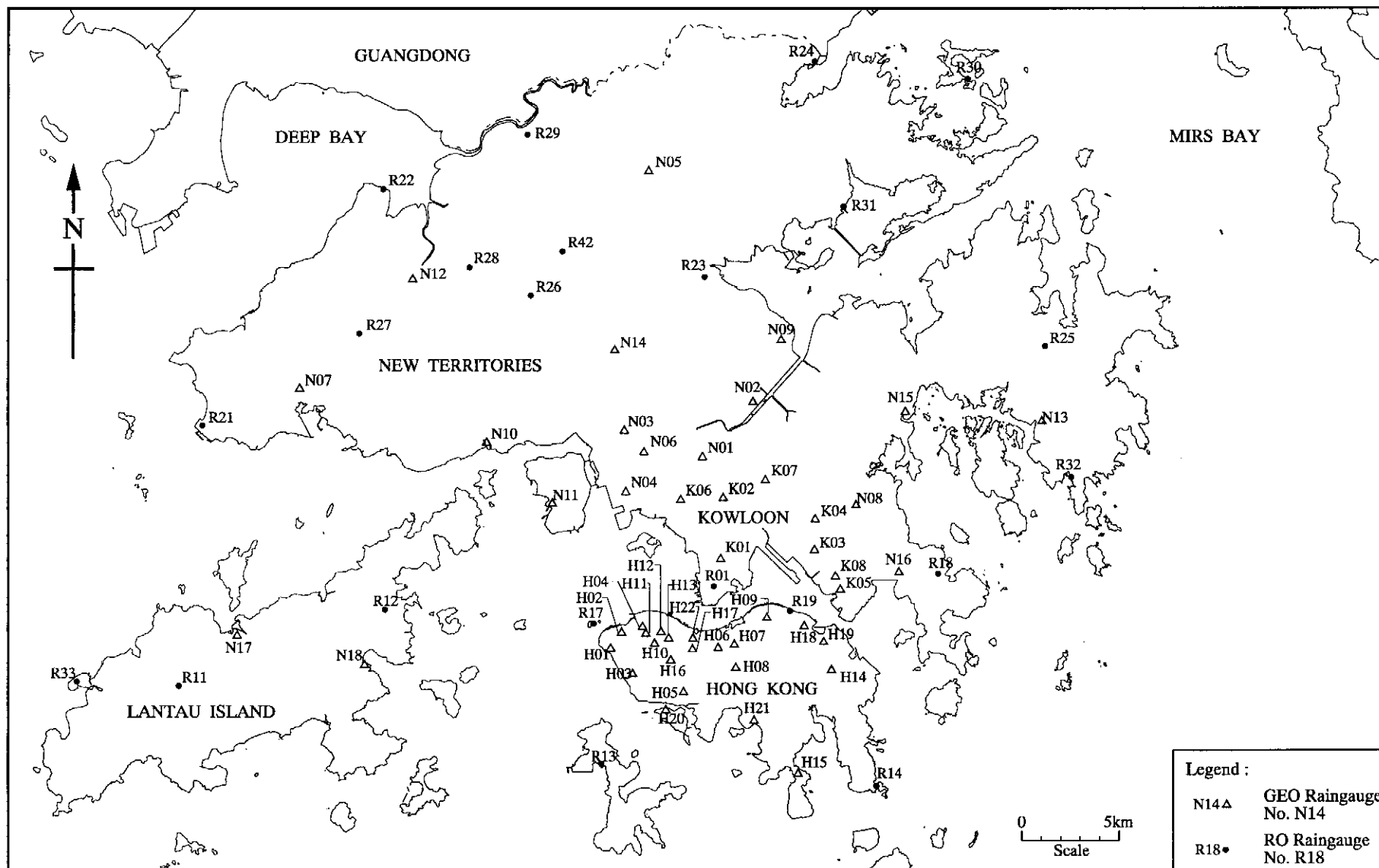
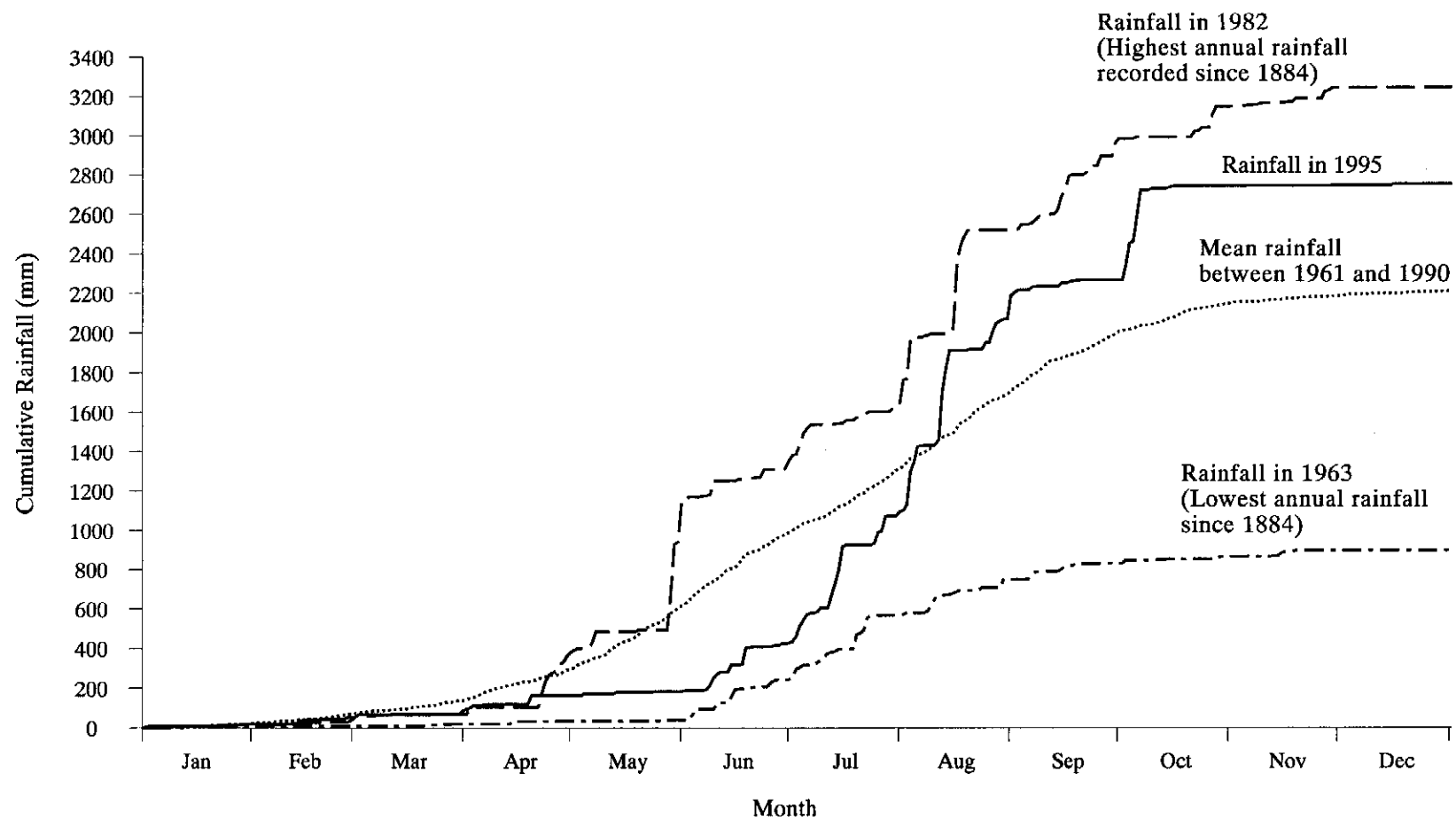
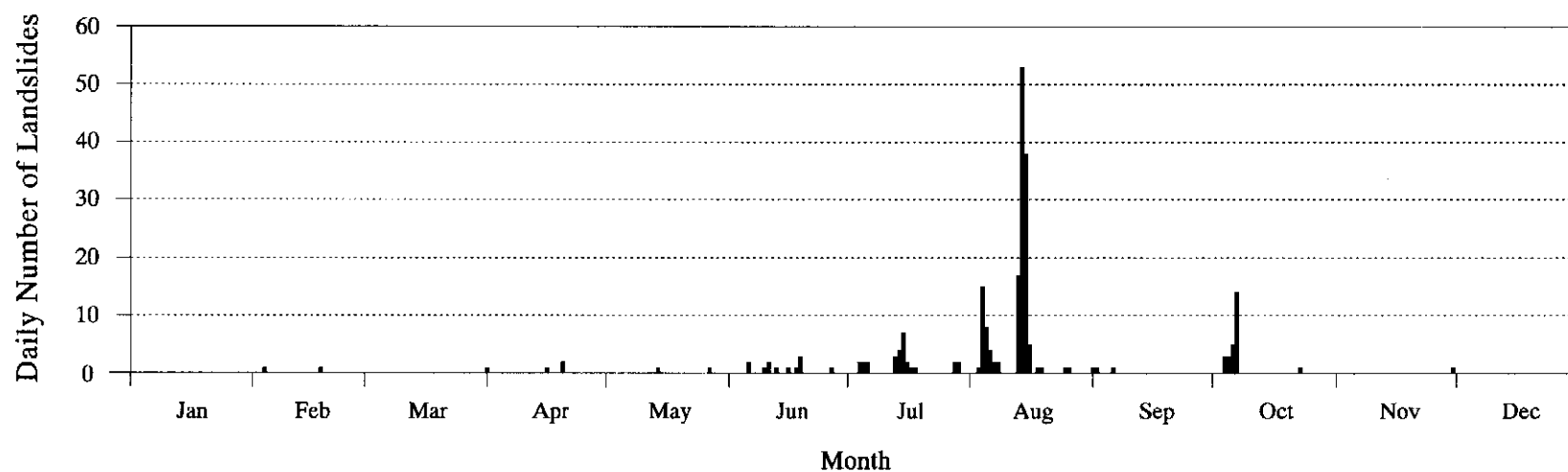
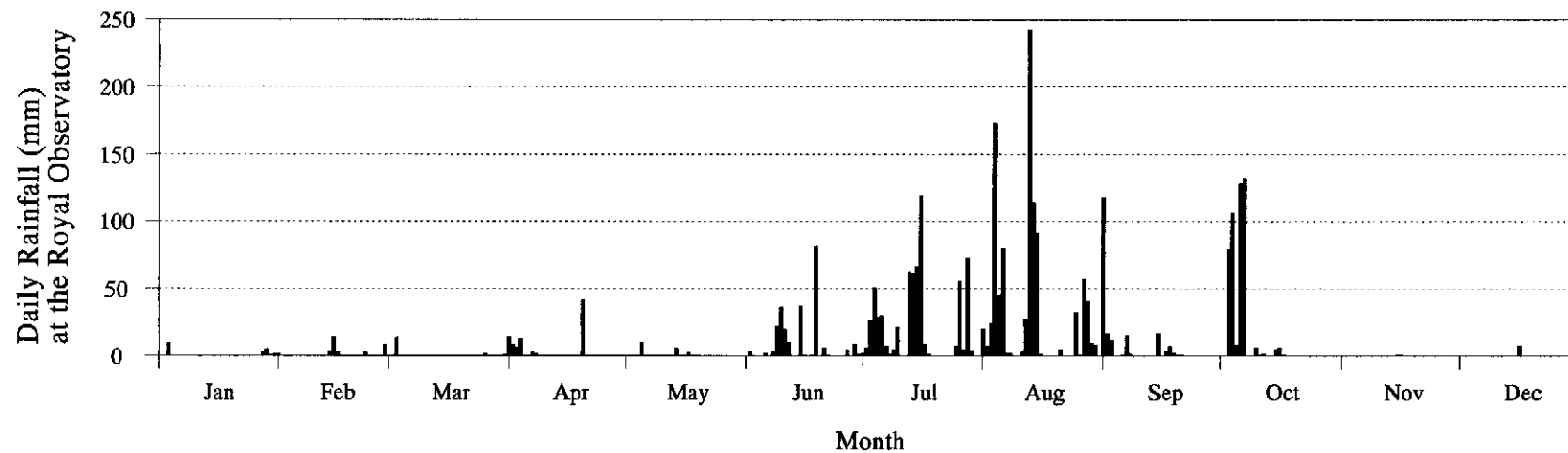


Figure 1 - Locations of GEO and RO Automatic Raingauges



Note : Rainfalls recorded at the Royal Observatory, Tsim Sha Tsui are shown.

Figure 2 - Cumulative Rainfall for 1995 and Recorded Highest, Mean and Lowest Cumulative Rainfalls



Note : Number of landslides known to have occurred on specific dates is shown.

Figure 3 - Daily Rainfall and Distribution of Number of Landslides in 1995

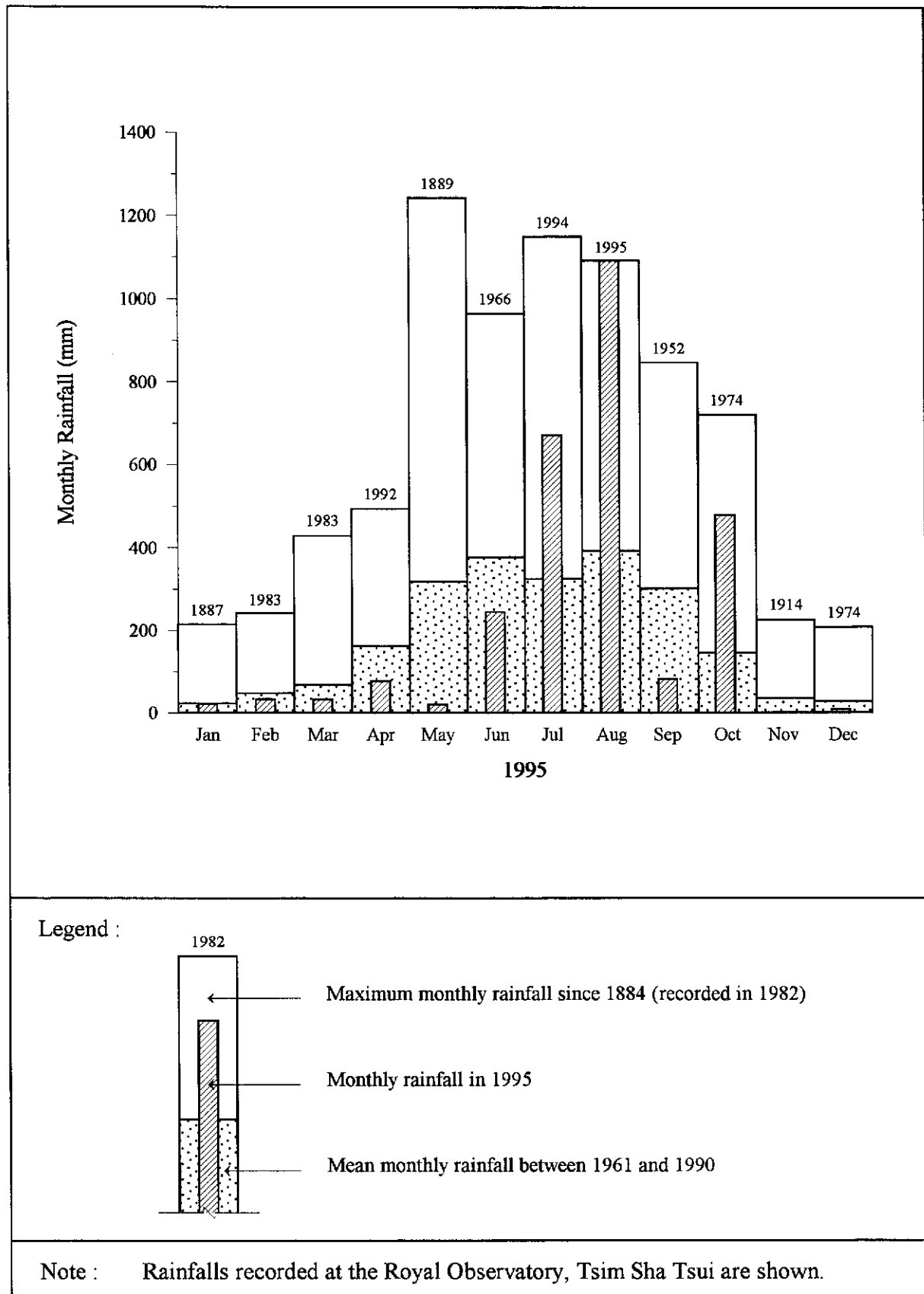


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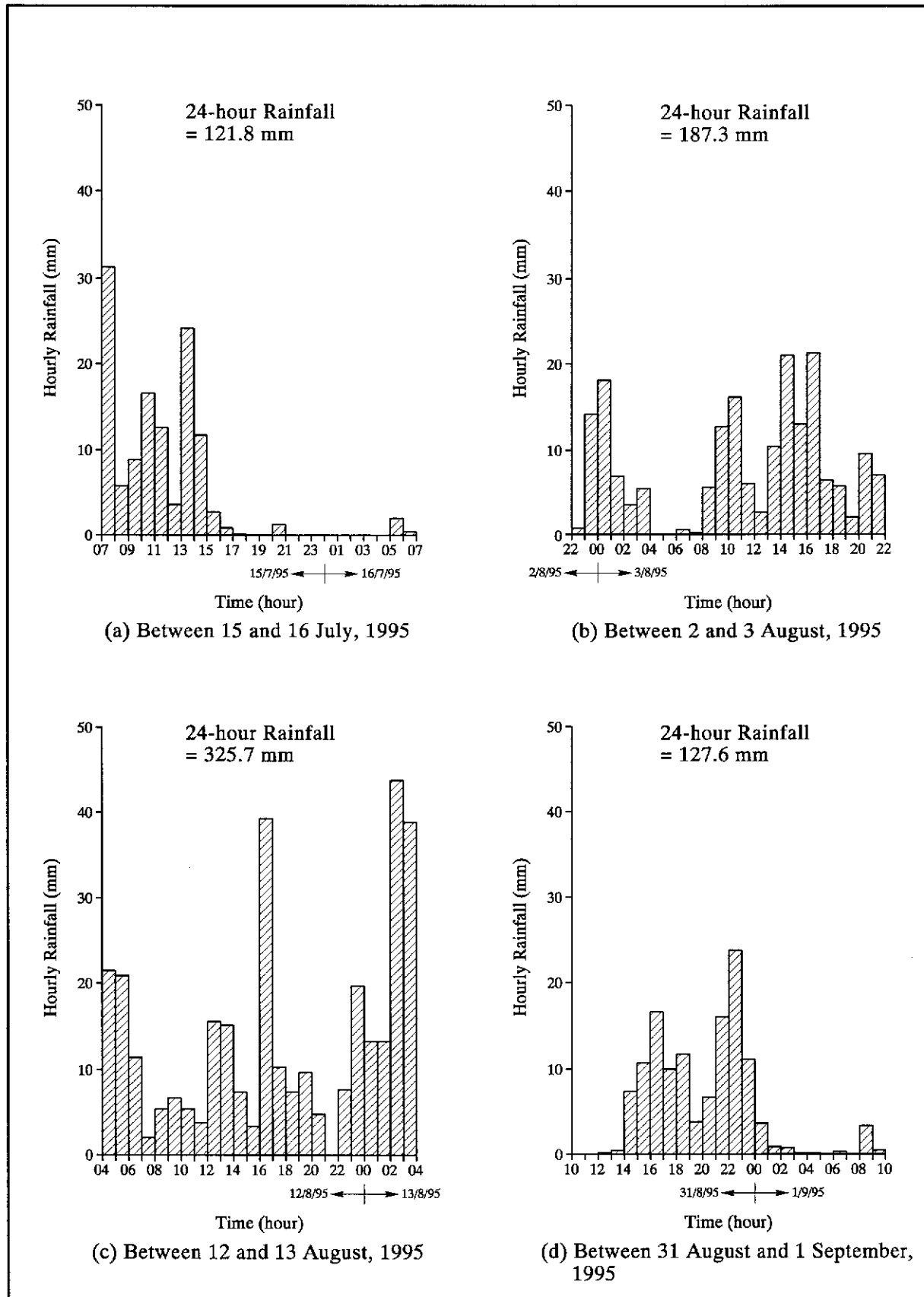


Figure 5 - Hourly Rainfall Intensities at the Royal Observatory for the Four Heavy 24-hour Rainstorms in 1995

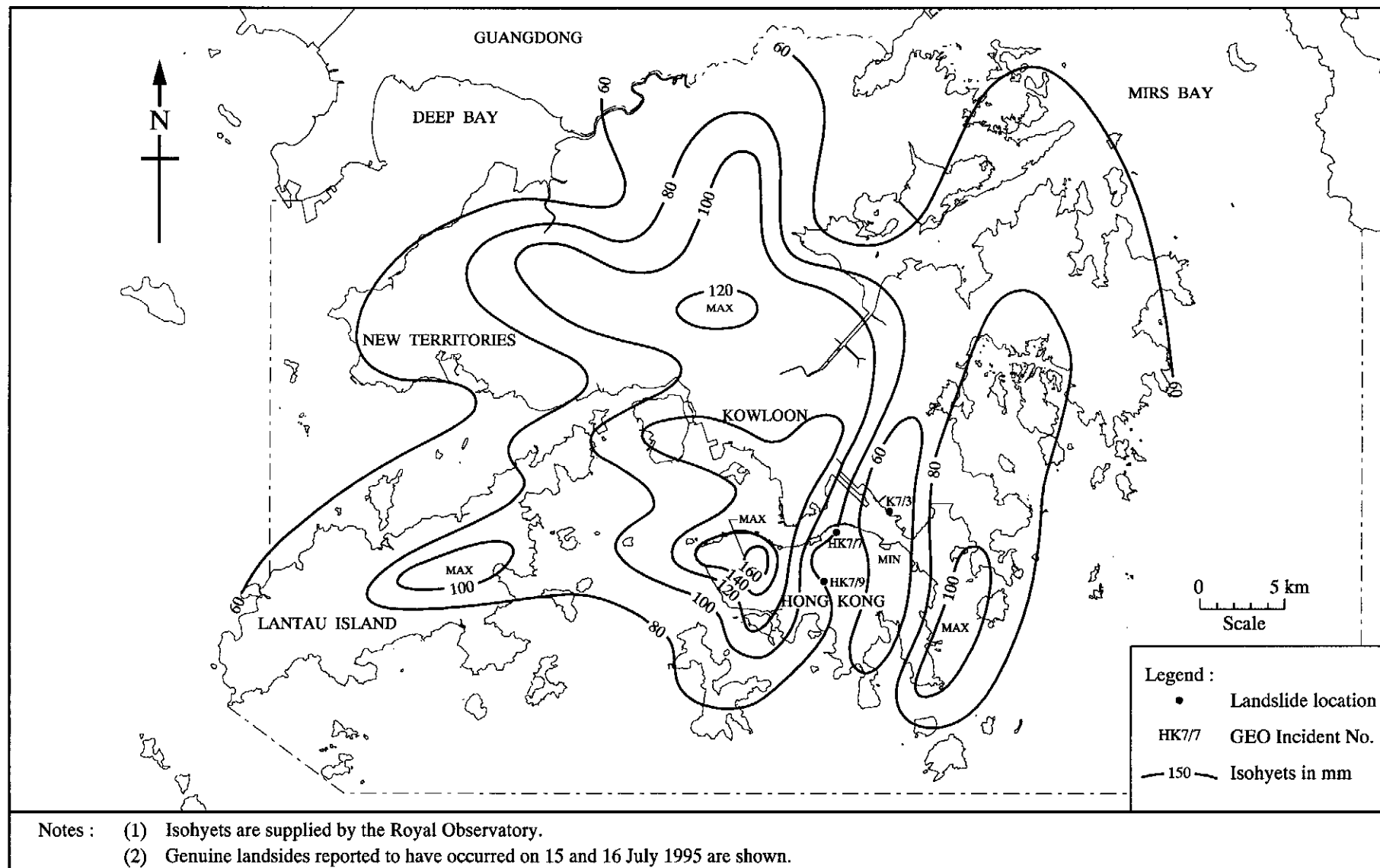


Figure 6 - 24-hour Rainfall Distribution Ending at 7 a.m. on 16 July 1995 and Locations of Landslides

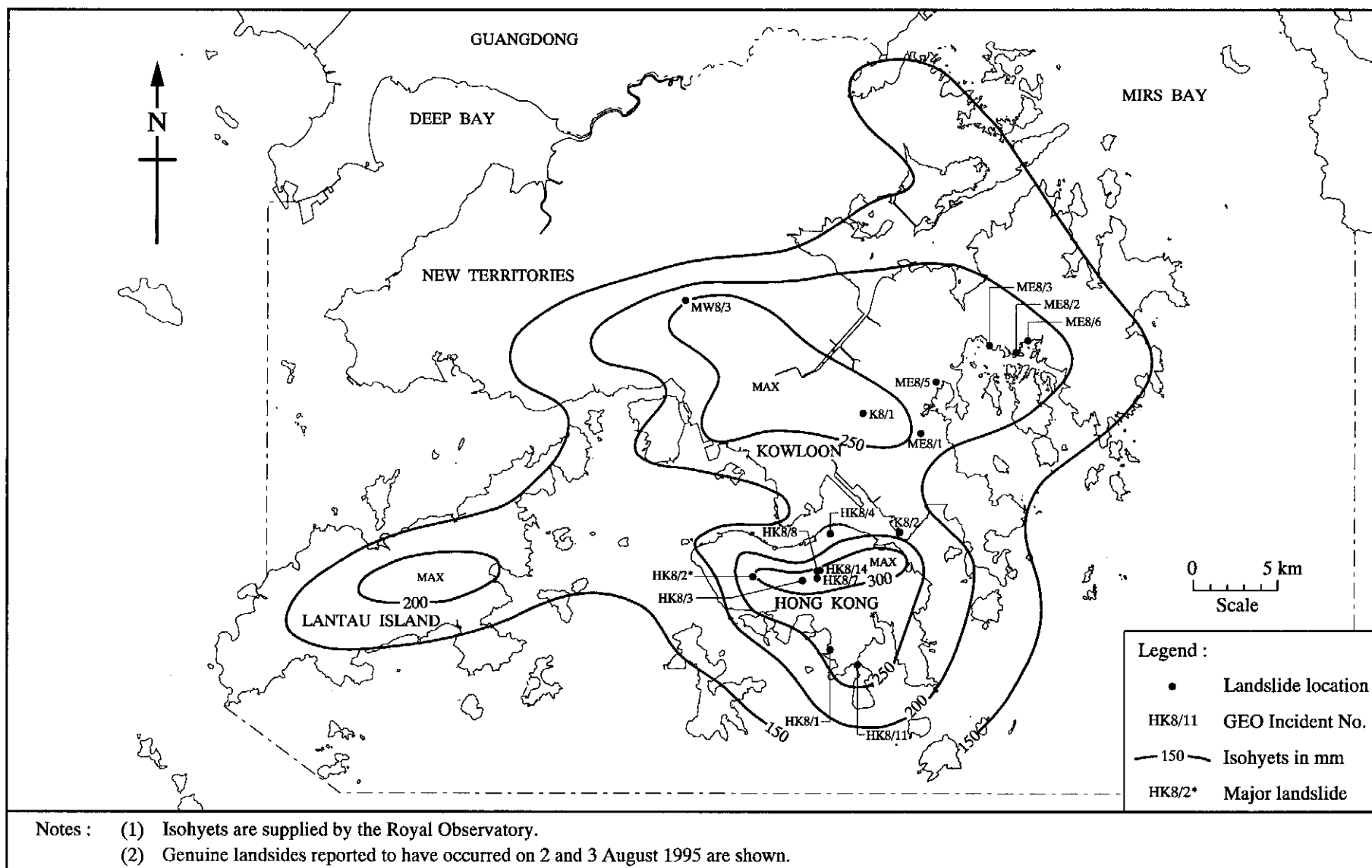


Figure 7 - 24-hour Rainfall Distribution Ending at 10 p.m. on 3 August 1995 and Locations of Landslides

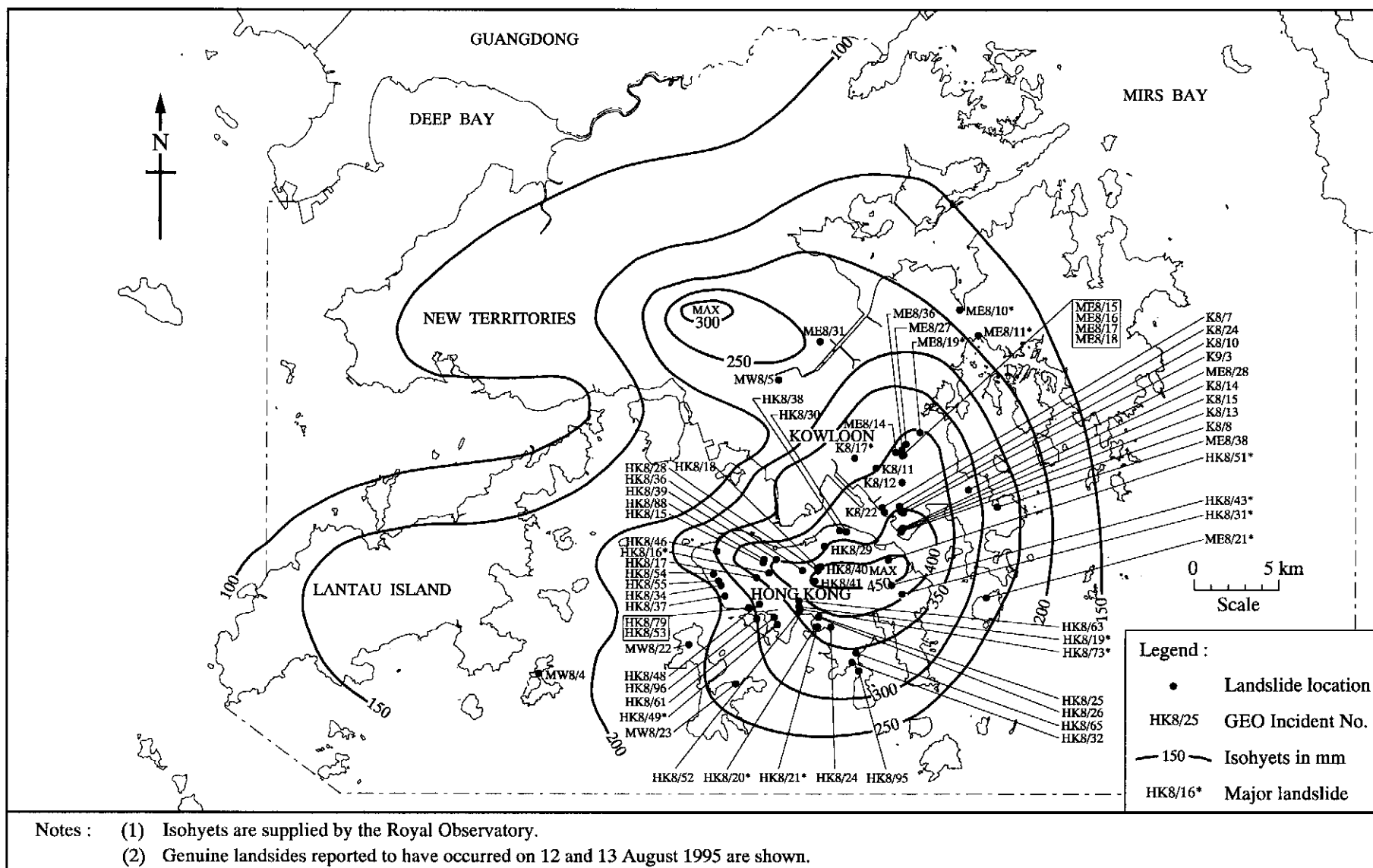


Figure 8 - 24-hour Rainfall Distribution Ending at 4 a.m. on 13 August 1995 and Locations of Landslides

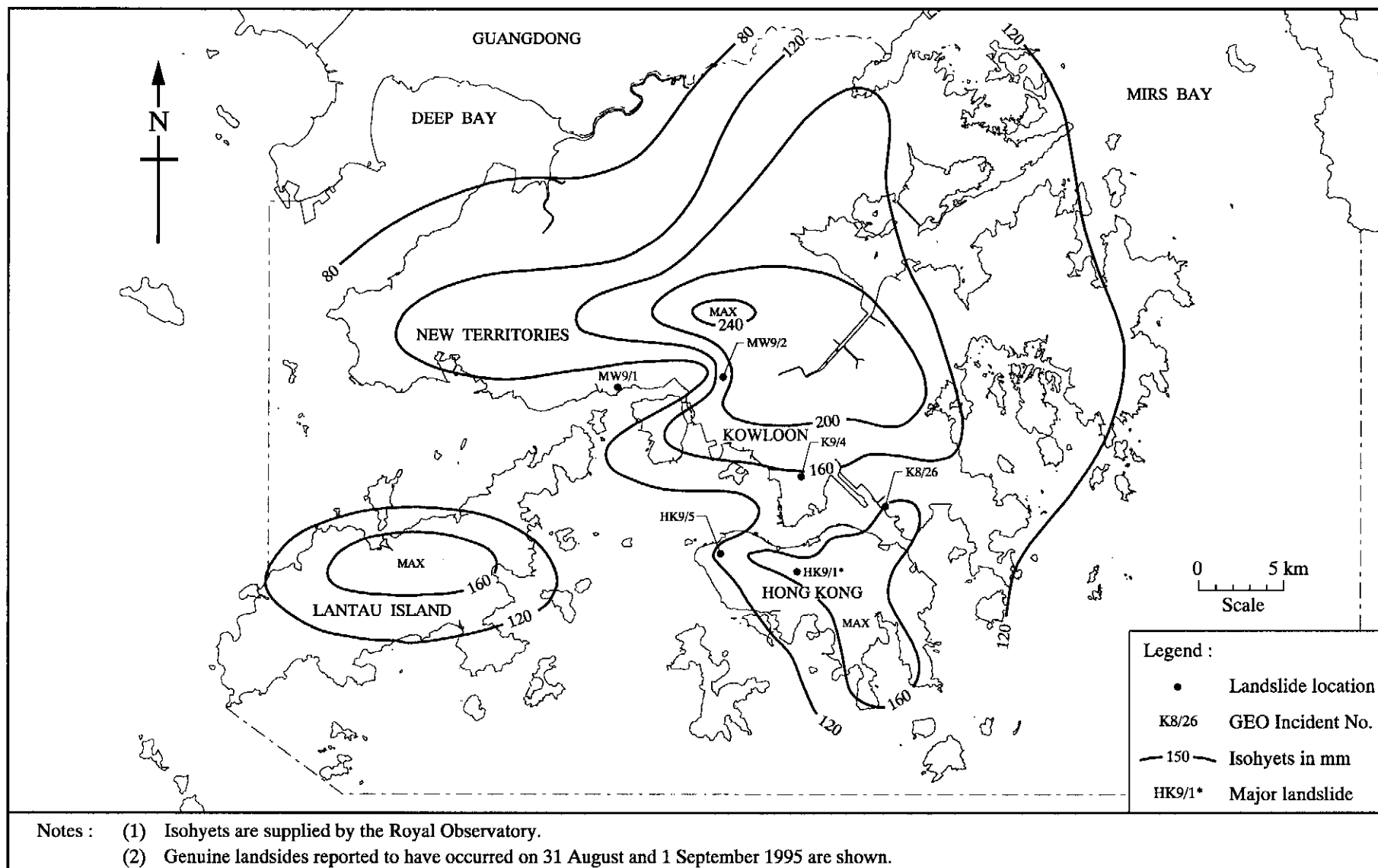


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Plate 1 : Negative No. MW9505710 Taken on : 22-3-95



Plate 2 : Negative No. MW9505724 Taken on : 22-3-95

Description : Major failure of a soil cut slope. Plate 1 shows the scarp and part of the natural slope involved in the landslide. Plate 2 shows the 42 m high cut slope and the natural slope above it.

Plates 1 & 2 - Sham Shui Kok Sub-station, Lantau (Incident MW 95/3/1)



Plate 3 : Negative No. MW9505715 Taken on : 22-3-95

Description : Scarp of the landslide.

Plate 3 - Sham Shui Kok Sub-station, Lantau (Incident MW 95/3/1)



Plate 4 : Negative No. I9525717 Taken on : 4-7-95

Description : Boulder fall from a natural slope resulting in the damage of four cars.

Plate 4 - Behind Kingsford Garden, 202-216 Tin Hau Temple Road, Braemar Hill
(Incident HK 95/7/1)



Plate 5 : Negative No. ME9530516 Taken on : 7-8-95

Description : Major failure of a fill slope resulting in the closure of an access road and a pedestrian pavement.

Plate 5 - Pak Shek Toi Road, Sai Kung (Incident ME 95/8/7)



Plate 6 : Negative No. ME9532013-15 Taken on : 14-8-95

Description : Failure of a soil/rock cut slope resulting in the permanent evacuation of 40 huts with 152 residents.

Plate 6 - 33 Fan Wa Street, Cha Kwo Ling (Incident K 95/8/7)



Plate 7 : Negative No. I9533823A & I9533824A Taken on : 14-8-95

Description : Major failure of a soil cut slope resulting in the temporary evacuation of four flats and blockage of a building access.

Plate 7 - Slope No. 11SW-D/CR160, 18 Shouson Hill Road, Shouson Hill
(Incident HK 95/8/73)



Plate 8 : Negative No. SP9511510 Taken on : 13-8-95

Description : Major failure of a soil/rock cut slope resulting in one fatality, one injury and closure of a road and part of a building.

Plate 8 - Slope No. 11SE-D/C42, Chai Wan Baptist Church, 30 Fei Tsui Road, Chai Wan (Incident HK 95/8/43)



Plate 9 : Negative No. I9534809 Taken on : 13-8-95

Description : Major failures of a soil cut slope and a natural slope resulting in the blockage of a road and fencing off of a carpark area.

Plate 9 - Slope No. 11SW-D/C147, 24 Shouson Hill Road, Shouson Hill
(Incident HK 95/8/19)



Plate 10 : Negative No. HQ9500401 Taken on : 17-8-95

Description : Major failure of a hillside, resulting in two fatalities, five injuries, damage to three shipyards and a factory and closure of two roads.

Plate 10 - Shum Wan Road, Aberdeen (Incident HK 95/8/49)



Plate 11 : Negative No. ME9531612 Taken on : 14-8-95

Description : Major failure of a soil cut slope resulting in the closure of a road.

Plate 11 - Slope No. 8SW-A/C8, Junction of Sai Sha Road and Tai Mong Tsai Road, Sai Kung (Incident ME 95/8/11)



Plate 12 : Negative Nos. ME9532103 & ME9532104 Taken on : 14-8-95

Description : Major failure of a soil/rock cut slope resulting in the permanent evacuation of 24 huts.

Plate 12 - Slope No. 11SE-B/C113, 503 Ma Wan Village, Lei Yue Mun
(Incident K 95/8/16)



Plate 13 : Negative No. MW9521209 Taken on : 18-8-95

Description : Boulder fall from a construction site resulting in one fatality, one injury and closure of three lanes of Tuen Mun Highway.

Plate 13 - Slope No. 6SW-D/C18, Road Widening Project Site near Siu Lam, Tuen Mun Highway (Incident MW 95/8/21)



Plate 14 : Negative Nos. MW9526715 & MW9526716 Taken on : 8-10-95

Description : Failure of a soil/rock cut slope resulting in two injuries and blockage of a road. The debris at the toe of the slope was trimmed from the slope after the landslide, as part of the remedial works.

Plate 14 - Dragonville, 21-25 Castle Peak Road (Incident MW 95/10/2)

APPENDIX A

RECORDS FROM GEO RAINGAUGES DURING
THE FOUR HEAVY 24-HOUR RAINSTORMS OF 1995

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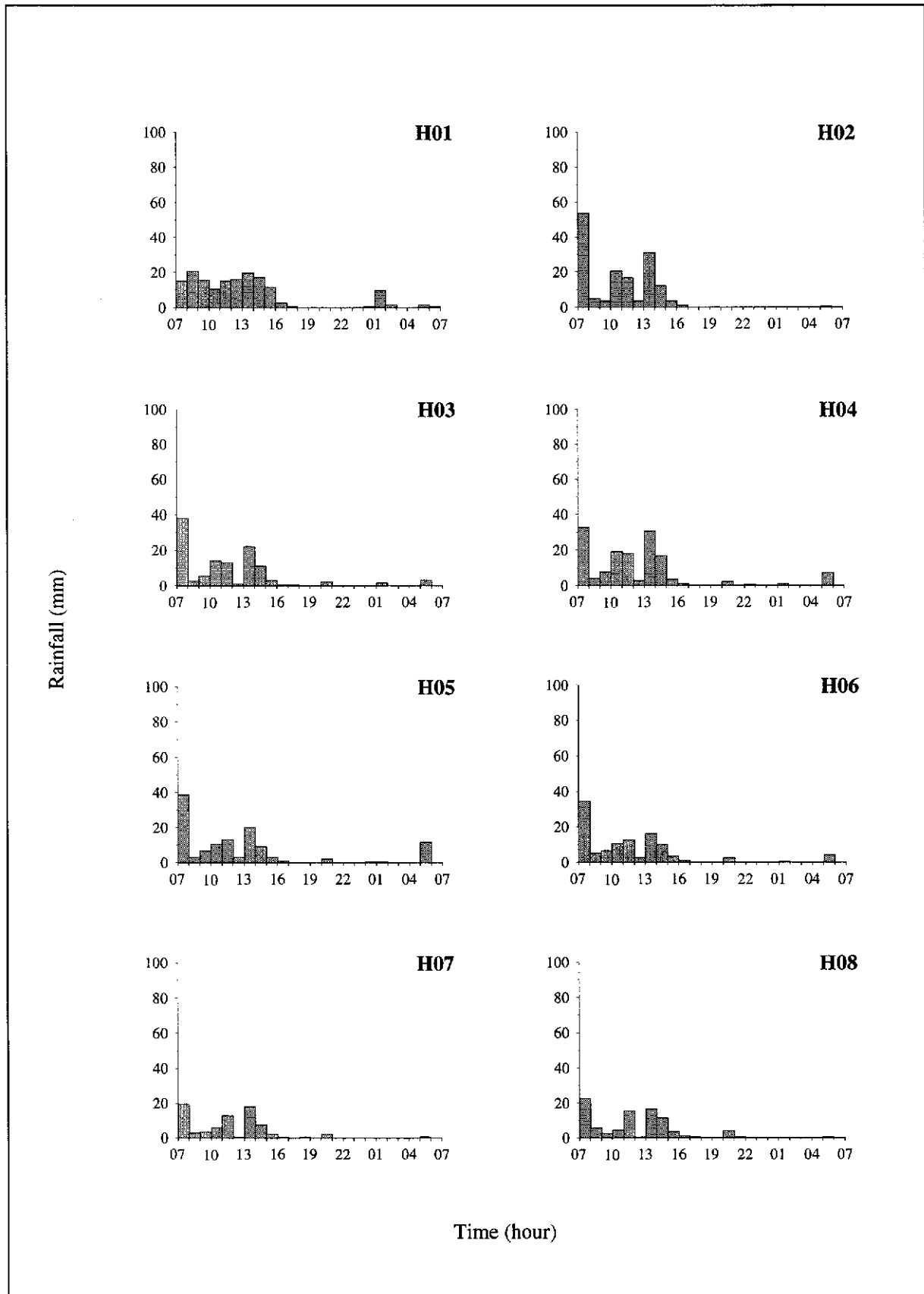


Figure A1 - Histograms of Hourly Rainfall Recorded by GEO Raingauges during 15 to 16 July, 1995 (Sheet 1 of 6)

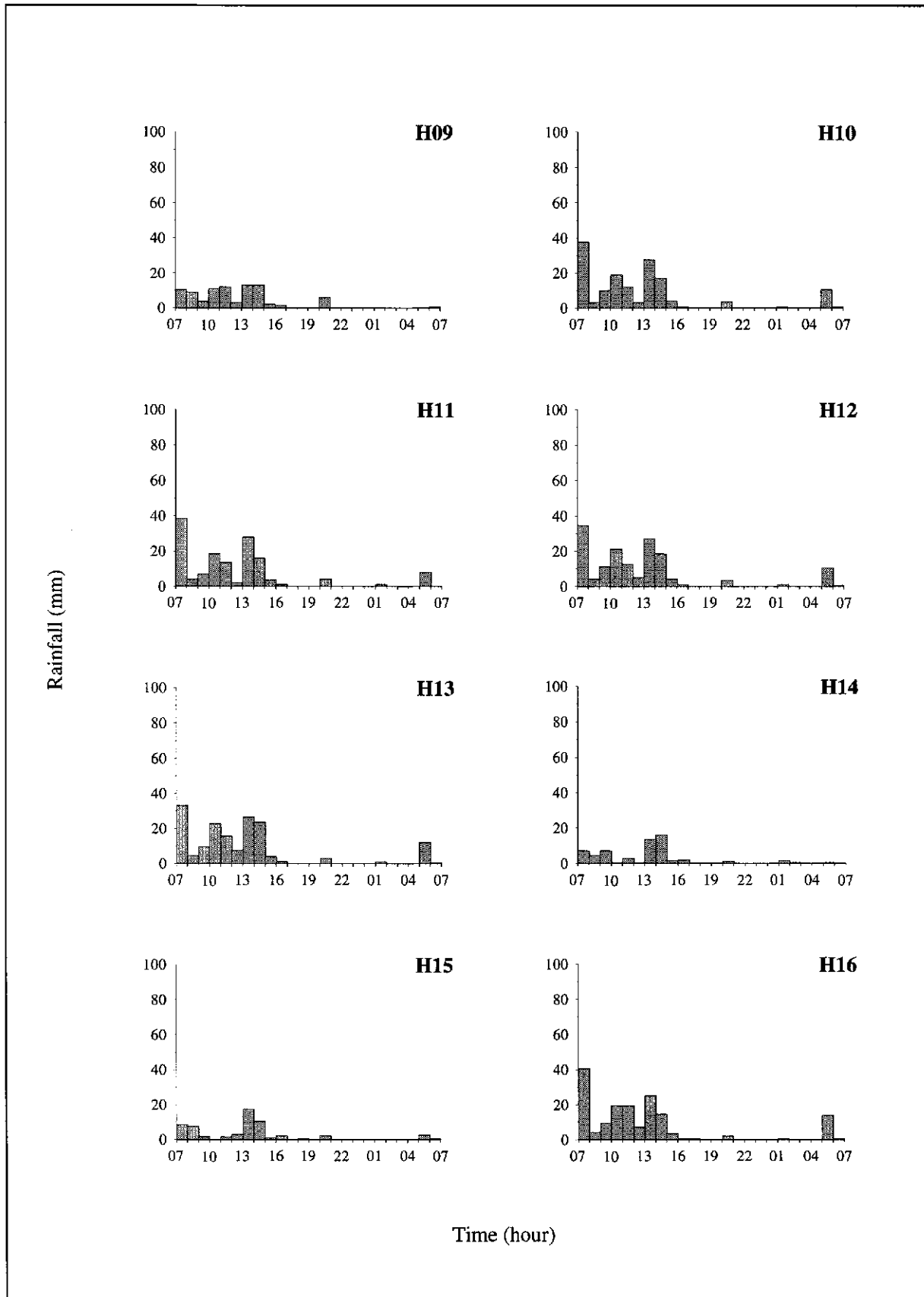


Figure A1 - Histograms of Hourly Rainfall Recorded by GEO Raingauges during 15 to 16 July, 1995 (Sheet 2 of 6)

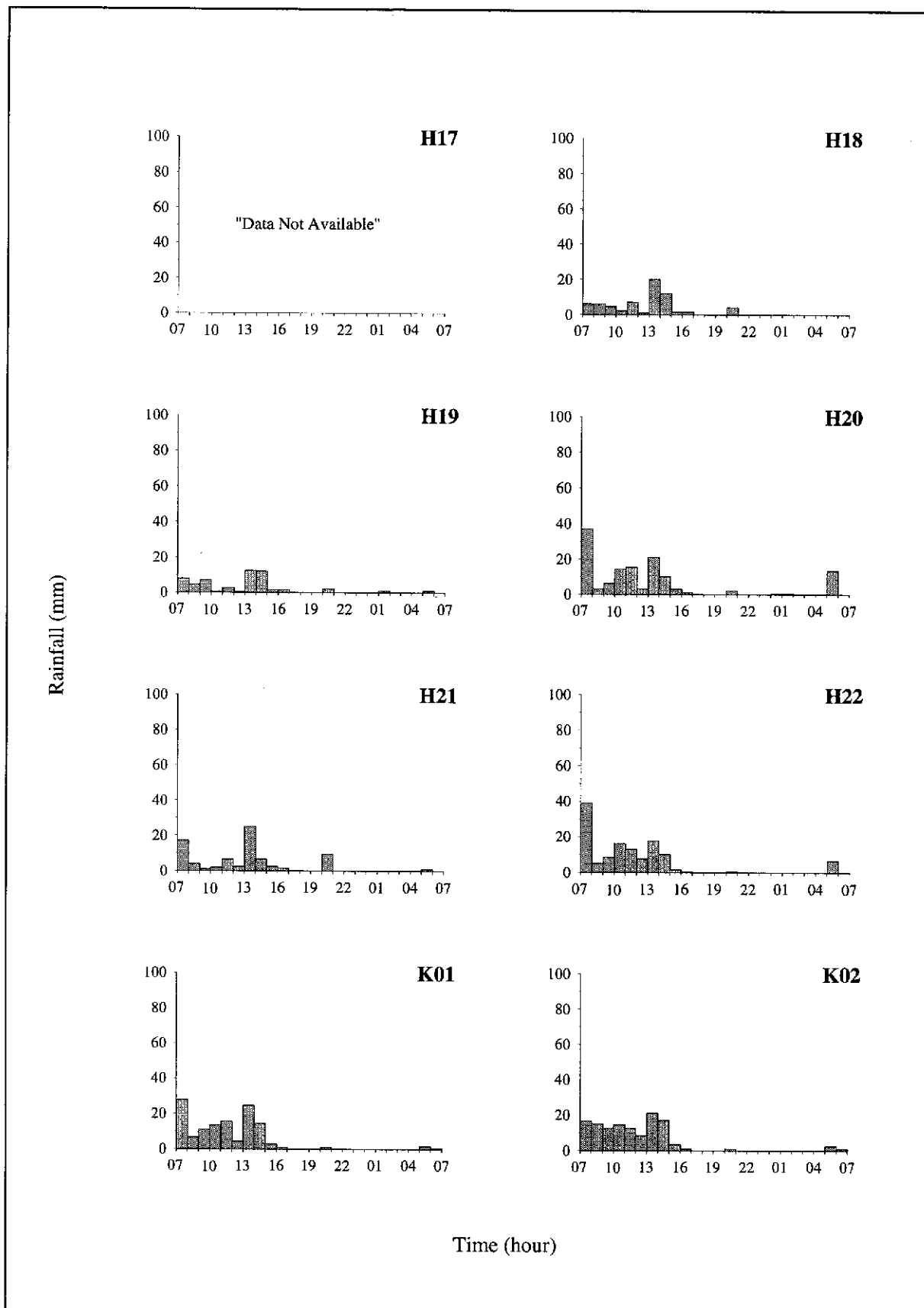


Figure A1 - Histograms of Hourly Rainfall Recorded by GEO Raingauges during 15 to 16 July, 1995 (Sheet 3 of 6)

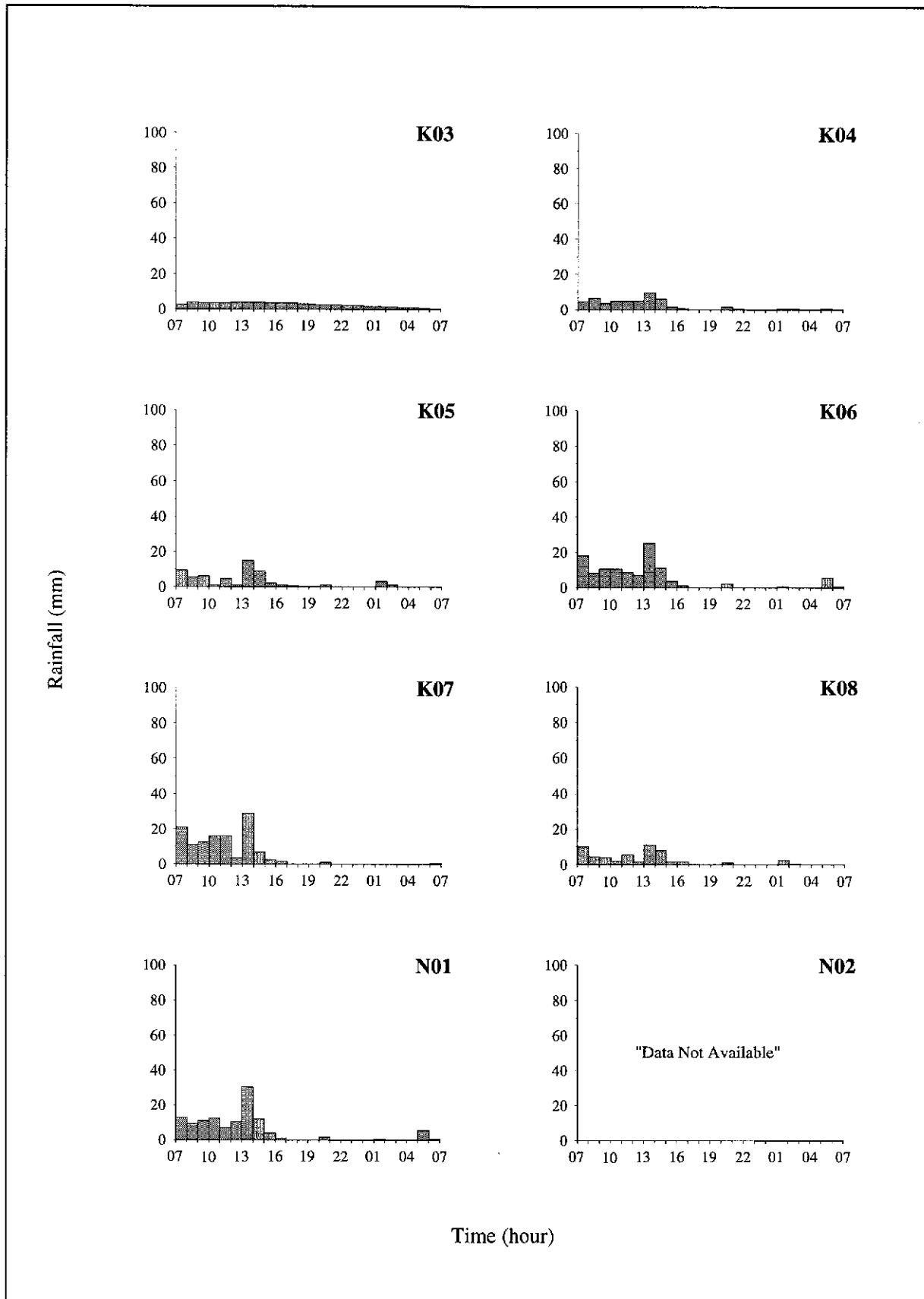


Figure A1 - Histograms of Hourly Rainfall Recorded by GEO Raingauges during 15 to 16 July, 1995 (Sheet 4 of 6)

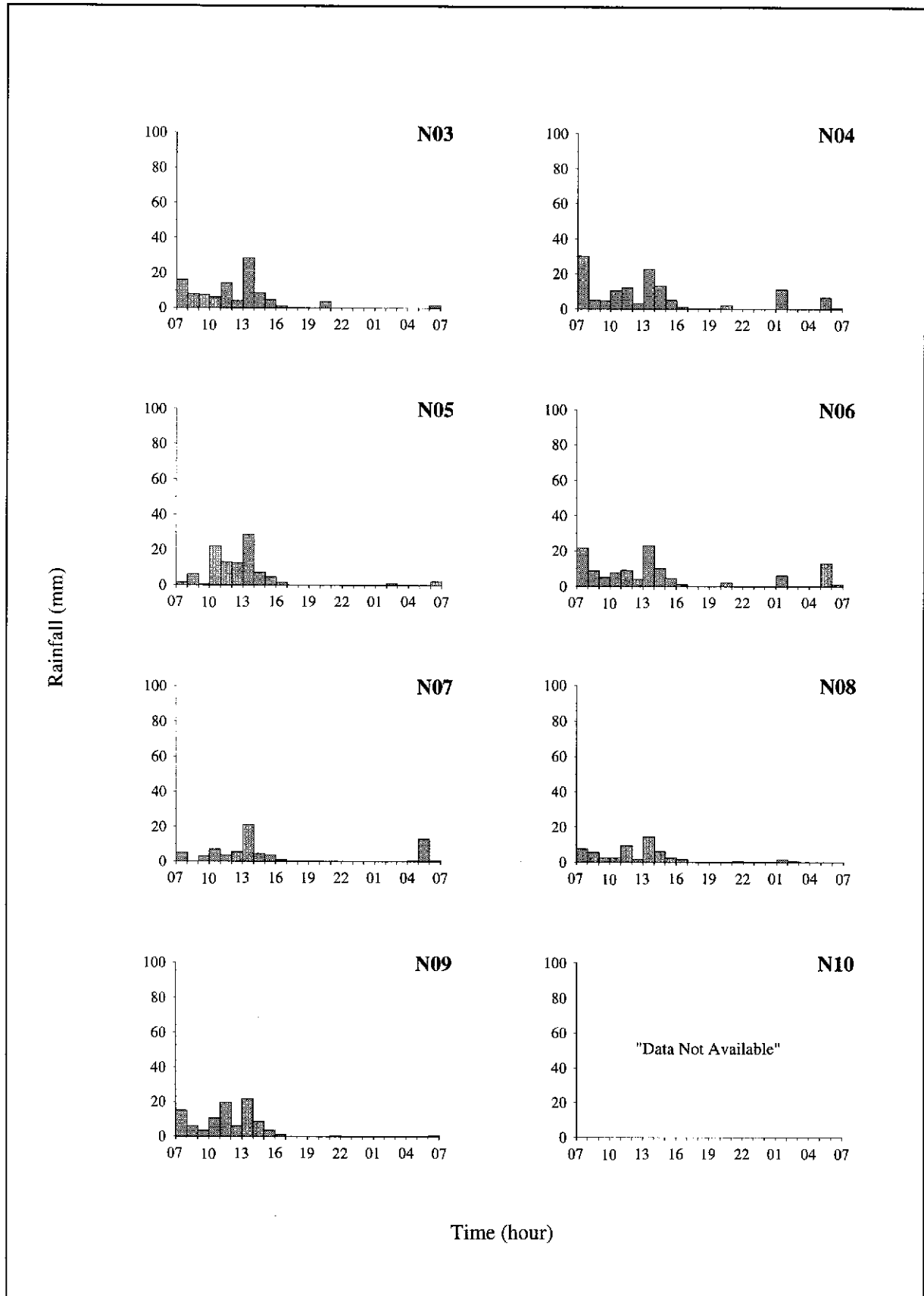


Figure A1 - Histograms of Hourly Rainfall Recorded by GEO Raingauges during 15 to 16 July, 1995 (Sheet 5 of 6)

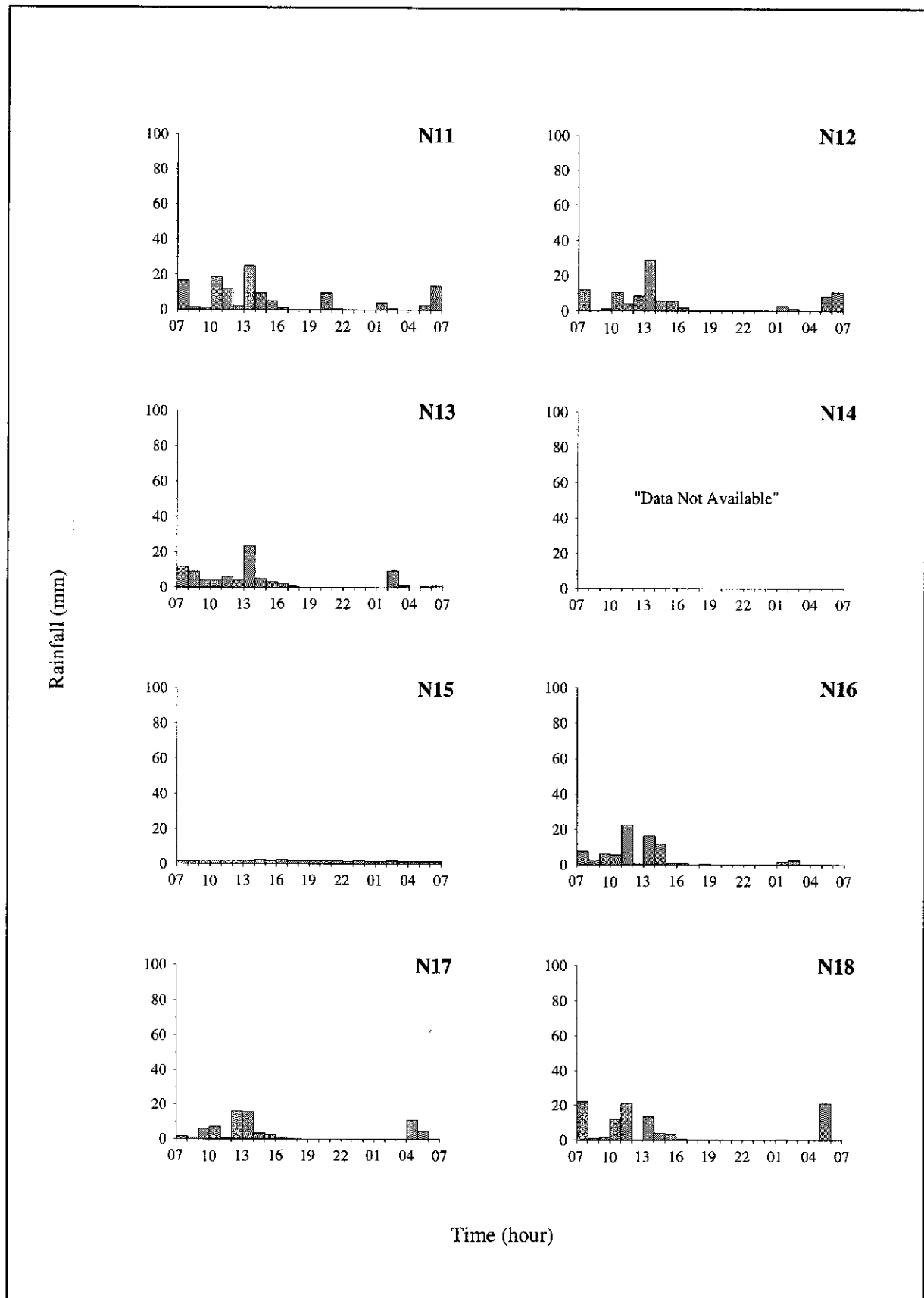


Figure A1 - Histograms of Hourly Rainfall Recorded by GEO Raingauges during 15 to 16 July, 1995 (Sheet 6 of 6)

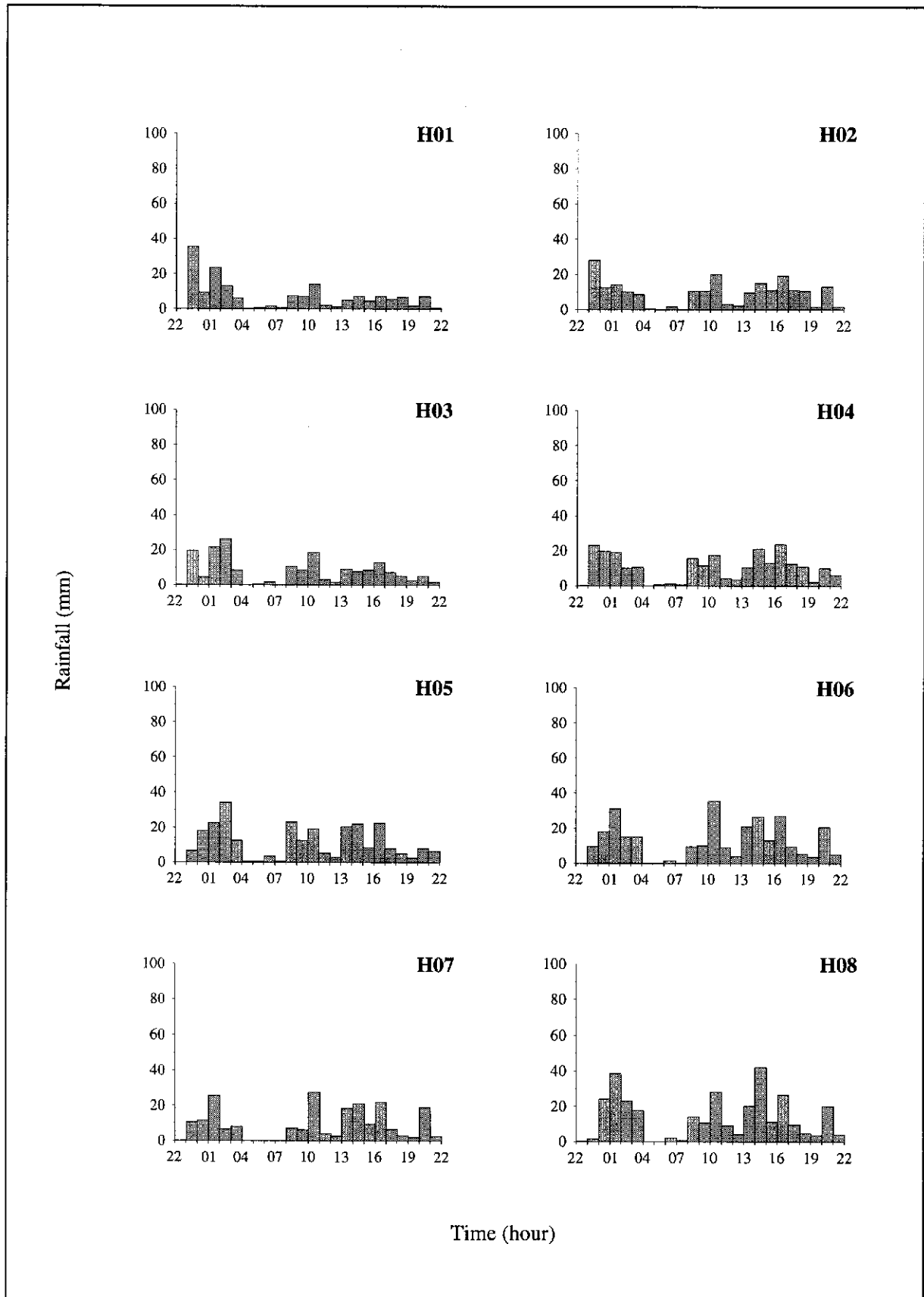


Figure A2 - Histograms of Hourly Rainfall Recorded by GEO Raingauges during 2 to 3 August, 1995 (Sheet 1 of 6)

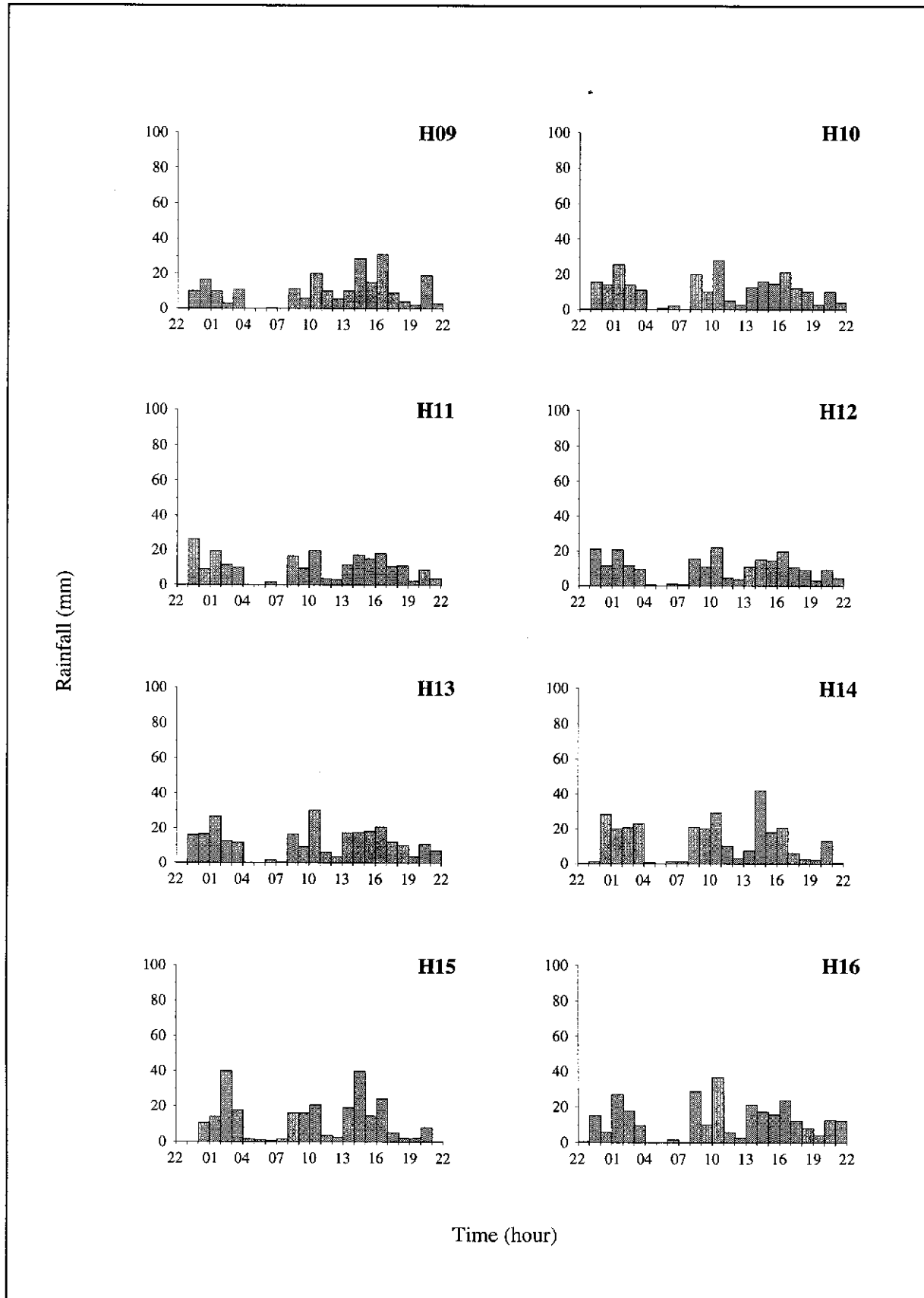


Figure A2 - Histograms of Hourly Rainfall Recorded by GEO Raingauges during 2 to 3 August, 1995 (Sheet 2 of 6)

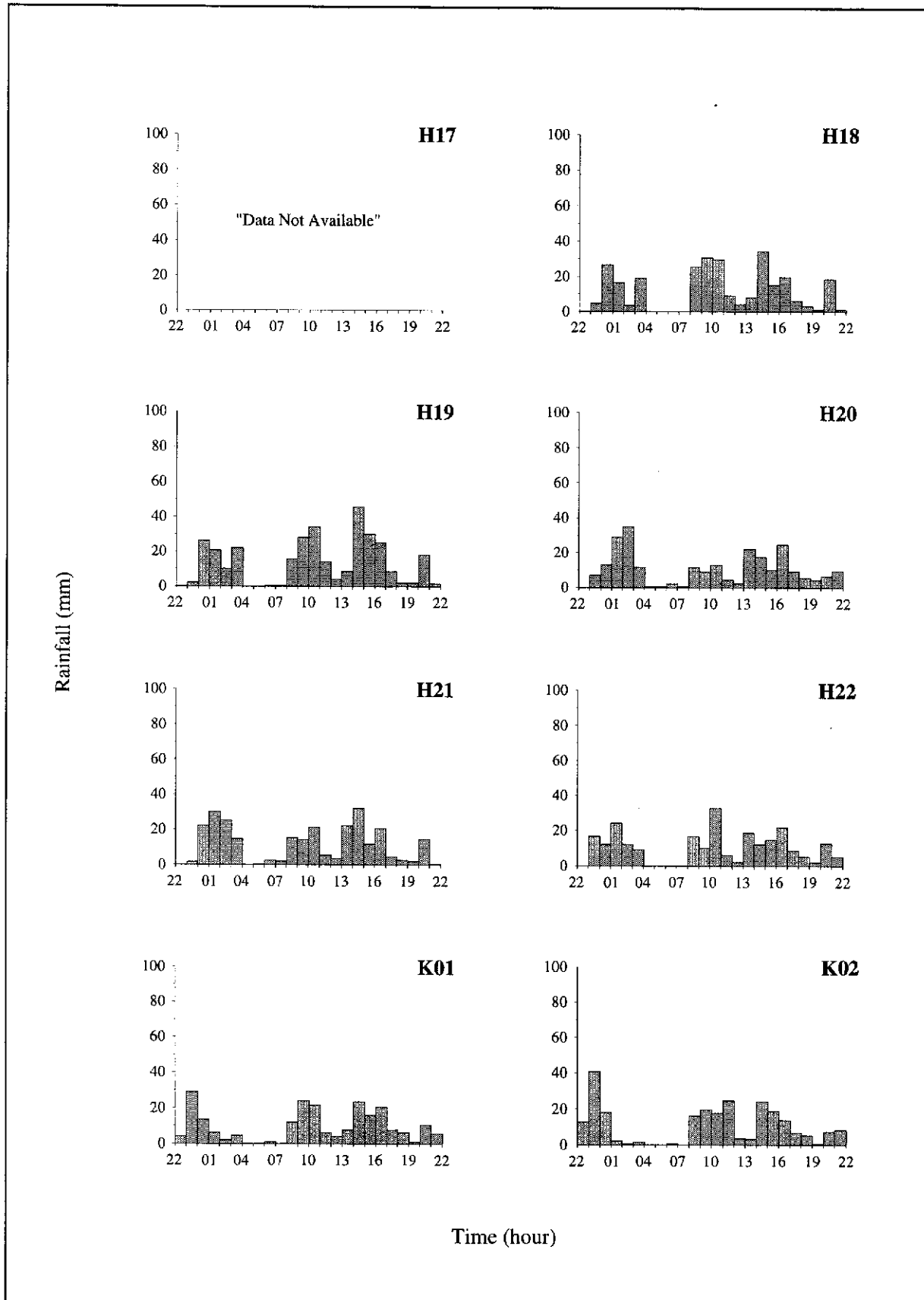


Figure A2 - Histograms of Hourly Rainfall Recorded by GEO Raingauges during 2 to 3 August, 1995 (Sheet 3 of 6)

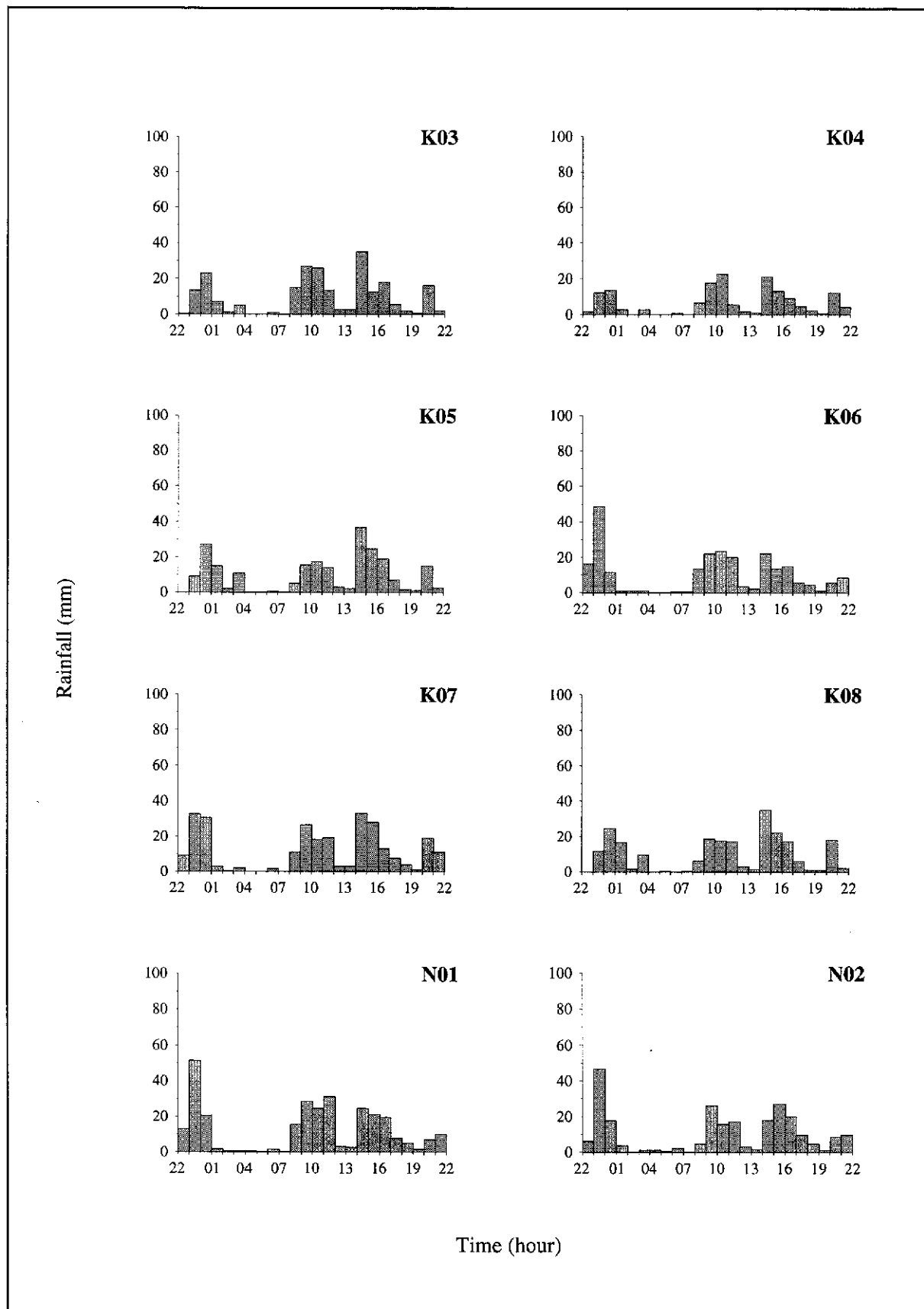


Figure A2 - Histograms of Hourly Rainfall Recorded by GEO Raingauges during 2 to 3 August, 1995 (Sheet 4 of 6)

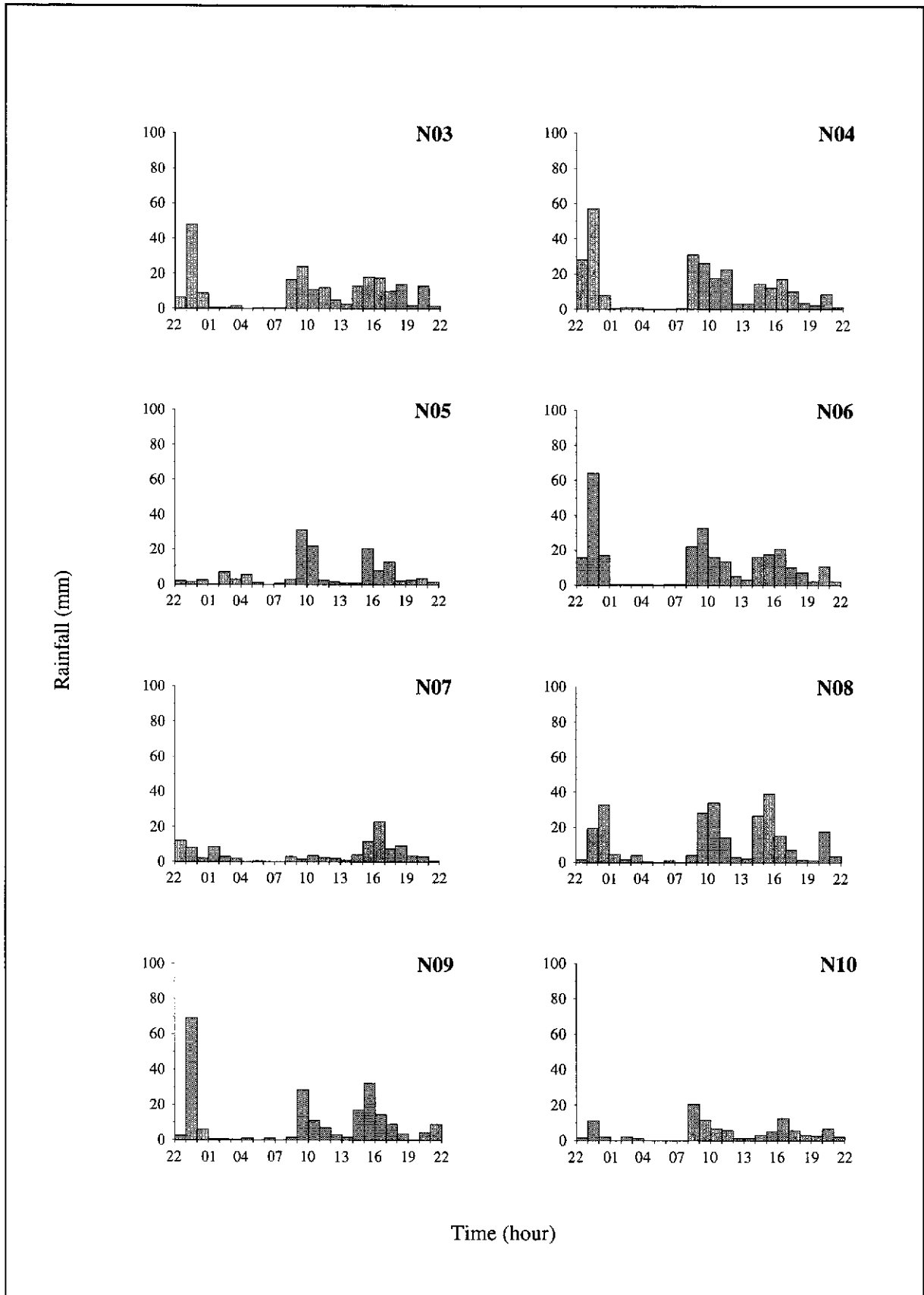


Figure A2 - Histograms of Hourly Rainfall Recorded by GEO Raingauges during 2 to 3 August, 1995 (Sheet 5 of 6)

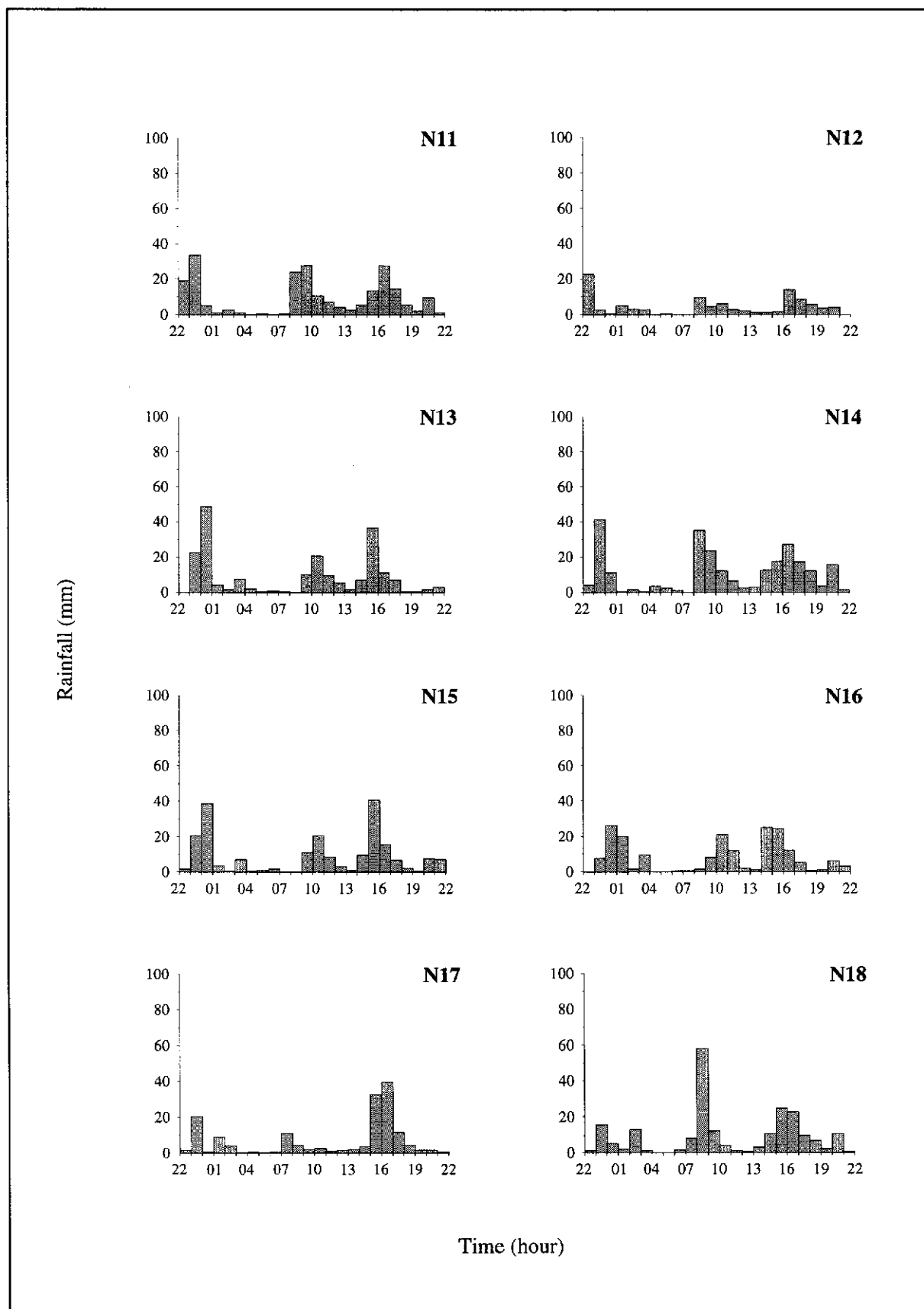


Figure A2 - Histograms of Hourly Rainfall Recorded by GEO Raingauges during 2 to 3 August, 1995 (Sheet 6 of 6)

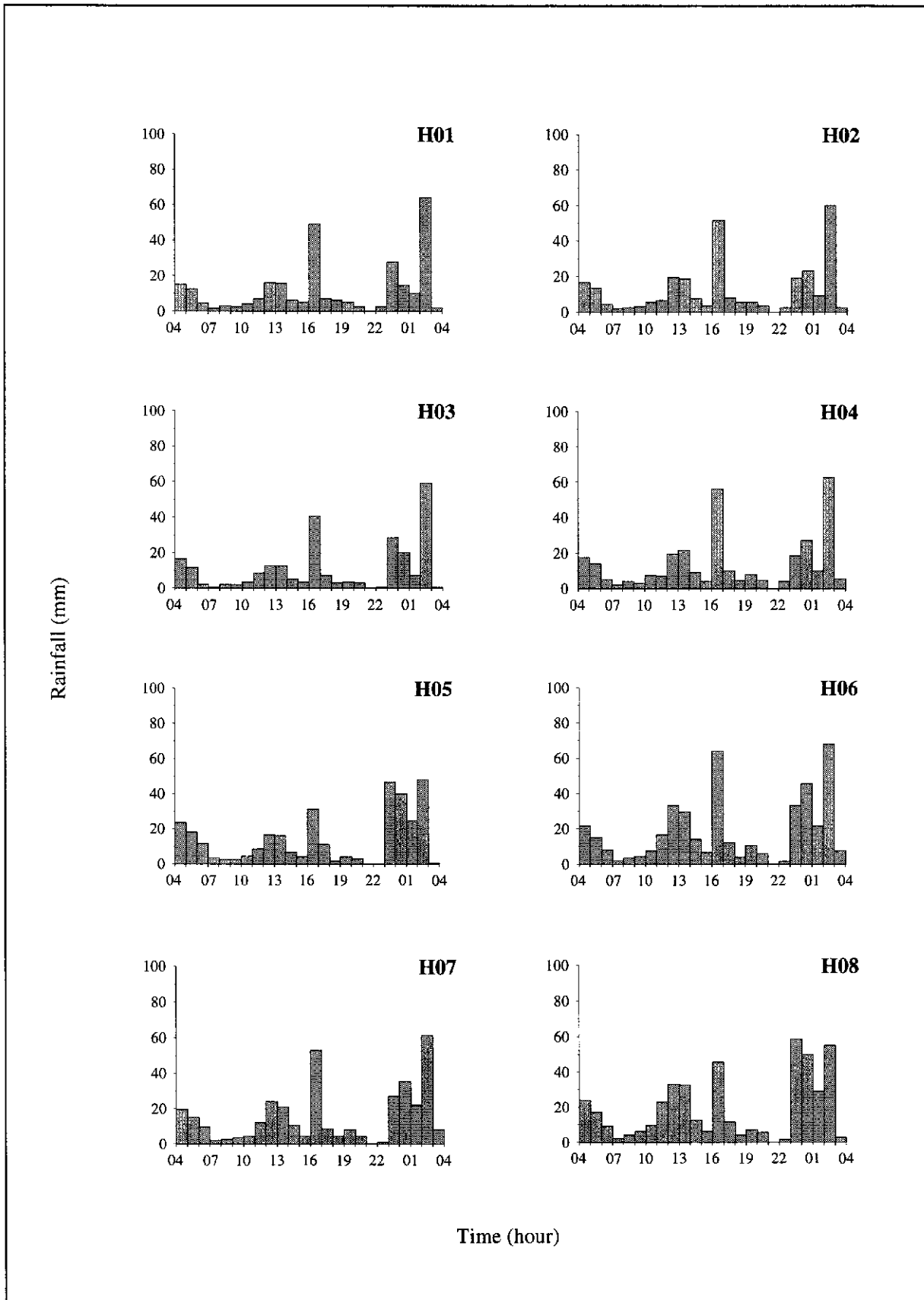


Figure A3 - Histograms of Hourly Rainfall Recorded by GEO Raingauges during 12 to 13 August, 1995 (Sheet 1 of 6)

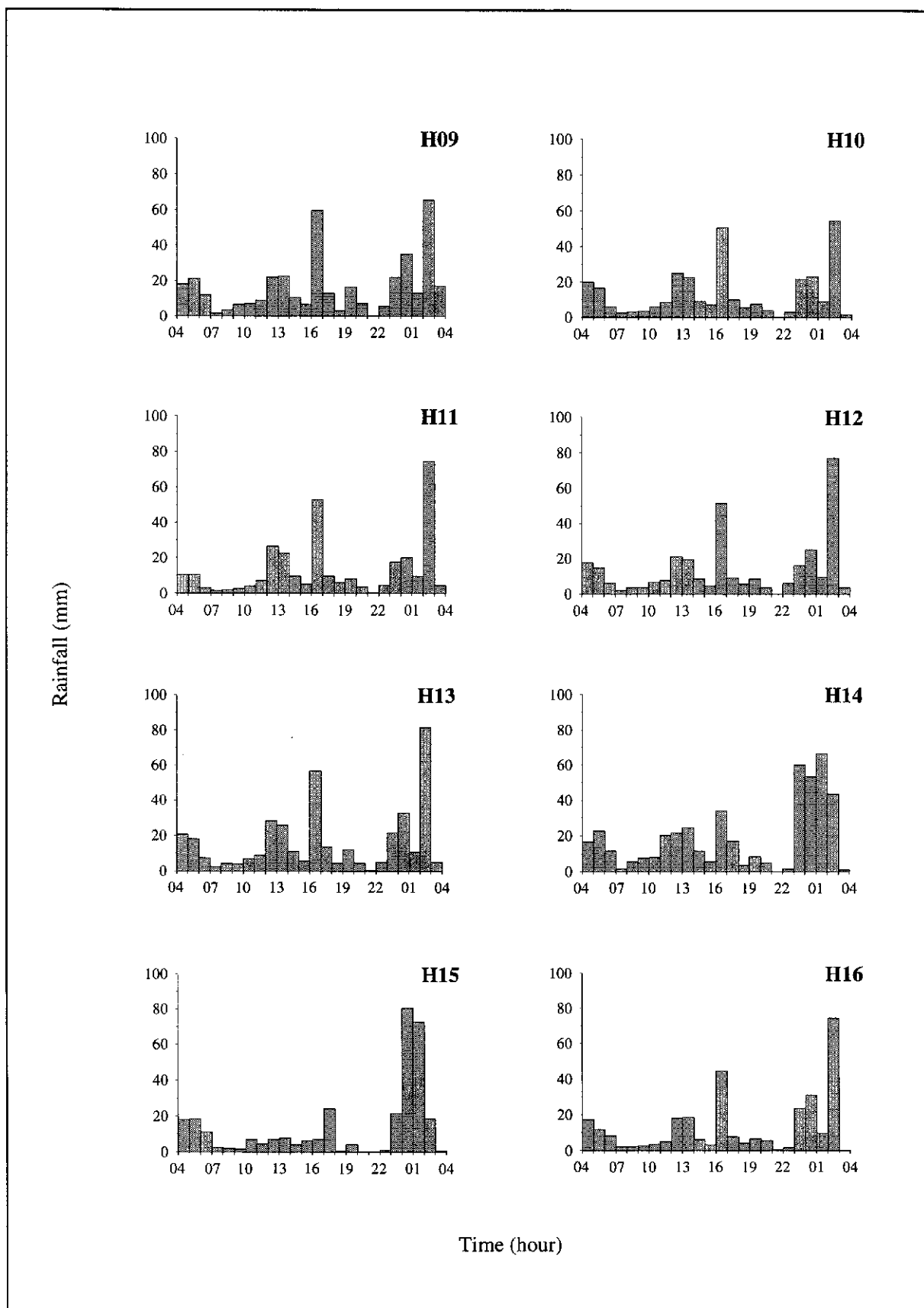


Figure A3 - Histograms of Hourly Rainfall Recorded by GEO Raingauges during 12 to 13 August, 1995 (Sheet 2 of 6)

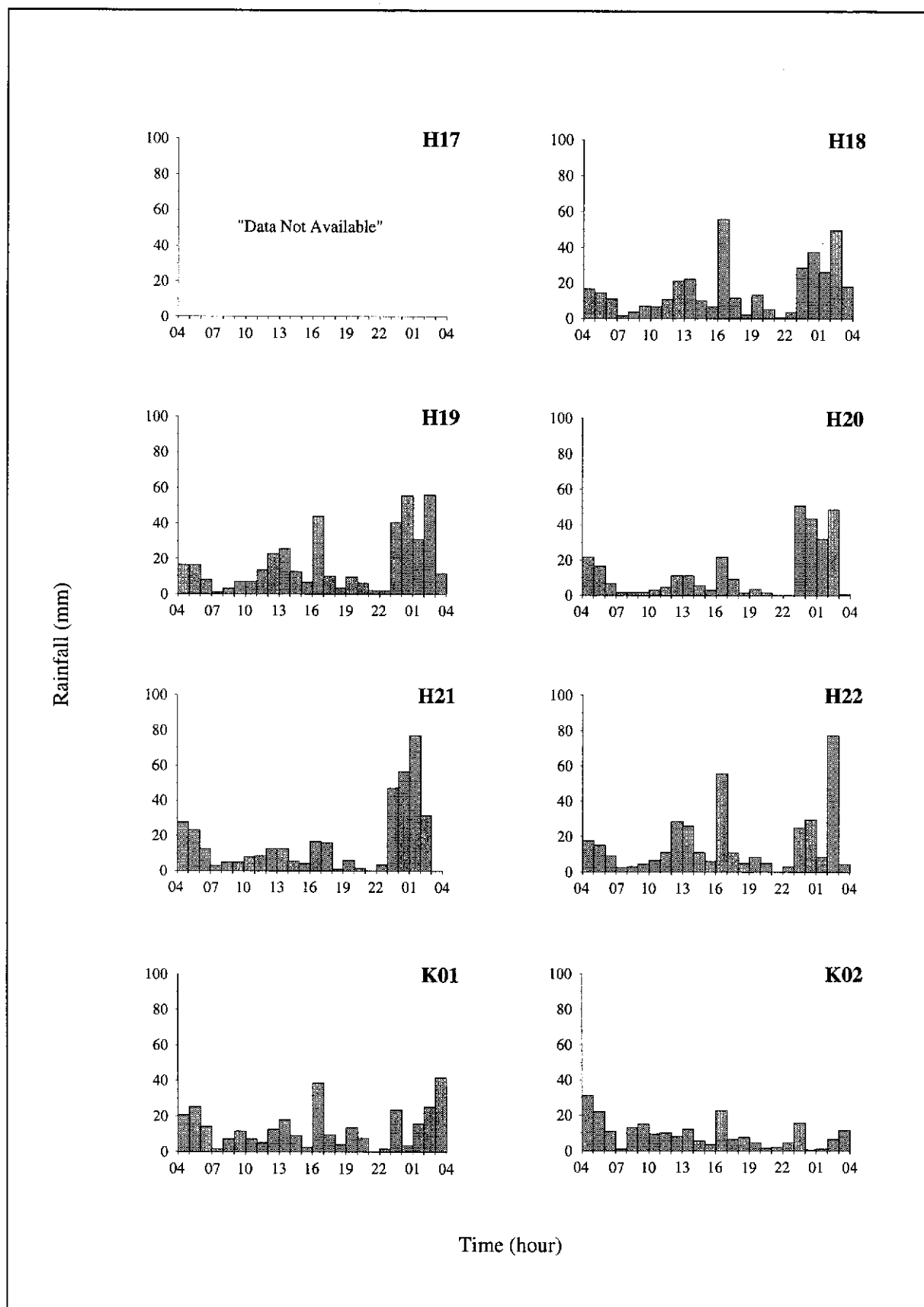


Figure A3 - Histograms of Hourly Rainfall Recorded by GEO Raingauges during 12 to 13 August, 1995 (Sheet 3 of 6)

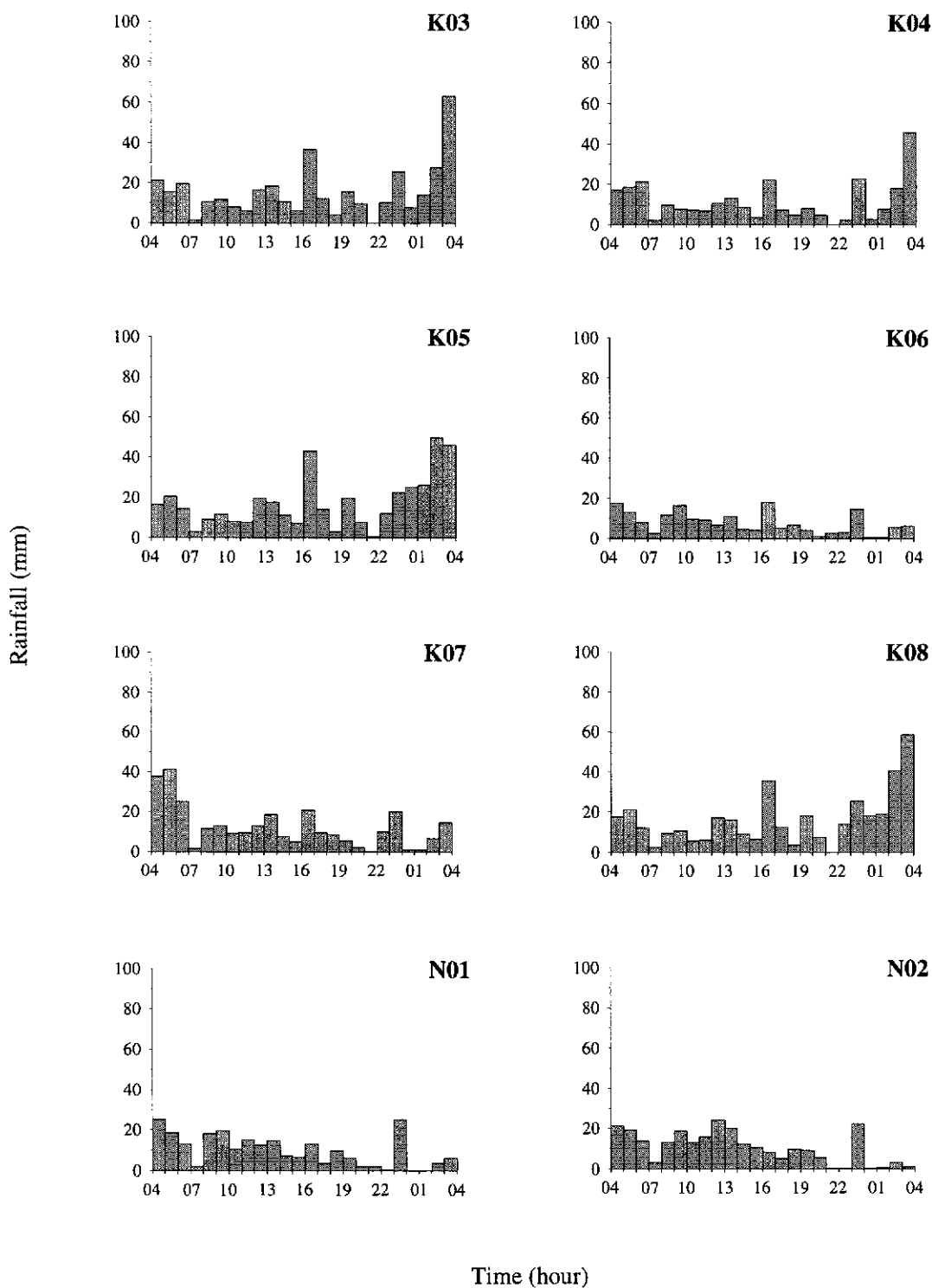


Figure A3 - Histograms of Hourly Rainfall Recorded by GEO Raingauges during 12 to 13 August, 1995 (Sheet 4 of 6)

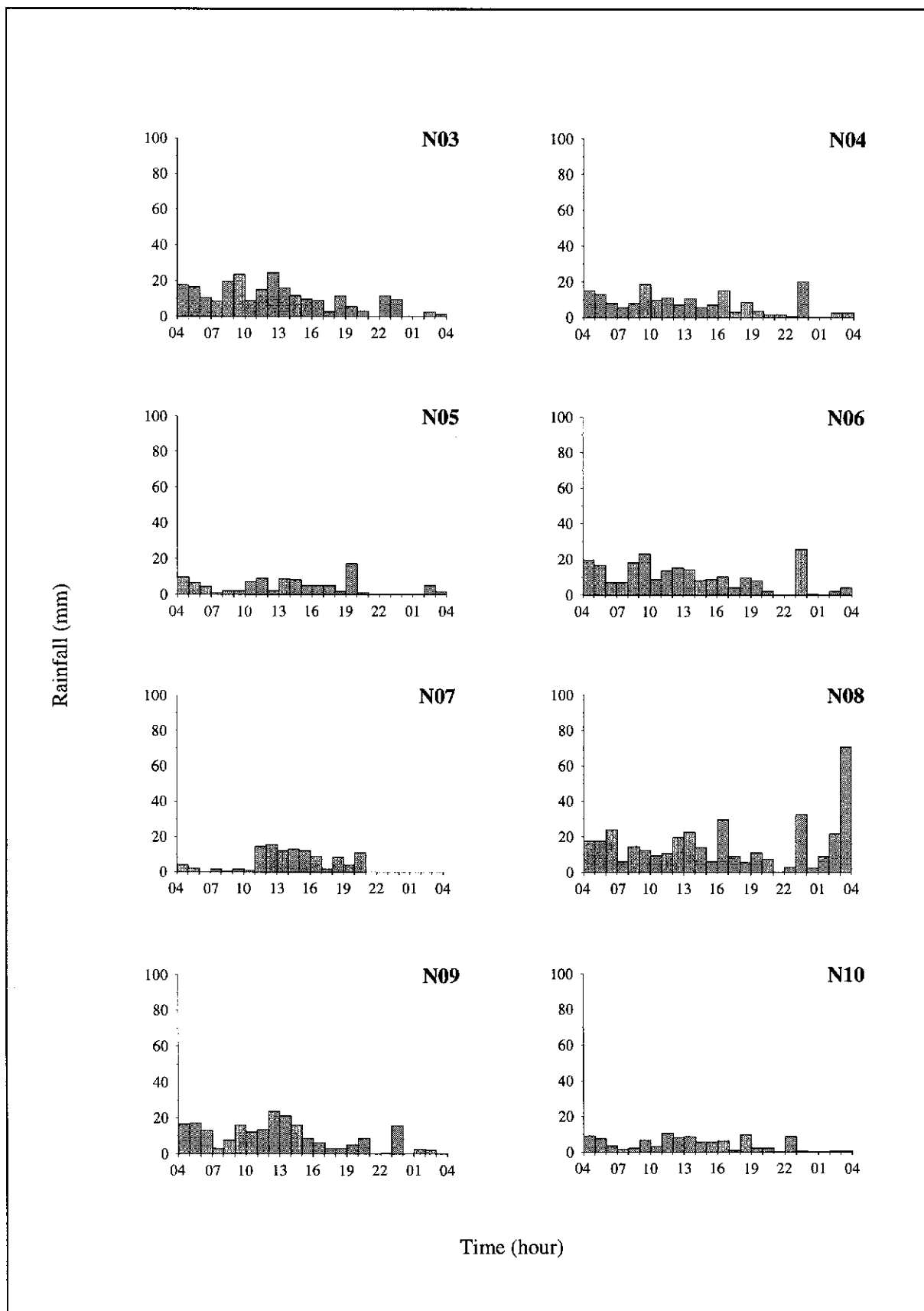


Figure A3 - Histograms of Hourly Rainfall Recorded by GEO Raingauges during 12 to 13 August, 1995 (Sheet 5 of 6)

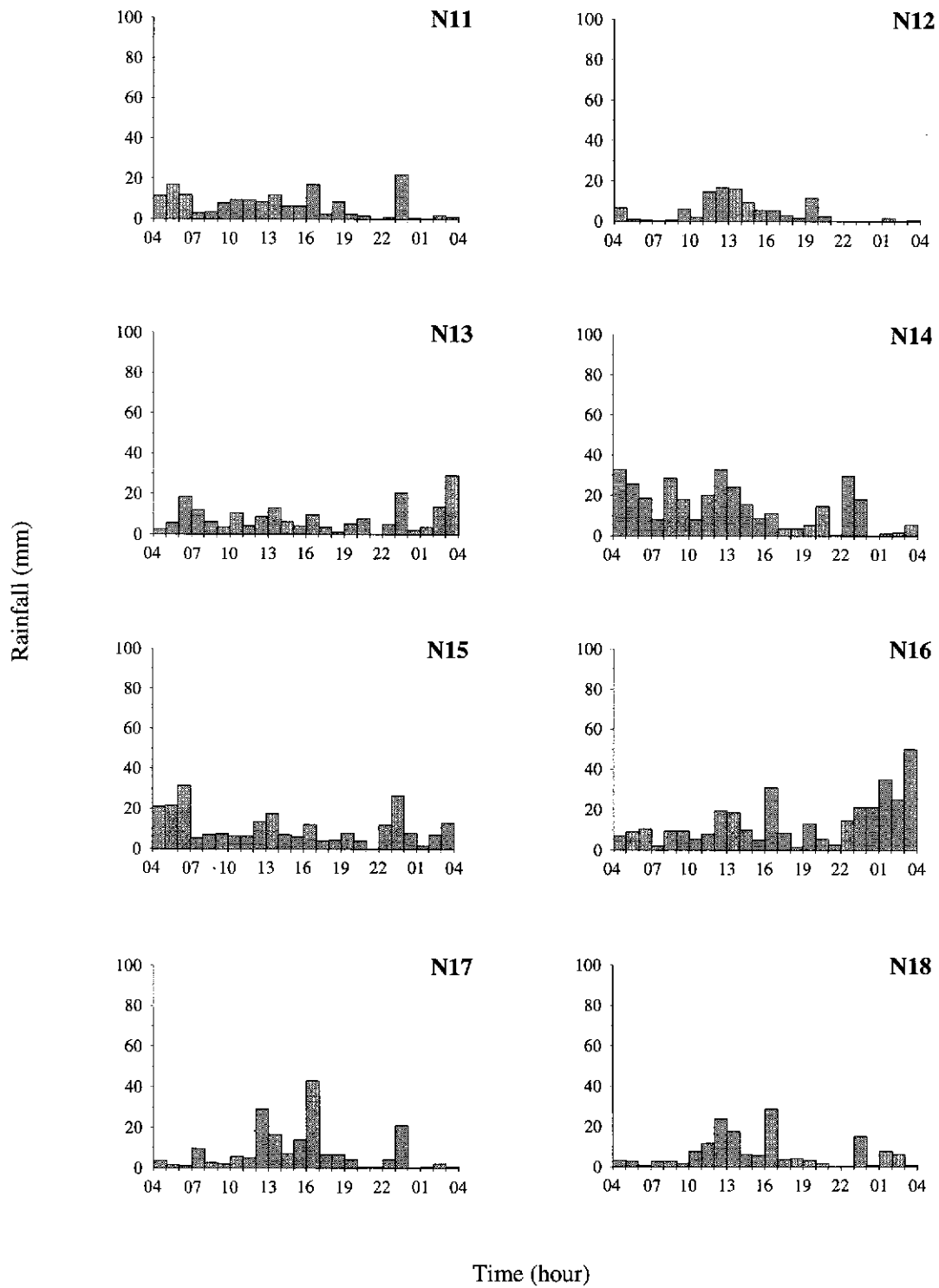


Figure A3 - Histograms of Hourly Rainfall Recorded by GEO Raingauges during 12 to 13 August, 1995 (Sheet 6 of 6)

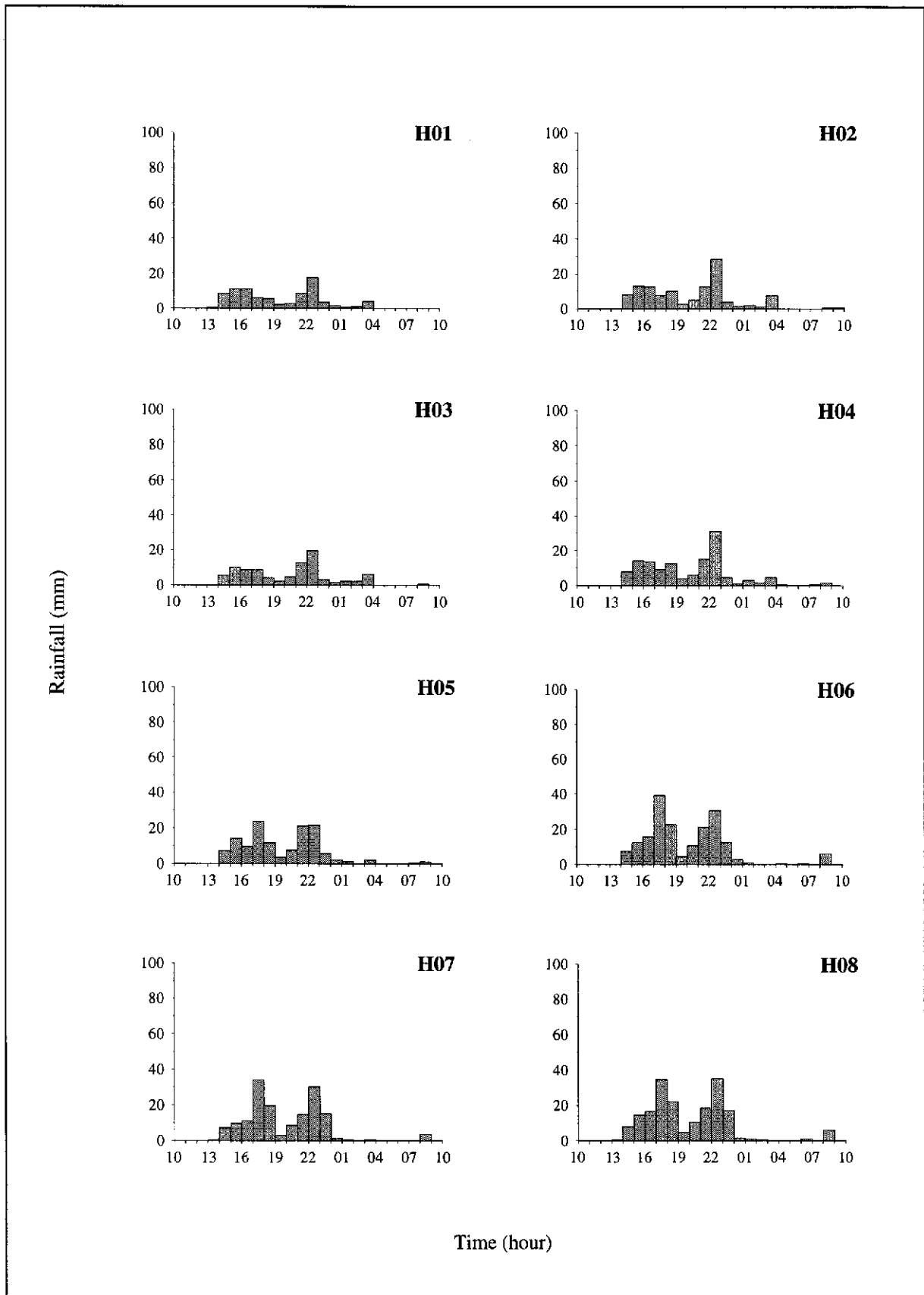


Figure A4 - Histograms of Hourly Rainfall Recorded by GEO Raingauges during 31 August to 1 September, 1995 (Sheet 1 of 6)

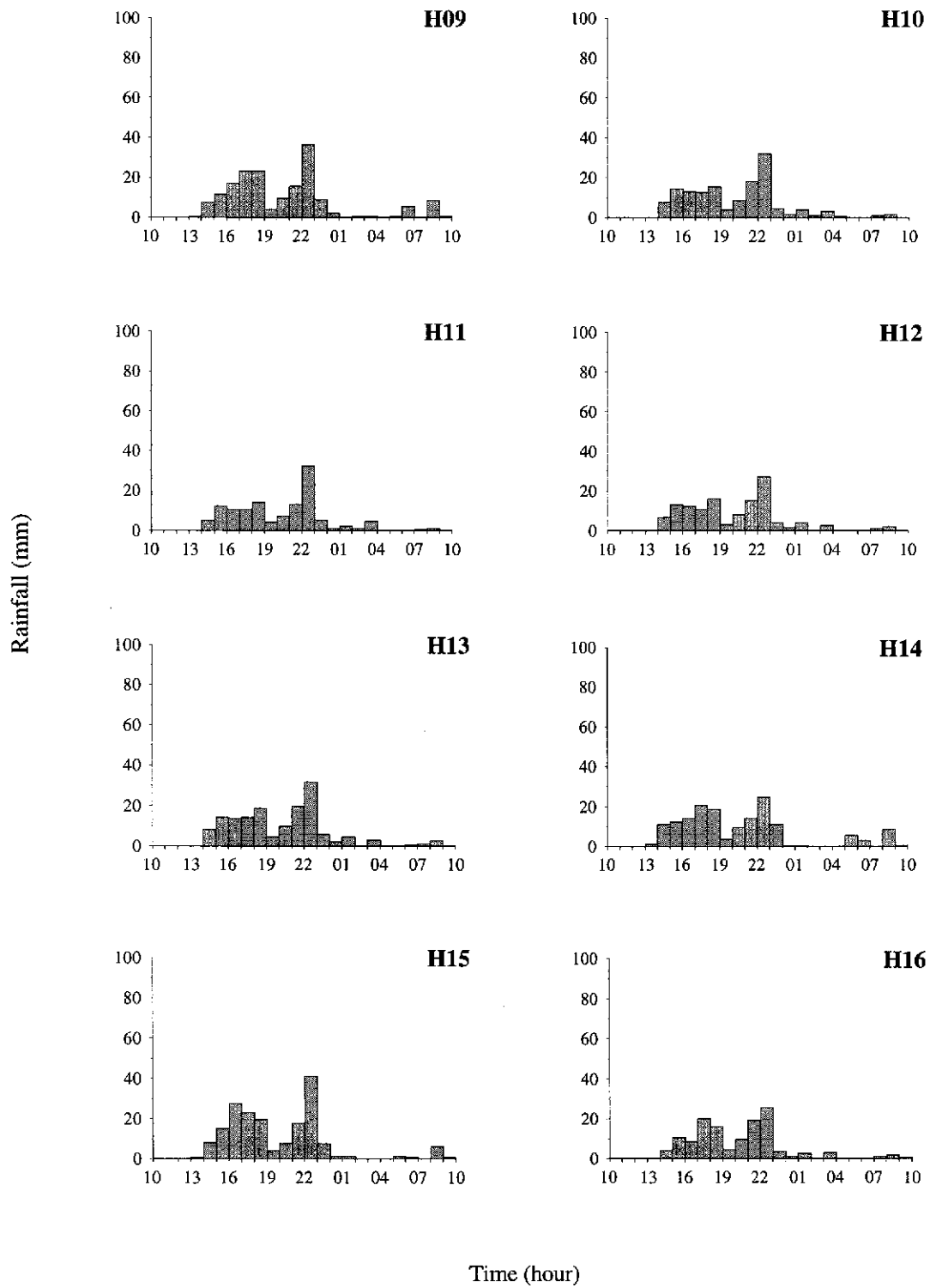


Figure A4 - Histograms of Hourly Rainfall Recorded by GEO Raingauges during 31 August to 1 September, 1995 (Sheet 2 of 6)

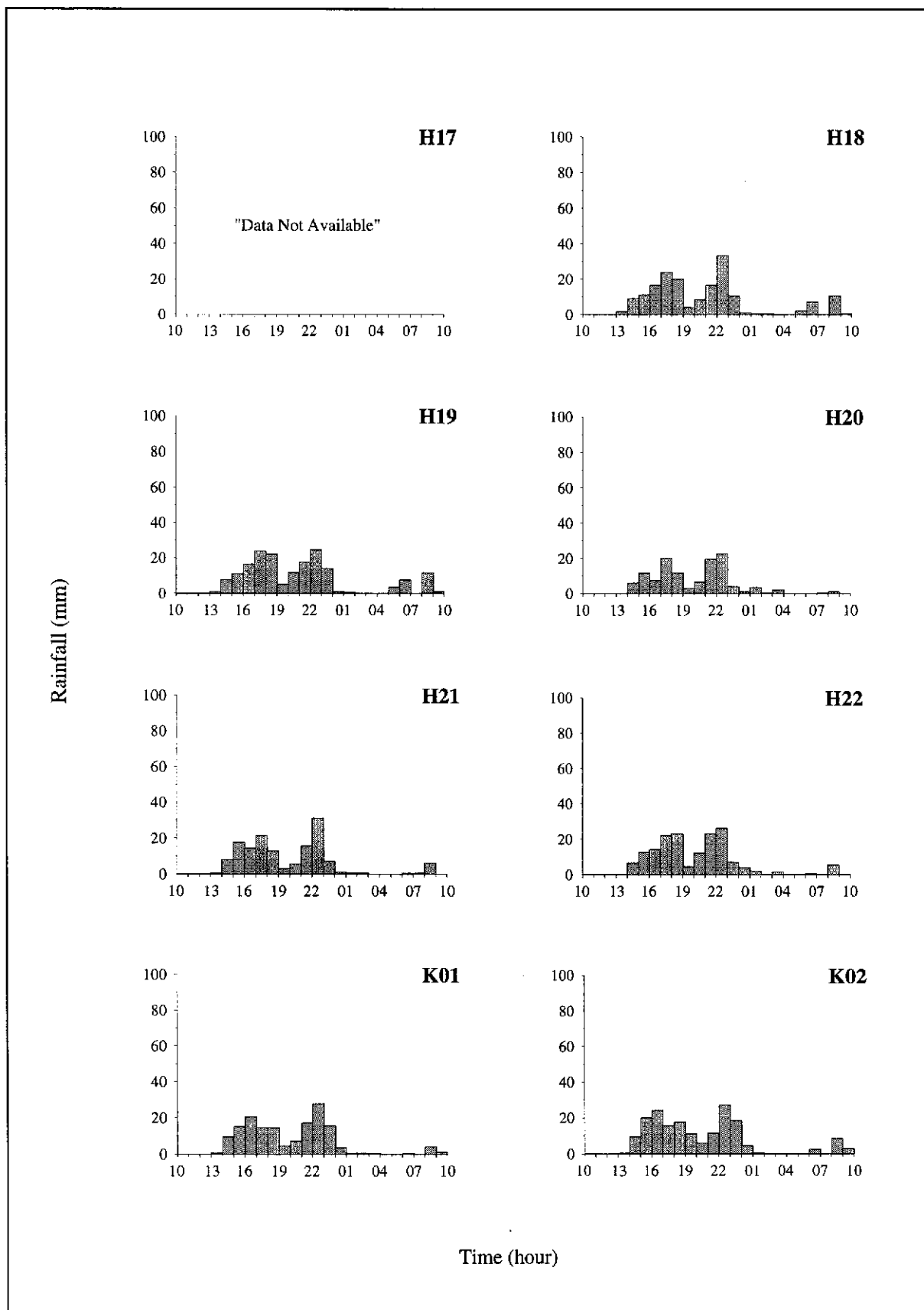


Figure A4 - Histograms of Hourly Rainfall Recorded by GEO Raingauges during 31 August to 1 September, 1995 (Sheet 3 of 6)

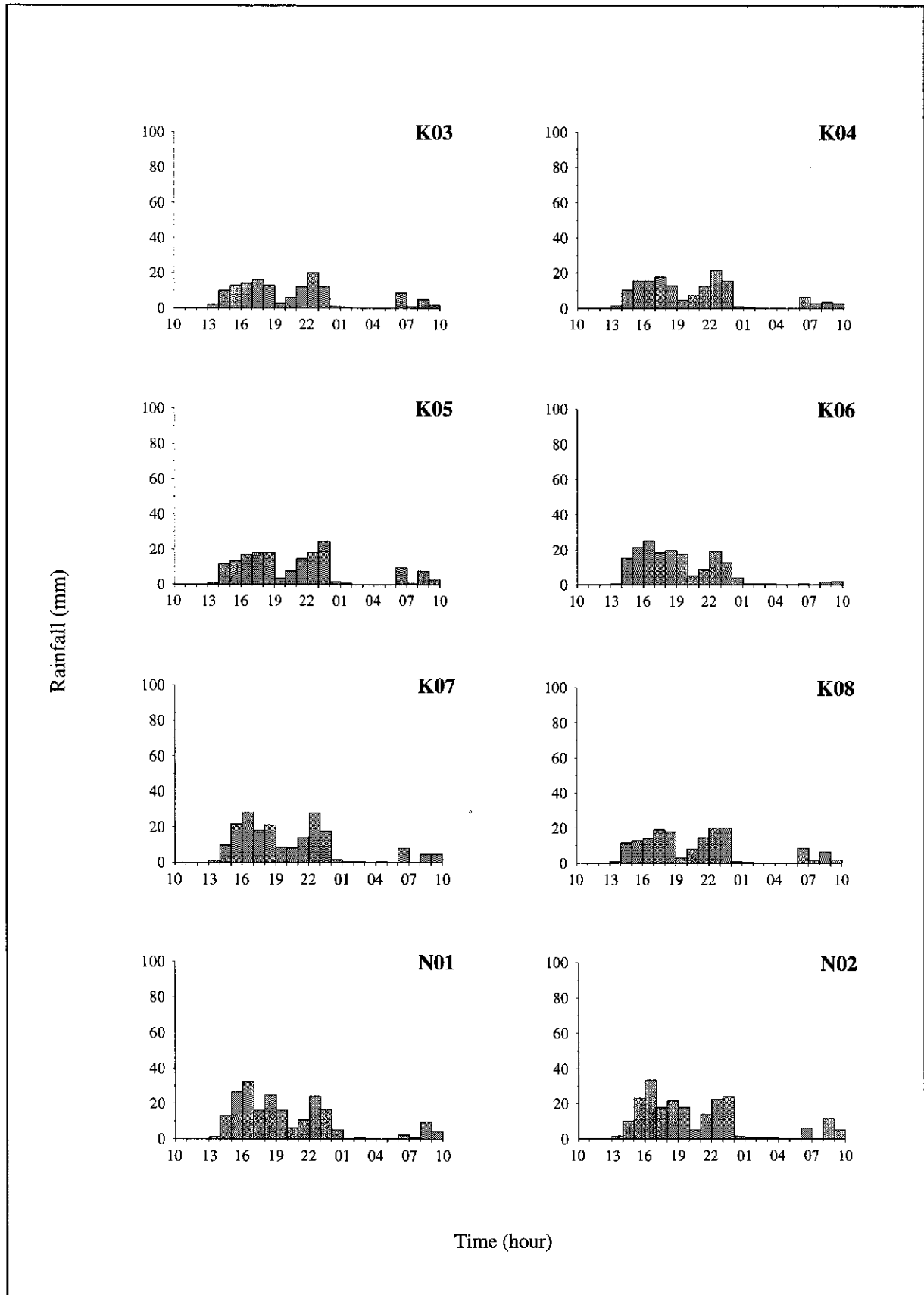


Figure A4 - Histograms of Hourly Rainfall Recorded by GEO Raingauges during 31 August to 1 September, 1995 (Sheet 4 of 6)

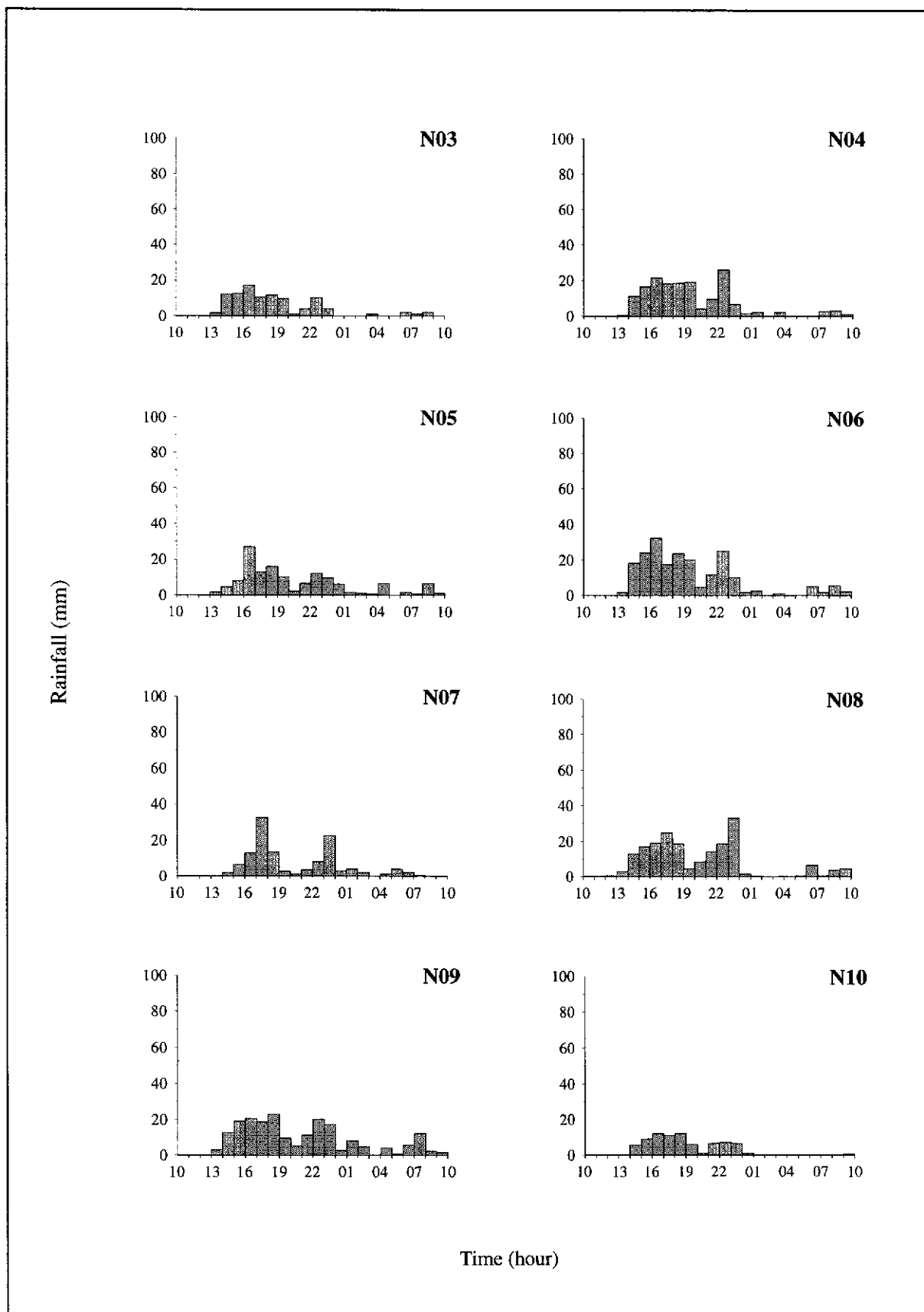


Figure A4 - Histograms of Hourly Rainfall Recorded by GEO Raingauges during 31 August to 1 September, 1995 (Sheet 5 of 6)

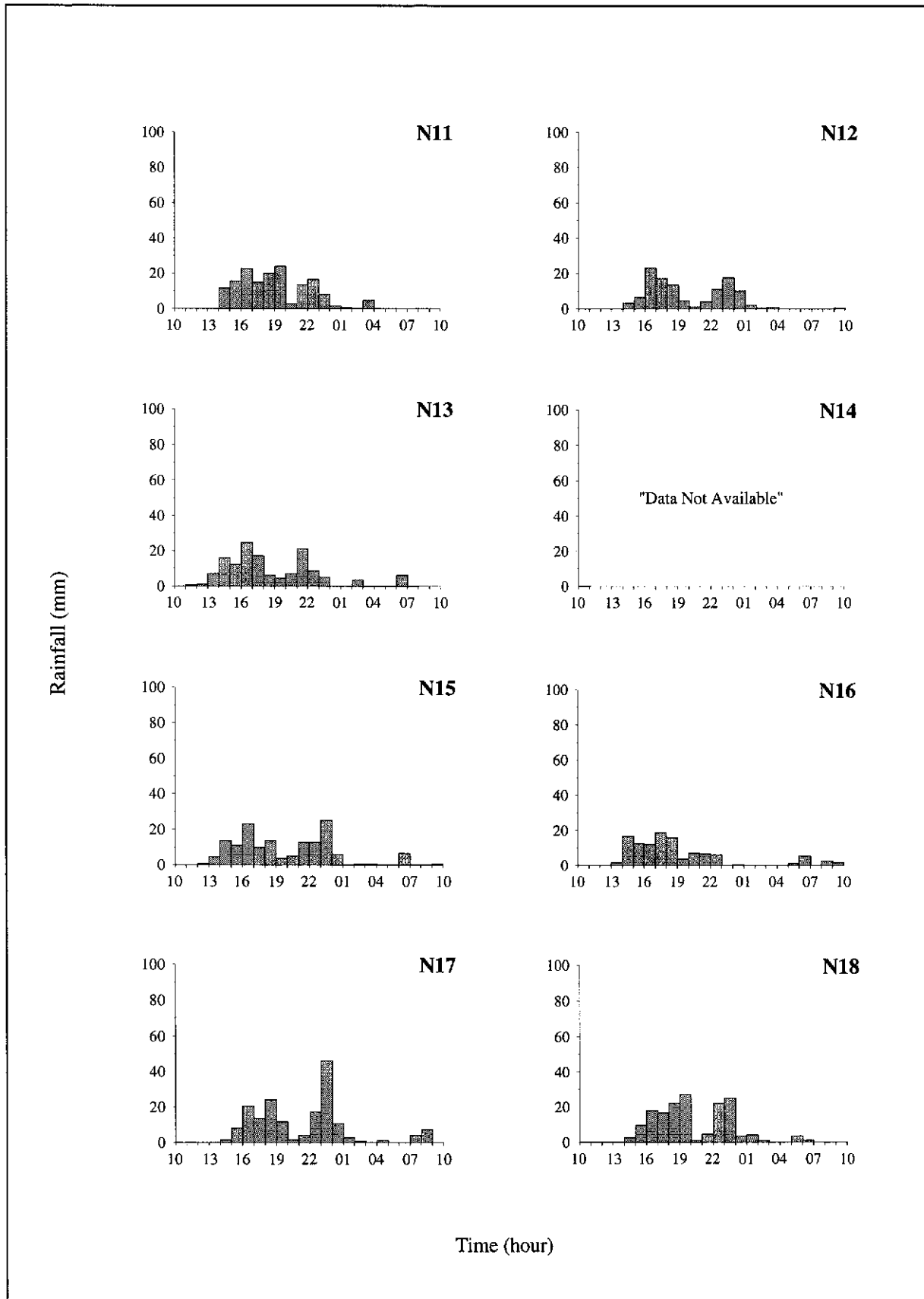


Figure A4 - Histograms of Hourly Rainfall Recorded by GEO Raingauges during 31 August to 1 September, 1995 (Sheet 6 of 6)

APPENDIX B
LIST OF INCIDENTS REPORTED TO GEO

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Table B1 - List of Incidents on Hong Kong Island Reported to GEO in 1995 (Sheet 1 of 15)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|---|------|---------|------------------|---------------------|-------------------------|-----------------------------|--|--|
| | | Date | From | Date (Time) | Type | Scale (m ³) | | | |
| HK 4/1 | 421 Queen's Road West, Shek Tong Tsui (11SW-A/R743) | 31/3 | FSD | 31/3 (19:15) | Tree fallen | | Road Pedestrian pavement | 2 lanes of road blocked and pedestrian pavement closed | No geotechnical concern, tree fallen |
| HK 4/2 | Below Stanley Gap Road, Stanley | 28/4 | HyD/HK | 15/4 (19:00) | Fill Slope | Minor (15) | Footpath | | |
| HK 5/1 | Above 19 Village Terrace, Happy Valley (11SW-D/CR10) | 13/5 | Public | 13/5 (11:00) | Tree fallen | | Backyard | | No geotechnical concern, tree fallen |
| HK 6/1 | Near May Road Tram Station, May Road, The Peak | 5/6 | HyD/HK | 5/6 (15:00) | Water overflown | | Road | 1/2 lane of road blocked | No geotechnical concern, water overflown |
| HK 6/2 | Below 17 Magazine Gap Road, Magazine Gap | 9/6 | HyD/HK | 9/6 (morning) | Retaining wall | Minor (7) | Open space | | |
| HK 6/3 | 42B Kennedy Road, Magazine Gap (11SW-B/C196) | 10/6 | HyD/HK | 10/6 (19:35) | Soil/rock cut slope | Minor (2.5) | Road | 1 lane of road closed | |
| HK 6/4 | Duchess of Kent Children's Hospital, Sandy Bay, Mount Davis | 16/6 | Arch SD | 10/6 (afternoon) | Rock fall | Minor (0.5) | Building lot | | |
| HK 7/1 | Behind Kingsford Garden, 202-216 Tin Hau Temple Road, Braemar Hill (11SE-A/CR202) | 4/7 | Police | 4/7 (8:15) | Boulder fall | Minor (2) | Building lot Carpark | 4 private cars damaged | Plate 4 |
| HK 7/2 | 15 New Eastern Terrace, Tin Hau Temple Road, Tai Hang | 4/7 | Police | 4/7 (15:30) | Boulder fall | Minor (1) | Building lot | | |

Table B1 - List of Incidents on Hong Kong Island Reported to GEO in 1995 (Sheet 2 of 15)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|---|------|--------|-------------------|---------------------|----------------------------|--------------------------------|-------------------------------|------------|
| | | Date | From | Date (Time) | Type | Scale (m ³) | | | |
| HK 7/3 | Ap Lei Chau Bridge Road, Ap Lei Chau | 5/7 | HyD/HK | 5/7 (7:30) | Soil cut slope | Minor (5) | Pedestrian pavement | Pedestrian pavement closed | No failure |
| HK 7/4 | Victoria Road, Mount Davis (11SW-C/CR137) | 5/7 | HyD/HK | 5/7 (9:00) | Soil/rock cut slope | Minor (3) | Road | 1/2 lane of road blocked | |
| HK 7/5 | Building Contractor's Association School, 62 Tin Hau Temple Road, Causeway Bay (11SE-A/CR101) | 14/7 | Public | 14/7 (morning) | Boulder fall | Minor (0.02) | Open space | | |
| HK 7/6 | Housing Department Staff Quarter, 34 Lin Shing Road, Chai Wan | 14/7 | HyD/HK | 14/7 (3:00) | | | | | |
| HK 7/7 | Opposite Maple Garden Phase III, 51 Kin Wah Street, North Point (11SE-A/C167) | 15/7 | USD | 15/7 (12:45) | Soil/rock cut slope | Minor (2) | Pedestrian pavement Carpark | | |
| HK 7/8 | Stanley Main Beach, Stanley | 17/7 | USD | 13/7 | Boulder fall | Minor (0.5) | Open space | | |
| HK 7/9 | 325 Tai Hang Road, Jardine's Lookout | 15/7 | Police | 15/7 | Rock fall | Minor (0.1) | | | |
| HK 7/10 | About 0.5 km from Peak Road Junction, Harlech Road, Victoria Gap (11SW-C/C299) | 27/7 | HyD/HK | 27/7 (am) | Soil/rock cut slope | Minor (0.5) | Road | 1/4 lane of road blocked | |
| HK 7/11 | 39 Shouson Hill Road, Shouson Hill (11SW-D/CR145) | 27/7 | Police | 27/7 (10:00) | Soil cut slope | Minor (1) | Road | 1/2 lane of road blocked | |

Table B1 - List of Incidents on Hong Kong Island Reported to GEO in 1995 (Sheet 3 of 15)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|--|------|--------|--------------|---------------------|-------------------------|-------------------|--|---------|
| | | Date | From | Date (Time) | Type | Scale (m ³) | | | |
| HK 7/12 | Tai Hang Road, So Kon Po (11SE-C/C60) | 28/7 | Police | 28/7 (13:00) | Rock fall | Minor (1.5) | Road | 1 lane of road closed | |
| HK 7/13 | Soil cutting on top of retaining wall one block west of Gleancaly Jr. School, The Peak (11SW-B/CR84) | 28/7 | Public | 28/7 | Soil/rock cut slope | Minor (1) | Carpark | | |
| HK 8/1 | Opposite lamp post No. 10410, South Bay Road, Repulse Bay (15NE-A/C100) | 3/8 | Police | 3/8 (8:00) | Rock fall | Minor (1) | Road | 1 lane of road blocked | |
| HK 8/2 | Opposite 99 Peak Road, The Peak (11SW-D/CR237) | 3/8 | HyD/HK | 3/8 (19:30) | Soil/rock cut slope | Major (50) | Road | 2 lanes of road closed | |
| HK 8/3 | Rosary Hill School, 41B Stubbs Road, Happy Valley | 3/8 | Public | 3/8 | Natural slope | | Carpark | | |
| HK 8/4 | Behind Kiangsu-Chekang College, 30 Ching Wah Street, North Point | 3/8 | Police | 3/8 | Boulder fall | Minor (0.5) | Open space | Water tank damaged | |
| HK 8/5 | Near junction of Repulse Bay, Beach Road, Repulse Bay | 4/8 | HyD/HK | 4/8 | Rock fall | Minor (0.5) | Road | Beach road slightly blocked but traffic not affected | |
| HK 8/6 | Near Junction of Shouson Hill Road East, 37 Deep Water Bay Road, Shouson Hill (11SW-D/C133) | 4/8 | HyD/HK | 4/8 | Soil cut slope | Minor (1) | Road | 1/4 lane of road blocked | |

Table B1 - List of Incidents on Hong Kong Island Reported to GEO in 1995 (Sheet 4 of 15)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|---|------|---------|---------------|---------------------|-------------------------|----------------------------|---|---------|
| | | Date | From | Date (Time) | Type | Scale (m ³) | | | |
| HK 8/7 | Near junction with Mount Butler, Tai Hang Road, So Kon Po (11SE-C/C57) | 3/8 | HyD/HK | 3/8 (14:00) | Soil cut slope | Minor (1) | Road | 1 lane of road closed | |
| HK 8/8 | 30 m east of intersection of Broadwood Road and Tai Hang Road, So Kon Po (11SE-C/C63) | 3/8 | HyD/HK | 3/8 (19:30) | Soil/rock cut slope | Minor (0.5) | Road | Debris on road but two way traffic maintained | |
| HK 8/9 | 108-110 Aberdeen Main Road, Aberdeen (11SW-D/CR78) | 4/8 | HyD/HK | 4/8 (pm) | Soil/rock cut slope | Minor (3) | Building lot | | |
| HK 8/10 | 4 Shouson Hill Road, Shouson Hill (11SW-D/CR152) | 5/8 | HyD/HK | 7/8 | Soil cut slope | Minor (3) | Pedestrian pavement | | |
| HK 8/11 | Hong Kong Sea School, 13-15 Tung Tau Wan Road, Stanley | 7/8 | Arch SD | 3/8 (night) | Soil cut slope | Minor (4) | Open space | | |
| HK 8/12 | Stanley Prison, Stanley (15NE-C/C117) | 9/8 | Arch SD | 7/8 (morning) | Rock fall | Minor (0.1) | Open space | | |
| HK 8/13 | RHKJC Club House, Shan Kwong Road, Happy Valley | 4/8 | Public | 4/8 | Soil cut slope | Minor (0.5) | Open space | | |
| HK 8/14 | Behind 1 Creasy Road, So Kon Po (11SE-C/C131) | 11/8 | BD | 2/8 (16:45) | Soil cut slope | Minor (0.5) | Building lot Open space | | |
| HK 8/15 | Near May Road, Magazine Gap Road, The Peak (11SW-D/CR316) | 13/8 | Police | 13/8 | Rock fall | Minor (20) | Road | 2 lanes of road closed | |

Table B1 - List of Incidents on Hong Kong Island Reported to GEO in 1995 (Sheet 5 of 15)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|--|------|--------|--------------|----------------------------------|-------------------------|---|--|---------|
| | | Date | From | Date (Time) | Type | Scale (m ³) | | | |
| HK 8/16 | Near 52 Peak Road, Magazine Gap | 13/8 | HyD/HK | 13/8 (1:30) | Soil cut slope | Major (60) | Road | 2 lanes of road closed | Plate 9 |
| HK 8/17 | 92 Peak Road, The Peak (11SW-D/C249) | 13/8 | HyD/HK | 13/8 (15:00) | Rock fall | Minor (8) | Road | 1 lane of road closed | |
| HK 8/18 | Behind Hut No. 251, Ching Man Village, So Kon Po | 13/8 | Police | 13/8 (0:00) | Soil cut slope | Minor (1) | Squatter hut | 1 hut temporarily evacuated | |
| HK 8/19 | 24 Shouson Hill Road, Shouson Hill (11SW-D/C147) | 13/8 | FSD | 13/8 (2:00) | Soil cut slope Natural slope | Major (310) | Building lot Road Carpark | 2 lanes of road blocked and carpark closed | |
| HK 8/20 | Opposite 65 Repulse Bay Road and Above 46 Island Road, Repulse Bay | 13/8 | Police | 13/8 | Soil cut slope Retaining wall | Major (250) | Building lot Road Building access | 3 houses evacuated and 2 roads closed and building access affected | |
| HK 8/21 | 73 to 91 Repulse Bay Road / Bellevue Drive, Repulse Bay (15NE-A/C34) | 13/8 | GEO | 13/8 (4:00) | Soil/rock cut slope | Major (300) | Building lot Road | 3 houses evacuated and 1 road closed | |
| HK 8/22 | | | | | | | | | |
| HK 8/23 | | | | | | | | | |
| HK 8/24 | 119 Repulse Bay Road, Repulse Bay (15NE-A/C76) | 13/8 | FSD | 13/8 | Soil/rock cut slope | | Road Building access | 2 lanes of road closed | |
| HK 8/25 | 43 Repulse Bay Road, Repulse Bay | 13/8 | Police | 13/8 | Soil cut slope | Minor (10) | Road | 1 lane of road closed | |

Table B1 - List of Incidents on Hong Kong Island Reported to GEO in 1995 (Sheet 6 of 15)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|--|------|--------|----------------|------------------------------|-------------------------|---|-------------------------------------|---|
| | | Date | From | Date (Time) | Type | Scale (m ³) | | | |
| HK 8/26 | 45 Repulse Bay Road, Repulse Bay | 13/8 | Police | | Soil cut slope | Minor (20) | Road | 1 lane of road closed | No failure, only sign of slope distress |
| HK 8/27 | 63 Manhattan Tower, Repulse Bay Road, Repulse Bay (15NE-A/C28 and 15NE-A/CR29) | 14/8 | Police | Unknown | Sign of slope distress | | | | |
| HK 8/28 | 148 Tai Hang Road, So Kon Po (11SE-C/C63) | 12/8 | HyD/HK | 12/8 (9:30) | Rock fall | Minor (3) | Road | 1 lane of road blocked | |
| HK 8/29 | Near lamp post No. 33384, Yee King Road, Tai Hang (11SE-A/C212) | 14/8 | HyD/HK | 13/8 | Rock fall | Minor (5) | Pedestrian pavement | Pedestrian pavement closed | |
| HK 8/30 | Braemar Terrace, Pak Fuk Road, North Point | 13/8 | Police | 13/8 | Natural slope | Minor (20) | Open space Carpark | | |
| HK 8/31 | Near Cape Collinson Road, Shek O Road, Tai Tam Gap | 13/8 | Police | 13/8 (2:30) | Fill Slope Soil cut slope | Major (120) | Road | 1 lane of road closed | |
| HK 8/32 | Behind 20 Carmel Road, Ma Hang Village, Stanley | 13/8 | HD | 13/8 (14:00) | Fill Slope Retaining wall | Minor (10) | Building lot Footpath Construction site | Footpath closed Gas main damaged | |
| HK 8/33 | Near Reservoir Dam, Tai Tam Road, Tai Tam Gap (15NE-A/C197) | 14/8 | Police | 14/8 | Soil cut slope | Minor (12) | Road | 2 lanes of road closed | |
| HK 8/34 | Adjacent to South-bound Lane near 555 Victoria Road, Pok Fu Lam (11SW-C/C143) | 12/8 | Police | 12/8 (morning) | Rock fall | Minor (3) | Road | 1 lane of road closed | |

Table B1 - List of Incidents on Hong Kong Island Reported to GEO in 1995 (Sheet 7 of 15)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|--|------|--------|----------------|---|-------------------------|--|---|---|
| | | Date | From | Date (Time) | Type | Scale (m ³) | | | |
| HK 8/35 | Opposit Fire Station, Ap Lei Chau Bridge Road, Ap Lei Chau | 13/8 | HyD/HK | Unknown | Muddy water flow from weephole & shotcrete crack | | Road | 1 lane of road closed | No failure, only muddy water flow from weephole |
| HK 8/36 | 100 m up from Ningnam College, Stubbs Road, Happy Valley | 13/8 | Police | 13/8 | Retaining wall | | Road | 2 lanes of road closed | |
| HK 8/37 | Near Pokfulam Kennel, Victoria Road, Pok Fu Lam (11SW-C/C131) | 12/8 | Police | 12/8 | Rock fall | Minor (5) | | | |
| HK 8/38 | 16-22 Kai Yuen Street, North Point (11SE-A/C94) | 12/8 | HyD/HK | 12/8 (morning) | Rock fall | | Road | 1 lane of road closed | |
| HK 8/39 | Near H.K. Electric House, Kennedy Road, Mid-Levels (11SW-B/C205) | 12/8 | HyD/HK | 12/8 (14:30) | Soil cut slope | Minor (10) | Road | 1 lane of road closed | |
| HK 8/40 | Access road of 135 Tai Hang Road, So Kon Po | 12/8 | Police | 12/8 (14:15) | Soil cut slope | Minor (2) | Road | 1 lane of road closed | |
| HK 8/41 | 19 Green Lane, Happy Valley (11SW-D/C202) | 12/8 | Police | 12/8 | Soil cut slope | Minor (15) | Road Building access | 2 lanes of road closed | |
| HK 8/42 | | | | | | | | | This incident no. was not used |
| HK 8/43 | Chai Wan Baptist Church, 30 Fei Tsui Road, Chai Wan (11SE-D/C42) | 13/8 | HyD/HK | 13/8 (1:15) | Soil/rock cut slope Fill slope Retaining wall | Major (14000) | Road Pedestrian pavement Building access Open space Playground | 1 person killed, 1 person injured and 1 road closed | Plate 8 |

Table B1 - List of Incidents on Hong Kong Island Reported to GEO in 1995 (Sheet 8 of 15)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks | | | | | | | |
|--------------|--|------|--------|------------------|------------------------------------|---------------|---|---|---|------|--------|-------------|----------------|-------------|------|-----------------------|
| | | Date | From | Date (Time) | Type | Scale (m³) | | | | | | | | | | |
| HK 8/44 | 84 Pokfulam Road, Pokfulam | 13/8 | Police | 13/8 (12:00) | Soil/rock cut slope | Minor (12) | Road | 1 lane of road closed | This incident no. was not used | | | | | | | |
| HK 8/45 | | | | | | | | | This incident no. was not used | | | | | | | |
| HK 8/46 | | | | | | | | | 22 Aberdeen Reservoir Road, Aberdeen (11SW-D/C58) | 13/8 | Police | 13/8 (4:00) | Soil cut slope | Minor (4.5) | Road | 1 lane of road closed |
| HK 8/47 | | | | | | | | | | | | | | | | |
| HK 8/48 | Shum Wan Road, Aberdeen | 13/8 | Police | 13/8 (4:00-4:30) | Hillside Fill slope Retaining wall | Major (26000) | Building lot Road Pedestrian pavement Building access | 2 persons killed, 5 persons injured and 3 shipyards and 1 factory damaged and 2 roads closed and pedestrian pavement blocked and footpath blocked and building access blocked | Plate 10 | | | | | | | |
| HK 8/50 | Cut slope behind Island Garden, 33, 35, 41 Chai Wan Road, Chai Wan | 13/8 | Public | 13/8 (3:30) | Soil/rock cut slope | Major (100) | Building lot | 40 flats temporarily evacuated | This incident no. was not used | | | | | | | |
| HK 8/52 | 45 Shouson Hill Road, Shouson Hill | 13/8 | Public | 13/8 (2:00) | Soil cut slope | Minor (30) | Building lot Carpark | | | | | | | | | |

Table B1 - List of Incidents on Hong Kong Island Reported to GEO in 1995 (Sheet 9 of 15)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|---|------|---------|--------------|----------------------------------|-------------------------|-----------------------------------|----------------------------|--------------------------------|
| | | Date | From | Date (Time) | Type | Scale (m ³) | | | |
| HK 8/53 | Near entrance of Chinese Permanent Cemetery, Aberdeen (11SW-C/CR36) | 13/8 | Public | 13/8 | Soil cut slope | Minor (10) | Road | 1 lane of road blocked | This incident no. was not used |
| HK 8/54 | Near Sassoon Road, Victoria Road, Pokfulam (11SW-C/C158) | 13/8 | HyD/HK | 13/8 | Rock fall | Minor (0.5) | Pedestrian pavement | | |
| HK 8/55 | Near entrance to Lower Baguio, Victoria Road, Pokfulam | 13/8 | HyD/HK | 13/8 | Soil cut slope | Minor (10) | Road Pedestrian pavement | 1 lane of road blocked | |
| HK 8/56 | | | | | | | | | |
| HK 8/57 | | | | | | | | | |
| HK 8/58 | Wah Yan College, facing Queen's Road East, Morrison Hill (11SW-B/C24) | 14/8 | Public | 14/8 | Soil cut slope | Minor (3) | Pedestrian pavement | Pedestrian pavement closed | |
| HK 8/59 | | | | | | | | | |
| HK 8/60 | | | | | | | | | |
| HK 8/61 | Below Nurses' Quarters, Nam Long Hospital, Brick Hill | 13/8 | Arch SD | 12/8 (night) | Subsidence | Minor (20) | Building lot | | |
| HK 8/62 | 2 Aberdeen Main Road, Aberdeen | 13/8 | Police | Unknown | Rock fall Soil/rock cut slope | Minor (35) | Pedestrian pavement Open space | Pedestrian pavement closed | |

Table B1 - List of Incidents on Hong Kong Island Reported to GEO in 1995 (Sheet 10 of 15)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|--|------|--------------|----------------------|--------------------------------------|-------------------------|-------------------|-----------------------------|--------------------------------|
| | | Date | From | Date (Time) | Type | Scale (m ³) | | | |
| HK 8/63 | Near Toll Plaza, Aberdeen Tunnel, Shouson Hill | 13/8 | HyD/HK | 13/8 (early morning) | Natural slope | Minor (10) | Road | 1 lane of road closed | This incident no. was not used |
| HK 8/64 | | | | | | | | | |
| HK 8/65 | 6 Stanley Village Road, RBL 392, Stanley | 13/8 | Public | 13/8 | Soil/rock cut slope | Minor (0.5) | Building lot | A closure order recommended | This incident no. was not used |
| HK 8/66 | Kiangsu-Chekiang Primary School, 30 Ching Wah Street, North Point (11SE-A/CR168) | 14/8 | Police & FSD | 14/8 (13:00) | Soil/rock cut slope | Minor (25) | Building lot | | |
| HK 8/67 | 8 A Kung Ngam Tsuen Road, Shau Kei Wan (11SE-B/C101) | 14/8 | Police | 14/8 (before 6:00) | Soil/rock cut slope Natural slope | Major (80) | Building lot | A closure order recommended | This incident no. was not used |
| HK 8/68 | | | | | | | | | |
| HK 8/69 | Lai Shing Building, 13-15 Tai Hang Road, Tai Hang | 14/8 | Public | 14/8 (10:00) | Mud water | | | | No failure, mud water |
| HK 8/70 | | | | | | | | | |
| HK 8/71 | Junction of Glenealy and Conduit Road, Mid-Levels (11SW-A/CR28) | 14/8 | Police | 14/8 | Soil cut slope | Minor (6) | Road | 1 lane of road blocked | This incident no. was not used |
| HK 8/72 | | | | | | | | | |

Table B1 - List of Incidents on Hong Kong Island Reported to GEO in 1995 (Sheet 11 of 15)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|--|------|--------|----------------|----------------------------------|-------------|---------------------------------|---|--------------------------------|
| | | Date | From | Date (Time) | Type | Scale (m³) | | | |
| HK 8/73 | 12 Shouson Hill Road, Shouson Hill (11SW-D/CR160) | 14/8 | Police | 12/8 (night) | Soil cut slope | Major (400) | Building lot Building access | 4 flats evacuated and access road blocked | Plate 7 |
| HK 8/74 | | | | | | | | | This incident no. was not used |
| HK 8/75 | Junction of Queen's Road East and Justice Drive, Queensway (11SW-A/R248) | 18/8 | HyD/HK | 14/8 (morning) | Soil cut slope | Minor (2) | Pedestrian pavement | | |
| HK 8/76 | | | | | | | | | This incident no. was not used |
| HK 8/77 | Near 34 Stubbs Road, Happy Valley | 14/8 | HyD/HK | 14/8 (17:00) | Soil/rock cut slope Rock fall | Minor (40) | Road | 2 lanes of road closed | |
| HK 8/78 | | | | | | | | | This incident no. was not used |
| HK 8/79 | Near entrance of Chinese Permanent Cemetery, Aberdeen (11SW-C/CR36) | 13/8 | DLO/S | 13/8 | Soil cut slope | Minor (15) | Road | 1 lane of road blocked | |
| HK 8/80 | | | | | | | | | This incident no. was not used |
| HK 8/81 | | | | | | | | | This incident no. was not used |
| HK 8/82 | | | | | | | | | This incident no. was not used |

Table B1 - List of Incidents on Hong Kong Island Reported to GEO in 1995 (Sheet 12 of 15)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|---|------|--------|----------------|---------------------------------|-------------------------|----------------------------|-----------------|--------------------------------|
| | | Date | From | Date (Time) | Type | Scale (m ³) | | | |
| HK 8/83 | Junction of Lee Nam Road and Ap Lei Chau Bridge Road, Ap Lei Chau (15NW-A/C1) | 14/8 | DO/S | Unknown | Soil cut slope | Minor (15) | | Footpath closed | This incident no. was not used |
| HK 8/84 | | | | | | | | | |
| HK 8/85 | Above carpark adjacent to Haw Par Mansion, Tai Hang Road, Tai Hang | 15/8 | HyD/HK | 14/8 | Natural slope | Minor (3) | Carpark | | |
| HK 8/86 | 13-15 Tai Hang Road, Lai Sing Court, Tai Hang | 15/8 | Public | 15/8 | Soil cut slope Natural slope | Minor (5) | | | |
| HK 8/87 | Near Yue Kwong Road, Aberdeen Reservoir Road, Aberdeen (11SW-D/C60) | 14/8 | HyD/HK | 14/8 | Soil cut slope | Minor (5) | Pedestrian pavement | | |
| HK 8/88 | 54 Macdonell Road, Mid-Levels (11SW-B/CR102) | 15/8 | Public | 13/8 (3:00) | Rock fall | Minor (1) | Building lot Open space | | |
| HK 8/89 | Block A, Police Quarters, Ka Wai Man Road, Kennedy Town (11SW-A/C257) | 17/8 | GPA | 14/8 (morning) | Soil/rock cut slope | Minor (1) | Carpark | | |
| HK 8/90 | Block C, Police Quarters, Ka Wai Man Road, Kennedy Town (11SW-A/C107) | 17/8 | GPA | 14/8 (morning) | Soil/rock cut slope | Minor (2) | Carpark | | |

Table B1 - List of Incidents on Hong Kong Island Reported to GEO in 1995 (Sheet 13 of 15)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|--|------|---------|----------------|---------------------|-------------------------|----------------------------|--|--------------------------------|
| | | Date | From | Date (Time) | Type | Scale (m ³) | | | |
| HK 8/91 | Behind Aberdeen Technical School, Wong Chuk Hang Road, Wong Chuk Hang (11SW-D/CR124) | 16/8 | Arch SD | 15/8 (morning) | Soil/rock cut slope | Minor (10) | Building lot | | This incident no. was not used |
| HK 8/92 | | | | | | | | | |
| HK 8/93 | Sitting out area west of petrol station, Kennedy Road, Queensway (11SW-A/R543) | 15/8 | Arch SD | Unknown | Retaining wall | Minor (9) | | | |
| HK 8/94 | 22-23 Big Wave Road, Shek O | 17/8 | HyD/HK | 17/8 (10:00) | Fill Slope | Minor (8) | Road | 1 lane of road closed and pedestrain pavement closed | |
| HK 8/95 | Wong Ma Kok Road, Stanley (15NE-C/F32) | 21/8 | HyD/HK | 13/8 | Fill Slope | Minor (45) | Road | 1 lane of road closed and pedestrain pavement closed | |
| HK 8/96 | Near junction of Lee Chi Road and Ap Lei Chau Bridge Road, Ap Lei Chau | 22/8 | HyD/HK | 13/8 | Rock fall | Minor (10) | Pedestrain pavement | Pedestrain pavement closed | |
| HK 8/97 | Adjacent to entrance of 68 Deepwater Bay Road, Shouson Hill | 15/8 | Police | Unknown | Rock slope | Minor (7) | Area alongside sub-station | | |
| HK 8/98 | Behind 135 Tai Hang Road, So Kon Po | 15/8 | GEO | 14/8 | Natural slope | Minor (1) | | | |
| HK 8/99 | Behind the Nurses Quarters of Tung Wah Eastern Hospital, Sai Ying Pun | 19/8 | Public | 14/8 | Natural slope | Minor (15) | | | |

Table B1 - List of Incidents on Hong Kong Island Reported to GEO in 1995 (Sheet 14 of 15)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|---|------|--------|----------------|---------------------|---------------|---|----------------------------|--------------------------------------|
| | | Date | From | Date (Time) | Type | Scale (m³) | | | |
| HK 8/100 | Behind 15 Hawthorn Road, Happy Valley | | | Unknown | tree fallen | | Store-room | | No geotechnical concern, tree fallen |
| HK 8/101 | Chung Hom Kok Road, Chung Hom Kok (15NE-C/C77 and 15NE-C/C78) | 15/8 | FSD | 15/8 | Soil/rock cut slope | Minor (30-40) | Road | 1 lane of road blocked | |
| HK 9/1 | Adjacent to 47A Stubbs Road, Wan Chai Gap (11SW-D/C340) | 1/9 | FSD | 31/8 (22:45) | Soil cut slope | Major (130) | Road | 3 lanes of road closed | |
| HK 9/2 | 77 Peak Road, The Peak | 24/8 | Public | 14/8 | Rock fall | Minor (1) | Road Pedestrian pavement Building access | Private access blocked | |
| HK 9/3 | Below English School, Chatham Path, The Peak | 30/8 | HyD/HK | 25/8 | Soil cut slope | Minor (2) | Pedestrian pavement | | |
| HK 9/4 | Opposite 35 Mount Kellett Road, The Peak | 1/9 | HyD/HK | Unknown | Soil/rock cut slope | Minor (0.3) | Road | 1/4 lane of road blocked | |
| HK 9/5 | 88 Pokfulam Road, Pokfulam (11SW-A/C323) | 2/9 | Public | 1/9 (16:05) | Soil/rock cut slope | Minor (4) | Pedestrian pavement Rubbish collection point | | |
| HK 9/6 | Hospital Path, below 60 Plantation Road, The Peak | 5/9 | HyD/HK | Unknown | Soil/rock cut slope | Minor (0.2) | Pedestrian pavement | | |
| HK 9/7 | Below 8 Plunkett's Road and Opposite 6 Bluff Path, The Peak | 8/9 | Public | 14/8 | Retaining wall | Minor (3) | Road side cutting | | |
| HK 10/1 | Near Lai Sing Court, Tai Hang Road, Tai Hang (11SE-A/C129) | 3/10 | HyD/HK | 3/10 (morning) | Soil cut slope | Minor (2) | Pedestrian pavement | Pedestrian pavement closed | |

Table B1 - List of Incidents on Hong Kong Island Reported to GEO in 1995 (Sheet 15 of 15)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|---|-------|--------|----------------|----------------------------------|-------------------------|--|----------------------------|---------|
| | | Date | From | Date (Time) | Type | Scale (m ³) | | | |
| HK 10/2 | Between Catchpits MA7 and MA8, Magazine Gap Road, Magazine Gap | 6/10 | HyD/HK | 4/10 | Rock fall Soil/rock cut slope | Minor (1.5) | Road | 1/4 lane of road blocked | |
| HK 10/3 | Opposite Kotewall Road Fire Station, Mid-levels | 6/10 | FSD | 6/10 (morning) | Soil cut slope | Minor (1) | Pedestrian pavement Tree at slope crest | Pedestrian pavement closed | |
| HK 10/4 | Building Contractor's Association School, Tin Hau Temple Road, North Point (11SE-A/CR101) | 6/10 | Public | 6/10 (10:00) | Rock slope | Minor (0.5) | Backlane | | |
| HK 10/5 | Opposite 54 Ventris Road, Happy Valley (11SW-D/C189) | 6/10 | Police | 5/10 | Soil cut slope | Minor (0.5) | Footpath | Pedestrian pavement closed | |
| HK 10/6 | Behind Lai Shing Mansion, IL 7909, 13-15 Tai Hang Road, Tai Hang (11SE-A/C130) | 22/10 | Police | 22/10 (15:05) | Rock fall | | Carpark | | |
| HK 12/1 | 82 Pokfulam Road, Pokfulam (11SW-A/C138) | 29/11 | HyD/HK | 29/11 (am) | Rock fall | Minor (0.2) | Pedestrian pavement | | |

Table B2 - List of Incidents in Kowloon Reported to GEO in 1995 (Sheet 1 of 5)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|--|------|---------|------------------|----------------------------------|-------------------------|----------------------------------|---|---------|
| | | Date | From | Date (Time) | Type | Scale (m ³) | | | |
| K 6/1 | Man Fuk Road, Homantin (11NW-D/C56) | 12/6 | Public | 12/6 (morning) | Soil/rock cut slope | Minor (1-2) | Open space | | |
| K 7/1 | Kai Tak Mansion Phase I, 53 Kwun Tong Road, Kowloon Bay (11NE-A/C69) | 12/7 | Police | 12/7 (20:45) | Rock slope | Minor (3-5) | Backlane Carpark | Backlane closed | |
| K 7/2 | Behind 12-14 Tak Hing Street, Yau Ma Tei | 17/7 | BD | 17/7 (afternoon) | Retaining wall | | Building lot Pedestrian pavement | 1 flat evacuated and pedestrian pavement closed | |
| K 7/3 | 135 Cha Kwo Ling Village, Kwun Tong | 19/7 | DO/KT | 16/7 (14:00) | Fill Slope | Minor (1) | Squatter hut | | |
| K 8/1 | Jat's Incline, Ngau Chi Wan | 3/8 | HyD/K | 3/8 (12:30) | Rock fall Soil/rock cut slope | Minor (12) | Road | 1 lane of road closed | |
| K 8/2 | Lei Yue Mun Village, Yau Tong (11SE-B/C108) | 3/8 | Public | 3/8 (morning) | Rock fall Soil/rock cut slope | Minor (25) | Squatter hut | 2 huts permanently evacuated | |
| K 8/3 | Near Yau Tong Road, Cha Kwo Ling Road, Yau Tong (11SE-B/N3) | 4/8 | HyD/K | Unknown | Rock fall | Minor (2) | Road | 1/2 lane of road blocked | |
| K 8/4 | Jat's Incline, Ngau Chi Wan | 4/8 | HyD/K | 4/8 (13:00) | Soil/rock cut slope | Minor (20) | Road | Road blocked | |
| K 8/5 | Lam Tin Park, Pik Wan Road, Lam Tin | 7/8 | Arch SD | 5/8 | Fill Slope | Minor (7) | Country park | | |
| K 8/6 | Below Lam Tin Clinic, Tseung Kwan O Road, Lam Tin (11NE-D/C75) | 9/8 | HyD/K | 6/8 | Soil cut slope | Minor (10) | Pedestrian pavement | Pedestrian pavement closed | |

Table B2 - List of Incidents in Kowloon Reported to GEO in 1995 (Sheet 2 of 5)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|--|------|-------|--------------|----------------------------------|-------------------------|--------------------|-------------------------------|----------|
| | | Date | From | Date (Time) | Type | Scale (m ³) | | | |
| K 8/7 | 33 Fan Wa Street, Cha Kwo Ling | 12/8 | FSD | 12/8 (17:00) | Soil/rock cut slope | Minor (45) | Squatter hut | 40 huts permanently evacuated | Plate 6 |
| K 8/8 | Tsuen Yeun Road East, Lei Yue Mun | 13/8 | DO/KT | 13/8 (4:00) | Natural slope | | Squatter hut | 1 hut temporarily evacuated | |
| K 8/9 | Near Kwun Tong Police Station, Junk Bay Road, Kwun Tong (11NE-D/C75) | 13/8 | FSD | Unknown | Soil/rock cut slope | | Road | 2 lanes of road closed | |
| K 8/10 | St. Antonius Girls' College, 1 Ko Chiu Road, Yau Tong | 13/8 | FSD | 13/8 (3:00) | Soil cut slope | Minor (35) | Carpark | | |
| K 8/11 | Opposite Block 40 Sau Mau Ping Estate, Sau Mau Ping Road, Sau Mau Ping | 13/8 | DO/KT | 13/8 | Soil/rock cut slope | | Road | 1 lane of road closed | |
| K 8/12 | Junction of Tseung Kwan O Road and Lin Tak Road, Lam Tin | 13/8 | FSD | 13/8 (5:00) | Soil cut slope | Minor (35-40) | Road Open space | 1 lane of road blocked | |
| K 8/13 | 2 On Lei Sai Tsuen, Lei Yue Mun | 13/8 | DO/KT | 13/8 (4:00) | Soil cut slope | Minor (15) | Squatter hut | 2 huts temporarily evacuated | Plate 12 |
| K 8/14 | 78H On Lei Sai Tsuen, Lei Yue Mun | 13/8 | DO/KT | 13/8 (3:00) | Natural slope | Minor (30) | Squatter hut | 1 hut temporarily evacuated | |
| K 8/15 | 13 On Lei Sai Tsuen, Lei Yue Mun | 13/8 | DO/KT | 13/8 (3:00) | Soil/rock cut slope | Minor (45) | Squatter hut | 1 hut temporarily evacuated | |
| K 8/16 | 503 Ma Wan Village, Lei Yue Mun (11SE-B/C113) | 14/8 | DO/KT | 14/8 (8:00) | Soil/rock cut slope Rock fall | Major (400) | Squatter hut | 24 huts permanently evacuated | |

Table B2 - List of Incidents in Kowloon Reported to GEO in 1995 (Sheet 3 of 5)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|---|------|--------|--------------|----------------------------|-------------------------|------------------------------------|---|---------|
| | | Date | From | Date (Time) | Type | Scale (m ³) | | | |
| K 8/17 | Opposite Lui Ming Choi Secondary School, Kwun Tong Road, Kwun Tong (11NE-A/C35) | 13/8 | HyD/K | 13/8 (18:30) | Rock slope Boulder fall | Major (150) | Road Pedestrian pavement | 2 lanes of road closed and pedestrian pavement closed | |
| K 8/18 | Opposite Mu Kuang English College, 55 Kung Lok Road, Ngau Tau Kok (11NE-C/C74) | 14/8 | Police | 14/8 (11:00) | Soil cut slope | Minor (35) | Road | 2 lanes of road blocked | |
| K 8/19 | Opposite Lok Wah Estate Community Centre, Chun Wah Road, Kwun Tong (11NE-C/N4) | 14/8 | HyD/K | 14/8 (11:30) | Soil/rock cut slope | Minor (25) | | Debris resting on berms and blocked surface drains | |
| K 8/20 | Junction of Wylie Road and Princess Margaret Road, King's Park (11NW-D/C126) | 15/8 | Police | Unknown | Soil/rock cut slope | Minor (3) | Pedestrian pavement | | |
| K 8/21 | Opposite Mei Tin House, Hing Tin Estate, Lin Tak Road, Lam Tin (11NE-D/C190) | 14/8 | Public | Unknown | Soil/rock cut slope | Minor (2) | Pedestrian pavement Bus shelter | Pedestrian pavement closed and bus shelter temporarily closed | |
| K 8/22 | Hut No. 104 Cha Kwo Ling Village, Lei Yue Mun | 14/8 | Public | 13/8 | Soil/rock cut slope | Minor (2) | Squatter hut | 1 hut temporarily evacuated | |
| K 8/23 | Hut Nos. 600, 601 and 635 Cha Kwo Ling Village, Lei Yue Mun | 14/8 | Public | Unknown | Natural slope | Minor (2) | Squatter hut | 3 huts permanently evacuated | |
| K 8/24 | Chung Pak House, Hong Pak Court, Lam Tin | 16/8 | HyD/K | 13/8 | Natural slope | Minor (<5) | Open space | | |

Table B2 - List of Incidents in Kowloon Reported to GEO in 1995 (Sheet 4 of 5)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|---|------|--------|-------------------|----------------------------------|-------------------------|---------------------|-----------------------------|---------|
| | | Date | From | Date (Time) | Type | Scale (m ³) | | | |
| K 8/25 | Below Ping Shek THA Site, Clear Water Bay Road, Ngau Chi Wan | 25/8 | Public | 13-15/8 | Natural slope | Minor (5) | | | |
| K 8/26 | 246 Cha Kwo Ling, Fan Wah Street, Lei Yue Mun (11NE-D/C18) | 31/8 | FSD | 31/8 (14:00) | Rock fall | Minor (1) | Squatter hut | 1 hut temporarily evacuated | |
| K 9/1 | Adjacent to Ma Yau Tong West Landfill, Tseung Kwan O Road, Kwun Tong | 30/8 | EPD | Unknown | Natural slope | Minor (40) | Open space | | |
| K 9/2 | Near Anderson Road, Po Lam Road, Kwun Tong | 1/9 | USD | Unknown | Soil cut slope | Minor (10) | Pedestrian pavement | | |
| K 9/3 | Adjacent Buddhist Ho Nam Kam Prevocational College, Ko Chiu Road, Lam Tin | 31/8 | Public | 12/8 | Natural slope | Minor (<5) | Open space | | |
| K 9/4 | Behind Mongkok Worker's Children School, 14 Princess Margaret Road, Mong Kok (11NW-D/C58) | 6/9 | Public | 31/8 | Soil cut slope | Minor (1.5) | Open space | | |
| K 9/5 | Opposite Kai Fai House, New Clear Water Bay Road, Jordan Valley | 19/9 | Public | August | Rock fall Soil/rock cut slope | Minor (2) | Open space | | |
| K 10/1 | Hut No. XKE/12/E/Q1/194 Che Tang, Lei Yue Mun | 3/10 | DO/KT | 3/10 (4:30-10:30) | Retaining wall | Minor (2) | Squatter hut | 1 hut permanently evacuated | |
| K 10/2 | Opposite Kam Shek House Block, Ping Shek Estate, Ngau Chi Wan (11NE-A/CR68) | 6/10 | FSD | 6/10 (6:30) | Soil cut slope | Minor (2) | | | |

Table B2 - List of Incidents in Kowloon Reported to GEO in 1995 (Sheet 5 of 5)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|---|-------|-------|-------------|----------------|-------------------------|-------------------|-------------|---------|
| | | Date | From | Date (Time) | Type | Scale (m ³) | | | |
| K 10/3 | Pik Wan Road, Lam Tin | 27/10 | HyD/K | Unknown | Natural slope | Minor (30) | Open space | | |
| K 11/1 | Near Chuk Yuen (North) Estate, Shatin Pass Road, Wong Tai Sin | 5/9 | HD | Unknown | Soil cut slope | Minor (2) | | | |

Table B3 - List of Incidents in Eastern New Territories Reported to GEO in 1995 (Sheet 1 of 10)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|---|-------|--------|----------------------|----------------------------------|-------------|---------------------------------------|------------------------------|---------|
| | | Date | From | Date (Time) | Type | Scale (m³) | | | |
| ME 1/1 | House No. 59F Ma Wo, Tai Po | 21/12 | Public | Unknown | Boulder fall Soil cut slope | Minor (3) | Footpath | | |
| ME 2/1 | Junction of Hiram's Road and Ho Chung Road, Sai Kung | 17/2 | FSD | 17/2 (11:20) | Soil cut slope | Minor (2) | | 1 person injured | |
| ME 4/1 | Ng Tung River, Hung Leng, Fanling | 4/4 | DO/N | Unknown | Natural slope | Minor (5) | Footpath | | |
| ME 4/2 | Hut No. RTP/KSB/304, Kam Shan Village, Tai Po | 24/4 | Public | 19/4 (night) | Retaining wall Soil cut slope | Minor (10) | Construction site | Road closed | |
| ME 6/1 | Behind House 41 and 42 Sam Mun Tsai Sun Tsuen, Tai Po (7NE-A/C20) | 15/6 | DO/TP | 15/6 (early morning) | Soil cut slope | Minor (2) | Backlane | | |
| ME 6/2 | Beside House 107 Sheung Wo Che, Shatin Lot no. 5170/D.D. 185, Shatin | | SWD | early June | Soil cut slope | Minor (2) | Kitchen and the associated cover area | 1 flat evacuated | |
| ME 6/3 | Near Kwong Fuk Road, Wan Tau Kok Lane, Tai Po | 18/6 | HyD/NT | 18/6 (am) | Soil cut slope | Minor (3.5) | Road | 1 lane of road closed | |
| ME 6/4 | Behind Nos. 1 and 2 Kai Kuk Shue Ha Village, Luk Keng, Sha Tau Kok (3NE-C/N3) | 20/6 | Public | 17/6 (night) | Natural slope | Minor (8) | Building lot | | |
| ME 7/1 | Behind Kam Ying Court, Ma On Shan | 2/7 | Public | 26/5 | Soil cut slope | Major (150) | Pedestrian pavement | Pedestrian pavement affected | |
| ME 7/2 | Yan Kwong Lutheran Church, Ma On Shan Tsuen Upper, Ma On Shan | 7/7 | HyD/NT | July 1994 | Soil cut slope | Major (200) | Building lot | Building damaged | |

Table B3 - List of Incidents in Eastern New Territories Reported to GEO in 1995 (Sheet 2 of 10)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|--|------|--------|---------------|---------------------------------|-------------------------|-------------------------|-----------------------------|--------------------------------|
| | | Date | From | Date (Time) | Type | Scale (m ³) | | | |
| ME 7/3 | Access Road to House 101, Tai Po Kau Lo Wai, Tai Po (11NE-B/143) | 13/7 | HyD/NT | 12/7 | Natural slope | Minor (10) | Building access Carpark | | This incident no. was not used |
| ME 7/4 | Behind House 21-25, Yue Kok, Tai Po | 13/7 | HyD/NT | 12/7 | Soil cut slope | Minor (25) | Building lot | 5 flats evacuated | |
| ME 7/5 | | | | | | | | | |
| ME 7/6 | River bank below No. 60 Tai Chung Hau Village, Sai Kung | 17/7 | DO/SK | 14/7 | Soil cut slope Natural slope | Minor (30) | Squatter hut | 1 hut temporarily evacuated | |
| ME 8/1 | Kowloon Bound C.W.B.R. opposite Ta Kui Ling, Ta Kui Ling | 3/8 | HyD/NT | 3/8 (11:48) | Soil cut slope | Minor (3) | Road | 1 lane of road closed | |
| ME 8/2 | Junction of Tai Mong Tsai Road and access road to AMS Canoe Centre, Sai Kung | 3/8 | Police | 3/8 (morning) | Soil cut slope | Minor (1) | Pedestrian pavement | | |
| ME 8/3 | Tai Mong Tsai Road, Tso Wo Hang, Sai Kung (8SW-A/C11) | 3/8 | Police | 3/8 (morning) | Soil cut slope | Minor (8) | Pedestrian pavement | 1 lane of road closed | |
| ME 8/4 | Access road of Hing Keng Shek Next to Hiram's Highway, Sai Kung | 4/8 | Police | 4/8 (0:45) | Soil/rock cut slope | Minor (15) | Road | Road closed | |
| ME 8/5 | Next to lamp post M57557, Hiram's Highway, Tai Chung Hau, Sai Kung | 4/8 | HyD/NT | 3/8 (11:00) | Soil cut slope | Minor (1) | | | |

Table B3 - List of Incidents in Eastern New Territories Reported to GEO in 1995 (Sheet 3 of 10)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|--|------|--------|--------------|------------------------------|-------------------------|------------------------------------|---|---------|
| | | Date | From | Date (Time) | Type | Scale (m ³) | | | |
| ME 8/6 | Next to lamp post No. 2633, Tai Mong Tsai Road, Sai Kung (8SW-B/C26) | 3/8 | HyD/NT | 3/8 (16:15) | Rock slope Rock fall | Minor (10) | Road | 1 lane of road closed | Plate 5 |
| ME 8/7 | Pak Shek Toi Road, Sai Kung | 5/8 | HyD/NT | 5/8 (8:00) | Fill slope Retaining wall | Major (600) | Access road Pedestrian pavement | Access road closed and pedestrian pavement closed | |
| ME 8/8 | Po Lo Che, Sai Kung | 6/8 | HyD/NT | 6/8 (0:50) | Boulder fall | | Road | 1 lane of road blocked | |
| ME 8/9 | Behind 169 Kam Shan, Tai Po | 9/8 | Public | 5/8 (am) | Soil cut slope | Minor (5) | Building lot | 1 block evacuated | |
| ME 8/10 | Sai Sha Road, near Kei Ling Ha Lo Wai, Sai Kung (8NW-C/C15) | 13/8 | HyD/NT | 13/8 (11:00) | Soil/rock cut slope | Major (240) | Road | 2 lanes of road closed | |
| ME 8/11 | Junction of Sai Sha Road and Tai Mong Tsai Road, Sai Kung (8SW-A/C8) | 14/8 | HyD/NT | 13-14/8 | Soil cut slope | Major (2000) | Road | 2 lanes of road closed | |
| ME 8/12 | Catchwater Near Bride's Pool Road, Ngau Au, Tai Po | 14/8 | WSD | 14/8 (10:00) | Soil cut slope | Minor (3) | Catchwater | | |
| ME 8/13 | Behind 25A Ying Pun Ha, Tai Po | 14/8 | DO/TP | 14/8 (am) | Retaining wall | Minor (5) | Squatter hut | 1 hut temporarily evacuated | |
| ME 8/14 | Tan Shan Road, Tan Shan, Clear Water Bay Road, Sai Kung | 16/8 | DO/SK | 13/8 | Fill Slope Soil cut slope | Minor (5) | Access road | Private access closed | |

Table B3 - List of Incidents in Eastern New Territories Reported to GEO in 1995 (Sheet 4 of 10)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|--|------|--------------|--------------|-----------------------------|-------------------------|---------------------|---|---------|
| | | Date | From | Date (Time) | Type | Scale (m ³) | | | |
| ME 8/15 | House No. 71C Tseng Lan Shue Ha Village, Clear Water Bay Road, Sai Kung | 13/8 | Public | 13/8 | Soil cut slope | Minor (5) | Building lot | | |
| ME 8/16 | House No. 11 Sam Long Village, Clear Water Bay Road, Sai Kung | 14/8 | DLO/SK | 13/8 | Soil cut slope | Minor (5) | Pedestrian pavement | | |
| ME 8/17 | House No. 34 Sam Long Village, Clear Water Bay Road, Sai Kung | 14/8 | DO/SK | 13/8 | Retaining wall | Minor (10) | Building lot | Flooding to nearby house No. 34 | |
| ME 8/18 | House No. 12 Sam Long Village, Clear Water Bay Road, Sai Kung | 16/8 | GEO | 13/8 | Soil cut slope | Minor (8) | Pedestrian pavement | 1 flat evacuated and pedestrian pavement closed | |
| ME 8/19 | Near Ta Ku Ling San Tsuen, Clear Water Bay Road, Sai Kung (11NE-B/C 142) | 12/8 | FSD & HyD/NT | 12/8 (15:00) | Soil cut slope | Major (80) | Road | 4 lanes of road closed | |
| ME 8/20 | House No. 15 O Mun Tsui, Mang Kung Uk Village, Sai Kung | 14/8 | DO/SK | 7/8 | Fill Slope Natural slope | Minor (4) | Road | 1/2 lane of road blocked | |
| ME 8/21 | Footpath to Rock Carving, Nam Tong, Tung Lung Chau (12SW-C/N1) | 14/8 | DO/SK | 13/8 | Natural slope | Major (100) | Pedestrian pavement | Pedestrian pavement closed | |
| ME 8/22 | Behind former House 395 Ha Wo Che, Shatin | 14/8 | HD | Unknown | Soil cut slope | Minor (10) | Open space | | |
| ME 8/23 | Behind House No. 106 Sheung Wo Che, Shatin | 17/8 | DO/ST | Unknown | Soil cut slope | Minor (1.5) | Squatter hut | 1 hut permanently evacuated | |

Table B3 - List of Incidents in Eastern New Territories Reported to GEO in 1995 (Sheet 5 of 10)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|---|------|--------|-----------------|----------------|-------------------------|--|---|--------------------------------|
| | | Date | From | Date (Time) | Type | Scale (m ³) | | | |
| ME 8/24 | Behind Hut No. XRKT/217 Fo Tan Cottage Area, Shatin | 16/8 | Public | Unknown | Soil cut slope | Minor (2) | Squatter hut | 1 hut permanently evacuated | |
| ME 8/25 | Behind Hut No. XRKT/217 Fo Tan Cottage Area, Shatin | 16/8 | Public | Unknown | Soil cut slope | Minor (2) | Squatter hut | 1 hut permanently evacuated | |
| ME 8/26 | Collapse of structure (RTP/HP/X9) at Ha Pa along Tan Shan Ho, Fanling | 17/8 | HD | 15/8 (am) | Natural slope | Minor (4) | Squatter hut Paving underneath shed | 1 hut permanently evacuated | |
| ME 8/27 | Near 82A Pak Shek Wo New Village, Pak Shek Wo, Sai Kung | 13/8 | FSD | 13/8 (3:00) | Soil cut slope | Minor (<10) | | | |
| ME 8/28 | Mang Kung Uk, Sai Kung | 21/8 | DO/SK | 12-13/8 | Retaining wall | Minor (1.5) | Natural stream course | Natural stream course blocked by boulders | |
| ME 8/29 | Near lamp post V7814, Access Road to Sam Long Village, Sai Kung | 21/8 | GEO | Unknown | Soil cut slope | Minor (1.5) | | | |
| ME 8/30 | Below House No.262 Ha Wo Che Village, Shatin | 16/8 | DO/ST | Before 12/8 | Soil cut slope | Minor (0.5) | Squatter hut | 2 huts permanently evacuated | |
| ME 8/31 | Below Footpath Near House No. 432, Ha Wo Che Village, Shatin | 17/8 | DO/ST | 12/8 (midnight) | Natural slope | Minor (5) | Pedestrian pavement | Pedestrian pavement closed | |
| ME 8/32 | Case cancelled | | | | | | | | |
| ME 8/33 | 3 Hoi Wan Road, Tap Mun | 14/8 | DO/TP | 14/8 | Retaining wall | Minor (3) | Building lot | | |
| | | | | | | | | | This incident no. was not used |

Table B3 - List of Incidents in Eastern New Territories Reported to GEO in 1995 (Sheet 6 of 10)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|--|------|--------|------------------|----------------|-------------------------|---------------------|--------------------------------------|---------|
| | | Date | From | Date (Time) | Type | Scale (m ³) | | | |
| ME 8/34 | East of No. 21, New Fishermen's Village, Tap Mun | 12/8 | DO/TP | Unknown | Boulder fall | Minor (2) | | 1 house evacuated and House affected | |
| ME 8/35 | Lane 9 No.4 Ho Chung Village, Sai Kung | 17/8 | Public | Unknown | Retaining wall | Minor (4) | Building lot | | |
| ME 8/36 | Next to No. 96, G/F Tseng Lan Shuc, Sai Kung | 13/8 | Public | 13/8 (3:00-8:00) | Soil cut slope | Minor (<10) | | | |
| ME 8/37 | Access road to House No. 156, Tai Hang Hau Village, Lung Ha Wan Road, Sai Kung | 14/8 | Public | 14/8 | Soil cut slope | Minor (7) | Access road | | |
| ME 8/38 | Behind House No. 27 Tai Hang Hau Village, Lung Ha Wan Road, Sai Kung | 15/8 | DO/SK | 12/8 | Soil cut slope | Minor (0.5) | Building lot | | |
| ME 8/39 | Lot 376/DD236, Tai Wan Tau, Sai Kung | 21/8 | DO/SK | Unknown | Subsidence | | Pedestrian pavement | | |
| ME 8/40 | Near lamp post EA 08257, Tai O Mun Road, Sai Kung | 23/8 | HyD/NT | 12/8 | Soil cut slope | Minor (0.8) | | | |
| ME 8/41 | Between lamp posts EA08425 and EA08414, Tai O Mun Road, Sai Kung | 23/8 | HyD/NT | 12/8 | Soil cut slope | | | | |
| ME 8/42 | Junction of Clear Water Bay Road and Hiram's Highway, Sai Kung | 23/8 | HyD/NT | 12/8 | Soil cut slope | Minor (2.5) | | | |

Table B3 - List of Incidents in Eastern New Territories Reported to GEO in 1995 (Sheet 7 of 10)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|---|------|--------|-------------|------------------------------|-------------|---------------------|----------------------------|---------|
| | | Date | From | Date (Time) | Type | Scale (m³) | | | |
| ME 8/43 | Behind Houses Nos. 4 to 6, Kai Kuk Shue Ha North, Tai Po (3NE-C/N3) | 22/8 | DO/N | August 95 | Soil cut slope | Minor (4) | Building lot | | |
| ME 8/44 | Near lamp post N90102, Access Road to Mok Tse Che, Sai Kung | 25/8 | DO/SK | Unknown | Fill Slope Natural slope | Minor (1.5) | Access road | | |
| ME 8/45 | Spanish Villa, Au Tsai Tsuen, Sai Kung | 23/8 | Public | Unknown | Retaining wall | Minor (<2) | | Storage hut affected | |
| ME 8/46 | Block 12, Saddle Ridge Garden | 1/8 | Public | May 1994 | Subsidence | Minor (25) | | | |
| ME 9/1 | Near Tai Ping Tsuen, Po Lo Che Road, Sai Kung | 1/9 | Police | Unknown | Soil cut slope | Minor (2) | Pedestrian pavement | | |
| ME 9/2 | House D, 6 Kam Shun Road, Lot 1121 of DD25, Sai Kung | 30/8 | DO/SK | After 12/8 | Fill Slope | Minor (2) | Orchid | | |
| ME 9/3 | Clearwater Bay Road, Sai Kung | 6/9 | HyD/NT | Unknown | Rock fall | Minor (3) | Road | 1 lane of road blocked | |
| ME 9/4 | Near Fung Sau Road, Tai Mong Tsai Road, Sai Kung (8SW-A/C10) | 7/9 | HyD/NT | Unknown | Soil cut slope | Minor (<3) | Pedestrian pavement | | |
| ME 9/5 | House No. 1 Sheung Wan Yiu, Tai Po | | | Unknown | Fill Slope Retaining wall | Minor (5) | Pedestrian pavement | Pedestrian pavement closed | |
| ME 9/6 | Old Turret Hill Quarry Site, Shatin | 30/8 | GEO | August 95 | Soil cut slope | Major (50) | Abandoned quarry | | |

Table B3 - List of Incidents in Eastern New Territories Reported to GEO in 1995 (Sheet 8 of 10)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|---|------|--------|----------------------|----------------|-------------|-----------------------|---|---------|
| | | Date | From | Date (Time) | Type | Scale (m³) | | | |
| ME 9/7 | House No. 14 Kau Sai Village, Kau Sai Chau, Sai Kung (12NW-B/C2) | 14/9 | DO/SK | 24/8 | Soil cut slope | Minor (5) | Building lot Backlane | | |
| ME 10/1 | Near lamp post No. EB1020-8, Brides Pool Road, Tai Po | 6/10 | HyD/NT | 6/10 (early morning) | Rock fall | Major (50) | Road | 1 lane of road closed | |
| ME 10/2 | Behind Hut Nos. 142 and 143, Sam Mun Tsai New Village, Tai Po (7NE-A/C27) | 6/10 | FSD | 6/10 (am) | Soil cut slope | Minor (20) | Building lot | 2 huts temporarily evacuated | |
| ME 10/3 | Near Muk Wu Pumping Station, Lin Ma Hang Road, Sha Tau Kok | 6/10 | HyD/NT | 6/10 (12:30) | Natural slope | Major (50) | Road | 2 lanes of road blocked | |
| ME 10/4 | Near Fortune Garden, Ting Kok Road, Tai Po | 6/10 | HyD/NT | 6/10 (early am) | Soil cut slope | Minor (5) | Road | 1 lane of road blocked | |
| ME 10/5 | Behind House No. 248 Pai Tau Village, Shatin | 5/10 | DO/ST | September 95 | Soil cut slope | Minor (1.2) | Building lot | | |
| ME 10/6 | Behind House No. 23 Wong Chuk Wan Village, Sai Kung (8SW-A/C6) | 6/10 | Public | 5/10 (21:30) | Fill Slope | Minor (15) | Carpark Backyard | | |
| ME 10/7 | House No. 41 Yue Kok Tsuen, Tai Po | 6/10 | DO/TP | Unknown | Retaining wall | Minor (3.5) | Road | Road closed and Drainage channel on path also blocked Cracking and displacement of adjacent wall | |

Table B3 - List of Incidents in Eastern New Territories Reported to GEO in 1995 (Sheet 9 of 10)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|--|-------|--------|------------------|-----------------------|-------------------------|---------------------------|------------------------------|---------|
| | | Date | From | Date (Time) | Type | Scale (m ³) | | | |
| ME 10/8 | House No. 10, Nam Hang, Tso Ma Wo, Tai Po | 6/10 | DO/TP | 5/10 (8:00-9:00) | Fill Slope Subsidence | Minor (1-2) | Squatter hut Building lot | 2 huts temporarily evacuated | |
| ME 10/9 | Behind House No. 230 Pai Tau Village, Shatin | 2/10 | DO/ST | September 95 | Soil cut slope | Minor (1.5) | Building lot | | |
| ME 10/10 | House No. 149, Area 8, Rennies Mill | 6/10 | Police | 5/10 (23:00) | Retaining wall | Minor (5) | Squatter hut | 3 huts temporarily evacuated | |
| ME 10/11 | Near House No. 124 Ma Yau Tong Village, Hang Hau, Sai Kung | 12/10 | DO/SK | August 95 | Soil cut slope | Minor (1) | Squatter hut Open space | | |
| ME 10/12 | Near House No.4 Ma Yau Tong Village, Hang Hau, Sai Kung | 4/10 | DO/SK | August 95 | Fill Slope | Major (50) | Access road | | |
| ME 10/13 | Near Lamp Post N30734, Sam Mun Tsai Road, Tai Po | 11/10 | HyD/NT | 4/10 | Soil cut slope | Minor (45) | | | |
| ME 10/14 | Near Breakwater, Sam Mun Tsai Road, Tai Po | 11/10 | HyD/NT | 4/10 | Soil/rock cut slope | Minor (3) | Pedestrian pavement | | |
| ME 10/15 | House Nos. 20-21 Tui Min Hoi Village, Sai Kung (8SW-C/C23) | 11/10 | DO/SK | 6/10 | Soil cut slope | Minor (10) | Backlane | | |
| ME 10/16 | House Nos. 18-19 Tui Min Hoi Village, Sai Kung (8SW-C/C18) | 11/10 | DO/SK | 6/10 | Soil cut slope | Minor (0.5) | | | |
| ME 10/17 | Near House No. 10 Chuk Yeung Road, Sai Kung | 11/10 | DO/SK | 6/10 | Soil cut slope | Minor (5) | Pedestrian pavement | | |
| ME 10/18 | 61 Greenfield Villas, Ngau Liu, Sai Kung | 11/10 | DO/SK | 6/10 | Soil cut slope | Minor (6) | Road side channel | Road side channel blocked | |

Table B3 - List of Incidents in Eastern New Territories Reported to GEO in 1995 (Sheet 10 of 10)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|--|-------|--------|--------------|----------------|-------------------------|---------------------|-------------|---------|
| | | Date | From | Date (Time) | Type | Scale (m ³) | | | |
| ME 10/19 | Near Kap Pin Long Lower Lane, Po Lo Che Road, Sai Kung | 11/10 | DO/SK | Unknown | Soil cut slope | Minor (6) | Pedestrian pavement | | |
| ME 10/20 | Near pavilion, Po Lo Che Road, Sai Kung | 11/10 | DO/SK | 6/10 | Natural slope | Minor (3) | Pedestrian pavement | | |
| ME 10/21 | Sung Tsun Secondary School, Sai Kung | 20/10 | Public | Unknown | Soil cut slope | Minor (<5) | | | |
| ME 10/22 | Man Uk Pin, Sha Tau Kok Road, Fanling | 24/10 | DO/N | October 95 | Retaining wall | Minor (40) | | | |
| ME 11/1 | Footpath to Pier, Hoi Ha, Sai Kung North | 9/11 | DO/TP | Unknown | Soil cut slope | Minor (1) | Country park | | |
| ME 11/2 | House 102 Pai Tau Village, Shatin | | | September 95 | Soil cut slope | Minor (1.5) | Alley | | |

Table B4 - List of Incidents in Western New Territories Reported to GEO in 1995 (Sheet 1 of 7)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|---|------|-------------|-----------------|---------------------------------|-------------------------|-----------------------------------|-------------------------------|--------------|
| | | Date | From | Date (Time) | Type | Scale (m ³) | | | |
| MW 1/1 | Below 14 Lai Chi Yuen, Lantau Island | 21/1 | Public | June 1994 | Soil cut slope | Minor (1) | Open space | | |
| MW 2/1 | Tai Woh Ping Road, Tai Wo Ping, Kowloon (11NW-B/C78) | 6/2 | HyD/K | 3/2 | Rock fall | Minor (0.05) | Pedestrian pavement | | |
| MW 3/1 | Sham Shui Kok Substation, Lantau | 10/3 | HyD/NT | Uncertain | Soil cut slope Natural slope | Major (30000) | Building lot Construction site | | Plates 1,2&3 |
| MW 4/1 | Behind 19 Shap Long Chung Hau, Lantau | 11/4 | DO/Is | Unknown | Soil/rock cut slope | Minor (40) | Building lot | 1 house evacuated | |
| MW 4/2 | Outside NKIL5924, East Bound Slip Road to Lung Cheung Road, Kowloon | 19/4 | HyD/K & FSD | 19/4 (19:10) | Fill Slope | Minor (30) | Road | Road closed and One car stuck | |
| MW 6/1 | Opposite Block 12 Shek Lei Estate, Shek Li Street (7SW-C/C159) | 5/6 | Public | 5/6 (am) | Soil/rock cut slope | Minor (3) | Pedestrian pavement | Pedestrian pavement closed | |
| MW 6/2 | Behind Ho Fung College, 73 Wo Yip Hop Tsuen, Tsuen Wan | 18/6 | Police | 18/6 (7:00) | Soil cut slope | Minor (0.5) | Squatter hut | 2 huts temporarily evacuated | |
| MW 6/3 | Hut No. 20A, No. 2 Street, Hang Fan Liu Tsuen, Tai Wai, Shatin | 18/6 | DO/ST | 18/6 (8:00) | Soil cut slope | Minor (2) | Squatter hut | | |
| MW 6/4 | Nam Hoi Pui, Tsuen Wan | 26/6 | DO/TW | 26/6 | Retaining wall | Minor (3) | Open space | | |
| MW 6/5 | Below Rhenish School, Kowloon Tong, Kowloon | 15/6 | Public | Unknown | Subsidence | Minor (1) | Open space | | |
| MW 7/1 | Hut No. RTW/4B/76, Tai Wo Tsuen, Tsuen Wan | 3/7 | DO/TW | 3/7 (7:00-8:00) | Soil cut slope | Minor (5) | Squatter hut | 1 hut permanently evacuated | |

Table B4 - List of Incidents in Western New Territories Reported to GEO in 1995 (Sheet 2 of 7)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|---|------|--------|--------------------|----------------|-------------------------|---|---|--------------------------------|
| | | Date | From | Date (Time) | Type | Scale (m ³) | | | |
| MW 7/2 | Behind Hut No. 119 Kau Wah Keng Upper Village, Kwai Chung | 3/7 | Public | 3/7 (am) | Soil cut slope | Minor (2) | Squatter hut | 1 hut permanently evacuated | This incident no. was not used |
| MW 7/3 | Below Block 9 Kwai Chung Estate, Kwai Chung (7SW-C/C106) | 13/7 | Public | 13/7 (am) | Soil cut slope | Minor (15) | Open space | | |
| MW 7/4 | Refuse Collection Point at Lei Uk Chuen, Shatin | 13/7 | RSD | 13/7 (before 8:00) | Retaining wall | Minor (10-15) | Open space RSD refuse collection point | | |
| MW 7/5 | 22 Sun Lung Wai, Tai Tei Tong, Mui Wo, Lantau Island | 10/7 | DO/Is | 1994 | Retaining wall | Minor (40) | Building lot | | |
| MW 7/6 | | | | | | | | | |
| MW 7/7 | Hut No. 6 Liu To Village, Tsing Yi | 14/7 | HyD/NT | 14/7 (8:00-9:00) | Soil cut slope | Minor (1) | Squatter hut | 2 huts permanently evacuated and 4 huts temporarily evacuated | |
| MW 7/8 | 69A Kau Wah Keng San Tsuen, Kwai Chung | 14/7 | Public | 14/7 (14:30) | Soil cut slope | Minor (35) | Squatter hut | 1 hut permanently evacuated | |
| MW 7/9 | Near Cheung Shan Estate, Shing Mun Road | 15/7 | FSD | 14/7 | Rock fall | Minor (2) | | 1 lane of road closed | |
| MW 7/10 | Route Twisk (6NE-D/C10) | 14/7 | Police | 14/7 (13:00) | Rock fall | Minor (0.8) | Road | 1 lane of road closed | |
| MW 7/11 | Behind Staff Quarter of Lai Chi Kok Reception Centre | 25/7 | CSD | 13/7 | Boulder fall | | Open space | | |
| MW 8/1 | RSD Public Toilet at Lo Wai Road, Tsuen Wan | 4/8 | HyD/NT | 4/8 (am) | Natural slope | Minor (1) | Public lavatory | | |

Table B4 - List of Incidents in Western New Territories Reported to GEO in 1995 (Sheet 3 of 7)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|--|------|---------|--------------|----------------|-------------------------|----------------------------|---|---------|
| | | Date | From | Date (Time) | Type | Scale (m ²) | | | |
| MW 8/2 | Squatter Huts at Tai Wo Tsuen, Tsuen Wan | 4/8 | DO/TW | Unknown | Subsidence | | Squatter hut | 1 hut temporarily evacuated | |
| MW 8/3 | Near MS13, Route Twisk | 4/8 | HyD/NT | 3/8 (night) | Rock fall | | Road | 1 lane of road closed | |
| MW 8/4 | No. 22A Pak She Sun Tsuen, Cheung Chau | 13/8 | Public | 12/8 (23:00) | Retaining wall | Minor (2-3) | Building lot | 1 flat evacuated | |
| MW 8/5 | Access to Lower Shing Mun Reservoir, Lower Shing Mun Road | 12/8 | Police | 12/8 | Soil cut slope | Minor (<0.5) | Toe channel | Spalled chunam blocked toe channel | |
| MW 8/6 | Castle Peak Road, Ting Kau | 14/8 | HyD/NT | 14/8 (am) | Soil cut slope | Minor (10) | Road | 1/2 lane of road blocked | |
| MW 8/7 | Tai Lam Correctional Institution, Tai Lam | 14/8 | Arch SD | 14/8 | Soil cut slope | Minor (7) | Building lot | | |
| MW 8/8 | Hut Nos. 292-294 Yau Ma Hom Resite Village, Kwai Chung (7SW-C/C251) | 14/8 | FSD | 14/8 (8:00) | Soil cut slope | Minor (40) | Squatter hut Open space | 3 huts temporarily evacuated | |
| MW 8/9 | Lai Chi Kok Reception Centre, Lai Chi Kok | 14/8 | CSD | 14/8 | Soil cut slope | Minor (<1) | Pedestrian pavement | | |
| MW 8/10 | No. 53 Sheung Yat Chuen, Kwai Chung | 15/8 | HD | 14/8 (15:30) | Fill Slope | Minor (20) | Squatter hut | 2 huts permanently evacuated and pedestrian pavement closed | |
| MW 8/11 | Yiu Fung Cold Storage & Warehousing Ltd., Wing Yip Street, Kwai Chung (7SW-C/C235) | 15/8 | Public | 14/8 | Soil cut slope | Minor (20) | Building lot | | |

Table B4 - List of Incidents in Western New Territories Reported to GEO in 1995 (Sheet 4 of 7)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|---|------|--------|--------------|----------------|-------------------------|----------------------|------------------------|---------|
| | | Date | From | Date (Time) | Type | Scale (m ³) | | | |
| MW 8/12 | Hut No. 56 Cheung Hang Village, Kau Wa Keng, Kwai Chung | 15/8 | Public | 14/8 (17:30) | Fill Slope | Minor (20) | Squatter hut | | |
| MW 8/13 | Junction of Wang Pui Road and Keung Shan Road, Lantau | 14/8 | HyD/NT | 14/8 (10:00) | Soil cut slope | Minor (15) | Road Country park | 1 lane of road blocked | |
| MW 8/14 | Near Shek Pik Terminal, MS9 3/4 MS Keung Shan Road, Lantau Island | 14/8 | HyD/NT | 14/8 (10:00) | Soil cut slope | Minor (10) | Road | 1 lane of road blocked | |
| MW 8/15 | Opposite lamp post FA0544, MS12 Keung Shan Road, Lantau | 14/8 | HyD/NT | 14/8 (10:00) | Natural slope | Minor (5) | Road | 1 lane of road blocked | |
| MW 8/16 | Near the access to Kwun Yam Temple, MS 12 Keung Shan Road, Lantau | 14/8 | HyD/NT | 14/8 (10:00) | Soil cut slope | Minor (20) | Road | 1 lane of road blocked | |
| MW 8/17 | Opposite Cheung Sha Beach, South Lantau Road, Lantau (13NE-B/C6) | 15/8 | HyD/NT | 14/8 (10:00) | Rock fall | Minor (5) | Pedestrian pavement | | |
| MW 8/18 | Behind 23 Tung Wan Tau Road, Mui Wo, Lantau | 9/8 | DO/Is | August 95 | Boulder fall | Minor (1) | Building lot | | |
| MW 8/19 | Near Lion Rock Tunnel Entrance (Kowloon Direction), Shatin | 14/8 | Public | 14/8 (1:00) | Soil cut slope | Minor (Minor (<50)) | Road | 1 lane of road closed | |
| MW 8/20 | Shatin Portal of Shing Mun Tunnel, at CH5.88, Shatin | 14/8 | HyD/NT | 14/8 (am) | Soil cut slope | Minor (24) | Road | 1 lane of road closed | |

Table B4 - List of Incidents in Western New Territories Reported to GEO in 1995 (Sheet 5 of 7)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|--|------|--------|--------------|----------------|-------------------------|---------------------|--|--|
| | | Date | From | Date (Time) | Type | Scale (m ³) | | | |
| MW 8/21 | Road Widening Project Site, Near Siu Lam, Tuen Mun Highway (6SW-D/C18) | 18/8 | Police | 18/8 (18:50) | Boulder fall | Major (10) | Road | 1 person killed and 3 lanes of road closed | Plate 13 Major failure involving fatality |
| MW 8/22 | Hut No. 84A Tai Peng New Village, Lamma | 17/8 | Public | 13/8 | Soil cut slope | Minor (0.5) | Building access | | |
| MW 8/23 | Near lamp post 35035, Mo Tat Road, Mo Tat Wan, Lamma Island | 14/8 | HyD/NT | 13/8 | Soil cut slope | Minor (45) | | | |
| MW 8/24 | Behind Lot 561 DD 187, Tai Po Road, Shatin | 10/8 | Public | Before 10/8 | Fill Slope | Minor (1-2) | Pedestrian pavement | | |
| MW 8/25 | Hut Nos. KTL/1171-1172 Kiu Tau Tsuen, Tai Kong Po, Kam Tin | 21/8 | DO/YL | 14/8 | Natural slope | Minor (35) | Squatter hut | 4 huts permanently evacuated | |
| MW 8/26 | Tai Tong Road, Yuen Long (6NW-D/C1) | 23/8 | HyD/NT | 15/8 | Soil cut slope | Minor (3) | Pedestrian pavement | | |
| MW 8/27 | Lei Uk Tsuen, Tai Wai, Shatin | | DO/ST | Unknown | Soil cut slope | Minor (1-2) | Squatter hut | | |
| MW 8/28 | House No. 25B O Tsai, Yung Shue Wan, Lamma Island | 17/8 | Public | Unknown | Soil cut slope | Minor (1) | Pedestrian pavement | | |
| MW 8/29 | House No. 26B Pak Kok Kau Tsuen, Lamma Island | 24/8 | Public | Unknown | Soil cut slope | Minor (2) | Building lot | | |
| MW 8/30 | House No. 30 Hung Shing Ye, Lamma Island | 24/8 | DO/Is | Unknown | Soil cut slope | Minor (1) | Open space | | |
| MW 8/31 | House No. 36 Tai Wan San Tsuen, Lamma Island | | Public | Unknown | Soil cut slope | Minor (0.01) | Open space | | |

Table B4 - List of Incidents in Western New Territories Reported to GEO in 1995 (Sheet 6 of 7)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|---|-------|---------|----------------------|---------------------|-------------------------|--------------------------|---|----------|
| | | Date | From | Date (Time) | Type | Scale (m ³) | | | |
| MW 9/1 | Above Ting Kau, Tuen Mun Road (6SE-C/C54) | 1/9 | HyD/NT | 31/8 (22:30) | Soil/rock cut slope | Minor (5) | Road | 3 lanes of road closed | |
| MW 9/2 | Da Chuen Ping Village, Sheung Kwai Chung | 1/9 | Police | 31/8 (19:00) | Soil cut slope | Minor (10) | Pedestrian pavement | Pedestrian pavement closed | |
| MW 9/3 | Near Fire Training School, Fan Kam Road | 6/9 | HyD/NT | 5/9 (16:45) | Soil cut slope | Minor (1.5) | Pedestrian pavement | | |
| MW 9/4 | Behind House No. CMW/GPA5/378 Ha Keng, Lantau | 15/9 | DO/Is | Unknown | Soil/rock cut slope | Minor (2) | Squatter hut | | |
| MW 9/5 | Rural Road in San Shek Wan, South Lantau | 14/9 | DO/Is | 4/8 | Retaining wall | Minor (1) | Deserted cultivated land | | |
| MW 10/1 | House Nos. 16-17, 4th Street, Area 8, Heung Fan Liu Tsuen, Shatin | 6/10 | DO/ST | 5/10 (22:00) | Soil cut slope | Minor (1-2) | Squatter hut | 3 huts temporarily evacuated | |
| MW 10/2 | Dragonville, 21-25 Castle Peak Road | 6/10 | FSD | 6/10 (7:33) | Soil/rock cut slope | Minor (1-2) | Road | 2 persons injured and 1 lane of road closed | Plate 14 |
| MW 10/3 | Behind Block 36, Shek Kip Mei Estate, Shek Kip Mei (11NW-B/C90) | 6/10 | Police | 6/10 | Rock fall | Minor (2) | Open space | | |
| MW 10/4 | Wo Hop Shek Cemetery | 11/10 | Arch SD | 3/10 | Soil cut slope | Minor (20) | Pedestrian pavement | | |
| MW 10/5 | 111 Yung Shue Wan Main Street, Yung Shue Wan, Lamma | 11/10 | RSD | August to October 95 | Soil cut slope | Minor (0.05) | | | |
| MW 11/1 | Near Shatin North Service Reservoir | 3/11 | DLO/ST | Before 13/9 | Soil cut slope | Minor (2) | Pedestrian pavement | | |

Table B4 - List of Incidents in Western New Territories Reported to GEO in 1995 (Sheet 7 of 7)

| Incident No. | Location (Slope No.) | Call | | Failure | | | Facility Affected | Consequence | Remarks |
|--------------|-----------------------|-------|--------|-------------|-----------------------------|------------|-------------------|-------------|---------|
| | | Date | From | Date (Time) | Type | Scale (m³) | | | |
| MW 11/2 | Sham Wat Road, Lantau | 21/11 | HyD/NT | Unknown | Fill Slope Natural slope | Minor (40) | Lay-by | | |

APPENDIX C

DAILY RAINFALL AT THE ROYAL OBSERVATORY IN 1995

LIST OF TABLES

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Table C1 - Summary of Daily Rainfall at the Royal Observatory in 1995

| DATE | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|-------|-------|-------|-------|-------|-------|-------|-------|--------|-------|-------|-------|-------|
| 1 | Trace | Trace | 0.7 | 8.8 | 0.0 | 3.4 | 6.4 | 7.2 | 17.1 | Trace | 0.0 | 0.0 |
| 2 | Trace | Trace | 13.4 | 6.8 | 0.0 | Trace | 26.8 | 24.3 | 11.9 | 79.3 | 0.0 | 0.0 |
| 3 | 9.4 | 0.0 | 0.2 | 12.7 | Trace | Trace | 51.4 | 173.0 | Trace | 106.4 | 0.0 | 0.0 |
| 4 | 0.2 | 0.0 | 0.0 | 0.0 | 10.3 | 0.0 | 29.3 | 45.9 | 0.0 | 8.4 | 0.0 | 0.0 |
| 5 | 0.0 | 0.0 | 0.0 | 0.0 | Trace | 2.0 | 30.0 | 80.3 | 1.0 | 128.6 | 0.3 | 0.0 |
| 6 | 0.0 | 0.0 | 0.0 | 2.9 | 0.0 | 0.3 | 7.2 | 2.6 | 16.2 | 132.6 | Trace | 0.0 |
| 7 | 0.0 | 0.0 | Trace | 1.9 | 0.4 | 3.8 | 1.6 | 2.1 | 1.9 | Trace | Trace | 0.0 |
| 8 | 0.0 | Trace | 0.0 | Trace | Trace | 22.0 | 5.2 | Trace | 0.2 | Trace | 0.0 | 0.0 |
| 9 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 36.6 | 21.4 | 0.0 | 0.0 | 6.3 | 0.0 | 0.0 |
| 10 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 20.0 | 0.2 | 3.0 | 0.0 | 0.6 | 0.0 | 0.0 |
| 11 | 0.0 | 0.0 | Trace | Trace | Trace | 10.7 | 0.1 | 28.1 | 0.0 | 1.7 | 0.0 | 0.0 |
| 12 | 0.0 | 0.0 | 0.7 | Trace | 0.4 | 0.0 | 63.3 | 242.4 | 0.1 | 0.2 | 0.0 | 0.0 |
| 13 | 0.0 | 3.4 | Trace | Trace | 5.8 | 0.0 | 61.2 | 114.1 | 0.1 | 0.3 | 0.0 | 0.0 |
| 14 | 0.0 | 13.9 | Trace | Trace | Trace | 37.1 | 67.2 | 91.8 | 17.4 | 5.4 | 0.5 | 0.0 |
| 15 | 0.0 | 3.2 | Trace | 0.0 | 0.4 | 0.9 | 119.3 | 1.5 | Trace | 6.2 | 0.9 | 7.9 |
| 16 | 0.0 | Trace | 0.0 | 0.0 | 2.7 | Trace | 9.2 | 0.2 | 3.5 | 0.9 | Trace | Trace |
| 17 | 0.0 | Trace | 0.2 | Trace | 0.4 | 0.8 | 1.6 | 0.0 | 7.3 | 0.0 | 0.0 | Trace |
| 18 | 0.0 | 0.1 | Trace | 0.0 | Trace | 81.8 | 0.0 | 0.0 | 2.6 | 0.0 | 0.0 | Trace |
| 19 | 0.0 | 0.4 | Trace | 42.6 | Trace | 0.3 | 0.0 | Trace | 0.8 | 0.0 | 0.0 | 0.0 |
| 20 | Trace | 0.3 | 0.0 | 0.6 | Trace | 6.1 | 0.0 | 4.8 | 0.8 | Trace | 0.0 | 0.0 |
| 21 | Trace | 0.3 | 0.0 | Trace | Trace | 0.6 | 0.0 | 0.0 | Trace | Trace | 0.0 | 0.0 |
| 22 | 0.0 | 2.7 | 0.0 | 0.0 | Trace | Trace | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 23 | Trace | 0.3 | 0.0 | 0.0 | Trace | Trace | 0.0 | Trace | 0.0 | 0.0 | 0.0 | 0.0 |
| 24 | 0.0 | Trace | 0.0 | 0.0 | 0.2 | Trace | 7.9 | 32.7 | 0.0 | 0.0 | 0.0 | 0.0 |
| 25 | Trace | 0.2 | 2.0 | 0.0 | 0.0 | Trace | 55.8 | 0.7 | Trace | Trace | 0.0 | 0.0 |
| 26 | Trace | Trace | 0.0 | Trace | 0.0 | 4.4 | 5.1 | 57.7 | 0.0 | Trace | 0.0 | 0.0 |
| 27 | 2.5 | 8.3 | 0.0 | Trace | Trace | Trace | 74.0 | 41.6 | Trace | Trace | 0.0 | 0.0 |
| 28 | 5.0 | Trace | Trace | Trace | Trace | 9.3 | 4.2 | 9.9 | 0.1 | 0.0 | 0.1 | 0.0 |
| 29 | 0.9 | | Trace | 0.0 | 0.0 | 1.4 | 0.0 | 8.3 | 0.4 | 0.0 | 0.0 | 0.0 |
| 30 | 1.3 | | 1.1 | 0.0 | 0.0 | 2.4 | Trace | 0.0 | Trace | 0.0 | Trace | 0.0 |
| 31 | 1.8 | | 13.9 | | 0.2 | | 20.3 | 117.9 | | 0.0 | | 0.0 |
| TOTAL | 21.1 | 33.1 | 32.4 | 76.3 | 20.8 | 243.9 | 668.7 | 1090.1 | 81.4 | 476.9 | 1.8 | 7.9 |

Note : Annual Rainfall of 1995 is 2754.4 mm.

LIST OF DRAWINGS

Drawing
No.

GCSP 8/16 Location Map of Reported Incidents in 1995