

**FOREST FIRE MANAGEMENT IN GOD'S LAKE:
A COMMUNITY DEVELOPMENT PERSPECTIVE**

By

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**A Thesis Submitted In Partial
Fulfillment of the Requirements for the Degree,
Master of Arts in Geography**

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September, 1999



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VALERIAH HWACHA

**A Thesis submitted to the Faculty of Graduate Studies of The University
of Manitoba in partial fulfillment of the requirements of the degree**

of

MASTER OF ARTS

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ACKNOWLEDGMENTS

Several people have contributed to the successful completion of this study. I am especially indebted to the Center for Indigenous Environmental Resources for providing the funding to support this project. Great appreciation is extended to my advisory committee for their ability to bring multi-disciplinary strengths to this study. I am especially indebted to Dr. Matiur Rahman who so willingly agreed to take on the supervision of this thesis and for his continual encouragement and support. I would like to thank Dr. Jill Oakes for her keen interest in this thesis and expertise in First Nation issues. Sincere gratitude is extended to Mr. Mark Bennett for his profound knowledge and expertise on emergency management in Manitoba. I would also like to thank Dr. Jeff Brown for his support and critical reading of my draft at such short notice.

I wish to express my thanks to the Chief and Council of God's Lake, for permitting me to conduct research in their community, and to the people of God's Lake who participated in this study. Other individuals who contributed to this study are Ms. Inez Miller at Manitoba Emergency Management Organization, and Mr. Larry French at Emergency Preparedness Canada. I would also like to thank my fellow students John Collins, Gina Sylvestre, and Paul Robinson for their friendship and support.

The completion of this project has been a family effort and I would like to express my gratitude to my husband, Paul Blankson and my sons, Kundai and Kudiwa for their support and patience. How did we ever do it?

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ABSTRACT

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Although disasters are an inevitable part of human existence the propensity for disasters is dependent upon the interaction between societal and person/environment factors (Briton, 1986:254). In fact, research now proposes that disasters be perceived as an opportunity for socio-economic and indeed political change and not purely emergency response (World Disasters Report, 1994). Policy in Manitoba has so far focused on emergency response rather than planning for disasters in which emergency response is a phase of the disaster management continuum. This study investigates the impact of forest fires in God's Lake in 1989 and 1995 and the extent to which the fires resulted in changes that assist the community of God's Lake prepare and respond to future forest fire emergencies. The study also examines the extent to which the response to the fires in God's Lake took into consideration the socio-economic and self-determination issues of the community.

A survey was conducted among 67 households on God's Lake Narrows in June and July of 1996. The analysis includes the use of descriptive statistics and chi-square tests to evaluate the vulnerability of people and property to forest fires. The survey results suggest that there were changes in forest fire emergency response between 1989 and 1995 particularly in the area of family separation during evacuation. Despite recommendations made following the 1989 fire situation in Northern Manitoba, First Nation labor and knowledge of the environment were again under utilized in 1995. The results indicate that the institutional delivery of emergency response does little to enhance community development in God's Lake. The survey results also showed that, most fires in the area were natural and not human caused.

This research encourages disaster management practitioners to deliver assistance (including emergency response) in a way that contributes to social and economic development efforts among First Nations. The study also demonstrates that more research is required to investigate how policy in Manitoba can be improved to better address First Nation emergency management concerns.

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CHAPTER ONE: INTRODUCTION AND OVERVIEW

1.1 Introduction

A geography of the forest fires in Manitoba reveals that First Nation communities are susceptible to adverse consequences from forest fires as a result of their remote northern physical location¹, vegetation type, inadequate socio-economic development and disparate political relationships. This is significant since recent fires reflect an increase in magnitude and frequency (figure 1), and affect an increased number of people² (Manitoba Emergency Measures Organization, 1989).

Unlike nations in Africa, Asia and Latin America where it is widely accepted that people are engaged in the development process, First Nations in Canada are uniquely lumped together with developed countries even though their social and economic conditions, and the potential impact of disasters mirrors that of the developing world. This study isolates the First Nation of God's Lake and evaluates its vulnerability to forest fire hazards from a community development perspective.

This introductory chapter describes the purpose and objectives of the study and discusses the concepts of disaster, development, and vulnerability to provide background to the theoretical framework of the study.

¹ That area which lies between the 51st and 60th parallels

² Increase in forest fire frequency may be a function of improvements in forest fire detection and monitoring methods.

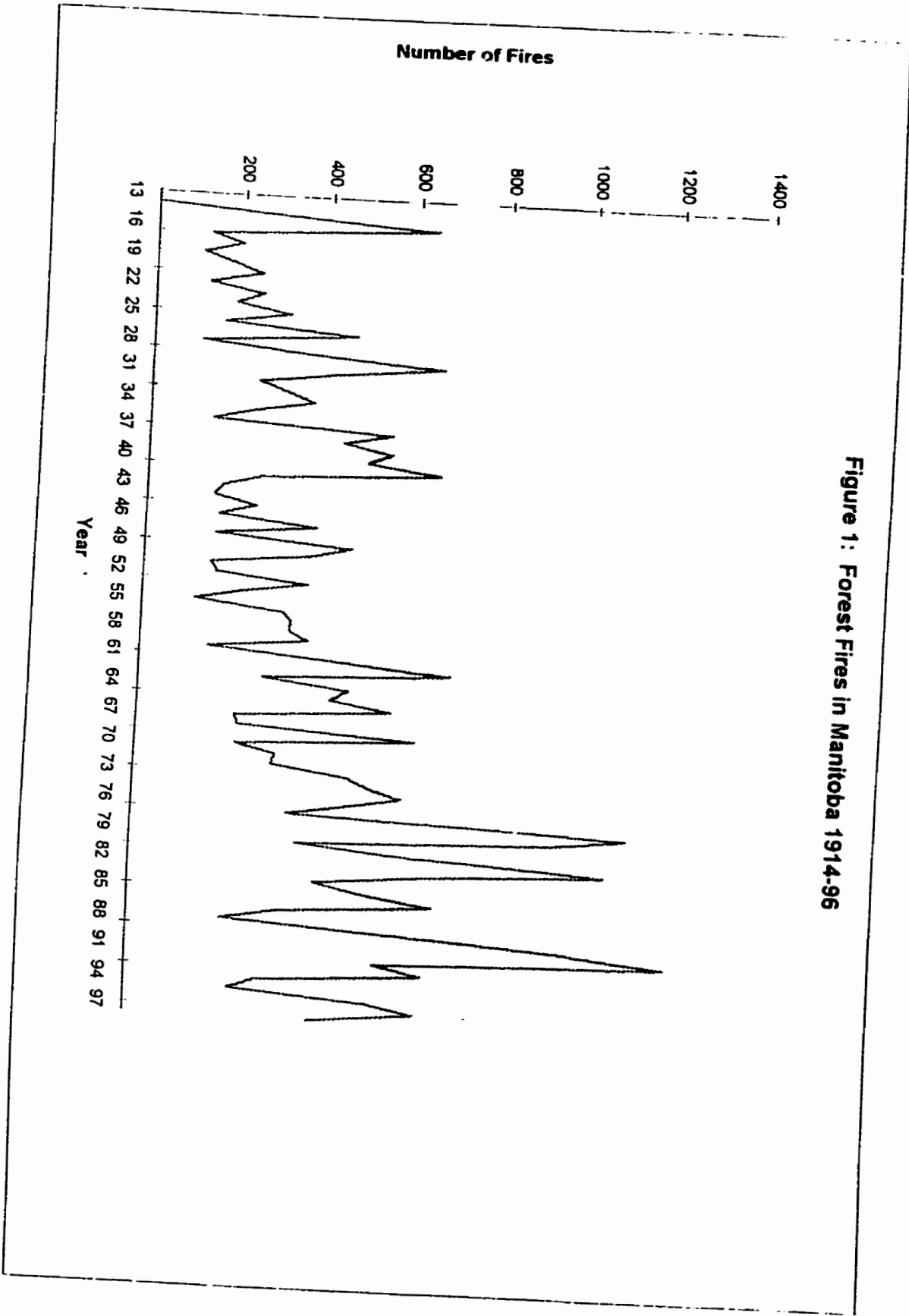


Figure 1: Forest Fires in Manitoba 1914-96

1.2 Disasters

1.2.1 Constructs of Disaster

Any discussion on the impact of disasters on communities must begin with an understanding of what is meant by *disaster* because of the different ways in which researchers, practitioners and members of the public utilize the term (Tierney, 1989; Britton, 1986). Understanding what is meant by disaster is also useful to those organizations involved in the fieldwork to ascertain the adequacy of the existing organizational structure, programs, and policies in meeting the disaster preparedness, response and mitigation needs of a community.

Geographical research into hazards and disasters has its origins in Gilbert White's 1945 investigation of human response to flooding in the United States. Using a systems approach, Gilbert White sought to understand why people occupy hazard prone regions and how they cope with these hazards in an effort to provide an alternative to structural mechanisms for coping with flood hazards in the United States. Such knowledge was used to influence policy recommendations relating to the cost of flood mitigation initiatives in the United States. For example, it was realized that the U.S. Flood Control Act of 1936, which increased spending on flood control engineering initiatives was paralleled by an increase in flood losses. People modified their attitude to flood plain settlement based on the perception that the flood control measures reduced the flood risk. Consequently, when the design capacity of flood control engineering was exceeded, flood losses increased due to the overestimation of the protection provided by flood control engineering (Smith, 1992; Walmsley and Lewis, 1984).

The primary objective of geographers is to understand the spatial dimension of the

person/environment relationship. Geographers concern themselves with human adjustment to natural hazards, where a *hazard* is defined as the threat to humans and what they value and disaster realization of that hazard (Smith, 1992). Early geographical research portrayed hazards as environmental extremes caused by physical forces extraneous to man. Since the late 1960's however, geographical definitions of disaster have been challenged by sociologists and later day geographers because the deterministic outlook of earlier geographers portrayed disasters as "Acts of God" in which man had no role to play (Smith, 1992).

Sociologists argue that the parameters of magnitude, frequency, damage potential, speed of onset and areal extent on which geographers focus are lacking in terms of explanation and causality of disasters (Kreps, 1984; Britton, 1986). Sociologists see these parameters as variables of the disaster agent rather than explanations of the phenomenon. They see a danger in placing emphasis on natural hazards and ignoring the social processes that create the foundation for disasters.

Sociologists consider disasters to be a social product (Britton, 1986), in which cultural, social and psychological attributes of a community can minimize or exacerbate the impact of a disaster agent (Britton, 1986; Turner, 1978 and 1979, Quarantelli & Dynes, 1977; Clausen, Conlon and Metreveli, 1978). Unlike geographers, they see disasters as normal and often revealing components of the social system since it is the changing attributes within the social system that lead to changes in vulnerability to disaster. Further, the sociological perspective maintains that unless extreme natural events impact on humans, they are not natural disasters. A severe earthquake in a remote unpopulated region is an extreme natural event of interest to seismologists but not a

hazard to humans (Smith, 1992).

Although sociological definitions of disaster have altered the bounds within which disasters are studied, they have not resolved the moot on the definition of disaster even among sociologists. Disasters are not solely the product of society. The unpredictable nature of hazards, their magnitude, scope, speed of onset and frequency has a role to play in creating disasters. Psychologists criticize sociologists for under emphasizing individual perception of disaster and individual coping mechanisms (Kreps, 1984: 3).

Following the failure of international efforts to resolve problems around the world created by disaster; in particular the African famines of 1970-72 and 1981-85 (Blaikie et al, 1994; Waddell 1983; Smith 1992). Structuralist conceptualization has been drawn into the definition of disaster. Structuralist interpretation revolves around a radical explanation of disaster emphasizing the constraints placed on people and their communities by broader and more powerful institutional forces. Structuralism explains disasters in terms of the accumulation of wealth rather than through the application of behavioral science and technology. The structuralist model constructs disasters as the interface between extreme physical events and a vulnerable human population, where vulnerability is depicted as the degree to which different social classes are differentially at risk of adverse consequences of disaster and their ability to recover from it. This radical perspective of disasters is opposed to intervention that extends beyond the emergency phase and which fails to take into consideration existing social differentiation. Such intervention is perceived as perpetuating dependency of one social class on another and failing to resolve the social conflicts which make people differentially vulnerable to disaster. The result is an impediment to community development and disaster mitigation.

Relief assistance is seen as lacking in the range of responses required to reduce existing vulnerability to disaster. Structuralism emphasizes that disaster reduction is best achieved by changing prevailing social structures to empower the community rather than by external interventions (Smith, 1992).

Structuralism criticizes perceptions of disaster which are ethnocentric, assume universal applicability and are lacking in historically grounded perspective (Gold, 1980). Structuralists accuse early researchers of roping hazards and disasters from the stratified social, economic and political context in which disasters occur. Further they disregard interpretations of disaster which are unidirectional; from physical agent to social consequence, when in fact the converse is true (Susman et al, 1983).

Although the radical perspective of disaster is opposed to aid, many studies show that, if administered correctly, aid is not always harmful (Anderson & Woodrow, 1989). Furthermore, it is difficult to breakdown socio-economic barriers that already exist in society. All individuals are constrained to some extent by institutional, economic and social circumstances in which they find themselves. Many institutions have influence which transcends the power of the individual and are themselves shaped by broader economic and political processes. Finally, where the behavioural paradigm of geographers and sociologists offers a practical framework for hazard mitigation, the structural paradigm is mostly theoretical in nature and limited in its real world application.

In the 1990s constructs of disaster draw on all the above paradigms. They re-introduce the human environment factor avoiding deterministic postulations by integrating physical causation of disasters with explanations of disaster, which include

political, economic, and social systems contexts. They also accept that vulnerability is not always a consequence of exploitation and inequality (Blaikie, 1994; Smith, 1992).

Given that the study area is in Manitoba, it is important to include the definition used by the Manitoba Emergency Management Organization (M.E.M.O). The Manitoba Emergency Measures Act defines disaster as a calamity however caused, which has resulted in loss of life, serious harm, or damage to the safety, health, or welfare of people or wide spread damage to property or environment (Manitoba Emergency Management Organization, Emergency Plan, 1988). Unlike the previous definitions of disaster, this definition focuses on loss as a consequence of disaster and is not cause dependent. It is valuable because it defines disaster in a manner that can be quantified which is of value to the disaster practitioner. However, it fails to contextualize disasters and like the above definitions, does not resolve the moot on the definition of disaster.

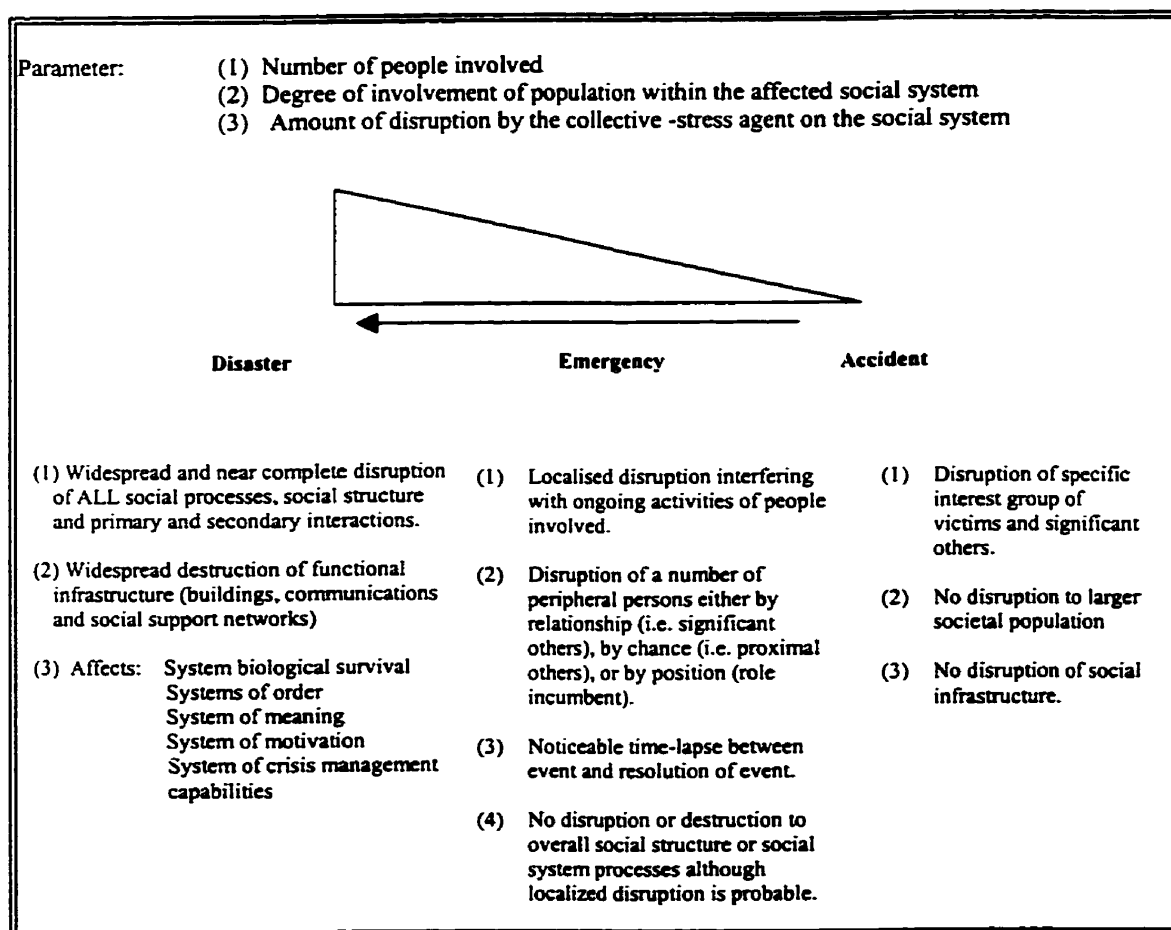
For the purpose of clarity, and because M.E.M.O is geared toward emergency response, an attempt is made to distinguish emergencies from disasters. The Manitoba Emergency Plan defines emergencies as, a present or imminent situation or condition that requires prompt action to prevent or limit loss of life, injury or property (Province of Manitoba, Emergency Plan, 1988). The emergency plan focuses on preparedness and response planning in order to limit the impact of hazard consequences. All that is required, is to show that the incident is abnormal, has potential for causing damage and requires a rapid and extra ordinary response to limit the impact for the situation to be termed an emergency (Bennett, 1992).

In this study, following Woodrow and Anderson (1989:1), disasters are defined as, “crises that overwhelm at least for a time, peoples capacities to manage and cope”.

where capacities are defined as capability to respond to disaster until aid arrives. In contrast to the above definitions, this definition does not automatically label the affected community as passive and it acknowledges the need for outside intervention at least for a time.

Britton (1986) explains that emergencies and disasters are similar in terms of their unplannedness, uncontrollability, recurrence, and geographical containment. They differ in terms of the number of people affected, the degree of involvement of the people in the affected area and the amount of disruption caused by the collective stress agent (figure 2).

Figure Two: Emergencies, Disasters and Accidents



Source: Britton, (1986); Developing an Understanding of Disaster

The present study considers emergencies as a phase of the disaster management cycle, which calls for immediate response to an imminent situation or immediately following the impact of a hazard. Further, because the study assumes a developmental perspective, emergency is considered as part of the relief phase of the disaster management continuum (figure 3).

1.2.2 The Disaster Management Continuum

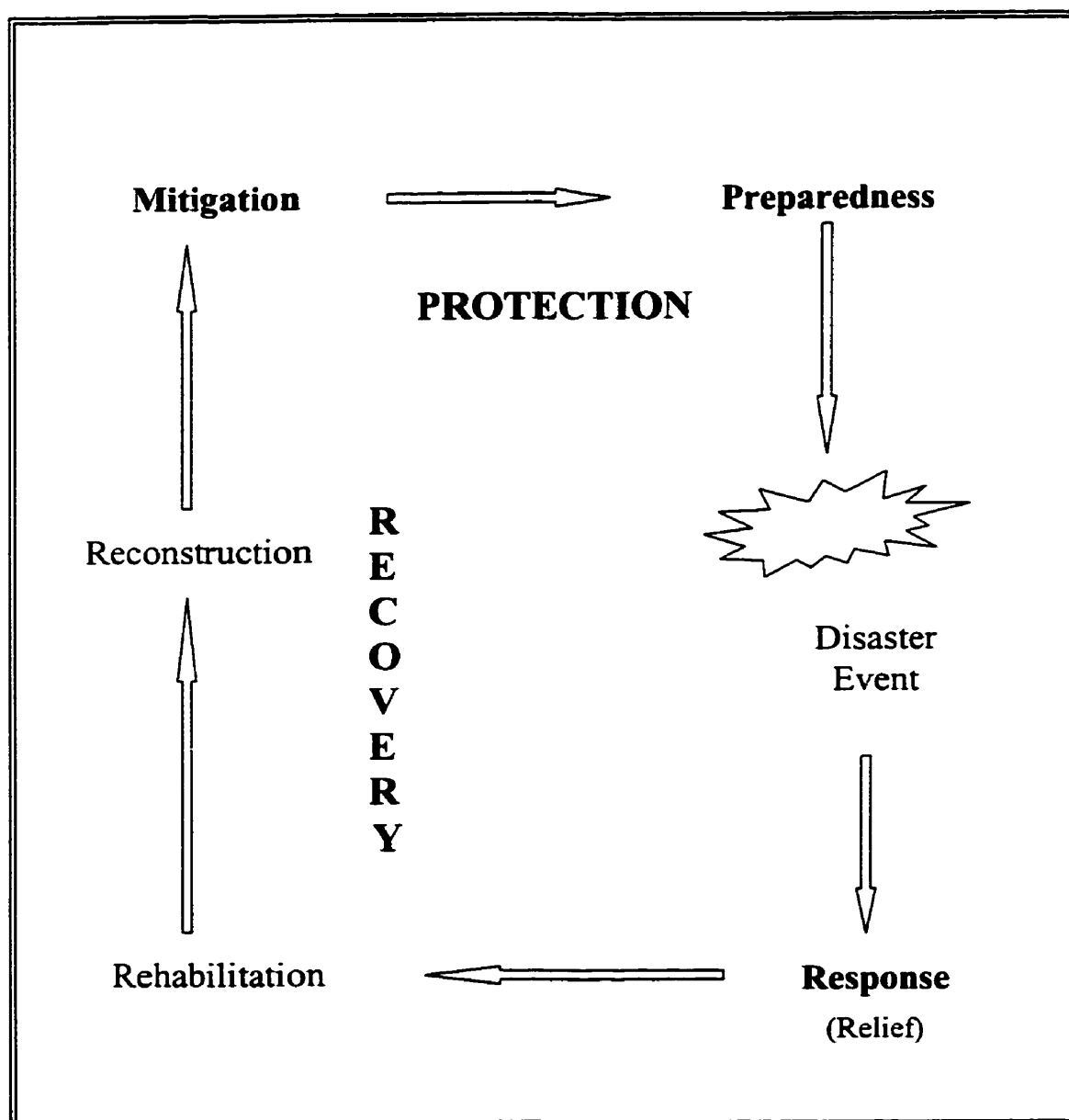
The Disaster Management Continuum consist of four phases namely; mitigation, preparedness, response and recovery (figure 3). It is included here to demonstrate the link between actions taken prior to hazard impact with a range of actions that are taken during and following the impact of hazard.

The protection stage of the disaster management continuum is comprised of mitigation and preparedness. Mitigation describes all those actions taken to reduce the impact of a hazard event that can be implemented prior to and following its occurrence including preparedness and long term risk reduction measures (UNDP/UNDRO, 1984). Preparedness has a more specific and temporal meaning. Smith (1992:88) defines it as pre-arranged emergency measures, which are taken to minimize loss of life and property damage in anticipation of and following the onset of disaster. This includes activities such as preparation of disaster plans, public education and responder training which aim to enhance the response capability (Tierney, 1989).

Relief, rehabilitation, and reconstruction comprise the recovery phase of the disaster management continuum. Response entails the performance of appropriate emergency related tasks which protect the community from further harm following the

occurrence of a hazard event (Britton, 1986). This is usually immediately prior to, during, and immediately following the impact. It includes reaction to warnings and emergency relief operations such as rescue, fire suppression and the provision of basic supplies (Smith, 1992).

Figure 3: The Disaster Management Continuum



Source: Davis and Wall, 1992

Recovery describes those actions taken post impact which aim to make conditions safer and restore community functioning (Britton, 1986). Recovery can be further subdivided into rehabilitation and reconstruction. Rehabilitation depicts temporary actions during which the objectives are to encourage the community to function again and can be a period of weeks or months depending on the nature of the impact and reconstruction is designed to restore community functioning permanently (Smith, 1992). Actions taken during the recovery phase are important for mitigating future events.

Traditionally, phases of the disaster management cycle were viewed as a series of stages. More recently, they are perceived as a continuum that can be integrated with the development process. The realization is that all actions taken in response to emergencies/disasters need to take into consideration the connectedness of all phases of the disaster management continuum. For example, in terms of development it has been shown that there is unevenness in the provision of relief funds and funds made available for rehabilitation and reconstruction (Blaikie et al, 1994). Emergency response focusing on meeting the immediate needs is often overwhelming. In comparison, recovery is marred by lack of financial resources and disorganization (Blaikie et al, 1994). Rahmato (1988), quoted in Blaikie et al (1994), explains that it is during the years of recovery that the seeds of future disasters are sown. A coordinated response cognizant of the connectedness of mitigation, emergency response, and recovery will assist a community to meet its preparedness requirements, as well as promote community development.

Experience in the South (developing countries) has shown that competition among agencies and lack of integration between emergency response and community development programs does not encourage community self-sufficiency and could instead

undermine existing community development endeavors (Anderson and Woodrow, 1989). Community development literature calls to question disaster assistance, which primarily aims to “get things back to normal.” Normalcy often involves vulnerabilities, which if not changed, continue to erode a community’s ability to endure and recover from disasters. Emergency responders are encouraged to understand existing vulnerabilities in order to avoid inadvertent reinforcement of vulnerabilities. They also need to understand the capacities that exist in the community upon which future development can be built (Anderson and Woodrow, 1989).

Oliver-Smith (1988), quoted in Blaikie et al (1994) articulates that post-disaster reconstruction should not recreate structures which reflect, sustain, and reproduce patterns of inequality, domination, or exploitation. There is a danger in regarding reconstruction as strictly a physical process aimed at restoring normalcy. Such a view fails to recognize that disasters expose the chronic social and economic vulnerability embedded in the ‘normal’ situation of people and their communities. Typically, response agencies do not enter the disaster management continuum until after the disaster event has occurred (Blaikie et al, 1994). The disaster management continuum illustrates that each phase is intricately linked, and that it is not enough to respond to emergencies/disasters as they occur. Attention should be paid to both protection and recovery if vulnerable communities are to develop sufficient capacity to cope with disaster.

1.3 Defining Development

From a disaster management perspective, community development is the process

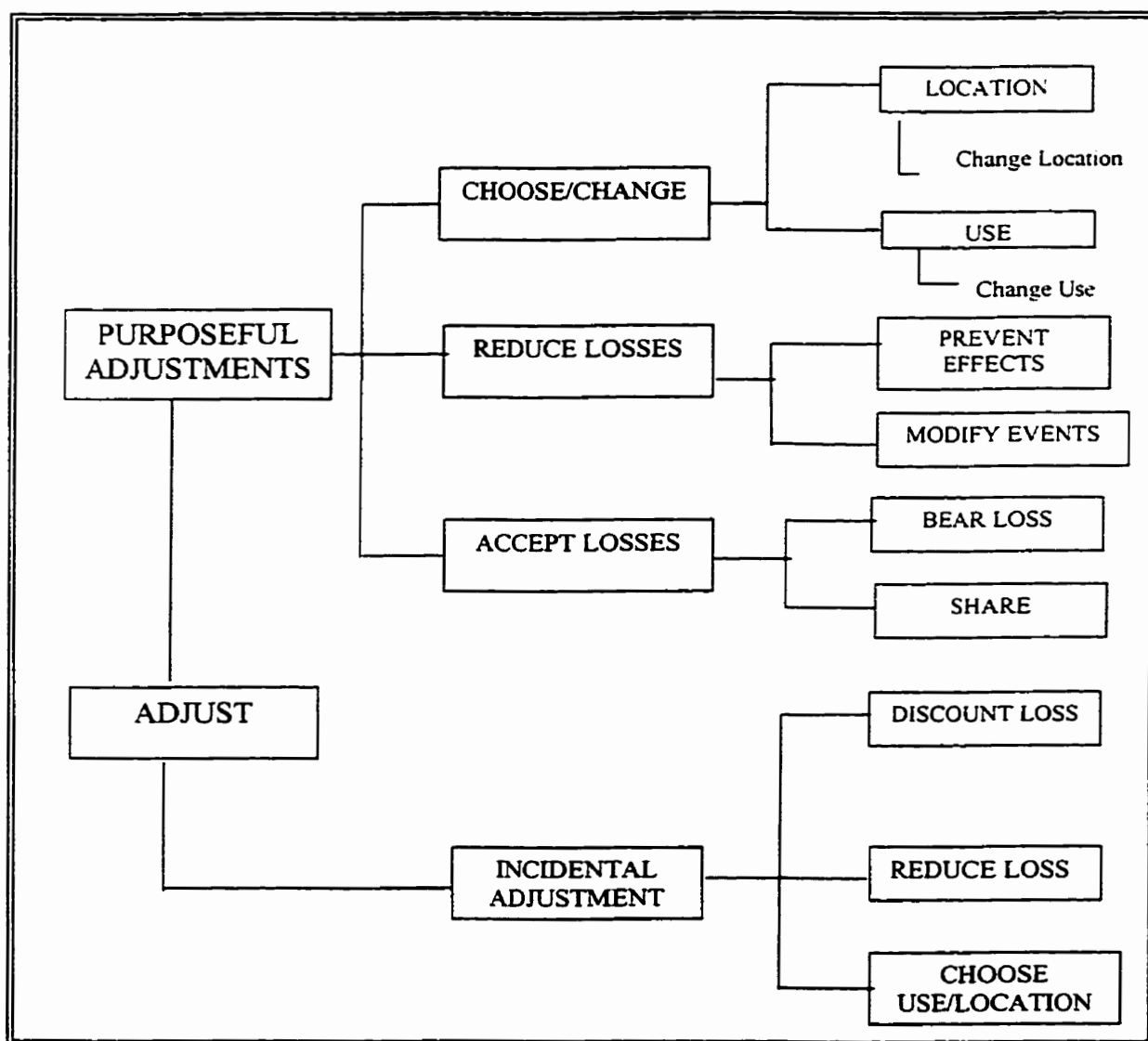
by which a society increases its capacity for dealing with the environment, including extreme environmental conditions, which produce disaster. Capacity is defined as the ability to protect oneself or community and to re-establish basic livelihood (Anderson and Woodrow, 1989). Burton, Kates, and White (1978) developed a model to illustrate the relationship between hazard, technological capacity and social organization based on a cross cultural study of several communities (figure 4). They suggest that every society will develop mechanisms to adapt to and adjust to extreme natural events in the environment. The first mode of coping is adaptation, which involves biological and cultural adaptations. In this mode, the society is unaware of its becoming suited to environmental extremes. The process of cultural adaptation generally results in relatively stable relations between people and their environment.

Awareness and acceptance result in purposeful actions (adjustment) to minimize losses. Acceptance will cause a society to either choose change, to reduce losses, or to accept losses. A society may choose to change location, or use, if the hazard is deemed to be intolerable. Purposeful action to reduce the losses includes preventing the hazard from occurring (for example, cloud seeding) or, modifying the effects of the hazard event (for example, building dams to control floods, or flood proofing buildings). Where society is accepting of the hazard and its consequences, it will choose to bear the losses or share the losses. Sharing of the losses entails redistribution of losses through community social support, government assistance or insurance.

Baird et al (1975) demonstrated that where external influences generate rapid cultural change and the balance between the society and its environment is changed, a society's capacity for coping is also changed. New hazards can appear, or existing

hazards can become intensified, changing the risks and the society's coping strategies. Such changes could also result in changes in the livelihood potential of the environment. Livelihood is the command over resources, which can be utilized to meet basic needs. It includes information, cultural knowledge, social networks, legal rights and access to physical resources (Blaikie et al, 1994).

Figure 4: Modes for Coping with Natural Hazards



Source: Burton, Kates and White, 1978; *The Environment as Hazard*

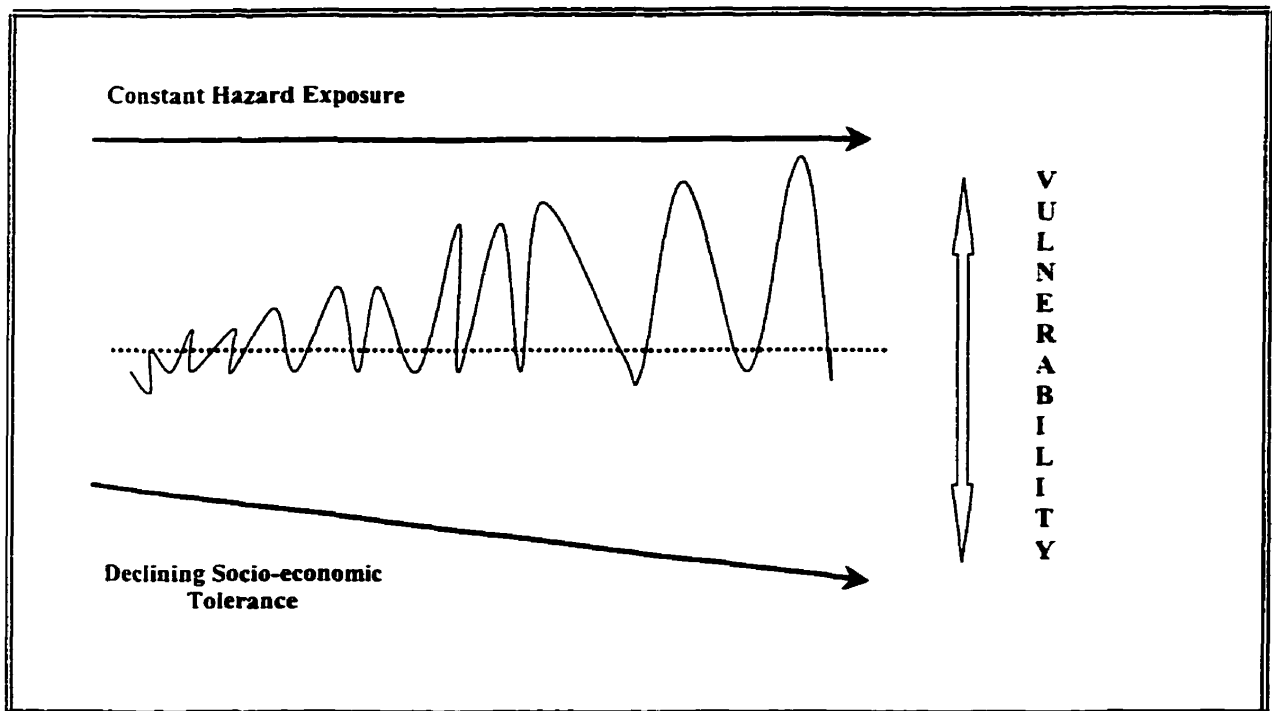
The capacity for dealing with the environment depends on the extent to which a society understands the laws of nature (science), its ability to put that understanding into practice (technology), and its social organization (Baird et al, 1975:28). Studies have shown that in mixed societies, where a segment of the population is still folk society and the other segments are connected to the commercial economy, displacement of the traditional adjustments occur (Kates, 1980). Traditional coping strategies continue to diminish as the folk societies continue to interact with the commercial and industrial economy. In Canada, as new livelihoods were introduced among First Nations, their capacity to cope with forest fire disasters was diminished and replaced by the increased role of, and dependence on government. The ability of First Nations to cope with disaster is now dependent on external institutional response. The government's capability to respond is often constrained by a lack of financial resources, particularly for addressing the entire disaster management continuum. The focus of financial resources on emergency response inadvertently contributes to First Nation vulnerability to disaster as they lack local economic resources to respond and have since lost their ability to utilize indigenous coping strategies as discussed in chapter four.

Susman et al (1983) assert that along the continuum to development, an under developed community attempts to discover alternative strategies for coping with disaster. These new strategies, coupled with social and economic change may leave the population less able to cope with the vagaries of the environment. Figure 5, illustrates that even when the physical hazard does not change, decline in the social or economic conditions of a community will increase vulnerability to 'normal' hazards and reduce the capacity to cope with hazards and their consequences. In the context of development, as societies

progressed toward 'development' indigenous coping strategies are destroyed and emerging alternative coping strategies are dependent on external inputs.

Walmsley and Lewis (1984) caution that it would be wrong to infer that people's attitudes and responses to hazards automatically vary with their level of economic development or culture, since response to hazard is often distorted by personal experience and perception of the hazard.

Figure 5: Response to Hazard Due To Decline In Socio-Economic Tolerance.



Adapted after Smith, 1992, *Environmental Hazards: Assessing Risk and Reducing Disaster*

1.3.1 Marginalization

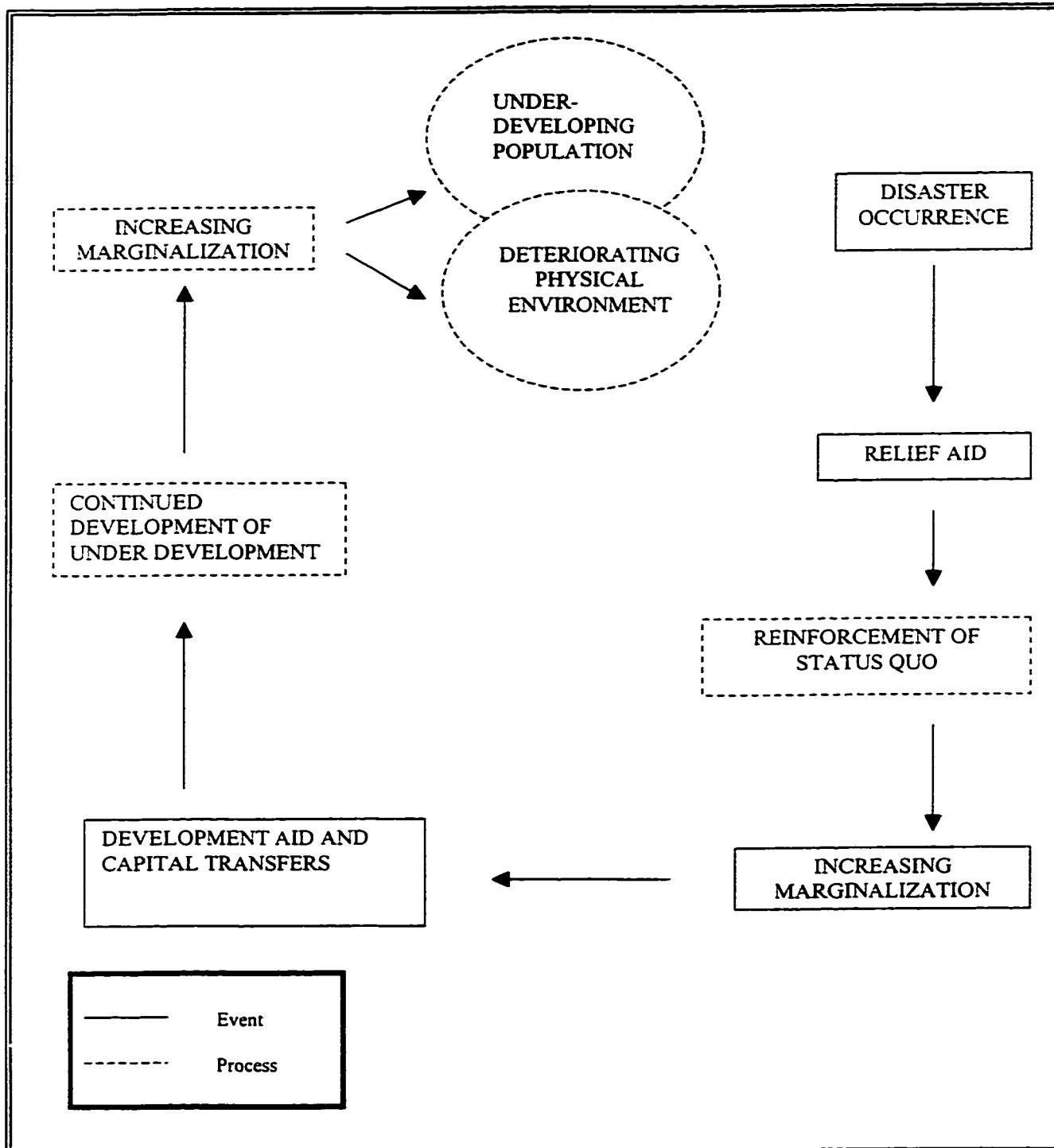
From a disaster management perspective, marginalization is a process which leaves a population more vulnerable, than it was earlier, to the vagaries of the

environment (Baird et al, 1975). It is linked to the control and exploitation of indigenous resources by the governing authority. In Canada, European domination of First Nations following the Indian Act (1867) caused the breakdown of traditional methods of livelihood and replaced it with political and economic relations, which favored development in those areas settled by Europeans. First Nations became dependent on handouts external to their communities, since no alternate economic livelihood was established within their communities, following the Indian Act. The process of marginalization and its relationship to disaster is shown in figure 6. It reflects how disaster assistance, which is external, will continue to reinforce dependency and hinder First Nation capacity to cope with disaster or promote social economic development. To limit the need for relief aid and the subsequent marginalization and dependency, what is required is a commitment to social and economic development that enhances a community's capacity to cope with frequently occurring disasters.

Despite several decades of efforts by the federal government and First Nation leadership to promote economic development, most First Nations remain locked in poverty and under development. Development from traditional to modern society as proposed by the capitalist model of development has so far failed to narrow the socio-economic gap between First Nations and the rest of Canada. Similar to the findings of Kates, (1980) and Susman et al, (1983) the lack of development on First Nation communities is linked to demographic factors, low resource endowment, lack of capital, and the lack of integration between First Nation economies and the Canadian industrial core. The capitalist perception of the causes for First Nation underdevelopment suggests that First Nations are the cause of the problem. In contrast, the radical paradigm argues

that the existing demographic structure is an outcome of the introduction and imposition of external systems on societies that were ill prepared to deal with the consequential

Figure 6: Marginalization and the Relationship to Disaster



Source: Susman et al , 1983

demographic changes. Medical technology was transferred with little consideration for social conditions such as education and poverty. For example, rapid population growth caused by high fertility and declining death rates among First Nations is a factor contributing to shortage of housing on First Nation communities. Population studies have shown that literacy and elimination of poverty are key to controlling rapid population growth (Status of the Worlds' Population, 1994).

Poor resource endowment is blamed as a cause of lack of development, ignoring the historical circumstances, which determined that First Nations occupy resource-poor environments. It is the Indian Act and the various treaties, which caused First Nations to be confined to reserves with low resource endowment. Lack of capital, which is also blamed for under development, is a function of the historical lack of control First Nations have over the natural resources and their local economies. First Nation communities were designed to serve the needs of the European settled areas. This is manifest in the regional development structure of the Canadian economy. Economic activity in the periphery is predominantly extractive, designed to support Canada's industrial corridor. Restoring control of resources and investing in the First Nation communities constitutes a mechanism that would encourage development in First Nation communities and generate needed capital.

Although it can be argued that the geographic isolation of First Nation communities has made them more vulnerable to environmental hazards, their vulnerability is compounded by the lack of control of resources created by the disparate relationship between a dominant political and economic system and First Nations. This relationship has caused the persistence of under development among First Nations

(Susman et al, 1983).

The lack of integration between First Nations and Canadian society would suggest that culture, cultural differences and cultural change, contribute to First Nation under development. Where there is lack of assimilation there develops competition, which results in inequality, which becomes institutionalized. Van Otten & Vasquez (1992) in their study of American Indians in the United States found that for integration to occur successfully development needs to occur. The development initiatives need to come from within the communities themselves, and each community should set its own pace. To blame First Nation lack of development on poor integration ignores the cultural perspectives of the decision-making process of First Nations. Consultation, values, and attitudes are important to First Nation people. These need to be acknowledged if social and economic development for First Nations is to be realized.

1.3.2 Disasters and Development

Development may be defined as a process by which vulnerabilities are reduced and capacities increased (Brigham, 1991). In the 1970s, research began to focus on the linkage between natural disasters and development. It was realized that despite massive and speedy response to crises around the world, material losses and loss of life from disaster was increasing (World Disasters Report, 1994; Cuny, 1983). The problem, it was realized, was the failure to link disasters and the responses to them with development. Although international response was adequate to meet the immediate needs of affected populations, there was a failure to address root issues of poverty and underdevelopment which existed in these poor societies prior to the disaster (Kates, 1980;

Blaikie et al 1994; Davis and Wall, 1992; Anderson and Woodrow 1989).

Disasters serve as an opportunity to bring into focus the basic problems of a society (Cuny, 1983) and are an opportunity for local people to develop capabilities, which improve the lives and wellbeing of the people. The literature emphasizes that people and societies develop themselves and should be given every opportunity to do so (Anderson and Woodrow, 1989). A society which is dependent on external technology and social organization is not developing (Kates, 1980). For example, The provincial response to forest fires particularly in 1989 was to evacuate First Nations from their communities. There was an apparent under utilization of First Nation knowledge and skills for dealing with forest fires (Manitoba Natural Resources, Forest Fire Communities' Review, 1990). This reflects the perception that First Nations lacked the capability to deal with the forest fires, however it also reveals that that no further consideration was given as to why First Nations did not have this capacity. These communities still lack the necessary capacity to cope with forest fires as a consequence of the lack of development.

The link between disasters and development in God's Lake is best exemplified by the fact that the 1989 evacuations were due mostly to the health risk associated with smoke inhalation. It is arguable that adequate housing, in good condition could have minimized the need to evacuate. Exposure to the health risks created by smoke could have been kept at a minimum if people were able to prevent smoke from entering their houses. In comparison, although the City of Winnipeg was exposed to intense and prolonged smoke from stubble burning in the fall of 1992 with hospitals and schools being affected, the exposure did not result in evacuation of any people from the City of

Winnipeg. People affected by exposure to smoke were treated locally since the facilities and expertise existed.

Federal and provincial emergency response in Canada has not made the connection between First Nation social and economic development, inclusion in the political process and emergency/disaster response capability of First Nation communities. The reasons for this may be that the existing response mechanism has been able to minimize the impact of disaster in terms of death and injury despite exclusion of First Nations in the process. The approach of government departments and response agencies has been that once the emergency phase is over, the 'needs' of First Nations can be met through the existing social safety net. The role of this safety net in promoting or impeding social and economic development, and disaster response capability among First Nations is not questioned. The argument that institutions use is that existing mandates do not provide for a response which goes beyond providing emergency assistance. This can be perceived as reluctance by provincial/federal departments to seek alternative ways of dealing with emergencies that affect First Nations in a way that promotes First Nation disaster response initiatives. This lack of foresight in planning could eventually result in disaster.

1.3.3 Vulnerability to Disaster

Vulnerability is the degree to which different segments in society are differentially at risk in terms of probability and occurrence of extreme physical events, and the degree to which members of the community are able to absorb and recover from the effects of extreme physical events (Davis and Wall, 1992). Vulnerability is best

rationalized by understanding the everyday circumstances of a community (Susman et al, 1983:264). It is rooted in social processes which may ultimately be removed from the disaster event itself (Blaikie et al 1994).

Vulnerability to disaster among First Nations is a function of community size and isolation, poverty, unequal political relations and the lack of access and control over resources. A small community affected by a disaster of similar scale to a large city will likely experience greater disruption than the large city, which has more resources. A community, which is isolated, is also at higher risk since assistance and emergency resources may not be readily available.

Poor people are more likely to experience extreme impacts in a disaster than wealthy people are. They are least likely to have access to resources which reduce their vulnerability to disaster (Kates, 1980; Smith, 1992). Blaikie et al (1994), contend that the vulnerability of poor people to disaster is connected to the absence of political voice. Unless First nations are able to participate fully and equally in the Canadian political system, they remain vulnerable and unable to develop their communities. Among poor societies, long-term reductions to disaster vulnerability require development that not only reduces marginalization but increases a community's ability to control resources and participate in the political process. Such a view concurs with, and lends support to, the proposed Aboriginal Self-government. Active involvement of the indigenous population in resolving forest fire and other emergencies occurring on their communities will more likely lead to durable solutions by utilizing existing traditional knowledge, improving skills, education, and promoting self esteem among members of the community.

1.4 Objectives of the Study

1.4.1 Purpose

The purpose of this research is to investigate how First Nation social, economic and political conditions influenced forest fire preparedness, response and recovery in the community of God's Lake following the 1989 and 1995 forest fires. A second goal is to explore how response to the fires influenced ensuing social and economic development in the community.

1.4.2 Objectives

The specific objectives of the study are as follows: -

- 1) To provide a comparison analysis of the health, social and economic impact of the forest fires of 1989 and 1995 on the community of God's Lake. The focus areas included:
 - a) Damage to property - homes, cabins, and other property;
 - b) Employment and income losses;
 - c) Health effect;
 - d) Impact of the evacuations on families.
- 2) To investigate the potential for disaster financial assistance to contribute to First Nation development following a forest fire event;
- 3) To assess the participation of the people of God's Lake during the 1989 and 1995 fires focusing on:
 - a) Community response and local participation in forest fire emergency efforts;
 - b) Willingness to train for forest fire emergencies.

It is the intent of this thesis to determine how the above objectives can be used to assess the ability of First Nations to prepare, respond, and recover from emergencies in light of first, the proposed Aboriginal Self-government and second, potential future enhancement of the socio-economic development of the community.

1.5 Contribution of Study to Geography

This study incorporates some of the research findings within Geography and develops them in terms of their application to the community of God's Lake. This study reflects the paradigmatic shifts that have taken place within Geography from environmental determinism to Behavioral Geography (Burton, Kates and White, 1978) to the radical interpretation of Susman and others in the 1980s. Disaster literature is replete with examples of events that recur in specific geographic areas and affect the same population (Burton et al, 1978; Kates, 1971, 1980). To demonstrate this, the section on hazard perception in the questionnaire (Appendix C), is included to illustrate that despite obvious knowledge about a hazard and its effects, people will continue to occupy hazard prone areas. Consequently, hazard perception becomes a moderate predictor of how the people of God's Lake view forest fires and the range of actions they will most likely take in response to the recurrent forest fire emergencies within their environment.

Incorporated within this study is a cross-cultural perspective unique to the investigation of emergencies within Manitoba and in particular in relation to Aboriginal Self-government. Despite the work of White (1974) on the cross-cultural perspective on adaptation to hazard, the cross cultural perspective has largely been ignored yet it provides insight to alternate mechanisms for dealing with disasters.

Within the cross cultural frame work, this study utilizes a model (Pressure and Release Model) that has typically be applied to the Third World context to provide explanation for First Nation vulnerability to disaster. The study goes beyond traditional Geography to illustrate that vulnerability to natural hazard impacts varies depending on the degree of exposure to physical elements, level of development, and access to

resources. As such this research seeks to encourage the view that disasters are not extraordinary events but extreme versions of circumstances present in the everyday condition of the population (Gold, 1980) including the social and political order. These everyday activities of a community influence their vulnerability to disaster and can be translated to effective disaster mitigation with effective planning. Disaster management should embrace a developmental approach rather than a reparatory one.

Finally this study embraces a systems approach to disaster management. It puts forth the view that each phase of the disaster management continuum is intricately related to the next phase. To emphasize response to a single phase and not other phases will compromise future development aspirations of a community.

1.6 Organization of the Study

This study is organized into eight chapters. Following this introductory chapter, the second chapter describes the theoretical framework. This is followed by a description of the study methodology in chapter three, which describes the process of data collection in the empirical field study. The fourth chapter focuses on the forest fire hazard and emergency response concept in Manitoba. Chapter five examines First Nations vulnerability to disaster and how response to the forest fires was influenced by social and economic development. The sixth chapter provides an account of the forest fires in God's Lake in 1989 and 1995 and discusses how these disasters were managed. Chapter seven is an analysis of the field results using descriptive statistics and chi square test. Conclusions and recommendations are contained in chapter eight.

CHAPTER TWO: CONCEPTUAL FRAMEWORK

2.0 Introduction

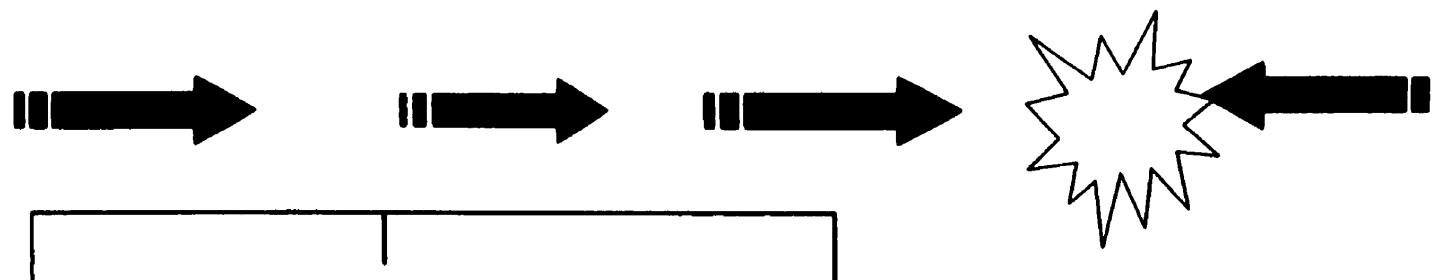
Disasters are not caused by natural events. The social, political and economic environment influences people's vulnerability to disaster. This chapter discusses first, the pressure and release model (Blaikie et al, 1994), to illustrate the social, economic and political causation of disasters. The capacities and vulnerabilities analysis is also included to illustrate how agency involvement may contribute to or subvert development initiatives. Together, the models provide the foundation for understanding First Nation vulnerability to disaster and the need for social and economic development, which supports indigenous efforts.

2.1 The Pressure and Release Model

The pressure and release model states that, disasters are produced by the complex interaction of vulnerability on one side, and physical exposure on the other (figure 7). Vulnerability to disaster is created by the interplay of underlying causes, dynamic pressures and unsafe conditions (figure 8). A natural event by itself is not seen as creating disaster, but is a trigger. Increased pressure is a result of magnified vulnerability and/or increase in the severity of the impact. To minimize the pressure (release), vulnerability needs to be reduced by addressing underlying causes.

Vulnerability is embedded in social processes and has three links that connect the disaster to social processes. First, underlying causes are established ideologies and fundamentals on which a society is built (Blaikie et al, 1994; Davis and Wall, 1992). These include demographic, economic, social and political indicators within the society. These indicators influence the allocation of resources and reflect the distribution of power within a society. Those who have power are least affected by underlying causes are the most likely to have the ability to survive and recover disruptions caused by hazard events.

THE PRESSURE AND RELEASE MODEL



ROOT CAUSES

Limited Access

- Power
- Structure
- Resources
- Ideologies
- Pol. Systems
- Eco Systems

DYNAMIC PRESSURES

Lack Of:

- Local institutions, health care, social services, markets, financial institutions, training, ethical standards
- Macro Forces
- Rapid Population inc.
- Environmental change

UNSAFE CONDITIONS

Fragile Physical Env.

- Dangerous locations
- Unprotected buildings
- Fragile Local Economy
- Livelihood at risk
- Low incomes
- Vulnerable society
- Lack of social institutions
- Public Actions
- Lack of preparedness

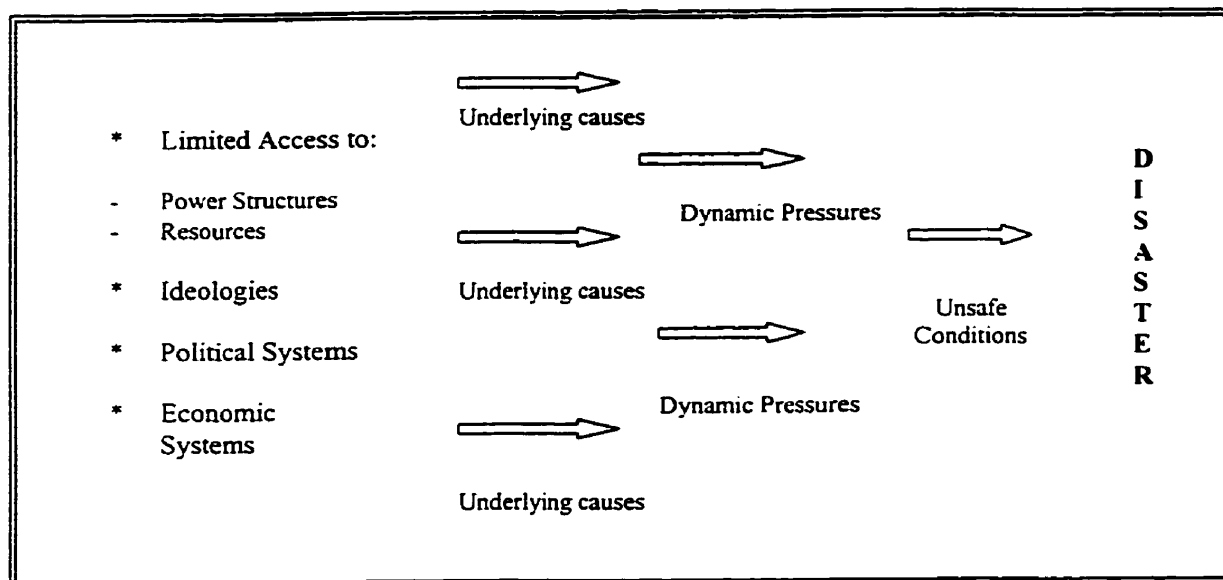
HAZARD

Forest Fire

Source: Blaikie et al, 1994

For example, colonization, a frequently occurring underlying cause, deprives indigenous people of economic resources and political power while creating an elite class with economic and political power. The dispossessed are limited in their capacity to protect themselves from disasters because they lack the economic and political resources of the elite.

Figure 8: Underlying Causes



Adapted: Ian Davis and Michael Wall, 1992

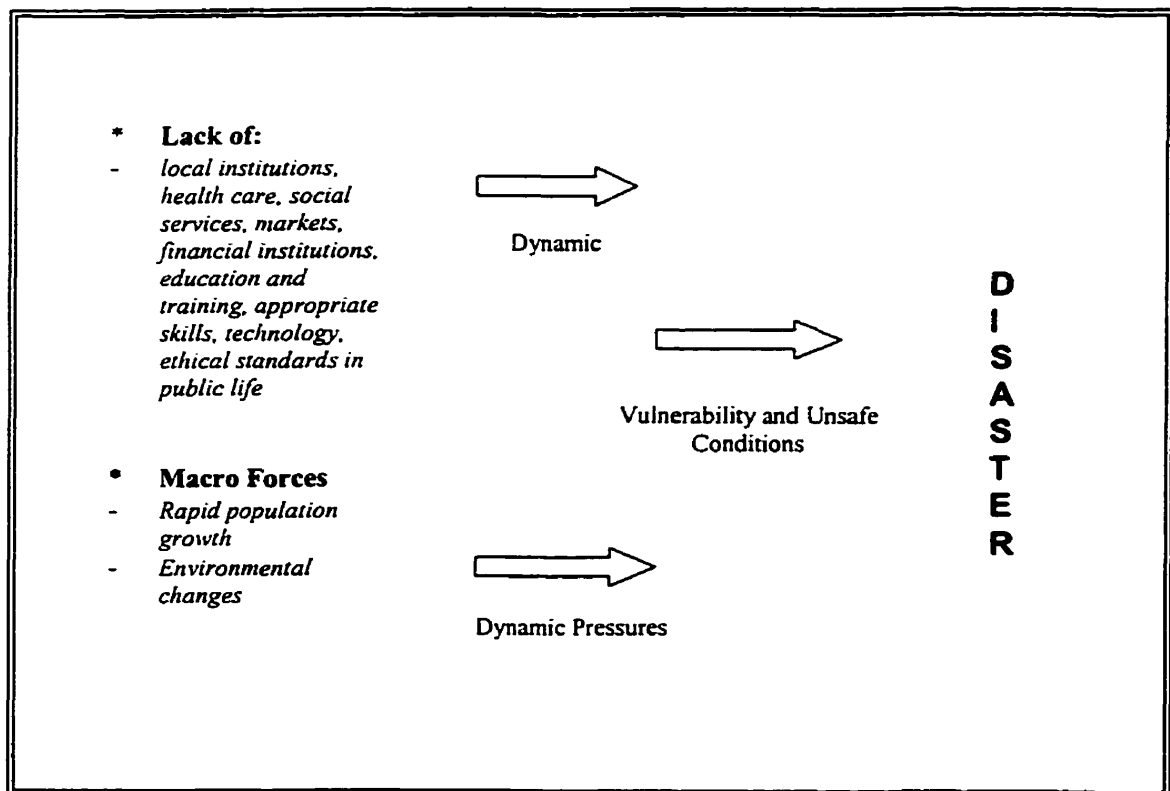
Dynamic pressures (figure 9) are those processes and activities that translate root causes into unsafe conditions. Examples of dynamic pressures are the lack of institutions, lack of training, lack of local markets and lack of press freedom. At the macro level, rapid population growth (caused by high birthrates and declining mortality rates), urbanization, deforestation, and depleting natural resource endowments are factors that would translate root causes into unsafe conditions. Rapid population growth increases the potential number of people who can be affected by disaster (Smith, 1992). Studies have shown that rapid population typifies societies that are considered to be

lacking in development and where income, literacy and health conditions are poor.

Population growth is also used to explain geographic settlement in marginal, and hazard prone areas. At the community level, dynamic pressures such as the lack of training deny poor people the opportunity to learn skills that improve their social and economic well being.

Dynamic pressures are positively correlated to the ability to survive disruptions caused by hazard events. Underlying causes such as poverty, illiteracy, unemployment and poor health are transformed via dynamic pressures, such as the lack of institutions, inadequate training, lack of employment opportunities and political control, into unsafe conditions.

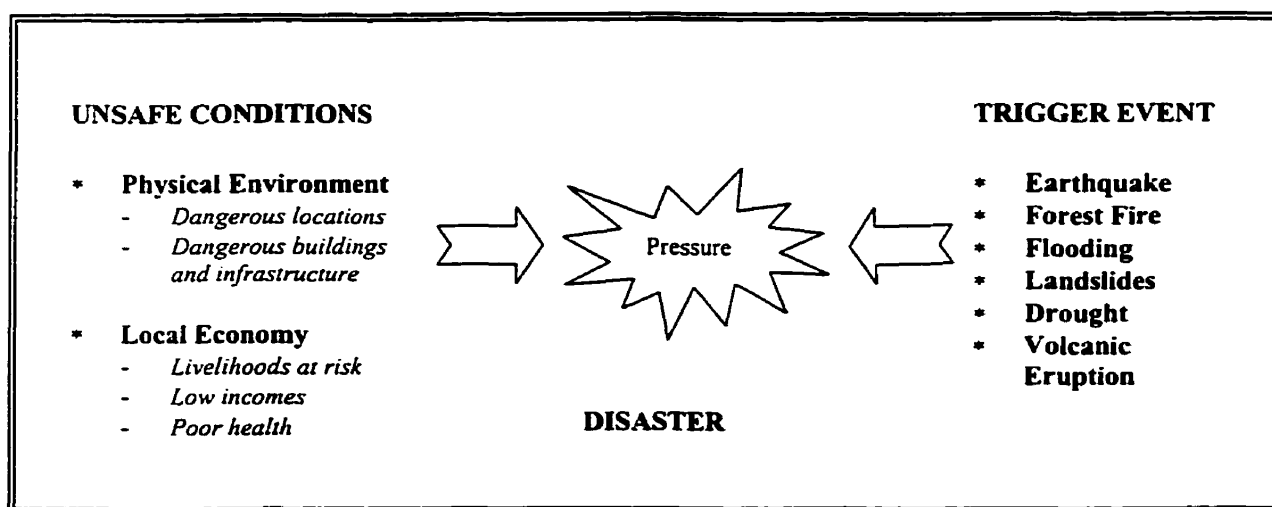
Figure 9: Dynamic Pressures



Adapted: Davis and Wall, 1992

Unsafe conditions are the specific conditions existing in a community just prior to the disaster, which make a community vulnerable (figure 10). For example, although the settlement of people in earthquake prone locations is the result of broader social, political and economic pressures – Underlying Causes and Dynamic Pressures- the key issue is the earthquakes' impact in relation to the existence of unsafe buildings (Blaikie, 1994). There is evidence particularly in the South, which corroborates the positive correlation between dangerous structures and collapse during earthquakes. Poor building construction is a consequence of poverty and the resultant inability to afford suitable construction materials (Blaikie, 1994; Smith, 1992).

Figure 10: Unsafe Conditions

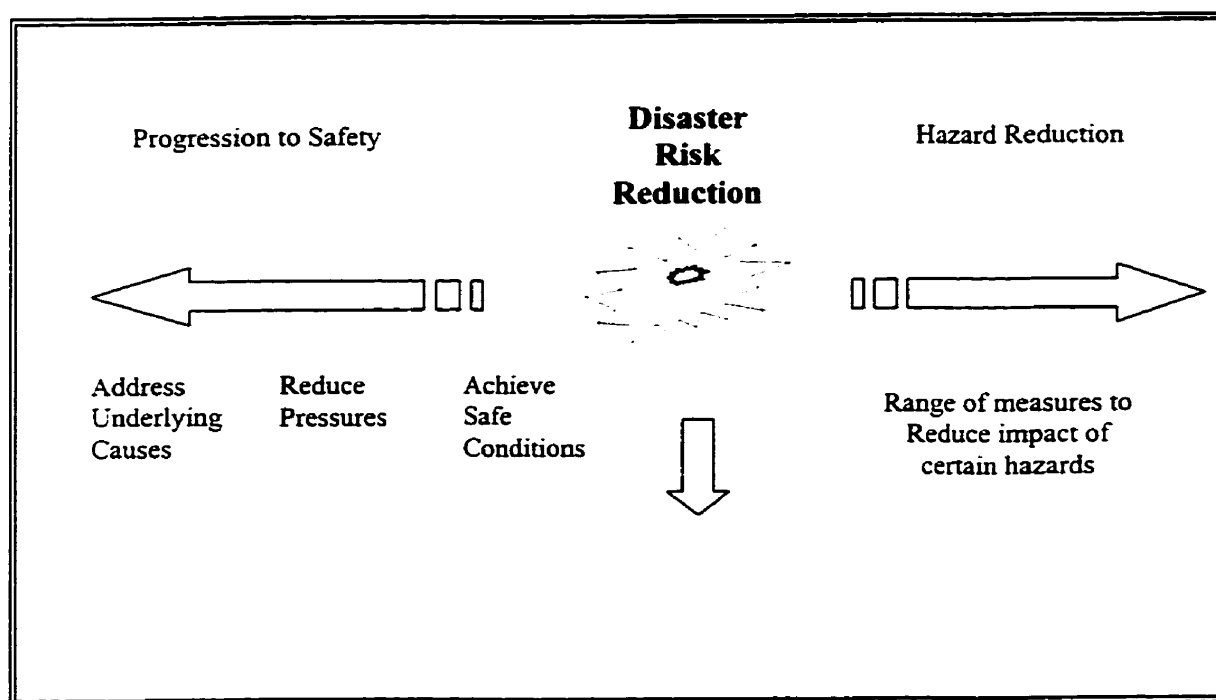


Adapted: Ian Davis and Michael Wall, 1992

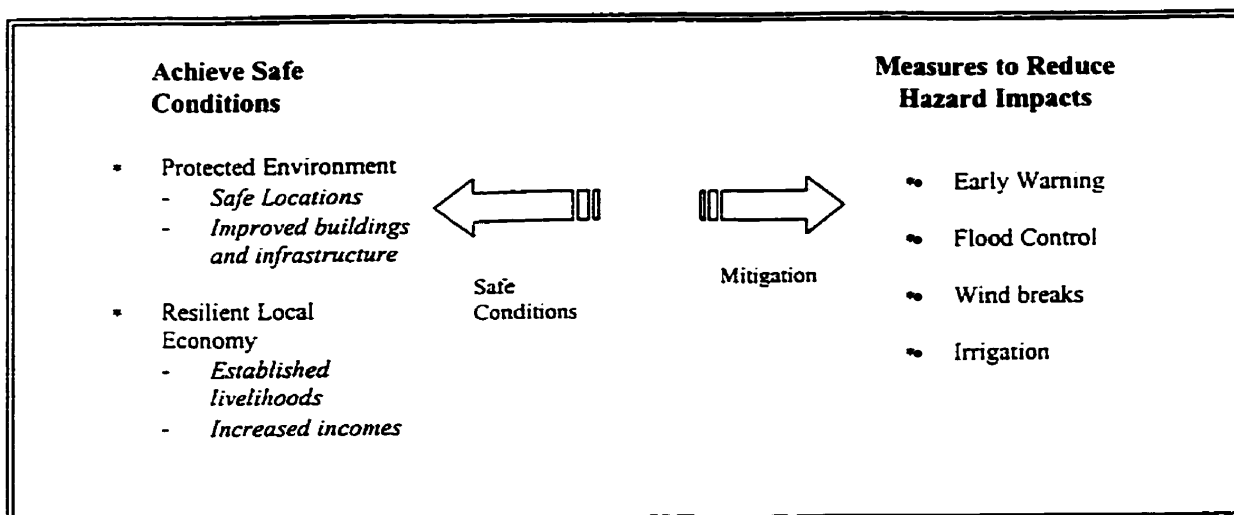
According to the Pressure and Release Model, releasing the pressure (figure 11) reduces the vulnerability to disaster. Natural phenomena cannot be prevented from occurring but, the risk of them getting out of control, and the damage potential can be reduced by addressing each of underlying causes, dynamic pressures and unsafe

conditions. Activities, which need to be adopted to reduce vulnerability, are justice programs and development projects (Davis and Wall, 1992). For example, safe conditions can be realized by occupancy of protected environments and improving building design in areas prone to specific hazards (figure 12). Employment and income generating projects minimize unsafe conditions created by lack of access to livelihood resources.

Figure 11: Releasing the Pressure

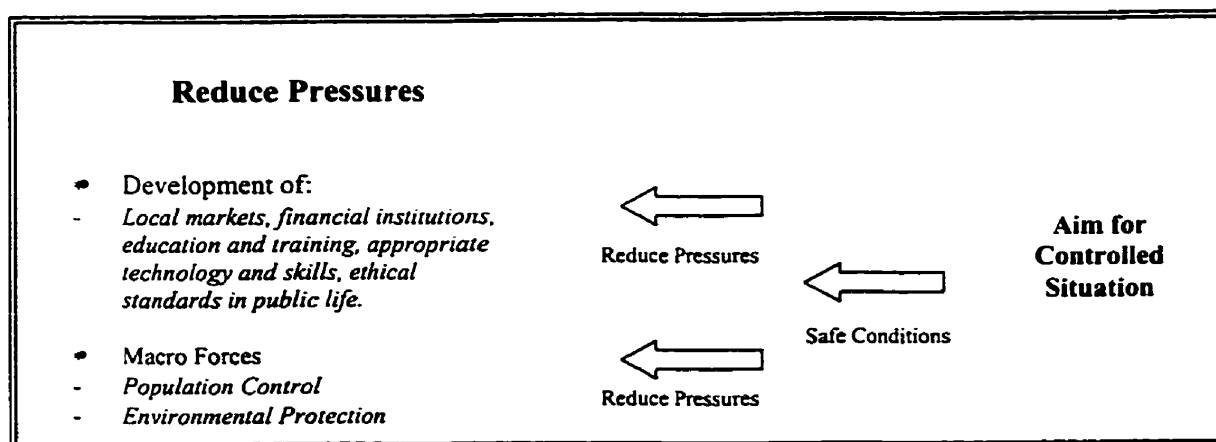


Source: Ian Davis and Michael Wall, 1992

Figure 12: Achieving Safe Conditions

Source: Ian Davis and Michael Wall, 1992

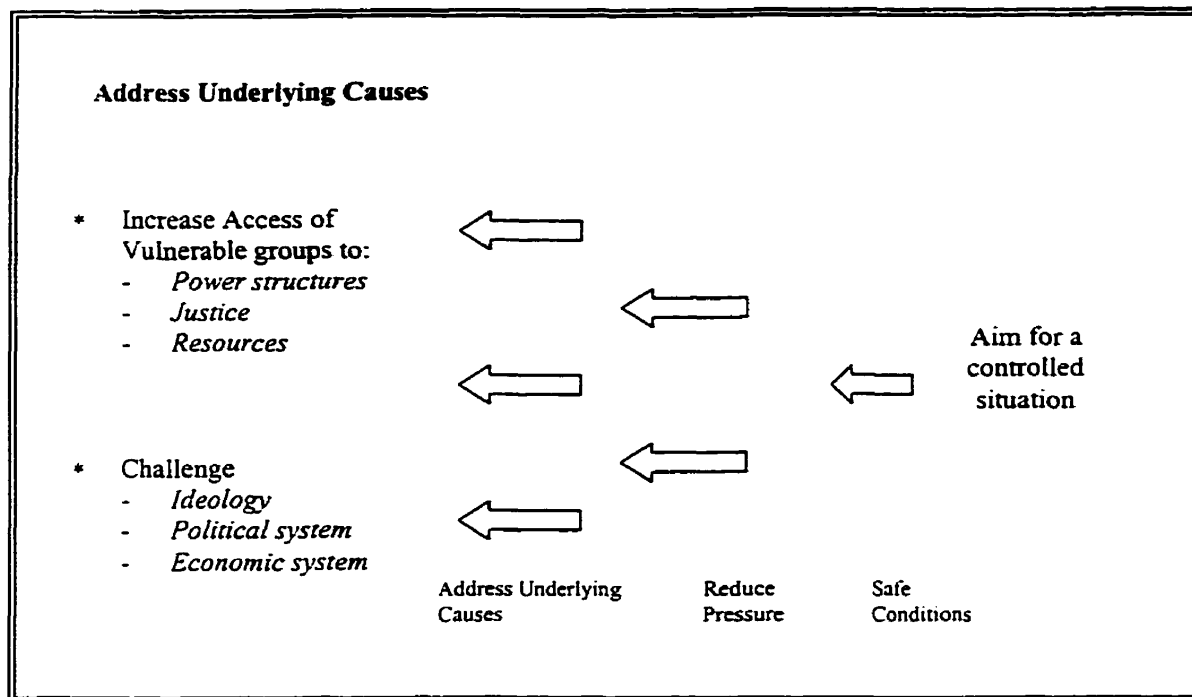
Resolving dynamic pressures through the establishment of local institutions to create employment and the development of social services such as education, training, family planning, public health and shelter, will empower communities to participate in the decision making process and ultimately contribute to changes in political, economic and social power relations (figure 13).

Figure 13: Reducing The Pressures

Source: Ian Davis and Michael Wall, 1992

Underlying causes can be addressed by changing the power relations in the political, social and economic structure of the community (figure 14).

Figure 14: Address Underlying Causes



Source: Davis and Wall, 1992

The Pressure and Release model emphasizes that there is limited long-term value in focusing exclusively on emergency response to disaster and treating vulnerability as irrelevant and immaterial. Problems will recur unless each of underlying causes, dynamic pressures and unsafe conditions are addressed. Failure to realize the linkage between unsafe conditions, dynamic pressures, and underlying causes with vulnerability to disaster fails to acknowledge how unsafe conditions arise or why they persist. The result is tackling incorrect pressures and the continuation of cosmetic solutions. The model does not minimize the value of emergency response planning or technical measures to mitigate disasters, however it beckons for an understanding of the linkage between vulnerability and disaster susceptibility.

Blaikie et al (1994), suggest that lack of knowledge about vulnerability to disaster emanated from the failure to ask the right kind of questions. Understanding vulnerability involves dealing with hazards through more than the progression of the disaster management cycle. Tracing vulnerability from unsafe conditions, through economic, political and social pressures to underlying causes will reduce the gaps in knowledge and encourage a broader comprehension of vulnerability to disaster.

The model is criticized because the linkage between underlying causes, dynamic pressures, and unsafe conditions is speculative (Davis and Wall, 1992). It is difficult to trace the direct linkages between the disaster occurrence and the broader issues created by root causes. The model is criticized for exaggerating the social causation of disaster to emphasize vulnerability. It is argued that in reality, the occurrence of disaster is unpredictable, dynamic, and varies in magnitude and frequency. To deal with these weaknesses, Blaikie et al (1994) expanded their explanation in the Access Model.

The Access model explains how unsafe conditions arise in relation to economic and political processes that allocate assets, income, and other resources in society and incorporates the nature of hazard impacts in its explanation. First, the model states that social systems create the conditions in which hazards impact differentially on different groups within society, this in turn affects the way economic resources are allocated within a society. Where access to resources varies among different groups within society, there are differences in potential loss and the rate of recovery; that is vulnerability. Those people with better access to information, cash, employment, and social networks to mobilize resources are assumed to be in a better position to avoid disasters. Their losses are frequently greater in absolute terms but less in relative terms

and are generally able to recover more quickly (Blaikie et al, 1994).

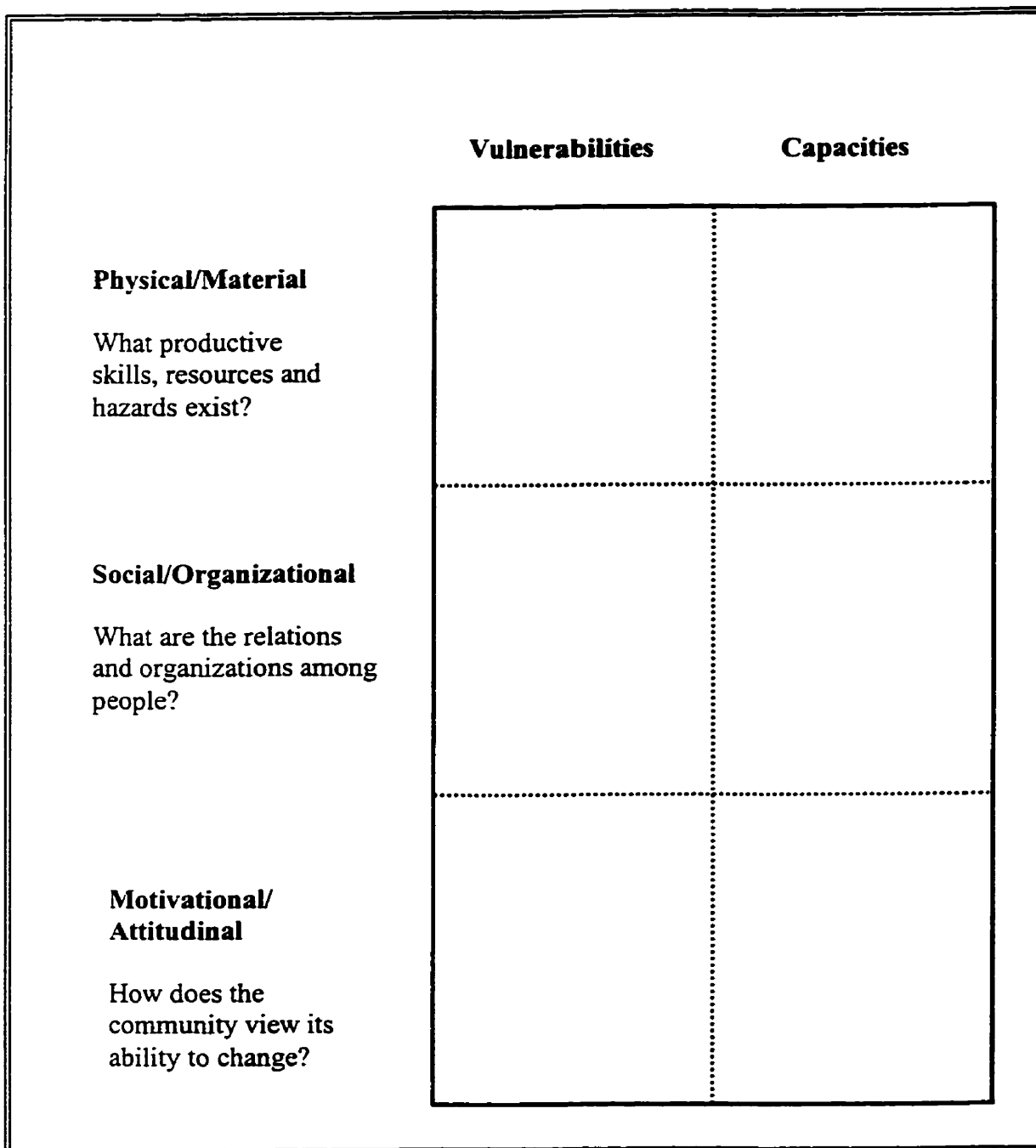
Insight into the structure of wealth distribution facilitates an understanding of how lack of access to resources turns natural events into disasters for some people. Access involves the ability of an individual, family, class or community to use resources, which are directly required to secure a basic livelihood. The model explains that rights to resources are based on social and economic relations and are not equally distributed among all people. These rights manifest themselves in the socio-political structure and may exhibit a spatial dimension. Spatial inequalities are a reflection of the social and economic inequalities.

The model emphasizes that development cannot be achieved if the disaster management continuum, vulnerability, and their relationship to development are not understood. For the most part, development work has focused on the relief assistance to address unsafe conditions, and has neglected to address root causes and dynamic pressures. The focus has been on cures not prevention.

2.2 Capacities and Vulnerabilities Analysis

The capacities and vulnerabilities matrix (figure 15), is a tool by which it is possible to predict prior, during and post impact the extent to which an emergency response and mitigation efforts support or subvert social and economic development in a community. The capacities and vulnerabilities analysis draws attention to response agencies' perception of a distinction between their emergency response work and the development endeavors within a community. Opportunities for combining disaster response with development have been missed, thus failing to contribute to long term social and

Figure 15: Capacities and Vulnerabilities Analysis



Vulnerabilities: precede disasters and are the long-term trends and factors, which directly or indirectly contribute to the suffering caused by a disaster agent.

Capacities: strength that exists within the community – even among victims of disaster upon which future development and disaster mitigation can be built.

(Source: Anderson and Woodrow, 1989)

economic development or worse undermining it. Awareness of the relationship between emergency response and development is fundamental to a community's potential to protect itself and recovery from disaster (Woodrow and Anderson, 1989).

To deal with the complexity and diversity of disasters, the capacities and vulnerabilities matrix categorizes those factors that makes a community vulnerable to disaster, and suggests a mechanism to sort out priorities by which these issues can be addressed. The model is being used in this study to acknowledge, as per the pressure and release model, that there are underlying causes to disasters, and secondly to identify those areas of strength or weakness (access) so as to determine the most appropriate intervention.

The analysis contributes to the conceptual underpinnings of the pressure and release model. It defines vulnerabilities as long-term factors which adversely affect the ability of a community to respond to events or which make it susceptible to environmental calamities. Vulnerabilities precede disasters and are the long-term trends and factors, which directly or indirectly contribute to the suffering caused by a disaster agent (underlying causes and dynamic pressures). Needs are the immediate requirements for survival or recovery from a calamity. Most emergency response efforts concentrate on meeting needs rather than on addressing vulnerabilities (Anderson and Woodrow, 1989:10). Capacities are those strengths that exist within the community - even among disaster victims on which future development and disaster mitigation can be built. Development is defined as a process by which vulnerabilities are reduced and capacities increased (the progression to safer conditions). Finally, the analysis points out that there is a relationship between principles, practice, and policy. The concern therefore is how

agencies can provide emergency aid that meets immediate needs and, at the same time contribute to, and support long term development. Since the Capacities and Vulnerabilities Matrix is not a theory, it forces agencies to think of alternative; often practical methods of reducing vulnerability to disaster.

The Matrix identifies three types of vulnerability. First, physical/material vulnerability which causes poor people to more often suffer from crises than people who are wealthy because they have few savings, limited income, and access to resources. Physical/material resources include land, climate and environment, people's health, their skills and labor, infrastructure, food, housing, capital and physical technologies. Second, social/organizational vulnerability is the organization of a society, its internal conflicts and how it manages. For example, formal political structures, and informal systems through which people make decisions, establish leadership or organize various social or economic activities. Social organizational vulnerabilities are most obvious in situations of extreme prejudice and conflict, for example war. However concealed divisions of race, religion, ethnicity, language, class and cast can weaken the social fabric, creating vulnerabilities. Finally, motivational/attitudinal vulnerability arises from people's feelings about their ability to shape their lives. A community is motivationally vulnerable when people feel victimized or dependent. When people share a sense of purpose, a feeling of empowerment or an awareness that they are agents of their own lives and futures, they can produce more and create a more satisfying community to build stronger social and economic institutions. Strengths or weaknesses in this realm make a difference in a community's ability to rebuild, improve its material base or its social institutions, and are influenced by culture. In fact, a crisis can be a catalyst for

extraordinary effort in a community. People are more open to a new way of doing things in the wake of disaster.

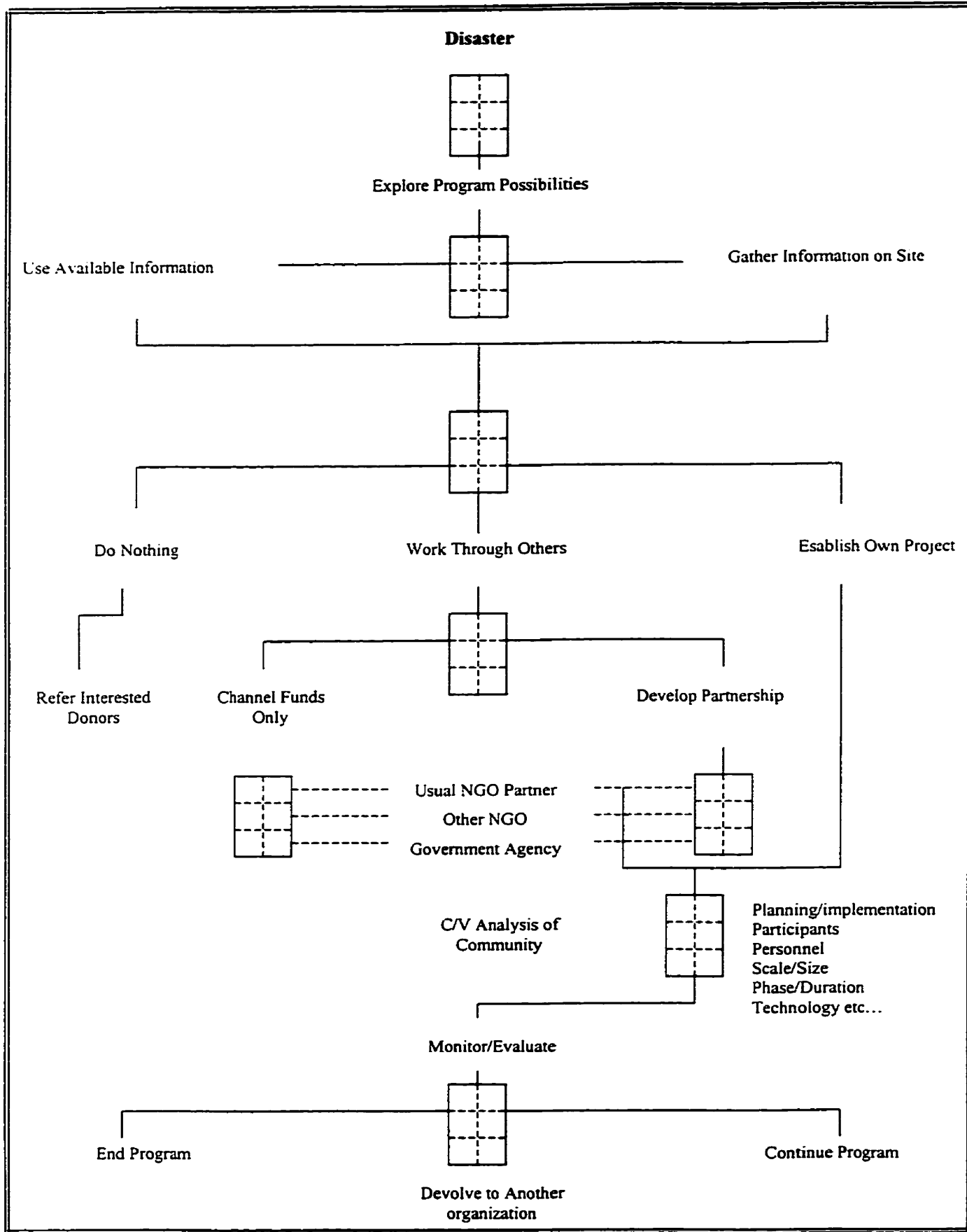
Using the decision tree (figure 16) the capacities and vulnerabilities analysis encourages agencies to evaluate in what ways their disaster response endeavors support or subvert community development. As well, it encourages agencies and institutions to consider when and how to intervene in a crisis in a manner which does not undermine the development process.

It is difficult to evaluate programs because emergency aid programs involve many people and agencies and the range of responses to natural and human caused disasters is varied. The analysis becomes useful in organizing large amounts of information. For example, the matrix can be constructed to explore capacities or vulnerabilities, which relate to gender, ethnicity, time, or scale. In so doing, it raises awareness of the factors that contribute to disaster and may reveal that normalcy (underlying causes) involves vulnerabilities. Thus, it alerts responders to the risk of unintentionally contributing to existing and future vulnerabilities, and subverting development.

The model provides more than just a snapshot of a given moment. It can be applied overtime to assess change from one disaster to another, and is applicable at many stages in the disaster response cycle. This is important since societies and disasters themselves are dynamic and can under go changes between periods of time. Finally, it has value as a diagnostic tool, which seeks to understand why under developed communities continue to be differentially vulnerable to disaster.

The weakness of the Capacities and Vulnerabilities Analysis is that it is not always easy to divide categories due to overlap between categories. The resultant

Figure 16: Decision Tree for Agency Intervention



Source: Anderson and Woodrow, 1989

categories may be subjective because of the manner in which a study area (subject) is selected. The result of such prejudice will influence the content defined in the matrix. Finally, the contents of the matrix are to a degree influenced by the researchers perception of the information and the task at hand (Brigham, 1991).

There are similarities in the conceptual underpinnings of the capacities and vulnerabilities analysis and the pressure and release model. Both models allude to the need to address the broader social, economic and political factors, which make people vulnerable to disaster. Both models emphasize vulnerability as a major part of the problem for continued lack of development and disaster proneness.

The contribution of the present study to the pressure and release model will be its application to First Nations peoples existing in social and economic conditions similar to those of the South within a country that has the capacity to redress the disparities. The test of the pressure and release model in the long term will be to evaluate whether First Nations self government will be the dynamic process which will ameliorate First Nation vulnerability to disaster.

CHAPTER THREE: STUDY METHODOLOGY

3.0 Introduction

This chapter describes the research procedure, which was utilized to obtain data that was used in this empirical study. Generally, this study adopted the following methodology. First, a review of disaster literature and research findings. Second, formulation of hypotheses and, finally, empirical testing of the hypotheses. A description of the sampling procedure, questionnaire design and data analysis is provided. This chapter also describes the limitations of the survey.

3.1 Data Collection

3.1.1 Data Sources

This study is based on relevant literature, primary and secondary data. Rigorous field work was undertaken to collect data through a feasibility study, field observation, informal interviews and a questionnaire survey. Extensive library search was conducted for the secondary data.

3.1.2 Feasibility Study

A pilot study to identify the most pertinent issues affecting First Nations' communities with respect to forest fires, their management and subsequent evacuation was conducted in July of 1995. This involved informal interviews with the Grand Chief of Manitoba Keewantinowi Okimakanak (MKO), Kewatin Tribal Council, council members from Split Lake First Nation, the Department of Health in Thompson, the Emergency Coordinator for the City of Thompson, and the RCMP. These agencies had

participated in the emergency response effort during the 1989 forest fires and at the time of the feasibility study were involved with the 1995 fire situation in northern Manitoba. Following the feasibility study, a content analysis of Manitoba Emergency Measures Organization's (MEMO), report on the forest fire situation of 1989 was undertaken.

3.1.3 Selection of Study Area

God's Lake First Nation was selected as a suitable case study since it experienced forest fires and consequent evacuations in both 1989 and 1995. With an on reserve population of 1,224 people and 325 households (First Nation Community Profiles, 1996), it was believed that an adequate sample size could be obtained.

3.1.4 Sampling Procedure

Data was collected in June and July 1996 over a period of three weeks. Ethical approval to conduct the research was obtained from the University of Manitoba's Faculty of Arts Ethics Review Committee. The permission of respondents was deemed to have been obtained by virtue of their agreement to participate in the survey. Using a questionnaire (Appendix C), a total of 67 households were interviewed, representing 21 percent of the homes on the reserve.

To minimize the risk of duplicating household interviews, 28 people from the community of God's Lake who were employed on the "island"³ were interviewed first. These were predominantly tour guides, fire rangers and employees of the lodge and Northern Stores. Also, 86 percent of the people who were employed on the island were

³ Geographically, Healey's Lodge and the Northern Stores, two major employers, are located on an island just outside to God's Lake Reserve. Both are owned by Non First Nation people.

male; excluding them would have biased the sample, since more women were at home to be interviewed. Selection of island respondents was random, based on the respondent's willingness and time to participate in the survey. Those persons whose spouses had been on the island were not interviewed again in the community interviews.

Systematic random sampling was used for interviews conducted in the community. Selection of the initial homestead for interview was random. Every second household along the road or path thereafter was selected for the sample in each of the residential areas. An in person interview was then conducted with the head of the household/or spouse if they were available. Where the head of the household/or spouse was not available, a second attempt was made the following day. In-person interviews were preferred since they enabled the researcher to observe not only the respondents as they answered survey questions, but also the living conditions of the family, including family size, construction and condition of the houses. For example, it was apparent that older houses were more likely to be dilapidated than those houses in the newer housing projects. However, even within the new housing project some homes showed signs of wear and tear and lack of maintenance.

3.1.5 Questionnaire Design

A questionnaire consisting of six sections was developed to elicit information from the people of God's Lake who had experienced forest fires. The first section of the questionnaire asked questions on people's perceptions of, and experiences with, forest fires. The next section sought to elicit responses about peoples' vulnerability to forest fires. The respondents were asked about actions that they had taken to minimize the

effect of the fires. The third section sought responses to issues of family separation, food, language, care for the elderly, children and teenagers during evacuation. These issues had emerged as pertinent following the 1989 forest fires in particular. The fourth section of the questionnaire contained questions on disaster financial assistance, the respondent's satisfaction with it, and its contribution in assisting them in future fire emergencies. Section five included questions on policy issues surrounding the 'let burn policy', disaster assistance, First Nation's self-government, and the inclusion of First Nations in forest fire emergency response. The final section of the questionnaire solicited social demographic data for additional insight about the respondents.

3.1.6 Informational Interviews

During the period of the research, additional information was gathered from interviews with the Manitoba Department of Natural Resources Coordinator in God's Lake, and the owner and other employees of the Healey's Lodge in God's Lake. These interviews were insightful because these subjects had remained in God's Lake for the duration of both the 1989 and 1995 fires. For example, despite the Department of Natural Resources' perception that few of the First Nations had responded to calls to assist in the fire fighting effort in 1995, close examination of payroll records reflected that at least 39 First Nation men had participated. This supported responses that were obtained from the questionnaire in which many men reported that they had remained in the community to assist with the fire fighting effort.

Additional informal information was obtained from the Band Office's Natural Resources Coordinator, who was assigned by the Band office to assist with the research.

Further qualitative data was obtained by virtue of the researcher's presence in the community, which permitted interaction with the local population. Qualitative data is critical for interpretation of data obtained using standard quantitative methods. For example, it was observed that the Band's administration was perceived to be corrupt and that this influenced community members confidence regarding First Nation self-government.

3.2 Data Analysis

3.2.1 Statistical Analysis

The data were analyzed using the Statistical Package for Social Sciences (SPSS). Frequency distribution tables were derived and used to describe the sample data. Due to the nominal nature of the data, the chi-square statistic was used to analyze the first research objective. To measure differences in the impact of the 1989 and 1995 fires on the community, the following issues were analyzed:

- a) the impact of the forest fires on individual property;
- b) the impact of the forest fires on employment;
- c) the impact of the fires on income;
- d) the impact of the fires on health;
- e) the impact of evacuations on families.

The second research objective is to explore the linkages of social and economic development and disaster assistance to preparedness and emergency response in God's Lake. Using the capacities and vulnerabilities analysis, resources within the community

that could be strengthened or undermined by emergency relief were identified. As well, the capacities and vulnerabilities analysis was used to forecast the readiness of the community for self-government in terms of social and economic programming. The purpose was:

- a) to determine the level of emergency preparedness in God's Lake;
- b) to provide a measure of the resources available in God's Lake that would enhance or undermine emergency preparedness in God's Lake;
- c) to evaluate the role of emergency response and disaster assistance to the 1989 and 1995 fires in terms of preparedness, mitigation and subsequent contribution to socio-economic development.

The final objective of this thesis is to assess the participation of the people of God's Lake during the 1989 and 1995 fires. This was analyzed by:

- a) examining the participation of the local population in forest fire emergencies;
- b) their willingness to participate in programs that would promote emergency preparedness.

The final objective is pertinent to First Nations Self Government to ensure that proposed changes do not place the community of God's Lake at risk of forest fire emergencies than already exists, or that is higher than the general Canadian population.

3.3 Limitations of Survey

Despite respondents heeding to most of the questions, there was often a need to explain or restate questions before a response was obtained. This was particularly true of women who generally exhibited a higher degree of shyness compared to men.

Responses were not obtained for some of the questions. This was particularly true

of women, whose time was limited by domestic responsibilities. Fishermen, tour guides and fire rangers had limited time to respond to the survey since they were either on their way to work or getting ready to go home at the end of the day. The length of the questionnaire and the respondent's fatigue could have influenced the lack of response to some of the questions.

Many respondents seemed particularly interested in the assistance and housing aspect of the survey, perhaps perceiving the survey as an opportunity to procure more assistance from the government. This highlighted the issues of poverty and inadequate housing as important issues among the people of God's Lake.

Some households were not interviewed since a number of families traveled to Winnipeg to attend the Red River Exhibition. Also, some households attended a meeting of Chiefs and Band Councilors in Winnipeg, hence they were not available for the interview. Those persons who had traveled to Winnipeg represented more affluent and politically active members of the community and could have biased the sample. For example, this was the segment of the population that would have been most familiar with self-government issues and also most likely to be employed.

The presence of other people, in particular those who had already been interviewed, created some concerns since respondents sometimes tried to solicit assistance from someone who had already been interviewed. This became more of a problem over the period of the survey as more people became aware of the researcher's purpose within the community. On the other hand, the presence of children often prompted parents to provide not only a response but also an accurate one by recalling or clarifying events.

The survey was conducted six years and one year post event respectively for the 1989 and 1995 fires. Perry and Greene (1983), caution that recollection of hazard experiences tends to be less than perfect and increasingly so as the time progresses. This may also have influenced responses to some of the questions.

Socio-economic and demographic data specific to God's Lake could not be obtained. It was also difficult to obtain socio-demographic data, that was contemporary with the study period. This caused a reliance on primary data obtained during the survey. This made comparison of changes between 1989 and 1995 difficult in terms of social and economic changes. Secondary data was obtained from Indian And Northern Affairs Canada and other Government of Canada publications. However, this did not segregate the information by community.

The capacities and vulnerabilities analysis suggests that community members themselves should be involved in the development of the analysis; however financial and time constraints made this impossible. It is also acknowledged that a community member would have better insight into cultural, political and economic factors that affect this specific population. Given the limited amount of time the researcher, as an outsider, was able to spend in the community, some qualitative information may have been overlooked. For example, there are bound to be differences in interpretation that a community member would provide compared to that of the researchers. Not all of these issues may have become evident to the researcher at the time of the research.

This study was conducted prior to the implementation of First Nations Self-government, and as such, some aspects of the study are speculative based on theories of social and economic development outlined in the literature review.

This study makes the point that isolation and socio-economic challenges are major factors influencing First Nation vulnerability to disaster. A comparative study of how other isolated and poorly developed communities in Canada (for example, Out Port Communities), cope with disasters would have provided an interesting dimension to the study and aid in substantiating or disputing the position of First Nation vulnerability to disaster adopted in this study. Due to time and financial constraints, this was not possible.

Despite the above cited limitations, conducting in-person interviews was extremely valuable because it provided the researcher the opportunity to observe the community in their proximal social and physical setting. Anticipated difficulties with language did not materialize and only on two occasions was interpretation necessary.

CHAPTER FOUR: FOREST FIRE HAZARD, POLICY AND EMERGENCY MANAGEMENT

4.0 Introduction

This chapter reviews the literature on the causes of forest fires and makes particular reference to the 1989 and 1995 forest fires experienced in Northern Manitoba. This is followed by an account of the management of forestry resources in Manitoba, which begins with a historical account of early indigenous management of Manitoba forests. The provincial emergency response concept is also discussed to establish the setting for the response to the forest fires, which affected First Nations in 1989 and 1995.

4.1 Forest Fire - Causes

Population growth, concentration of settlement and changing land use patterns have changed the risks involved with fire hazards both in terms of causation and nature of impact on human actors (Britton, 1991). Although forest fires can be human caused, lightning remains the predominant cause of forest fire ignition (Smith, 1992; Britton, 1986). Human caused fires maybe intentional or accidental. In Manitoba, human caused fires occur most frequently in Spring as a result of persons burning under permit. The spring fires, intended to clear dead winter vegetation, get out of hand, imposing an immediate threat because of their proximity to residential areas (M.E.M.O, 1989). The Department of Natural resources estimates that 90 percent of the 1989 spring fires were human caused (Forest Fires: Community Review, 1990). Although it was not determined what proportion of these were human caused-intentional versus human caused-accidental, it was speculated that some of the fires were intentionally set to create summer employment or for reasons of mischief.

Summer fires are attributed to a number of factors. The quantity and type of fuel is fundamental. Without material to burn, there cannot be a fire, and the more material there is, the greater the fire potential. Also, the type of fuel influences the behavior of a fire in response to changing environmental conditions. For example, grass fires and forest fires behave differently under different environmental conditions raising different dangers (Britton, 1980, Chapman, 1994). Forest fires have a bigger fuel load ranging from 15 to 100 tonnes per hectare in tall forests. Although they ignite less easily and spread more slowly, once they reach a critical threshold in intensity, they can rapidly become violent and uncontrollable sometimes resulting in crown fires⁴. The God's Lake area has predominantly coniferous (Boreal) forest, consisting of species such as Black Spruce, White Spruce, Balsam Fir, White Birch, Aspen and Jack Pine. Trees grow to a tremendous height, generating a lot of woody matter conducive for crown fires. In contrast, grass fires are less violent and burn rapidly. Flames are typically 5 to 15 feet high and spotting⁵ is only up to about 8 feet (Pauly, 1988).

Winds stimulate rapid combustion and steer a fire in different directions over short periods of time. Also, fierce fires can cause their own winds. In an intense fire, as air rises, to several kilometers, in-flowing air will help increase the intensity of the fire. These winds can throw burning pieces up to 18 kilometers in coniferous forests (Britton, 1980) thus igniting spot fires which coalesce to form larger and fiercer fires.

The moisture content of the fuel is also important and is dependent on season and weather conditions (Smith, 1992). The weather conditions of the preceding seasons influence the amount of growth and potential for fuel accumulation. The preceding

⁴ Crown fire - large and violent fires which burn at the canopy level of a forest

⁵ Spotting - fires caused by burning pieces of fuel which are thrown by winds generated by the forest fire.

winter drought, high temperatures, warm dry winds, and low humidity influenced the fuel moisture content leading to the spring fires of 1989 (M.E.M.O. Report, 1989). Beer et al (1988), argue that humidity is the single most important variable determining forest fire incidence on an annual basis. Britton (1986) however, suggests it is the combination of both fuel and weather that influence the severity of forest fires.

4.2 Recent Forest Fires in Northern Manitoba

Forest fire season in Manitoba is April 1- October 15, making spring and summer the most conducive times for forest fires. In the spring and summer of 1989, Manitoba experienced the worst forest fires since 1930 when record keeping began (M.E.M.O. Report, 1989). According to this report, the fires of 1989 were unique in terms of their magnitude, areal extent, and number of fires burning (figure 17) and enormous evacuation undertaking that resulted (table 1). By May 20, a total of 1,911,781 acres (3.5 million hectares) of Manitoba forests had burned in spring fires. This represented 90 percent of land that had burned across Canada in that year, yet Manitoba experienced 14 percent of the total reported number of fires. Ninety percent of the spring fires were attributed to human causes (M.E.M.O. Report 1989). During that period, two fires affected God's Lake. One was burning 12 miles southwest and another burning 10 miles south of the reserve. During July and August of the same year, 1108 fires burned in northern Manitoba. The summer fires were attributed to drought conditions of the preceding season, dry lightning storms and unseasonably high temperatures (M.E.M.O. Report, 1989).

Figure 17: Distribution Of Forest Fires in 1989

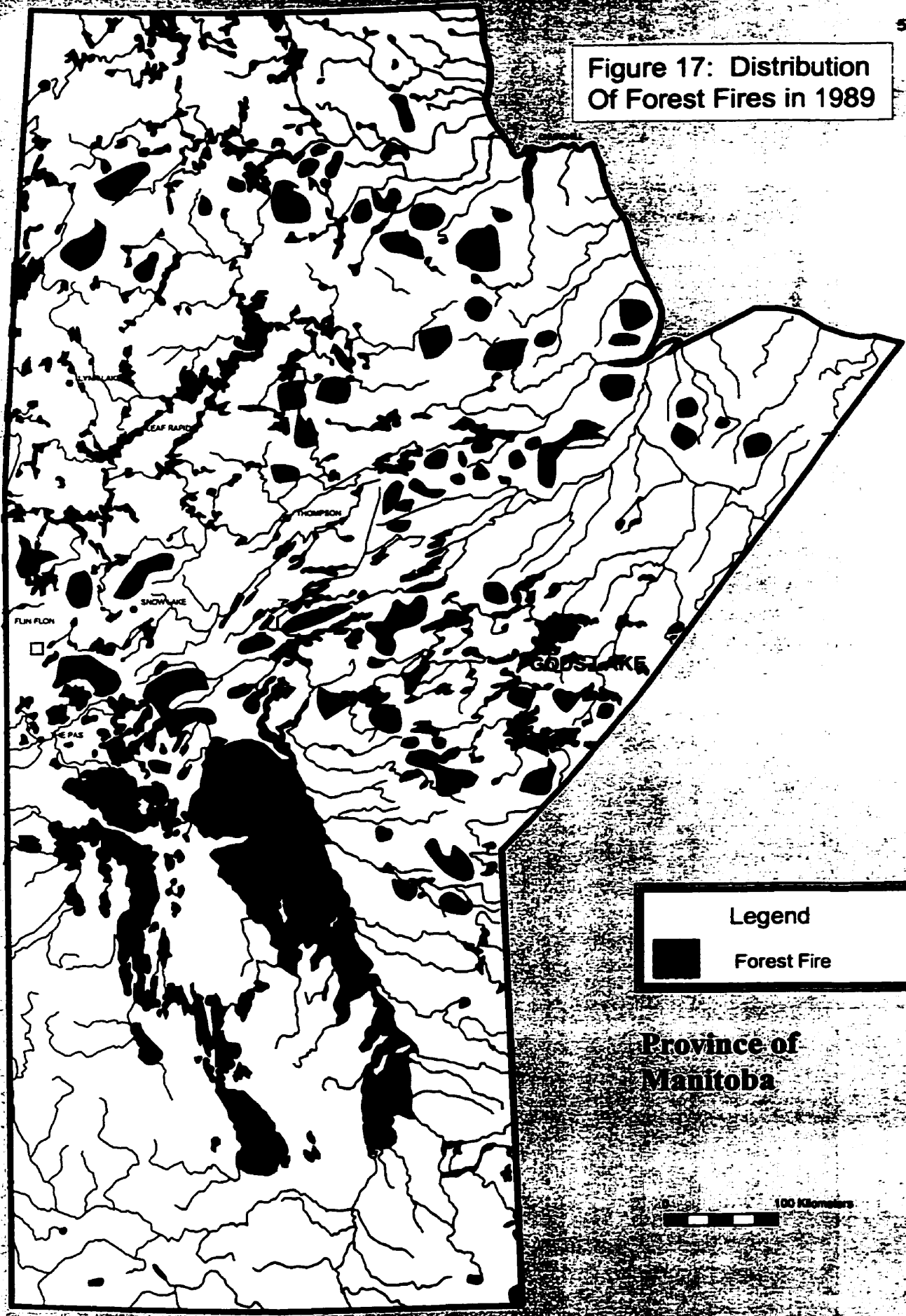


Table One: Forest Fire Evacuations 1989

Community	Number Evacuated	Reception Center
Cross Lake	3600	Thompson The Pas Cranberry Portage Wabowden
Garden Hill	1018	Brandon
Island Lake	221	Brandon
God's Lake	342	Brandon Winnipeg Thompson
Gods River	294	Winnipeg
Grand Rapids	1000	Winnipeg
Nelson House	2500	Winnipeg
Norway House	4000	Winnipeg Gimli Portage La Prairie
Oxford House	596	Winnipeg
Pukatawagon	1843	Flin Flon Cranberry Portage Swan River The Pas
Red Sucker Lake	84	Brandon
Shamattawa	205	Churchill
Sherridon	50	Cranberry
Snow Lake	1600	Flin Flon
Split Lake	1100	Thompson
St. Teresa Point	448	Brandon
Wasagamack	142	Brandon Winnipeg
Fort Landing	244	Brandon Thompson
Total	19,287	

Source: Cam King, Unpublished Records, MANFF , 1989

In the summer of 1995, Northern Manitoba experienced forest fires, which affected several First Nation Communities. Unfortunately, no reports have been written following these fires. As a result, the information obtained relies on oral sources from organizations and government departments that were involved. During the summer of 1995, 662 fires burned across Northern Manitoba covering a total area of 325,335 acres (803,298 hectares) of land. Of these, 39.9 percent of the fires were believed to be human caused (Peter Costs, Manitoba Natural Resources, 1996). The fires again were attributed to unseasonably high temperatures and low humidity.

4.3 Management of Forestry Resources

An account of fires and the American Indian is included to illustrate the capability of the indigenous population in managing the environment prior to the arrival of the Europeans and to illustrate how the risk of forest fire may have changed since then.

4.3.1 Forest Fires and the American Indians

Fire, whether human caused or lightning caused, has been part of the Prairies for thousands of years and provided benefits to the Prairies. It removed dead vegetation which hinders new growth, released nutrients which enrich the soil, reduced invader plants and encouraged native species which create attractive habitat for existing wild life (Higgins, Krause and Phiehl, 1989).

Deliberate firing of the Prairie by native people was much more frequent prior to European settlement and the advent of agriculture in the Prairies in the 1870s. Native Americans set fires deliberately to enhance game production, to procure food such as berries and nuts, for shelter and clothing, for reduction of brush and for ease of travel (Henderson and Statz, 1995). Fire was also used for ceremonial purposes, to drive off pests, economic exploitation, military objectives and to control other fires by back firing (Pyne, 1982). These fires played an incontestable role in the evolution of the Prairie grassland and in preserving its biological diversity.

Contrary to the common perception that the Native people lived within the bounds of nature and had no impact on the landscape, archaeological and ecological evidence suggests that the Native Americans actively and successfully managed the flora and fauna with fire for hundreds of years (Henderson and Statz, 1995). There is evidence that the Indians understood the precepts of fire prevention too. Debris was cleared from around settlements, cooking fires were carefully situated away from long grass and when necessary fires were fought.

Historical evidence suggests that early European settlers were ignorant of wild land fires and how to control them. By 1940, European settlers had banned the use of fire on the Prairies believing that it was harmful. Such action caused much of the Prairie grasslands to revert to forest (Pyne, 1982) and increased the fire hazard since it enabled the boreal forests to accumulate larger fuel loads (Pauly, 1988).

Henry Lewis, as quoted in Pyne (1982), cautions that not all Indians used fire to modify their environment, or lived in perpetual harmony with their environment, upset only by European interventions. Today fire in the form of prescribed burns is used

frequently as a management tool not only because of the historical role of fire in maintaining and influencing native ecosystems, but also because of the relatively low cost.

4.3.2 Manitoba Department of Natural Resources

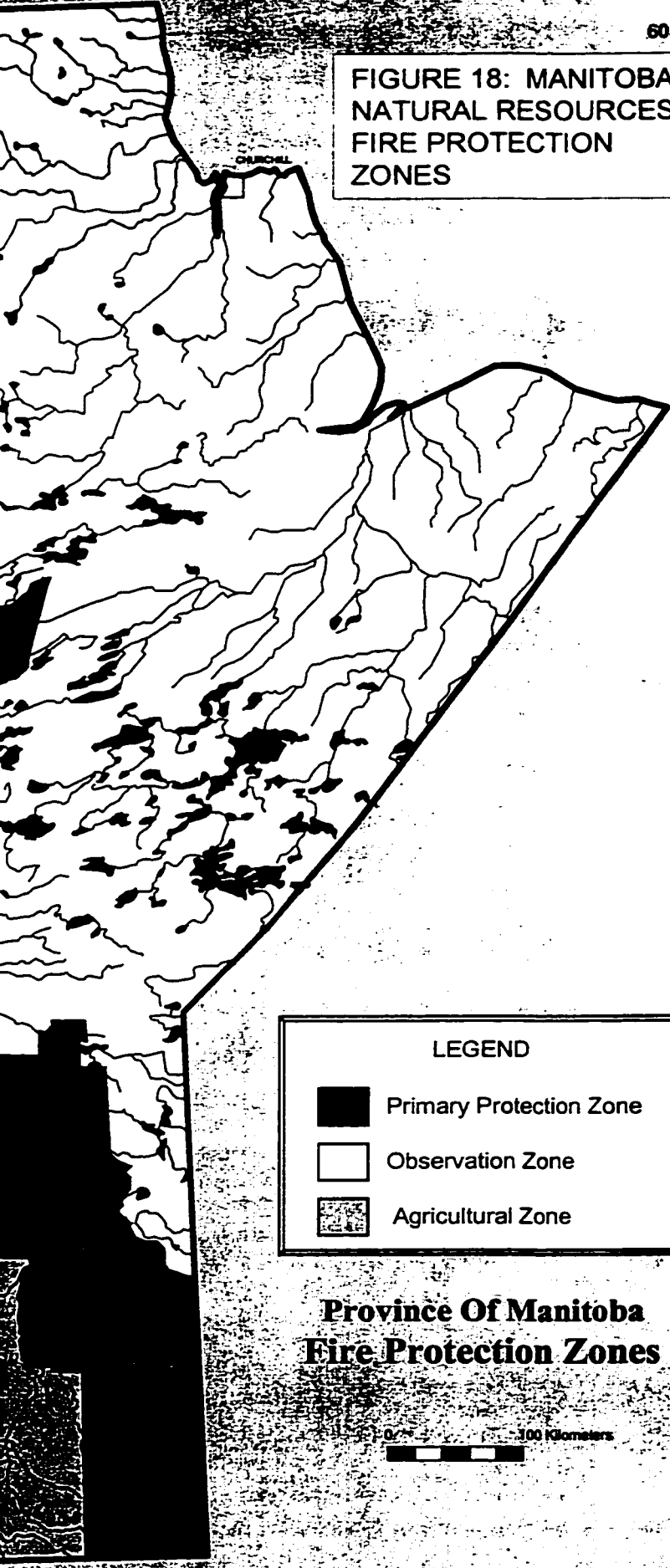
The management of Manitoba's forested land and forest fires falls under the jurisdiction of the Department of Natural Resources. As the primary forest fire protection agency in the Province, the Department has a mandate under the Fires Prevention Act to directly provide and/or support fire protection within the wooded districts and unorganized territory and to assist in fire control outside of these areas when necessary and/ or requested, subject to availability of resources and the value of forestry resources at risk (Manitoba Natural Resources, Policy Directive, 1990).

The objectives and priorities of the Department of Natural Resources in order are, to protect life, property and other resources from wild fire, to provide levels of protection consistent with the value of resources at risk, and to minimize costs and losses. To this end, the Department has set up three fire protection zones (figure 18) that determine fire response:

- a) Primary Protection Zone - this zone contains commercially valuable timber resources, and response following a forest fire start is immediate, provided suppression resources are available;
- b) Observation Zone - response in this zone is undertaken only if life or property is at risk;
- c) Agricultural Zone - action is generally the responsibility of the affected

Rural Municipality or Local Government District, but the Department of Natural Resources will assist when necessary, or if requested, subject to availability of suppression resources and values at risk.

FIGURE 18: MANITOBA
NATURAL RESOURCES
FIRE PROTECTION
ZONES



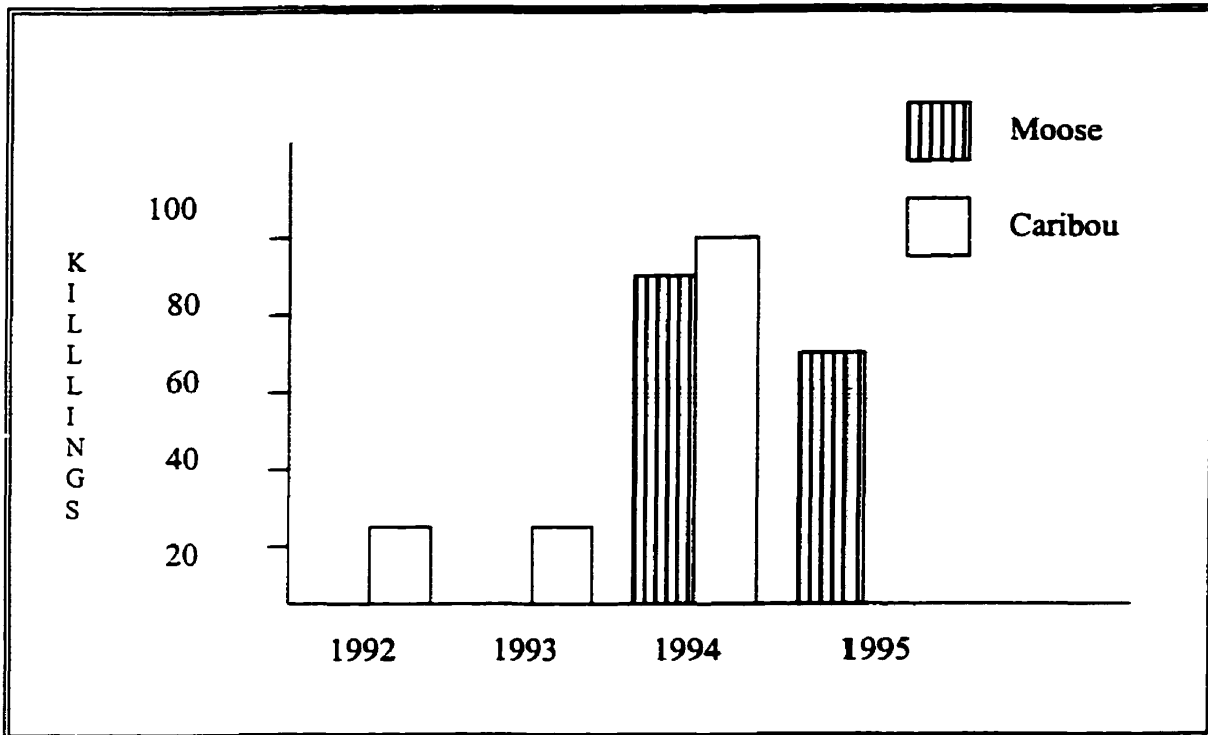
LEGEND

- Primary Protection Zone
- Observation Zone
- ▨ Agricultural Zone

**Province Of Manitoba
Fire Protection Zones**

0 100 Kilometers

The response priority allocated to the Observation Zone presents problems for First Nation people. The so-called “let burn policy” applied to the Observation Zone conflicts with the spiritual value that First Nations attach to this land as ancestral burial grounds. First Nations have concerns regarding the impact of these vast fires on hunting and fishing activities (Tom Nepetepo, Department of Health, Thompson, 1995). They believe that the fires drive game away from proximal settlement areas and ash from the fires causes a decline in fish stock in surrounding lakes. In response, the Department of Natural Resources maintains that its fire response priorities are determined by the base level suppression resources provided, the severity of fire, weather conditions, availability of resources to man-up as fire danger increases and multiple fire starts. As such Natural Resources is unable to respond to all fires occurring in the observation zone. In an interview Bill Med (Department of Natural Resources, 1995), pointed out that the Observation Zone (figure 18) remains a low priority because timber resources in that zone have minimal commercial value and the fires have minimal impact on hunting in the area. The regeneration of vegetation following the fire eventually attracts more animals to the area. A record of moose, elk and caribou killed in the area of God’s Lake Narrows kept by the Department of Natural Resources in God’s Lake does not indicate a decline in game for the period 1992 to 1995. These numbers could be higher considering that not all killings of game are reported, since First Nations people are generally not required to report (Figure 19, Collin Merritt, Manitoba Natural Resources in God’s Lake, 1995).

Figure 19: Reported Killings of Game by Treaty Indians

Source: Collin Merritt, Unpublished data, Manitoba Natural Resources 1995, God's Lake

4.4 Effects of 1989 and 1995 fires

The fires of 1989 caused the destruction of 3.5 million hectares of forest. This is high when compared to the 50 year average of 51,130 acres (126,245 hectares). Twenty homes, 16 cottages, at least 30 other outlying buildings, several miles of farm fence line, and 60 heads of cattle also perished in the fires. Highways number 325, 514, 68 and 6 were cut off or threatened by fire, or dangerous smoke conditions limiting travel. Destruction to trap lines, equipment, and vehicles was also reported (M.E.M.O Report, 1989).

Although there was no direct loss of life or injury owing to the fires, they did cause the evacuation of twenty two thousand people of which 19,287 were from 16 First

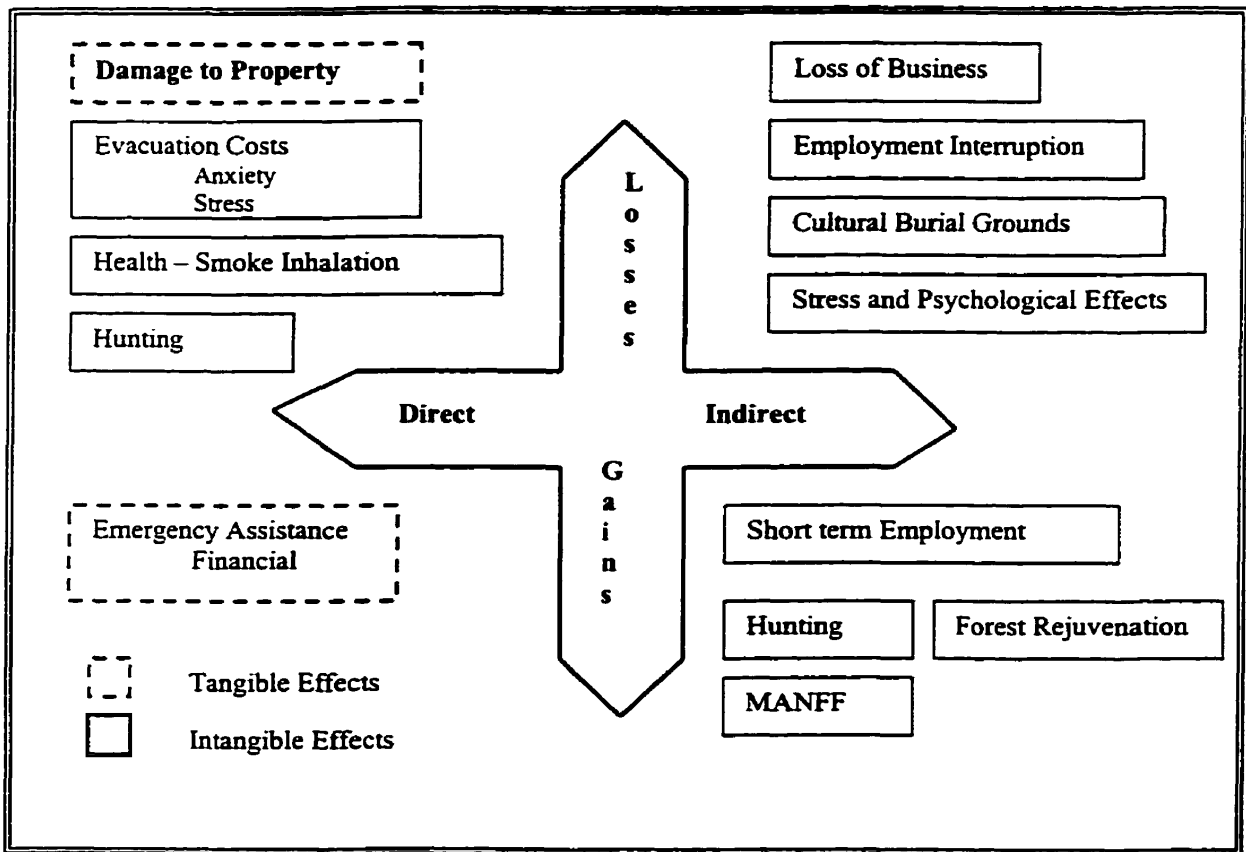
Nation Communities in 1989 (Table 1). Three hundred and forty two people were evacuated from God's Lake to Brandon, Winnipeg and Thompson (table one), due to the health threat from smoke inhalation. Health effects experienced varied from headaches, dry throats, chest tightness to nose bleeds (M.E.M.O Report, 1989).

In 1995, forest fires caused the evacuation of three thousand four hundred people from five First Nation communities. In contrast to 1989, residents from God's Lake were evacuated due to the actual threat of fire. It is estimated that between nine hundred and a thousand residents of God's Lake were evacuated to Portage la (Robinson, informal interview, 1996). The number of evacuees from God's Lake varies because some residents were returned for reasons of social misconduct, while others presumably teenagers, proceeded to Winnipeg attracted by the potential for fun and excitement. This raised concerns for some families and fears that teenagers could use evacuations as a free ride to the city (Inter Media International, June 21, 1995).

Fire suppression costs were \$63.3 million and \$37.0 million in 1989 and 1995 respectively (Peter Costs, Manitoba Natural Resources, 1996). Smith (1992: Figure 20), demonstrates that losses expressed in monetary terms do not fully express the true impact of a disaster on a community because financial criteria inadequately measure the indirect and intangible effects of disaster. Social, cultural, psychological and economic considerations make measurement of the impact of a disaster difficult. For example, it is possible to attach monetary value to a cabin lost during a forest fire, but the stress and anxiety which were alluded to in the (Manitoba Natural Resources: Forest Fires Communities Review, 1990) as consequence of the fire evacuations are difficult to quantify. To date, no systematic evaluation of the impact of stress and anxiety due to the

forest fires has been done. According to Tom Nepetepo (informal interview, 1995), hunting provides a valuable passtime and economic contribution for many First Nation families. The disruption to hunting caused by the fires is believed to create higher stress levels and abuse within First Nation Communities. This argument however, is not justified by figure 19, which shows that the impact of forest fires on hunting in the God's Lake area did not decrease following the fires.

Figure 20: Potential Impact of Forest Fire Hazards - Losses and Gains



Source: Smith, 1992

4.5 Recommendations following 1989 Fires

Several recommendations were made following the fires of 1989 by the responding departments and agencies. The following summarizes the key recommendations following the 1989 fires based on M.E.M.O report of 1989:

- a) **More public information is required regarding forest fire prevention and and policy for fire burning permits;**
- b) **Need to review individual agency and departmental responsibilities as well as become familiar with the responsibilities and capabilities of other responding agencies;**
- c) **Training is required for First Nation officials concerning lines of authority;**
- d) **Need to encourage Mutual Aid Agreements among communities, especially for the provision of fire fighting equipment.**

A communities review was undertaken to document the concerns, comments and recommendations of affected First Nation communities (Forest Fire Communities Review, 1990). These recommendations would be incorporated with any modifications to improve the emergency response system. The following issues emerged from the communities' review:

- a) **Local manpower was underutilized, despite the presence of trained and knowledgeable local people in some of the communities;**
- b) **Knowledge of the local area and terrain by local people was not effectively utilized in the deployment of manpower and equipment;**
- c) **Displacement to cities was traumatic for people who were evacuated from remote Northern areas, especially where language barriers were encountered at reception centers;**
- d) **Need to develop adequate fire fighting inventory and train attack crews at the community level in areas where forest fires are an on going hazard;**
- e) **Training of local emergency personnel in matters of handling evacuations.**

Not all the issues above applied to all the communities. The recommendations, however, provide valuable guidelines for evaluating the changes, which have taken place since the fires of 1989 and will be discussed in the final chapter of this thesis.

Some of the recommendations following the 1989 fires have since been achieved. Public information regarding forest fire prevention was widely disseminated through schools and the Manitoba Native Fire Fighters Association (MANNF). Some training for First Nations Chiefs was conducted, but with the changes in governance, many chiefs are now without training. There is also a debate regarding whether First Nations have any real decision making authority in an emergency. Mutual aid agreements have been achieved with some of the communities through MANNF initiatives. Evacuations were less traumatic in 1995 than they were in 1989.

Some of the recommendations are yet to be achieved. There was still in 1995 an under-utilization of First Nation labor and knowledge of the local area. There is still a need to build up adequate fire fighting equipment for the communities.

4.6 Emergency Response in Manitoba

3.6.1 Manitoba Emergency Management Organization

Emergency response in Manitoba is coordinated through Manitoba Emergency Management Organization (M.E.M.O)⁶. Founded in 1959, its mandate was to deal with nuclear war. As natural and other disasters increased, there has been a shift toward other disasters and less emphasis placed on nuclear war, which threat has since declined

⁶ Manitoba Emergency Measures Organization was amalgamated with the Manitoba Disaster Assistance Board in 1996 to form the present Manitoba Emergency Management Organization.

significantly. Today its aim is to provide prompt and coordinated response to emergencies and disasters and to maintain a state of readiness (Manitoba Emergency Measures Organization, Emergency Plan, 1988).

The responsibilities of the Manitoba Emergency Management Organization are planning, training and education, and operations. For example, following the 1989 fires, there was a phase of assisting communities with disaster plans, education on emergency response and lines of authority as follow up to recommendations made in 1989. The agency also runs public information programs, training exercises, has an emergency preparedness week and hosts an annual emergency response conference.

4.6.2 The Emergency Response Concept in Manitoba

The emergency response concept in Manitoba purports that in the first instance, dealing with an emergency is the responsibility of the local authority. When the capacity of the local authority to deal with the emergency is exceeded, the next level of response is activated by the local authority where local authority means:

- i) the council of an incorporated city, village, rural municipality or community as defined by the Municipal Act; or
- ii) the resident administrator and council of a local government district; or
- iii) the Minister of Northern Affairs with respect to Northern Manitoba.

This arrangement is followed through formal or informal mutual aid agreement or other agreements. If the resource provisions of these agreements are exceeded, or in danger or being exceeded, the next level of response is the Province through its departments and agencies. Federal support may also be arranged at the Provincial level.

Manitoba Emergency Management Organization may be required to assume responsibility where no local government exists, or when the local government has been rendered ineffective, or where the nature and magnitude of the resources exceeds local municipal resources or where a provincial department is responsible for a geographic area.

Response to First Nation emergencies has always been through the Department of Indian Affairs and Northern Development (DIAND) at the Federal level, or Northern Affairs at the provincial level. If Manitoba Emergency Management Organization is called to assist, it would first notify the departments responsible for paying the emergency response costs.

Owing to this structure, issues of Aboriginal Self-government present interesting questions regarding the management of emergencies among First Nations. First, to what extent should First Nations be allowed to manage emergencies which affect their community? Second, what is the realistic capability of First Nations to respond to emergencies? Finally, what can be done to ensure that First Nation people are able to manage their own emergencies without incurring any greater risk than already exists. It is the contention of this study that these issues need to be addressed in light of Aboriginal Self-government and that they are linked to the social and economic progress of First Nation Communities. Understanding, these conditions will reveal how changes can be made to emergency response in Manitoba in a way that incorporates First Nation Self-government initiatives.

4.6.3 Emergency Social Services

In times of disaster, The Department of Family Services' Emergency Social Services (ESS) is responsible for providing emergency clothing, lodging, feeding, registration and inquiry, and personal services. Personal services are offered for unattended children, elderly and special needs persons. In order to restore evacuees some personal independence during evacuations, Emergency Social Services provides financial or material assistance to enable victims to secure basic necessities (ESS, 1993)

While Emergency Social Services recognizes the need for programs which support day-to-day social problems on the reserves such as housing, poverty and unemployment, it emphasizes that its role is to support existing human services and not to replace them (ESS, 1993). The importance of this position in relation to the assumption of this study is discussed in the literature review. There is a relationship between policies, principles and practice between agencies and the communities. Emergency response agencies should incorporate and support social and economic development initiatives within a community.

4.6.4 Disaster Financial Assistance

The purpose of disaster assistance is to assist municipalities, businesses and individuals financially when they incur losses due to disaster that exceed the threshold which any individual, business or municipality can reasonably be expected to bear on its own provided these losses are deemed eligible (Manitoba Disaster Assistance Board, Financial Policy, 1989).

In general, the Manitoba Disaster Assistance Board will provide for losses

incurred due to disaster, or losses that cannot be recuperated through insurance.

Assistance for individuals is provided as follows:

- a) Restoration to a pre-disaster condition or replacement to a depreciated value of dwellings, buildings and other property;
- b) Restoration or repair to pre-disaster conditions of chattels, furnishings of an essential nature;
- c) Assistance in the re-establishment of a small business where the owner's livelihood has been materially affected;
- d) Costs for damage inspection.

Disaster assistance to the public sector is provided for the following:

- a) Clearing of debris and wreckage to channels, streams, sewers storm drains and reservoirs;
- b) Protective health and sanitation facilities;
- c) Repair to pre-disaster conditions of streets, roads, bridges and docks;
- d) Repair to municipal and public buildings including recreational facilities;
- e) Costs of inspection and estimates.

The Disaster Assistance Board's guidelines states that eligible costs exclude post-disaster assistance to large businesses or industry whose continued operation may be vital to the community, projects or undertakings designed to reduce vulnerability in the event of recurrence of disaster or to assist post disaster economy of a community as these are considered to be part of normal intergovernmental arrangements. This policy position is similar to that of Emergency Social Services described earlier; the significance of which is discussed in the literature review.

In 1989, the Manitoba Disaster Assistance Board assisted trappers who had

incurred losses and it provided \$890,000.00 in assistance to the affected communities. God's Lake received \$21,650 in financial assistance (Manitoba Disaster Assistance Board, Summer Fires in Northern Manitoba, 1989).

4.6.5 Manitoba Native Fire Fighters Association (MANFF)

MANFF was established in 1994 as a component of the dismantling process.⁷

MANFF has transitional responsibilities and as with the Framework Agreement⁸ is to be achieved through a consultative process. MANFF has as its major responsibilities:

- a) The provision of technical assistance to First Nations who choose to provide direct wild fire suppression and prevention on Protected Land;
- b) Training of First Nation fire fighters;
- c) Public information on fire prevention and suppression.

Other objectives are to establish a national training center for First Nation fire fighters as well as explore the feasibility of setting up a permanent host facility to be used by evacuees during evacuations. The same facility will also be used as a training center (MANFF, Smoke Signals, 2:1 1995).

Since its inception MANFF has embarked on a comprehensive hazard analysis and resource analysis of Manitoba First Nation communities to be used in the development of community disaster plans. It was considered that the disaster plans prepared by Manitoba Emergency Management Organization did not take into consideration that the resources present in a community will impact the degree to which

⁷ The tearing down of the Department of Indian Affairs and Northern Development I to grant greater authority to First Nations. First Nations would be legally empowered to exercise authorities required to meet the need of First Nations.

⁸ An agreement signed between Indian Affairs Canada and the Assembly of Manitoba Chiefs with the intent of restoring to First Nations the jurisdictions consistent with aboriginal rights to self-government.

First Nations would be able to respond to a forest fire emergency. Further, it is the author's observation that the disaster plan that was prepared for God's Lake has not been updated since 1991 (God's Lake, Disaster Plan, 1991). The contact numbers and emergency response persons listed have changed since 1991. To date 46 plans have been completed, including God's Lake (Cam King, MANFF, 1996). As MANFF plans are completed, they supersede those made by Manitoba Emergency Organizations. Two exercises using the plans, including evacuations, were conducted in Spring of 1996. Also, a total of 10 fire fighters have been trained, two of whom were trained as instructors. MANFF has been successful in addressing some of the issues of institutional discrimination; those First Nation persons who were not chiefs had to pay \$1,500 in fees plus transportation and, room and board. This is no longer a requirement.

In summary, analysis of emergency response in Manitoba reveals that it is concerned predominantly with the emergency phase of the disaster management cycle. It is arguable whether Manitoba has a disaster management policy, since the Emergency Measures Act addresses only issues of emergency preparedness and response and not disaster management. Manitoba Emergency Management Organization can be criticized for dealing with "hard core" emergency response issues and neglecting the "soft core" issues, namely, the social economic and behavioral aspects of disaster management that are relevant to First Nation issues.

CHAPTER FIVE: FIRST NATION VULNERABILITY TO DISASTER, AND DEVELOPMENT

5.0 Introduction

This chapter elaborates on the lack of social and economic development on First Nation communities and how this influences their vulnerability to disaster. It also addresses the political context of First Nations and Aboriginal Self-government initiatives in Manitoba. The relevance of the Pressure and Release model in interpreting First Nation vulnerability to disaster is also discussed. First Nations are defined as North American Indians, excluding Meti and Inuit.

5.1 First Nation Social and Economic Development

There is a disparity in the social and economic conditions of First Nations and the Canadian population in general. Described below, are a number of social and economic indicators, which demonstrate the level of socio-economic development of First Nations in relation to the general Canadian population.

5.1.1 Demographics

Quebec and Manitoba have the largest representation of aboriginal people in Canada. There are 61 First Nation communities in Manitoba of which 42 are situated in the North (land lying between the 51st and 60th parallels). Forty eight percent of Manitoba's First Nation population lived on reserves in 1991 (Manitoba Northern Affairs, 1995). This Northern location limits access to social and economic resources.

Although statistics indicate that the First Nation population has increased, caution is emphasized owing to Bill C-31, which has enabled more people to claim native

ancestry. The demographics however, suggest that the First Nation population is aging into reproductive years (20-49). In contrast, the Canadian Non Aboriginal population is aging into retirement years. The potential for rapid population growth among First Nations is high. Large family size of 3.5 compared to 2.2 in the general population (Indian And Northern Affairs Canada, Basic Departmental Data, 1995) is typical of First Nations.

5.1.2 Health

Compared with the general Canadian population, the health of First Nations is poor. Illnesses such as diabetes, tuberculosis, diseases of the digestive system and respiratory tracts have a higher incidence than in the general population. Even though the rate of tuberculosis has decreased, it remains eight times higher among First Nations (Manitoba Northern Affairs, 1995). Poor health of First Nations is explained by poor housing, water, and sewer services (Indian And Northern Affairs Canada, Information Sheet No. 4, 1991). It is reported that between 1977-94, access to treated water and sewer services on First Nation communities increased from 47% to 86% (Backgrounder, 1995).

Statistics show that life expectancy at birth for First Nations is lower than that of the general Canadian population (figure 21) indicating that First Nations do not enjoy the same level of health care as other Canadians. Although the gap narrowed between 1981 and 1991, life expectancy of First Nations is expected to remain lower even in the year 2001.

Although infant mortality has declined in the last 20 years, it is still double that of the Canadian population (Figure 22, Highlights 1989). High infant mortality can be

attributed to the absence of adequate on-reserve health facilities, and the high incidence of crowded dwellings.

Death by suicide is 2.4 times higher among First Nations than it is among Canadians (Indian And Northern Affairs Canada, Information Sheet No. 4, 1995). Suicide is positively correlated with high stress levels, which are thought to be a consequence of poor economic opportunity on the reserves (Highlights of Aboriginal Conditions, 1989). Among aboriginal youth the suicide rate is 6 times higher than the general Canadian population (The Ottawa Citizen, 1996).

Figure 21 Life Expectancy at Birth First Nations and Canadians

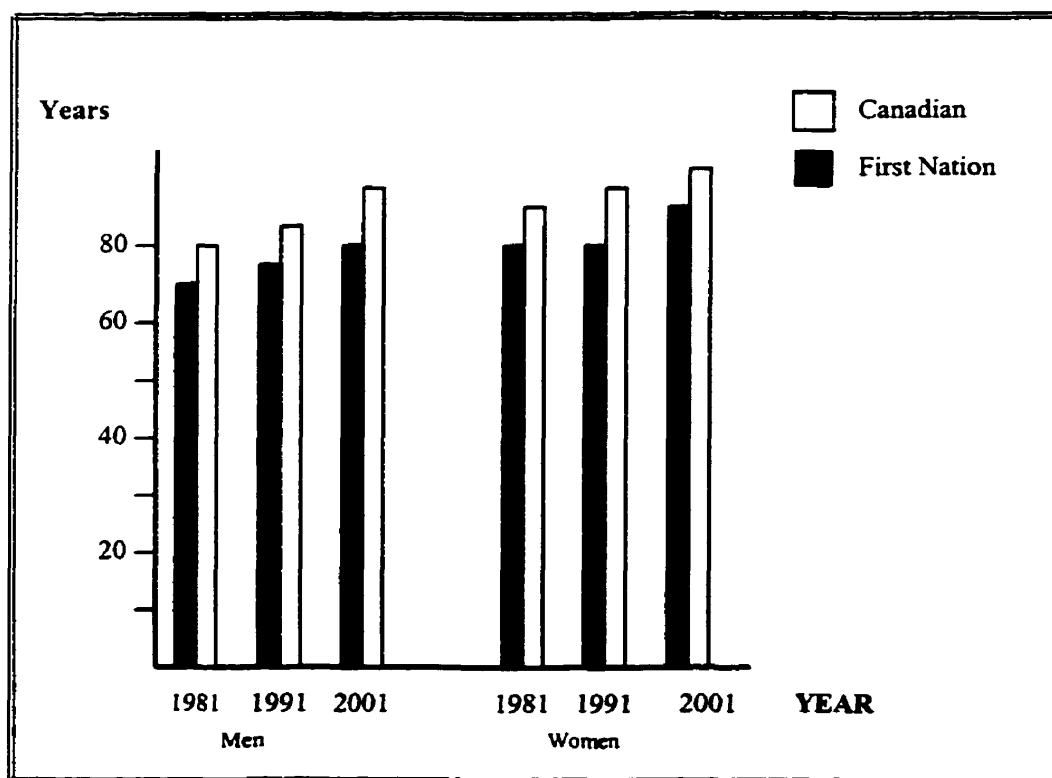
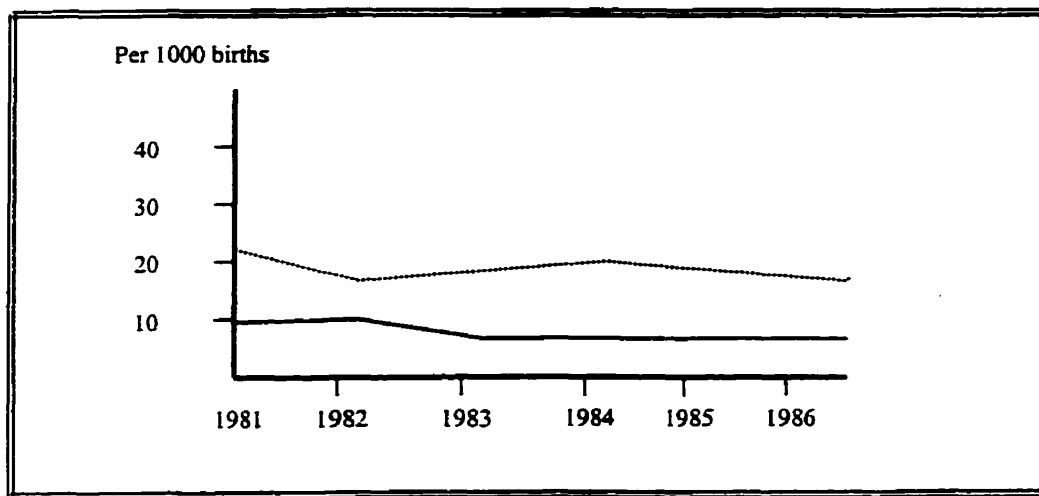


Figure 22: Infant Mortality Per 1 000 Births First Nations and Canadians 1981-86

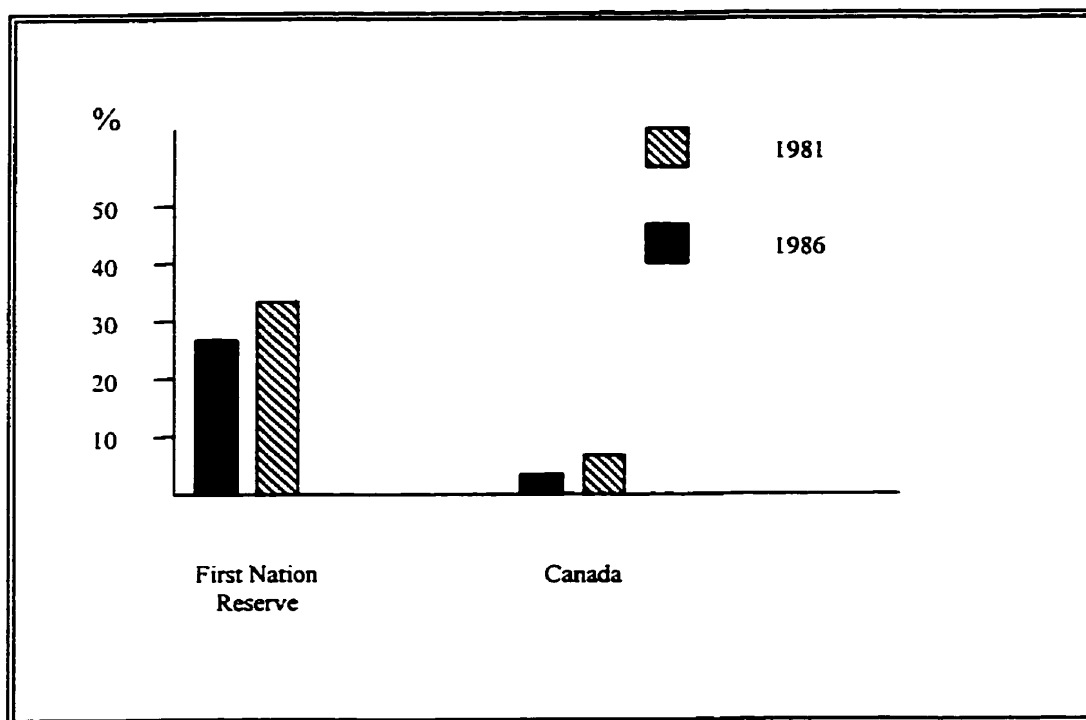


5.1.3 Housing

In 1962, First Nations became responsible for administering all housing programs in the community. Prior to 1962, the Federal Government administered First Nation housing. Support for housing programs is provided through the Canada Mortgage and Housing Corporation and the Department of Indian Affairs and Northern Development. First Nations do not own the homes in which they live.

There is a shortage of housing among First Nation Communities', that is reflected by the incidence of crowded dwellings (Figure 23). The proportion of crowded dwellings on reserves decreased between 1981 and 1986 from 33% to 28%. These rates are still high compared to the general Canadian rates.

**Figure 23: Incidence of Crowded Dwelling
First Nation on Reserves and Canadian, 1981 and 1986**



Compared with the quality of the average Canadian house, on-reserve housing remains inadequate. An estimated 10% of houses need replacement, another 25% need repair, and still 20% do not have indoor plumbing. Shortage of housing has impeded the return of First Nation people who wish to move back to the reserves to contribute to their community (Indian And Northern Affairs Canada, Backgrounder, 1996).

5.1.4 Education

There is a disparity between First Nation education levels and that of the rest of Canada. Although there are signs that education levels are improving, this trend is most evident among First Nations in urban centers (Manitoba Northern Affairs, 1995). First

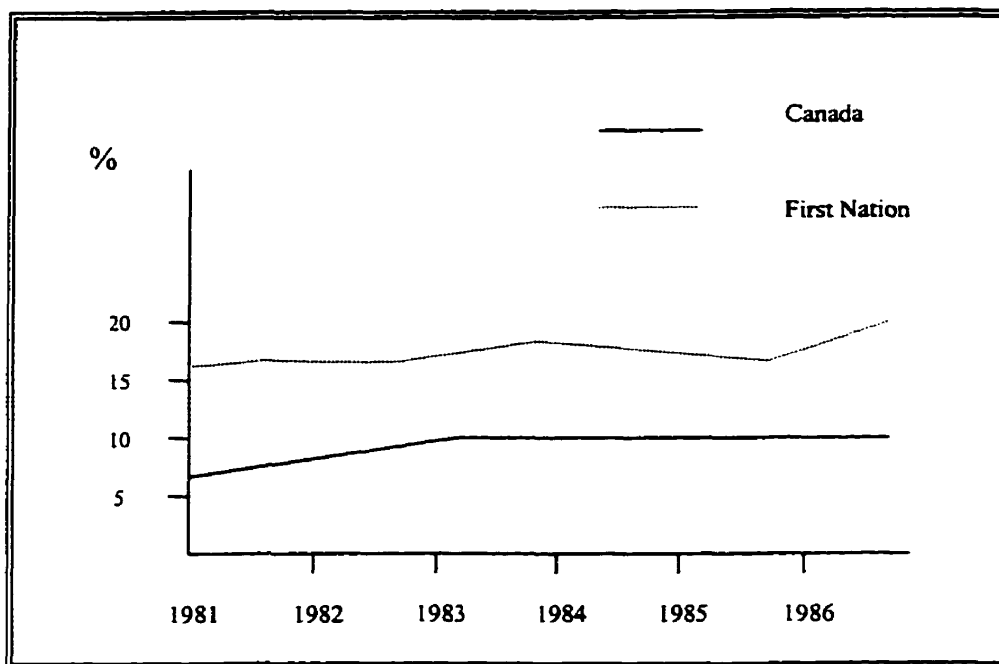
Nations now control education on the reserves (with the exception of curriculum development). However, only 30% of schools offer at least one year of high school (Indian And Northern Affairs Canada Information Sheet No. 5, 1991). This limits the educational attainment possible on the reserve. The result is family disruption caused by the necessity to leave the reserve in order to pursue further education. In the urban centers, teenage children frequently become victims of urban social problems such as crime, gangs, drug, and alcohol abuse.

5.1.5 Employment

The incidence of poverty among First Nations exceeds the general Canadian population. Unemployment is highest on the reserves, and First Nation income is less than that of the rest of Canada. In 1991, the average earning of First Nations in Manitoba was \$13,000 compared to \$21,000 for the rest of Manitoba. This included employment income, transfer payments, and other income.

Forty six percent of First Nations compared to 4% of Canadians are dependent on social assistance (Indian And Northern Affairs Canada, Background, 1996). Participation in social assistance programs provides an indication of poverty in a population (Figure 24), Highlights of Aboriginal Conditions, 1987).

**Figure 24: Social Assistance Recipients
First Nation on Reserve and Canadians 1981 and 1986**



5.2 Aboriginal Self Government

Aboriginal people were the first inhabitants of Canada with a range of governments, economic and social systems that existed prior to the arrival of Europeans. Following the arrival of the Europeans various treaties were signed which resulted in the erosion of aboriginal authority, culture, social function, and self esteem (Department of Indian and Northern Affairs Development, Framework Agreement, Work Plan and Memorandum of Understanding, 1994).

The Indian Act of 1876 gave the government of Canada control over the Indians their land, money, personal assets and laws (Department of Indian and Northern Affairs Development, Framework Agreement, Work Plan and Memorandum of Understanding, 1994). The Indian Act was followed by the signing of several treaties in which Indians gave up further rights to huge tracts of land in return for, annuities, gratuities, schools,

hunting and fishing rights (Indian And Northern Affairs Canada, Information, n.d). In Manitoba, the Woods and Plains Cree Indians signed Treaty Number six in 1876.

First Nation people maintain the government of Canada did not fulfill lawful obligations to the Indians under the treaties, other agreements nor the Indian Act. They argue that the spirit and intent of the treaties went beyond the written context. Following the 1982 constitutional amendment to the Canadian Charter of Rights and Freedoms, and the Red Book promises of the Liberal government, Aboriginal Self-government issues are once again at the forefront. In 1995, the Canadian government recognized that Aboriginal people have an inherent right to Self-government that was never extinguished under the treaties. This recognition resulted in a multitude of negotiations, which aimed to establish a new relationship between Aboriginal people and the Canadian government. The negotiations address issues of Aboriginal culture, education, health, housing, lands, and natural resources.

5.2.1 Manitoba Framework Agreement

In November of 1994, the government of Canada signed a Framework Agreement with the Assembly of Manitoba Chiefs to commence negotiations to confirm First Nation Jurisdictions and dismantle the regional Department of Indian and Northern Affairs (Indian And Northern Affairs Canada, 1995). The Framework Agreement is to be implemented following consultation and informed consent of those First Nations willing to participate. Its implementation is subject to ratification by a reasonable number of First Nations and any First Nation has the option to remain under the administration of the Federal Government. The objectives of the Framework Agreement are to be achieved

based on the Core Principles (Appendix A) and Mutual Agreements (Appendix B). The main objectives of the Framework Agreement are:

- a) Dismantle DIAND as they affect First Nations in Manitoba;
- b) Develop and recognize First Nation governments in Manitoba legally empowered to exercise the authorities required to meet the needs of First Nations.
- c) Restore to the First Nations the jurisdictions consistent with the inherent right to self-government.

(Manitoba Framework Agreement, 1993)

Efficiency and effectiveness in the use of resources is encouraged regarding existing levels of support, programs and services to be assumed by First Nations. The ability of the First Nation to raise their own revenue will be taken into consideration to ensure the basic public services are maintained (Indian And Northern Affairs Canada, Aboriginal Self Government, 1995).

In the first twelve months of the Framework Agreement, \$3.8 million was committed for research on existing DIAND programs, development of options for change and governmental powers. Education, fire safety and capital development programs were given the highest priority. Opportunities were also provided for First Nations to understudy DIAND staff at senior levels, so as to provide a better understanding of federal practices and policies. The project will endure until the parties agree on a mutual level of achievement. Progress will be evaluated in the third, sixth and tenth years. If after ten years, the objectives are not achieved, the parties will review how progress should continue.

5.3 Application of the Pressure and Release Model

The Pressure and Release model would attribute First Nation vulnerability to disaster first, to European colonization, which destroyed First Nation culture and self-government and self-esteem. Accompanying colonization was the limited access to power, resources, and the creation of socio-economic structures, which promoted dependency on the dominant European based economic and political system.

Second, the underlying causes are translated via dynamic pressures such as the lack of local institutions, poor education and training, poor health care and inadequate social service provision. Migration into the cities has drained First Nation communities of human resources, which necessitate infrastructure and provision of services. Poor ethical standards in First Nation Band administration are not atypical. Favoritism and poor financial accountability are further contributors to lack of development on the reserves.

Unsafe conditions are manifest by poor health status, poor housing quality, poverty, unemployment and the isolated northern location. The progression to safety requires addressing each of the above Underlying Causes, Dynamic Pressures and Unsafe conditions in the model.

In summary, the disparity in the living conditions between First Nations and the general population in Canada underscores the need for social and economic development among First Nation communities. In the context of the Pressure and Release model these social and economic conditions make First Nations differentially vulnerable to disaster and limit their capacity to resolve disaster crises without reliance on external assistance.

CHAPTER SIX: FOREST FIRE AND THE COMMUNITY OF GOD'S LAKE

6.0 Introduction

The chapter describes the geographic location of God's Lake, the cultural attributes of the people and illustrates the social and economic conditions in the community of God's Lake. The final section of the chapter describes the fires of 1989 and 1995 and the Provincial response to them.

6.1 The Community Profile

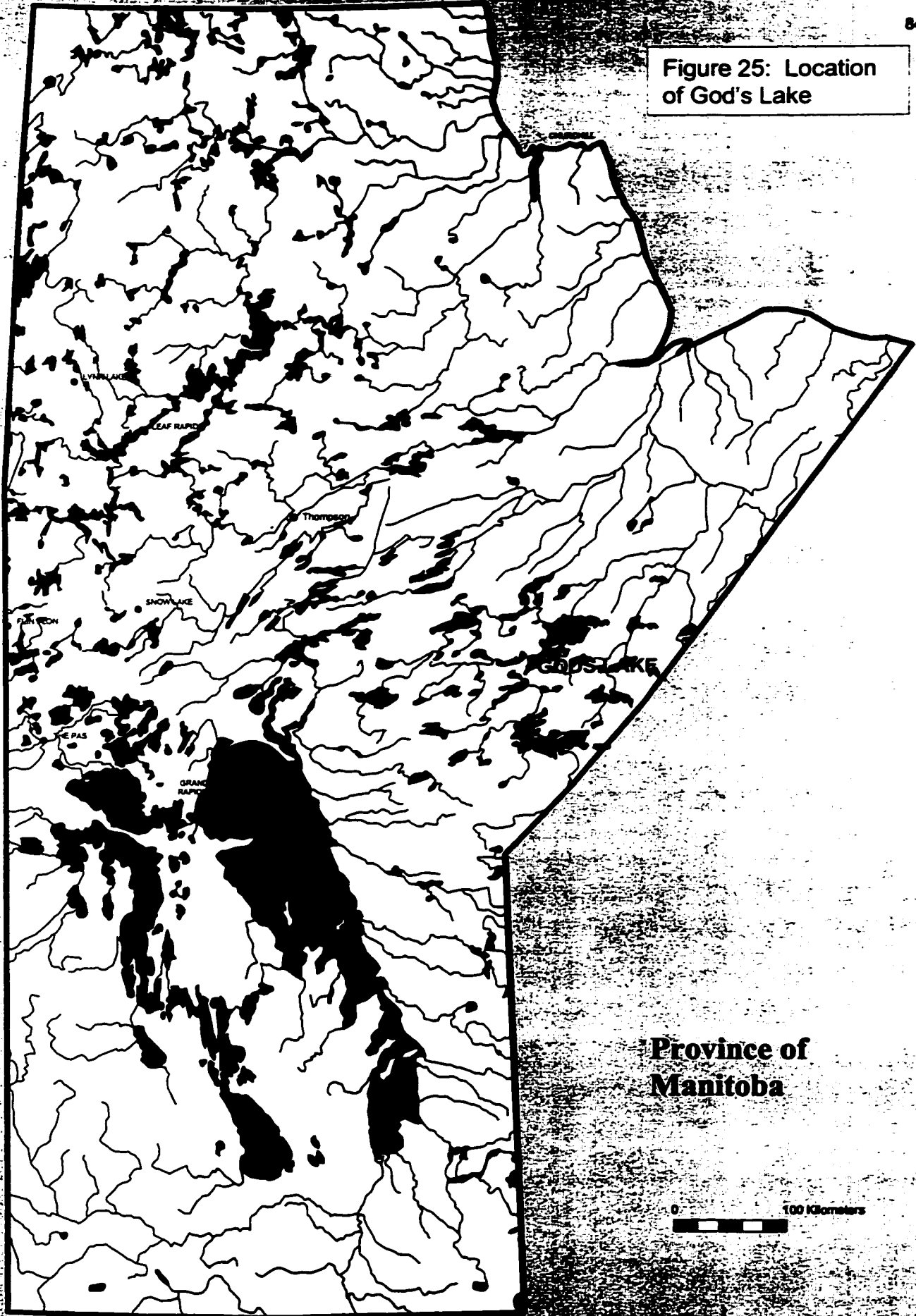
6.1.1 Location and Physical Environment

Typical of many First Nation communities, God's Lake is isolated with a small population of 1 224 people (First Nation Community Profiles, 1996) . It is located 1,037 km Northeast of Winnipeg at the Narrows of God's Lake and covers an area of 3,696 hectares (Figure 25). Access to the community is possible regularly by air. In winter, a winter road is constructed via Cross Lake (First Nations Community Profiles, 1996). Isolation and small size have been shown to affect fire management and the provision of services owing to high transportation costs, which make it difficult to achieve economies of scale (Coombes and Charlton, 1994).

6.1.2 Cultural Attributes

Historically, God's Lake supported hunter-gatherers and fishing communities. Today the Swampy Cree live there and are still dependent on the environment for their livelihood. The people believe in living in harmony with nature and protecting mother earth.

Figure 25: Location of God's Lake



**Province of
Manitoba**

0 100 Kilometers

In contrast to the European system of private ownership, property ownership is communal and decision making is accomplished through a consultative process (Ungar, 1969). The Swampy Cree live for the present; planning and organization has not always been part of their social, political or economic structure. The cultural context of Native people needs to be taken into consideration when planning for disaster, social and economic development programs, since culture is integral to people's perception and response to disaster, social change and development. This is perhaps more critical now than in the past, since First Nation cultural identity is in a state of flux owing to the impact of interaction with the Europeans, and the prospect of Aboriginal Self-government.

6.2 Social and Economic Development

6.2.1 Community Services and Infrastructure

Knowledge of the community social services and infrastructure available in God's Lake is important in terms of preparedness planning as it gives a measure of the resources that can be mustered in the event of an emergency as well as the community's capacity for dealing with such crises. Such knowledge can also be utilized to ascertain preparedness needs of the community.

Given the size and isolation of the community, the number of social services and infrastructure available in God's Lake are impressive (Figure 26). Although God's Lake had a fire hall (plate 1), fire truck (plate 2) and other forestry equipment (plate 3, plate 4) these were dilapidated, abandoned and/or in need of repair. A new sewer plant had replaced an old one, however, an external contractor maintained it. The contractor explained that getting skilled labor to maintain the plant in God's Lake was not possible, since the local people did not have the skills.

Plate One: God's Lake Fire Hall

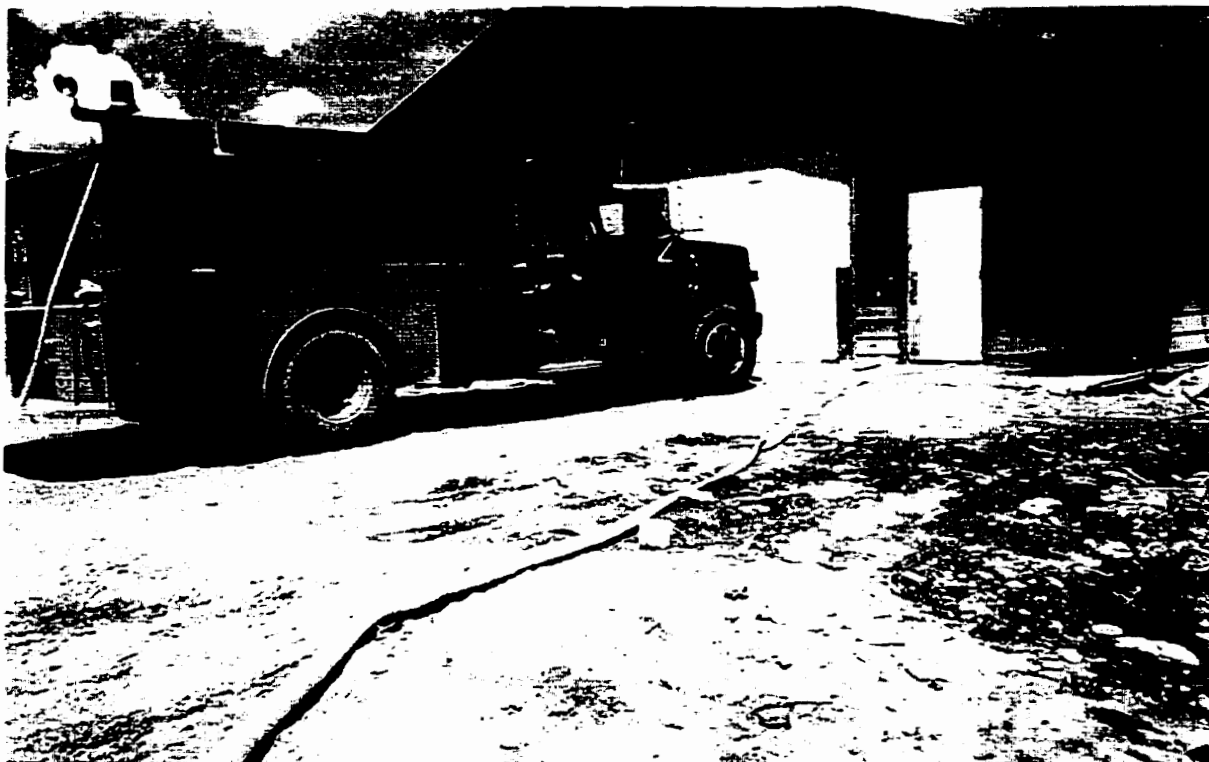


Plate Two: God's Lake Fire Truck

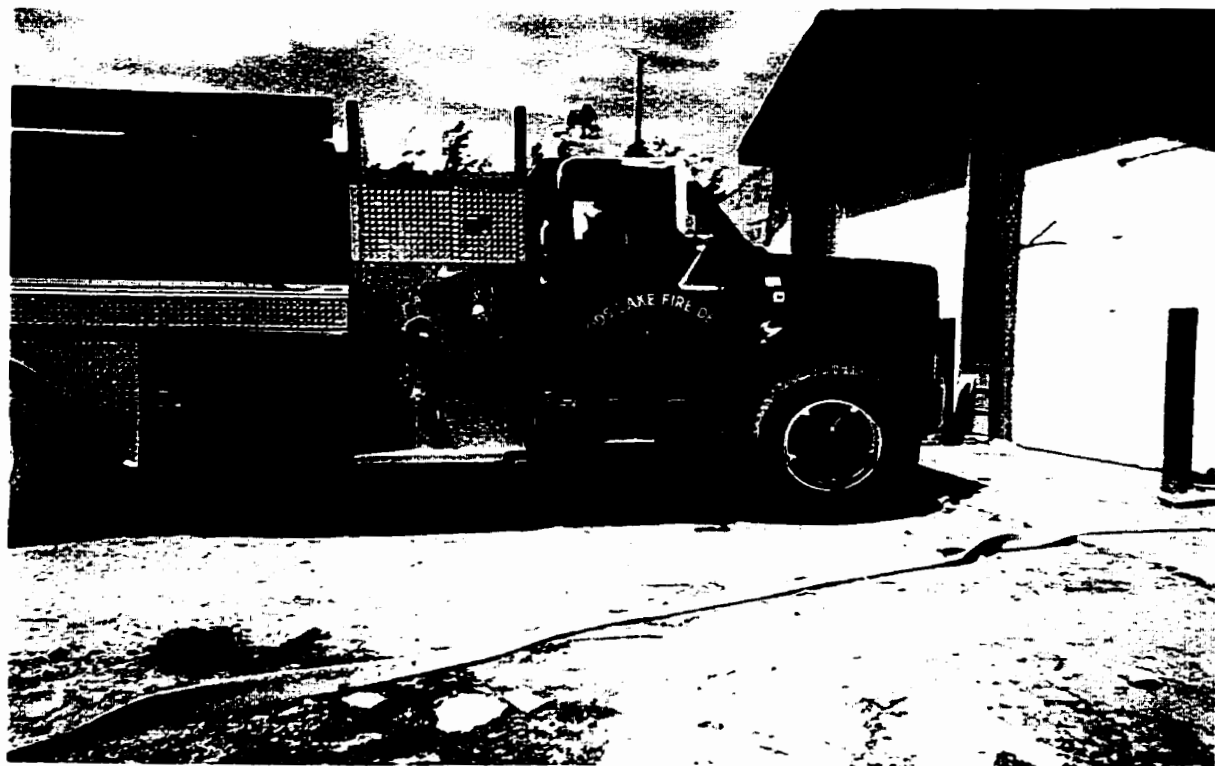


Plate Three: God's Lake Forestry Equipment

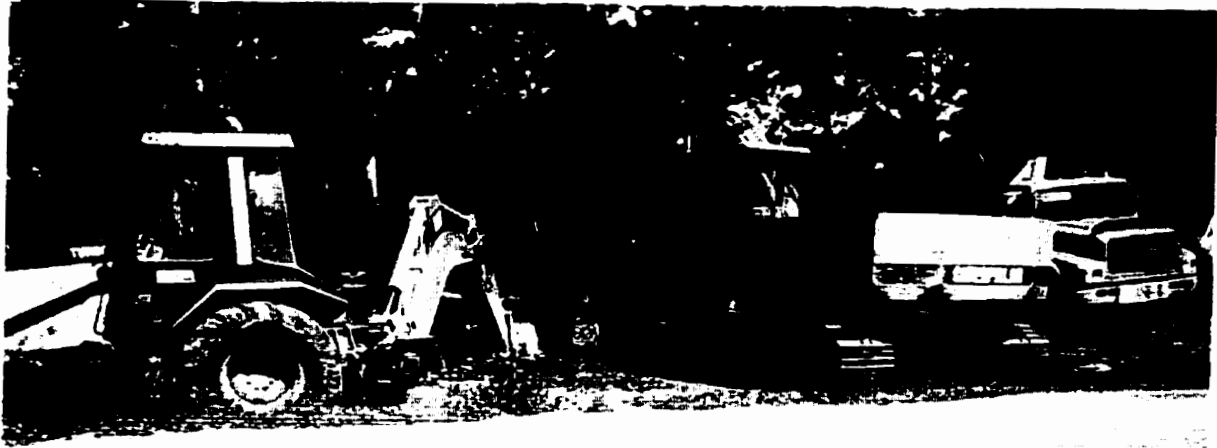
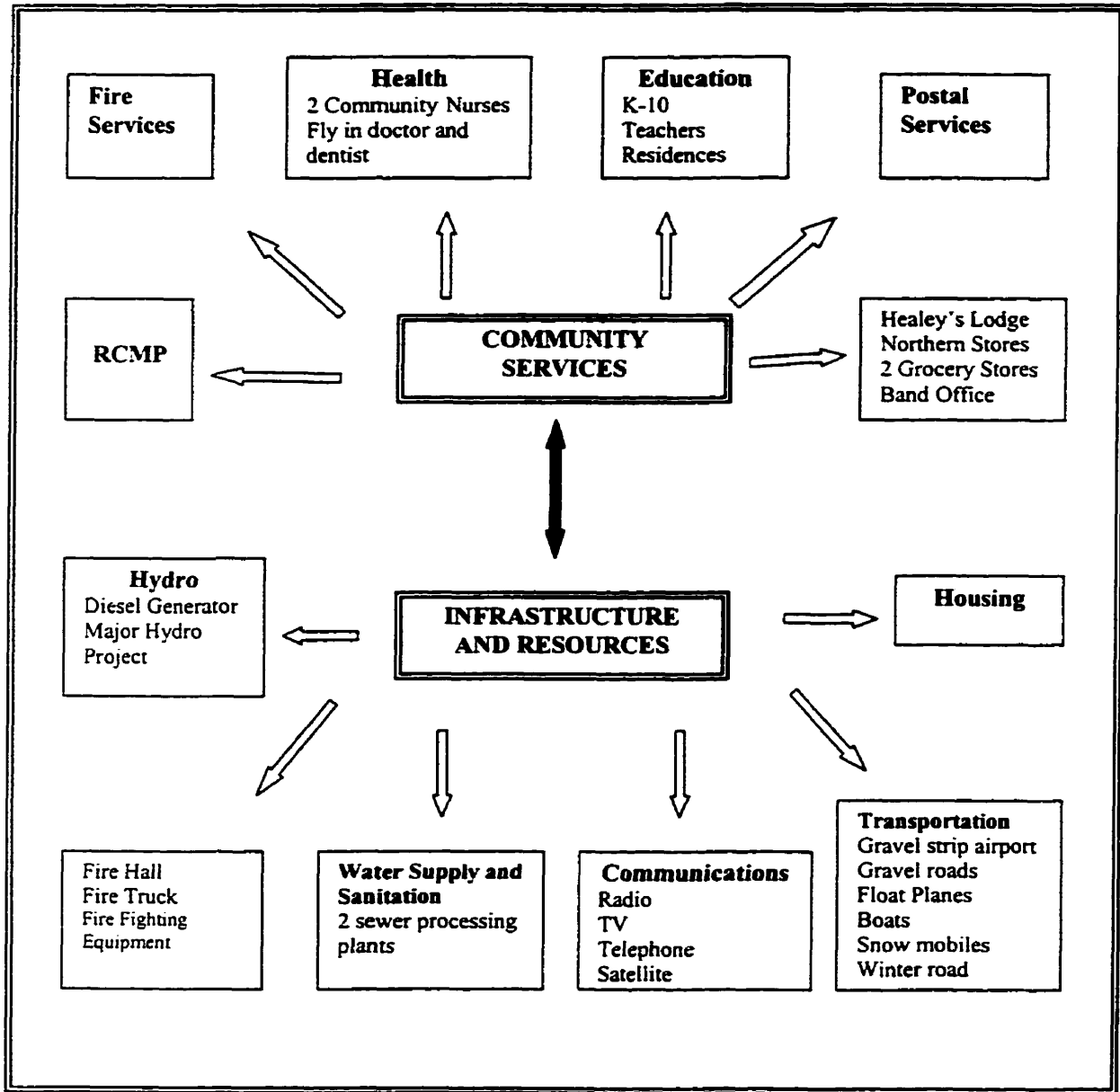


Plate Four: God's Lake Forestry Equipment



Figure 26: God's Lake Community Infrastructure and Services



6.2.2 Housing

Prior to 1962, First Nation families living on the reserve were responsible for their construction of their own housing. Since then, each First Nation community has become responsible for housing with assistance provided by Canada Mortgage and Housing and DIAND. Since 1994, 20 new houses have been constructed in God's Lake through the Rental Housing Assistance Program. Subsidies are provided to meet the rental requirements of low-income families. Insurance for housing is provided by the band (Interview, Marie-Ann Swain, Housing Officer DIAND, 1996). Despite the new housing project, housing remains a pressing issue for the community (Plate 5, Plate 6). The band office indicated that the government funding provided to build houses is inadequate.

First Nation housing is subject to rapid rate of deterioration when compared to the general Canadian population. This fast deterioration of housing contributes to the shortage of suitable housing. Survey data reveals that at least 70% of the population lived in housing that was less than 10 years old, another 30% lived in housing that was two years old. Some of the elderly people were still living in housing that was constructed prior to 1962. It is notable that the average life span of on-reserve houses is twenty five years, a period much shorter than the national average (Indian And Northern Affairs Canada, 1996). Based on the researcher's observation, many of the homes, even those recently completed under the 1994 Rental Housing Assistance Project, showed serious signs of disrepair.

Sanitation and water supply amenities in God's Lake were poor when compared to national standards. None of the homes in God's Lake had indoor plumbing. Most residents utilized pit privies.

Plate Five: God's Lake Housing



Plate Six: New Housing Project in God's Lake



At least 28% of First Nation houses are overcrowded (Highlights, 1989). In God's Lake, nearly half of the homes were overcrowded, accommodating 7-9 persons per household. This also suggested that there is a serious housing problem in God's Lake. The above suggests that there is a need for more houses, and a need to repair and upgrade existing ones.

6.2.3 Local Institutions

The Band and Council represents the governing and administrative body of God's Lake. It is made up of an elected chief and six councilors. In the event of an emergency, the chief is responsible for declaring a state of emergency. The M.E.M.O Report (1989) notes that, many of the First Nation chiefs did not have an emergency plan and were not aware of the procedures of an emergency during the 1989 fires. The God's Lake Council had recently been elected in March 1996 and the new chief declined to discuss his familiarity with emergency response procedures.

Social services are provided through the band. The Band office through the Awasis Agency is charged with the responsibility of administering social assistance programs to its members. The community hall and arena provide recreational services for the community. In terms of education, God's Lake has a school K-10. Beyond grade 10, students have to attend school off the reserve.

The Keewatin Tribal Council (KTC)⁹ created in 1979 represents 11 member First Nations. Its mandate is to facilitate the transfer of local control and responsibility of programs and services to member First Nations by:

⁹ KTC covers the following member bands: Barrens Lands, Fox Lake, God's Lake, God's River, Northlands, Oxford House, Sayisi Dene, Shamattawa, Split Lake, War Lake, and York Factory.

- 1) Promoting continuous public relations aimed at creating and developing mutual understanding and improved relations between First Nations and government agencies;
- 2) Allowing the resource development council of the area to contribute and to participate in community regional economic development;
- 3) Allowing the continuation of First Nation's way of life with enhanced pride and purpose;
- 4) Participating in the utilization of natural resources and establish new or existing enterprises and services;
- 5) Undertaking a broad range of initiatives on Northern Manitoba on resource and economic development and community services associated with long-term development strategy;
- 6) Developing the council into a self supporting revenue generating corporation; and
- 7) Eliminating the dependence of the First Nation on the DIAND and other funding agencies.

Even though the tribal council is physically an off-reserve institution, its role in social and economic development and capacity building among member First Nations is important.

6.2.4 Economic Activity

The main economic activities in God's Lake are fishing, hunting, trapping, and tourism. Commercial enterprises include a repair shop, water taxi, Northern Stores, a gas bar, Louis's Grocery, Spence's Food Store (plate 7), and a fishing lodge (plate 8). Other than Healey's Lodge and the Northern Store, local entrepreneurs own the rest of the businesses. It is, however, the lodge and the Northern Store that are the most viable enterprises providing limited employment opportunity. These provide limited employment in the community. The lodge for example provides seasonal employment for tour guides.

Plate Seven: Spence's Grocery Store



Plate Eight: Healeys Fishing Lodge



Typical of any First Nation community, there was evidence of high unemployment on the reserve. This survey indicated that nearly half of the population was unemployed. This reflects the lack of opportunities on the reserve. Owing to the high dependence on social assistance, capital for local investment is limited and may become even more so following the 1996 cutback in public welfare spending. The forest vegetation is of low ecological value and does not attract economic investment.

As per capacities and vulnerabilities analysis, Figure 26 captures the existing capacities within the community which, can be utilized to promote development such as such as health, communication, education and fire services. The descriptive analysis however reveals areas of weakness, which may make God's Lake susceptible to disaster. For example in the physical/material realm, isolation, poor accessibility and poor maintenance of infrastructure contribute to vulnerability. In the area of social vulnerability planners need to be aware that a society that lives for the present is less likely to plan for potential disaster in the future. In terms of attitude/motivation, the consultative decision-making process is a strength that can be built on. Dependence on welfare however, may negate some of the positive attitudes the community may have.

6.3 The Fires of 1989 and 1995

Two fires affected God's Lake in the summer of 1989. One burning 12 miles southwest and another burning 10 miles south of the reserve. In 1995, a fire burning East of the reserve affected God's Lake. The fires were attributed to unseasonably high temperatures and low humidity. Fires in both years caused the evacuation of the community.

6.4 Forest Fire Coping Strategies

6.4.1 The role of different agencies

The response to the forest fires was coordinated through Manitoba Emergency Management Organization. Typically, the response to human needs was in the form of evacuations. During the 1989 fires, 342 hundred people (mostly women and children) were evacuated to Brandon. The survey suggests that at least 11 percent of the respondents were evacuated to Winnipeg. In 1995, all 900 evacuees were sent to Portage La Prairie.

During the 1989 evacuations, concerns were raised about family separation, food, and language difficulties. It is assumed that most residents of God's Lake did not experience language difficulties since many of the residents; including children were able to converse in English. Prejudice and cultural insensitivity were experienced in 1989, in part due to evacuation to centers which were not familiar to First Nations people. The long distance evacuations in 1989 were also considered to be stressful. The most serious concern arising out of the 1995 evacuations were those of social misconduct by teenage evacuees.

During the evacuations, evacuees received assistance in the form of food, clothing, and limited medical and cash assistance. Financial assistance was continued in the form of social assistance to those individuals who already qualified. In 1989, the community of God's Lake received \$21,000 in disaster financial assistance from the Manitoba Disaster Assistance Board. Official record of disaster assistance for God's Lake was not available in 1995.

In contrast to the Manitoba Emergency Management response system, apart from

the Awasis agency's continuation of assistance to evacuees during evacuations, there was little evidence of First Nation agencies involved in the emergency in both 1989 and 1995. Of note was their lack of involvement in the decision making. The Chief who had recently been elected was unable to confirm his participation in the decision to evacuate.

6.4.2 Community Coping Strategies:

Traditionally, the Swampy Cree share the burden of disaster consequences although this was not apparent from the research of the present study. Historically, backfiring or migration was used to protect communities from forest fires. Oral conversations with some of the community members revealed that the Swampy Cree have notable skills for detecting unextinguished fires in forest under growth. Based on the informal interviews, it was reported that First Nation community members were utilized by Manitoba Natural Resources personnel to trace smoldering fires in the under growth; a skill said to be unique to First Nations.

The survey disclosed that some people of God's Lake utilized water levels in the lake to predict the dryness of the season; and hence the risk of forest fires in that season. However, there was no evidence that community members had engaged traditional practices to extinguish the fires or protect themselves from the effect of the fires.

The majority of the adult male members of the community reported that they had remained in the community to fight the fires. The 1995 fires were put out with the support of Norway House First Nation fire protection services. Norway house has a fire chief, and a volunteer fire department made up of 12 crews.

Prior to the 1989 evacuations, residents of God's Lake coped with the fires by

keeping their windows shut and limiting outdoor activities. Despite evidence of dilapidated housing, the survey revealed that few people suffered adverse effects from the smoke created by the fires in 1995.

Based on the above information, the assumptions of the Pressure and Release Model can be applied to the community of God's lake. The underlying causes are similar to those described in chapter three. There was evidence of diminished hunter-gatherer livelihoods and indigenous coping strategies. Typical of most First Nation communities, the band office was the most obvious institution. The Department of Natural Resources and its forestry management exacerbated the risk of large forest fires and by so doing, reduced the local capacity to cope effectively with forest fires.

Further, the remote northern location of God's Lake, high unemployment, and poverty placed the Community of God's Lake at high risk. The state of disrepair of much of the housing contributed to the risk of smoke inhalation and associated respiratory problems. The lack of disaster preparedness was illustrated by the inoperable condition of the fire fighting equipment and the fact that God's Lake did not have a current disaster plan.

CHAPTER 7: ANALYSIS OF SAMPLE DATA

7.0 Introduction:

This chapter provides a description and statistical analysis of the information that was obtained from the 67 respondents who were surveyed. The first segment describes the sample characteristics to establish background for the statistical research questions. The second segment analyses the research questions based on the Chi-square statistic and the Capacities and vulnerabilities analysis.

7.1 Description of Sample Characteristics

7.1.1 Hazard Identification and Forest Fire Experiences

The theoretical premise is that people who have previous experience with a hazard, have a better perception of the hazard and where the hazard is frequent are more likely to adopt suitable adjustment strategies (Kates, 1962). All the respondents who were interviewed had experienced forest fires while living in God's Lake. Half (57.8 percent) thought that forest fires presented a serious threat to the community of God's Lake. When asked about forest fire frequency in the previous ten years, 4.5 percent said it was low, 68.7 percent said it was moderate and 26.9 percent said it was high. People recalling fires that resulted in evacuations rather than fires that occurred in the area within the previous 10 years probably influenced this result.

7.1.2 Likelihood of Future Fires

When asked about the likelihood of future forest fires, 6.7 percent of the respondents thought there was no likelihood, 41.7 percent indicated low likelihood and

51.7 percent of the respondents considered the likelihood of future forest fires to be moderate.

Half of the respondents felt that forest fires were unpredictable, citing that forest fire could occur at anytime. The other half said that the fires were predictable, citing factors such as lightning, high temperatures and season as predictors of forest fires. Low water level in the lake was considered to be indicative of high likelihood of forest fires by 8.9 percent of the respondents.

7.1.3 Forest Fire Causes

When the question of forest fire causes was presented, 94 percent replied that the causes of the fires were natural. Since most people felt the fires were due to natural causes, 88.1 percent of the respondents considered that it was difficult to reduce the causes of forest fires. At least 3.6 percent reported that putting out all campfires could reduce forest fire causes. Contrary to the Manitoba Natural Resources: Forest Fires Communities Review (1990), no evidence of the forest fires being caused by humans intentionally was indicated. This concurred with the information provided by Manitoba Natural Resources Officer in God's Lake.

7.2. Vulnerability of People and Property

An important concern of this study is to examine the vulnerability of the people of God's Lake to forest fire emergencies and contrast the years 1989 and 1995. Disasters occur when a vulnerable community suffers severe damage and or disruption to their livelihood in such a way that recovery is unlikely without external aid. Recovery

includes psychological and physical recovery of victims, replacement of physical resources and the social relations required to use them, and should include mitigative measures for future events.

7.2.1 Direct Effects of Forest Fires

Table 2 shows destruction of vegetation as the most serious effect of the forest fires (40 percent). Smoke inhalation and respiratory problems (26.7 percent), evacuation (15 percent) and financial constraints (11.6 percent) were noted to be problems. Only 6.7 percent of the respondents feared losing personal possessions. The remainder of the respondents did not indicate specific concerns. More than three quarters of the respondents felt that it was not easy to reduce the effects of the forest fires; in particular the regeneration of vegetation. Closing doors and evacuation could minimize respiratory problems. It is important to note that the survey was conducted six years and one year after the 1989 and 1995 forest fires respectively and this could have affected the results. Perry and Greene (1983), caution that recollection of hazard experiences tend to be less than perfect, and increasingly so as the time interval increases.

7.2.2 Indirect Forest Fire Effects on Economic Activities

Table 3 shows tourism was ranked as the economic activity most affected by the fires (75 percent). Tourism was followed by hunting (68.3 percent), employment (63.6 percent), income loss (43 percent), and fishing (21.6 percent). The first place ranking of tourism is significant since it is a major contributor to the economic viability of God's Lake. Tourism is an important economic activity in God's Lake during the summer

TABLE 2: DIRECT EFFECTS OF FOREST FIRES

EFFECTS	RESPONDENTS(%)
Destruction of Vegetation	40
Smoke inhalation and respiratory problems	26.7
Evacuation	15
Financial constraints	11.6
Loss of personal possessions	6.7
Total	100

N=67

because of the trophy fishing activity. Seventy five percent of the respondents (n=36)¹⁰, said the tourist activities were affected by the fires by way of road closures and evacuation of tourists. The most significant impact of fires therefore, was probably on the lodge owners; northern stores and those employed as tour guides.

TABLE 3: ECONOMIC ACTIVITIES AFFECTED BY FOREST FIRES

Activity	Rank	Percent	No. of Respondents
Tourism	1	75	36*
Hunting	2	68.3	67
Employment	3	63.6	67
Income Loss	4	43	67
Fishing	5	21.6	67

¹⁰ where (n=x) is not indicated then response to question was 100 percent.

Although hunting was ranked second, only 7 percent of the respondents said that hunting was poor. This suggests that the negative impacts are perceived rather than real, and supports the records obtained from the Department of Natural Resources in God's Lake which showed that hunting actually increased between 1989 and 1995.

Since a decline in hunting was reported only by 7 percent of the respondents and 42 percent of respondents said that hunting contributed to their dietary needs. This would suggest that not many families supplementing their food requirements from hunting were as adversely affected as suggested from the informational interview with the Manitoba Health Department in Thompson. This however, may be true for other First Nation communities. At the same time, the increase in hunting following the fires suggests that the practice of firing exercised by the Amerindians had a positive role to play in terms of increasing the hunting and thus food potential in the Prairies.

Disruption to employment was experienced by 11.7 percent (n= 60), and 12.7 percent (n=55) of the respondents in 1989 and 1995 respectively although nearly all said they were paid for the period in which they were absent. Only one person reported an actual loss of employment following the fires of 1989.

In terms of income 11.7 percent and 15 percent reported that their income was affected in 1989 and 1995 respectively. These numbers correspond with those with the percentage of those who experienced disruption in employment. Some respondents (3.5 percent) elaborated that some financial losses were a result of utilizing their savings because they were not satisfied with the accommodation and food provided during the evacuations. This is an impact of the fires that is easily overlooked. Important because savings in these communities are generally low. Not apparent however, are losses

incurred in service tips. One guide indicated that tips could be as high as US\$100. per day during the summer.

Fishing was ranked last. Although fishing is an important economic activity, its significance to the community is via tourism and less as a food source or recreational activity. It is possible that some of the effects on fishing are reflected in the impact on tourism.

Generally, respondents experienced minimal material losses. One household reported loss of a boat and fishing equipment in the 1989 fires and another household lost a boat in the 1995 fires. Four households reported loss of a cabin in 1989 (n=60), and two families reported similar losses in 1995 (n=59). Only one family said their losses were greater in 1995 because they had experienced no losses in the fires of 1989. Losses reported from the survey are not consistent with losses reported to the Disaster Assistance Board following the 1989 fires. This suggests first, that not all respondents who experienced losses reported them to the Disaster Assistance Board or second, that survey respondents may have reported losses higher than they actually experienced. Under reporting of losses could be a function of low levels of education and or a lack of awareness of the Manitoba Disaster Assistance Board and its purpose. Under reporting of financial losses does not begin to address the social cost to the community of the impact of these fires. Reporting of losses and assistance provided is important in this study since these losses are a measure of the impact of the fires on individuals and their ability to recover from the impact of the fires. Many of the reports produced, reflected organizational costs such as, the cost of the fire suppression and evacuation. They neglected soft-core cost to the community the personal losses suffered by the members of

the community.

None of the households experienced loss of a home, family member or injury in either of the fires. This reflected the timeliness of response and the success of evacuations in limiting physical harm to the population of God's Lake. Interestingly despite some of the men remaining in the community to combat fires, there were still no reports of injuries or death although many of them were not trained as fire fighters. This demonstrates that community members have an interest in protecting their belongings and have skills traditional, or otherwise, that enable them to combat fire situation, which they feel, may impact them adversely.

7.2.3 Health Concerns

The most frequently reported conditions resulting from forest fires were respiratory problems in particular difficulties with breathing, asthma, and chest pains. Despite the smoke inhalation hazard, only 13.3 percent (n=60), reported that they had personally experienced problems connected to smoke inhalation.

TABLE 4: PROTECTIVE ACTION TAKEN

	%	No of Respondents	Actions Taken
Protective Action			
1989	58.2	63	Closing windows
1995	67.3	67	Staying indoors
			Fire fighting
No Protective Action			
1989	41.8	63	
1995	32.7	67	

At least 58.2 percent (n=63) and 67.3 percent (n=52) of respondents said they took action to protect themselves during the 1989 and 1995 respectively. In both years, the dominant precautions were closing windows, staying indoors, or fighting fires. Smoke inhalation was a concern for 93.7 percent (n=63), of the respondents and at least 60.7 percent said they took action to limit the effects of smoke inhalation. This maybe explained by successful dissemination of public health information, which encouraged people to take precautions against smoke inhalation and evacuation. It was observed that it was predominantly women (98 percent) who reported having taken action to limit adverse effects of smoke inhalation as opposed to men (47 percent). This is reflective of the fact that women bear the greater part of caring for family in particular children and other dependant members of the community.

7.3. Evacuation

7.3.1. Destination

Table 5 shows that eighty six percent of the households interviewed were evacuated in 1989, of these (10.9 percent) of the respondents were evacuated to Winnipeg, 62.5 percent to Brandon. The rest, 12.5 percent remained in the community to fight fires. In 1995, (93.2 percent) of respondents were evacuated, all of them to Portage la Prairie. In both cases evacuees were mostly women and children. Of those evacuated in 1989, 14.1 percent of the respondents said they had proceeded onto a secondary destination. This percentage declined in 1995 to 6.8 percent and is explained by improvement in evacuation for example, family separation since all people were evacuated to the same destination.

TABLE 5: EVACUATION DESTINATION

YEAR	DESTINATION	% of Population	SECONDARY DESTINATIONS (%)
1989	Winnipeg	10.9	14.1
	Brandon	62.5	
	God's Lake	12.5	
1995	Portage la Prairie	93.2	6.8

Nearly half of the respondents reported that they were concerned about long distance evacuations. Not having relatives or friends in the city was reported as a concern by 1.8 percent of those respondents who were concerned about long distance evacuation. At least 56.7 percent of the respondents reported that they would prefer to be evacuated to a neighboring First Nation community because they had relatives in the neighboring First Nation community (38.2 percent), or they simply wanted to remain in an area close to God's Lake (18.2 percent). Another 5.5 percent said they simply preferred to remain within the community, while 23.6 percent (all males), reported that they did not want to be evacuated to God's River because of the unfriendliness between the two communities. Relations among First Nation communities have an important implication for the feasibility of evacuation among First Nations. These relations need to be understood before evacuations can be considered. Where rivalry exists, evacuation to another First Nation community may not be possible and may therefore not be the solution for concerns about long distance evacuation.

7.3.2 Food

Complaints about food decreased from 65 percent of the respondents in 1989 to 45.9 percent in 1995. Concerns about food were of interest since the researcher observed an abundance of “Canadian” food in the Northern Store and in some of the residents homes. This suggests that respondents to this survey were familiar with the food and complaints reflected a preference for a particular kind of food. It is possible that the complaints about food are related to length of the evacuation or varied by communities rather than the actual food itself. In both cases, evacuations lasted six to seven days.

7.3.3 Language

Difficulties with language was experienced by 12.9 percent and 6.5 percent of the respondents, all of them elderly, in 1989 and 1995 respectively. This was of interest to the researcher since nearly all the respondents interviewed spoke English. The researcher observed that even the youngest of children spoke English. Language is a concern for elderly evacuees, and may cease to be an issue in future. A majority of the respondents were able to understand and converse in English.

7.3.4 Family Separation

Family separation was a lesser concern in 1995 compared to 1989 reflecting improvements in emergency social service provision. Only 37.5 percent of the families reported family separation in 1995 compared to 40.3 percent in 1989. In contrast to 1989, family separation in 1995 was a consequence of male members of the community remaining to fight fires rather than family members being taken to separate destinations.

7.3.5 Children and Elderly

Seventy six percent of children reported difficulties in both years. Problems related predominantly to boredom caused by confinement. There was little difference in difficulties experienced by the elderly in 1989 (11 percent) and 1995 (12 percent). Difficulties with teenagers did not change much between 1989 and 1995 showing 47.8 percent and 49.3 percent respectively. The 1990 Forest Fires Communities Review for Manitoba suggested that teenagers were responsible for setting some of the fires because they had nothing to do in the community. Setting fires was therefore a way to earn a free ride to the city. No evidence of this was found in God's Lake.

The report by M.E.M.O (1989), and the 1990 Communities Report about the fires were compiled as a collation of all comment or issues raised. No real scientific measurement was used to determine the actual extent of the concerns. It is important to note that many of the issues, which were not apparent in God's Lake, were a problem for other communities.

Evacuation has been successful in minimizing physical harm to individuals in term of loss of life, injury, and other health effects

7.4 Disaster Assistance

It is the thesis of this paper that if disaster assistance is well administered, it can contribute to social and economic development of a community.

7.4.1 Emergency Assistance

The number of respondents who reported having received assistance during evacuation increased from 57.1 percent in 1989 to 74 percent in 1995. This variance may

be explained by the difference in absolute number of people evacuated in 1989 and 1995. Much of the assistance was a continuation (substitution) of social assistance. At least 8.9 percent reported receiving assistance from the band during the evacuations. Assistance in both years aimed at meeting short-term emergency needs of the evacuees. Assistance in the form of clothing was accepted by 21.7 percent.

Regarding satisfaction with the assistance received, 41.3 percent said they were satisfied. Of those who were not satisfied, 65.1 percent said the assistance provided did not meet their short nor long-term needs. Some caution needs to be exercised when interpreting some of the results since respondents may consider that reporting satisfaction will limit assistance in future.

Only 3 percent of the respondents said that they were aware of the Manitoba Disaster Assistance Board. Those individuals who received compensation (two households) had post secondary education and one was serving as a councilor at the time of the 1989 fires. At least one person said they received \$25,000 (labor and supplies) in disaster assistance following the fires of 1989. Of note is that God's Lake received \$21,000 in disaster assistance in 1989 yet one of the respondents reported having received approximately \$25,000 in disaster assistance for the loss of his cabin. No record of disaster assistance provided to God's lake in 1995 was available.

7.4.2 Insurance

None of the respondents reported having fire insurance for their belongings in either 1989 or 1995 despite the fact that 85.4 percent of the respondents said that they were concerned about property losses in future fire. At the institutional level, this is

explained by the fact that housing is the responsibility of the Band. Since First Nations do not own their houses, there is little incentive for residents to protect their homes. At the individual level, reasons cited for not having insurance were that insurance was too expensive (25.4 percent), or not available (34.3 percent), or a lack of knowledge about insurance (20.9 percent), or they had never thought about it (17.9 percent). It does suggest however, that there are other underlying factors that may prevent people from obtaining insurance such as low incomes and lack of information. Both could yield a sense of helplessness among respondents.

Based on the results of the survey, there was no direct evidence that disaster assistance which, was received contributed to social or economic development, nor derailed it. Since the physical event did not cause significant damage to property, the disaster did not present an opportunity to replace dilapidated infrastructure

7.5 Policy

7.5.1 Let Burn Policy

Just over half (53.7 percent) of respondents said they were aware of Natural Resources "let burn" policy. Of these, 45.5 percent felt the let burn policy imposed additional hardship, as the fires spread over a wider area destroying vegetation and frightening game. Another 20.5 percent said that it created a lot of smoke in the environment, which was a concern. One third (34.1 percent) said it did not impose any additional hardship. No direct reference was made by any of the respondents to hunting impediments or to impact on religious burial grounds as was anticipated based on the pilot study.

7.5.2 Community Response and Preparedness

About three-quarters (72.5 percent) of respondents felt that the government could be doing more to improve the community's forest fire preparedness and response. The government could do this by providing more fire fighting equipment (16 percent), more information (72 percent) and more training (12 percent; n=25).

Willingness to participate in programs aimed at protecting the community are reflected by the fact that at least 43.3 percent of the respondents said that they had participated in programs pertaining to community development and 35.8 percent of the male respondents said they had taken a fire-fighting course. Eighty five percent (n=60), of the respondents said that they were willing to participate in future training programs.

Almost two thirds (59.7 percent) of the respondents believed the community could develop the capability to respond to forest fire emergencies. Suggestions for improving the capability to respond to forest fires are summarized in table 6. The suggestions are linked to social and economic development (70.1 percent; n=52). More training (7.7 percent), use of local knowledge and manpower (55.8 percent), more equipment (9.6 percent; n=52) and information (26.9 percent) will facilitate improvements to forest fire emergencies in God's Lake.

Ninety percent of the respondents believed that this would benefit the community in terms of improved knowledge and training (56.1 percent; n=41), employment (29.3 percent) and equipment (14.6 percent) where (n=41).

Table 6: Improving Forest Fire Preparedness and Response in God's Lake

Suggestions	%	No. of Respondents
Equipment	9.6	52
Training	7.7	
Local Knowledge	55.8	
Information	26.9	
Total	100	52

7.5.3 Self Government

Thirty three percent of the respondents (n=67) said that they were aware of the Aboriginal self-government initiative. This apparent low level of awareness is partially explained by the manner the question was phrased in the first few days of the interviews. It was later realized that many of the respondents would respond 'yes' if they were asked whether they were aware of the Framework Agreement Initiative (FAI), the term that the grass roots campaign had used to inform people about the self-government initiative.

It was difficult to determine, based on the survey the potential for Aboriginal Self-government. The assumption is that with education and training, the people of God's Lake will be better able to administer self-government. Inference is drawn from the level of participation of First Nations (43.3 percent) in training programs such as Brandon University Northern Teachers Education Program (B.U.N.T.E.P), and Inter Universities North Programs.

Members of the community of God's Lake are willing to participate in programs that facilitate social and economic development. Eighty five percent of the respondents

report a willingness to participate in future training programs, which enable them to contribute to their community. This is a capacity upon which future development can be based.

7.6 Socio Demographics

7.6.1 Education, Income and Employment

Half the respondents had completed junior high school education. Twenty percent and fifteen percent of the respondents reported having high school and post secondary education respectively. This may be explained by the fact that the school in God's Lake provides instruction up to grade 10 after which students seeking a higher level of education have to move out of the community usually to Winnipeg or Thompson. This is a factor in limiting the level of education on the Reserve as many such students are still too young to leave home. Further, the education base is important for determining programs suitable to train participants in God's Lake. Much of this was in reference to Government sponsored training programs such as business, or fire ranger courses with Department of Natural Resources. To be viable, these programs require that students have a high level of education than is presently available on the Reserve.

The majority of the respondents (40.3 percent) were dependent on social assistance as a source of income. One fifth (20.9 percent) said they were employed. Another 26.9 percent relied on seasonal employment making them dependent on unemployment insurance and social assistance. Unemployment was high. Half (49.3 percent), of respondents said that they were not working, another 13.4 said they were involved in volunteer work, 9 percent were involved in social work, and 28.4 percent

were involved in maintenance and other work.

7.6.2 Housing Conditions

Seventy three percent of the respondents lived in housing that was less than 10 years old. Of these, 34.3 percent were inhabiting dwellings less than two years old, reflecting a housing program that was begun in 1994. However, it was apparent that many of these new houses were already in need of repair. Fifteen percent of the houses were more than 19 years old.

Nearly half (49.3 percent) of respondents rated their housing as good, 23.9 percent said it was average and 26.9 percent said that their housing was poor. Many of the homes showed signs of disrepair (plate 4). Twenty seven percent of the houses had been repaired in the previous five years, 17.2 percent in the previous 6-10 years and 3.4 percent of the houses had not been repaired in 11-15 years. Repair and maintenance of housing is an area in which potential training and employment could be utilized.

Overcrowded housing is a major concern of First Nations housing. In God's Lake, 43.3 percent of households possessed between 7 and 9 residents, and 3 percent of households had more than nine residents.

7.7 Research Questions

This section provides an analysis of the research objectives. The specific objectives of the study, which were detailed on page 24 are reiterated below:

- 1) To evaluate the health, social and economic impact of the forest fires of 1989 and 1995 on the community of God's Lake. The focus areas are:
 - a) Damage to property - homes, cabins, and other property;

- b) **Employment and income losses;**
 - c) **Health effect;**
 - d) **Impact of the evacuations on families.**
- 2) **To investigate the potential for disaster financial assistance to contribute to First Nation development following a forest fire event;**
- 3) **To assess the participation of the people of God's Lake during the 1989 and 1995 fires focusing on:**
- a) **Community response and local participation in forest fire emergency efforts;**
 - b) **Willingness to train for forest fire emergencies.**

The first research objective is analyzed using the Pearson Chi Square cross tabulation. In cases where a two by two cross tabulation (contingency table) was used and one of the cells had a value of less than two, the Fishers exact test was substituted for the Chi Square procedure. The second objective is analyzed using the Capacities and vulnerabilities analysis. The final research objective is reviewed by an objective analysis of responses to survey questions pertaining to Aboriginal Self-government.

7.7.1 Forest Fire Impacts

The first research objective of this study seeks to determine whether there is a difference in the social, economic and health impacts of the forest fires of 1989 and 1995. To analyze this, the two-sample chi-square statistic has been utilized. Chi-square is useful because it is simple to use and it is suited to the use of non-parametric data.

7.7.1.1 Impact on Property

Ho: There was an equal impact on property in the forest fires of 1989 and 1995.

Ha: There was unequal impact on property in the forest fires of 1989 and 1995.

The difference in the impact on loss of boats (table 7) is explained by the fact that more boats were lost in 1989 (10.4 percent), compared to 1.5 percent in 1995. On the basis of the chi square test, it is unlikely that the observed difference was due to chance. It is likely that people took precaution to protect their boats in 1995, because the threat was actual fire and there was increased experience with the hazard. Since the value of 0.84 is greater than 0.35826, we reject the null hypothesis (H_0) that the impact of the fires was the same in both 1989 and 1995 and accept the alternate hypothesis (H_a) that there was a difference in the impact of the fire on boating and fishing equipment. This is important since boating represents a significant means of transportation in the spring and summer months. However, in terms of fishing and nutritional status people would still be able to fish.

A further possible explanation is that the forest fire risk in 1989 (smoke) and 1995 (fire) were different and therefore would impact the community differently. The differences may therefore be related to the fires and not preparedness. However since more boats were lost in 1989, compared to 1995 when the risk was actual fire, it is apparent that the people of God's Lake utilize more than just resources proximal to their community. By inference, this lends support to First Nation concerns regarding the Department of Natural Resources "Let Burn" policy.

Since no homes were lost, a two by two contingency table could not be derived. However, the frequency tables reiterate that impact on homes was minimal. Although some cabins were lost in 1989 and 1995, they were too few (<5), so the Chi Square test could not be used.

TABLE: 7 IMPACT OF THE FOREST FIRES ON PROPERTY

Impact	Pearson Chi-square	Fishers Exact Test	Significance	Degrees of Freedom
Property				
Boat	.84	1.00	.35826	1
Home	*N.R	0	0	0
Cabin	*N.R	0	0	0

*N.R Number of empty rows or columns is one.

The *N.R Pearson Chi Square value obtained for homes and cabins is explained by the fact that no homes or cabins were destroyed in 1995 and 4 cabins were destroyed in 1989. Neither chi -square nor the Fishers Exact test could be used because values in the contingency table were less than five in 1989 and 1995. Neither of the tests calculates the degrees of freedom when the number of rows or columns is less than two in the cross tabulation.

7.7.1.2 Impact on Employment and Income

Ho: There is no difference in the impact to employment and income between the 1989 and 1995 forest fires.

Ha: There is a difference in the impact to employment and income between the 1989 and 1995 forest fires.

In 1989, 11.7 percent of the respondents reported lost income compared to 15 percent in 1995. A chi-square value of 38.6 requires that we reject the null hypothesis and accept the alternate that there was a difference in the loss of income in the years 1989 and 1995. Given the high dependence on government assistance programs (welfare and employment insurance) and the high level of unemployment in the God's Lake

community, this difference is surprising. It is possible that respondents felt that if they reported income losses there was a possibility of some benefit to be derived from it.

In terms of employment (table 8), the Chi Square value indicates rejection of the null hypothesis and acceptance of the alternate, that the impact of the fires on employment was not similar in both years. Disruption to employment was greater in 1995 (12.7 percent) than in 1989 (11.7 percent). This can be explained by the fact that in 1995 the threat was actual fire versus smoke inhalation in 1989; this required that individuals be removed from the communities. Although many men had remained in the community to fight the fires, there was still an increase in the disruption to employment as many of them may have left their regular economic activities to engage in fire fighting.

TABLE 8: IMPACT OF THE FOREST FIRES ON EMPLOYMENT AND INCOME

Impact	Pearson Chi-square	Fishers Exact Test	Significance	Degrees of Freedom
Economic				
Employment	52	0	.05	1
Income	38.65	0	.05	1

*N.R. Number of empty rows or columns is one.

7.7.1.3 Impact on Health

In 1989, the threat from the fires was predominantly that of smoke inhalation; however, an equal number of respondents said that they had experienced problems of smoke inhalation in both years even though in 1995 the principal threat was actual fire. As a result, there was no difference in the health effects of the fires in both 1989 and

1995. This reflects also the success of the actions taken to minimize the effects of smoke inhalation.

7.7.1.4 Impact of Evacuation

There was no difference in problems experienced by the elderly and children in 1989 and 1995, contrary to expectations (Table 9). In terms of language difficulties, the null hypothesis is accepted to reflect that there was no difference. It would appear that there was a difference in the language experience. More people reported language difficulties during evacuations in 1995 than in 1989. A possible explanation is that while language difficulties were of concern to some First Nation communities, they were not to others. Based on the community profile of God's Lake, majority of the population spoke English. This ability may explain the diminished evacuation concerns of the people of God's Lake when compared to the total population which was evacuated.

7.7.1.5 Family Loss and Injury

No family losses or injuries were reported in either 1989 or 1995, a measure of the success of the evacuations.

TABLE 9: IMPACT OF THE FOREST FIRES ON EVACUATION

Impact	Pearson Chi-square	Significance	Degrees of Freedom
Evacuation			
Elderly	.4611	.05	1
Language	.2886	.05	1
Separation	.640	.05	1
Teenagers	.3585	.05	1

The Capacities and Vulnerabilities analysis for God's Lake showed that there are strengths within the community upon which future development and forest fire mitigation can be based. In term of capacities, the community already has some fire fighting equipment and the people are willing to participate in training that will assist community development and contribute to preparedness activities to mitigate forest fire effects. There are however, areas of weakness. There has been no change in forest management policy, fire-fighting equipment remains in poor condition, and the socio-economic conditions of the people remain unchanged. The results of the Capacities and Vulnerabilities analysis are summarized in figure 27.

Figure 27: God’s Lake :Capacities and Vulnerabilities Matrix

	Capacities	Vulnerabilities
Physical	<ul style="list-style-type: none"> • Existing infrastructure and equipment 	<ul style="list-style-type: none"> • No change in forest management policy
Material		<ul style="list-style-type: none"> • Forestry equipment in disrepair
Social		
Organizational	<p>Some fire fighting training</p>	<ul style="list-style-type: none"> • Low level of education and training • No policy change in ESS • Housing • Lack of institutions
Attitudinal	<ul style="list-style-type: none"> • Local willingness to train 	<ul style="list-style-type: none"> • External decision making
Motivational	<ul style="list-style-type: none"> • Participation in other training • Self belief 	

CHAPTER EIGHT: CONCLUSIONS AND RECOMMENDATIONS

The basic premise of this study was to determine whether First Nation lack of economic development increases their vulnerability to the forest fire hazard in Northern Manitoba, based on the assumptions of the pressure and release model. The observations drawn from this study are summarized below.

The northern geographic location of God's Lake contributes to its vulnerability to forest fires because of the coniferous nature of the forests around it and the susceptibility of the forests to seasonal variation in climate. The risk of forest fires has been compounded by regulations that control the cutting down of vegetation within the surrounding area. The location of God's Lake contributes to remoteness and increased costs in transportation since most contact with other regions is by air. This creates a lag in the response, time between the emergency occurring and the response and contributes to the cost of emergency operations.

The realization of the forest fire hazard in God's Lake manifests itself in the form of destruction to vegetation, smoke inhalation, evacuation and financial constraints. The effects of the fires on economic activity, including employment, were not significant and were generally temporary. Diminished hunting effects were temporary and in the longer term were actually beneficial. Increased vulnerability however, was observed for fishing guides who are engaged in tourist activity as a source of income. The fires caused travel restrictions that limited the number of tourists to God's Lake during that period. Fishing guides lost employment income as well as income received in tips. The incongruous implication is that those who were employed were the most affected. Ironically, since those on welfare were the least affected, the incentive to become gainfully employed was

reduced. This does not enhance the community's capacity and is reflected in continued lack of social and economic development and reliance on transfer payments. The study results disclose a high dependence on social assistance as a source of income. This limits the community's ability to initiate independent emergency response activities and increases their dependence on externally organized evacuation.

There was also a disparity in the receipt of disaster financial assistance. Those with post secondary education were the most likely to receive assistance. This was probably a function of access to information and awareness. This could confirm that education programs would contribute to reduction of the degree of vulnerability.

Evacuation in 1995 was less stressful than in 1989. There was less family separation, and evacuation to Portage was less stressful. Evacuation can be credited for the fact the no lives were lost, and injury and other health effects were limited. The institutional response is still reflective of the diminished ability of First Nations to protect their community and the focus on relief and meeting immediate needs by the response agencies. The formulation of the institutional response may also accounts for the absence of traditional coping strategies in people's responses to forest fires.

The community of God's Lake exhibited capacities for dealing with the fires in terms of its awareness of the hazard and the risks it poses to the community. Contrary to the Manitoba Natural Resources: Forest Fires Communities Review (1990), forest fires in God's Lake were not human caused. Women were particularly active in protecting their families from the effects of smoke. The result was that only 13% of the people experienced notable health effects. Despite the under utilization of local community labor, many of the men chose to remain in the community to fight the fires.

In contrast to the assumptions of the Pressure and Release model, although First Nations are politically and economically vulnerable, their existence in a free market economy minimizes their material losses. Existing response operations significantly reduced the effects associated with the forest fire disasters. First Nations in Canada are not as vulnerable because they can draw on Federal resources to respond to disaster. What is required is to increase First Nation participation in the decision making process on issues which affect them.

There was no direct evidence to suggest that the emergency response contributed to vulnerabilities or impeded social and economic development. It is unclear whether this was due to the nature and minimal effects of the disaster or due to the lack of political will on the part of the response agencies. The disasters did not present an opportunity to construct, for example, smoke resistant dwellings.

It was evident however, that the relief operations did not support local capacities in a manner that could contribute to local development initiatives. The community's ability to prepare for, respond to, and mitigate hazard impacts generally remained the same. Undervaluing of local participation in forest fire fighting was apparent. Provincial Natural Resources grossly underestimated the number of community members who had participated in fire fighting. Further fire fighting equipment on the reserve was in poor condition despite two major forest fires in seven years.

There was a profound willingness among community members (85%) to participate in training programs, which they believed would contribute to community, development initiatives. They also believed that this would assist them in developing the capacity to deal with future forest fires. Acquired skills would contribute for example, to

the maintenance and repair of homes and to fire fighting competence.

From the community level, there is need for improved ethical standards for those in public office. Some community members alluded to favoritism and exclusion from certain programs.

In light of the institutional response, unless a political policy decision is made to restore governance to First Nations, the challenge of social and economic development will not be met. For as long as First Nation communities are perceived as under developed, institutions will continue to make assumptions regarding First Nation disaster response requirements. This political decision in Manitoba is manifest in the form of the 1995 Framework Agreement. The success of this is yet to be seen. First Nations should take care to assume responsibility for what can feasibly undertake. This requires a lot of planning. Failure is risky in communities, which have suffered low self-esteem for such a long time and where financial ethical standards beckon improvement.

8.1 Recommendations

There is need to acknowledge and build upon Gods Lake' capacities. Training in fire fighting skill will build on existing capacities and reduce the risk for men who are trained and chose to remain in the community to repel the fires. Needs assessments are required to determine how education and training should be provided in order to support community needs. Education and training should be provided in a way that the community develops expertise of its own. Education and training will not in and of themselves support community development.

At the institutional level, some consideration should be given regarding whether

or not to intervene and how to intervene. Whether or not and how to respond to a disaster will influence assistance design and implementation. Institutions should resist the pressure to make decisions for First Nations. They need to allow the community to assume as much responsibility as possible in terms of emergency response. To overcome some of these pressures, government and other responding agencies should develop local partnership programs. Externally motivated large-scale assistance creates the expectation that assistance will continue. Assistance should be scaled, such that it does not overwhelm local capacity but supports it.

There is need for government and other agencies to understand the relationship between emergency response, community development, and the political context of First Nations in Canada. This will require that institutions obtain knowledge about First Nations. Adequate information will increase the potential of agencies to make better intervention and programming decisions including enhancing community disaster response capability through programs and projects operating during non-crisis times.

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Appendix A

The following principles, together with the terms of the Memorandum of Understanding entered into between Grand Chief Fontaine and Minister Irwin on April 20, 1994 (attached hereto), will guide the process to achieve the Objectives. Such principles include the following, among others which may also be agreed to by the parties:

- 5.1 First Nations' Treaty rights, aboriginal rights and constitutional right will in no way be diminished or adversely affected by this process;
- 5.2 The inherent right of self-government, First Nations' Treaty rights and Aboriginal rights will form the basis for the relationships which will be developed as a result of the process;
- 5.3 In the process, the Treaty rights of First Nations will be given interpretation, to be agreed upon by Canada and First Nations, in contemporary terms while giving full recognition to their original spirit and intent;
- 5.4 First Nations governments in Manitoba and their powers will be consistent with Section 25 of the *Constitution Act, 1982*;
- 5.5 The *Indian Act* will be amended, or repealed, as it applies to First Nations in Manitoba, to the extent required in order to give effect to the new relationships of those First Nations which ratify the new relationship;
- 5.6 The relationships between the governments of Canada and First Nations in Manitoba will be mutual, stable and secure;
- 5.7 The primary focus of First Nations government will be individual First Nation; in addition, there may be functions of First Nation government carried out at appropriate aggregated levels as determined by First Nations;
- 5.8 The Crown's fiduciary relationship will continue in accordance with judicial decisions, aboriginal rights, constitutional provisions including Section 35 of the *Constitution Act, 1982*;
- 5.9 Any and all liabilities for past actions and inaction by Canada will remain with Canada. Liabilities arising out of the exercise of decision-making powers and authorities by First Nations governments in Manitoba, unfettered by involvement of the Minister, will rest thereafter with the First Nations governments in Manitoba;
- 5.10 Canada recognizes First Nations governments in Manitoba have the power to enter into arrangements with other First Nations governments, provinces, municipalities and the federal government, to deal with issues and relationships deemed to be appropriate.

Appendix B

Without restricting any other term thereof, it is mutually agreed that:

- 6.1 The joint Assembly/Ministerial political overview process has been established with the understanding that First Nations leadership will have reasonable access to the Minister throughout the project and that officials of the Assembly will have reasonable access to the Minister's political designations and officials.
- 6.2 The work will proceed in a timely manner and at a pace that conforms to the needs of First Nations for consultation and deliberation and on the understanding that the Assembly desires to move expeditiously but will do so with the full understanding and agreement of the Chiefs of First Nations in Manitoba;
- 6.3 Adequate funding will be provided by the Minister through out the term of this Agreement (as defined in paragraph 9) to enable First Nations of Manitoba to be fully capable of becoming informed, planning and implementing the process required to effect the project and implementation agreed functions and structures of First Nations governments in Manitoba. Such funding will be predicated on agreed upon workplans and budgets submitted in advance;
- 6.4 Adequate personnel from DIAND, particularly at a sufficiently senior level and with authority to direct the Project, will be assigned to work on the Project in cooperation with the Assembly, and consistent with the Framework Agreement and costed workplan, as developed jointly by the Assembly and the Minister;
- 6.5 A record of all meetings, sessions and decisions taken at all levels of these joint relationships will be maintained;
- 6.6 The Secretariat of the Assembly will provide quarterly financial reports with respect to expenditures against budgets both to the Minister and to the Assembly;
- 6.7 This Agreement will not preclude or prevent the First Nations of Manitoba from accepting, participating in or benefiting from any other future legislative or constitutional reform, or other measures, favoring First Nations of First Nations governments in Canada.

APPENDIX C**UNIVERSITY OF MANITOBA
DEPARTMENT OF GEOGRAPHY****FOREST FIRE MANAGEMENT IN GODS LAKE: A COMMUNITY
DEVELOPMENT PERSPECTIVE**

Respondent Identification Number: _____

Date of Interview (day/month/year): _____

INTRODUCTION

I would like to ask you questions about your experience (s) with forest fires. In the first section I will ask you questions about your perceptions of the forest fire hazard in Gods Lake. I would also like to ask you questions about evacuation, disaster assistance and the ability of Gods Lake community to manage forest fires. Please remember that you can refuse to answer any of these questions or to stop the interview at any time. Your contribution to my research is greatly appreciated.

1. HAZARD IDENTIFICATION AND FOREST FIRE EXPERIENCES

I will begin by asking you some questions about your experience (s) with forest fire.

1. How long have you lived in Gods Lake? _____

2. Have you ever experienced a forest fire in Gods Lake?

No....0 Yes....1 NR...9 DK...10

3. Do you perceive forest fires to be a serious threat to the community of Gods Lake?

No....0 Yes....1 NR...9 DK...10

4. How you rate the likelihood of a forest fire in Gods Lake?

1. not probable
2. low probability
3. moderate
4. high
5. nearly certain
9. NR
10. DK

5. Are the forest fires predictable?

No....0 Yes....1 NR...9 DK...10

If yes, explain
how?

6. How often has God's Lake experienced forest fires in the last 10 years?

- 0-1 timesLow
 2-3 timesModerate
 4+ timesHigh

7. What do you think is the most common cause of forest fires in God's Lake?

1. human caused intentional
2. human caused unintentional (accidental)
3. Natural (e.g. lightning caused)

8. Is it easy is it to reduce the causes of forest fires?

- No....0 Yes....1 NR...9 DK...10

If yes, explain how?

If no, explain why?

9. What is the estimated duration of the forest fires?

- | | |
|--------------|-------|
| 1. 1 day | 6. NR |
| 2. 2-6 days | 7. DK |
| 3. 1 week | |
| 4. 2-3 weeks | |

10. In your opinion what are the most severe effects of the forest fires?

11. Is it easy to reduce the effects of forest fires?

No....0

Yes....1

NR...9

DK...10

If yes, explain how?

If no, explain why?

12. Which three of the following hazards do you feel pose that greatest threat to Gods Lake? (Rank as number one the hazard that poses the greatest threat.)

1. Blizzard _____
2. Drought _____
3. Epidemic _____
4. Extreme heat (T^oC) _____
5. Extreme Cold (T^oC) _____

6. Flood _____
7. Forest fire _____
8. Water pollution _____
9. Wind storm _____
10. Other _____

2. VULNERABILITY OF PROPERTY AND PEOPLE

All societies possess some degree of hazard vulnerability. Disasters arise from human interaction with the natural, social and technological environment.

13. Do forest fires affect your participation in the following activities:-

	Yes	No	NR	DK	Explain How
Hunting					
Agriculture					
Fishing					
Tourism					
Logging					
Other					

b. What is the contribution of these activities to your families well being?

14. Can you indicate which of the following losses you experienced as a result of the forest fires:
1989

	Yes	No	NR	DK	Explain How
Loss of Family					
Injury					
Loss of Home					
Loss of Boat					
Loss of Cabin					

Loss of Employment					
Loss of Income					
Loss of Livestock					
Other Losses					

Can you indicate which of the following losses you experienced as a result of the forest fires:

1995

	Yes	No	N R	D K	Explain How
Loss of Family					
Injury					
Loss of Home					
Loss of Boat					
Loss of Cabin					
Loss of Employment					
Loss of Income					
Loss of Livestock					
Other Losses					

15. Do you feel your losses greater in 1995 than they were in 1989?

No...0

Yes...1

NR...9

DK...10

Can you explain how?

16. Did the losses experienced by friends and family affect you?

17. Do you have concerns about losses caused by future forest fires?

No....0 Yes....1 NR...9 DK...10

Can you explain how?

18. Did you and your family engage in any activities to minimize the effect of the forest fires 1989?

No....0 Yes....1 NR...9 DK...10

If yes, can you describe some of these activities?

If no, can you describe why not?

19. Did you and your family engage in any activities to minimize the effect of the forest fires 1995?

No....0 Yes....1 NR...9 DK...10

If yes, can you describe some of these activities?

If no, can you describe why you did not engage in any preventive activities?

20. Do you think forest fires cause health concerns?

No....0 Yes....1 NR...9 DK...10

If yes, can you describe some of the effects caused by smoke in the environment?

21. Do you have friends and family that experienced health problems because of smoke inhalation?

No....0 Yes....1 NR...9 DK...10

If yes can you explain how?

22. Have you ever experienced health concerns because of smoke inhalation?

No....0 Yes....1 NR...9 DK...10

23. Do you take any actions to protect yourself or other family members from excessive smoke inhalation?

No....0

Yes....1

NR...9

DK...10

24. What actions do you take to protect yourself and other family members from excessive smoke inhalation?

3. EVACUATION

25. Have you or your family been evacuated owing to a forest fire emergency?

No....0 Yes....1 NR...9 DK...10

26. Where were you evacuated to?

1989 _____

1995 _____

27. For what length of time were you evacuated?

1989 1. one day 3. one week
 2. 2-6 days 4. two weeks 5. more than two weeks

1995 1. one day 3. one week
 2. 2-6 days 4. two weeks 5. more than two weeks

28. Do you have concerns about long distance evacuations?

No....0 Yes....1 NR...9 DK...10

If yes, can you explain why?

29. Given a choice would you have preferred to be evacuated to a neighboring First Nation community rather than the community to which you were evacuated?

No....0 Yes....1 NR...9 DK...10

30. Can you explain why?

31. Did you encounter any of the following difficulties during your evacuation?

family separation	1989	No...0	Yes...1	NR...9	DK...10
	1995	No...0	Yes...1	NR...9	DK...10
language difficulties	1989	No...0	Yes...1	NR...9	DK...10
	1995	No...0	Yes...1	NR...9	DK...10
coping with elderly relative	1989	No...0	Yes...1	NR...9	DK...10
	995	No...0	Yes...1	NR...9	DK...10
coping with young children	1989	No...0	Yes...1	NR...9	DK...10
	1995	No...0	Yes...1	NR...9	DK...10
coping with teenage children	1989	No...0	Yes...1	NR...9	DK...10
	1995	No...0	Yes...1	NR...9	DK...10
diet	1989	No...0	Yes...1	NR...9	DK...10
	1995	No...0	Yes...1	NR...9	DK...10
entertainment	1989	No...0	Yes...1	NR...9	DK...10
	1995	No...0	Yes...1	NR...9	DK...10

If yes, describe how?

32. Was your evacuation experience in 1995 different from 1989?

No...0 Yes...1 NR...9 DK...10

If yes, can you explain
how?

4. DISASTER ASSISTANCE

Following a disaster there are generally resources available to assist the victims of disaster.

33. Did you receive any disaster assistance following the 1989 forest fires?

1989 No....0 Yes....1 NR...9 DK...10

1995 No....0 Yes....1 NR...9 DK...10

34. If yes, what type of assistance did you receive?

35. Were you satisfied with the assistance you received?

No....0 Yes....1 NR...9 DK...10

36. Was this adequate to meet your immediate (food, clothing etc.) and longer term needs (employment, income, health, housing, recreation, repairs etc.)?

37. Did you have any fire insurance for your home or belongings?

1989 No....0 Yes....1 NR...9 DK...10

1995 No....0 Yes....1 NR...9 DK...10

38. If not, please describe the reasons?

- | | |
|----------------------|----------------------------|
| 1. Too expensive | 4. Lack of resources |
| 2. Not available | 5. It doesn't help any way |
| 3. Lack of knowledge | |

39. If yes, did your insurance compensate you adequately for your losses?

No....0 Yes....1 NR...9 DK...10

5. POLICY

40. Are you aware of the Department of Natural Resources "let burn" policy?

No....0

Yes....1

NR...9

DK...10

41. Do you think that it imposes any additional hardship?

Explain how?

42. Are you aware of the Manitoba Disaster Assistance Board?

No....0

Yes....1

NR...9

DK...10

43. For what losses did you receive compensation from the Manitoba Disaster Assistance Board?

44. Do you think the government and other agencies can do anything to better prepare people for forest fire emergencies?

No....0

Yes....1

NR...9

DK...10

45. If yes, how do you think the government could help?

46. Have you participated in any programs aimed at improving forest fire management in your community?

No....0

Yes....1

NR...9

DK...10

47. If yes, can you explain?

48. Are you aware that Manitoba has been selected as the pilot for Aboriginal Self Government?

No....0 Yes....1 NR...9 DK...10

49. Do you think that the community of Gods Lake can develop the capability to manage their own forest fire hazards?

No....0 Yes....1 NR...9 DK...10

Can you explain?

50. Do you think that additional training will enable the community of Gods Lake to deal with the forest fore hazard?

No....0 Yes....1 NR...9 DK...10

Can you explain?

51. Are you willing to participate in training programs that will enable Gods Lake to manage their own forest fire hazards?

No....0 Yes....1 NR...9 DK...10

52. Do you think that community management of forest fires will be beneficial to Gods Lake's social and economic development?

No....0 Yes....1 NR...9 DK...10

Can you explain why?

5. SOCIO- DEMOGRAPHIC

To conclude, I would like to ask you some general questions about yourself. You do not have to respond if you do not feel comfortable with any of the questions.

53. Sex of respondent

1. Male

2. Female

54. How old are you? (Code actual age.)

55. What is your marital status?

1. single

4. widowed

2. married

5. other (specify)

3. divorced/separate

56. What is your highest level of education?

1. no formal education

2. elementary

3. junior high

4. completed high school

5. post secondary education

6. other (specify)

57. What is your occupation? (Code actual occupations.)

58. How would you rate the quality and condition of your current residence?

1. poor

2. average

3. good

4. excellent

59. How old is your home?

60. When was your home last repaired?

61. How many people live permanently in your house hold?

62. What is your main source of income?

Employment income _____

Other income _____

6.7