



EL NINO CRISIS IN GUYANA 1997 - 1998



**Fires in Regions
4,9,10**



Rice

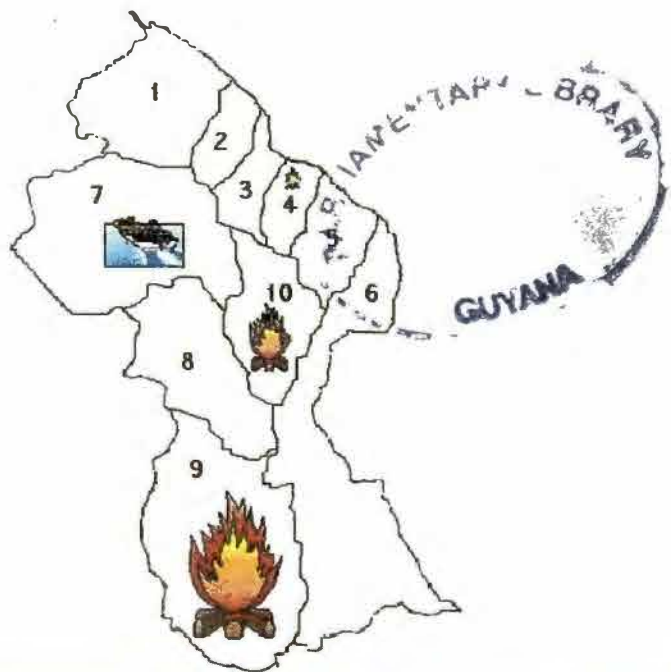
**Crop issues in
Regions 1,2,3,4,6,9**



Sugar



**Water problems
in Regions
1,2,3,4,5,6,7, 8,9**



REPORT ON DROUGHT BY CIVIL DEFENCE COMMISSION

Cover Illustration: Idea Adopted in part from Guyana Chronicle Mar 28, 1998.

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ACKNOWLEDGEMENTS

The Commission was privileged to be given the mandate of discharging the formidable responsibilities of managing the nation's responses to the El Nino crisis. It is our hope that we have discharged that mandate creditably and lived up to your expectations. This report, the work of many hands, is but one means of accounting for our stewardship.

We wish to express our thanks to the several individuals, media and other business houses, non-governmental organizations, central and local government offices, members of the international community, other Guyanese and friends abroad who supported the Commission in its management of those responses.

It was an honour joining hands with and serving the people of the Co-operative Republic of Guyana.

C.D.C.

STATEMENT FROM THE NATIONAL DISASTER CO-ORDINATOR

The floods of 1996 took place at the identical time that the Administration created the permanent CDC and its headquarters.

This report chronicles the work of the Emergency Operations Centre of the Civil Defence Commission in the very next year as it managed the Drought related to the El Nino phenomenon. Natural disasters continue to be the current focus of the CDC providing the exposure the CDC has used to strengthen our National Capacity to handle all aspects of Disasters Management.

**Sgd. DR. R. F. LUNCHEON M.D.
National Disaster Coordinator**

STATEMENT FROM THE OFFICE OF COMMISSIONER
CIVIL DEFENCE COMMISSION

Fellow Guyanese,

The Civil Defence Commission (CDC) was privileged to have been given the responsibility of managing the nation's responses to the consequences of the El Nino weather phenomenon.

The CDC prides itself on transparency in the conduct of its operations and accountability in the discharge of its mandate. This report is but one means by which we seek to account for that specific mandate given to us.

It is my office's hope that by our efforts we have provided an adequate degree of protection allowing those who suffered to now rebuild and pursue their paths to development.

It was a pleasure to have been able to join with so many and an honour to have been of service to the people of the Co-operative Republic of Guyana.

Sgd. I.A. ALERT LLB.;LEC.
Major
Civil Defence Commission

INTRODUCTION

Between March 1997 and April 1998 Guyana was affected by severe drought induced by the El Nino weather phenomenon. Record high temperatures were experienced. Rainfall was at record lows and river discharges in major rivers were as much as 78-81 % below normal.¹ By February 1998, the drought had become acute with adverse direct and indirect consequences across all ten Administrative Regions of the country.

Eventually, on March 26th 1998, A state of National Emergency was declared by Her Excellency, the President of the Co-operative Republic of Guyana.²

The Civil Defence Commission was tasked with the management of the nation's disaster responses³ This report seeks to provide a comprehensive account of the discharge of that mandate.

This report is in two parts. The first is intended to provide an understanding of the country and its Civil Defence Structures. The Second focuses on the El Nino induced crisis and the Civil Defence Commission's management of the nation's interventions to combat the effects of the El Nino weather phenomenon.

The location, geography, climate, population, economy and governance of THE COUNTRY are briefly discussed as well as the main characteristics of the DROUGHT and

some details of the consequences that were initially anticipated. The report also takes a look at CIVIL DEFENCE IN GUYANA and THE CIVIL DEFENCE COMMISSION before dealing comprehensively with the DROUGHT RELIEF OPERATIONS 1997-1998.

The part which examines Drought Relief Operations is divided into two main sections; Operations and Administration & Logistics. The organisation and conduct of Operations are reported on and concise accounts of several areas of administration and logistics are covered.

The conclusions and recommendations which follow are entirely mine and reflect my experiences as an Officer of the Commission, with principal responsibilities for the execution of Operations.

**Sgd. I. A. Alert
Major**

THE COUNTRY

Guyana, Land of Many Waters, is situated on the north-east coast of the continent of South-America. It is bounded on the north by the Atlantic Ocean, on the east by Suriname, on the west by Venezuela and on the south-west by Brazil. It lies between 1° & 9° North latitude and 57° & 61° West longitude and extends south to a depth of approximately 720 kilometers⁴.

Guyana has an equatorial climate, the main features being high but variable rainfall, high humidity and a relatively narrow variation in temperature. There are usually two wet seasons and two dry seasons.⁵ The first wet season starts late April, peaks in June and ends August while the second starts mid-November, peaks in December and ends mid-January.⁶

Guyana is divided into four natural regions and for the purpose of governance into ten Administrative Regions. The natural Regions are; the low Coastal Plain, the Hilly Sand and Clay area, the Highland Region and the Interior Savannah's.⁷ The Administrative Regions are:

Region #1-	Barima/Waini
Region #2-	Pomeroon/Supernaam
Region #3-	Essequibo Islands/West Demerara
Region #4	Demerara/Mahaica
Region #5	Mahaica/Berbice
Region #6	East Berbice/Corentyne

Region #7	Cuyuni/Mazaruni
Region #8	Potaro/Siparuni
Region #9	Upper Takatu/Upper Essequibo
Region #10	Upper Demerara/Berbice⁸

Four major rivers cross the Coastal Plain, (from west to east) the Essequibo, the Demerara, the Berbice and the Corentyne which forms the eastern frontier with Suriname. Other major rivers include the Mazaruni, Cuyuni and Potaro.⁹

Guyana gained Independence on May 26th, 1966 and became the Co-operative Republic of Guyana on February 23rd, 1970. Guyana is a Democratic State with an Executive President as Head of State under its (1980) Constitution. A Prime Minister and Cabinet are responsible to the National Assembly which has 65 members elected for a term of five years. The country is divided into ten Administrative Regions for the purpose of governance. Local Government is effected largely through a system of Regional, District and Neighbourhood Democratic Councils.¹⁰

Most of Guyana's population (approximately 723000;1991 census) inhabit the low coastal plain and produce mainly primary products: sugar, rice, ground-provisions, fruits and vegetables, fish, dairy-cattle and livestock. Timber, bauxite, gold and diamonds are also produced in the Highland and Savannah Regions. Water is a critical input to the production of all of these primary products.

THE 1997 - 1998 DROUGHT

Between March 1997 and April 1998 Guyana was affected by the El Nino weather phenomenon. The lowest rainfall and river run-off discharges were recorded and the highest temperatures since 1909 were experienced.¹¹

Accumulatively rainfall was below normal across weather stations in all regions. The dry spell leading to drought began in March 1997, which was the month El Nino became active in Guyana. Rainfall deficit intensified with time reaching record lows by August 1997. In seven of the ten Administrative Regions i.e. Regions 1-6 and 10, precipitation was as much as 50% below normal for several months between the March 1997 and April 1998 period.¹²

The monthly mean discharge of three major rivers i.e. the Essequibo, Demerara and Mazaruni was below normal from around June 1997 reaching their lowest values in March 1998. Discharge in the Essequibo was just 10% below normal in June 1997 but by March 1998 it was 80% below normal. In the Demerara it was 12% below normal in June but by March 1998 it had reached its lowest value, being 78% below normal. In the Mazaruni the situation was similar. In June the discharge was 10% below normal but by March 1998 it had achieved its lowest value and was as much as 81% below normal.¹³

The mean maximum temperatures in Georgetown, the capital, from September to November 1997 and again from February to March 1998 were the highest ever recorded since 1909. Nighttime temperatures also reached all time highs in November 1997.¹⁴

The combination of these factors had significant adverse consequences on Guyanese and the Guyanese economy.

In the last quarter of 1997 surface water supply from the East Coast Demerara Water Conservancy to the Georgetown Sewerage and Water Commissioners (GS&WC) had been drastically reduced from 10-12 million gallons daily to 1-2 million gallons daily thereby placing the largest group of domestic consumers of potable water, city dwellers, at risk. The GS&WC could not meet normal demand. In collaboration with the Civil Defence Commission (CDC) OPERATION MELON was mounted which made available over 20,000 gallons of water daily to affected parts of the city. Concurrently the GS&WC brought the number of active wells delivering sub-surface waters to city residents to a total number of 17, thereby increasing productive capacity to approximately 16 million gallons daily.¹⁵ The Guyana Water Authority (GUYWA) also extended its services to both coastal and hinterland communities laying pipelines, drilling wells and installing hand and mechanical pumps. Some Regional Democratic Councils also put into operation potable water delivery systems.

By the middle of the first quarter of 1998 sectoral and activity reports indicated the dire consequences facing the economy.

It was estimated that the total area sown with rice would be reduced by 67000 acres or 35%. Thirteen thousand (13,000) acres were expected to produce no yield and another 60,000 acres were expected to be of uncertain yield. Annual production was expected to drop by 63,000 tons or 18% with an estimated loss of US\$22 million. Approximately 1300 farmers were expected to be affected.¹⁶

Annual sugar production was expected to drop by about 13,700 tons or 5% with a projected loss of US\$7 million. Another 1000 small farmers were expected to be affected.¹⁷

The total number of persons directly related to these two activities that were expected to be affected was projected at 11000.¹⁸

Other crops and livestock were expected to take significant losses while dairy production was expected to ride the crisis. Small losses were expected to livestock but significant losses were projected for the cassava crop in particular and fruits and vegetables in general. In Regions 8 and 9 where the main and in some places only agricultural produce is cassava, loss was expected to be complete. Coffee and pine cultivation were also experiencing losses not only from lack of water but from devastation by forest fires. Beef production was not expected to be seriously affected and milk production was anticipated to drop by only about 0.5 million gallons. Saline intrusion approximately 30-40 miles upstream of coastal rivers compounded the situation facing inhabitants and cultivation.¹⁹

In several cases farmers reported increased difficulties in paying bank loans. No insurance against crop failure or damage from natural disasters exists. Even though aquaculture operations (mainly in Region 6) had ceased by the first quarter of 1998 this did not impact significantly on the fish supply as aquaculture sources accounted for less than 5% of normal fish supply²⁰

It was anticipated that Wildlife would migrate to available water sources and there were some reports of poaching.²¹

Gold and diamond mining operations in Regions 1,2,7,8,9 and 10 were being reported as being severely affected. Normal operating capacity of small operations were reportedly reduced to about 20%. A shortfall of 50,000 ounces on normal production was estimated with a loss of about US\$14.5 million. Secondary effects were also evident in reduced demand for domestic flights to service miners' needs, migration of population from mining areas and slow-down of associated commercial activity.²²

Forest fires were destroying state forests along the Linden Soesdyke Highway, the Wismar Rockstone Road, along the Mabura Road, at Winiperu in the Bartica/Potaro area, in the Takatu and Kanuku ranges of the Interior Savannahs and in both the East and West Demerara Water Conservancies. Secondary effects were also being experienced as smoke drifted across the Timebri aerodrome resulting at times in significantly reduced visibility and requiring occasional temporary closure of the aerodrome to domestic flights.²³

Since the comprehensive and dire nature of these consequences could not continue to be addressed by sectoral responses only, there was need for a national effort to combat these consequences of the El Nino weather phenomenon and deliver relief to people in affected areas; The Civil Defence Commission of the homeland was targetted.

CIVIL DEFENCE IN GUYANA

The roots of Civil Defence in Guyana are traceable to the colonial era. Efforts have always been made to maintain mechanisms by or through which responses to serious emergencies could be effected. Over the years execution of Civil Defence activities may have been the province of different bodies but responsibility for Civil Defence matters has always rested with one of the more senior offices tasked with governance.

In more recent times and despite changes in political leadership responsibility has been vested in the Office of the Prime Minister and since 1993 that responsibility has been vested in the Office of the President.

Technological development has heightened awareness of disaster occurrences world-wide and brought home the damage and destruction they wreak. Particularised knowledge related to the prediction, prevention, mitigation and rehabilitative aspects of disaster events has also improved. The increased incidence and periodic occurrence of disaster events is not lost upon the nation.

International and Regional co-operation in general and affiliation with the Caribbean Disaster Emergency Response Agency (CDERA) in particular have contributed significantly to Guyanese experience and institutional capacity to manage the nation's

disaster sector. It is perhaps unfortunate but interesting to note that as the United Nations International Decade for National Disaster Reduction (IDNDR) comes to an end the incidence and catastrophic consequences of disasters seem to be increasing. The objectives of prevention and mitigation of natural disasters and loss of life, property damage and social and economic disruption are even more imperative in 1998 than they were a decade ago.

In Guyana the hard earned lessons of 1995 (OMAI cyanide spill) and 1996 (Floods in all Administrative Regions) have reinforced the need to maintain a permanent body dedicated to the management of disaster events.

That disasters can undermine development and dictate redirection of development resources are both recognised and appreciated, at least at the level of Central Government. Disaster planning is increasingly becoming part and parcel of development planning.

There has been since August of 1997 inaugurated in Guyana a permanent body i.e. the Civil Defence Commission, dedicated to the establishment and maintenance of an effective disaster management system in the Co-operative Republic of Guyana.

THE CIVIL DEFENCE COMMISSION (CDC)

In accordance with cabinet decision of June 02,1997 there was established in Guyana a permanent body i.e. the Civil Defence Commission (CDC)²⁴ dedicated to the establishment and maintenance of an effective disaster system in the Co-operative Republic of Guyana.

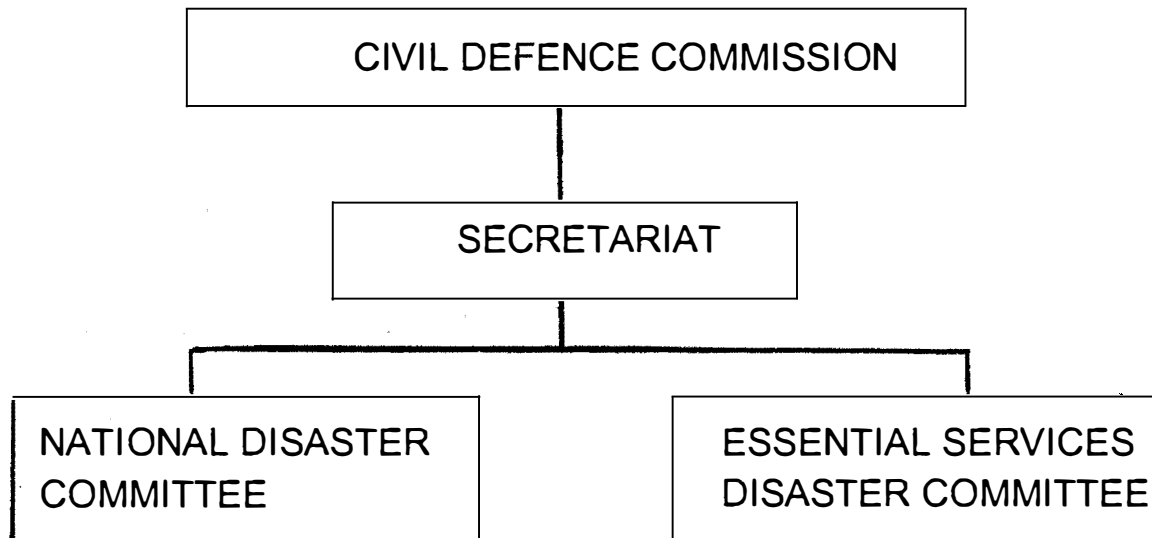
The CDC was inaugurated on August 16th, 1997 and its proposed terms of reference, organisational structure and membership adopted. Its national offices are located at the CAMP AYANGANNA ANNEX, PLANTATION THOMAS LANDS, THOMAS ROAD, GEORGETOWN, GUYANA.²⁵

The Patron of the CDC is the Executive President of the Co-operative Republic of Guyana and its appointed Secretary is the National Disaster Coordinator.²⁶

TERMS OF REFERENCE

1. To identify disasters according to established criteria and classification.
2. To produce plans for the management of National Disasters.
3. To identify and implement mechanisms for disaster response and mitigation.
4. To maintain a permanent body, to enhance the national capacity for disaster management services.
5. To train human resources involved in disaster response mechanisms.
6. To educate at all levels in the tenets of disaster responses.²⁷

ORGANISATION



To effectively discharge its institutional mandate, the CDC has established a Secretariat and two Committees as the principal organs through which to do so.²⁸

The Executive organ of the Commission is the Secretariat. The established Secretariat comprises an appointed National Disaster Coordinator (NDC), the Chief of Staff of the GDF and the Commissioner of Police. It is understood that the Secretariat may co-opt the services of such other persons to assist it in the discharge of its functions as it may in its discretion deem necessary. The Secretariat is tasked with the day to day management of the Disaster Response Sector. The affairs of the Commission and implementation of decisions are effected through a Commissioner-Civil Defence Commission.²⁹

The wide scope and array of functions envisaged to be undertaken by the Commission is intended to be effected through the other two organs i.e. The National Disaster Committee and the Essential Services Disaster Committee. Of the two committees the latter is more vibrant and has achieved considerable success in meeting its objectives. Both committees are chaired by the National Disaster Coordinator.

MEMBERSHIP

Membership to both committees include Representatives of the Joint Services and of Central Government. However membership in the National Disaster Committee is extended to include representatives of service and religious organisations as well as representatives of political parties. Membership in the National Disaster Committee is reflective of the wider membership on the Commission and the multiplicity, diversity and wide cross-section of Guyanese interests represented in the Commission³⁰

FINANCES

The work of and routine costs associated with the Commission is financed by the Office of the President in this its formative period. It is envisaged that over time as the Commission takes its place among independent national institutions that it would have its own budgeted provisions.

Operational finances are acquired from three main sources; Government funds, contribution of local donors and from appeals to the international community.

LEGISLATION

It is anticipated that in time the Commission will be provided with its own particularised legislative basis. Some consideration has already been given to this and preliminary discussions with regional affiliates pursued.

STAFFING OF NATIONAL OFFICES

In the formative period the national offices are being routinely manned by a small core of service personnel from the Joint Services. A few positions are staffed by civilian employees.

This approach gives the benefit of lower or no manpower costs to the Commission and at the same time it retains available institutional experience and expertise in the management of national emergencies.

Operational manpower requirements are met from the manpower resources of the Joint Services. Specialist services are occasionally contracted.

CONCEPT OF CIVIL DEFENCE OPERATIONS

It is intended that the CDC shall monitor all potential hazards with a view to having measures taken to promote prevention of disaster events.

Whenever a hazardous threat becomes imminent or actual the secretariat defines that threat and determines the course (s) of action to be instituted. The wider Commission

is appropriately informed, considers the Secretariat's proposal (s) and any other relevant issues and gives direction.

Sectoral responses are promoted to meet that threat unless it is reasonably clear that a coordinated national effort would be needed to deal with the disaster event.

Whenever an integrated, multi-agency national effort becomes necessary to effectively manage the nation's responses to an imminent or actual disaster event then the Commission's interventions are premised upon the principle of assisting the responsible authority in the discharge of their functions.

Usually a National Emergency Operations Centre (NEOC) is established comprising such members of the Commission its Secretariat and/or Committees and such other persons as may be deemed necessary to effectively manage the nation's disaster responses.

Command of the NEOC operational duties is usually vested in the Commissioner - Civil Defence Commission or where appropriate in an appointed operational commander.

DROUGHT RELIEF OPERATIONS 1997/1998

BACKGROUND

The El Nino phenomenon first attracted general attention and that of the Civil Defence Commission around the time of the inauguration of the CDC in August 1997. However no adverse effects had up to that time been complained of. In November 1997 at a meeting of the CDC, data related to the phenomenon was circulated to the membership as by that time supplies of surface water to city residents were being seriously affected. That meeting of the CDC approved the mounting of OPERATION MELON,³¹ a water distribution operation which made available daily, over 20,000 gallons of water to residents of the capital city, Georgetown and its environs.

The effects of the phenomenon were beginning to demand response mechanisms but responses remained primarily within the ambit of communities, districts and sectors. By late January- mid February 1998, communities, districts and sectors were reporting harsh effects of the phenomenon on their respective areas of interest. By the end of February 1998 it was clear that effects of the phenomenon had reached national proportions and the Civil Defence Commission was formally tasked to monitor, report and make preparations to implement appropriate responses.³²

On March 21, 1998 the Civil Defence Commission met and discussed a national report on the effects of the phenomenon and articulated strategies to respond to those effects. By this time limited engagements were already undertaken between the Government of Guyana and the United Nations Development Programme- Department of

Humanitarian Affairs (UNDP-DHA) to conduct impact assessments and needs analyses particularly in the water and agriculture sectors.

DECLARATION OF NATIONAL EMERGENCY

On March 26, 1998 Her Excellency The President of the Co-operative Republic of Guyana declared a state of National Emergency, appealed to Guyanese to contribute to the national effort and formally requested assistance of the International community.³³

OPERATIONS

ORGANISATION OF NATIONAL RESPONSES

Response Guidelines

Immediate responses were defined to include:

- a. provision of water inputs to identified communities**
- b. provision of relief food supplies to identified communities**
- c. provision of agricultural inputs to sustain economic activity, and**
- d. implementation of fire fighting measures to protect national assets and the environment.**

Longer term responses were to be directed to the development of capacity within the disaster sector to prevent where possible and to mitigate the effects of such crises.³⁴

Activation of the National Emergency Operations Centre (NEOC)

As an integral part of its daily work the CDC routinely maintained an Operations Centre at its national offices. When OPERATION MELON was mounted this centre was already operational and geared for that Operation. At the end of February 1998 when the CDC was formally tasked to monitor, report and make preparations to implement appropriate national responses to combat the effects of the El Nino phenomenon initiatives had already been taken to designate that centre as the NEOC and to have it operational on a 24 hour basis. By March 26, 1998 therefore when the state of National Emergency was declared the NEOC was reasonably well geared to discharge its operational functions.

NEOC Guidelines:

1. Humanitarian relief was effected on a fortnightly basis to approximately 11,516 households across all ten Administrative Regions.

Breakdown by Regions:

Region #1 - 1500	Region #6 - 1000
Region #2 - 1520	Region #7 - 738
Region #3 - 108	Region #8 - 1400
Region #4 - 1000	Region #9 - 2000
Region #5 - 1250	Region #10- 1000

2. The Regional authorities determined the target population for relief and the NEOC verified the needs of that population.
3. Relief Supplies and or cash to purchase such supplies were delivered to Regional authorities who were then responsible for its distribution.
4. Administrative costs were to be kept to a minimum.
5. The Office of the Commissioner - Civil Defence Commission was to collaborate with the UNDP on utilisation of international donor contributions.
6. The NEOC was to establish liaison with:
 - a. Key Ministries
 - b. Key Sectors or Agencies
 - c. Where appropriate, Regional Democratic Councils and Regional Relief Committees.

Organisation of the NEOC

The NEOC was organised into four groups.

- | | |
|---------------------|-------------------------|
| a. Executive Group | c. Administrative Group |
| b. Operations Group | d. Supplies Group |

Executive Group

This group essentially comprised an extended CDC Secretariat. The normal establishment Secretariat was expanded to include representatives from the public

and private sectors, non-governmental voluntary and service organisations and representatives from the international community.

Operations Group

This group included:

Commissioner- CDC

Operations Officers

Duty Officers

Communications Staff

Air, Regional and Sector liaison Officers

Administrative Group

This group was made up of:

Finance department

Security detachment

Registry

Supply Group

This group was comprised of:

Supply Officer

Transport

Stores Department

Porter detachments

Command of the NEOC

Responsibility for execution of operations was vested in the office of Commissioner-CDC.

The NEOC was managed by the CDC with manpower needs being substantially provided by the Joint Services.

CDC	19	GDF	24
GPF	02	GNS	02
GPS	03	UNDP	01
GFS	01	Min of Local Govt	01

Public Information and Education

Public Information and Education (PIEO) was managed by the extended Secretariat through the principal agency of the Ministry of Information.

Once weekly press briefings were established as routine. The CDC also issued press statements and releases occasionally. All important activities and decisions were highlighted in the media. The media were always welcome by the NEOC to its offices and on its missions.

Impact Assessment and Needs Analyses

Provision of relief supplies to affected communities was based on Impact Assessments and Needs Analyses done by or on behalf of the CDC or by Regional authorities and verified by the CDC.

Mechanisms used to accomplish these included:

- *utilization of Officers of the Joint-Services to report on conditions in their areas of operation from all administrative regions**
- *aerial surveys by GDF Air Corps**

***utilization of the services of the Civil Aviation Department and the Private Aircraft Owners Association to have pilots routinely submit reports on observations in their flight paths**

***utilization of the Guyana Gold and Diamond Miners association and the Guyana Geology and Mines Commission to report conditions in their areas of operation**

***utilization of the Regional Democratic Councils and Regional Relief Committees directly and through the Ministry of Local Government to submit detailed reports on conditions in their region**

***site visits by officials of the CDC**

***utilization of professional services, that were volunteered**

***hire of expert consultants**

***utilization of the Guyana Forestry Commission to submit reports on forest damage by fires**

***utilization of the Ministry of Health, in particular the Regional Health Services to report on conditions within their Regions**

CONDUCT OF OPERATIONS

Provision of Water Related Inputs

All water inputs were acquired centrally by or on behalf of the CDC and then delivered to regional authorities or sector heads for distribution or deployment.

Items such as covered water buckets, 50x gallon containers, 400 gallon tanks and 2 inch water pumps were provided to regional authorities for distribution to affected communities.

Hand and mechanical pumps were handed over to the water sector for installation in needed areas.

A drainage and irrigation pump was also made available to the agriculture sector.

Several new wells were dug in affected communities.

OPERATION MELON assets (tractors, trailers, water tanks) were handed over to the water sector.

A US\$9 million credit agreement has been secured from the World Bank to effect long term rehabilitative works in the water sector along the entire coastal plain.³⁵ A project coordinating unit has already been established and operates out of the national offices of the CDC.

Provision of Food Relief

A basket of relief goods was established (see Appendix vi) for a family of 5 for one fortnight.

Bulk supplies or monies to purchase those supplies were made available to Regional authorities or Regional Relief Committees who were then responsible for distribution of supplies to communities in need.

The CDC procured and also through UNDP caused to be procured food relief supplies centrally for Regions 3,4,5,7,8,9 and 10. Supplies were warehoused at the CDC stores and then forwarded to these Regions.

Regions 2 and 6 were provided with funds to do their own procurement. So too was Region 1 but for the Moruca sub-district of Region 1, the Region 2 Relief Committee agreed to and were given funds to procure and provide relief food supplies to this area.

Region 9 also received funds to procure items such as farine and feijao which were best procured in that area.

In-kind donations of food supplies received by the CDC were forwarded to Regions.³⁶

Food Relief Distribution Matrix is at Appendix vii.

Provision of Agricultural Inputs

The CDC through the UNDP made funds available to the Ministry of Agriculture to acquire agricultural inputs, mainly seeds and chemicals, assessed as being needed.

Inputs acquired were forwarded to regional agricultural officers for distribution and utilization.

The Ministry of Agriculture utilised its own resources to combat caterpillar and other insect infestation of agricultural cultivation.

Some agricultural seeds and tools were acquired from the Social Impact Amelioration Programme and distributed directly to affected communities.

GYD 80 M was given by the CDC to the Rice Sector to make seed paddy available to affected Rice farmers.

Fire Fighting

Most fires occurred away from inhabited areas. Fortunately most either burnt themselves out or were put out by sporadic rainfall.

The Guyana Forestry Commission utilized its own resources to put out several fire pockets in state forests.

Impact assessment of long term fire damage may still be needed. There was no widespread harm loss or injury to man, animal or property.

ADMINISTRATION AND LOGISTICS

Manpower Engagement³⁷

The total number of persons engaged in the CDC efforts over the period of operation was 53. Their engagement in areas of activity were as follows:

<u>Command</u>		<u>Operations</u>	
Command	01	Operations Officers	02
Alternative Command	01	Duty Officers	03
	<u>02</u>	Air Liaison	01
		Regional Sector Liaison	01
		Operations & Communications	<u>01</u>
			<u>08</u>
 <u>Administration</u>		 <u>Supply</u>	
Finance	04	Logistics Consultant	01
Security	05	Supply Officer	01
Office Administration	02	Transport	02
Registry	<u>04</u>	Stores	04
	<u>15</u>	Porter detachment	<u>20</u>
			<u>28</u>

Security

The CDC has a small security detachment of 5 servicemen integral to it. They are responsible for the physical security of the CDC premises and its assets thereon. Over the period of operation there were no reported losses or other breaches of security.

Registry Support

The CDC has integral to it a small unit providing clerical support and data entry services. Over the period of operations 4 clerks performed such duties.

Foreign Donor Agency Coordination

Following the Declaration, Guyana's Minister of Foreign Affairs met with Heads of Missions and other representatives of International and Regional organisations resident in Guyana. He appraised them of the disaster situation, highlighted some of the country's needs and requested their assistance.

The UNDP Resident Representative agreed to coordinate all efforts of the International donor community.

The International donor community was briefed by the CDC at the UNDP's offices. Details of Impact Assessments and Need Analyses available were made known.

Pledges and commitments from this community were coordinated by the UNDP. Utilisation of donations was managed by the UNDP in collaboration with the CDC and accounted for by the UNDP. Further details are at appendix viii..

The Regional Disaster relief Agency, CDERA sent its Deputy Co-ordinator on a field advisory mission to Guyana and acted as a focal point for coordinating regional relief assistance.

Guyanese overseas missions were also briefed by the Ministry of Foreign Affairs. Missions were able to mobilize Guyanese and other support to make both cash and in-kind donations.

Relief supplies consigned to the CDC originating outside Guyana were allowed to enter Duty Free and upon receipt of the notification and shipping documents were cleared expeditiously by the CDC

The efforts of the Ministry of Foreign Affairs were sustained throughout the period of operation and yielded commendable results.

Foreign Support Agencies

Services of the following foreign support agencies were utilized.

- | | |
|---------------|---|
| UNDP | -Coordination of international donor community.
Institutional strengthening and Technical Support. |
| UN-DHA | -Disaster Advisory, Aid and Support. |
| PAHO | -Health Impact Assessment and Needs Analysis.
Supplies Management Training. |

**Institutional Strengthening. Provision of Health
Inputs.**

**MSF-Medicins San Frontieres; Independent Impact Assessment on Health system and
Needs Analyses.**

**CDERA -Disaster Advisory, Provide financial support,
Coordinate Regional support.**

Local Donors Coordination

The CDC primarily through its expanded Secretariat took several initiatives to mobilize local support. These included a telethon, television interviews, radio call-in programmes, television advisories, advertisements and the establishment of an El Nino Relief Fund.

The CDC coordinated the efforts of voluntary service NGO's and others, to the national relief effort.

Local Support Agencies

Local support was received from several quarters. These included:

- a. Central and Local Government**
- b. NGO's- Guyana Relief Council, Guyana Red Cross, Beacon Foundation, Fast Response Group, SIMAP, Lions, Leo's, Rotary, Jaycees, Women's Groups.**
- c. Religious bodies**
- d. Political Parties**
- e. Commercial Banks**
- f. State Corporations**

g. Media and other business houses

h. Individuals

The CDC encouraged and supported participation by all contributors and provided coordination for their efforts.

Finance

The finance department was manned by 4 persons. Financial principles governing expenditure and accounting for Government funds were adhered to. All financial contributions managed by the UNDP were managed in accordance with their accounting regulations.

The CDC operated three (3) accounts. All accounts were held at the Guyana Bank for Trade and Industry (GBTI).

Account #C1CA 337711- This is the normal established account of the CDC which it uses to manage its day to day affairs.

Account #C1EA-073074 El Nino Relief Fund. This account was opened and publicly advertised for members of the Public to deposit their cash donations, ie A donors Fund.

Account # C1CA 351567 Civil Defence Secretariat. This was the principal account used for El Nino relief expenditures.

International Donor Community Contributions³⁸

Contributions were received from:

Singapore	USD 19,400	UNDP USD 65,000
Canada-CIDA	141,843	UN-OCHA 20,000
		UNICEF 10,000
Italy	48,543	OAS 20,000
Norway	19,400	CDB 100,000
United Kingdom	256,000	CDERA 3,320
China	50,000	WFP - Contributions through
Germany	12,500	SIMAP and by direct
Mauritius	50,000	purchases
Japan	43,433	PAHO - Inputs managed by
		PAHO

CIDA managed the Canada contribution directly.

Germany, CDERA and the OAS effected direct payments to suppliers for goods and services provided to the CDC for relief operations.

The WFP effected direct purchases and presented materials so purchased through SIMAP.

The Chinese and Mauritian donations were made directly to the CDC. These were deposited into the CDC accounts and accounted for by the CDC.

The Japanese donation of US\$43,433 was a direct in-kind contribution of water containers to the CDC.

All other donations were managed and accounted for by the UNDP to donors.

Utilization: See summary of Foreign Donors Financial Contributions attached at appendix viii.

Local Donors Contributions

Guyanese donors tangibly expressed their concern for the plight of their countrymen affected by the El Nino phenomenon. Donors gave cash and food. Cash contributions were made either directly to the El Nino Relief Fund established at GBTI, Account #C1EA 073074 or cheques were handed over to the CDC. All cheques received at the CDC were recorded and duly deposited into the EL Nino Relief Fund Account # C1EA 073074. In-kind contributions were received at the CDC, recorded and forwarded to affected communities.

The NEOC arranged publicity coverage for the benefit of donors.

Contributions totalled Guy \$2,856,258.00

Government Funds

The Ministry of Finance made available to the CDC through the Office of the President GYD 120 M.

Utilization

These funds were utilized to cover operational and administrative expenditures.

Details of these two sources of funding are at appendix ix.

Stores

All supplies acquired centrally were stored at the CDC stores and bond before being forwarded to regions. Limited storage space was available at the CDC and a temporary bond had to be constructed.

Supplies were therefore not warehoused for long periods. The time frame between acquisition and shipment was about 48 hours. In some cases supplies were moved directly from point of acquisition to destination.

Stores procedures common to the Joint Services were utilized. Periodic inspections were done.

Basket of Relief Goods

Following consultations with several agencies a basket of relief goods for a family unit of 5 per fortnight was designed to be used as a guide for the provision of food relief. This basket of goods was adjusted based on resources available. The average cost per basket of goods was GYD 3,254.97.

See details at appendix vii.

Procurement of Supplies

Procurement by CDC in this emergency situation benefitted from waiver of normal tendering procedures. The following guidelines were observed:

Competitive pricing was used as a guide to engage suppliers.

Availability of needed items in the quantities anticipated from specific suppliers was noted.

Availability of short term credit from suppliers was considered.

Provision of a delivery service by suppliers was also considered.

Procurement by UNDP conformed to their system of tendering and acquisition.

Porter Detachment

The GDF provided a detachment of 20 men to assist the CDC in loading and off loading trucks at its stores and bond as well as to load aircraft on interior missions.

The detachment performed creditably. Discipline and morale were high and troops enjoyed interior missions.

The economic cost of providing these services was approximately GYD 4 M. Where in future operations the Commission may have to meet such costs consideration may be given to having the providers of transport include such services in their charges.

Transportation

All transport needed was hired at prevailing commercial rates.

From Government and local donors funds, expenditures associated with transport were as follows:

Operations: Transport Travel & Postage	GYD 12,618,660.00
Local Travel & Subsistence	323,005.00
	12,941,665.00

Administration:	Vehicle Repairs & Maintenance	287,853.00
	(OPERATION MELON TRACTORS)	
	(Trailers & Tanks included)	
		13,229,518.00

From UNDP managed funds expenditures associated with transport were:

Air Transport	USD 116,985.57
Land Transport	14,084.50
	131,070.07

Communications

Only telephone communications are integral to the CDC. These worked reasonably well throughout and provided links that eventually proved adequate.

Use was made of the GDF and Police radio network. The latter were particularly helpful on interior missions.

Consideration should however be given to the development over time of a disaster communication network with HF and /or VHF radio links integral to the CDC.

CONCLUSIONS AND RECOMMENDATIONS

1. In the initial stages sufficiently refined impact assessments were slow in forthcoming. This may have been as a result of the absence at Regional and Community levels of organized and trained personnel. The establishment of Regional Relief Committees in some regions was encouraging. Such structures must now be crystallised, strengthened and expanded to all regions.
2. Each potential donor or contributor needed information suited to his own interests. The CDC served as a focal point for such information. Particular emphasis was placed on producing user friendly data. The CDC must constantly strengthen its database.
3. It is essential to have an officer dedicated to the management of Public information and Education at the NEOC in such crises.
4. Computers and their networking are essential to the development of institutional capacity at the CDC.
5. Staff provided by the Joint Services were adequate and competent. It was particularly helpful to have personnel who had experience of working during the 1996 Flood Relief made available to the NEOC.

6. **The Risk insurance industry should be encouraged to re-examine the feasibility of disaster related insurance.**
7. **A Disaster Communication Network should be developed.**
8. **Over the period of this operation the Guyana Airways Corporation and the Guyana Defence Force Air Corps were faced with serious operating constraints. It is strongly recommended that every effort be made to ensure that a skyvan aircraft and a helicopter are at all times operable within the national inventory. This would lend capacity for airborne missions in support of relief operations.**
9. **Demand for relief supplies often exceed supply. Every effort must be made to ensure priority of needs is established, that distribution is fair and just and that all operations are transparent. People participation is key to this.**
10. **Fire Fighting abilities and expertise should be strengthened.**
11. **The long term rehabilitative works in the water sector along the coastal plain must now be executed with all dispatch.**

**ADDRESS TO THE NATION
BY HER EXCELLENCY JANET JAGAN,
PRESIDENT OF THE REPUBLIC OF GUYANA**

Fellow Guyanese,

The prolonged dry season that has been attributed to the EL NINO phenomenon has resulted in severe and widespread damage, destruction and loss in many sectors of the national economy and in many of our administrative Regions. The lack of rainfall has led to inadequate supply of fresh water to support our country's domestic and economic needs. River water levels are extremely low and salt water from the Atlantic Ocean is moving upriver into the areas of cultivation and human habitation.

In our agricultural sector traditional and non-traditional crops have been significantly affected and this has led to a negative impact on the Economy. This prolonged dry season has led to serious disruption to the livelihood of many of our country men in the Hinterland regions. Particularly hard hit have been our Amerindian communities in Regions 1,2,7,8 and 9 where food and potable water shortages have led to threats of starvation and destitution.

The livelihood and the viability of the miners in our National Resources sector have also been adversely affected by this El Nino. Reports have also been received and confirmed of the many forest fires that are raging in the State Forests and in the Intermediate Savannas.

The earlier responses of the Administration have been sectoral but the increasingly severe and wide spread effects led Cabinet to assign responsibility for a national response to the Civil Defence Commission.

The Civil Defence Commission has reviewed the situation as it has evolved in many areas of involvement and the determination is that the situation is extremely serious.

Cabinet has now tasked the Civil Defence Commission with the management of the Disaster Responses that are being carried out. Mobilization of resources in the domestic and the international communities is being accelerated.

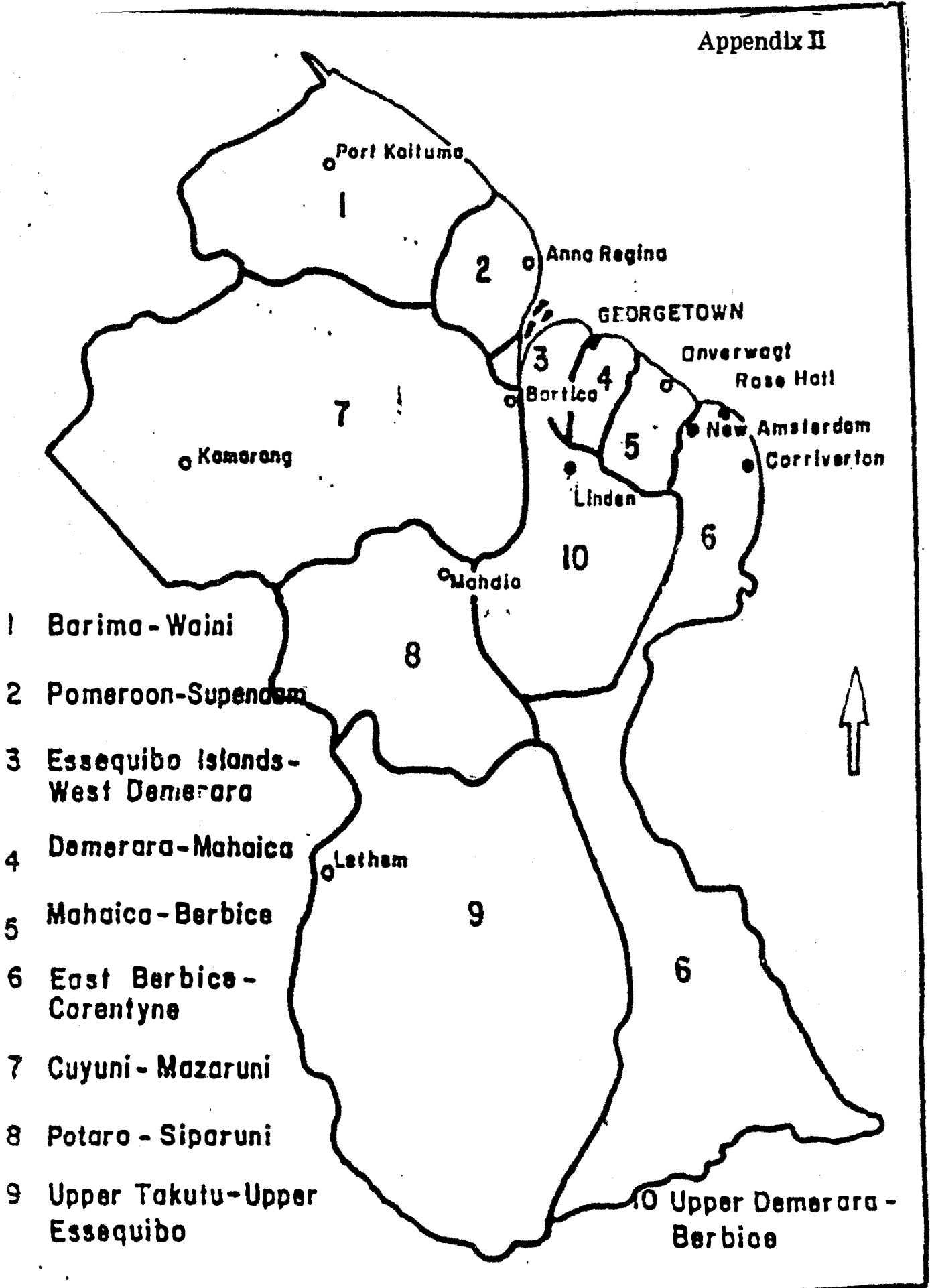
Already plans to procure and distribute food, potable water and agricultural inputs are in train. This activity has been expanded to involve the private sector, the national relief organisations and others.

There is need for a national effort to combat EL NINO and bring relief to our people in the areas affected. I make an appeal to all Guyanese to contribute to this effort

and to do so in an organised manner through the recognized structures so that we can achieve the maximum effectiveness in this sacred undertaking.

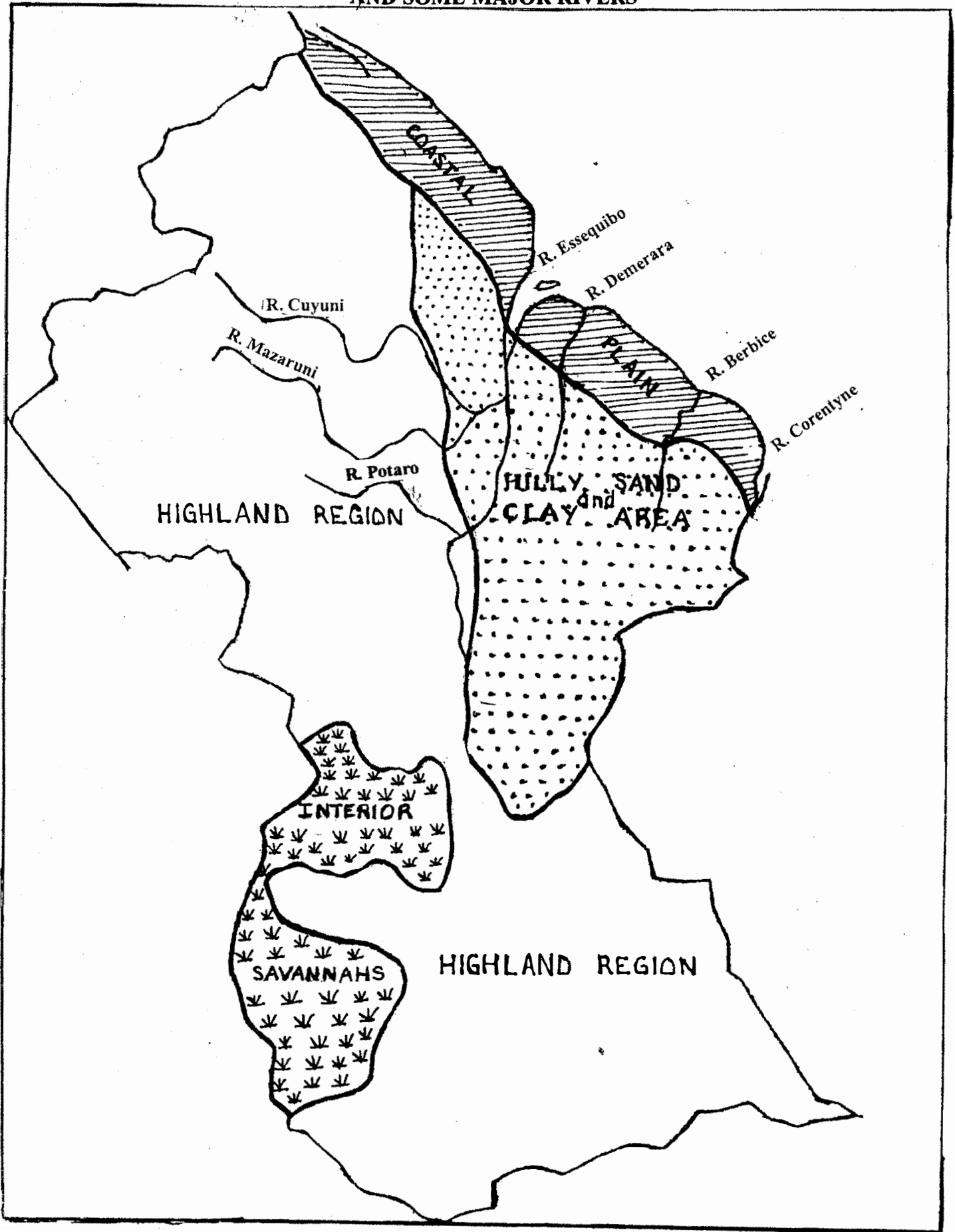
I am convinced that our country faces a natural disaster and I am now declaring a state of National Emergency in the interest of our nation and our people.

**OFFICE OF THE PRESIDENT
THURSDAY, MARCH 26, 1998**



GUYANA ADMINISTRATIVE REGIONS

MAP OF GUYANA DEPICTING NATURAL REGIONS
AND SOME MAJOR RIVERS



CIVIL DEFENCE COMMISSION

Appendix iv

REGIONAL IMPACT MATRIX

SER	IMPACT AREA	REGIONS									
		1	2	3	4	5	6	7	8	9	10
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
01	FOREST /FIRES	X	X	X	X					X	X
02	GOLD AND DIAMOND MINING	X			X			X	X	X	X
03	WATER FOR DOMESTIC USE	X	X	X	X	X	X	X	X	X	X
04	WATER FOR AGRICULTURAL USE	X	X	X	X	X	X			X	X
05	RICE		X	X		X	X				
06	SUGAR			X	X		X				
07	OTHER CROPS	X	X	X	X	X	X	X	X	X	
08	LIVESTOCK		X	X	X	X	X			X	X
09	FISHERIES						X				
10	DAIRY		X	X	X	X	X			X	X
11	AVIATION				X						

Appendix v

HYM: TR 1/98

DROUGHT IN GUYANA, 1997-1998

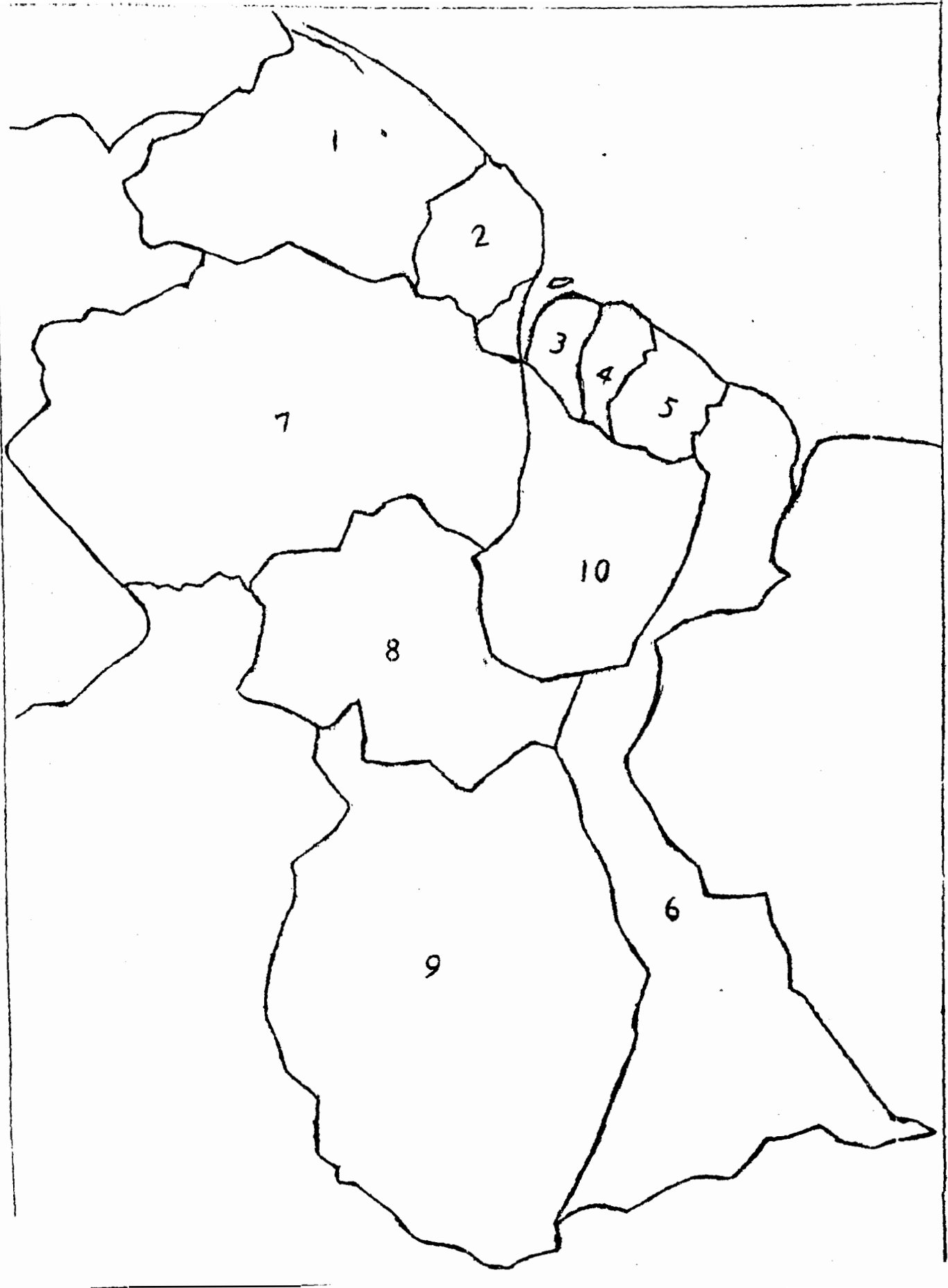


by
Kemp Simon, Specialist Meteorologist &
Joylyn Jafferally, Specialist Hydrologist (ag)

**HYDROMETEOROLOGICAL SERVICE
MINISTRY OF AGRICULTURE**

22nd July, 1988

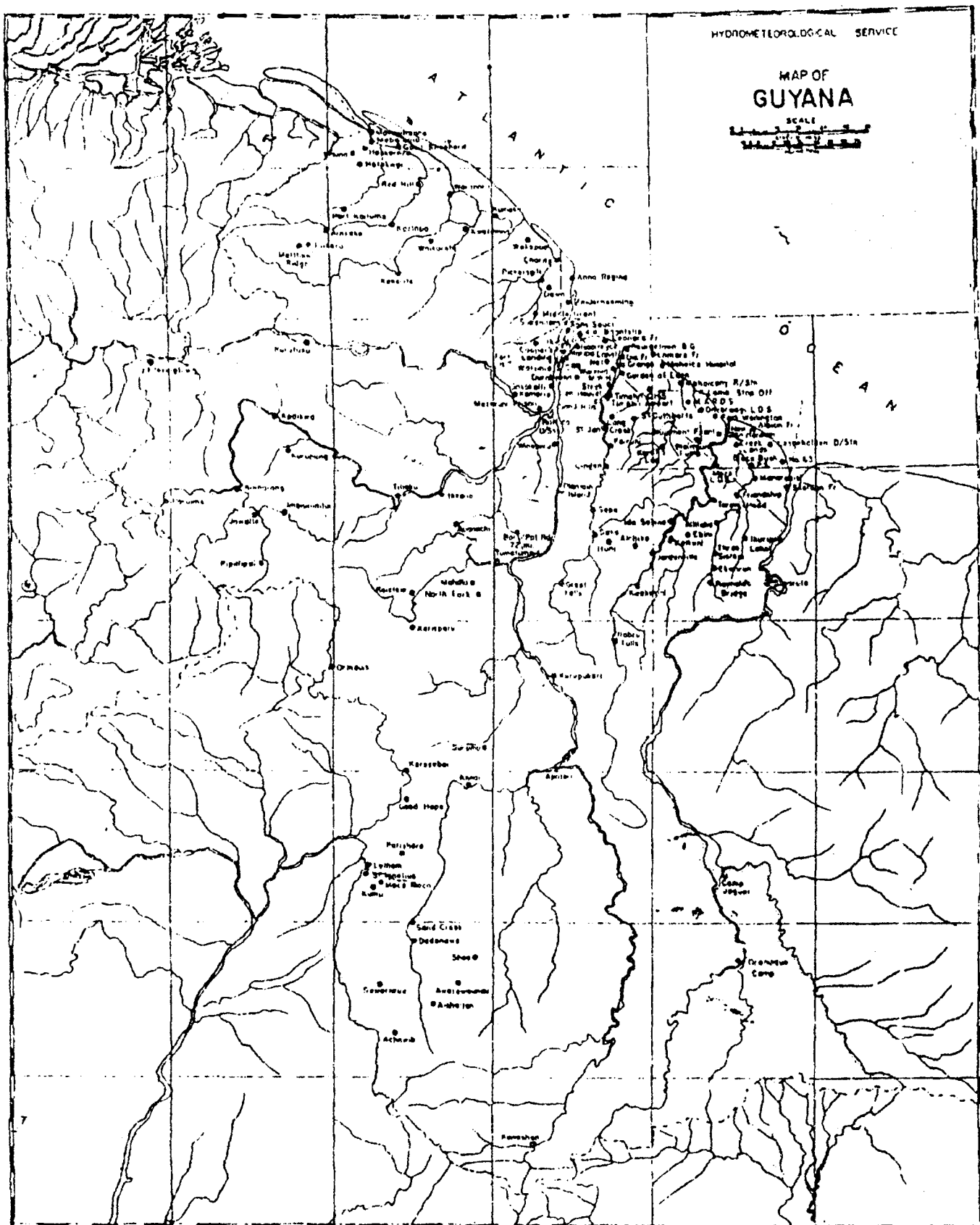
MAP OF GUYANA DEPICTING REGIONAL DIVISIONS



HYDROMETEOROLOGICAL SERVICE

MAP OF GUYANA

SCALE
1:500,000



ACKNOWLEDGEMENTS

Our gratitude go to the Chief Hydrometeorological Officer Mr. Dilip Jaigopaul and Project Coordinator Ozone Action Unit, Mr. Sheik Khan for their reviews and comments. Also to the other members of staff of the Hydrometeorological Service for their efforts at station maintenance, data collection, processing and computerisation and all the other activities necessary to make this document possible.

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Introduction

The year 1997 was unique in the annals of climate. The warmest global sea surface and air temperatures on record were associated with the strongest recorded El Niño. This influenced anomalous precipitation in many parts of the world with dire consequences viz: droughts, forest fires, floods, intense hurricanes in the Pacific and tornadoes in the U.S. Guyana was among the countries affected by drought and forest fires, a situation, which became so severe that a state of emergency was declared on the 26th March, 1998.

Drought may generally be defined as a prolonged and abnormal moisture deficiency¹. Droughts may be classified into categories dependent on the parameters or activities being considered. Meteorological drought is characterised by the water shortage induced by the imbalance between precipitation and evaporation. Agricultural drought refers to water shortage caused by the imbalance between the available water in the soil and crop water requirements. Physiological drought refers to the condition of vegetation. Hydrological drought occurs when there is a deficit of surface and underground water². Societal/economic drought occurs when both natural and societal factors contribute to the water deficit i.e. when demand exceeds supply.

The flora and fauna at a location are somewhat adapted to its climatology and it is evident that human activities also conform to the relevant climatology, for benefit and sometimes for survival. Therefore normal conditions at one location may be considered drought at another, or we may say that drought is a relative term and as a result values used for drought identification can differ. The formation of drought occurs by a gradual and cumulative process following which the drought intensifies if the anomalies persist. Consequently the determination of the commencement of a drought is not a simple task. Unfortunately drought indices have not been developed for Guyana and therefore this paper does not state exactly when the drought began.

Climate and Rainfall

There are two wet seasons in Guyana termed Primary and Secondary, the former starts late April peaks in June and ends early August, while the latter starts mid November peaks in December and ends mid January. These wet seasons are due primarily to the periodic presence of a zonally aligned band of clouds stretching across the Atlantic called the Inter Tropical Convergence Zone (ITCZ). Additionally troughs, areas of relatively low pressure, and tropical waves, perturbations in the surface winds, are also contributing factors, but the latter only occur in the Primary Wet Season. The Secondary Wet Season is absent in Southwestern Guyana (Region 9) where the climate is continental as against northern Guyana where it is tropical wet marine. When the El Nino is active, convection and cloud formation are suppressed by subsidence resulting from anomalous upper atmospheric winds blowing from the Pacific to the Atlantic. Hence ITCZ activity is considerably reduced primarily in the Secondary Wet Season.

The analysis that follows involves data from selected stations in the ten Regions across the country, but is constrained by its inadequacy in some cases. Nevertheless, wherever feasible, deductions were drawn from the available data. Percentages of normal were computed (Tables 1 & 2) and a graph of accumulated anomalies was plotted for period March 1997 to April 1998 (Fig 1).

Accumulatively, the rainfall was below normal at all locations, and significantly so at many stations. Least affected were Boerasirie, Linden and Apaikwa (Fig. 1), probably due to the mesoscale effect, induced by the local topography, such as Orographic lift at mountainous Apaikwa. Considering the climatology of the various Regions in the country it is evident that the dry spell, in this case the period with below normal rainfall, leading to drought began in March 1997 which was the month when the El Nino became active. Except for May when conditions varied across the country, the rainfall deficit intensified with time reaching record lows by August and tending to zero at some locations between September and November, but there was adequate rainfall in April 1998 to terminate Meteorological drought in all Regions except 1 and 2.

Region 1

Of all the stations sampled across the country Wauna recorded the most significant anomalies reaching an accumulative value of negative 1713.6 mm, with the missing May'97 excluded. At this station precipitation was above normal only in April'97 and probably May'97. It was more than 50 % below normal in March'97 and from July'97 to March'98. At Port Kaituma rainfall was above normal only in March'97 and February'98, while notably there was no rainfall in March'98.

Region 2

Rainfall at Charity was below normal throughout the period, to a value of 50 % or more from August'97 to March '98. At Anna Regina rainfall was more than 40 % below normal from August to November 1997 and from January to March 1998. It was above normal in only 3 months within the period. Rainfall at Onderneeming was also significantly below normal in most of the months between March'97 and April'98, and was less than 1 % of normal in March 1998.

Region 3

At Wakenaam rainfall was more than 50 % below normal in April'97 and from August'97 to April'98. Of the locations sampled in the Region this Island suffered the greatest rainfall deficit over the latter period, and the rainfall there was only above normal in May June and July 1997. Wales recorded subnormal rainfall in all months excluding May'97, but Boerasirie seemed to be least affected with above normal rainfall from March to May 1997, in July 1997 and April 1998.

Region 4

In Georgetown, rainfall was below normal in 12 of 14 months, the exceptions being May'97 and April'98. In 9 of these months rainfall was more than 50 % below the respective normals i.e. in June'97 and from August'97 to March'98. At this location the rainfall was just 16.2 mm in August or 8 % of normal and 2.1 mm in September or 2 % of normal. These were both the lowest values for the respective months, in at least 118 years. Rainfall was also significantly below normal at Cane Grove Front and to a smaller extent at near inland station Timehri.

Region 5

At Blairmont rainfall only exceeded the normal in April'98 and was more than 50 % below normal from July'97 to March'98. There was no rainfall at this station in November 1997. Values obtained indicate that the rainfall was also primarily below normal at Mahaicony.

Region 6

Subnormal rainfall dominated being frequently less than 50 % of normal. In only 2 of the 14 months was there above normal rainfall at New Amsterdam and in three of these months this parameter was above normal at Skeldon and Crabwood Creek.

Region 7

Rainfall exceeded the normal at Apaikwa from March to August 1997, but this location then succumbed to the El Nino effect and the rainfall remained below normal for the remainder of the period. At Bartica Rainfall remained below normal through the entire period under consideration while at Mazaruni Prison it was only above normal in May'97 and April'98.

Region 8

Just one of the four months of data obtained for Kaitour falls indicated above normal Rainfall.

Region 9

Rainfall was above normal at Lethem in December'97 and April'98, Kumu in April'98, and Shea at least in July'97, but significantly below normal otherwise. There was no rainfall at Lethem in October'97 and at Kumu in September'97, November'97 and January'98.

Region 10

At Linden rainfall was above normal in 5 of the 12 months for which data was available and these were from March'97 to May'97, in August'97, November'97 and April'98. At this station the rainfall was less than 50 % of normal only in February 1998. At Plantain Island rainfall was above

normal from April'97 to June'97, in November'97 and December'97, but below normal otherwise. Ebini in the eastern part of the Region was more severely affected and recorded above normal rainfall only in April 1998.

Table 1. Rainfall and relation to Normals for stations within Regions for year 1997, dark shade indicates subnormal rainfall, very dark shade indicates rain 50% or more below normal.

Reg.	Station	Particulars	Mar 97	Apr 97	May 97	Jun 97	Jul 97	Aug 97	Sep 97	Oct 97	Nov 97	Dec 97	Jan 98	Feb 98	Mar 98	Apr 98
1	Wauna	Rainfall	42.8	173.8	-	347.4	130.6	83	55	74.7	47.1	24.4	4.2	11.6	18.1	58.1
		% of Normal	40.2	146.7	-	84.4	115.5	77.5	52.0	47.5	32.5	20.0	10.0	5.0	15.0	18.0
	Port Kaituma	Rainfall	76.7	49.2	-	263.6	169.2	163.1	127	174.1	154.1	115.9	42.1	95	0	150.6
		% of Normal	108.8	65.0	-	83.3	59.6	77.6	71	98.1	69.9	50.0	119.5	100.0	0	99.5
2	Charity	Rainfall	73.9	118.3	298.1	315.5	243	61.3	0	67.4	51.5	91.1	90.3	11.7	53.3	109.1
		% of Normal	68.8	75.5	95.5	93	85.6	50.0	0	50.1	40.0	80.0	80.0	10.0	50.0	68.7
	Anna Regina	Rainfall	101.3	118.5	446.7	196.3	314.1	87	0	32.6	81.2	222.0	99.4	5.8	43.4	-
		% of Normal	114.9	95.7	158.1	65.2	127.3	50.0	0	20.0	80.0	200.0	80.0	5.0	40.0	-
Onderneeming	Rainfall	24.8	130.8	342.4	159.5	245.2	17.6	26.2	2.3	1.1	80.2	31.9	1.2	0.3	72.7	
	% of Normal	82.6	74.3	114.7	57.1	122.4	50.0	50.0	10.0	10.0	80.0	30.0	10.0	10.0	70.0	
3	Wakenaam	Rainfall	58.8	92.8	572.6	513	492.1	19.2	0.5	18.5	55.8	8.4	30.2	1.1	5.3	33.6
		% of Normal	57.5	90.0	168.7	122.8	226.5	50.0	5.0	18.0	50.0	8.0	30.0	10.0	5.0	30.0
	Boerasirie	Rainfall	170.6	230.7	670.6	287.8	395.8	77.7	48.9	117	136	253.2	68.3	52.3	40	186.2
		% of Normal	145.1	157.9	199.2	69.1	124.2	50.0	40.0	100.0	100.0	200.0	60.0	50.0	40.0	104.8
Wales	Rainfall	61.6	130.7	250.7	173.1	215.4	70.4	31.4	72.1	39.3	105.9	69.4	31.1	-	132.6	
	% of Normal	53	86.4	121.4	53.1	77.5	50.0	30.0	70.0	30.0	100.0	60.0	30.0	-	87.6	
4	Georgetown	Rainfall	70.8	99.4	342	138.3	249.9	16.2	2.1	26.6	41.1	78.3	71.8	18.2	23.1	145.2
		% of Normal	63.8	70.7	120	50.0	93.2	50.0	10.0	20.0	30.0	70.0	60.0	15.0	20.0	103.3
	Cane Grove (F)	Rainfall	59.3	123.2	310.1	236.7	143.2	38.1	10.2	3.8	19.8	75.1	44.4	18.6	39.9	133.5
		% of Normal	55.4	93.0	100.0	50.0	62.5	20.0	10.0	4.0	20.0	70.0	40.0	15.0	35.0	101.3
Timehri	Rainfall	128.7	146.9	267.5	266.6	146.3	156.9	87.4	165.8	50.4	109.7	127.6	34.2	35.6	257.6	
	% of Normal	74.8	85.4	84.5	79.0	51.1	71.8	66.2	121.4	29.0	47.0	61.5	33.5	26.6	149.8	

Accumulated Rainfall Anomalies at Stations

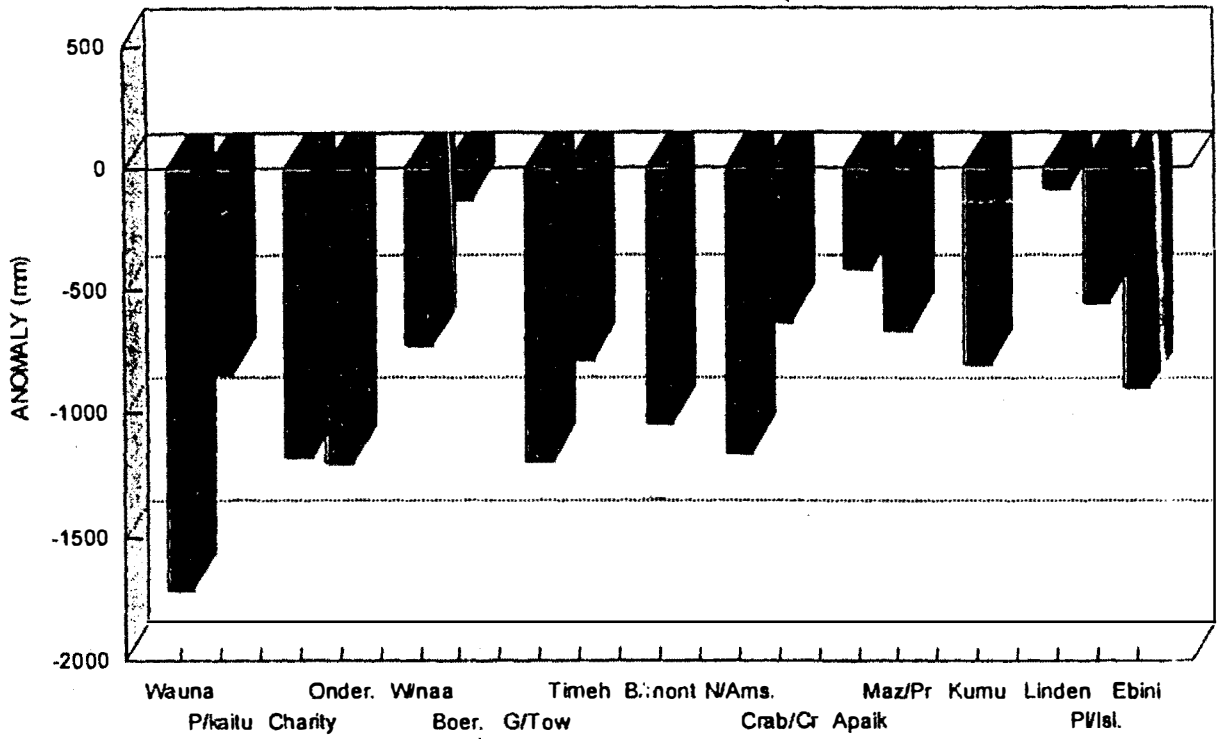


Figure 1. Anomalies of the rainfall accumulated over period March 1997 to April 1998, for stations arranged by Regions in chronological order, but with Region 8 excluded

Temperatures

Meteorological drought is usually associated with reduced cloudiness and hence increased incoming radiation, but with less moisture to dissipate some of this incoming energy in the form of latent heat both air and soil temperatures are likely to increase. However temperature increases were global indicating that other factors were also responsible, such as the El Nino itself which distributes heat from the tropical oceans via changes in the global circulation, but there is growing consensus that anthropogenic forcing due to human activities was also a factor³.

The temperatures in Guyana were high relative to the climatology and this would have influenced enhanced evapotranspiration thus contributing to the severity of the drought. The mean maximum temperatures (average of the most significant daily values) at the Georgetown Botanic Gardens from September to November 1997, also February 1998 and March 1998 were the highest since records were kept from 1909. These were 32.3 C, 32.4 C, 31.9 C, 30.9 C and 31.0 C for the respective months. The previous highest value (all months and years considered) was 32.2 C and this occurred in October 1919.

The nighttime temperatures, as represented by the mean minimums, reached an all time high in November 1997 with a value, in Georgetown, of 25.9°C. This exceeded the previous highest value, which occurred in November 1987, by 0.5 C. While the mean minimum temperatures for October 1997 (25.8 C), February 1998 (25.4 C) and April 1998 (25.7 C) were the highest on record for those months

The hydrological cycle also known as the water cycle deals with the interaction between the atmosphere, hydrosphere and lithosphere. Elements of the cycle are evaporation, precipitation, infiltration, transpiration, percolation and surface runoff. This part of the paper deals mainly with the runoff. Data for the period under consideration were analysed for three of the major rivers, Essequibo, Mazaruni and Demerara with the aid of graphs of the monthly mean discharge and normals.

The Essequibo river with a drainage area of 66,600 km² is the largest of the three and is monitored at a location called Plantain Island which is 20.9 km upstream from Rockstone. Next is the Mazaruni river which primarily drains the Pakaraima mountains and has a drainage area of 14000 km². This river is monitored in the middle reaches of the Mazaruni just below the confluence with the Isseneru River which is 2.09 km upstream from the Apaikwa Falls. The Demerara river is monitored at Great Falls approximately 322 km upstream from the mouth and has a drainage area of 2460 km².

Discharge:

Discharge follows a curve similar to that of rainfall with a lag of about one month especially in the drainage basins which are characteristically flat. Consequently discharge peaks in July and January in the Essequibo and Demerara rivers, but in the Mazaruni river with its elevated drainage basin, the peaks are in June and January. The slower response in the Secondary Wet Season is probably due to the greater soil moisture deficit following the Primary Dry Season (early August to mid November).

Essequibo River:

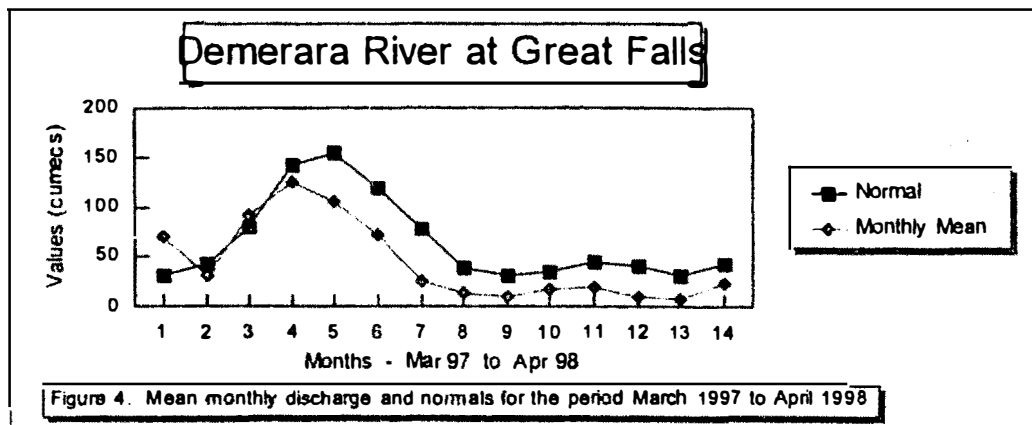
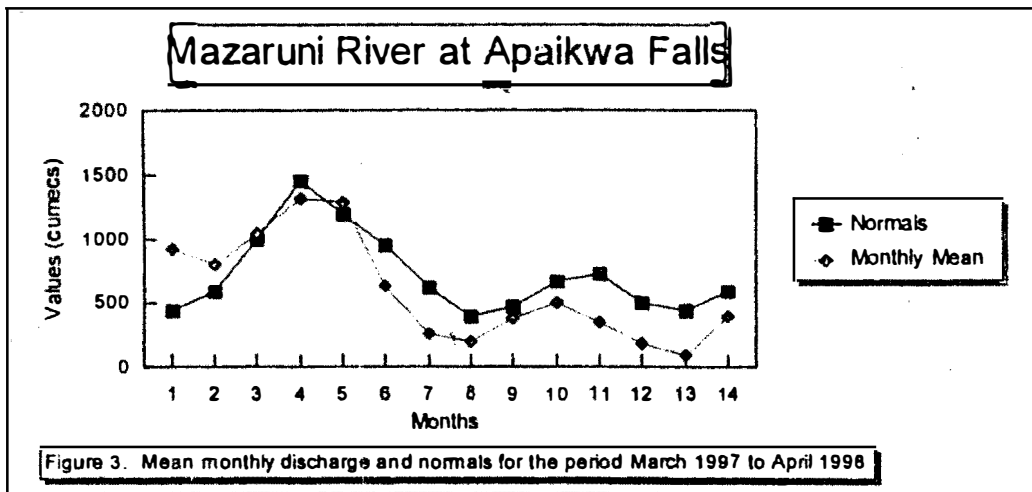
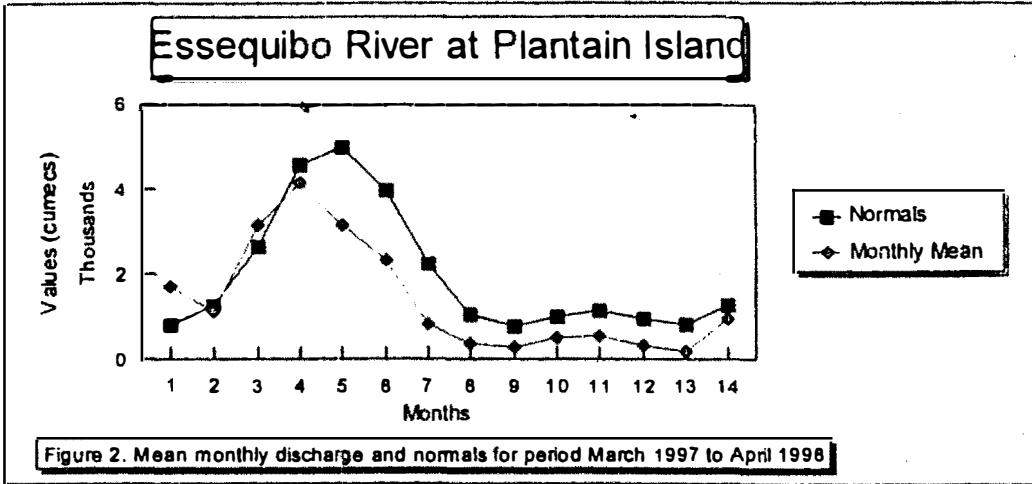
Mean monthly discharge (Fig. 2) was below normal from June '97 and for the period March '97 to April '98 it was 28% below. In June the discharge was just 10% below normal, but by October his deficit rose to 66% and in March 1998 the discharge had reached its lowest value (5579 ft³ s⁻¹) which was 80 % below normal.

Mazaruni River:

The mean monthly discharge was persistently below normal from August 1997 (Fig. 3), and this contributed to the overall subnormal value of 16 % on average over the period under review. Like the Essequibo the mean monthly discharge was 10% below normal in June but was 7% above normal in July following which it remained below normal. In September the discharge was 59% below normal and while there was an improvement in November with a value of just 19% below, by March 1998 the discharge achieved its lowest value and was as much as 81 % below normal.

Demerara River:

From June 1997 the mean monthly discharge was persistently below normal, contributing to an overall subnormal average of 32%. The discharge was 12% below normal in June and decreased significantly to the value of 69% below in September. In October the discharge was 66% below normal and by November 71% below. There was only a slight increase in flow in December with discharge 53% below normal but, as for the other rivers, by March 1998 the discharge had reached its lowest value being 78 % below normal.



Some Consequences

The information above clearly indicates that the 1997/1998 drought was initiated by meteorological factors and therefore began as a meteorological drought. By the end of October 1997 there were grass fires indicating that physiological drought was in effect, at least in well drained areas and by early February 1998, following what can be considered a failure of the Secondary Wet Season, very low levels in rivers and water conservancies were being reported with saline intrusion approximately 30 to 40 miles upstream of the coastal rivers. There was therefore an acute shortage of irrigation water for agriculture. In some areas, creeks and reservoirs had completely dried up, necessitating the importation of water for drinking purposes. Navigational difficulties and the lack of available water for the use of pressure pumps impeded gold and diamond mining. Evidently hydrological as well as societal/economic drought were additionally present. By late February 1998 forest fires were being reported at Mabura indicating the spread and intensification of physiological drought to the more resilient forested areas. In March 1998 fires were reported in other forested areas and grasslands inclusive of locations in Regions 1 and 9. Root crops were severely damaged by the increased soil temperatures in Region 9. The increased evapotranspiration influenced by high temperatures, the fast draining soils and the rainfall deficit in the river catchments exacerbated the drought in this Region.

Conclusion and Recommendations

Clearly, between March 1997 and April 1998 Guyana was affected by what commenced as a meteorological drought induced by the El Nino weather phenomenon. By February 1998 the drought became comprehensive with dire consequences. During this drought there were record low rainfall, record high temperatures and low river discharges. There is growing consensus that these anomalies are evidence of a changing climate and therefore it is necessary for greater emphasis to be placed on climate related analyses, including the development of a drought index for Guyana. This will require an improvement in the technical capabilities of the Hydrometeorological Service which essentially entails improved staffing, both in terms of quality and quantity.

References

1. **Palmer W.C. (1965).** Meteorological Drought. Research Paper No. 45, Weather Bureau, Washington D. C., 2
2. **Kerang L. & Makarau A. (1994).** Drought & Desertification, WMO/TD-No. 605, 3-5
3. NOAA 98-019

CIVIL DEFENCE COMMISSION
EL NINO BASKET OF GOODS

BASKET OF RELIEF GOODS FOR FAMILY UNIT OF 5 PER FORTNIGHT

ITEM	QTY/FN	QTY/MTH
(a)	(b)	(c)
RICE	1.5 GAL	03 GAL
FLOUR	05 LB	10 LB
BAKING POWDER	0.25 LB	0.5 LB
SUGAR	10 LB	20 LB
SALT	01 LB	02 LB
MILK	05 LB	10 LB
COOKING OIL	01 LITRE	02 LITRE
PEAS(B/EYE OR RED BEANS)	0.5 GAL	01 GAL
BISCUITS	2.5 LB(1/2 BOX)	05 LB (01 BOX)
MARGARINE	01 LB	02 LB
TEA BAGS	0.5 BOX	01 BOX
SOAP(MEDICATED)	02 CKS	004 CKS
FARINE	7.5LB	15 LB
CANNED MEAT		
PLASTIC BAGS(SMALL)	11	22
PLASTIC BAGS(LARGE)	01	02
Based on bulk purchases, the average cost per basket per fortnight is \$3,254.97		

CIVIL DEFENCE COMMISSION
CONSOLIDATED REGIONAL FOOD RELIEF FORTNIGHTLY DISTRIBUTION MATRIX

Ser	Region	Total Pop.	H/Hold	March	April	May	June	July	Aug.	Sep	Total Units H/Hold Received	REMARKS
01	1	9397	1632		*	*			*		8160	
02	2	7690	1128		*	*					1611	
03	3	729	108		**	**	*		*		484	
04	4	78500	507			*	*		*		1521	
05	5	6320	1251		*	**	*		*		6270	
06	6	3948	730			**			*		1301	
07	7	4356	738		*	**	*	*	*		4119	
08	8	6290	1393		**	*	*	*	*		7033	
09	9	19065	3510		**	*	*				13548	
10	10	25201	1393		*	*	*	*		*	5803	
		161496	12390								49850	

Civil Defence Commission
Regional Food Relief Fortnightly Distribution
Region: # 9

SER.	VILLAGES	TOTAL POP.	No. of H/Hold	MARCH			APRIL			MAY			JUNE			JULY			AUGUST			SEPTEMBER			NO. OF RELIEF UNITS RECEIVED						TOTAL					
				1	3	5	1	3	5	1	3	5	1	3	5	1	3	5	1	3	5	1	3	5	1	2	3	4	5	6						
1	SAWARIWAU	974	98				*	*			*			*											98	98	98	98							392	
2	KATOONARIB	300	72				*	*			*			*												72	72	72	72							288
3	RUPUNAU	223	50				*	*			*			*												50	50	50	50							200
4	SAND CREEK	1158	135				*	*			*			*												135	135	135	135							540
5	POTARINAU	541	86				*	*			*			*												86	86	86	86							344
6	SHULIMAB	504	88				*	*			*			*												88	88	88	88							352
7	SHEA	312	81				*	*			*			*												81	81	81	81							324
8	MARURANNAN	646	129				*	*			*			*												129	129	129	129							516
9	AWAREAUNAU	578	120				*	*			*			*												120	120	120	120							480
10	AISHALTON	1040	208				*	*			*			*												208	208	208	208							832
11	KARAODARNAU	995	160				*	*			*			*												160	160	160	160							640
12	ACHEWIB	248	106				*	*			*			*												113	113	113	113							452
13	GUNN STRIP	247	50				*	*			*			*												48	48	48	48							192
14	LETHEM	468	251				*	*			*			*												251	251	251	251							1004
15	ST. IAGNATIUS	618	103				*	*			*			*												106	106	106	106							424
16	MOCA MOCA	361	63				*	*			*			*												63	63	63	63							252
17	NAPPI	490	86				*	*			*			*												86	86	86	86							344
18	PARISHARA	289	41				*	*			*			*												36	36	36	36							144
19	HIAWA	263	43				*	*			*			*												43	43	43	43							172
20	YUPUKARI	1352	231				*	*			*			*												128	128	128	128							512
21	DADANAWA	72	16				*	*			*			*												26	26	26	26							104
22	QUATAMANG	303	44				*	*			*			*												44	44	44	44							176
23	TOKA	177	28				*	*			*			*												28	28	28	28							112
24	MASSARA	434	74				*	*			*			*												72	72	72	72							288
25	YAKARINTA	649	89				*	*			*			*												95	95	95	95							380
26	ARANAPUTA	331	98				*	*			*			*												80	80	80	80							320
27	ANNI	410	76				*	*			*			*												76	76	76	76							304
28	SARAMA	263	35				*	*			*			*												35	35	35	35							140
29	WOWETTA	263	35				*	*			*			*												31	31	31	31							124
30	RUPERTEE	239	38				*	*			*			*												38	38	38	38							152
31	APOTERI	312	60				*	*			*			*												60	60	60	60							240
32	REWA	260	37				*	*			*			*												24	24	24	24							96
33	FAIRVIEW	82	22				*	*			*			*												22	22	22	22							88
34	KARASABI	778	136				*	*			*			*												136	136	136	136							544
35	TIPURI / RUKUMUTU	267 197	49 34				*	*			*			*												83	83	83	83							332
36	TIGER POND/PAI PAN	430	80				*	*			*			*												80	80	80	80							320
37	YURONG PERU	272	46				*	*			*			*												46	46	46	46							184
38	TAUSHIDA	212	43				*	*			*			*												41	41	41	41							164

CIVIL DEFENCE COMMISSION

SUMMARY DISPLAY SHOWING UTILIZATION OF

FOREIGN DONOR FINANCIAL CONTRIBUTIONS

Appendix viii

SITUATION AS AT 98-11-30

SER	COUNTRY/ AGENCY	US\$ AMT DONATED	EXPENDITURE							TOTAL EXPD	BAL	REMARKS
			FOOD INPUT	WATER INPUT	AGRI INPUT	AIR TPT	RIVER/ LAND TPT	EMPLOYMENT COSTS	INSTITUTIONAL SUPPORT			
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)
	COUNTRIES											
01	CHINA	50,000.00				50,000.00				50,000.00		
02	ITALY	48,543.00	35,306.42	13,236.58						48,543.00		
03	CANADA	141,843.00		117,562.00	12,627.97		610.40	382.97		131,183.34	10,659.66	Committed
04	NORWAY	19,400.00	10,650.00							10,650.00	8,750.00	Committed
05	SINGAPORE	19,400.00			18,073.00					18,073.00	1,327.00	Committed
06	U.K.	256,000.00	203,338.57	10,690.00		19,703.00	5,017.43	10,147.00		248,896.00	7,104.00	Committed
07	GERMANY	12,500.00	12,500.00							12,500.00		
08	MAURITIUS	50,000.00				17,945.86		1,080.00	8,987.74	28,013.60	21,986.40	Committed
09	JAPAN	43,433.00		43,433.00						43,433.00		
	SUB-TOTAL	641,119.00	261,794.99	184,921.58	30,700.97	87,648.86	5,627.83	11,609.97	8,987.74	591,291.94	49,827.06	
	AGENCIES											
10	UNDP	65,000.00				636.71	1,256.67	6,919.27	5,922.18	14,734.83	50,265.17	Committed
11	UN-OCHA	20,000.00	10,710.00		9,290.00					20,000.00		
12	UNICEF	10,000.00		10,000.00						10,000.00		
13	OAS	20,000.00				20,000.00				20,000.00		
14	CDERA	3,320.00	3,320.00							3,320.00		
16	CDB	100,000.00		6,285.00		8,700.00	7,200.00		27,815.00	50,000.00	50,000.00	Committed. Not yet received
17	SUB TOTAL	218,320.00	14,030.00	16,285.00	9,290.00	29,336.71	8,456.67	6,919.27	33,737.18	118,054.83	100,265.17	
18	GRAND TOTALS	859,439.00	275,824.99	201,206.58	39,990.97	116,985.57	14,084.50	18,529.24	42,724.92	709,346.77	150,092.23	

CIVIL DEFENCE COMMISSION

SUMMARY DISPLAY SHOWING UTILIZATION OF GOVERNMENT FUNDS AND LOCAL DONORS FINANCIAL CONTRIBUTIONS

Situation as at 98-11-30

SER	SOURCE OF INCOME	\$G	%	REMARKS
(a)	(b)	©	(d)	(e)
01	Govt. Funding	120,000,000.00	97.67	
02	Local Donors	2,856,258.00	2.33	
03	Total Income	122,856,258.00	100	
	OPERATIONAL EXPENDITURE			
04	Ration	25,748,731.00		
05	Agri Sector (Rice)	80,000,000.00		
06	Field Material & Supplies	52,498.00		
07	Transport, Travel & Postage	12,618,660.00		
08	Local Travel & Subsistence	323,005.00		
09	Fuel & Lubricants	444,970.00		
10	Other Purchases	367,601.00		
11	SUB TOTAL	119,555,465.00	97.31	
	ADMINISTRATIVE EXPENDITURE			
12	Office Materials & Supplies	1,000,747.00		
13	Repair & Maint of Building	612,146.00		
14	Accomodation Stores	604,780.00		
15	Janitorial & Cleaning Supplies	36,375.00		
16	Contracted Employees	365,268.00		
17	Vehicle Repairs & Maint	287,853.00		
18	Utility Charges	200,967.00		
19	SUB TOTAL	3,108,136.00	2.53	
20	TOTAL EXPENDITURE	122,663,601.00	99.84	0.16% BALANCE

NGO's AFTER ACTION SUMMARIES

1. **Guyana Relief Council**
2. **Summary of Beacon Foundation**
3. **Summary of Fast Response Group**
4. **Guyana Red Cross Society**

THE GUYANA RELIEF COUNCIL

P.O. Box 10951

Georgetown, Guyana.

Lot X West of Public Road, Riverview, Ruimveldt,

Telephone: 592-2-53081/52874 Fax: 592-2-53681



Caring & Sharing

17th November, 1998

REPORT OF GUYANA RELIEF COUNCIL'S "EL NINO PHENOMENON" ASSISTANCE TO REGIONS 8 & 9

The Guyana Relief Council, working in collaboration with the Civil Defence Commission, provided humanitarian relief to the several families of the Northern Rupununi Savannahs who were devastated by the effects of the "El Nino Phenomenon."

The affected five hundred and ninety three (593) families were from the villages of Fairview, Surama, Rupertie, Wowetta, Quatamang, Annai, Toka, Yakarinta, Quimata, Rewa & Apoteri.

Between the period of 8th April, 1998 and 18th August, 1998 the G.R.C.'s relief assistance was dispatched in four (4) shipments.

The first convoy of 4 trucks with food supplies departed Georgetown on 8th April, 1998.

The second shipment of 2 trucks departed Georgetown on the 21st April, 1998.

The third consignment of 3 trucks departed Georgetown on the 2nd June, 1998.

The final shipment of 2 trucks load of food supplies along with farmer's tools departed Georgetown on 18th August, 1998.

The Civil Defence Commission facilitated this exercise by providing the trucks used for transporting the supplies.

The various communities received substantial food hampers along with clothing, medical supplies, school supplies, seeds, farming tools and footwear.

The G.R.C.'s team of willing volunteers was headed by its enthusiastic chairman, Mrs Yvonne Hinds during these distribution exercises.

In the G.R.C.'s assessment, it was determined that each family would receive one hamper, with the exception of the larger families. They received two hampers each. This distribution pattern was observed for the three trips.

On the fourth trip, the villages of Rewa and Apoteri were added to the distribution list.

In addition to the food hampers and clothing, villages were given farming tools and seeds.

The village of Fairview was supplied with footwear
Of interest is the "Special Care Package" which the Guyana Relief Council has since been providing to the triplets Tracy, Trudy and Trina of the Van Long family of Rupertie Village. This family consists of six (6) other children together with their parents. Having to care for three babies at the same time under the "El Nino" conditions was and still remains burdensome to the Van Long family.

Funding for the Relief exercise was provided by Overseas Guyanese, especially from Toronto, New York and Miami. On the local front, the national Bank of Industry and Commerce rose nobly to the challenge and pledged one million dollars to this worthwhile cause. This was followed by other business organisations and individuals who contributed despite their reduced economic ability.

The Guyana Relief Council's motto is: Caring and Sharing.: The Goodwill of the Community on the Coast was manifested in the donations given. This helped the G.R.C. in fulfilling its mandate of providing relief to distressed persons who have been affected by disasters.

The "El Nino Phenomenon" has certainly depleted most of the G.R.C.'s financial resources.

The attached represents the amounts expended.

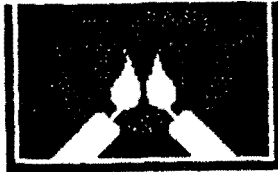
Sincerely,
Sgd. Joan Sears
Secretary

	TRIP #1	TRIP #2	TRIP #3	TRIP #4
No. of Hampers	500	250	375	500
Value of Hampers	2,500,000	1,250,000	2,250,000	4,000,000
Transportation for Staff & Volunteers	220,000		323,000	92,000
Accommodation for Staff & Volunteers	-		99,720	53,900
Contingency for Staff & Volunteers	170,000	100,000	150,000	185,000
Medical Supplies to Communities	56,210			
Cost of Footwear				169,000
Triplets "Care Package	5,000	8,000	7,000	5,000
Water Tanks	65,000			
School Supplies	2,696			
Diesel Supplied to G.R.C. Vehicles by Dem. Timbers Ltd.,			8,048	
Hire of Boat & Vehicles From Iwokrama				116,784
TOTAL	3,018,906	1,358,000	2,837,768	4,621,684

GRAND TOTAL

11,836,358

Beacon



Foundation

Community Development Division

El Nino Relief Fund **TOTAL VALUE OF DONATIONS** Mar-Nov 1998

Berbice:	Fish, Shrimp	218,500
Rupununi	Foodstuffs (Schools)	6,078,336
	Foodstuffs (communities)	1,708,474
	Cooking Utensils	302,324
	Detergents (communities)	483,840
	Medical Supplies	32,091
	Transportation	439,450
	Fuel	27,190
	Packaging Materials	42,490
	Office	993
	Bank Charges	600
	TOTAL:	9,334,288

* Full report to follow.



Guyana Lottery Company Limited

23 Park Street,
Kingston
Georgetown.
Tel: 592-2-60783-G
Fax: 592-2-88000.
E-mail: guy_lot @ guyana. net. gy.

Appendix x

29th June, 1998

The following refers to supplies donated by "Fast Response" to Region #9 and its villages.

- | | | |
|------------------|-------------------------------------|----------------------------|
| Toka | -28 families | } |
| Rupunau | -60 families | } Shared 4,600 lbs Farine. |
| Sarawrinau | -129 families | } |
| Shulinab | -20 Oral Rehydrants | |
| | -100 Water purification tabs | |
| | -3 bottles Neosporin Eyedroppers | |
| | -3 bottles Neomycin Eye/Ear drops | |
| | -3 bottles Visine Eye Drops | |
| | -20 pks oral Rehydrants | |
| Rupunau Village: | -350 Anti-Diarrhoea tabs | |
| | -20 pks Oral Rehydrants | |
| | -3 boxes Oral Rehydrants Powder | |
| | -86 Chlorinated tabs | |
| | -4 bottles Visine Eye drops | |
| | -3 bottles Neosporin Eye drops | |
| | -2 bottles Myosborine Eye/Ear drops | |
| | -5 buckets | |
| Shea: | -40 Oral Rehydrants salt | |
| | -20 pkts Rehydrants powder | |
| | -4 bottles Visine Eye drops | |
| | -6 bottles Myosborine Eye/ear drops | |
| | -80 Chlorinated tabs | |
| | -55 buckets | |
| Mururunau: | -20 pks oral Rehydrants salt | |
| | -60 pks Rehydrants powder | |
| | -2 bottles Visline Eye drops | |

**-2 bottles Neosporin Eye/Ear drop
-120 Anti-Diarrhoea tabs
-83 Chlorinated tabs**

**Awarwaunau: -20 pks Oral Rehydrants
-40 pks oral Rehydrants power
-7 bottles Neomycin Eye/Ear drops
-7 bottles Neosporin Eye/Ear drop
- 5 bottles Visine Eye Drops
- 66 Tabs Chlorinated tabs**

**12 drums of fuel
One 290 Tractor and 1 Toyota 4x4 donated by Ainlim-(Neal & Massay Group of
Companies)
for period of 2 months.
Medication for Intestinal Parasites - Dosage for 3000 persons
40 Gallons Chlorine for waste treatment**

For your guidance

Regards

**Martin Subero
Sales Manager.**

**REGION # 9 RELIEF COMMITTEE
DIESELENE**

DATE	DONOR	QTY. REC'D	ISSUED TO	QTY.	BAL.	REMARKS
98./04//01	Fast Reponse	360		-	360	
98.4.03	(Canadian Private Enterprise)		Truck GFF 9846	45	315	
98.04.07			NDC Tractor #19477	5	310	
98.04.09			NDC Tractor	15	295	
98.4.13			Education Vehicle PDD 7936	13	282	
98.4.13			South Tractor #19220	45	237	
98.4.13			Truck #GFF 9846	45	192	
98.5.15			NDC Tractor	30	162	
98.5.15			Guywa Vehicle PFF 3734	10	152	
98.4.21			South Central Tractor #20332	45	107	
98.4.22			South Central #19220	45	62	
98.4.22			Reported Missing	11	51	
98.4.24			Central Tractor #20305	19	32	
98.4.25			South Central Tractor #20332	16	16	Food distribution
98.5.4			Central Tractor #20305	16	Nil	Food distribution

**REGION #9 RELIEF COMMITTEE
GASOLENE**

DATE	DONOR	QTY. REC'D	ISSUED TO	QTY.	BAL.	REMARKS
98.5.01	Fast Response	180 gals	Vehicle GEE 9364		180	
98.5.01	(Canadian)			10	170	

DATE	DONOR	COMMODITY	QUANTITY	BENEFICIARIES	QUANTITY DISTRIBUTED	BALANCE
1.04.98	Fast Response	Farine	4,626 lbs	Awarewaunau	2837 lbs	1789
	Canadian P Enterprise			Rupunau	1152 lbs	637
				Toka	637 lbs	Nil
		12 Volts Batteries	2	Region #9 Relief Office		
				Lethem	1	1
				Deep South Relief Office		
				Aishalton	1	Nil
		Buckets	164	Rupunau	45	119
		(medium)		Shea	77	42
				Quarry	24	18
				Relief Staff	3	15
				Aishalton School	1	14
				Shea School	1	13
				Awarewaunau School	2	11
				Marununau School	2	9
				Karaudarnau School	1	8
				Sand Creek School	1	6
				Katoocarib School	1	5
				Sawariwau School	1	4
				Small Sandcreek Primary	1	2
				Macushi Primary	1	1
				Parikwarinau Primary	1	nil
				Achiwib School	1	7
				Potarinau Primary	1	3
	Fast Response	Stihl Pump	1		Nil	
		Flex	2	Lethem Community	Nil	
		Clamps	2		Nil	

GUYANA DROUGHT

Red Cross Relief & Rehabilitation Operation



MAP IS FOR INFORMATION AND/OR INDICATIVE
PURPOSES ONLY AND HAS NO POLITICAL SIGNIFICANCE

Report, December 1998

Guyana Red Cross

International Federation of Red Cross and Red Crescent Societies

Country : Guyana
Name operation : Guyana: El Nino Drought
Implementing Agency : Guyana Red Cross Society (hereafter: the GRC) in co-operation with the International Federation of Red Cross and Red Crescent Societies (hereafter: the Federation)
Appeal No. : 14/98
Funding received : USD
Duration : April 1998 - October 1998
with ongoing Rehabilitation Programme
Date of Report : 7 December 1998

1. Context

The El Nino phenomenon resulted in unprecedented drought conditions throughout Guyana, which is one of the poorest countries in the western Hemisphere (placed 104 in 1997 UNDP-rating out of 175 countries) with a per capita gross domestic product of only USD 570 million (1993). Rainfall was 50% lower than normal last year, and March rainfall was 85% lower than usual. This resulted in severe water shortages and drought conditions that affected 80% of the population; Guyana has 759,000 inhabitants. Cumulatively, the rain deficiency between August 1997 and February 1998 exceeded 75% of normal precipitation. The rain deficiency resulted in severe water shortage with associated effects on the population in general and economic activities in particular. The most acute problems faced by the population were lack of drinking water and shortage of food, as sea water moved up stream into areas of cultivation and crops fail. On 26 March 1998, the President of Guyana declared a state of national emergency, articulating her conviction that the country "faced a natural disaster".

Most severely affected areas were Region 1 (north-west) and Region 9 (south-west), home to approx. 23,000 indigenous Amerindians, and where the potable water supply was greatly reduced and fires raged. As a result, crops and livestock was adversely affected, significantly reducing food supplies. The economic activities of those employed in the areas of mining, agriculture (especially subsistence farming), forestry and fishing were seriously affected. As sugar, rice and gold are the main foreign exchange earners for Guyana, the impact of the drought was severe.

Food supplies, already in short supply in the hinterland, were almost fully exhausted and it was predicted that malnutrition would re-emerge in many vulnerable areas, in particular among women and children left alone. Water supplies from rivers, creeks and ponds diminished and in some instances dried up completely or became contaminated by sea water. The presence of unsafe drinking water and risk of water borne diseases also posed a threat to the population. Wells and springs had dried up in hinterland areas. Depleted river levels

hindered the use of these waterways for transportation purposes which resulted in more vigorous journeys to those areas inaccessible by road.

The Guyana Red Cross (GRC), on whose behalf the Federation launched the El Nino Drought Appeal, is a relatively small National Society with limited operation capacity in Georgetown as well as in the regions. The GRC gained relevant experience in relief operations while responding to the Flood disaster of the first half of 1996 in which the National Society distributed relief items to over 1,460 families in three regions.

In response to the Emergency Appeal launched by the Federation on 22 April 1998, the European Community Humanitarian Office (ECHO) and the National Red Cross Societies and Governments of United Kingdom, Norway, Sweden, Iceland, Canada, Japan and the Netherlands made cash contributions, while the Netherlands Red Cross made an in-kind donation. The total value received was CHF xxxxxxxx, achieving XX % of the Appeal target.

2. Objectives and Target Group

In its declaration of a state of national emergency on 26 March, the Government of Guyana requested regional and international assistance to cope with the crisis. A preliminary needs assessment was done in March and early April by the Civil Defence Commission; the GRC complemented the findings. While Guyana Red Cross volunteers assessed the needs for relief, especially in the affected Amerindian villages in Region 9, to prepare a Plan of Action, the Federation reallocated funds towards the Guyana Red Cross Society to facilitate the immediate purchase of food and other necessities to those most in need.

The most immediate needs were those of the subsistence farmers and their families who would have no or very limited local sources of food until October, or later if the normal rainfall did not occur in May. Therefore, the Red Cross objectives of the relief operation were:

- To provide food security to 1,500 households in the Rupununi region;
- To assist with public measures to prevent outbreaks of water-borne diseases;
- To co-ordinate and avoid duplication of effort with other national and international agencies.

The operation would continue with a rehabilitation phase of three months in which assistance would be given to support 1,500 families to return to their homes and resume their livelihoods.

In order to carry out this relief operation, the Federation assisted the Guyana Red Cross with strengthening its human and material disaster-response capacity not only for this relief operation but also in preparation for future disasters.

3. Planned Activities

The GRC and the Federation planned to assist immediately the most vulnerable 1,500 families in the Rupununi region with supplementary food parcels and safe drinking water supply. The longer-term assistance would concentrate on supporting people to return to their homes and resume their livelihoods with a limited continuation of the supplementary food rations distribution, with providing replacement of farming tools and seeds, and with the dissemination of health and safety advice's to prevent the occurrence of any water-related diseases.

The following table gives an overview of the planned distribution of relief items to the 1,500 households with an indication of related quantity and period.

Item	Product	Qty / Parcel	Distribution/period
Food	Rice	12,5 kgs	every househ./month
	Vegetable Oil	3,4 ltr	every househ./month
	Salt	1 kg	every househ./month
	Sugar	5 kgs	every househ./month
	Flour	3 kgs	every househ./month
	Beans/Peas	3 kgs	every househ./month
	Corn Beef	4 cans	every househ./month
	Fish	4 cans	every househ./month
	Powder Milk	1 kg	every househ./month
	Tea Bags	100 bags	every househ./month
	Biscuits	1,5 kgs	every househ./month
	Hygiene	Soap	4 bars
Agricuilt. Tools	Fork	100	5 - 10 per community
	Machete	1,500	1 per household
	Hoe's	1,500	1 per household
	Corner File	1,500	1 per household
	Shovels/Spades	1,500	1 per household
	Axe/Pick Axe	500	1 per 3 households
Seeds	Bora	1,500	1 pack/household
	Watermelon	1,500	1 pack/household
	Cucumber	1,500	1 pack/household
	Eggplant	1,500	1 pack/household
	Onions	1,500	1 pack/household
	Pak Choy	1,500	1 pack/household
	Tomato	1,500	1 pack/household

The Guyana Red Cross in Georgetown has a warehouse, vehicles, HF and VHF radio-communication equipment and a reasonable number of active volunteers. However, it was agreed that for a successful implementation of the operation the hire an extra local accountant, a warehouse manager, a field co-ordinator, the presence of a Federation delegate and a number of volunteers were necessary as well as the rental of trucks and boats to transport relief supplies to the various communities in the hinterland.

Furthermore, the upgrading of the Red Cross warehouse, located at the National Headquarters compound, and the radio-communication network was planned to take place during the operation. Additional equipment for the warehouse in Georgetown and identification of suitable warehouse space in Lethem were needed to facilitate the relief operation.

The relief supplies would be purchased locally in Georgetown and packed in Family Food and Hygiene Parcels at the Red Cross warehouse. By hired trucks these parcels were to be transported directly to the affected communities in North Rupununi or to the secondary point in Lethem. From Lethem the distributions would continued by other means of transport to communities further south. Relief teams at the regional level would be organised and trained. These teams would organise and distribute relief supplies, evaluate the activities and take care of reporting.

The Federation took into account both the operational capacity of the GRC and the necessity to avoid duplication of efforts by other agencies. To this end, the Guyana Red Cross co-ordinated its activities with the Civil Defence Commission (CDC) which had the responsibility at the national level to co-ordinate and manage the response to the disaster. A National Response Committee had been set-up which included all sectors, the UN Donor Group and voluntary organisations. The GRC participated in this Committee.

3.1 Changes in planned activities

In the period between the immediate response of the GRC (April) and the distributions of August, the Civil Defence Commission and other agencies and organisations responded effectively to the need of the victims of fires as well as providing safe drinking water for the affected population which were mainly located along the coastline areas. Assistance to fire victims and the provision of water containers and purification tablets were not any more identified as a priority in the relief operation. However, in its distributions to region 9, the GRC assisted other organisations with the delivery of water jerry cans to the affected population.

3.2 Planned period of execution of activities

Subject to funding, the implementation period of the Emergency Appeal was planned at six months, till September 1998. During the relief phase, plans were to be developed regarding the rehabilitation phase in which the disaster preparedness capacity of the population and the GRC were identified as central themes to be addressed.

4. Realised activities

As a response to the declared state of emergency, the Federation reallocated over USD 35,000 towards the relief operation to facilitate the immediate purchase of food and other necessities to those most in need. During April, 480 of the most affected households in 9 communities received food parcels from the Guyana Red Cross.

Other organisations carried out food distributions in the following period, which gave the Guyana Red Cross time to receive additional quotations, to issue the purchase orders and to plan and organise the continuation of its distributions.

Early June, a plan was developed by the Guyana Red Cross with assistance from the Federation to distribute relief items to the most affected households in region 9. A parcel with food and hygiene items were to be distributed to each household in three successive months, whereas agricultural tools and seeds were to be distributed in the first of these three months.

Activities for the victims of fires and the distribution of safe drinking water were reconsidered in the Red Cross Plan of Action as other organisations were already addressing these needs.

The activities realised during the relief operation can be divided into four stages:

1. The immediate distribution of 480 family parcels in April to 10 communities and in May to one community in region 9. This was completed 25 May 1998
2. The distribution of agricultural tools and seeds in August and September. This was completed by end of September 1998.
3. The distribution of family parcels to over 42 affected communities in region 9 in three rounds during August, September and October. This was completed end of October 1998.
4. The distribution of additional agricultural tools to selected communities in region 9. This is planned to be completed by end November 1998.

The number of families assisted in region 9 was increased from 4,500 to 5,199 families (about 26,000 persons). This number is expected to increase somewhat further as not all beneficiaries-list, especially from the Deep South, have reach Georgetown at the time of writing this report.

Additionally, and subject to the funding of the Appeal, proposals are being formulated by the GRC for the rehabilitation phase in which the disaster preparedness capacity of the communities in region 9 and the response capacity of the Guyana Red Cross in the regions are the central themes.

The table on the following page gives an overview of the number of beneficiaries of Family parcels per month per community in Region 9. Communities in Guyana have often two names; one official and one used by the local habitants. In the following table, the most common names have been listed.

No.	Region 9	No.	Community	April	Aug.	Sept.	Oct.	TOTAL
A.	North Rupununi	1	Fair View			22		22
		2	Surama			39		39
		3	Wowetta		40			40
		4	Rupertie		42			42
		5	Kwatamang		52			52
		6	Annai		80			80
		7	Anaraputa			88	100	188
		8	Massara			76	76	152
		9	Yakarinta		22	82	101	205
		10	Rewa			30	36	66
		11	Apoteri			61	65	126
		12	Toka		84			84
B.	Central Rupununi	1	Yupukari	153	185			338
		2	Nappi		120	114		234
		3	Parishara		34	50		84
		4	Moco Moco Village		54	54	51	159
		5	Moco Moco Settle.		13	13	13	39
		6	Lethem	8		37	47	92
		7	St. Ignatius Mission		122			122
		8	Kumu		65			65
		9	Quarry	28				28
		10	Parikwarinau	32	32	32	32	128
C.	South Central	1	Shulinab		84		90	174
		2	Potarinau	12	70		80	162
		3	Shiriri				15	15
		4	Sand Creek		84	96		180
		5	Katoonarib	24	72		64	160
		6	Sawarinau	78	92		95	265
		7	Rupunau			52		52
D.	South Pakaraimas	1	Karasabai	135	27	190	73	425
		2	Tiger Pond				21	21
		3	Pai Pong				12	12
		4	Toushida				16	16
		5	Tiperu				23	23
		6	Rukumuta				35	35
		7	Yurong Peru				20	20
E.	Deep South	1	Shea			75	69	144
		2	Maruranau			117	123	240
		3	Awarwanau			120	111	231
		4	Aishalton			112	110	222
		5	Karaudarnau		95		124	219
		6	Achawib		88		88	176
		7	Gunn's Strip	10		12		24
			TOTAL	480	1,557	1,472	1,690	5,199

4.1 Purchase and composition of relief items

The relief items (the food and hygiene items, the agricultural tools and seeds) were purchased locally. A mixed procurement committee was formed of the leadership of the Guyana Red Cross and the Federation delegate to act as the administrative entity responsible for selecting suppliers and making recommendations as to awarding of contracts in accordance with usual procedures followed by the Guyana Red Cross, the legal provisions governing contract awards by Public Administrations in force in Guyana and conditions established by donors.

The decision to purchase the relief items were in general taken on the basis of three quotations for each item. Suppliers were selected on the following criteria: experience of each supplier, price levels, quality guarantees, packing security and delivery time.

The items came in bulk to the warehouse of the GRC in Georgetown. The items, mostly pre-packed in prior agreed handy quantities, were then put into special prepared boxes by temporary local staff and volunteers to become a family parcel. Health information with practical tips were included in every parcel.

4.1.1 Family parcels

Every Family Food and Hygiene parcels (total weight 24 kg) contained the following items:

Family Parcel Composition

No.	ITEM	Weight (kg)
1	Flour	5
2	Sugar	5
3	Salt	1
4	Corned Beef	2
5	Mackerel	2
6	Split Peas	1.5
7	Black eye Peas	1.5
8	Tea	0.5
9	Milk	1.5
10	Seeds (7)	-
11	Soap	2
12	Biscuits	1.5
13	File (only August)	0.5
TOTAL		24

The parcels distributed during April to the most affected households (in 11 communities differed just slightly from the above parcels used for the August - October distributions; seed and file were not included and there were three type of peas in stead of two with a weight of kg each instead of 1,5 kg. The total weight for the "April-parcel" was 23 kg. Besides this parcel, rice (in bags of 25 kg) and oil (in bottles of 3,8 litres) were distributed. The rice was later (August - October) distributed in bags of 12,5 kg because the weight was found more practical.

There were in total four rounds of family parcel distributions: in April (and May), August, September and October.

4.1.2 Agricultural seeds and tools

The plan was to purchase tools and seeds for the most affected households according to the table in paragraph 3. The tools were brought in the following quantities:

TOOL	cutlas	hoe	file	shovel	spade	fork	axe	mattock
PLANNED	1,500	1,500	1,500	1,500		100	500	
BOUGHT	1,500	1,500	1,500	1,200	300	100	300	200

These agricultural tools and seeds were mainly distributed in August (see also table in paragraph 4.3). The seeds and the files were included in the first 1,500 family parcels.

4.2 Transport of relief items

Trucks were needed to transport the relief items from the central warehouse at the NS headquarters in Georgetown to the affected communities in region 9. Trucks were selected according the following criteria: past record with Red Cross operations, price levels, delivery time, and experience with the reliability of the drivers. The trucks were duly identified by the distinctive emblem of the Red Cross and ECHO.

The transport to region 9 became a **major problem** as Guyana experienced exceptional rainfall in the planned distribution period. Rivers became swollen and roads inaccessible.

Due to the absence of adequate storage-space in region 9, relief items were transported by truck directly to the communities or first to the secondary distribution point in Lethem. Local arrangements were then made by the field co-ordinator to facilitate the delivery of the relief goods to villages whose access was badly affected by the rainfall. This meant the immediate unloading from truck to tractor & trailer and onwards often to boats, the only way to reach some communities.

The weather conditions prevailing not only delayed the plan of distribution and the transport of goods from Georgetown to the region, it caused various operational problems in the region as well. Especially in August, some distributions to communities could not materialise as the trucks and tractors got stuck in the mud and, although outside assistance was given to get lose, they were unable to continue to the planned sites at the scheduled times. The rescheduling of distributions caused some further delays.

4.3 Distribution of parcels

As mentioned before, there were in total four rounds of distributions: in April (and May), August, September and October. Through radio-communication (and telephone whenever possible), the field co-ordinator in Lethem directed the Headquarters regarding the timing and quantities of items to be transported to the different communities in region 9. The HF radio

was also extensively used for communication between the regional co-ordinator and villages to inform and to be informed about the road and river conditions and expected arrival of the relief deliveries.

In view of the relative small size of the villages (mostly less than 1,000 inhabitants), the local Red Cross volunteers charged with the registration and distribution of the relief items consisted of the basic units of local organisation which were the elected village captain ('touchaus'), the head of school, the community health worker, the church leader and the head of the women's group.

The beneficiaries were families directly affected by the drought and suffering manifest hardship. In case the number of potential beneficiaries identified was greater than the number of parcels received, the local committee often decided to split the family parcel between two families consisting of only one, two or three members each. Therefore, the total number of beneficiaries is exceeding the total number of family parcels distributed.

The Guyana Red Cross respected the decisions made by the local committee's regarding the distributions. In all cases but one the reports received regarding the distribution taken place were satisfactory. Corrective measures were taken in the exceptional case (Karasabai).

Items distributed per Month

No.	Date 1998	No. House holds	Box	Rice	Oil	Cut-lass	Hoe	Shovel	Spade	Axe	Fork	Mat-tock	Ant bait
1	April/May	480	474	435	453								
2	August	1,557	1,521	1,500	1,502	1,265	1,311	1,332	224	201	112	175	300
3	September	1,464	1,369	1,371	1,369	127	105	6	26	53	3	3	
4	October	1,690	1,577	1,579	1,579	14	6	5	14	40			
	TOTAL	5,199	4,966	4,885	4,903	1,406	1,422	1,343	264	294	115	178	300

The distribution of agricultural tools and seeds was 90% completed by the end of August. The remaining communities received these items before the end of September as transport conditions improved to reach also the more isolated areas.

Twenty axes were not yet distributed but stored temporarily at the secondary distributions point in Lethem; they are therefore not included in the above table. However, these axes were distributed before the end of November 1998 (see next table).

4.5 Distribution of additional tools

During the operation it was found that many families who were not identified as most severely affected by the drought, and who therefore did not receive tools, were in a vulnerable position as well and struggled to resume their livelihoods. The Guyana Red Cross was aware that the planned quantity was only a minimum and that more were needed. With the availability of funds, they decided to purchase an additional quantity of tools. These were being distributed during the first weeks of November to the following communities:

Distribution of additional tools per community

No.	Region 9	cutlas	file	mattock	shovel	axe.
A.	North Rupununi					
1	Aporteri	55	55	6	36	5
2	Rewa	25	25	6	24	5
3	Aranaputa	80	60		36	
4	Yakarinta	80	80	6	36	5
5	Massara	65	65	6	36	5
6	Surama	40	40			
B.	Central Rupununi					
1	Kumu	50	40			
2	St. Ignatius	60	50			
3	Lethem	50	50	6	24	
4	Quarry	20	20			
5	Kapibara	15	15			
6	Gunn's Strip	20	20			
7	Katoka	15	15			
C.	South Central					
1	Rupanau	45	45			
2	Sand Creek	110	100			
3	Shirri	15	15	2		
4	Baitoon	20	20			
5	Small Sand Creek	20	20			
6	Potarinau	35	35			
7	Shulinab	30	30			
8	Kwaiko	15	15			
9	Miriwau	20	20			
D.	South Pakaraimas					
1	Karasabai	60	60	4	} 72	
2	Tiger Pond	25	25	3		
3	Pai Pong	10	10	2		
4	Rukumuta	30	30	3		
5	Tiperu	30	30			
6	Yurong Peru	40	40			
7	Toushida	20	20			
E.	Deep South				36	
1	Shea	60	60			
2	Maruranau	100	100			
3	Awarwanau	60	60			
4	Aishalton	120	110	6		
5	Achawib	60	60			
6	Karaudarnau	60	60			
	TOTAL	1,560	1,500	50	300	20

In the early stage of the distribution, the GRC made a mistake with the shovels. These came in boxes of 24 each. However, it was assumed by the warehouse manager that the boxes contained only 12 shovels each. Therefore, the first few distributions in August contained twice the number of shovels as planned for. The confusion was caused by the unmarked boxes and by not checking the quantities under the existing time-pressure to have the relief items as soon as possible where they were needed. After notification, most of the additional shovels were recollected from the communities and distributed as originally planned to other communities in need.

4.6 Health Education and First Aid

Information was prepared on precautions and safety measures to take regarding water borne diseases and these were distributed with the relief packages. An attractive booklet was furthermore developed on the "Basics of Nutrition", mentioning the support given by the European Union in printing them.

4.7 Disaster Response Capacity of Guyana Red Cross

During this relief operation, a Toyota Hilux with radio-communication equipment was purchased to render valuable services in the region. A fax machine and a photocopier had to be purchased to be more accountable and effective in the follow up of the relief activities. Improvement to the warehouse in Georgetown, such as additional light and ventilation, were necessary to operate under the given conditions. No improvements could be effectuated towards resolving the absence of storage-space in Lethem, the secondary distribution point in this operation. This point will receive attention in the long-term development plan of the National Society.

The management of the relief operation was ensured by the Director General, Mrs. Dorothy Fraser; Mrs. Dawn McTurk was in charge of the warehouse during the first few months and Ms. Sherleen Williams for the last few months. Mr. Tyroon Foo was the field co-ordinator of this relief operation. Various dedicated Red Cross volunteers worked at the headquarters as well as in the regions to make the operation successful.

4.8 Delegates

In April, Mr. Brett Leppan assisted the Guyana Red Cross in enhancing its capacity to provide community based first aid, health prevention and sanitation to vulnerable communities. He trained an additional nine first aid instructor trainers.

In June and July, Mr. Fernando Bendeck assisted the Guyana Red Cross in preparing the comparative bid analyses of the relief goods and the planning of the distributions. He came again to Guyana end of August till half September to assist with logistics aspects of the operation.

Early August, Mr. Frank Dewez assisted the Guyana Red Cross with the interim reporting. He came again early November to Guyana to collect all relevant information to complete the final report. He met with Mr. L. Tsiavos of the European Union; the meeting with the consul of the Netherlands, Mr. Fredericks, could not materialise due to his illness.

5. Evaluation

5.1 Problems encountered in implementation phase

► Local purchase of items

The transfer of funds to the Guyana Red Cross and the availability of some food supplies and seeds imposed a longer planning period than foreseen.

► Transport

Problems with transport were frequent, especially in August. Due to the exceptional rainfall, road conditions were very bad which caused trucks to the hinterland to break down, were stuck in a swamp, and sometimes even drivers contracted malaria and had to stop. For security reasons, trucks left Georgetown as much as possible in pairs.

The truck-drivers arriving from Georgetown had a contract to go to a specific place and deliver the goods. The field co-ordinator accompanied the truck (or tractor and trailer depending on weather and road conditions) from Lethem onwards and distributed the goods at the respective communities immediately to the beneficiaries as no adequate storage space was available at Lethem. However, the truck-drivers were anxious to leave as soon as possible to go back to Georgetown and did not want to wait. The field co-ordinator, who was depending for his return transport on the willingness of the driver, had to leave the relief items without having all the beneficiaries sign the distribution list. In those cases, the completed beneficiaries list were later sent by the local Red Cross volunteers to the field co-ordinator. The recent purchase of a 4WD Red Cross vehicle facilitated the work of the field co-ordinator tremendously.

► Storage

As no safe or suitable storage capacity was available at the secondary distribution point (Lethem), the relief goods had to be unloaded from the trucks directly to tractor-and-trailer, which were needed to transport the relief items from Lethem onwards (boats were used to get the items to the affected communities). However, as the demand for these tractor and trailers were high, the arrival time of the trucks uncertain, and the field co-ordinator occupied or immobile at a different location, the absence of a warehouse caused serious logistical problems and delayed the distribution.

► Communication

The manpower, experience and resources of the local Red Cross Groups in region 9 were limited. The Red Cross HF-radio was important for communication between Lethem and the hinterland and Lethem and Headquarters. However, some communities in the South and Deep South do not have the facility of HF-radio which makes the logistics a real challenge. Telephone communication between Lethem and Georgetown was possible. The region received recently a few hours electricity in the evening.

► Distributions to the Target Group

The units of local organisation were the village Captain, the head teacher, the church leader, the community health worker and, if available, the leader of the local women's group. This local committee was involved in the selection of the beneficiaries. According to the Red Cross principles, guidelines were given as to who was eligible to receive relief items. The

local context was respected by the Guyana Red Cross in so far this local committee could decide if:

- a Family parcel would be given to one family or be shared between those families consisting of one, two or three members only, or that
- some tools were at the disposition of the committee for use of all community members instead of distribution per individual family.

In one case, a local community leader gave a list of beneficiaries which was less than the total number actually badly affected. This was revised and corrected in the following distributions round. There were no further reports of complaints received.

► **Accurate information**

The information regarding the number of beneficiaries in this report is as accurate as possible. However, the numbers of goods purchased is not exactly equivalent with the numbers received on the beneficiaries lists. Some items are reported to have been received in bigger quantities than distributed whereas some other items have been received in smaller quantities than distributed. Several factors might have caused this discrepancy:

- two list of beneficiaries (from the Deep South) have not yet been received.
- some listed persons were absent from their community at the time of distribution. The relief items were then kept at a safe place awaiting their return. In most cases, their signature as beneficiary has been received.
- difference in terminology of some items: a shovel and a spade look somewhat similar and a mattock could have been confused with an axe.
- relief items were being sent to one community to be transported and redistributed to a neighbouring community which was at the time inaccessible to reach.
- the initial mistake at Georgetown assuming 12 shovels in stead of the actual 24 in one box.
- some family parcels have been shared between smaller families.
- some inexperience in reporting at the local level and in signing of beneficiaries to acknowledge receipts.

One can be assured that all effort were made to give a complete picture.

5.2 Planned against Realised Activities

The total number of households in region 9 assisted with supplementary food, seeds and tools was 5,191 or about 26,000 persons in total. The initial plan was to distribute to 1,500 families supplementary food supplies during three round of distribution. In fact, 4,958 families received Family Food and Hygiene parcels. With the second and additional distribution of tools, the total of tools distributed will reach far above the planned figure.

5.3 Institutional Development

The Guyana Red Cross strengthened its disaster response capacity at national, district and local levels, and gained visibility and experience. Close co-ordination and co-operation with the government and municipal authorities generated positive results for all parties involved. At the same time, the National Society strengthened its links with national and international relief agencies. The equipment and infrastructure of the Guyana Red Cross has been improved.

The transfer of knowledge and skills between the National Society and delegates of the Federation improved mutual understanding of the way a relief and rehabilitation operation should be done in Guyana. In spite of certain limitations and with Federation's logistical support, the National Society managed successfully to carry out the relief operation using their network of dedicated volunteers.

During the rehabilitation phase of this operation, the following activities are planned:

- Training of Red Cross staff and volunteers in Georgetown and in the regions in Disaster Preparedness and Response in close collaboration with local NGO, GO and International Organisations;
- Evaluating the relief operation in Region 9 and to give a follow-up on the development of a local Red Cross Branch, a campaign to increase Red Cross membership and the group of volunteers at the regional and community level, initiating and/or reinforcing activities targeting the most vulnerable households;
- Increase the communication capacity of the Red Cross in region 9 by improving the Red Cross repeater station and the purchase of additional hand-held radio's, antenna, battery and charger.
- Nation-wide dissemination of Red Cross principles and practices;
- Development of the National Society's human resources capacity and materials in First Aid and Disaster related area's;
- Strengthening the Youth involvement in ongoing programmes and initiating special activities for young people in various regions;
- Fencing and drainage of Red Cross Headquarters.

6. Conclusion

Based on this report, the following general conclusions can be made:

- ▶ The minimum target group intended to cover, as described in the Plan of Action, has been reached with supplementary food supplies, tools and seeds although later than planned.
- ▶ The period over which the distribution was supposed to take place, as described in the Plan of Action, was extended by two months.
- ▶ The rehabilitation activities will furthermore strengthen the Guyana Red Cross base at the national, regional and community level and an increase in membership and volunteers is expected.
- ▶ The Guyana Red Cross has reinforced its position in the national arena of being not only an effective but a neutral humanitarian organisation at the same time.

6.1 Conclusion about the target group reached

The need for relief food assistance as a response to the drought was most urgent during April and May. Due to the immediate release of funds by the Federation, the Guyana Red Cross was able to give an appropriate quick response to bring relieve to the most severely affected households in region 9. In the following period, the Federation prepared and launched an emergency appeal to the international community and other, mainly national, organisation responded to the drought disaster. The Guyana Red Cross was able, with funds received from the Appeal, to continue its assistance in food supplies with the additional distribution of tools and seeds along a well prepared plan of action. The affected communities were therefore able

to concentrate on the cultivation of their crops for a longer period. It is expected that the delayed harvest of crops like cassava will give better results than other years.

6.2 Conclusion regarding the role played by the International Federation

Three expatriate personnel assisted in the preparation and reporting of this operation, which included training of National Society staff responsible for implementation. Co-ordination and monitoring of implementation was also provided by the International Federation's Regional Delegation for the Caribbean.

6.3 Conclusion regarding the role played by the National Society

Although some logistics training took place at the national level, the much needed information dissemination and training at district and local levels did not materialise partly due to insufficient material and equipment. The lack of local Red Cross teams hampered the relief operation in its registration of beneficiaries, the reception of relief items from Headquarters, the distribution to the beneficiaries, and the evaluation and reporting of activities. Furthermore, the large geographical coverage of region 9 as well as the conditions of the terrain made this region very difficult to service during this relief operation.

At head-quarters as well as at local levels, the Red Cross operation and activities are undertaken by a relative few but dedicated staff and volunteers. The Guyana Red Cross Society felt that the relief programme was reasonably well executed. For the future of the Guyana Red Cross, the completion of a Development Plan for the National Society and the preparation of its Disaster Plan and related training courses will be very important. The more so as Guyana, and especially its interior, is prone to disasters. La Nina is expected to cause severe flooding with predicted rainfall between 60 and 70 % above normal conditions during the coming wet season (Minister of Agriculture in Stabroek News of 5 November 1998).

7. Financial Report

The exchange rate used is 1 US\$ for 150 Guyana \$.

Expenditures charged to Netherlands Government

Topic	Ref. #	Date	Description	receipt or bill	Amount (G\$)	Amount Total
Relief items	14	11 July	5699 - tools		1,238,500	7,246,575
	15	15 July	5230 - seeds		675,000	
	21	21 July	5001 - tarpaulins		50,000	
	31	29 July	5600 - tools		2,708,000	
	51	12 Aug	5230 - balance seeds	no	564,000	
	112	12 Sept	5001 - tarpaulins		41,000	
	113	14 Sept	5601 - drums		3,600	
	195	29 Oct	5600 - tools		1,959,300	
	196	29 Oct	5600 - tools		7,175	

Total Expenditure against Donor

Expenditure	Guyana \$	US \$	ECHO	Neth. Govt.	Balance
Relief Items	32,644,360	217,629		48,311	
Packing	799,338	5,329			
Storage	385,113	2,567			
Transport	10,244,448	68,296			
Equipment	688,596	4,591			
Personnel	1,731,567	11,544			
Office	877,553	5,850			
Communication	188,816	1,259			
Miscellaneous	511,975	3,413			
Total	48,071,766	320,478			

ENDNOTES:

1. Kemp Simon and Joylyn Jafferally, "Drought in Guyana, 1997-1998," Hydrometeorological Service, Ministry of Agriculture, 22nd July 1998.
2. See "Address to the Nation by H.E. Janet Jagan, President of the Republic of Guyana." Office of the President, Thursday, March 26th, 1988
3. Ibid.
4. Adopted in part from "Macaw stationery Diary 1994 Guyana." See further, Phillip's Regional Wall Map of the West Indies, Great Britain, 1994.
5. Adopted from "Macaw Stationery Diary 1994 Guyana."
6. Kemp Simon and Joylyn Jafferally, "Drought in Guyana, 1997-1998," Hydrmeteoroligical Service, Ministry of Agriculture, 22nd July 1998, p.2.
7. See Administrative Map of Guyana, Edn. No. 5, December 1981, Lands and Surveys Department, Guyana and Atlas for Guyana & Trinidad & Tobago, Macmillan Caribbean 1988.
8. See Administrative Map of Guyana, Edn. No.5, December 1981, Lands and Surveys Department, Guyana.
9. "Guyana" in, Caribbean Island Handbook, 4th ed., U.S.A. Prentice Hall Pub., 1992, p.616.
10. Ibid.p.618.
11. Kemp Simon and Joylyn Jafferally, "Drought in Guyana, 1997-1998," Hydrometeorological Service, Ministry of Agriculture, 22nd July 1988.
12. Ibid.
13. Ibid.
14. Ibid.
15. References to the GS&WC are from submissions made by the Chief Engineer GS&WC to the Civil Defence Commission.

16. I.A. Alert, "El Nino National Report," Civil Defence Commission, 1998-03-16. See also Anatoly Samoilenko, "Report : El Nino 1997/98 Effects, Guyana" Prepared for the United Nations Development Programme , New York, February 1998.
17. Ibid.
18. Ibid.
19. Ibid.
20. Ibid.
21. Ibid.
22. Ibid.
23. Ibid.
24. Cabinet Decision "Sector Strategy: Cabinet: Reconstitution of the Civil Defence Commission; CP (97) 2:2: dated 1997-02-06. CLASSIFIED.
25. Inaugural meeting of the Civil Defence Commission, August 16, 1997. Civil Defence Commission File Records 5/1
26. See "Organisational Structure : Civil Defence Commission." Civil Defence Commission File Record 1/2. See also Cabinet Decision on Reconstitution of the Civil Defence Commission op. cit.
27. Cabinet Decision on Reconstitution of the Civil Defence Commission op. cit.
28. Ibid.
29. Ibid.
30. See, "Orgational Structure : Civil Defence Commission," Civil Defence Commission File Records 1/2.
31. Civil Defence Commission "Guyana: El Nino Brief." See further, Civil Defence Commission File Records 3/21 for Operational details.
32. Minutes of Civil Defence Commission Meeting: See Civil Defence Commission File Records_____.
33. Address to the Nation by H.E. Janet Jagan, President of the Republic of Guyana, op.cit.
34. Civil Defence Commission press statement of 1998-04-14.

- 35. See, Document of the World Bank, "Credit Agreement in the Amount of US \$9 Million Equivalent to the Cooperative Republic of Guyana, for an El Nino Emergency Assistance Project," Report No. 18018-GUA, September 8, 1998.**
- 36. See Civil Defence Commission, Donations Register, El Nino Operation 1997-1998.**
- 37. See Civil Defence Commission, Control Register, for details of names and periods of engagement.**
- 38. All figures for China, Mauritius and Japan are from Civil Defence Commission Financial Records: El Nino Crisis 1997-1998. All others figures from UNDP "Status of Commitments and Payments" reports to the Civil Defence Commission.**

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