

**A Combination of Four Planning Models for Use in First Nations Environmental Health**

**Birgit Lüsgen**

B.Sc., The University of Northern British Columbia, 1999

Project submitted in Partial Fulfillment of  
the Requirements for the Degree of  
Master of Natural Resources and Environmental Studies

The University of Northern British Columbia

August 2006

© Birgit Lüsgen, 2006

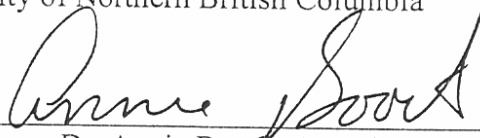
**APPROVAL**

Name: Birgit Lusgen  
Degree: Master of Natural Resources and Environmental Studies  
Project Title: A Combination of Four Planning Models for use in First Nations Environmental Health

Examining Committee:



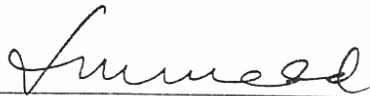
Chair: Dr. Robert Tait  
Dean of Graduate Studies  
University of Northern British Columbia



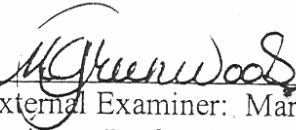
Supervisor: Dr. Annie Booth, Associate Professor  
Natural Resources and Environmental Studies Program  
University of Northern British Columbia



Committee Member: Dr. Sylvia Barton  
Associate Professor, Nursing Program  
University of Northern British Columbia



Committee Member: Dr. Lorna Medd, MD  
Medical Health Officer  
Northern Health Authority



External Examiner: Margo Greenwood, MA  
Assistant Professor, Education Program  
University of Northern British Columbia

Date Approved:

August 31, 2006

**Abstract**

This project is an inquiry into understanding community-based planning models that may be used for First Nations' environmental health to contribute to more equitable partnerships. The purpose of this project was to conduct a review of the literature in order to select planning models that could better address the environmental health needs in relation to assessment, ecological considerations, culturally sustainable community development, and comprehensive First Nations community planning. My questions in this inquiry were: "Which community-based planning approaches may be used for First Nations environmental health programs and projects?" and "What specific models when combined together might be used by First Nations people, environmental health professionals, and others in the planning of environmental health programs and endeavours that contribute to the development of healthy, sustainable First Nations communities?" To answer these questions, and following an extensive review of the literature, I focused on two books, one article, and one manual as contributions to the field of environmental health planning and the importance of using models respectful of culture. The outcomes of the inquiry were enhanced by my own professional experience within First Nations environmental health and an awareness of planning between cultural paradigms. As a result, this project demonstrates that a select variety of planning models need to be considered as a foundation for developing healthy sustainable communities in order to connect environmental health with long-range comprehensive community planning. Such an opportunity offers First Nations and non-First Nations planners a way to proceed that has the potential to address the present, complex needs and future aspirations of community members within a larger regional, global context.

## **Acknowledgements**

This Master of Natural Resources and Environmental Studies project arises from many years of working with First Nations peoples and communities in the area of environmental health. This project has limitations in as much that it is based solely on a review of literature and my own experiences and perceptions. Interacting and working with First Nations peoples has been a major part of my life over the past fifteen years and has contributed much to my worldview of humans as being part of and adaptable to the natural environment. I have learned that relationships determine the outcomes of any planning endeavour. Respect comes to mind as one important aspect of relationship with the land and all that's connected to the land, including animals, people, and oneself. I am grateful to the numerous First Nations peoples in my life for teaching me these valuable lessons.

My thanks and appreciation go to my committee members for their on-going support, mentoring, and patience. I am indebted to my family, my colleagues and friends who lived with me through this challenge.

## Table of Contents

Abstract	Page	ii
Acknowledgements		iii
Table of Contents		iv
Chapter One Introduction and Rationale		1
Research Questions		1
Overview of the Project		2
My Personal Experience		2
Rationale for the Inquiry		3
Chapter Two The Process of Searching for Planning Models		9
Method		9
Identifying Aboriginal Ancestry		10
Background Information for the Inquiry		11
Planning within the Concepts of Environmental Health and Ecosystem Health		12
Environmental Health		12
Ecosystem Health		13
Environmental Threats to Human Health		13
Environmental Health Assessment as a Foundation for Planning		15
Community Environmental Health Assessment within the Context of a First Nation		15
An Ecological Approach to First Nations Environmental Health		16
First Nations Worldviews and Traditional Environmental Knowledge		17
Ecological Planning in the Context of a First Nation		19
Culturally-Based Sustainable Communities		20
The Cultural Connection to Sustainability		21
Biophysical, Social, and Cultural Capital		22
Holistic Health and Healing		23
Comprehensive First Nations Community Planning		25
Planning Considerations for First Nations Environmental Health		26
Chapter Three Planning Approaches Respectful of a First Nations Perspective		27
A Culturally-Sensitive Planning Approach		28
Planning between Cultures		28
The Significance of Communication and Relationships		29
Counteracting the Impacts of Colonization		29

	Utilizing Decolonizing Methodology in Planning	30
	Using Participatory Methods for Planning	32
	The Importance of Capacity Building for Empowerment	33
	A Population Health Approach	35
	Aboriginal Health based on a Population Health Approach	37
	Partnerships as Foundations for Population Health	38
	The Significance of Respect, Equity, and Empowerment in Aboriginal Health	38
	The Meaning of Accountability for Aboriginal Health	40
	Planning Approaches Essential for First Nations Planning Models	41
Chapter Four	Four Planning Models as Guides Toward First Nations Environmental Health Planning	44
	Analytical Review of Collaborative and Culturally-Sensitive Planning Models	45
	Criteria for First Nations Planning Models	45
	Silva and Rosile's (1999) Planning Model for Environmental Health	46
	Applying the Criteria to Community Environmental Health Assessment	48
	Steiner's (1994) Planning Model for Environmental Health	49
	Applying the Criteria to Ecological Landscape Planning	51
	Guyette's (1996) Planning Model for Environmental Health	53
	Applying the Criteria to Culturally Balanced Sustainable Development	55
	Wagmatcook First Nation (2000) Planning Model for Environmental Health	56
	Applying the Criteria to First Nations Comprehensive Community Planning	57
	Guiding First Nations Environmental Health Planning	59
	Figure 1: A Combination of Four Planning Models	61
Chapter Five	A First Nation Lesson in Environmental Health Planning	62
	The Vision Generates the Framework for Environmental Health Assessment	63
	A Local Air Shed Approach to Community Health	64
	Long-term Benefits: Sustainable Community Development	66

	Creating Social and Cultural Capital Towards Health and Sustainability	67
Chapter Six	Combining Four Planning Models Based on Two Cultural Perspectives	70
	The Outcomes of the Inquiry	70
	Planning between Cultures beyond Crisis Response	73
	Four Planning Models as Guides Beyond Crisis Response	75
	An Environmental Health Assessment Model at the Initial Stage	75
	An Ecological Landscape Planning Model Beyond Crisis Response	76
	A Culturally Balanced Sustainable Development Model Beyond Crisis Response	77
	A First Nations Comprehensive Planning Model Beyond Crisis Response	78
	Summary	79
	Acknowledging the Importance of Culture on the Way to Wellness	80
	References	82

## CHAPTER ONE

### Introduction and Rationale

This project was an inquiry into understanding the community-based planning models that could be used to guide First Nations environmental health programs and endeavours, and to advance more equitable partnerships within those endeavours. My interest in the selection of environmental health planning models stems from many years of working in First Nations communities in northern British Columbia (BC) on environmental and public health issues. Within this project, I strove to combine my experience in First Nations environmental health with knowledge of planning for healthy, sustainable communities. My argument is that collaborative, culturally-sensitive planning is an essential tool by which challenging environmental health concerns may be addressed in order to promote health within First Nations communities.

The purpose of this project was to conduct a review of the literature and to select planning models that could better address the environmental health challenges which are relevant to First Nations communities. The rationale underlying the inquiry is that a planning approach, which is contextualized within a framework of First Nations culture and holistic view of community health, has a better chance of success for addressing identified environmental health concerns. Thus, it is my view that such successes if cumulative over time support the creation of healthy, sustainable First Nations communities.

### Research Questions

In this inquiry I ask, “Which community-based planning approaches may be used for First Nations environmental health programs and projects?” and “What specific models when combined together might be used by First Nations people, environmental health



professionals, and others in the planning of environmental health programs and endeavours that contribute to the development of healthy, sustainable First Nations communities?”

### Overview of the Project

The project begins with Chapter One, which provides justification for the topic under inquiry. The process of searching for planning models that are based on culturally-sensitive background information is described in Chapter Two. Planning approaches respectful of a First Nations perspective are considered in Chapter Three. In Chapter Four, four planning models are examined for their usefulness as guides toward addressing First Nations environmental health concerns. In Chapter Five, I relate my own professional experience to an understanding of planning processes as a way to enhance the credibility of the inquiry. Lastly, Chapter Six focuses on how four particular planning models when combined together may effectively result in culturally-relevant and collaborative acts of change. I emphasize that such acts, when viewed from a new cultural angle, have the potential to result in mutually desired environmental health changes between First Nations people, environmental health professionals, and others in ways that advance the development of healthy, sustainable First Nations communities.

### My Personal Experience

My first experience as an Environmental Health Officer (EHO) was with the Nisga'a Valley Health Board in the northwest of British Columbia. I was part of a team of Nisga'a and non-Nisga'a health professionals and practitioners that held regular environmental and public health meetings within the Nisga'a community. Although at the time I had little practical experience in the field of environmental health, I felt involved in solutions that originated from members of the community. I was always treated with respect and tried to reciprocate the

same by listening, observing, and participating in ways that informed me about some of the details of Nisga'a community life and culture. Over time I learned about the reality of First Nations people from their perspective, a world view I continue to appreciate and value as part of my own personal and professional development.

I attained a Bachelor's degree in Environmental Planning from the University of Northern British Columbia (UNBC) in 1999. For the last decade I have worked with the federal department of Health Canada, First Nations Environmental Health Services, located in Prince George, BC, with connections to First Nations communities in the Peace River, northeast, and greater Prince George areas of BC. My recollections and awareness of these cultural places stem from personal and professional experiences working and living with First Nations people in their communities throughout northern BC. In particular, it was living among the Nisga'a People of the *Mighty River*, as the Nisga'a call the Nass River, that provided me with experiences which have enriched my life socially, ecologically, and culturally. These influences have shaped my perceptions in expanding ways, colouring the lens through which I approached, viewed, and wrote this project in more culturally-appropriate terms.

#### Rationale for the Inquiry

Working with First Nations communities in northern BC has shown me the need for collaboration and cultural sensitivity between First Nations and non-First Nations stakeholders: health and social services, land-use and environmental departments, educational and academic institutions, and community economic ventures, in order to advance healthy, sustainable community development. First Nations people establish, administer, and maintain health, social, educational, and infrastructure services in their own

communities. These include: community infrastructure such as housing, water, and wastewater systems, as well as schools, preschools, day care for children, health centres, administrative offices, maintenance shops, community halls and kitchens, convenience stores, gas stations, and an array of other businesses.

First Nations communities in northern BC are characterized by complex cultures and diverse environments. Located on rural and remote landscapes, some exist as small rural communities distanced from or on the fringes of lightly or more heavily populated municipalities, while others are accessible only by airplane or vehicle transport along logging roads. Local and regional factors such as geography, climate, remoteness, isolation, and community resources (for example infrastructure, leadership capacity, human expertise, and government funding) impart overall challenges in terms of successful and sustainable community development as well as specific challenges inherent within community service and program delivery.

In northern BC, there are a myriad of federal and provincial agencies that have mandates and responsibilities involving First Nations communities, particularly their environments and traditional-use areas. Many of these community elements overlap environmental health and public health concerns or have an impact on environmental health issues. For example, Indian and Northern Affairs Canada (INAC) is a federal agency that employs environmental specialists who focus on environmental issues and their impact within First Nations communities designated as 'reserve lands'. INAC also provides funding for community infrastructure such as water systems, sewage disposal, subdivisions, and buildings, which are approved by yet another federal agency, Public Works and Government Services Canada (PWGSC).

Both INAC and Health Canada are major funding agencies sponsoring health, social, and economic development. Community health nurses (CHN), for example, deliver community and public health programs. They are employed by either a particular First Nation band, a transfer provincial organization, or the federal agency of Health Canada. Labour Canada, a federal agency, deals with occupational health and safety issues for federal employees working in First Nations communities (on-reserve).

The provincial agency of the Ministry of Environment (MOE) issues permits for waste disposal sites, industrial air emissions, and discharges from waste water systems and water treatment plants into the off-reserve environment. In northern BC, Northern Health (NH) offers provincially-mandated health programs and licensing of child day care, preschool programs, and other care facilities in both rural and urban settings including First Nations communities.

In BC, environmental health services within rural First Nations communities are typically offered through the Health Canada Environmental Health Officers. The First Nations and Inuit Health Branch's (FNIHB) environmental health program is a mandatory component of community health services that covers such areas as water quality, sewage disposal, waste management, food safety, communicable diseases, housing, pest control, transportation of dangerous goods, environmental contaminants issues, and emergency response plans for First Nations communities. Services include: inspections of community infrastructure, investigation of environmental concerns, environmental health education, and the communicating, facilitating, and networking with other government agencies (Health Canada, 1996).

In its booklet, “Your Environmental Health Program”, the Health Canada First Nations and Inuit Health Branch’s environmental health program spells out a commitment to First Nations people for a high quality environmental health program. The commitment is towards collaboration in a culturally-sensitive manner. More specifically, the commitment acknowledges the “recognition of First Nations’ need to formulate and direct the activities of the Environmental Health Program” (Health Canada, 1996, p.20). This commitment promotes self-direction, collaboration, and empowerment of First Nations and their communities. The commitment requires a willingness on part of the environmental health professional to focus on a culturally-sensitive public and environmental health program.

“Preparation of community work plans in collaboration with the individual communities” (Health Canada, 1996, p.20) involves collaborative efforts towards a community-based environmental health program, which may include other service providers and agencies in areas of overlap. A “timely response to the environmental health needs of communities” (Health Canada, 1996, p.20) presupposes an awareness of what the environmental health needs are for both the First Nation and overlapping agencies. The commitment to “advocacy and leadership in the area of environmental health” (Health Canada, 1996, p.20) necessitates the ability of the environmental health professional to continually advance professionally in culturally-sensitive ways. “Protection of First Nations public health by utilizing culturally appropriate education and promotion techniques” (Health Canada, 1996, p.20) anticipates the capacity within environmental health and associated professionals to make transitions towards culturally-sensitive environmental health education.

“Recognition that environmental health is part of the holistic wellness approach” (Health Canada, 1996, p.20) broadens the horizon of environmental health towards non-health related

issues such as social, economic, and cultural factors of community health. This commitment is based on “respect for First Nations culture and their special relationship with the environment” (Health Canada, 1996, p.20), which presumes knowledge, awareness, and acceptance of the importance of culture on the part of the environmental health professionals working with First Nations.

Environmental health professionals are called upon to suggest solutions to evolving problems that may not have been anticipated in the initial planning approach or design of a structure in a community. For example, mould found inside a house requires moisture to grow and is an indicator of moisture problems. Leaking pipes, inadequate ventilation, permeable roofs, and poor site drainage are all sources of moisture, which may result in water damage and subsequent mould growth. Potential health effects and symptoms associated with mould exposure include allergic reactions, asthma, and other respiratory complaints (U.S. EPA, 2002).

For the most part, moisture problems can be anticipated in a planning approach with solutions incorporated into the design. Site layout, building material, operation and maintenance considerations, aligned with geography and climate as well as lifestyle, social, and cultural requirements of the residents, are essential to comprehensive planning designs. They are also critical planning factors to be considered in the development of healthy, sustainable communities.

First Nations people are faced with finding ways and the means to approach health related issues arising from environmental and public health concerns that effect their communities. Community members’ local knowledge is used, in part, to approach environmental and public health concerns, as well as to apply the necessary tools to address the kinds of

concerns found within the social, ecological, and cultural context of a First Nation community. The involvement of community members in the planning, implementation, and monitoring of environmental health and public health programs and endeavours determines the success and effectiveness of those endeavours. First Nations people live with the decisions of a planning process designed for their community and the ensuing results in terms of quality of life and well-being. Thus, the process of planning environmental health programs and endeavours is best approached in collaborative and culturally-sensitive ways that assess and mitigate risks to First Nations communities, include local and traditional knowledge, and create equitable partnerships with appropriate agencies and service providers that are better positioned to develop healthy, sustainable First Nations communities.

## CHAPTER TWO

### The Process of Searching for Planning Models

The purpose of this project was to conduct a review of the literature in order to select planning models that could better address First Nations environmental and public health concerns in relation to environmental health assessment, ecological considerations, culturally sustainable community development, and comprehensive First Nations community planning.

#### Method

During the initial phase of the inquiry, approximately 90 articles published in peer-reviewed and non-peer-reviewed journals, books, and technical reports between 1987 and 2005 that addressed environmental health and First Nations planning were retrieved and reviewed. Databases and indexes found under the headings of First Nations studies, health and nursing, natural resource and environmental studies, and rural and small town planning were used. The search included CINAHL, MEDLINE, GEOBASE, ABI/INFORM global, Artic and Antartic Regions, Bibliography of Native North Americans, First Nations Periodical Index, Native Health Database, Urban Studies and Planning, as well as General Sciences, Health Sciences, and Social Sciences indexes.

In addition, a manual search of websites led to other sources as well as to dissertation abstracts. Reference lists were examined for additional literature related to environmental health and First Nations planning. Other sources of references included publications and reports that I reviewed as part of my regular professional tasks. Further into the inquiry, I focused on two books, one article, and one manual as valuable contributions to the field of environmental health planning and the importance of exploring models respectful of culture. In order for a planning model to be considered cultural, it needed to focus on approaching



environmental health concerns by using holistic assessment; ecological considerations; healthy, sustainable community development; and comprehensive community planning amenable to collaboration and cultural-sensitivity. English-language publications were selected.

The analytical review resulted in four literary sources that met the criteria of supporting collaboration and cultural sensitivity. The intent was to consider planning models that exist which could provide a foundation for developing healthy, sustainable First Nations communities, connecting environmental health with long-range comprehensive community planning. By proceeding in this manner, I considered the four planning models that resulted from the literature review as having the best chance of honouring First Nations local, traditional, and contemporary knowledge, as well as emphasizing collaborative and culturally-sensitive approaches within them.

#### Identifying Aboriginal Ancestry

For the purpose of this project report, I considered it important to identify aboriginal ancestry and to clarify the use of the term First Nations. I discovered within the Canadian context of environmental health and First Nations planning literature that the term “aboriginal”, referring to the indigenous inhabitants of Canada, includes First Nations, Metis, and Inuit peoples. Specifically, the term First Nations replaces the term “Indian”, and “Inuit” replaces the term “Eskimo”. The terms “Indian” and “Eskimo”, however, continue to be used in federal legislation and policy (for example, the Indian Act), and in reports and data generated by the Department of Indian and Northern Affairs Canada (INAC) for example, status Indian or registered Indian. Status or registered Indian refers to people who are

registered by INAC as members of a First Nation under the terms of the Indian Act (INAC, 2003).

The terms, First Nations and non-First Nations are used provisionally in this project report, with a clear understanding that they do not accurately reflect the differences among the people and communities they are used to represent. First Nations is the term used by Health Canada. The use of the term, First Nations community in this project report refers to the built environment on reserve land and includes the natural environment of traditional use areas.

### Background Information for the Inquiry

Before exploring models for First Nations environmental health planning, I provide background information that considers planning within the concepts of environmental health and ecosystem health. I briefly outline environmental threats to human health. I then focus on environmental health assessment as a foundation for planning with an example of community environmental health assessment within the context of a First Nation. An ecological approach to First Nations environmental health is related to First Nations worldviews and Traditional Environmental Knowledge (TEK), followed by an example of ecological planning in the context of a First Nation. I further link culturally-based sustainable communities to sustainability and biophysical, social, and cultural capital, and to holistic health and healing as the cultural connections. I then complete my discussions on background information by defining comprehensive First Nations community planning and by reflecting on planning considerations for First Nations environmental health.

### Planning within the Concepts of Environmental Health and Ecosystem Health

Planning and environmental health have a lot in common, since environmental health is at the interface of public health and environmental protection, and planning considers public health, safety, and welfare as components in the planning process (Steiner, 1994). Planning can be defined as activities that are guided towards a desirable future (Gyulette, 1996; Forester, 1989). As planners are facilitators with a mandate to plan for the health, safety, and well-being of a community, and as planning is a guided approach of actions towards a desirable future, then planning approaches for environmental and public health are based on the connections of people with the biophysical environment and with each other.

### Environmental Health

Environmental health is located at the interface of human health with the biophysical environment. The US National Environmental Health Association (NEHA) jointly defines environmental health and environmental protection as “protection against environmental factors that may adversely impact human health or the ecological balances essential to long-term human health and environmental quality, whether in the natural or man-made environment” ([http://neha.org/position\\_papers/def\\_env\\_health.html](http://neha.org/position_papers/def_env_health.html)). This definition emphasizes a contemporary view of environmental health as being characterized within an ecological approach that includes environmental protection (NEHA, 1996).

Environmental health traces its origins back to the mid-19<sup>th</sup> century, when a connection between illness and environmental conditions was becoming evident, particularly in the crowded living conditions of industrialized cities. Discoveries of disease-causing bacteria formed the basis of the germ theory, which included a more scientific approach to sanitation, such as the chlorination of water supplies and the pasteurization of milk. Environmental

health professionals were known as sanitarians due to the belief that a sanitary environment was a safe and healthy environment. The public health focus was on microbiological threats to human and community health, which expanded in the 1960s to the public awareness of chemical threats to human health. A common response since then has been to create and implement regulations in order to control specific environmental and public health concerns, and to limit human exposure to environmental contaminants or unsafe conditions (Berg, 2005).

### Ecosystem Health

An environmental health focus is similar to a focus on ecosystem health. Rapport (1998a) defines a healthy ecosystem by its ability to sustain a healthy human population. The provision of clean air, safe water, and uncontaminated soils, and the processing of wastes are examples of ecosystem functions important to human health. For example, Cook et al. (2004) suggest examining human disease outbreaks, particularly in the areas of vector-borne and zoonotic (e.g. West Nile Virus, Hantavirus) diseases, for disruptions of ecosystem functions.

The science of ecosystem health is interdisciplinary and draws from social, natural, and health sciences. The focus of ecosystem health is on the relationship between human activity, ecological functions, and human health (Rapport, 1998b). Similarly, an environmental health focus is on the inter-relationships between people and their environment, promoting human health and well-being within a safe and healthful environment (Silva & Rosile, 1999).

### Environmental Threats to Human Health

The World Health Organization (WHO) separates environmental threats associated with human health into traditional and modern hazards. Traditional hazards are related to poverty and insufficient development, which include the lack of safe drinking water, inadequate

sanitation, food contamination, indoor air pollution, occupational injury hazards, and natural disasters. Modern environmental hazards are related to development, which include a lack of health and environmental safeguards, unsustainable consumption of natural resources, water and air pollution, solid and hazardous wastes, chemical and radiation hazards, infectious disease hazards, deforestation, land degradation, and climate change (WHO, 2000). This confirms that human health and ecosystem health are closely connected in two major areas: impacts from human activities on ecosystem functions; and impacts on human health from the deterioration or loss of ecosystem functions, indicating diminished ecosystem health.

Globally, environmental factors are responsible for about one quarter of disease. For example, mortality from exposure to air pollution is estimated at between 2.7 – 3 million deaths per year worldwide. The almost daily exposure to smoke from fires, including cooking and heating with wood, is cause for diseases associated with poor air quality (Samet & Spengler, 2003). Tobacco smoke will kill ten million people a year worldwide by the year 2030, over seven million alone in developing countries (Health Canada, 2000). Arctic regions show significant environmental damage due to accidental release of radioactivity, elevated levels of persistent organic pollutants and heavy metals, and ozone depletion (Cochran and Geller, 2002). In BC, air quality is an emerging public health issue (BC PHO, 2004).

The BC Provincial Health Officer in his Annual Report 2002 reported on physical environment indicators that can have adverse impacts on human health. These include air, water, land, and soil, as well as factors associated with community sustainability. For example, fine particulate matter, ground-level ozone, and exposure to second hand smoke are associated with adverse health outcomes. Sources for fine particulate matter include wood

smoke, open burning, power generation (for example diesel generators), and emissions from vehicles and industrial sources. Waterborne diseases such as gastroenteritis are often attributed to lack of or insufficient water treatment, irregular operation and maintenance of water systems, and high turbidity in the source water. Watershed management is proposed to protect the quality of water sources. Land and soil contamination, greenhouse gas emissions, and energy consumption are environmental health indicators closely related to human activities (BC PHO, 2003).

First Nations communities, particularly in northern Canada, face community challenges due to high rates of ecosystem warming related to global climate change. These challenges include loss of permafrost resulting in damaged infrastructure and reduced road and service access (Government of Canada, 2002).

#### Environmental Health Assessment as a Foundation for Planning

Environmental health issues vary in each region and community and can include such concerns as poor water quality, air pollution, unsafe buildings, communicable diseases, and contaminated areas within a community. The first step in a planning approach is to assess what the issues are and to identify the stakeholders who need to be involved in suggesting ways to investigate concerns. Thus, utilizing environmental health planning models as tools for the assessment of local, regional, and global environmental impacts and health risks to communities becomes essential for progress towards healthy, sustainable First Nations communities.

#### Community Environmental Health Assessment within the Context of a First Nation

The importance of reflecting on environmental health at the community level was verified by Severtson et al. (2002) during a participatory assessment of environmental health

concerns in an Ojibwa community. This assessment concluded that community participation is essential in promoting ownership and in utilizing the results of the assessment. Concerns for the health of the environment were greater among elders and included issues related to future generations. Local environmental health issues included water, diabetes, cancer, stress, obesity, global warming, unsafe driving, drugs and alcohol, asthma and mould, and the loss of traditional Ojibwe practices. The environmental health assessment reflected not only an ecological view for environmental health, but also included social and behavioural aspects of the First Nations environment (Severtson et al., 2002). This example implies both an ecological approach and a community sustainable development approach in addressing environmental health issues and concerns.

#### An Ecological Approach to First Nations Environmental Health

The relationship of First Nations with their natural environment has to be seen in a historical context to consider the impacts of human activity on First Nations health and well-being. First Nations cultures have evolved within the environment over thousands of years. Aboriginal peoples lived in self-reliant societies before colonization, capable of supporting physical, social, and spiritual needs and aspirations of individuals and families (Dickason, 1992).

Copet (1992) points out that traditional aboriginal communities embrace the interrelationship between people and the environment and thereby embody human ecology. Key aspects of traditional aboriginal communities are leadership, sustenance, learning, and well-being. Life and lifestyles are largely shaped by culture, which links the environment with the physical environment and with the human community. Copet suggests combining

these aspects of traditional communities with contemporary planning towards equitable and healthy communities in an ecologically sustainable development approach (Copet, 1992).

### First Nations Worldviews and Traditional Environmental Knowledge

Outright ownership of land and resources by individuals was a foreign concept to indigenous peoples at the time of colonization. Land and resources were common goods, but recognized as traditional lands for one group by neighbouring groups. First Nations people accepted a custodial responsibility for land and wildlife (Dickason, 1992; Tennant, 1996).

Land and resources are traditionally allocated through a system of family-owned territory. The Nisga'a People of northwestern BC, for example, belong to tribes with houses (wilps) and families (Nisga'a Tribal Council, 1992a). As Nisga'a *Chief Mountain* stated in 1883:

We occupied this land before we ever saw a white man; each tribe had a piece of land bounded by some stream or mountain...each tribe then subdivided their land among the villages and families for fishing, trapping, hunting and berrying so each man occupied his own place and no one would interfere with him.... (Nisga'a Tribal Council, 1992a, p. 10)

According to Nisga'a law, the *Ayuukhl Nisga'a*, every Nisga'a person belongs to a house, which owns songs, dances, stories, crests, names, and territories that have been passed from one generation to another through matrilineal lines. When a male head of a house dies, for example, usually the oldest sister's son or a younger brother assumes the role of the custodian for all property of the house in a ceremony, referred to as the Settlement Feast. This feast represents public registration of title and ownership of the land (Nisga'a Tribal Council, 1992a & b). These cultural practices are still honoured to this day.

First Nations worldviews as represented by Traditional Environmental Knowledge (TEK) consider humans as part of the environment. The relationship of people with their environment and each other over time is a key function of sustainability. By contrast, non-



First Nations societies generally view the environment as a reservoir for natural resources or some other land use (Centre for Traditional Knowledge, 1997).

The aboriginal way of life, expressed as TEK, is detailed, collective knowledge of the land and environment obtained over time. There are many definitions of TEK that give an understanding of the traditional knowledge of aboriginal peoples. One understanding from the Dene Cultural Institute, Centre for Traditional Knowledge (1997), reveals that:

Traditional environmental knowledge is a body of knowledge and beliefs transmitted through oral tradition and first-hand observation. It includes a system of classification, a set of empirical observations about the local environment, and a system of self-management that governs resource use. Ecological aspects are closely tied to social and spiritual aspects of the knowledge system. The quantity and quality of TEK varies among community members, depending on gender, age, social status, intellectual capacity, and profession (hunter, spiritual leader, healer, etc.). With its roots firmly in the past, TEK is both cumulative and dynamic, building upon the experience of earlier generations and adapting to the new technological and socioeconomic changes of the present. (p. 5)

So defined, TEK is capable of evolving towards change through the experience of earlier generations.

Berkes (1999) refers to more than two options for indigenous groups; one option being to return to a traditional lifestyle, and the other to become assimilated into mainstream society. The preferred option increasingly expressed by indigenous groups is to maintain significant aspects of a traditional way of life and to combine the old with new modern ways, allowing social and economic development to evolve in a culturally balanced way. For example, traditional land-use mapping using a computer-based geographic information system (GIS) combines TEK and technology in order to adapt to the realities and requirements of present day life. This has been extensively used to validate First Nations land claims and land-use patterns (Berkes, 1999).

Court decisions have upheld aboriginal rights to the land and resources. Aboriginal rights are entrenched in the *Canadian Constitution*, 1982. The *Canadian Charter of Rights and Freedoms*, section 35(1), in Van Loon & Whittington (1996) states: “The existing Aboriginal and treaty rights of the Aboriginal Peoples of Canada are hereby recognized and affirmed” (p. 177). Aboriginal rights relate to those activities integral to distinct First Nations cultures.

In 1986, the Supreme Court of Canada in its *Sparrow* decision ruled that Section 35(1) of the *Charter of Rights and Freedoms* means that an aboriginal right to fish for food continues to exist in non-treaty areas of the Province of BC (Tennant, 1991). Furthermore, the Supreme Court of Canada in its *Delgamuukw* decision in December 1997 confirmed that aboriginal title exists in BC (BC Treaty Commission, Annual Report 1998). Aboriginal rights are imperative for the planning and development of First Nations communities.

#### Ecological Planning in the Context of a First Nation

An example of ecological planning is a model developed by Burda et al. (1999) for an ecosystem based plan for managing forests in the Gitx̱san territory of northwestern BC. The Gitx̱san model first studied the ecological and cultural requirements for long-term sustainability before deciding on cutblocks for logging. In conventional timber planning, cutblocks are allocated based on short-term economic and political criteria. Cultural, biological, and ecological inventories representative of the whole bioregional ecosystem were gathered and connected with the help of GIS mapping. The inventories and mapping included horizontal and vertical areas from the soil to the tree tops. The Gitx̱san model produced a plan considering entire watersheds, biodiversity, animal migration patterns, habitats, and cultural and traditional use areas (Burda et al., 1999).

The Gitx̄san model not only produced an ecosystem plan, but was also successful in facilitating a collaborative approach between First Nations and non-First Nations communities, industries, and government departments. Incidentally, the *Delgamuukw* decision of the Supreme Court of Canada granted the Gitx̄san the opportunity for legal entitlement to their territory. The Gitx̄san model with its ecological, culturally-sensitive and cooperative approach has confirmed the central significance of First Nations peoples' relationship to their land, as recognized by the *Delgamuukw* decision. The Gitx̄san model represents land stewardship as opposed to the private ownership of land and resources. It emphasizes the responsibility required to take care of present and future generations. With a focus on sustainability, it connects economic, spiritual, and cultural human health to the landscape (Burda et al., 1999). Such an example links acts of ecological planning to culturally sustainable community development.

#### Culturally-Based Sustainable Communities

First Nations people view the health of the environment as connected to community health. For example, a joint project between the Skownan First Nation (Manitoba) and the International Institute for Sustainable Development (IISD) demonstrated a sustainable link between community health and environment evident in the Skownan First Nation. The goal of the project was to assist the Skownan First Nation in identifying their values related to their natural environment, to express these values to government and industry (in this case forestry), and to facilitate discussion amongst stakeholders in order to integrate these values into land-use planning and resource management. As was discovered during this collaboration, aspects of health, education, spirituality, and economic development could not

be separated from the initial focus on resource related issues (IISD, 2001), suggesting a holistic approach to health.

### The Cultural Connection to Sustainability

A holistic approach to planning strives to achieve sustainability and well-being in all aspects of life. Through a culturally-sensitive development approach, planning acknowledges the existence and importance of cultural practices for First Nations people. A culturally-sensitive planning approach has the potential to build bridges between knowledge systems. In this light, TEK can be seen as a paradigm for planning (Lertzman, 1999).

Lertzman (1999) points out that the world is using resources in an unsustainable manner, creating a crisis with ecological, socioeconomic, and existential dimensions. As an example, the earth's population at the present rate is doubling every 30 years with the energy consumption doubling every 20 years (Philp, 2001). The predominant development paradigm is based on a growing economy and its monetary value. Transition of the dominant paradigm towards sustainable development is an enormous present-day challenge to ecosystem health (Lertzman, 1999).

The concept of sustainability is derived from TEK and the worldview of indigenous peoples. The *Brundtland Commission* defined sustainable development as development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs. Sustainability contains two concepts; the concept to satisfy essential needs, and the idea of limitations of the environment's ability to meet present and future needs (World Commission on the Environment, 1987).

A significant aspect of sustainability is the realization that First Nations worldviews include a spiritual and cultural component derived from the natural environment. Blackstock

(2001), for example, found in his interviews with elders that water is considered to be a living entity, a mediative medium, a purifier, and a source of power. Water is alive and has a spirit. Seen through a First Nations worldview, this bestows the ecosystem with social and cultural dimensions beyond the biophysical realm (Blackstock, 2001).

### Biophysical, Social, and Cultural Capital

Sustainability represents the ability of the natural environment to provide for essential needs, which is limited within the ecosystem. Air, water, and food are natural resources essential for human survival and dependent on ecosystem health. These natural resources are representative of the biophysical capital of the natural environment. Essential human needs also include shelter as well as social, cultural and spiritual requirements. These are representative of social and cultural capital.

Dannenber et al. (2003) define social capital as the social, political, and economic networks that inspire relationships built on trust and reciprocity. Frumkin et al. (2004) define social capital as the glue that keeps communities together. Social capital consists of attitudes such as trust and reciprocity, and behaviours such as networking and participation (Frumkin et al., 2004). Cultural capital relates to such areas as spirituality as well as personal growth and education. The creation of social and cultural capital is often connected. For example, community and professional development (social capital) also facilitates personal growth and learning (cultural capital). An important form of social and cultural capital is expressed in relationships to others and to a place. Sustainability can be seen as the balance of biophysical, social, and cultural capital (Lertzman, 1999).

## Holistic Health and Healing

Aboriginal peoples traditionally lived in societies where social, physical, and spiritual determinants of health were strong (Mussell & Stevenson, 1999). The determinants of health and well-being are social, emotional, and spiritual in nature, with connections to environmental and economic conditions, genetic inheritance, and health services (Health Canada, 2001a). Poverty, housing, water, sanitation, and other environmental conditions are determinants of community health (RCAP, 1996). Krieger and Higgins (2002) found that substandard housing, for example, reflects underlying issues of poverty and socioeconomic inequality.

Through the process of colonization, the relationship of First Nations people with their environment has been compromised and disrupted (Berkes, 1999, Dickason, 1992). The colonizers brought with them communicable diseases such as smallpox, tuberculosis, diarrhea, influenza, and respiratory infections. These diseases previously unknown to aboriginal peoples spread like wildfire, wiping out entire villages. Epidemics, loss of land, and the disruption of the social and ecological balance damaged cultural support systems and created poverty followed by dependency on the ensuing welfare system (Waldram et al., 1995).

Poor health status of First Nations people reflects historical disadvantages. Losses of traditional lifestyle and traditional foods had particularly devastating effects as shown by high rates of obesity, and diabetes at epidemic proportions (BC PHO, 2002). Cardiovascular disease and stroke are higher, and cancer rates are now as high as in mainstream society (Mussell and Stevenson, 1999; Stephenson et al., 1995, Waldram et al., 1997). Mortality and morbidity rates for tuberculosis, pneumonia, influenza, and HIV/AIDS in aboriginal people

are higher than for the BC population as a whole (Mussell and Stevenson, 1999). Rates of suicide, family violence, and infant mortality, as well as alcohol and drug abuse are higher. Accidents and violence are major causes of death for aboriginal people in BC, at about three times the provincial average (Mussell and Stevenson, 1999).

The BC Provincial Public Health Officer in his Annual Report 2001 points to suicide rates as “indicators of needy communities” (BC PHO, 2002, p. 46). Suicide rates have been found to be lower in communities that have made progress towards self-government and land claims, have cultural facilities, and have control over local services such as health care and education (Chandler and Lalonde, 1998). Self determination, cultural expression, education, and access to health care are important determinants of health (Health Canada, 2004).

The First Nations definition of health is understood as holistic; well-being in all aspects of life – physical (shelter, air, water, food), emotional (social support system), social (feeling of belonging to a community or place), environmental (feeling of having roots in an environment or place), and spiritual (personal strength) (BC PHO, 2002; Health Canada, 2001a; Atkinson & Ober, 1995). Personal health depends on the well-being of family, community, land, and natural environment (Mussell and Stevenson, 1999).

At the core of holistic health are human values such as honesty, fairness, honour, integrity, being of service, recognizing that each person can modify the self, and an optimistic belief in the future (Mussell and Stevenson, 1999). Chief Leonard George (1991) identifies those strengths as components of spirituality. He believes that most people share a vision of a balanced and harmonious life in a healthy world. As a source of personal strengths, Chief George defines spirituality as the bringing together of those things that are essential to becoming human beings, stating:

To achieve this we must utilize all the strengths and capabilities of every human creature and we must develop our roles and relationships. This can only happen through the kind of deep understanding that results from serious dialogue and sharing. When we understand our differences and the things we have in common, then we may grow and survive together. (George, 1991, p.160)

Aboriginal people are survivors of colonization rather than victims, and have grown from their own and their communities' sense of spirituality (Mussell and Stevenson, 1999). First Nations cultures and worldviews offer a foundation for individual and community health and healing. Thus, planning involving First Nations communities requires a collaborative and culturally-sensitive approach to addressing environmental and public health concerns.

### Comprehensive First Nations Community Planning

Holistic health is a key aspect for planning self-reliant First Nations communities. Wilson (1996) defines comprehensive planning as including all or almost all parts of a community (city) in an attempt to deal with a broad range of issues and problems. In that way, comprehensive planning is multifunctional and relates well to sustainability (biophysical, social, and cultural capital) and holistic health (physical, emotional, social, environmental, spiritual, and cultural well-being). The federal agency of Indian and Northern Affairs Canada (INAC) defines comprehensive community planning as the intention to balance environmental stewardship, resource management, standard of living, cultural and traditional values, and socioeconomic conditions. The agency promotes comprehensive community planning as a replacement for physical development plans for First Nations communities, which only included planning for physical development such as infrastructure and housing (PWGSC, 2005). However, the existing aboriginal rights establish that beyond reserve lands, traditional use areas ought to be included in comprehensive planning.



### Planning Considerations for First Nations Environmental Health

In discovering models to guide First Nations environmental health planning, I found the assessment of environmental health issues was a key focus and foundational to planning. Environmental health issues are connected to both environmental protection and public health, where it is understood that balance of ecosystem functions with human activities is essential in the prevention of human health hazards. Ecosystem health and holistic health are compatible with First Nations worldviews of traditional environmental knowledge.

Sustainability and holistic health are the guiding concepts for planning by and with First Nations. Sustainability provides the realm for long-range planning for generations within the parameters of the natural environment. Holistic health provides the sphere for thinking and planning comprehensively. Thus, planning models that are able to include First Nations worldviews and holistic health into their approaches are better positioned to be useful in the development of healthy and sustainable First Nations communities.

## CHAPTER THREE

### Planning Approaches Respectful of a First Nations Perspective

My first research question in this inquiry was: “Which community-based planning approaches may be used for First Nations environmental health programs and projects?” Colonization disrupted the culture and traditional lifestyle of Canada’s First Nations peoples. I consider that First Nations planning requires culturally-sensitive planning approaches to counteract the impacts of colonization, and to address needs and aspirations for healthy, sustainable communities. In this chapter, I want to raise awareness of how environmental health professionals and local First Nations could work together on more equitable planning approaches towards empowerment of communities.

In identifying culturally-sensitive First Nations planning approaches that facilitate collaboration, I focussed on planning between cultures and the significance of communication and relationship. In looking at counteracting the impacts of colonization, I concentrated on utilizing decolonizing methodology and using participatory methods for planning involving First Nations people. I found that capacity building is essential for individual and community empowerment.

I deemed it important to look at the emerging collaborative concept of a population health approach to find benefits that honour First Nations culture and empower people and communities. In examining a population health approach, I concentrated on the importance of partnerships as foundations for collaboration. The significance of respect, equity, and empowerment, and the meaning of accountability emerged as fundamental concepts for addressing health disparities in aboriginal health within the context of a population health approach.

### A Culturally-Sensitive Planning Approach

In my inquiry, I considered it useful to review literature for cultural planning approaches that are capable of taking into account the importance of culture within First Nations community life. I found that a cultural planning approach honours First Nations cultures and worldviews as represented by traditional environmental knowledge. A planning between cultures approach facilitates collaboration between people from diverse cultural backgrounds as they attempt to build bridges between different cultural knowledges and value systems.

#### Planning between Cultures

Lertzman (1999) proposes a planning between cultures paradigm as a First Nations planning approach. A planning between cultures paradigm recognizes the importance of relationship and collaboration between stakeholders working towards sustainability. It is a review of sustainability that underpins opportunities to create social and cultural capital toward a balance of human activities with ecosystem functions, representing the biophysical capital needed for future generations.

Planning between cultures facilitates intercultural learning amongst diverse cultural systems, and in an understanding and appreciation of values and beliefs of diverse cultures. Learning within a culture is termed intracultural learning, where people learn about the cultural values, beliefs, and practices of their ancestors. Inter – and intracultural learning is facilitated by dialogue and interactions amongst people from different cultural backgrounds. In its creation of social and cultural capital, a planning between cultures paradigm recognizes the role of inter- and intracultural learning towards the transition to sustainability. Lertzman (1999) supports the notion that planning between cultures benefits both First Nations communities and Canada's multicultural and diverse society (Lertzman, 1999).

### The Significance of Communication and Relationships

Planning involves processes and institutions that can change people's lives. Effective communication in the day-to-day work of planning is critically important. Lertzman (1999) points out that in order to be sensitive to First Nations cultures, appropriate ways of communication have to be considered. Kowalsky et al.(1996) propose guidelines for entry into First Nations communities. Being aware of general etiquette, following lines of in-community authority, confidentiality, and ongoing consultation are respectful behaviours towards interacting, communicating, and working with First Nations people. Mutual teaching and sharing ideas, being flexible and allowing for time, and being sensitive and respectful to others are essential building blocks for relationships with First Nations people (Kowalsky et al., 1996).

Kowalsky et al.(1996) found that health and other professionals must be aware of a subtle form of ethnocentrism; a preconceived notion that one strategy is more effective and appropriate than the alternative ways of another culture is damaging to building relationships and to addressing concerns and issues. Ethnocentrism means focusing on the values and beliefs of one culture and diminishing or ignoring the values and beliefs of other cultures (Kowalsky et al., 1996). To facilitate learning and understanding, Forester (1996) suggests entrusting working relationships with the consideration, empathy, thoughtfulness, and insight that is normally associated with friendship.

### Counteracting the Impacts of Colonization

In my inquiry, I focused on planning approaches for First Nations communities that were capable of addressing disparities of health between First Nations people and mainstream society, particularly when health was thought about in the sense of a First Nations view of

holistic health. Planning approaches that are intended to empower communities and to counteract the impacts of colonization are portrayed as beneficial to aboriginal health. Using decolonizing and participatory methods in planning approaches is an effort to increase capacity within personal strengths, collective knowledge, and community empowerment.

### Utilizing Decolonizing Methodology in Planning

Planning by and with First Nations ought to work against impacts of colonization and create benefits for individuals and communities. Tuhiwai Smith (1999) offers relationship-based, decolonizing methodology including intervention, self-representation, connection, creation of knowledge networks, collective creativity, negotiation, and the discovery and sharing of western science and technology as characterizing approaches to First Nations planning. The use of decolonizing methodology in projects and programs is meant to create more benefits through more equitable ways for First Nations communities.

For example, using the decolonizing methodology of intervention requires becoming involved as an advocate for change in the way that institutions deal with First Nations people. Intervention questions the status quo rather than trying to fit First Nations people into the existing structure. Advocates for change can come from First Nations, from professionals working with First Nations people and communities, and from other stakeholders working towards societal change.

Representing oneself is a fundamental human right of First Nations people in proposing community-based solutions. However, in reality, top down policies determine how issues at the community level are dealt with and how they are implemented. In a participatory planning process, First Nations people assert their views and are in charge of the decision-making process.

Connecting with others establishes relationships between people and places. Building networks and knowledges are based on face to face relationships. Connections are maintained over many years. That means when a professional project ends, the personal connections to the place and to and among the people remain.

Collective creativity is directed at producing solutions that are shared in a collaborative approach. For example, different planning options are represented in creative ways to help with making decisions towards mutual benefits.

Negotiation and patience connect in working towards long-term goals. Fair and equitable negotiation requires consent, acceptance, commitment, and accountability by all parties involved in a collaborative approach.

Discovering western science and technology in making science work for First Nations peoples and for sustainable community development is a form of capacity-building. Traditional environmental knowledge and western science are compatible and complement each other. Sharing demystifies western science, knowledge, and information, and speaks in constructive and understandable terms to the community (Tuhiwai Smith, 1999).

Appreciative inquiry is another decolonizing method of inquiry that acknowledges the capacity already available at the community level. Appreciative inquiry involves the inventory of past achievements and what has led to these achievements; the development of a vision based on these past achievements; the design of new and innovative structures and processes based on consensus; and the delivery and implementation of strategies, links, and resources. Thus, appreciative inquiry facilitates a positive shift from a focus on local problems to a focus on local achievements, which is an empowering approach for First Nations communities (IISD, 2001).

These decolonizing approaches are based on relationships of people with each other. Relationship-based decolonizing methodology has been found to be suitable for use with ecological planning approaches, with a planning between cultures paradigm, and in participatory action research (Lertzman, 1999).

### Using Participatory Methods for Planning

Participatory methods build on the foundation of decolonizing methodology in that the product and processes of research move the power of creating knowledge into the realm of the community. A participatory approach makes sure that community members are involved both as participants and as researchers. Evans et al. (1999) found that the key to collaborative processes in an example of aboriginal curriculum development was the recognition of distinct but overlapping interests of the community and, in this example, the educational institution. A relationship of mutual autonomy acknowledges barriers between knowledge systems. This allows mutual approaches to confront barriers in culturally appropriate ways (Evans et al., 1999).

Participatory methods for addressing environmental health issues, for example concerns about the safety of traditional foods, provide tools for First Nations communities to participate in and direct research projects. As in any research project involving aboriginal people, participatory health research and the researchers must adhere to, as a minimum requirement, ethical guidelines as presented by the World Health Organisation (WHO, 2003).

The guiding principles for participatory health research are funding, ethics and consent, partnership principles, and benefits. For example, health research is only undertaken if the research topic and process are compatible with the health priorities of the community. The benefits created through the research are geared towards improved health status and

improved health services. Resources and funding are used for training, employment, and capacity building (WHO, 2003). The *Tricouncil* policy statement *Ethical Conduct for Research Involving Humans* also stresses the guiding ethical principles of being respectful, minimizing harm, and maximizing benefits for research participants individually and collectively (PWGSC, 2003).

St. Denis (1992) describes participatory action research as an activity of social investigation, community participation, learning, and taking action. Community-based participatory research is complex and dynamic, with chances of uncertain outcomes, and where both researchers and collaborators learn new roles. This method takes time, careful planning, personal commitment to involvement, community acceptance, culturally appropriate research methods, and a conducive cultural and political climate (St. Denis, 1992).

Herbert (1996) points out that forming partnerships and building capacity during the course of planning are key aspects to community empowerment. Community empowerment refers to the equitable access to resources, the capacity of the community to identify and solve problems, the increased participation in community control, and the development of a participatory action model to influence social change (Herbert, 1996).

#### The Importance of Capacity Building for Empowerment

Fukuda-Parr et al. (2002) affirm that each society has capacities corresponding to its own functions and objectives. Non-industrial societies, such as First Nations, have highly developed skills and complex social and cultural relationships that are often difficult for outsiders to comprehend and understand. These societies have worked out survival mechanisms in sometimes harsh and difficult conditions. Building societal capacity creates



opportunities for people to use and to expand their capabilities in the transformation of community development (Fukuda-Parr et al., 2002).

Capacity is a measure for personal and collective knowledge, strengths, skills, and abilities needed to plan, develop, implement, carry out, manage, and evaluate community projects and programs. Building capacity through education and through integrating knowledge and technology into both traditional and western scientific knowledge systems increases personal and collective strength. The use of innovation and creativity in the design of projects and programs are considered capacity-building approaches (Health Canada, 2001a).

Capacity development demands a continuous process of learning and relearning for individuals, institutions, and societies from each other and from the world around them. Thus, knowledge is embedded in life experience (Fukuda-Parr et al., 2002). Capacity is built with learning by doing. For example, in mediated learning the facilitator does not provide the answers, but rather creates a learning environment for discovery of solutions by the learner. Mediated learning involves developing strategies and discovering personal skills in learning how to learn. These skills and abilities enable learners to help others how to learn (Mussell & Stevenson, 1999; Schacter, 2000).

Capacity-building is geared towards the needs and circumstances of the recipients. Thus, solutions to problems can not be fully determined at the outset, which makes it difficult to develop predictable time tables over a fixed period. Rather than proceeding in a linear way from project identification to implementation and evaluation, a capacity-building approach implies finding other ways of doing business and changing policies and procedures to fit needs and aspirations. The quality of capacity-building is influenced by the degree that the

project or program design is owned by the community, and built on local commitment (Schacter, 2000). Whiting (2002), for example, notes that capacity-building elements of contemporary community economic development approaches are not geared towards community empowerment, but rather the reduction of socioeconomic barriers to private-sector economic development. Therefore, many community economic development approaches do not address the desire of First Nations communities for self-determination (Whiting, 2002).

### A Population Health Approach

In my inquiry, I deemed it important to examine the emerging collaborative concept of a population health approach for benefits that honour First Nations cultures and empower peoples and communities. The concept of population health has evolved over the last two decades and builds on public health, community health, and health promotion. An understanding of the term population health reflects a meaning for health which recognizes multiple individual and collective factors contributing to health. In 1997, the *Federal, Provincial, and Territorial Advisory Committee on Population Health* defined population health as :

Population health refers to the health of a population as measured by health status indicators and as influenced by social, economic, and physical environments, personal health practices, individual capacity and coping skills, human biology, early childhood development, and health services. (Health Canada, 2001b, p.2)

Population health depends on many factors beyond the domain of the health care sector, such as clean air and water, employment, social support, cultural values and lifestyles, early childhood experiences, and economic conditions (Health Canada, 2000). Population health strategies are designed to affect a group of people or a population group. The overall goal of

a population health approach is to continually safeguard or improve the overall health status of the entire population and reduce inequities between population groups (Health Canada, 2001b). The discrepancies in health and socio-economic status that exist between Canada's First Nations and other mainstream populations are a striking example of health inequities within Canada.

The First Nations holistic view of health is similar to a population health approach. The *Health Council of Canada* (2005) advocates measures to address the health disparities of aboriginal peoples with a population health approach. The council recommends that the responsibility for the approach be shared amongst the health delivery system (Health Council of Canada, 2005).

Campbell (1998) found that the major tenets of public health and environmental protection are very similar. Advocates of public health call for sustaining communities and diversity, for empowering people, for planning across generations, and for diminishing global inequities. The environmental protection community fosters the concept of sustainability, intergenerational equity, biodiversity, precautionary action, community participation, and a global perspective (Campbell, 1998).

A population health approach offers the opportunity to combine public health advocacy and environmental protection in a multidisciplinary team approach. Krieger and Higgins (2002) encourage public health workers to advocate and collaborate for cross-sectoral planning in relation to substandard housing, which is an indicator for underlying inequity problems. Samet and Spengler (2003) encourage a multidisciplinary team approach in the area of the built and indoor environment, including research, design, problem solving, and planning for the future. Samet and Spengler observed professionals (public health, medical,

research, design, engineering, architectural, planners, building managers), concerned in their disciplines with indoor environments, as being isolated from one another, as well as from the population whose needs these professionals are aiming to address (Samet and Spengler, 2003).

Srinivasan et al. (2003) confirmed that partnerships which included environmental health researchers, social scientists, health care providers, public health departments, and communities, had led to more comprehensive, multidisciplinary research agendas in the area of indoor environments. Projects based on these agendas initiated intervention and prevention programs to impact public health, and led to a greater understanding of health effects of indoor environments (Srinivasan et al., 2003). A population health approach advances connections across institutional, departmental, and cultural boundaries.

#### Aboriginal Health based on a Population Health Approach

Enabling, expecting, and respecting aboriginal peoples as full partners in the development and implementation of aboriginal health programs is key to a population health approach which addresses health disparities (Health Council of Canada, 2005). Warry (1998) describes a community-based health planning approach from his work with the Mamaweswen North Shore Tribal Council in Ontario. He noted the dedication and tenacity of community members and First Nations leadership in creating a holistic vision of environmental and community health programs. In an attempt to combine western science and traditional health practices, views were often conflicting on what constituted culturally-sensitive health care programs for the communities. Warry found that aboriginal peoples and institutions are prepared to rise to the challenge of long-term planning of culturally-sensitive health programs and services. He states that the uniqueness of First Nations communities can create

innovative community-based initiatives that combine the health care of individual and families and human service delivery at the community level. These innovative solutions have great potential to teach mainstream society about culturally-sensitive, holistic approaches to health service delivery (Warry, 1998).

### Partnerships as Foundations for Population Health

The *Commission on the Future of Health Care in Canada* identified common principles for aboriginal health partnerships; a holistic approach to health, adaptation of health services to social and cultural realities, and reflection of specific community needs. The commission states that given the diverse circumstances of First Nations people and communities, there is no one single partnership model. Rather, partnerships should be arranged depending on needs, preferences, and on-going input from individual First Nations (Romanow, 2002).

Working with First Nations requires that partners recognize each other's foundation. In a partnership, resources are identified, acquired, and utilized by all partners (Mohawk Council of Akwasasne, 1994). In partnerships, organizations are willing to take risks. Developing respectful partnerships means building trust within teams based on the recognition of common ground. Political support is needed to create the space for the process to take place. Partners need to be prepared to comply with the outcomes of the collaboration. The development of partnerships takes time, mutual respect, and listening with an open mind (IISD, 2001).

### The Significance of Respect, Equity, and Empowerment in Aboriginal Health

The principles of respect, equity, and empowerment can encourage First Nations and non-First Nations people to form more equitable partnerships through communication and understanding. Respect is a fundamental indigenous teaching: respect for all creation – the

land, animals, plants, people, and self. Respect comes from the belief that all living things have a spirit and are part of the circle of life, thus deserving of kindness, caring, and honesty (Health Canada, 2001a and 2004).

Brown (1995) found that the capacity to treat and accept others as inherently worthy and equal, and the willingness to listen, understand, and explain each other's values and beliefs in a meaningful and sincere way, are characteristics of respect. Lack of respect, paternalism, and superiority are considered discriminatory attitudes of not acknowledging the inherent worth of others (Brown, 1995). Respect is generated by knowledge and understanding. Differences between community and funding agency approaches towards achieving goals need to be respected rather than ignored. Learning about and understanding differences allows for bargaining and for the negotiation of compromise (Mohawk Council of Akwesasne, 1994).

First Nations peoples base negotiations on the concepts of equity, respect, and empowerment (Centre for Traditional Knowledge, 1997). Historically, equity is often related to financial resources. However, equity involves fair distribution of all resources, which can include assets such as technical, fiscal, and in-kind contributions, and diversity in knowledge systems equally important for a project or program (Health Canada, 2004).

Empowerment enables First Nations to be responsible for a project or program in their own way, which requires trust among partners. This is only achieved after respect and equity are established (Health Canada, 2004). Mussel and Stevenson (1999) define the essence of empowerment as the replacement of top-down thinking and doing with community-based approaches to action. This enables First Nations people to decide what type is important for them and to manage the processes that produce health in more meaningful ways. Within the

premises of respect, equity, and empowerment, understanding and healing between cultures can be strengthened (Mohawk Council of Akwesasne, 1994).

Although a project or program may generate respect for a First Nations community, without equity and fair distribution of resources the project or program will not be successful. Instead of community empowerment, not having the means to follow through with a commitment will lead to failure (Mohawk Council of Akwesasne, 1994).

### The Meaning of Accountability for Aboriginal Health

Accountability is defined as the quality of having to account for, defend, or justify the effectiveness, sensibility, and sustainability of a program or project (Health Canada, 2001a). Effective use of a program or project means being culturally relevant and useful to First Nations communities. Sensibility to culture and cultural differences acknowledges capacity, resources, and barriers in the implementation of sustainable programs and projects. As defined, sustainability provides for essential needs in a finite natural environment and balances biophysical, social, and cultural capital. All partners are accountable for resources, which have to be available and accessible. Barriers such as standardized funding and program templates must become more flexible in the allocation of resources towards sustainability and balance (Health Council of Canada, 2005).

Accountability is closely tied to answerability, responsibility, and liability. Funding agencies generally want to retain control of funding to avoid liability issues and accusations of funds being spent inefficiently or ineffectively. Funding agencies are more comfortable with pointing out visible activities such as courses, training manuals, and computers. This makes accountability more manageable, but excludes more creative options such as long term learning and discovery over several stages. The recipients of funding may also find

themselves locked into a cycle of dependency and conformity rather than moving towards independence through the support of creativity (Fukuda-Parr et al., 2002). First Nations communities have to be on equal footing with funding agencies and service providers in order to determine their future. Community empowerment is an ultimate long-term goal.

Collaboration, establishing relationships, and building capacity takes time. Many activities of environmental health professionals have shifted towards actions mandated by health protection regulations. The complexity of mandates and regulations concerning health and environment makes time an even more precious commodity for everybody involved (Berg, 2005). New and creative ways of addressing environmental health issues may be required to deal with these complexities.

The *Commission on the Future of Health Care in Canada* recommended that current funding for aboriginal health services should be pooled into consolidated budgets to fund new aboriginal health partnerships. Adapting services and programs to local needs involves communities directly in the defining and delivery of services. Given the diversity of First Nations communities, the commission found that there is no single model that meets the specific needs of all (Romanow, 2002).

#### Planning Approaches Essential for First Nations Planning Models

This part of my inquiry was aimed at answering questions about how health professionals and First Nations community members can work together towards First Nations environmental health planning. I found that a culturally-sensitive approach acknowledges and honours the existence and importance of cultural practices for First Nations peoples. A planning between cultures paradigm facilitates communication and relationships between people from different cultural backgrounds. Through the facilitation and creation of



relationships, cultural planning approaches work towards the creation of social and cultural capital.

I further found in my inquiry that planning approaches that empower people are beneficial in addressing the impacts of colonization. Using decolonizing methodology means facilitating relationships that create benefits for First Nations peoples and their communities. Participatory methods, particularly in environmental health research, move the power of creating knowledge into the realm of the community. Building capacity through culturally-sensitive learning and education is key to community empowerment. The quality of capacity building refers to the degree that a project or program design is owned by the particular community.

I suggest that a population health approach is compatible with the First Nations view of holistic health, which aims for the creation of well-being in all areas of human life. A population health approach, based on holistic health, enables working in partnership with aboriginal peoples. These partnerships, if based on mutual respect, equity, and empowerment for First Nations communities, hold all partners accountable for resources and benefits, which has the potential to strengthen the guiding principles of sustainability.

This inquiry has shown me that relationships determine the outcomes of planning endeavours. Culturally-sensitive and community-empowering planning approaches, centered around the health of First Nations peoples within a population health approach, contribute to community-based solutions focused on challenges associated with aboriginal health and sustainability. Working, learning, and teaching with First Nations peoples grant relationship-based opportunities for planners, environmental and public health professionals, and

practitioners that are essential to effective collaboration focused on First Nations environmental health planning.

## CHAPTER FOUR

### Four Planning Models as Guides Toward First Nations Environmental Health Planning

This project was an inquiry into understanding community-based planning models that could be used to guide First Nations environmental health programs and endeavours, and to develop more equitable partnerships within those endeavours. The second question I asked in this inquiry was, “What specific models when combined together might be used by First Nations people, environmental health professionals, and others in the planning of environmental health programs and endeavours that contribute to the development of healthy, sustainable First Nations communities?” In order for a planning model to be considered cultural, it needs to focus on a planning approach amenable to collaboration and cultural sensitivity.

In this chapter, I derived a set of criteria for the analytical review of collaborative and culturally-sensitive planning models. The criteria are rooted in sustainability and holistic health, and connects both concepts to culture. The analytical review includes four examples of planning models that show the best potential for addressing environmental health concerns within a First Nations worldview. They are Silva and Rosile’s (1999) planning model for community environmental health assessment, Steiner’s (1994) ecological approach to landscape planning, Guyette’s (1996) planning for culturally balanced development, and the Wagmatcook First Nation and Dalhousie University’s (2000) First Nations comprehensive community planning model. Following an analytical review, I present the combination of these four planning models that could be used to guide First Nations peoples, environmental health professionals, and others in the planning of environmental health programs and endeavours. This particular combination of models may better guide the users

to create more equitable partnerships necessary for the development of healthy, sustainable communities.

#### Analytical Review of Collaborative and Culturally-Sensitive Planning Models

During my inquiry, I discovered that First Nations environmental health planning could be built on the foundation of an environmental health assessment combined with an ecological planning approach that incorporates culturally balanced sustainable development. These three building blocks for First Nations environmental health planning feed into comprehensive community planning. I further learned in my inquiry that culturally-sensitive and empowering planning approaches for aboriginal health are compatible with a population health approach, promoting more equitable partnerships.

I garnered from my inquiry that First Nations cultures and worldviews offer a philosophical foundation for understanding individual and community well-being within the concepts of holistic health and sustainability. Holistic health, as represented by well-being in all aspects of human life, is a key to self-reliant First Nations communities. Sustainability represents the ability of the natural environment to provide for essential needs for the present and future generations. This ability is limited within the global ecosystem. My intent for the analytical review was to consider existing participatory planning models that could include holistic health and sustainability as planning concepts. A participatory planning approach strives to involve community members as participants, planners, and decision makers.

#### Criteria for First Nations Planning Models

I concentrated on the potential for collaboration and capacity-building as criteria that led to the selection of planning models. Collaboration fosters opportunities for relationships, partnerships, and inter- and intracultural learning. Collaboration is required for effectively

introducing participatory methods and decolonizing methodology into culturally-sensitive planning approaches. Effective collaboration acknowledges and builds capacity among partners. As such, the capacity acknowledged, supported, built, valued, and maintained among all partners can be seen as an attribute of successful collaboration towards community empowerment.

Using these parameters, I considered four planning models that stood out from my literature review as having the best chance of honouring First Nations local, traditional, and contemporary knowledges, due to the emphasis on collaborative and culturally-sensitive approaches within them.

#### Silva and Rosile's (1999) Planning Model for Environmental Health

In discovering models for First Nations environmental health planning, I found that the assessment of environmental health issues was foundational to planning, and became a key focus. Environmental health issues are connected to both public health and environmental protection within the greater concept of ecosystem health. Environmental health issues and concerns vary in each region and in each community. An environmental health assessment identifies the issues and the stakeholders who need to be involved, suggesting ways to investigate concerns at the community and regional level. Thus, utilizing environmental health assessment as a tool for environmental health planning becomes essential for guiding users towards the development of healthy, sustainable First Nations communities.

For my analytical review, I chose Silva and Rosile's (1999) community environmental health assessment model because of its view toward the future needs of a community and health department, and because of the inclusion of stakeholders and community members into the planning process. Their use of the model involved the Delaware city-county health

department and community members from the Delaware county in the United States.

Although community-based, a distinct cultural focus is lacking.

The community environmental health assessment model described by Silva and Rosile (1999) was initiated at the institutional level, in this case a public health department, rather than at the community level. This model for planning attempts to anticipate environmental health needs and to plan for future interventions with a participatory community environmental health assessment. Many First Nations partners and stakeholders are from an institutional background. This model could potentially serve as a framework for institutional professionals who are involved in the delivery of community-based environmental health programs or services. The approach is meant to build a sense of ownership and relationship amongst stakeholders (Silva and Rosile, 1999). The need for assessing internal capacity at the institutional level, as well as at the community and stakeholder level, is crucial in providing technical, fiscal, and in-kind resources towards the facilitation of a community planning process.

The assessment approach starts with an internal capacity assessment for funding and resources for sharing that enhance the planning process. Stakeholders such as community members, government agencies and departments, institutions, and industries with their resource and service needs, are identified. A team is formed to guide the assessment approach, with representation from all stakeholder groups, including community members. The objectives of the assessment are established jointly by the team. Identification of the environmental health issues include community perspectives. The indicators for environmental health, and the standards by which they are measured, also integrate community values, reflecting community needs and goals. Data is identified, collected,

maintained, and evaluated. Issues, and links between issues, are identified, ranked, and prioritized. An action plan is developed using strategies to address environmental health issues of greatest community concern (Silva and Rosile, 1999).

#### Applying the Criteria to Community Environmental Health Assessment

Applying the criteria focused on collaboration and capacity-building, Silva and Rosile's (1999) planning model for implementing environmental health assessment provides ample opportunities for the inclusion of both. The potential for collaboration between community members, agencies, and stakeholders is evident through the creation of teams. Inter- and intracultural learning can be facilitated, for example, in the review of indicators and how they relate to different cultural groups in interpretation and assessment of the importance of cultural values. Reflecting on community needs and goals when setting standards in public health and environmental protection acknowledges cultural differences and practices, which work towards community empowerment.

Data gathering, interpretation, strategy and action planning are opportunities for utilizing decolonizing methodologies and participatory methods, which embrace collaboration and capacity-building as vital components. Existing capacity can be acknowledged and further capacity can be built within all partners and stakeholders by recognizing opportunities and realizing already existing potential. Implementing action plans and monitoring indicators for outcomes over time provide opportunities to recognize TEK in conjunction with western science. Community involvement in environmental health assessment incorporates the local knowledge that is gained in a place over time and contributes to making decisions on priorities, on ways to resolve issues, and on preventive actions.

Silva and Rosile (1999) found that completing a community environmental health assessment significantly improved understanding of local environmental health issues. An assessment prepares environmental health departments for environmental community interventions and for preventive actions. Silva and Rosile (1999), however, caution that such collaboration may not fit conveniently into established environmental health programs and services.

Silva and Rosile's (1999) community environmental health assessment represents a useful model for assessing environmental health needs for planning at the community and agency level. Although the approach is not specifically cultural, more equitable partnerships and relationships between people, their cultures, and the environment can be facilitated and realized at this assessment stage of an environmental health program or endeavour. These partnerships and the relationships within them provide opportunities for collaboration and capacity-building. Over time, such opportunities contribute to the creation of social and cultural capital that can lead to sustainability. For these reasons, I view this planning model as a means for guiding the cultural empowerment and collaborative collaborative practices of its users.

#### Steiner's (1994) Planning Model for Environmental Health

In my inquiry, I found that planning models for First Nations environmental health issues and concerns necessitate an ecological approach. An ecological planning approach is the basis for answering questions concerning land-use issues. For example, planning for community infrastructure including housing, water, and wastewater systems is a land-use issue with significant environmental health considerations.



Steiner (1994) defines ecology as the study of relationships between all living entities, including humans, with their physical and biological environments. Human ecology is thought of as an expansion of ecology in terms of how humans interact with each other and with their environments. In this sense, interactions provide a measure of belonging and affect identity, obligation, responsibility, and liability (Steiner, 1994).

Ecological planning differs from more conventional methods as the interactions of an ecological system are considered. For example, in conventional planning, flood prone areas are identified and mapped. In ecological planning, all the factors contributing to flooding in an area are considered (Steiner, 1994).

For my analytical review of culturally-sensitive planning models, I chose Steiner's (1994) ecological approach to landscape planning because it is 'in tune' with the First Nations world view of humans as part of the ecosystem. Steiner's (1994) ecological planning approach uses biophysical and sociocultural information in a consensus-based decision making approach for land use. Through an ecological approach, social and cultural characteristics of a region and community are connected to landscape features.

Connecting social and cultural characteristics to land-use decision-making is an ecosystem health approach, often with a watershed or airshed that represents a regional area for ecological planning. Within these spheres, all parts of the ecosystem are interconnected. Sustaining the health and well-being of the system as a whole, including humans, is defined by Steiner (1994) as adaptation to fitness within an environment. As all systems strive for survival, they try to find the fittest environment and adapt it and themselves to the needs of the system, which provides balance within the natural environment. The relationships of

humans with their natural environment and with each other represent the cultural and social aspects of this balance (Steiner, 1994).

Steiner (1994) proposes a step-by-step approach to connect social and cultural characteristics to a land-use decision-making process. This planning approach utilizes scientific and technical information in order to consider and reach a consensus-based decision on different choices. Throughout this process there is continued citizen involvement and community education for choosing different concepts and options. Planning is viewed as a living process, with planning methods providing structures and room for improvisation.

The process starts with the identification of planning problems, with opportunities for the establishment of planning goals. The landscape is analysed on regional and local levels through detailed studies. The purpose of these studies is to understand the complex relationships between human values and environmental constraints or opportunities. Ideas for planning and future options are developed in creative and logical ways that combine all the information gathered together. Options are chosen based on the planning goals. The ideas and options are combined in a landscape plan emphasizing natural and social / cultural considerations, usually presented in a visualized form with elements arranged spatially. The community goals for land use are realized through the implementation and administration of plans and designs, which involve monitoring and evaluation over time (Steiner, 1994).

#### Applying the Criteria to Ecological Landscape Planning

Steiner's (1994) ecological landscape planning model is a participatory approach, which creates opportunities for interactions and relationships between people and the environment. Applying the criteria of potential for collaboration and capacity-building, the ecological planning approach presents many opportunities for both. Community involvement and on-

going education for decision-making offer choices in the implementation of decolonizing methodologies and the building of capacity.

The potential for collaboration, particularly for the purpose of facilitating capacity-building, is evident at the initial stage of identifying planning problems, with opportunities for the establishment of goals. Specifically, collaboration is vital in order to solicit input from all knowledge and stakeholder groups and to identify planning problems, with opportunities that turn these plans into viable goals. Collaboration is also essential in recognizing existing capacity and the potential for capacity-building among all participants.

At the investigative stage the regional and local landscapes are analysed in detailed studies. At this stage, the participatory approach lends itself to making use of decolonizing methodology. The conduct and content of the studies, such as factors to be considered, indicators to be examined, and type of analysis chosen, call for input from both western science and traditional environmental knowledge holders. As the purpose of these studies is to understand the complex relationships between human values and environmental constraints or opportunities, collaboration is fundamental, which has the potential to facilitate understanding among participants through inter- and intracultural learning. Capacity at this investigative stage of planning can be built by involving participants in the developing and implementation of these detailed landscape studies.

At the conception stage of ecological planning, present and future options emphasize natural as well as social and cultural considerations. A visualized presentation of the plan promotes creativity in developing, portraying, and visualizing land-use options and offers room for cultural expression. Collaboration among participants facilitates the choices to be

made. Planning between knowledge systems at this conceptual stage can build capacity, particularly through inter- and intracultural learning and teaching.

The community goals for land-use are realized through the implementation and administration of the plan and its designs, involving monitoring and evaluation over time. The processes of collaboration also continue over time, utilizing the capacity that has been acknowledged, created, and strengthened during the planning approach.

Steiner's (1994) ecological planning model is capable of incorporating culturally empowering and collaborative approaches, as represented by the potential for collaboration and capacity-building. For these reasons, I view this ecological planning model as a means for guiding First Nations environmental health planning, particularly in the area of land-use as it relates infrastructure and in the area of traditional land-use as it relates to culture.

#### Guyette's (1996) Planning Model for Environmental Health

In my inquiry, I found that planning for First Nations environmental health needs to aim at understanding culturally-balanced community development by embracing the concepts of sustainability and holistic health. For many First Nations in Canada, the continued use and production of natural resources for a subsistence economy is crucial for cultural sustainability. Cultural sustainability is closely linked to maintaining traditional economies, sharing environmental views, respecting spirituality, and preserving traditional community concepts and structures. A rapid change or loss of traditional values and responsibilities disrupts the cultural balance with the biophysical environment. This loss of balance has serious consequences, such as dependency and assimilation (Health Canada, 2004).

For the analytical review of a model for culturally-sensitive and community-empowering planning approaches, I chose Guyette's (1996) culturally balanced sustainable development

model. This participatory model aims at addressing the needs of First Nations for harmonizing cultural preservation and economic development. In the context of planning for balanced sustainable development, Guyette (1996) defines planning as depicting a desirable future and outlining the steps or approaches to achieve this future. The planning approach seeks to build consensus amongst participants, to create focus for the task at hand, and to connect to overall community goals. The purpose of planning is to align the people and the resources needed in order to reach those goals in a culturally-sensitive and community-empowering manner (Guyette, 1996).

Guyette (1996) characterizes development that reinforces culture as culturally sustainable through supporting and linking more than one cultural subsystem. For example, the creation of a community facility such as a school can be planned and designed to express culture and art while supporting a culturally-sensitive learning environment. By including community members in the planning and design stages, capacity and skills are built towards personal growth and community socioeconomic development. This is carried forward into the learning environment that has been created.

Guyette (1996) outlines a step-by-step approach based on merging cultural preservation with economic development in order to create projects that sustain the culture in the future. This planning approach encourages integration of the needs of First Nations with input from the community and stakeholders into all steps. Planning of projects starts with the creation of a community vision for the future, with the identification of key issues and the definition of strategies. Data to support the project is collected and analysed to identify strengths, weaknesses, opportunities for change, and threats to change. Developing a mission statement, supported by goals and objectives, defines the projects. Auditing resources and creating a

timetable and budget start the implementation phase of the vision. An executive summary assists in obtaining resources and in planning for sequential development. Guyette (1996) portrays planning for balanced sustainable development as a proactive long-term strategy, with emphasis on the planning approach rather than the plan (Guyette, 1996).

#### Applying the Criteria to Culturally Balanced Sustainable Development

Applying the criteria focused on collaboration and capacity-building, I reviewed this culturally sustainable development model as presenting many opportunities for fostering the inclusion of both concepts. Planning for culturally balanced sustainable development focuses on the vision of a desirable community future. This participatory planning approach is driven by community initiative as a response to identified needs and aspirations, and by a desire to find community-based solutions. Creation of a community vision for the future is encouraged by the potential for collaboration amongst participants. The community vision identifies the needs for capacity and capacity-building for future aspirations. Data collection and analysis, and the identification of planning needs and opportunities, can be initiated within a framework of relationship-based decolonizing methodologies.

Concrete actions, such as auditing available resources and establishing goals, objectives, budgets, and timetables, start the implementation phase of the community plan for a future vision. Collaboration facilitates inter- and intracultural learning as the needs and aspirations of a community vision are translated into specific requirements for culturally-sensitive and empowering interactions. These interactions, viewed as a resource, acknowledge existing capacity and build further capacity for the future. Intercultural teaching and learning are able to help align the expectations and outcomes of a planning approach amongst stakeholders,

particularly between funding agencies and their recipients, where the need for accountability in a sustainable sense needs to be realized.

Guyette's (1996) culturally sustainable development model is capable of guiding culturally empowering and collaborative practices by utilizing collaboration and building capacity throughout the planning process. Environmental health programs promoting awareness, education, and capacity building in culturally relevant ways benefit from a planning model that emphasizes balanced cultural development. Emphasizing the planning approach rather than the outcome of a plan promotes collaboration between people and cultures, and leaves room for creativity focused on the identified community goals. Culturally balanced sustainable development is useful in planning for the environmental health needs of the present and future generations. For these reasons, I view this model as a means for guiding culturally sustainable planning as development in sequence with the community vision of the future, thereby feeding into a more comprehensive community planning process.

#### Wagmatcook First Nation (2000) Planning Model for Environmental Health

For my analytical review of models for culturally-sensitive planning approaches, I chose the Wagmatcook First Nation comprehensive community planning model because of the apparent First Nations context within which the model was developed. The Wagmatcook First Nation, in conjunction with the Dalhousie University (2000), developed a First Nations comprehensive community planning manual in order to guide in the creation of comprehensive development plans for First Nations communities. The Wagmatcook First Nation comprehensive community planning model is described as a tool for establishing a

vision, determining needs, coordinating local initiatives, and ensuring community accountability (Wagmatcook FN, 2000).

Steps in the comprehensive planning process start with gathering background information on the people, land, settlement, and community within a larger context of local and regional areas. Schools, health services, housing, employment, expertise, and skills are identified as strengths and concerns. The search for connections attempts to form links between concerns and strengths, and investigates change. Community aspirations and values, rooted in the past and in traditional environmental knowledge, establish a vision for the future. A vision statement forms the basis for capacity building. Public consultation and expertise transforms the vision into action. The approach to planning is holistic and includes physical, social, economic, environmental, political, and cultural aspects of the community. Projects are transformed into visible results by, for example, the construction of a community centre. Capacity and skills found at the community level are identified and enhanced. Change resulting from plans and projects are assessed over time by the First Nation community and its partners (Wagmatcook FN, 2000).

#### Applying the Criteria to First Nations Comprehensive Community Planning

This comprehensive approach to planning is holistic and includes physical, social, economic, environmental, political, and cultural aspects of a community. Applying the criteria focused on collaboration and capacity-building, this comprehensive community planning approach presents various opportunities for fostering the inclusion of both concepts.

At the initial stage, the comprehensive planning approach gathers background information on the people, land, settlement and community, which implies a need for collecting information on the natural environment, the built environment, and the social and cultural



contexts within the local and regional areas. A collaborative effort is essential, as this information is pulled together from many different agencies, departments, and stakeholders. Schools, health services, housing and employment agencies, individual expertise and skills are identified as strengths and as focal points, which are included in an assessment of existing capacity and capacity-building goals and aspirations.

At the investigative stage, the search for connections between focal points and strengths, and the resulting changes, provide room for initiating decolonizing methodology, which is relationship-based and collaborative. Rooted in the past and in traditional environmental knowledge, the community vision statement forms the basis for identifying and building capacity.

At the implementation stage, collaborative efforts of public consultation combined with local and external capacity and expertise, transform the community vision into action. By utilizing the capacity that has been acknowledged, created, and strengthened during the planning approach, collaboration continues over time through the assessment of results.

A comprehensive approach includes a needs assessment at the initial stage, such as a community environmental health assessment. An assessment not only identifies needs, but also aspirations and strengths. In terms of planning between First Nations and non-First Nations participants, this can be seen as accounting for biophysical, social, and cultural capital that is created or regained towards the fostering of sustainability. Importantly, gathering background information on the people, land, settlement, and community in the larger contexts of local or regional areas is necessary for an environmental health assessment, as well as for implementing an ecological approach. The contexts of the larger local or

regional areas make the comprehensive planning approach an ecological approach, with humans as part of the ecosystem.

The Wagmatcook First Nation (2000) comprehensive community planning model guides the introduction of culturally empowering approaches by utilizing collaboration and building capacity strategies throughout the planning process. For these reasons, I view this model as a means for guiding the inclusion of all aspects of community development within an ecosystem and population health context, based on sustainability and holistic health.

### Guiding First Nations Environmental Health Planning

In answering the question, “What specific models when combined together might be used by First Nations people, environmental health professionals, and others in the planning of environmental health programs and endeavours that contribute to the development of healthy, sustainable First Nation communities?” I reviewed four planning models. They included a community environmental health assessment model, an ecological landscape planning model, a culturally balanced sustainable development model, and a First Nations comprehensive community planning model. The analytical review revealed that these participatory planning models provide ample opportunities for collaboration and capacity building to be included in the implementation of culturally-sensitive practices. These models have vital components that may guide First Nations environmental health planning, but none of them are all inclusive on their own in addressing First Nations environmental health issues.

A community environmental health assessment model provides an inventory of environmental health issues at the community level. It provides the foundation for planning environmental health programs and endeavours. The information collected in an assessment is valuable in determining priorities for dealing with environmental health issues. Involving

community members aids in obtaining a more complete inventory and in integrating community values into priorities for environmental health. A community environmental health assessment determines past impacts and present realities for future outcomes. The assessment is a starting point for community environmental health planning and, as such, a valuable planning tool for capacity building.

An ecological planning model is useful in determining land uses and their impacts on the environment. Humans are part of the ecosystem, and human activities have impacts on ecosystem functions. Ecological planning is an attempt to balance these two interests. The ecological approach creates opportunities for interactions and relationships between people and their environment, which over time represent cultural characteristics of a regional landscape. However, ecological models for planning do not determine which human activities are the best for members of the community in terms of future well-being.

A culturally balanced sustainable development model is useful in planning for the needs of community members in the present, as well as for future generations. The aspect of sustaining culture and balancing cultural needs with economic development is particularly important for the future of First Nations communities. The concept of sustainability signifies developmental constraints based on the capacity of the natural environment in order to provide for people's essential needs and to make future aspirations possible. It is at this interface that ecological models and culturally sustainable development models complement each other. Both ecological and sustainable development models are suitable for planning certain aspects of First Nations environmental health built on a community environmental health assessment.

I gathered from my inquiry, combined with my own experience, the idea that the creation of a vision is a starting point and a focal point along the way from past to future. Many programs and activities feed into the realization of a community vision, and the goals and objectives associated with a desirable community future. The First Nations comprehensive community planning model that was described did represent aspects of community environmental health development, but only within an ecosystem and population health context, based on sustainability and holistic health. For these reasons, I view these four models, when combined together, offer a means for guiding how the complexity of environmental health issues need to be addressed.

Figure 1: A Combination of Four Planning Models

Figure 1 is a representation of the combination of four planning models for use in First Nations environmental health.

**Comprehensive Community Planning**

**Sustainable Development Planning**

**Ecological Planning**

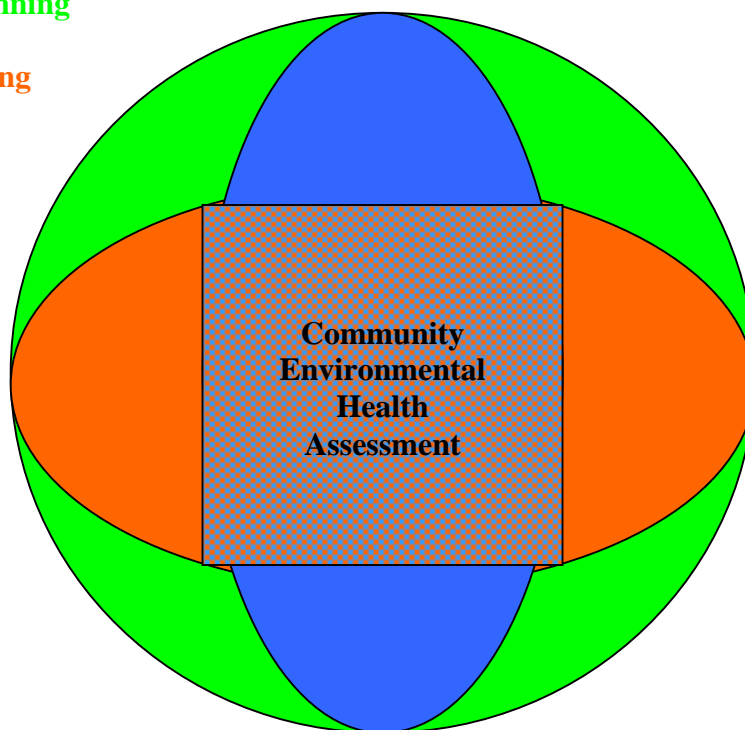


Figure 1: A Combination of Four Planning Models

## CHAPTER FIVE

### A First Nation Lesson in Environmental Health Planning

The outcomes of the inquiry were enhanced by my own professional experience within First Nations communities and an awareness of planning between cultural paradigms. In my inquiry, I discovered that First Nations environmental health planning can be built on the foundation of an environmental health assessment using an ecological planning approach towards culturally balanced sustainable development. These three building blocks for First Nations environmental health planning feed into comprehensive community planning. I further learned in my inquiry that culturally-sensitive and empowering planning approaches correspond well with the concepts of sustainability and holistic health, which are congruent with aboriginal concepts of health.

In this chapter, I bring my professional experience into this discussion of planning models as a way to enhance the credibility of the inquiry. The following is an example of how planning created a vision of a healthy, sustainable future. I gleaned from combining the four participatory planning models a way of addressing local air quality concerns. This offered opportunities to members of a First Nation to proceed so that they were able to address current complex needs and future aspirations of their community within a larger, regional context. I believe this example can be helpful to those involved in environmental health programs and endeavours by guiding the kind of planning required to develop healthy and sustainable communities.

What I recollect from my involvement with an environmental health project on local air quality is the creation of a vision as a framework for an environmental health assessment. The project represented an airshed approach to community health. The project created long-

term support for sustainable community development. The collaborative relationships and the capacity acknowledged, built, and supported had created social and cultural capital that enhanced health and sustainability.

#### The Vision Generates the Framework for Environmental Health Assessment

Addressing an environmental health issue can serve as a catalyst for a holistic approach to community health. One example is a First Nation community in northern BC that created a vision for their future as a stepping stone towards a comprehensive community plan.

During a community planning exercise, community members identified air emissions from an industrial site adjacent to the community as a major community health concern. Chief and Council committed to investigating the impacts of air emissions of the industrial site on the health of the community. The First Nation community received funding from Health Canada's environmental contaminants program to investigate community concerns regarding impacts of industrial air emissions on the health of community members. The Nation hired a project coordinator from the community. A community air quality committee was formed, which included representatives from the Nation's membership, community groups, and families. The community vision of a healthy future provided the route to an environmental health assessment directed toward air quality concerns.

Stakeholders were identified and concerns were exemplified during the environmental health assessment phase. The provincial Ministry of Environment (MOE) had issued a permit to industry, which set out specifics for emissions and ambient air monitoring as well as reporting requirements. Partners and stakeholders in the project included MOE, Health Canada's First Nations Environmental Health Services, local industry representatives, primarily from the forestry sector, and staff from the First Nation's health department.

During the environmental health assessment phase of the project, it was quickly established by the committee that the existing regulatory air quality monitoring program was not sufficient to address the concerns of the community members. The committee also recognized the need to evaluate the impacts of air emissions on the community during different weather conditions. The committee asked for a more stringent continuous air monitoring program with access to monitoring and meteorological data on-line. Local industry, as part of their permit requirements, supplied state of the art air monitoring and meteorological equipment with internet-based data collection capability. The committee, through the First Nation's project coordinator, had ongoing access to the data collected. In addition, the project coordinator was trained to operate a manual air sampling program in an area of particular concern to the community. MOE provided the sampling equipment, training, and funding for analysis.

During this initial phase of the project, the potential for collaboration between the stakeholders and partners was utilized, leading to capacity-building for committee members and the project coordinator, in particular. Financial resources and expertise from inside and outside of the community were found and shared. The community committee played a major role in directing the investigation of the air quality concerns, evidence that decolonizing methodology for the project was being applied.

#### A Local Air Shed Approach to Community Health

In addition to the collection of data from air quality monitoring, observations from the community, such as odours and deposits on surfaces, were reported to the project coordinator. Deposits collected from surfaces typically contained a mix of naturally occurring and seasonal deposits such as pollen, as well as deposits from activities, such as

wood burning. This led to the investigation of other factors contributing to air quality and other sources of air emissions such as open burning, residential wood stoves, and a beehive burner.

An odour response team, consisting of the First Nation's project coordinator, MOE staff, and industry staff, was able to link specific activities at the industrial site to odour complaints from the community level. This was an important aspect of the air quality program, as these sensory observations were not captured by monitoring equipment. Odours presented a significant nuisance to the community to the point where quality of life was diminished. In this case, the odour response team identified the source of the odour as part of an industrial process. Changing procedures in the process reduced the odour. Changes to the industrial procedures led to less odour complaints over time. However, odour continues to be an alerting factor to the industrial processes that are on-going across the highway from the community.

The initial concern of the community was with air emissions from a specific industrial site and its possible association to increased disease in the community, specifically respiratory illnesses and cancer. The committee became aware that it was not enough to concentrate on industrial emissions from a single source alone. Other factors from outside and from within the community, contributing to outdoor and indoor air quality, had to be considered in investigating respiratory and other illnesses. Besides emissions from industrial activities, other concerns, including road dust, wood stove pollution, mould in housing, second hand smoke, and vehicle exhaust from a nearby highway, were identified. For example, the committee discovered that ambient particulate matter decreased considerably after the roads within the community were paved.



The community health concern of increased illness from industrial air emissions was addressed with an ecological planning approach that utilized airshed monitoring. An air shed is representative of a regional ecosystem. Investigating air shed concerns beyond regulatory requirements through community members and with the involvement of multiple stakeholders allowed for collaborative efforts, and generated capacity building at all levels.

#### Long-term Benefits: Sustainable Community Development

The project is still ongoing and has evolved over several years. The Nation has established an environmental health department, giving the project coordinator and staff opportunities to gain experience and build capacity. The First Nation's environmental health department is responsible for several types of environmental health monitoring, including collecting water, wastewater, and air samples, and local testing of drinking water quality.

The federal Environmental Health Officer is a beneficial resource to the community and visits regularly. Activities, such as housing and community facilities inspections, are directed by the First Nation's staff and the inspections carried out jointly. Educational sessions at the school for staff and community groups, for example, are a regular part of environmental health activities.

Through the First Nation's environmental health department, the community interacts directly with local and regional industry and with government agencies, such as the provincial Ministry of Environment and Health Canada's First Nations Environmental Health Services. The First Nation's health, public works, and land-use departments work closely with the environmental health department. The First Nation's health department deals with public health, the public works department with community infrastructure, and the land-use department with industrial activities within the traditional-use areas. The connections and

linkages of these departments were recognized at the community level through the environmental health planning approach.

In this example, environmental health linked public health with environmental protection of the built and natural community environment, and with the traditional-use areas that are vital for preserving the continuation of cultural expression and sustenance. The connection of these different parts of community health services made this approach a holistic planning approach. The establishment of a community-based environmental health department that directed environmental health activities, and the linkages between the First Nation's health, public works, land-use departments, and environmental health were reflective of culturally balanced sustainable community development. Balanced sustainable development planning is empowering and vital in meeting culturally appropriate environmental health needs and aspirations of present and future generations.

#### Creating Social and Cultural Capital Towards Health and Sustainability

The example of an air shed approach to community health demonstrates that through the creation of mutual benefits for communities and stakeholders, such a process can lead to increased community empowerment over time. The key is for people, from community members to agency staff and industry, to realize opportunities through the formation of collaborative relationships and partnerships, and through supporting and building capacity on all levels.

From my inquiry, I learned that culturally empowering, collaborative planning approaches are better positioned to incorporate First Nations knowledge into planning. As in the analytical review of four planning models, I linked my professional experience to the criteria focused on collaboration and capacity-building as characteristic of culturally empowering

planning approaches. I learned through my work as an environmental health officer that effective partnerships acknowledge and build capacity among participants.

The relationships established at the beginning of the project between the community, industry, and government agencies have created benefits. Collaborative relationship between community members and staff, agencies, and industry provided the realm for environmental health planning. Building and supporting capacity which facilitated learning at the community level, as well as among stakeholders, created the tools needed to address local and regional environmental health issues. This took place within the larger context of sustainable development - the regional ecosystem. The collaborative relationships and capacity acknowledged, built, and supported represented social and cultural capital that can create healthy, sustainable communities within a balanced ecosystem. The capacity built and the resources created supported the overall community vision of health and sustainability, which was viewed as part of a comprehensive community planning exercise.

This First Nation's example showed me that a combination of participatory planning approaches worked together in addressing a community environmental health concern. A comprehensive community planning exercise established a vision for a healthy, sustainable future. This vision provided the framework for the assessment of environmental health concerns within an ecological regional ecosystem approach. The benefits created through collaborative relationships and through acknowledging, building, and supporting capacity at the community and stakeholder levels aided in culturally balanced sustainable community development. These benefits transformed the investigation of an environmental health concern into an opportunity for community empowerment. Viewed in this way, addressing an environmental health concern connected to the community's vision of health and

sustainability as part of a comprehensive community plan. It is my belief from the inquiry, and from my own professional experience, that by combining the four models I have identified, planning for environmental health can be an empowering endeavour for First Nation communities and stakeholders alike.

## CHAPTER SIX

### Combining Four Planning Models Based on Two Cultural Perspectives

In answering my research questions, I found that there was no single planning model sufficient to cater to all the needs and aspirations of a First Nations community in relation to environmental health; rather a combination of planning models was required. As a result, this project suggests that a select variety of planning models need to be considered as a foundation for developing healthy and sustainable communities through connecting environmental health with long-range comprehensive community planning. Such an opportunity offers First Nations and non-First Nations planners a way to proceed that has the potential to address the present, complex needs and future aspirations of community members within a larger regional, global context.

In this chapter, I present the outcomes of the inquiry. In planning between cultures beyond a crisis response, I use the four planning models as guides towards holistic health and sustainability. In closing, I acknowledge the importance of culture on the way to wellness for a sustainable present and future rooted in the past.

#### The Outcomes of the Inquiry

For this inquiry, I adopted a definition of planning as guided activities towards a desirable future. In this guided approach, planners facilitate a mandate to plan for the health, safety, and well-being of the future of a community. I recognized that planning approaches for environmental health are built amid the relationships of people, with the biophysical environment, and with each other.

I confirmed in my inquiry that environmental health issues are connected to both public health and environmental protection. Environmental protection is closely linked to ecosystem

health with humans as part of the natural environment. Public health is closely linked to community health and the concept of holistic health. I verified that human health and ecosystem health are connected in two major areas: impacts from human activities on ecosystem functions; and impacts on human health from the deterioration or loss of ecosystem functions, indicating diminished ecosystem health.

The First Nations worldview of health is holistic and includes social, emotional, physical, environmental, cultural, and spiritual well-being. From my inquiry I learned to characterize sustainability as the balance of social, cultural, and biophysical capital within the confines of the ecosystem. In recognizing that healthy and sustainable communities associate social-emotional, cultural-spiritual, and physical-environmental well-being of their members (holistic health) with social, cultural, and biophysical capital (sustainability), such communities create social and cultural benefits within the biophysical balance of the ecosystem. Thus, planning models that are able to guide the inclusion of First Nations worldviews and holistic health into their approaches are better positioned to be useful in the development of healthy and sustainable First Nations communities.

In answering my first research question: “Which community-based planning approaches may be used for First Nations environmental health programs and projects?” I learned that a culturally-sensitive approach acknowledges and honours the existence and importance of cultural practices for First Nations people. Cultural planning approaches create social and cultural capital. Planning between cultures facilitates communication and relationships between people from different cultural backgrounds.

I further found in my inquiry that empowering planning approaches that use decolonizing methodology and participatory methods can move the power of creating knowledge into the

realm of the community. Building capacity through culturally-sensitive learning, teaching, and education is key to community empowerment.

I realized from the inquiry that a population health approach is compatible with the First Nations view of holistic health, which aspires to the creation of well-being in all areas of human life. A population health approach enables and requires partnerships with aboriginal people. Working, learning, and teaching with First Nations people grants relationship-based opportunities for planners, environmental and public health professionals, and practitioners to collaboratively enhance First Nations environmental health planning.

In answering the question, “What specific models when combined together might be used by First Nations people, environmental health professionals, and others in the planning of environmental health programs and endeavours that contribute to the development of healthy, sustainable First Nations communities?” I reviewed four planning models for their potential to facilitate collaboration and capacity-building.

By selecting a combination of four planning models, the environmental health assessment takes note of issues and concerns related to environmental protection and public health. In terms of environmental protection, an ecological planning approach balances human activities with impacts on ecosystem functions within the regional and global ecosystem, representative of biophysical capital. In terms of public health, culturally sustainable development supports the creation of social and cultural capital necessary for human health and well-being within the ecosystem functions of the local and regional ecosystem. All aspects of environmental and public health feed into comprehensive community planning, which is based on a community vision for a desirable future.

My professional experience, related through an example of an airshed approach to community health involving a First Nation in northern BC, showed me that creating mutual benefits for communities and stakeholders can lead to community empowerment over time. The key for people, from community members to agency and industry staff, is to realize opportunities through the formation of collaborative relationships and more equitable partnerships, and through supporting and building capacity at all levels. Building and supporting capacity and resources, and facilitating learning at the community level and among stakeholders, created tools to address local and regional environmental health issues within the larger concept of sustainable development within the regional ecosystem. This experience confirmed for me that effective collaboration acknowledges and builds capacity among partners. In this manner, an environmental health concern evolved from a community vision of health and sustainability. This vision is the first step in comprehensive community planning.

#### Planning Between Cultures Beyond Crisis Response

The following is an example of a remote First Nation community in northern BC, which is experiencing environmental contamination due to an unsustainable source of energy for their community. The environmental hazard was dealt with through an emergency response to an immediate environmental health threat and resulting public health concerns. I make use of this example to illustrate how a collaborative and more culturally-sensitive approach has the potential to extend beyond the immediate response to an environmental health hazard.

A northern remote community has faced several diesel spills at their community's power generator. The community is dependent on diesel for production of electricity via a diesel generator. This form of energy production is not sustainable for the community long-term.



Power outages are a regular occurrence. As long as the community is dependent on an unsustainable and unreliable energy source, community empowerment and sustainable development are held back.

Tests revealed that the ground water is contaminated with hydrocarbons typical of diesel. A major concern for the community and their partners in environmental health is the safety of the drinking water well. Depending on the topography and hydrogeological flow, diesel in the ground water may contaminate the drinking water well. The community has a drinking water program with regular in-community bacteriological water testing performed by community staff. However, the community relies on environmental health services for chemical testing of their drinking water supply.

Several agencies and industry staff, and consultants from outside the community hired by these agencies, were involved in the emergency response and clean-up. The emergency response included decontaminating the spill sites and testing ground water for the presence of hydrocarbons. The location of the drinking water well was assessed in terms of distance from the contaminated sites and in relation to the hydrogeological flow of the ground water. In this case, the spill sites are located in a down gradient from the drinking water well. No measurable levels of hydrocarbons are presently detected in the drinking water. The consultants decided that the risk of contaminating the drinking water aquifer with diesel fuel from the spill sites was low.

Public health is presently not considered threatened by diesel fuel contamination of the drinking water. Environmental health services have the mandate to safeguard drinking water and thereby the health of community members. As a precautionary measure, environmental health services continue to periodically monitor the community drinking water for the

presence of hydrocarbons. With the clean-up of the immediate impacts of the diesel spills the reactive emergency response or crisis is over.

#### Four Planning Models as Guides Beyond Crisis Response

The next steps towards preventing further spills and resulting emergencies are to safeguard environmental and public health, and to proactively explore alternative forms of energy production towards sustainability. Energy is an essential human need and critical for present and future sustainable community development.

#### An Environmental Health Assessment Model at the Initial Stage

This example demonstrates that the diesel spills are linked to several environmental health issues not clearly identified or addressed in the reactive emergency response. The environmental health issues that could have been identified at an initial assessment stage relate to: the ultimate fate of the ground water contamination in the environment; the risk to safety and security of traditional foods and medicines from contaminated soil and water; air quality impacts on local human health from burning fossil fuels, combined with impacts from wood smoke and road dust; impacts from greenhouse gas production on climate change and global warming; and increased risk of further environmental contamination due to dependence on an unsustainable and unreliable energy source. Importing diesel over long distances into a remote community also increases the risk of a spill while transporting a dangerous good and adds to greenhouse gas emissions and global warming.

An environmental health assessment at the community level would have identified and involved all the stakeholders in determining, prioritizing and addressing these environmental health issues. The stakeholders that come to mind are the First Nation's Chief and council, the environmental specialist from the federal department of Indian and Northern Affairs

Canada (INAC), the environmental health officer from the federal department of Health Canada, representatives from the provincial Ministry of Environment (MOE), representatives from the energy industry responsible for the operation of the generators, and representatives from the First Nation's health, public works, land-use, and education departments. An environmental health assessment would have identified the existing resources and capacity and the needs for capacity-building to deal with the identified environmental health issues.

The team, representative of all stakeholders, could have linked further with research and learning institutions, such as the University of Northern British Columbia, in a community-based effort to address long-term environmental health issues. Within this team, a population health approach compatible with a First Nations view of holistic health would have enabled to work in partnership. These partnerships, when based on mutual respect, equity, and empowerment for the First Nation community, hold all partners accountable for resources and benefits towards holistic health and sustainability. Through the facilitation and creation of partnerships, a culturally-sensitive planning approach to environmental health assessment could have realized the potential for social and cultural capital.

#### An Ecological Landscape Planning Model Beyond Crisis Response

An ecological approach was required to determine the ultimate fate of the ground water contamination within a bioregional ecosystem, a watershed. An ecological approach was required to determine the impacts on the regional and global airshed from burning of fossil fuels and from woodstove emissions. An ecological approach would have presented opportunities for interactions and relationships between people, cultures, and the environment for the purpose of understanding the complexity between human activities and values, and environmental constraints and ecosystem functions. An ecological approach

could have utilized scientific and technical information as well as local and traditional environmental knowledge to develop consensus-based decisions on different choices.

Honouring First Nations worldviews in a culturally-sensitive approach brings an understanding of the importance of safeguarding aboriginal rights embedded in the *Canadian Constitution*, 1982. First Nations people are not only concerned with the safety, quality, and quantity of water coming out of the tap of a distribution line. First Nations people need to assure themselves that water is safe for animals and plants within their traditional use area and for themselves when they are out on the land. Contaminated soil and water may have effects on fish, wildlife, plants, and humans. Traditional food and medicine sources may become exposed to contaminants in soil and water. The availability and security of traditional foods and medicines are indicators of the link between the balance of ecosystem functions and human activities. An ecological planning approach, grounded in culturally-sensitive and empowering methodology, could facilitate intercultural learning towards sustainability among the team partners.

#### A Culturally Balanced Sustainable Development Model Beyond Crisis Response

A diesel generator as a source for community energy is unsustainable with impacts on the local, regional and global ecosystem. By addressing the issue of dependency on this unreliable and unsustainable energy source through collaboration and capacity-building, opportunities for working together on finding ways and means to develop alternative and sustainable energy sources could be realized. Researching, developing, and testing sustainable and dependable alternative energy sources to phase out and replace the present unreliable and unsustainable energy production are proactive approaches towards sustainable community development.

In proceeding towards culturally sustainable development in an ecological approach, numerous benefits can be realized at the local, regional and global scale. Viewed in a holistic understanding of health, benefits are generated not only for the physical and environmental aspects of human health, but also for social, emotional, cultural, and spiritual aspects. The economic and environmental costs to meet community energy needs are decreased. Air emissions from the diesel generators and woodstoves are decreased or eliminated over time. Global impacts are diminished as greenhouse gases are reduced. Local air quality and human health are protected. The risk of accidental spills is reduced, preventing soil and water contamination and environmental impacts on fish and wildlife. These present many benefits to local, regional and global ecosystem functions and towards community and ecosystem health. The collaboration among partners and the capacity built and supported during the culturally balanced sustainable development of a community energy supply has the potential to create social and cultural capital.

#### A First Nations Comprehensive Planning Model Beyond Crisis Response

Working towards addressing the environmental impacts and public health concerns from the diesel spills and working towards a sustainable and reliable energy source will add important components to a comprehensive community plan. Focused on community aspirations and values, and rooted in the past and in traditional environmental knowledge, a community vision can create a healthy and sustainable future. The vision forms the basis for capacity building. On-going collaboration, community participation, and local and outside expertise can work towards transforming the vision into action. A holistic planning approach includes the physical, social, economic, environmental, political, and cultural aspects of the community's present and future.

### Summary

Culturally-sensitive and community-empowering planning approaches, centered around the health of First Nations people within a population health approach, are capable of contributing to community-based solutions for aboriginal health focused on sustainability. Working, learning, and teaching with First Nations people grants relationship-based opportunities for planners, environmental, and public health professionals and practitioners to collaboratively guide First Nations environmental health planning. Partnerships between First Nations people, environmental health professionals, and others in ways that advance the development of healthy and sustainable First Nations communities are essential. However, these partnerships have to be mutually understood and interpreted by all participants.

The *Commission on the Future of Health Care in Canada* identified common principles for aboriginal health partnerships as a holistic approach to health, with adaptation of health services to social and cultural realities, reflecting specific community needs (Romanow, 2002). The *Mohawk Council of Akwasasne* defined partnerships as recognizing each other's foundation and identifying, acquiring, and utilizing resources among all partners (Mohawk Council of Akwasasne, 1994). The *International Institute for Sustainable Development* supports the notion that partnerships include a willingness to take risks and to comply with the outcomes of a collaboration. The development of partnerships takes time, mutual respect, and listening with an open mind (IISD, 2001).

It is my belief from my own professional experience and from the inquiry that by combining the four participatory models of community environmental health assessment, ecological planning, culturally balanced sustainable development, and comprehensive

community planning, environmental health programs and endeavours have the potential to contribute mutually desired outcomes towards a community vision.

### Acknowledging the Importance of Culture on the Way to Wellness

As an environmental health professional working with First Nations communities, I have come to appreciate the value of creating social and cultural capital focused on community empowerment. In my personal and professional experience, the creation of social and cultural capital is closely connected to the natural environment and to the relationship of people to the land and each other.

One of my most memorable experiences while living among the Nisga'a People in the Nass Valley was the raising of a crest pole, the first one in Gitwinksihlkw (Canyon City) after more than one hundred years. It was a significant cultural event involving an elaborate community effort with extensive organisation and preparation. The skilfully carved pole was carried from the carving shed to its place in front of the community hall. Hundreds of people were needed in an organized fashion to carry the pole. There were several resting places on the way, where the carriers were fortified with traditional foods. The carver performed special dances and ceremonies during the pole raising, breathing life into the crest pole. All the Clans and Houses were part of the story of the crest pole that the carver told. Every Clan member was dressed in regalia, hand made by themselves or family members, and richly decorated with buttons and with materials from the natural environment such as fur, cedar bark, and feathers.

Hundreds of guests came to witness the event and share in a feast. All the Nisga'a delicacies from the ocean and forest were enjoyed. There was salmon prepared in different ways – smoked and half-smoked, sun dried, canned, and baked. There were other sea foods

such as halibut, crab, cockles, and herring eggs, as well as wild meat from moose, sea lion, mountain goat, and also roasted seaweed. The guests were well fed and sent home with food in a tradition of sharing and caring for the welfare of the guests.

The festivities for the guests went on for more than twelve hours, but for the community the preparations had begun much earlier and were firmly rooted in the rich cultural past brought back into the present. Dances had been practiced based on memories from elders and from documents. Specific dances were performed that evening for the first time in 100 years. The guests followed the invitations to join. Drumming, singing, and dancing were integral parts throughout the celebration. My family and I were delighted partakers.

This experience was a feast for my senses and bestowed a significance of connection to this special place, to a time more than 100 years ago or “time immemorial” as the Nisga’a say. It was a connection to a culture that evolved in this place over time, based on people’s relationships with their environment and with each other. This event, rooted firmly in the past and brought to life in the present, offered sustenance and direction for the future of all participants. Most of all, I felt that people were united in their enjoyment of the cultural and life affirming celebrations.



## References

Atkinson, J., and Ober, C. (1995). We Al-Li 'Fire and Water': A process of healing. In K. Hazlehurst (Ed), Popular justice and community regeneration. Praeger Publishers

Berg, R. (2005). Bridging the great divide: Environmental health and the environmental movement. Journal of Environmental Health, 67 (6), 39-52

Berkes, F. (1999). Sacred ecology. Philadelphia: Taylor & Francis

Blackstock, M. (2001). Water: a First Nations' spiritual and ecological perspective. B.C. Journal of Ecosystems and Management, 1(1), 1-14.

British Columbia. Provincial Health Officer. (2004). A report on the health of British Columbians: Provincial Health Officer's annual report 2003. Feature report: Air quality in British Columbia, a public health perspective. Victoria, BC: Ministry of Health Planning.

British Columbia. Provincial Health Officer. (2003). A report on the health of British Columbians: Provincial Health Officer's annual report 2002. Feature report: The Health and Well-being of People in British Columbia. Victoria, BC: Ministry of Health Planning.

British Columbia. Provincial Health Officer. (2002). A report on the health of British Columbians: Provincial Health Officer's annual report 2001. Feature report: The health and well-being of Aboriginal People in British Columbia. Victoria, BC: Ministry of Health Planning.

British Columbia Treaty Commission (1999). Annual report 1998. [http://www.bctreaty.net/files\\_3/annual\\_archive.html](http://www.bctreaty.net/files_3/annual_archive.html)

Brown, A. (1995). The meaning of respect: A First Nations perspective. Canadian Journal of Nursing Research, 27(4), 95-109.

Burda, C., Collier, R., and Evans, B. (1999). The Gitxsan model: an alternative to the destruction of forests, salmon and Gitxsan land. The Eco-Research Chair of Environmental Law and Policy, University of Victoria.

Campbell, M. (1998). Role of health professionals in protecting children from environmental risks: a commentary. Canadian Journal of Public Health, 89(1), 63-72.

Centre for Traditional Knowledge (1997). Guidelines for environmental assessment and traditional knowledge. Canadian International Development Agency

Chandler, M.J., and Lalonde, C. (1998). Cultural continuity as a hedge against suicide in Canada's First Nations. Transcultural Psychiatry, 35 (2), 191 – 219.

Cochran, P.L., and Geller, A.L. (2002). The melting ice cellar. American Journal of Public Health, 92 (9), 1404-1409.

Copet, W. (1992). An approach to community planning in Aboriginal settings. Canadian Journal of Native Studies, 12(1), 37-50.

Cook, A., Jardine, A., and Weinstein, P. (2004). Using human disease outbreaks as a guide to multilevel ecosystem interventions. Environmental Health Perspectives, 112(11), 1143-1146.

Dannenberg, A.L., Jackson, R.J., Frumkin, H., Schieber, R.A., Pratt, M., Kochtitzky, C., and Tilson, H.H. (2003). The impact of community-design and land-use choices on public health: a scientific research agenda. American Journal of Public Health, 93 (9), 1500-1508.

Dickason, O.P. (1992). Canada's First Nations. Toronto: McClelland & Stewart Inc.

Evans, M., McDonald, J., and Nyce, D. (1999). Acting across boundaries in Aboriginal curriculum development: Examples from Northern British Columbia. Canadian Journal of Native Education, 23 (2), 190-205

Forester, J. (1996). Planning in the face of power. Los Angeles: University of California Press

Frumkin, H., Frank, L., and Jackson, R. (2004). Urban sprawl and public health. Washington: Island Press

Fukuda-Parr, S., Lopes, C., and Malik, K. (2002). Institutional innovations for capacity development. In Fukuda-Parr, S., Lopes, C., and Malik, K. (Ed), Capacity for development. London: Earthscan Publications Ltd.

George, L. (1991). Native spirituality, past, present, and future. In Jensen, B. (Ed), In celebration of our survival: The First Nations of British Columbia. Vancouver: UBC Press

Government of Canada (2002). Climate change plan for Canada. <http://www.climatechange.gc.ca>

Guyette, S. (1996). Planning for balanced development. Santa Fe: Clear Light Publishers

Health Canada (2004). Canadian handbook on health impact assessment - volume 3: the multidisciplinary team. <http://www.hc-sc.gc.ca/hecs-secs/ehas/index.htm>

Health Canada (2001a). It takes a community. [http://www.hc-sc.gc.ca/fnih-spni/alt\\_formats/fnihb-dgspni/pdf/pubs/preg-gros/2001\\_takes-prend-commun\\_e.pdf](http://www.hc-sc.gc.ca/fnih-spni/alt_formats/fnihb-dgspni/pdf/pubs/preg-gros/2001_takes-prend-commun_e.pdf)

Health Canada (2001b). The population health template: key elements for actions that define a population health approach (Draft). [http://www.phac-aspc.gc.ca/ph-sp/phdd/pdf/discussion\\_paper.pdf](http://www.phac-aspc.gc.ca/ph-sp/phdd/pdf/discussion_paper.pdf)

Health Canada (2000). Health Canada's sustainable development strategy 2000: Sustaining our health. <http://www.hc-sc.gc.ca/>

Health Canada (1996). Your environmental health program. Ottawa: Minister of Supply and Services

Health Council of Canada (2005). Health care renewal in Canada: accelerating change. <http://www.healthcouncilcanada.ca>

Herbert, C.P. (1996). Community-based research as a tool for empowerment: The Haida Gwaii diabetes project example. Canadian Journal of Public Health, 87 (2), 109-112

Indian and Northern Affairs Canada (INAC) (2003). Sustainable development strategy 2004 – 2006: On the right path together. <http://www.ainc-inac.gc.ca>

International Institute for Sustainable Development (IISD) (2001). Integrating Aboriginal values into land-use and resource management. Final report January 2000 to June 2001. [http://www.iisd.ca/pdf/skownan\\_final\\_nopics.pdf](http://www.iisd.ca/pdf/skownan_final_nopics.pdf)

Kowalsky, L.O., Thurston, W.E., Verhoef, M.J., and Rutherford, G.E. (1996). Guidelines for entry into an Aboriginal community. The Canadian Journal of Native Studies, 16 (2), 267-282

Krieger, J., and Higgins, D.L. (2002). Housing and health: time again for public health action. American Journal of Public Health, 92 (5), 758-768.

Lertzman, D.A. (1999). Planning between cultural paradigms: Traditional knowledge and the transition to ecological sustainability (Doctoral dissertation, University of British Columbia). Dissertation Abstracts International. DAI-A 60/07, p.2705, Jan 2000

Mohawk Council of Akwesasne (1994). First Nations – environmental knowledge and approaches to natural resources. University of Ottawa, Institute of Research on Environment and Economy

Mussell, W.J., and Stevenson, J. (1999). Health authorities handbook on Aboriginal health. Aboriginal Health Association of British Columbia

National Environmental Health Association (NEHA) (1996). Definition of environmental health. [http://neha.org/position\\_papers/def\\_env\\_health.html](http://neha.org/position_papers/def_env_health.html)

Nisga'a Tribal Council (1992a). Nisga'a People of the Mighty River. New Aiyansh, BC: Nisga'a Tribal Council

Nisga'a Tribal Council (1992b). Nisga'a Government. New Aiyansh, BC: Nisga'a Tribal Council

Philp, R.B. (2001). Ecosystems and Human Health. Lewis Publishers

Public Works and Government Services Canada (2005). Sharing the story – comprehensive community planning – experiences in First Nations, Inuit and northern communities. [http://www.pwgsc.gc.ca/rps/inac/content/docs\\_governance\\_comm\\_part1-e.html](http://www.pwgsc.gc.ca/rps/inac/content/docs_governance_comm_part1-e.html)

Public Works and Government Services Canada (2003). Tricouncil policy statement; ethical conduct for research involving humans. Medical Research Council of Canada, Natural Sciences and Engineering Research Council of Canada, Social Sciences and Humanities Research Council of Canada.  
[http://www.pre.ethics.gc.ca/english/pdf/TCPS%20June2003\\_E.pdf](http://www.pre.ethics.gc.ca/english/pdf/TCPS%20June2003_E.pdf)

Rapport, D. (1998a). Defining ecosystem health. In Rapport, D., et al. (eds) Ecosystem Health. Blackwell Science, Oxford, U.K.

Rapport, D. (1998b). Ecosystem health as an ecotone. Ecosystem Health, 4 1-2

Romanow, R. (2002). Building on values: The future of health care in Canada. Commission on the future of health care in Canada. <http://www.hc-sc.gc.ca/english/care/romanow/hcc0023.html>

Royal Commission on Aboriginal Peoples (1996). Royal Commission Report on Aboriginal Peoples. <http://www.ainc-inac.gc.ca/ch/rcap>

Samet, J.M., and Spengler, J.D. (2003). Indoor environments and health: Moving into the 21<sup>st</sup> century. American Journal of Public Health, 93 (9), 1489-1493

Schacter, M., (2000). “Capacity building”: A new way of doing business for development assistance organizations. Institute of Governance, policy brief no.6  
<http://www.iog.ca>

Severtson, D.J., Baumann, L.C., and Will, J.A. (2002). A participatory assessment of environmental health concerns in an Ojibwe community. Public Health Nursing, 19 (1), 47-58

Silva, H.P., and Rosile, P.A. (1999). Community environmental health assessment. Environmental Health, October 1999, 9-15.

Srinivasan, S., O'Fallon, L.R., and Dearry, A. (2003). Creating healthy communities, healthy homes, healthy people: initiating a research agenda on the built environment and public health. American Journal of Public Health, 93(9), 1446-1450.

Steiner, F. (1994). The living landscape: An ecological approach to landscape planning. In Aberly, D. (Ed), Futures by design. Gabriola Island: New Society Publishers

St. Denis, V. (1992). Community-based participatory research: Aspects of the concept relevant for practice. Native Studies Review, 8 (2), 51-74

Stephenson, P.H., Elliott, S.J., Foster, L.T., and Harris, J. (1995). A persistent spirit: Towards understanding Aboriginal health in British Columbia. Canadian Western Geographical Series, 31. University of Victoria, Department of Geography

Tennant, P. (1996). Aboriginal Peoples and Aboriginal title in British Columbia politics. In Carthy, R.K. (Ed), Politics, policy, and government in British Columbia. Vancouver: UBC Press

Tennant, P. (1991). Aboriginal Peoples and politics. Vancouver: UBC Press

Tuhiwai Smith, L. (1999). Decolonizing methodologies. University of Otago Press: Zed Books Ltd.

U.S. EPA (2002). A brief guide to mold, moisture, and your home. United States Environmental Protection Agency, Cincinnati.  
<http://www.epa.gov/iaq/molds/moldguide.html>

Van Loon, R., and Whittington, M. (1996). Canadian government and politics. Toronto: McGraw-Hill Ryerson Ltd.

Wagmatcook First Nation (2000). First Nations community planning model. Wagmatcook First Nation and Dalhousie University: Cities & Environment Unit

Waldram, J. B., Herring, D.A., and Young, T.K. (1995). Aboriginal health in Canada. Toronto: University of Toronto Press

Warry, W. (1998). Unfinished dreams: community healing and the reality of Aboriginal self-government. University of Toronto Press Inc.

Whiting, K.J. (2002). Indigenous-industry partnerships and capacity building for Aboriginal economic development: the case of forest industry joint ventures in north central British Columbia. (Master's thesis, University of Northern British Columbia). Dissertation Abstracts International. Publication number AAT MQ80707

Wilson, W.H. (1996). The city beautiful movement. In Campbell, S., and S. Fainstein (Ed). Readings in planning theory. Blackwell Publishers Inc.

World Commission on Environment and Development (1987). Our common future. New York: Oxford Press

World Health Organization (2003). Indigenous Peoples and participatory health research. <http://www.who.int>

World Health Organization (2000). Protection of the human environment. <http://www.who.int/peh/index2.htm>