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# Nuclear fuel waste and aboriginal concerns : Canada's nuclear fuel waste management concept public hearings--a content analysis

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# Nuclear Fuel Waste and Aboriginal Concerns

# Canada's Nuclear Fuel Waste Management Concept Public Hearings: A Content Analysis

by

Ann Marie Farrugia-Uhalde
BES, York University, 1995

A thesis

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## ABSTRACT

Nuclear Fuel Waste and Aboriginal Concerns, Canada's Nuclear Fuel Waste Management Concept Public Hearings: A Content Analysis

Masters of Applied Science and Resource Management, 2003
Ann Marie Farrugia-Uhalde
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This thesis examined Aboriginal views on nuclear fuel waste management in Canada and assessed the concerns and issues Aboriginal people are likely to voice at future interactions and deliberations in the next siting phase. A content analysis method was used to examine the entire public record produced during the 1996/1997 Federal Environmental Assessment Review Panel hearings held on the Environmental Impact Statement for the concept of geological disposal of nuclear fuel waste. The content analysis indicated that Aboriginal peoples have continued to express opposition to the geologic disposal concept with intensity and consistency as demonstrated by measures of issue frequency and number of lines expended on each issue in the testimony. Further, the study indicated that native views remained consistent when compared with earlier scoping hearings in 1991, and that their positions were substantively and culturally different than non-native responses to the concept. In addition, two case studies were examined where natives in North America have been confronted with, and expressed views on, nuclear fuel waste storage or disposal, in order to further demonstrate the consistency of native views. The study found that Aboriginal responses have likely influenced the consideration of alternative disposal concepts in the long-standing Canadian nuclear waste management process.

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I would also like to extend my appreciation towards Richard Uhalde, Alice Farrugia, Alfred Farrugia, Margaret Farrugia and Jean Farrugia, for their help, support and encouragement while I completed my graduate degree and research.

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# CHAPTER ONE: INTRODUCTION

## 1.1 Purpose of Study- Aboriginal Views on the Siting Of Nuclear Fuel Waste

There is considerable uncertainty about how the federal government will deal with future proceedings in the management of nuclear fuel waste in Canada. This thesis attempts to answer one question within the entire nuclear waste disposal dilemma. Which issues can we expect Aboriginal people to raise at the negotiating and decision-making tables during the next siting phase? It is the intention of this thesis to identify and predict the concerns of Aboriginal communities that will be raised during future interaction and deliberations.

Using a content analysis approach, this study examines the entire record of public submissions and transcripts that were made during the Federal Environmental Assessment Review Panel (FEARP) scoping hearings and the public review of the Atomic Energy Council Limited's (AECL) environmental impact statement on the concept of geological disposal. Attention has been paid to native messages versus non-native messages that were raised during these hearings in order to obtain both a quantitative and qualitative understanding of what native peoples' perceptions and concerns are on the siting of nuclear fuel waste and whether there is a distinct difference to non-native perceptions. A method that involves a content analysis approach, coupled with a qualitative examination of the data, is employed in order to obtain a set of results that can be viewed with a certain degree of validity. Merely using a qualitative approach which has been done in the past, although useful, unfortunately does not always hold the same weight on its own as rational, quantitative results usually do.

The Federal Environmental Assessment Review Panel, also known as the Seaborn panel, clearly recommended that Aboriginal communities be involved in future management efforts, as they will undoubtedly be the population most affected by this project. The document conveying the Government's response to the Panel's final report affirmed this recommendation by committing the Government to initiating a dialogue with Aboriginal communities, where "the objective of the dialogue is to determine how Aboriginal People want to be consulted in the process leading up to the preferred approach for the long-term management of nuclear fuel waste" (Government of Canada, 1998). Given that Aboriginal communities will likely be most affected, due to the favourable geological siting characteristics found on traditional lands, it is logical to assume that their views on this matter will play a significant role in the decision. Therefore, issues and values that native people will raise must be addressed in any decision making process. The Nuclear Waste Management Organization (NWMO), an organization recently appointed by the federal government, formed and funded by the nuclear energy industries (Ontario Power Generation, New Brunswick Power, Atomic Energy of Canada Ltd. and Hydro-Quebec) is now responsible for "[proposing] to the government of Canada approaches for the management of nuclear fuel waste and [implementing] the approach that is selected" (Nuclear Fuel Waste Act, 2002: 2).

It is increasingly being recognized that there is distinct value in incorporating the views of aboriginal people in environmental management strategies, as many new pieces of federal legislation have made explicit reference to the role that this culture should play (Nuclear Fuel Waste Act, 2002; Species at Risk Act, 2002). The objective of this research is to provide evidence of the intensity and the continued values and concerns

that have remained constant within the nuclear waste management dilemma, as well as in other circumstances where Aboriginals have been faced with having to deal with the siting of a nuclear related facility. Recognition of these persistent values and concerns is important in the decisions we make about the environment, because in the words of Jeanette Wolfley, a member of the Shoeshone-Bannock tribe of Fort Hall Indian Reservation in Nevada:

> "Cultural values and diversity are as urgent as biological diversity and must be manifested in scientific methods of valuing lands, resources, ecosystems, and human rights, or cultural knowledge must be considered equally in evaluating and planning for future projects or activities impacting tribal rights and resources" (Wolfley, 1998: 153)

Although the goal of this thesis is to identify these important issues, it is not intended to provide a guideline to these issues that will replace future and direct consultation in future facility siting attempts. The success of facility siting is likely to depend on an open and transparent process involving equal participation by all who are affected.

## 1.2 Nuclear Fuel Waste Management in Canada – A Brief History

The siting of Nuclear Power facilities and nuclear waste disposal facilities has posed a significant problem for authorities due to the substantial opposition expressed by the public. The Canadian government has been struggling with this task for several years and has been very unsuccessful. Canada, unlike many other countries dealing with the same issue, has also had to contend with the views of Aboriginal people who, for the most part, are largely affected by the siting of nuclear fuel waste because of the geological suitability of native lands for disposal of the waste. If the intention of the Canadian government is to eventually site an accepted nuclear waste disposal management facility, it will have to anticipate and consider native views, and meeting their concerns will be central in reaching this goal.

For years, many Canadian communities, and others around the world, have benefited from energy that has been produced by nuclear power plants. After the Second World War, the peaceful application of nuclear technology for the generation of electricity was considered an attractive alternative that was a cheap, abundant and clean energy source (Nixon, 1993). It was believed at the time that the waste accumulated from nuclear power generation, which remains toxic for up to 10,000 years (Dormuth 1996), would over time be undoubtedly dealt with by an ingenious scientific and technological community. Up to this point, however, there has not been one example in the world where nuclear waste has been disposed of permanently in a safe location and with an appropriate method that is acceptable to the general public and the majority of the scientific community. Since its inception, public confidence in nuclear energy production has declined, as perceptions and attitudes have become quite negative in the

wake of such incidents as Chernobyl and Three Mile Island (Slovic et al., 1991). It is these attitudes that have fed the extreme opposition to nuclear waste disposal plans/proposals and have prevented that waste from being permanently dealt with.

Spent nuclear fuel that has accumulated thus far is currently being stored on-site at nuclear energy generating stations using two different methods. The first is storage in Olympic size pools, which are usually occupied by waste during its first six years out of the reactor core, in order for it to cool. From the pools it is moved to the second method of storage, concrete silos located on the reactor site. The silos are designed only to store the waste temporarily (Atomic Energy Control Board, 1994b). Also, more recently there have been several attempts in the United States to store waste in off-site Monitored Retrievable Storage (MRS) facilities, which are meant to house the waste for up to 50-100 years, until a permanent method is developed (Shrader-Frechette, 1996; Gowda Rajeev and Easterling, 2000; Indigenous Environmental Network, 2002).

For approximately 35 years, the Canadian Government and AECL have been struggling with the task of finding the most appropriate method for disposing of nuclear waste. Since the beginning of the nuclear age, scientists have been trying to devise a concept to best deal with this toxic waste, and solutions have ranged from burying it under Antarctic ice, injecting it into the seabed or launching into space. However, with each of these proposals, there has been a multitude of objections and barriers that have prevented any from becoming a possibility (Lenssen, 1992). The method deemed the most suitable for Canada was first suggested in 1972 by a committee that included Atomic Energy of Canada Limited (AECL), Ontario Hydro and Hydro-Quebec. This Committee advocated the idea of deep geological disposal in the earth's crust. In 1974 it

was decided, through consultation between the Department of Energy, Mines and Resources (now Natural Resources Canada) and AECL, that most of the research on nuclear fuel waste would be directed towards disposal in the plutonic rock of the Canadian Shield.[1] It was felt that plutonic rock characteristics were technically favourable as a disposal medium and offered a number of site opportunities because of the shield's vast geographical extent (Dormuth 1996). This preference was, again, supported by the province of Ontario's Royal Commission on Electric Power Planning (RCEPP, 1978), the House of Commons Standing Committee on Energy, Mines and Resources (SCEMR, 1988) and a study group chaired by F.K. Hare (Aikin et al., 1977 ; cited in: Atomic Energy of Canada Ltd., 1994a).

In 1978 the governments of Canada and Ontario established the Nuclear Fuel Waste and Management Program in order to ensure the safe disposal of nuclear fuel waste in Canada. AECL was given the responsibility of researching and developing a proposal for geological disposal in a deep underground repository of intrusive igneous rock. In 1981, both governments in a joint statement decided that, rather than selecting a disposal site, the first step in the siting process would be to gain public acceptance of the disposal *concept*. Due to broad public opposition that exists to nuclear power plants and waste disposal facilities, gaining public acceptance is critical to the success of nuclear fuel waste management. Therefore, the responsibility for selecting the disposal site, and subsequent operation, was not to be determined until after the concept approval was established.

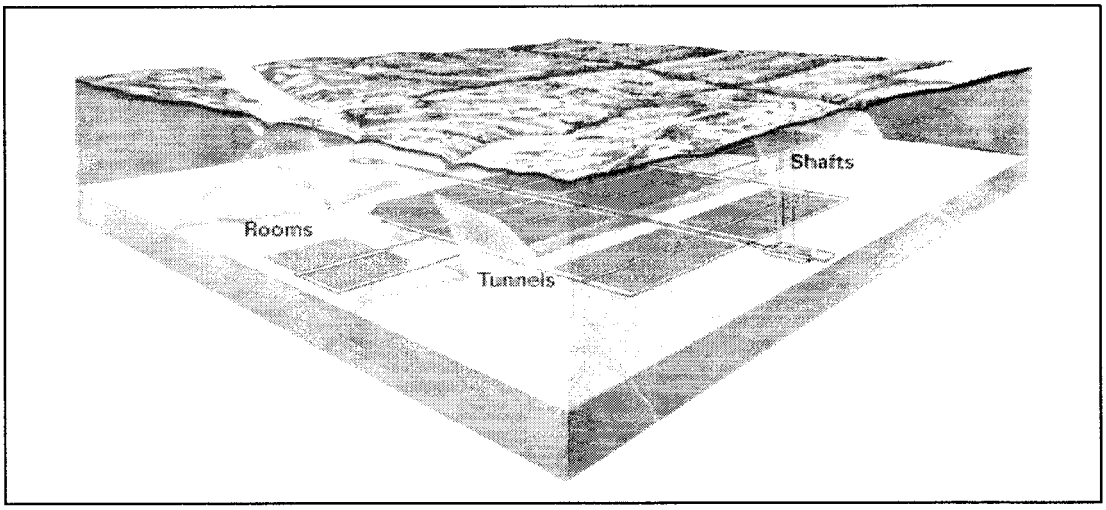
[1] "Plutonic rock is formed deep in the earth by crystallization of magma and/or by chemical alteration. It is often referred to as crystalline rock or intrusive igneous rock" (Atomic Energy of Canada Ltd., 1994a: 3).

As part of determining acceptability, the disposal concept was required to undergo an Environmental Impact Statement (EIS) and public review.[2] In late 1989, the federal Minister of Environment appointed the Federal Environmental Assessment Review Panel (FEARP), also known as, the "Seaborn Panel", after Chairman Blair Seaborn. Its first task was to develop a set of guidelines for the disposal concept to direct AECL in its production of the EIS. With the intention of establishing a concise and comprehensive set of guidelines, the Seaborn Panel conducted 'open houses' and 'scoping' meetings to gain an understanding of the concerns about nuclear waste disposal held by the Canadian public. After reviewing much of what they heard at these sessions, a draft set of guidelines for an environmental assessment of the concept were issued to the public in 1991, with an opportunity for the public to comment. These comments were also taken into consideration in the final set of guidelines that were issued to AECL in 1992 (Environmental Assessment Review Panel, 1991; Atomic Energy of Canada Ltd., 1994a).

In 1994, two years after receiving the guidelines, AECL produced its EIS on the proposed geological disposal concept. Its proposal involved the emplacement of nuclear fuel waste in plutonic rock in vaults deep in the Canadian Shield 500-1000 meters below the surface. The concept suggested that the spent fuel bundles be placed in sealed corrosion-resistant containers, which were designed to last at least 500 years depending on the material used. These containers were to be placed in rooms that extend laterally from a main disposal vault, in boreholes, drilled in the floors of these rooms. A buffer of sand and clay would surround each container of waste. Once filled, the rooms and the entire vault would be backfilled with a clay and granite mixture and sealed.

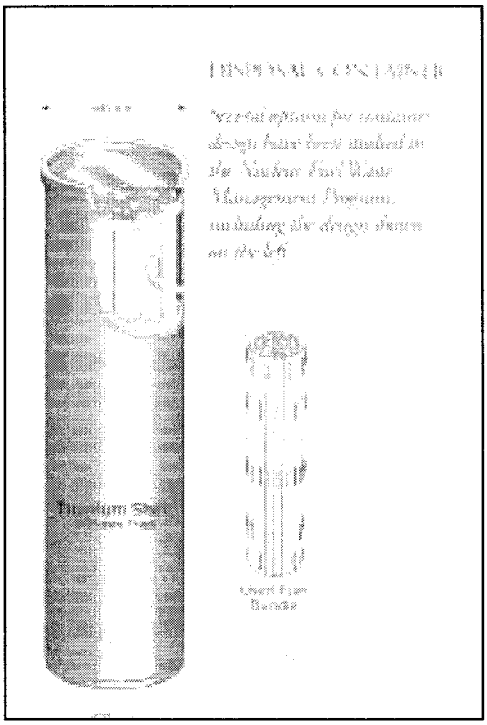
[2] The FEARO Process was established in 1984 and remained the federal regulation for EA until 1995 with the passage of CEAA. The Act was passed in 1992 but did not come into effect until 1995.

**Figure 1: Artist's Rendering of a Disposal Vault**




(source: Atomic Energy of Canada Ltd., 1994a)

**Figure 2: Disposal Container**



(source: http://www.nuclearfaq.ca/wste_con.jpg, September 8, 2003)

In the AECL concept, the combination of several man-made and natural barriers is intended to provide long-term protection for humans and the environment

(Environmental Assessment Review Panel, 1994). It is assumed that once the vault has been sealed it would be perpetually safe, even if people were not able to monitor the site any longer. It was important to the proponents that the disposal site be able to exist safely without constant supervision once it was closed, so that future generations would not have to be burdened with looking after waste that was not their own.

In order to facilitate our understanding of the proposed concept, the EIS was divided into two hypothetical case studies: a pre-closure system, which examines the period before the facility is closed, and a post-closure system examining the period after the facility is closed. The EIS also outlined the steps that would be taken during the site selection process, the most significant of which was to propose a voluntary siting approach. Seeking a voluntary site would mean that only willing, interested communities would be considered as hosts for the waste. In terms of time, it was estimated that the entire process was expected to last approximately 57 years, 20 for the siting process, 5 for construction, 20 for operation, 10 for decommissioning and 2 for its final closure (Dormuth 1996).

Upon the release of the EIS, the Panel was instructed to conduct a public review of the AECL concept, and consequently conducted extensive public hearings across Canada from March 1996 to March 1997, visiting the provinces of Ontario, Manitoba, Saskatchewan, New Brunswick and Quebec.[3] The Panel also accepted written submissions commenting on the concept and after considering all the input, issued its final report in February 1998 (Federal Environmental Assessment Panel, February, 1998). In its final conclusions, the Panel did not recommend that the concept move to the

[3] These five provinces each are associated with the nuclear industry, Ontario with twenty reactors, New Brunswick and Quebec with one reactor each, Saskatchewan for its mining of uranium fuel and Manitoba with AECL's Whiteshell research laboratories.

siting stage since, "the AECL concept for deep geological disposal has not been demonstrated to have broad public support. The concept in its current form does not have the required level of acceptability to be adopted as Canada's approach for managing nuclear fuel waste" (Federal Environmental Assessment Panel, February, 1998: 2) It was recommended that an independent agency be set up to further investigate the management of nuclear fuel waste, its safety and acceptability. The Panel also recommended, among other things, that a participation process be initiated to involve Aboriginal people since the likely site would be in a location that would affect them as a group specifically. In December 1998 the Federal Government produced its response to the report, which addressed several of the issues raised in the Panel report (Government of Canada, 1998). With respect to involving Aboriginal communities, the government agreed to commit itself to a dialogue with Aboriginal people in the decision making process leading up to the preferred disposal approach.

## 1.3 Nuclear Fuel Waste Management Today and the *Nuclear Fuel Waste Management Act*

After the completion, in 1998, of the Environmental Assessment, its review of the Concept for Disposal of Nuclear Fuel Waste and its concerns about social acceptability, something of a standstill seemed to occur in the management and siting of a permanent fuel waste disposal/storage facility. This is, however, a familiar pattern in the realm of facility siting over the last few decades, as many projects have been stalled or delayed because of public opposition and uncertainty. Several years after the completion of the

Environmental Assessment Review, the government introduced bill C-27, *The Nuclear Fuel Waste Act*, which was enacted on June 13, 2002.

This act deals with the long term management of nuclear fuel waste, taking into consideration not just geological disposal alone, but also above or below ground centralized storage, as well as above ground storage at reactor sites. The Act also introduced the creation of the "Nuclear Waste Management Organization" (NWMO), which was established towards the end of 2002. Contrary to the panel recommendations that suggested an independent regulating body, this organization, formed and funded by the nuclear energy industries (Ontario Power Generation, New Brunswick Power, Atomic Energy of Canada Ltd. and Hydro-Quebec), is now responsible for "[proposing] to the government of Canada approaches for the management of nuclear fuel waste and [implementing] the approach that is selected" (Nuclear Fuel Waste Act, 2002). The government in addition to this organization, has established the Nuclear Fuel Waste Bureau (NFWB), formed within the federal Department of Natural Resources to assume the oversight responsibilities of NWMO, the Government of Canada, and the Minister of Natural Resources under the 2002 Act respecting the long-term management of nuclear fuel waste.

It is unclear at this point whether a voluntary approach, which was proposed initially by AECL and reviewed in its EIS, will still be implemented. The Act does not mention this siting method and it also does not specify what role aboriginal peoples will have in the decision process, besides being involved in consultation. Their involvement has been limited to a summary of their comments on each of the proposed options, that will be included with the studies upon their presentation to the Minister. Thus far, the

NFWB has contacted five native groups requesting them to propose how they would like to be consulted, however, there has been no native response yet, on this matter (Nuclear Fuel Waste Bureau, 2002). Elizabeth Dowdeswell, President of NWMO, nevertheless in her remarks to the Canadian Nuclear Association on March 19, 2003 stated: "We are committed to developing a meaningful consultation program with aboriginal people. Our discussions in this regard are at an early stage" (Dowdeswell, 2003: 1). Therefore, at this time, little progress has been made in considering native views and the role they will play in the proposed nuclear waste disposal strategy.

## CHAPTER TWO: NUCLEAR FUEL WASTE DISPOSAL IN CANADA AND NATIVE VIEWS

This thesis attempts to conduct a systematic and quantitative representative record of Canadian Aboriginal responses to nuclear fuel waste management and disposal. It attempts to provide a clear illustration of the strength and consistency of their views and nature of their responses. However, prior to commencing the discussion of the data and results surrounding this study, a review of the literature and history on this subject is essential.

### 2.1 Background & Literature Review

Native peoples around the world have been subjected to frequent and often stressful development projects that have damaged their homes and disrupted their way of life. In Canada, native peoples have been negatively affected by both private and public development projects, ranging from mining, forestry, hydro development, and refinery projects, to military installations and toxic waste sites. Each of these in many ways has altered the lives of native people and has caused heartache and pain. They have had to cope with the social changes that these industries bring with them, which has been very difficult considering that the culture of native peoples has traditionally rested on their isolation and seclusion from the modern world (Page, 1986). Their difficulties have been recorded within the alcoholism, crime, welfare and suicide statistics (Page, 1986), as they have watched their hunting territories become developed, flooded, and clear cut. They have had to bear the burden of industries entering and exploiting their regions, and polluting their water, causing sickness and disease among their people, the likes of which

they have never had to deal with before. It is only recently, given the growing recognition of the environmental devastation and catastrophe and the recognition of the social impacts from development, that non-natives are now concerned with achieving development that is sustainable, which includes the sustainability of native cultures.

There has been a great deal of research investigating the specific question of what Indigenous peoples feel about the siting of nuclear fuel waste disposal. Aside from the panel and scoping hearings, when looking at the literature, what one finds is the lack of a clear understanding of the views that they hold. Native peoples have voiced concerns about development on traditional lands, but unfortunately, due to a lack of resources and their lack of experience and knowledge of the socio-political systems that are available to them, their voices have not been heard. On the topic of native perceptions of nuclear fuel waste disposal in Canada, what one finds in the literature are bits and pieces of information that are most often limited to low circulation newspapers and magazines, single-issue newsletters and small activist journals. Also, most of the research concerning Aboriginal views on nuclear waste disposal and management, is only available for cases within the United States. Furthermore, far less attention and recognition has been given in academic literature to the views of Aboriginals in Canada. This chapter will attempt to identify these few sources, and bring together other related literature, including that from U.S. context, in order to present a clearer picture of how this topic has been examined in the past.

## 2.2 Nuclear Waste Disposal and Native Perceptions in Canada

As has been previously stated, the availability of native views on nuclear fuel waste disposal and management in Canada is very limited. One of the few attempts to bring forth these views was the effort of the Federal Environmental Assessment Panel for the Disposal and Management of Nuclear Fuel Waste. The public hearings that were conducted provide the most extensive record of Aboriginal positions on high-level nuclear waste disposal. In its final report, the panel outlined and summarized they key issues concerning the involvement and perspectives of Aboriginal people on the management of nuclear fuel waste (Federal Environmental Assessment Panel, February 1998). The Panel's unique experience of listening to every one of the participants in the public hearing process and their reading of the entire collection of written submissions, has made them the most informed group of people about what natives feel are the significant issues about nuclear fuel waste disposal, and how it is expected to impact their lives. Although the summary gives a general understanding of these concerns, it does not convey the level of importance of each issue in a systematic manner. This is mainly because the summary is inspired by the panel's interpretation of what was important, rather then being a clear and objective measure of each of the issues raised by native peoples.

In addition to this contribution, Lois Wilson, a member of the Seaborn Panel, has also produced a book in which she recounts her personal experiences and observations while serving on the panel. She emphasizes the issues that are most relevant to her and gives her impression of the government's response to its overall report (Wilson, 2000). She gives her opinion of what the role of native peoples should be in the management of

nuclear fuel waste and reflects on the views that native participants expressed during the hearings.

A second source was is a report written for Ontario Power Generation by Peters and Fern-Duffy (Peters and Fearn-Duffy, 2001). This document examines the written submissions and oral transcripts of the FEARP public review process in AECL's nuclear fuel waste management and disposal concept, summarizing all the issues that were raised by native participants. Peters and Fern-Duffy provide an overview of each of the issues raised, organizing them into three different areas of concern: native views on the nuclear industry, perspectives on long-term management of used nuclear fuel waste, and Aboriginal participation in planning and decision-making. Each category and its related issues was discussed in an attempt to give a general idea of its importance. This document provides a non-quantitative general summary of the issues but fails to produce a clear analytical presentation of the issues, which is what this thesis sets out to do.

Very few studies have dealt with the examination of Aboriginal views about the siting of nuclear fuel waste in a systematic manner. Hine, Summer et al. (1997) is the most recognized academic study that has examined this issue in the Canadian context, using a statistical approach. The primary objective of the study, however, was to explore the cultural differences between Aboriginals and non-aboriginals, in terms of their support for a proposed nuclear repository sited next to their respective communities (Hine et al., 1997). Hine et al. hypothesized that Aboriginal support would be lower than that of non-aboriginals because of specific cultural differences. The data were gathered by administering a survey designed to generate responses to targeted issues. The subjects included in the research were three non-native Northern Ontario communities and one

native community, the Waterhen First Nation, located in Northern Saskatchewan. What is interesting about the native community chosen for the study is that Waterhen which is a member of the Meadow Lake Tribal Council (MLTC). MLTC, at the time this study was conducted, had expressed an interest in offering its reservation as a nuclear fuel waste disposal site. The tribal leaders had spent time investigating the idea with the Mescalero Apache Tribe in New Mexico, who were also in the middle of negotiation with a group of utility companies to host a Monitored Retrievable Storage site on their reservation (Sillars, 1994; Parker, 1995). One might question whether the community of Waterhen First Nation was indeed representative of the native communities across Canada. No other native community in Canada had ever shown interest in hosting nuclear waste except for MLTC. This may lead one to view the results of this study with skepticism as to how accurately they convey results that reflect the majority of the native peoples and their views across Canada.

Apart from these documents, any other literature pertaining to the topic of Aboriginal perspectives on nuclear fuel waste disposal in Canada is recorded in a fragmented manner and dispersed within grassroots newspapers and journals (Sedden, 1997; Avery, 1997a; Avery, 1997b; Avery, 1998; Phelan, 1998; McIlroy and Anderson, 1999). The majority of the articles refer to the scheduled community visits made by the Federal Environmental Assessment Review Panel. The reports are often a source of voices and reflections of native opinion that were recorded by reporters outside the hearing sessions.

As an alternative, one could also compile a basic understanding of native perceptions on nuclear fuel waste disposal and management by examining literature that

has dealt with land use proposals on native land and how native peoples have been impacted by these projects. The James Bay Hydro development project in northern Quebec had a significant impact on the Cree peoples, and is one of the developments in Canada that generated an extensive literature and research. Authors including Berkes, Niezen, Richardson, Salisbury and McGregor have each, in their own way, touched on the issues of native peoples and how they have perceived the impacts of large scale land-use development projects, such as the hydro dams constructed by Hydro Quebec (Berkes, 1981; Salisbury, 1986; Berkes, 1988; Richardson, 1991; Richardson, 1993; McGregor, 1997a; Niezen, 1998). Although these sources effectively recount in detail how Aboriginals were impacted by the project, for the most part, they remain only a second-hand source of Aboriginal concerns. The views discussed are interpreted from conversations during interviews, during community visits or from what tribal leaders or spokespersons have said in the media or during the course of legal action. On occasion, testimony is included in the text offering a more accurate sense of their concerns.

A study by Robert F. Keith of Aboriginal communities and mining in northern Canada also offers significant insight into the topic of Aboriginal perspectives on the siting and management of nuclear fuel waste (Keith, 1996). Keith's study was based on discussions with native communities across the North for several days in September and November of 1995. The breadth and depth of the issues vary and, in some cases, focus narrowly on problems that arise from mineral exploration and extraction. However, a large-scale land-use development such as a nuclear waste disposal facility, similar to the concept proposed by AECL, can easily resemble a mining development project, since both initiatives require the displacement of significant amounts of land and subsurface

excavation. Furthermore, Keith's discussion of "notification, consultation and consent", "regulations based on traditional knowledge and science", and "protecting societies" among other issues (Keith, 1996), provides insight on the topic this thesis is investigating. Keith concludes that "if mining is to contribute to sustainable futures in the North, one of the most important challenges will be building effective partnerships [between government, industry, natives, and environmentalists] that respect diverse cultural, social and economic traditions" (Keith, 1996: 8).

There have also several studies done in the United States and Australia that review the impacts of the mining industry on native communities, with reference to how native peoples perceive the industry. Although these references are removed from the Canadian standpoint, they still provide a window of understanding into Aboriginal concerns about proposed and current industries, such as a nuclear waste repository affecting their home lands (Anonymous, 1997; Begay, 2001; McShane and Danielson, 2001; Brugge and Goble, 2002; LaDuke, 2002). A study by Siestreem and Rowley is particularly helpful, including an interview with a young native woman who is the organizer for the Indigenous Environmental Network's Mining Campaign. The article introduces a new generation of native activists, who have become facilitators and advocates of discussion concerning the social impacts of development on native peoples (Siestreem and Rowley, 2001). The young woman interviewed in this article provide a clear understanding of what native people's concerns are in response to mining projects in the United States.

A further example in Canada, where native concerns related to land-use issues have been raised, is the low-level military flight training project in eastern Quebec and

Labrador. Unfortunately, this matter has not received as much exposure as the James Bay Project in the academic press, although there is evidence that the perceptions of natives parallel those that have been recorded on other development projects. The few sources that are available, with reference to native perceptions, can be found in Winona LaDuke's' All Our Relations, where she devotes some discussion to the experiences and views of the Innu people (LaDuke, 1999). Also, a useful source is the Innu Nation website, where one can find a whole series of links to news articles and news updates that depict the standpoint of the Innu Natives (Innu Nation, 2003).

The most recent set of studies that provide background on native views on nuclear waste disposal, can be found in the literature pertaining to the proposed dry-fuel waste storage of nuclear fuel at the Bruce Nuclear Power Development (BNPD) site. Again, this subject is largely absent in the literature, however, a study by Andrew Orkin and Gordon Edwards, on behalf of the Chippewas of Newash First Nation, surveys Aboriginal perspectives on the project (Orkin and Edwards, 1998). Orkin gives a detailed commentary on the Environmental Impact Statement for the proposed dry-storage development, detailing the Chippewas First Nation's concerns and views about how it will affect their lives and the environment. Other sources are usually short press articles covering the story and include a few opinions from local Aboriginals (Avery, 1997a; Anonymous, 1998; Avery, 1998). One can also look to the Environmental Impact Assessment and its Addendum for more information in the sections pertaining to Aboriginal issues (Ontario Hydro, 1997; Ontario Hydro, 1998). Generally, the response of native people towards the expansion of dry storage at BNPD was not positive and tended to reflect skepticism towards Ontario Hydro's proposal.

## 2.3 Nuclear Waste Disposal and Native Perceptions in the United States And Beyond

The United States is also very familiar with the task of looking for an appropriate site and an acceptable process to dispose of the mounting nuclear fuel waste within its boarders. Similarly, there are many Aboriginal communities who will be affected by the decisions that come out of this siting process. Consequently, there is a considerable literature available that can contribute to this topic.

### *2.3.1 Risk Perception*

Risk perception of the disposal of nuclear fuel waste and management has been extensively studied in the United States since 1987. It was in 1987 that the *Nuclear Fuel Waste Amendments Act* was passed, which ended the voluntary siting process and designated Yucca Mountain as the disposal site for all commercial nuclear waste in the United States. Paul Slovic is one of the central academics studying this field, in the company of James Flynn, Mark Layman, C.K. Mertz, Michael E. Kraft, Kai Erikson, Roger Kasperson, Doug Easterling, Howard Kunreuther, Alvin Mushkatel, David Pijawka and W. Burnz. Their many works provide an in-depth understanding of how the public perceives the potential risk from a high-level nuclear waste repository (Kunreuther et al., 1990; Erikson, 1991; Slovic et al., 1991; Slovic et al., 1991; Kraft, 1991a; Kraft and Clary, 1991b; Pijawka and Mushkatel, 1992; Flynn and Slovic, 1993; Flynn et al., 1995). These studies have attempted to define and understand the immense dread and lack of trust that the public associates with nuclear power and waste management that does not exist to the same degree with other environmental and socioeconomic risks. Through public surveys and discussions, their studies provide an understanding of risk

perception related to nuclear fuel waste management. However, despite the significant impacts this industry has created for Aboriginals, the U.S. studies shed very little light on the cultural differences between Aboriginal and non-aboriginal perceptions that may exist because of a distinct Aboriginal culture.

### *2.3.2 Aboriginal views on Nuclear Waste*

One of the central voices for native views and perceptions on nuclear fuel waste disposal comes from Grace Thorpe, a member of the Sac and Fox Nation of Oklahoma, and a well-known activist and promoter of tribal nuclear-free land across the nation. She is the founder of the National Environmental Coalition of Native Americans (NECONA), an organization that networks with Indian and Non-Indian environmentalists to develop a grassroots counter-movement to the well-funded efforts of the nuclear industry. In addition, NECONA also aims to educate Indians and non-Indians about the health risks of radioactivity and the transportation of nuclear waste on America's rails and roads (NECONA, 1993). She has expressed her views about nuclear fuel waste disposal (Thorpe, 1995, 1996, 1997; Sheldone, 1996) and has actively spoken out about the relationship native peoples have with the earth and their feelings about the production of nuclear energy and the nuclear industry. Thorpe clearly articulates her rejection of nuclear waste on native lands and this is clearly expressed in all her works and through the goals she has set out in the mandate of her organization.

Native environmental groups have also contributed to the literature on the subject of native perspectives on nuclear fuel waste disposal and much of it is available on their websites. Organizations including the Indigenous Environmental Network, Turtle Island,

and the Shundahai Network, among others, have expressed their concerns about nuclear fuel waste disposal and have posted resolutions, statements and information on their websites, in hopes of educating other native and non-native peoples about nuclear fuel waste issues and influencing impacts on tribal lands (NECONA, 1993; Shundahai Network, 1996; Turtle Island Native Network, 1998; Indigenous Environmental Network, 2002; Native Americans and the Environment, 2002; Gundjehmi Aboriginal Corporation, 2003).

The Conference Proceedings of the World Uranium Hearing, held in Salzburg in September 1992, are a valuable source for perspectives from native individuals and groups on the subject of nuclear fuel waste (World Uranium Hearing, 1992). Individuals from 27 countries and 25 indigenous nations provided testimony on how the nuclear industry has impacted their lives. With its central topic, "Uranium mining and the storage of radioactive waste", this conference was inspired by "a handful of people [who] decided to give voice to the unheard people of the atomic age and did not allow themselves to be dissuaded from achieving their goal" (Claus, 1992: 9). These hearings provide important first hand accounts and views from Aboriginal people on the disposal and management of nuclear fuel waste. Manuel Pino, from the Acoma Nation in New Mexico, Thomas Banyacya, Sr., from the Hopi Nation in Arizona, and Myron Mataoa, a native from Tahiti, are some of the natives who traveled to Salzburg to represent their tribal affiliations and share their concerns with the rest of the world (Banyacya, 1992; Mataoa, 1992; Pino, 1992). Native speakers all shared a pessimistic view and understanding of the nuclear industry and often told stories about how nuclear mining, nuclear weapons testing and nuclear waste have negatively affected their lives.

### *2.3.3 MRS in the United States*

There is an extensive literature on the subject of monitored retrievable storage in the United States and the case of the Mescalero Apache tribe which had volunteered its reservation as a temporary storage site for nuclear waste in the early 1990s, in exchange for monetary compensation and improvements in their community infrastructure. Many authors have entered into a debate on this subject, examining the issues and views of native peoples that have surfaced, as the drama has unfolded. Terms such as "environmental racism", "environmental justice", "radioactive colonization", "inequality", "trust", and "risk perception" have been used in many of the works to interpret what was has happened (Erickson and Chapman, 1993; Leroy and Nadler, 1993; Hanson, 1995; Northard, 1996; Sachs, 1996; Shrader-Frechette, 1996; Louis, 1997; Gowda Rajeev and Easterling, 1998; Churchill, 1999; Gowda Rajeev and Easterling, 2000; Hanson, 2001; Hoffman, 2001).

Native individuals have also contributed to the literature by publishing their own views in the academic press, often complementing the works yet sometimes at odds with findings by non-native researchers (Eagleye Johnny, 1994; Chino, 1996; Thorpe, 1996; Jeffereys, 1997). Rufina Laws, a native activist who shares views with Grace Thorpe, is a Mescalero Apache tribal member, and grandmother who holds a masters degree in English, and is the founder of HANDS (Humans Against Nuclear Waste Dumps). Laws has been an opponent of the monitored retrievable storage (MRS) proposal her tribal government has expressed interest in and she has given countless interviews and has been invited to many events to speak out against the storage proposal (Parker, 1995; Jeffereys,

1997). In an interview with Jenny Jeffereys, she spoke of the disagreement that exists between tribal leaders who advocate the MRS storage site and tribal elders and members who are opposed, which she says, is "something most people talk about among themselves but do not feel empowered to speak out about" (Jeffereys, 1997: 2)

## 2.4 Native Perceptions of Environmental Decision-Making And Traditional Ecological Knowledge

Over the last few decades, with the mounting recognition of environmental degradation and ecological issues that have occurred as a result of failed environmental management strategies, scientists, and academics have become increasingly interested in traditional ecological knowledge from Aboriginals in contrast to knowledge derived from scientific and technical assessments. Indigenous groups have proven themselves to be ecologically sensitive cultures, with a history of living and interacting with their environments in a sustainable manner. Environmental planners and decision-makers are now realizing that the ecological knowledge Aboriginal people hold can help make appropriate and lower impact decisions, when it comes to managing the environment (Snively and Corsiglia, 1997; Paci et al., 2002). There are a few key authors that have contributed to an examination of traditional ecological knowledge (TEK) (Abele, 1997; Snively and Corsiglia, 1997; Berkes, 1999; Berkes et al., 2000; Huntington, 2000; Loomis, 2000; Snively and Corsiglia, 2000; Usher, 2000; Paci et al., 2002). Their discussions are important and relevant to the discussion of native perspectives on the disposal and management of nuclear fuel waste. As set out by the *Nuclear Fuel Waste Act*, Aboriginal peoples will inevitably play an important role in how we proceed with the

management of nuclear waste and TEK will be a contributing factor for native peoples (Nuclear Fuel Waste Act, 2002).

There is no universal definition of what TEK is, although it has been written about extensively (Richardson, 1991; Sadler and Boothroyd, 1994; Sherry and Vuntut Gwitchin First Nation, 1999; Battiste, 2000; Paci et al., 2002). As a result, many definitions been offered; however, they all rest on several fundamental characteristics. These can be best described by the views of the Vuntut Gwitchin First Nations Representatives as depicted in The Land Still Speaks (Sherry and Vuntut Gwitchin First Nation, 1999). Here TEK, also referred to as indigenous, local or traditional knowledge, is understood as an adaptive and dynamic knowledge system that has been built in close contact with the natural world. It is knowledge passed on by different individuals in the community, depending on their status through both an oral tradition and direct experience. It can include a system of classification, a set of observations about the local environment, the rules and beliefs governing stewardship of the earth and as system of self-management governing resource use (Sherry and Vuntut Gwitchin First Nation, 1999: 36).

### *2.4.1 TEK and Risk Perception*

Jeanette Wolfley, a member of the Shoeshone-Bannock Tribe of Fort Hall Indian Reservation, Nevada, has examined the issue of Traditional Ecological Knowledge, its application in risk assessment and management, and its application in the protection of tribal homelands (Wolfley, 1998). Although, Wolfley does not provide evidence that her views reflect the majority of native peoples, she does often give the impression that she is

speaking on behalf of them. Her views on sovereignty, Aboriginal treaties, laws, and ethical beliefs are those she has learned from her culture, and are shared by those she represents. Wolfley concludes that traditional ecological knowledge should be institutionalized into risk assessment/management policy and regulation. Such consultation, should serve as "a focal point of future dealings between tribal communities and federal government" (Wolfley, 1998: 165).

### *2.4.2 TEK and Facility Siting*

Our society is repeatedly faced with the problem of locating new risk-generating facilities within our environment. Often they are not welcome due to their nature, as well as the negative impacts that are associated with them. Among the most difficult to site are municipal landfills, nuclear power plants, hazardous waste treatment plants, and as we have seen thus far, nuclear fuel waste disposal facilities (Gerrard, 1994; Rabe, 1994). It is a common phenomenon for communities to strongly reject these types of facilities because of the perceived risks that are attached to them (Slovic, 1987; Shrader-Frechette, 1990). A rational and quantitative analysis, based on calculated risk and scientific reasoning, that has predominantly been relied on in the decision making process for facility siting, has proven to be inadequate in convincing affected communities that the risks are acceptable. This forces facility siting proponents to question which aspects are missing from the process that would allow success in resolving the facility siting dilemma.

It has been argued that one element that has been historically neglected and, far too often, not realized for its value is TEK. There is a limited literature that deals

specifically with the issue of TEK and its significance in resolving facility siting conflicts, let alone the management and siting of a nuclear waste repository; however, the role TEK plays may change, considering that the views of Aboriginal people are now becoming increasingly more instrumental in siting decisions. It has been argued that indigenous cultures maintain an intimate knowledge of the land, allowing them to extract resources and utilize the earth in a way that has protected nature from any adverse impacts (Snively and Corsiglia, 1997). Frequently, the understandings of the environment that indigenous cultures hold have been devalued because of their lack of scientific and rational validity. It is this subjective knowledge, however, that is increasingly being recognized for its importance.

Indigenous communities, for countless generations, have demonstrated their environmental decision-making capabilities that have not created significant impacts (Berkes et al., 2000). Many have defined these groups as holders of valuable knowledge concerning methods of managing natural resources and have argued that western cultures should look to them for solutions to the global environmental crisis (Berry, 1988 and; Mander, 1991 cited in; Johnson, 1992; Knudtson and Suzuki, 1992; Churchill, 1994; Deloria, 1995; LaDuke, 1995 cited in; McGregor, 1997a). The Canadian Government has suggested, in its response to the FEARP Final Report on Nuclear Fuel Waste Management and Disposal Concept, that Aboriginal peoples would be consulted before any future decisions are made (Government of Canada, 1998). Therefore, one can assume that the appearance of TEK in environmental decision making for nuclear waste will play a significant role in the upcoming siting process.

## 2.5 Aboriginal Values

Aboriginal values concerning land-use and environmental management have been discussed broadly in the academic literature (Bigart, 1972; Wiseman, 1991; Sadler and Boothroyd, 1994; Tano et al., 1996; Holst, 1997; Stevenson, 1998; Burger, 1999) Several studies have suggested indigenous cultures have been able to achieve a successful and sustainable relationship with the environment due to the culturally different way they view themselves in the web of life. Instead of seeing themselves as exclusive and separate entities from nature, which is the Western Scientific view, native cultures believe that there is no division (Sadler and Boothroyd, 1994). Their responses to nuclear waste and other issues are governed by an environmental view that does not assume a relationship of dominion over nature, but rather, one that "is based on respect, equity and reciprocity." They see the importance of managing their own relationships with the natural world, instead of managing the world and its resources to accommodate there needs (Stevenson, 1998).

## CHAPTER THREE: METHOD

### 3.1 Description of Data

The objective of this thesis is to produce a systematic and comprehensive understanding of Aboriginal responses to nuclear fuel waste management in Canada. It aims to achieve this by conducting a content analysis of public testimony produced during the Canadian Environmental Assessment review of the concept for disposal of nuclear fuel waste produced by AECL. This testimony is considered to be the most extensive record of native views on the issue and can provide a broad understanding of the consistency of these values and opinions.

During an approximate one-year period, the Federal Environmental Assessment Review Panel conducted public hearings on the Concept for Disposal of Canada's Nuclear Fuel Waste proposed by AECL. From March 11, 1996 to March 27, 1997, the Panel visited 19 different cities and communities, traveled to the provinces of Ontario, Quebec, New Brunswick, Saskatchewan, Manitoba and Alberta and conducted 54 days of hearings. The hearings were divided into three Phases. Phase I focused on the broad societal issues related to long-term management of nuclear fuel waste. Phase II focused on the safety of the AECL concept of geological disposal, from a scientific and engineering point of view. The final phase involved community hearings, which gave the public an opportunity to voice their opinions on the safety and acceptability of the proposed concept (Federal Environmental Assessment Panel, February 1998).

The Aboriginal and non-Aboriginal content for analysis was compiled from several different sources that were produced during the hearing process. These sources included:

- the transcript for the workshop on the Nuclear Fuel Waste Management and Disposal Concept - Native Issues and Concerns Session - held by the Federal Environmental Assessment Review Panel during its scoping sessions on March 6, 1991;[4]
- all written submissions to the Panel made by, or on behalf of, Native individuals and Native organizations, and
- transcripts of all the oral presentations made during the public hearings.

The Workshop on the Nuclear Fuel Waste Management and Disposal Concept - Native Issues and Concerns is included in this investigation, as it contains the testimony of several key tribal members who spoke of their concerns on this matter and is therefore an important source of data. The written submissions made by native individuals and native organizations and the oral testimony given during the public hearings, which make up the bulk of these data, are both extensive records of the views of native peoples on nuclear waste management.

### *3.1.1 Participants in the Hearings*

In total, there were 13 oral presentations during the workshop on native issues and concerns, 548 oral presentations during the public hearings, and 41 written submissions by native participants to the Panel for their consideration. Participants in the hearings who gave oral and written submissions to the panel included:

- *Academics*: several invited or regular participants from universities provided an academic opinion.

[4] Scoping sessions were conducted by the Environmental Assessment Review Panel in a number of locations in five provinces prior to the development of the Environmental Impact Assessment Guidelines. This was done in order to get a sense of the public's questions and concerns that they felt should be addressed by AECL in their Environmental Impact Statement.

- *Government departments:* for example, Natural Resources Canada, Environment Canada, Health Canada, municipal governments, the Scientific Review Group;
- *Industry*: for example, Chem-Security (Alberta Ltd.), Decision Research and others;
- *Native Groups:* native individuals who spoke on behalf of a larger group of native people with similar interests and views such as trappers or school children;
- *Native Individuals:* native individuals expressed their personal views, such as tribal members or elders;
- *Native Organizations/Governments:* for example, Sagkeeng First Nation, Center of Indigenous Environmental Resources and others ;
- *Nuclear Industry:* AECL, AECB, Ontario Hydro, Hydro Québec and others;
- *Public Citizens:* individuals, groups and organizations who were non-native and were not affiliated with the industry and or the proponent and who do not represent professional organizations;
- *Environmental Groups:* for example, Energy Probe, Canadian Coalition for Nuclear Responsibility, Northwatch; and,
- *Nuclear Energy Organizations:* for example, Canadian Nuclear Association, and Power Workers Union;
- *Special Interest Groups:* Any organized group that did not represent an environmentalist group or the nuclear industry, for example, Science for Peace and Concerned Citizens about Free Trade.

Public citizens and native individuals or groups included consulting firms presenting on behalf of a group of participants, as well as individuals who have professional qualifications such as geologists, miners and social workers. Each participant was allowed 10 to 20 minutes for their presentation, depending on the phase in the hearing process, and an additional 10 minutes for a question-and-answer period to clarify any points made during the presentation.

## 3.2 Data Collection Method

The study determined the fundamental concerns and perceptions of Aboriginal peoples towards the disposal of nuclear fuel waste in Canada by analyzing the content of the public record. The public testimony and written submissions made during the public hearings provided a rich source of information on these perceptions and the analysis of the content produced a systematic and quantitative measure of these concerns. In terms of the public hearing testimony, issues were recorded which arose during oral presentations, as well as during the question and answer period and were recorded by their frequency and duration.

### *3.2.1 Frequency of Issues*

In order to measure the level of concern for each issue as it arose in the hearings and written submissions, its frequency was recorded for each occurrence within the testimony for each individual participant. The analysis equates the importance of an issue with the number of times it is brought up during the oral testimony and written submissions, paying attention to whether the participants are native or non-native. This study assumes that the number of times an issue is mentioned has a direct correlation with the importance it holds (Neuendorf, 2002).

### *3.2.2 Duration of Issue within the Testimony*

In addition to frequency of the issues, the number of lines devoted to each of the issues expressed was recorded. The study assumes that the length of time devoted to a certain issue is also an indication of how important it is to the presenter. The public testimony

transcripts were uniformly transcribed onto pages that had exactly 25 lines to a page; therefore, the number of lines spoken on a certain subject could be measured and compared between participants (see appendix A for sample page). Although this study considers duration to be a significant measure of importance, frequency is understood to be the leading determinant of the issues with the most magnitude.

### *3.2.3 Data Collection Entry Form*

Following an initial review of the public hearing transcripts, a data collection form was created to code for the content. There were seven sections to the form, one section with descriptive data including identifying information (name, date, language, organization), and six broad issue headings with sub-categories for each (see appendix B and C for sample forms). Two versions of the form were made, one for non-native submissions and another for native submissions, so that comparisons could be made during data analysis. Having two different sheets was also important so that one could identify whether non-native speakers were referring to native issues, and visa versa. For example, it is important to distinguish whether a non-native citizen was concerned about the use of Aboriginal traditional ecological knowledge, or protection of native land or native rights.

### *3.2.4 Sample*

During data collection, the testimony of any of the panel members and the proponent, which includes both members of AECL and Ontario Hydro, was excluded from the analysis. Because these groups acted as the organizers of the hearings or the

proponents of the EIS, their testimony was excluded so that the comparisons made between native and non-native participants would only include those who had volunteered to express their views.

In the data analysis, the comparison of issues between native participants and non-native participants only includes the issues recorded in the oral transcripts. The public hearing transcripts provides an extended record to make a comparison between native and non-native groups, without having to include the native workshop and native written submissions to the panel.

### *3.2.5 Qualitative Assessment of data*

During the data collection process, attention was paid to any testimony that made reference to the quality and tone of the presentation. For example, it was noted if the speaker was acknowledged for his or her passion and concern in what he had testified. These statements were recorded with the intention of including them in later discussion of the prevalent issues.

## 3.3 Content Analysis

A quantitative content analysis of the data was done rather than simply relying on a qualitative analysis, so that any biases the investigator may have had could be reduced from the examination (Neuendorf, 2002). In method, it is similar to Kraft's study in 1991, a content analysis of testimony from public hearings, sponsored by the Department of Energy, on high level radioactive waste disposal in order to provide "a more precise description of public concerns" (Kraft, 1991a; Kraft and Clary, 1993: 108). It also

follows on Pushchak and Heisey's content analysis of social issues and public involvement concerns raised in the FEARO panel scoping meetings (Pushchak and Heisey, 1992). This study aims to provide numerical counts of the Aboriginal concerns and perceptions on nuclear fuel waste, in order to show a definite and "a more precise description" of their views on this matter. The results are not meant to be a final summation of the Aboriginal concerns, excluding any others that arise beyond the bounds of this research. It is rather meant to provide a concrete understanding of what native issues will entail and to provide a starting point for future deliberations and consultation over the siting of nuclear fuel waste in Canada.

## CHAPTER FOUR: DATA ANALYSIS

The content analysis of the public testimony in the panel hearings has produced a quantitative measure of native views on nuclear fuel waste disposal. At the same time, the analysis has contrasted native views with the concerns of non-native participants illustrating the cultural differences and perceptions that exist between the two groups. Future siting attempts of nuclear fuel waste disposal facilities in Canada will inevitably affect native communities if the deep disposal concept is pursued, given the location of their tribal lands in relation to likely candidate sites situated in remote areas. Therefore, decision makers will have to communicate with native peoples about their concerns and enter into negotiations about a possible site. It is the intention of this study to present a prospective measure of what these issues will most likely be through an analysis of the public testimony.

### 4.1 General Information About the Data

Before reporting the results of the content analysis, an overview of the data source illustrating its geographic and cultural extent is important. In total, the entire data set comprised 601 individual segments of testimony ranging from roundtable discussions, formal oral presentations, question-and-answer periods, written submissions and scoping sessions.[5] Table 1 provides the distribution of the 601 submission segments by the type.

[5] The majority of the submissions were oral presentations which were often followed by a question-and-answer period. Roundtable discussions were conducted on 9 occasions and involved hearing attendants to form groups to discuss specified topics and then reporting back to the larger groups the results of their discussion.

**Table 1: Breakdown of Data**

| Submission Type | | Totals |
|---|---|---|
| Scoping Workshop | | 13 |
| Oral Submissions | | |
| • Oral Presentations | 101 | |
| • Oral Presentations with Question and Answer Period | 430 | |
| • Roundtable Discussion | 9 | |
| • Question & Answer Period | 7 | 547 |
| | 547 | |
| Written Native Submissions | | 41 |
| | **Total** | **601** |

**Table 2: Breakdown of Data Sources, Native, Non-Native**

| Submission Type | Native | Non-Native |
|---|---|---|
| Scoping Workshop | 11 | 2 |
| Oral Submissions | | |
| • Oral Presentations | 91 | 440 |
| • Roundtable Discussion | | 9 |
| • Question & Answer Periods | 3 | 4 |
| Written Native Submissions | 41 | |
| **Total** | **146** | **455** |

Table 2 demonstrates the distribution of the submissions among native and non-native participants in the hearing process. Native testimony is represented in 24.3 percent of the total submissions, while the remaining 75.7 percent is from non-native participants. Of the formal oral presentations, native peoples represented 17.1 percent of the total number of speakers who participated while non-native participants represented the greater majority at a total of 82.9 percent. In terms of submission length, non-native presentations were significantly longer than native participants averaging 241.2 lines while native submissions averaged 136.3 lines. The same trend also followed for the question-and-answer period which averaged 330.9 lines of text for non-native and 160.9 lines for native participants (See Table 3).

**Table 3: Maximum, Minimum and Average Length of Oral Presentations**

| | Oral Submission Length | | | Q&A Session Length | | |
|---|---|---|---|---|---|---|
| Native/Non-Native | Max | Min | Average | Max | Min | Average |
| Native | 470 | 3 | 136.27 | 530 | 10 | 160.87 |
| Non-Native | 671 | 18 | 241.16 | 2784 | 11 | 330.86 |

Each of the 601 submissions were coded according to a classification that described the affiliation of the speaker or group represented during the hearing process. This was done to estimate the number of individuals from native communities making presentations in comparison to other groups (Table 4). Native groups and native individuals together represent 24.4 percent of the participants in the analysis, while the nuclear industry and nuclear-related special interest groups totaled 14.3 percent. Native representation is seemingly high because, in addition to the oral presentations where both native and non-native participants took part, the written submissions included in this study were of native participants only. Also, the scoping session was a guided meeting[6] titled, Native Issues and Concerns which involved, for the most part, Aboriginal participants. The exclusion of all non-native written submissions and the entire collection of scoping sessions were done to concentrate primarily on native views of nuclear fuel waste. The oral submissions presented during the FEARO Environmental Impact Assessment review provide an extensive data set with which to make comparisons between native and non-native views.

[6] Guided meetings were conducted during the scoping sessions in order to initiate dialogue on a specific topic mandated by the panel. Participants were encouraged to focus their discussion on the subject the panel had chosen and wanted to learn more about.

**Table 4: Classification of Speakers during Hearing Process**

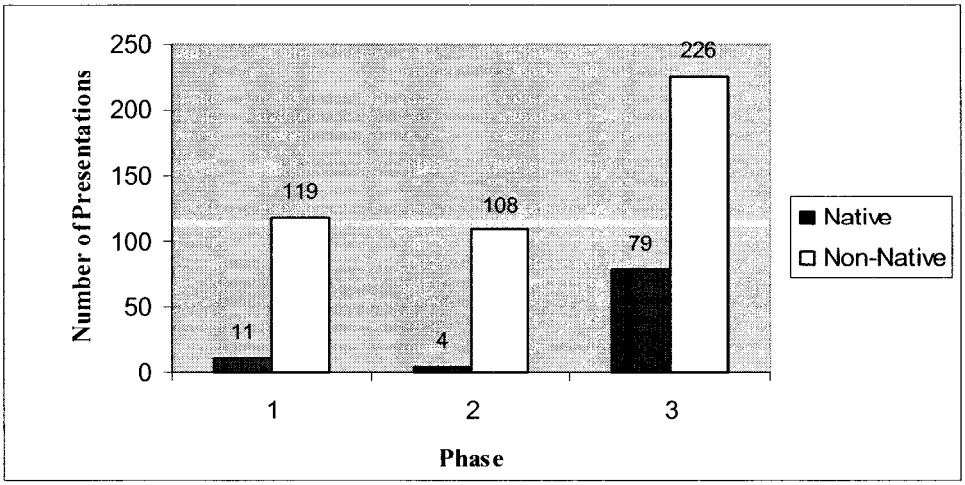
| Speaker Classification | N=601 | % (100) |
|---|---|---|
| *Native Organization* | *96* | *16.0* |
| *Native Individual* | *40* | *6.7* |
| *Native Group* | *10* | *1.7* |
| Public Citizens | 121 | 20.1 |
| Environmental Group | 112 | 18.6 |
| Special Interest Group* | 45 | 7.5 |
| Government Representative | 32 | 5.3 |
| Academic | 29 | 4.8 |
| Special Interest Nuclear Industry | 25 | 4.2 |
| Industry | 15 | 2.5 |
| Nuclear Industry | 61 | 10.1 |
| Q&A/Roundtable | 11 | 1.8 |
| Technical Advisory Committee (TAC) | 4 | 0.7 |

* This category includes all interest groups other than environmental groups or those representing industry or utilities.

## 4.2 General Comparisons

General comparisons were made between native and non-native participants in each phase of the hearing process. The first phase, consisting of general sessions with several guided topic sessions and the second phase concentrating on technical subject matter, attracted very little native participation as demonstrated in Figure 3.

**Figure 3: Native and Non-Native Oral Presentation Counts for Each Phase of the Public Hearing Process**



The phase three hearing sessions, however, involved community visits where testimony was heard in towns, cities and reserves across Canada on the Canadian Shield and near nuclear facilities (Federal Environmental Assessment Panel, February, 1998). This allowed the participation of individuals who may not have been able to travel to the hearing locations in the first two phases and explains why there was a significant increase in native participation.[7] Of the 16 communities visited, 3 were Aboriginal communities (Sagkeeng First Nation in Manitoba, Ginoogaming First Nation and Serpent River First Nation in Ontario) where a combination of 58 elders, native individuals and groups expressed their views. By contrast, only 21 native participants spoke off reserve during phase three hearings.

During data collection, submissions were coded according to the position taken by participants on acceptability of the concept for disposal of nuclear waste as presented by AECL in its environmental impact statement. Furthermore, submissions were coded, "Positive" or in favour of geological disposal, "Opposed", not in favour of geological disposal, "Neutral", neither in favour or not in favour, "Viable in concept but uncertain in technology" and "Uncertain". Submissions identified as having no position were coded as "Specific or Individual Concerns". In this case, participants expressed views and concerns that may not have dealt specifically with the disposal concept and also did not state a preference for geological disposal. Table 5 tabulates the totals for each position by native and non-native groups. For the most part Aboriginal participants were opposed to any type of nuclear waste disposal close to their homes, including geological disposal. Some native participants expressed uncertainty about the concept and nuclear waste

[7] The Berger Inquiry public hearings used the same level of access in order to ensure native involvement (Richardson, 1993).

disposal in general. There were no native participants in favour of the concept and only 2 who felt the concept was feasible but were uncertain about the technology. Non-natives on the other hand expressed more favourable views about the concept, with 104 participants expressing a positive view and a total of 31 participants who felt the concept was acceptable but were uncertain about the technology. The opposition to the concept among non-natives was also quite high with 142 participants expressing this view and 116 submissions which expressed total uncertainty.

**Table 5: Native and Non-Native Positions on Geological Disposal**

| Position on Geological Disposal | Native N = 144* (100) | % | Non-Native N = 443* (100) | % |
|---|---|---|---|---|
| Opposed | 97 | 67.4 | 142 | 32.1 |
| Positive | 0 | 0 | 104 | 23.5 |
| Neutral[a] | 0 | 0 | 17 | 3.8 |
| Viable concept but uncertain technology | 2 | 1.4 | 31 | 7.0 |
| Uncertain[b] | 29 | 20.1 | 116 | 26.2 |
| **No Position[c]** | | | | |
| Specific or Individual Concerns | 16 | 11.1 | 33 | 7.4 |

*Total Native and Non-Native equals 587 submissions, although there are a total of 601 submissions. The 14 remaining submissions were 9 roundtable discussions, 5 Q&A periods and general discussions which were not coded with a position because numerous positions were made by the general public in each case.

[a] Neutral includes all submissions which objectively examined the disposal methods without giving any specific preference

[b] Includes those submissions in which the participant felt the concept was viable but held many uncertainties in the technology

[c] Includes those submissions which only expressed concerns other than those specifically about the disposal concept

Table 6 demonstrates the distribution of positions by the group affiliation in order to show the sources for each position. For example, of the 104 non-native participants who were in favour of the concept, 55 were from the nuclear industry and 21 were from special interest groups related to the nuclear industry. Therefore, 73 percent of the positive positions came from participants who were in some way associated with the

nuclear industry. Opposition to the concept was mainly observed among native associations, public citizens and environmental groups, while uncertainty in geological disposal also predominantly originated in the same groups.

**Table 6: Distribution of Classification Positions on Geological Disposal**

| Classification | Position | | | | | No Position |
|---|---|---|---|---|---|---|
| | Opposed | Unsure | Positive | Viable but Uncertain | Neutral | Specific or Individual Concerns |
| Native | 97 | 29 | 0 | 2 | 0 | 16 |
| Academic | 6 | 12 | 3 | 3 | 1 | 4 |
| Government | 5 | 5 | 2 | 10 | 5 | 5 |
| Industry | 2 | 2 | 2 | 2 | 3 | 4 |
| Nuclear industry | 0 | 2 | 55 | 2 | 1 | 1 |
| Public citizens | 49 | 44 | 8 | 6 | 6 | 7 |
| Special interest groups | 20 | 9 | 11 | 1 | 0 | 4 |
| Environmental groups | 59 | 40 | 2 | 3 | 1 | 7 |
| Nuclear special interest groups | 1 | 2 | 21 | 0 | 0 | 1 |
| TAC | 0 | 0 | 0 | 4 | 0 | 0 |
| Total | 239 | 145 | 104 | 33 | 17 | 49 |

## 4.3 Non-Native Perceptions

Central to the content analysis of the public testimony is the isolation of native and non-native views about the disposal concept. The comparison of native concerns with non-native concerns draws attention to the similarities and differences between the groups.

### *4.3.1 Top 15 Non-Native Issues*

Figure 4 indicates the top 15 non-native issues according to the number of lines of testimony or extent they were discussed throughout the hearings, and Figure 5 presents the top 15 issues according to the frequency that the issues occurred throughout the testimony.

**Figure 4: Top 15 Non-Native Issues – Number of Lines**

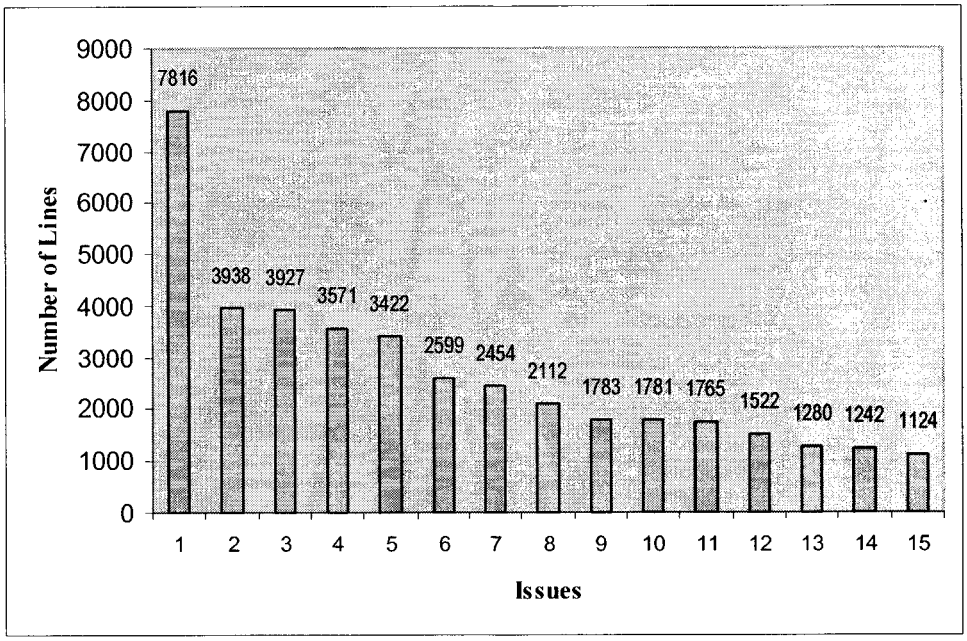



**Table 7: Top 15 Non-Native Issues - Number of Lines**

| Issue | Frequency N = 40336 | % 100 |
|---|---|---|
| 1. Uncertainty about disposal technology | 7816 | 19.4% |
| 2. Ethical and moral concerns | 3938 | 9.8% |
| 3. Trust and credibility of government & industry | 3927 | 9.7% |
| 4. Transportation | 3571 | 8.8% |
| 5. Voluntary siting | 3422 | 8.5% |
| 6. Critical of the EIS documents | 2599 | 6.4% |

| | | |
|---|---|---|
| 7. Critical of the panel hearings | 2454 | 6.1% |
| 8. Human health and safety | 2112 | 5.2% |
| 9. In favour of deep geological disposal | 1783 | 4.4% |
| 10. Concerns with accepting waste from other countries | 1781 | 4.4% |
| 11. Provide other options | 1765 | 4.4% |
| 12. Impacts on future generations | 1522 | 3.8% |
| 13. Fairness of voluntary siting and compensation offered to vulnerable communities | 1280 | 3.2% |
| 14. Eliminate nuclear energy and nuclear waste production | 1242 | 3.1% |
| 15. Rejection of deep geological disposal | 1124 | 2.8% |

**Figure 5: Top 15 Non-Native Issues - Frequency**

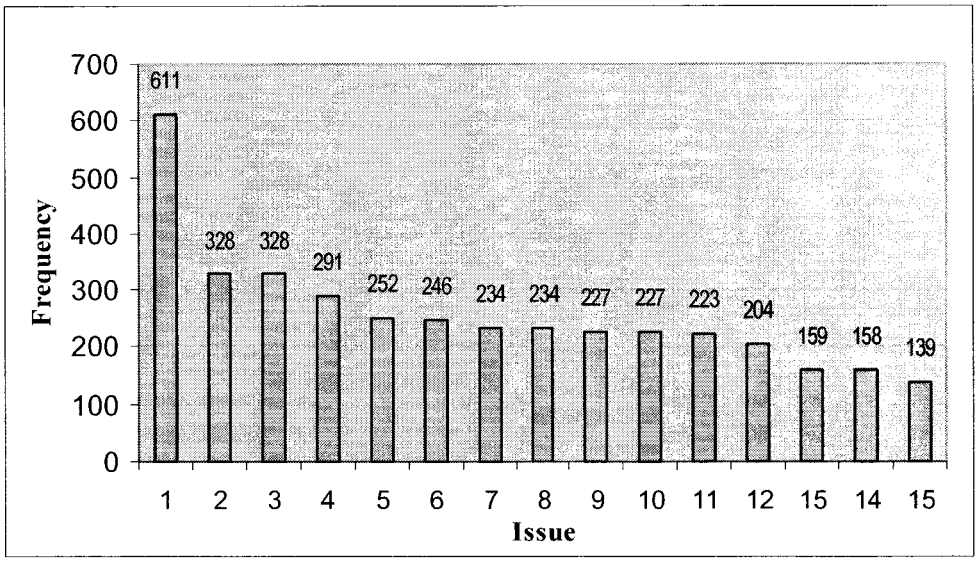



**Table 8: Top 15 Non-Native Issues - Frequency**

| Issue | Frequency N = 3863 | % 100 |
|---|---|---|
| 1. Uncertainty about disposal technology | 611 | 15.8% |
| 2. Future generations | 328 | 8.5% |
| 3. Human health and safety | 328 | 8.5% |
| 4. Trust and credibility of government & industry | 291 | 7.5% |
| 5. Critical of the EIS documents | 254 | 6.6% |
| 6. Transportation | 246 | 6.4% |
| 7. Provide other options | 234 | 6.0% |
| 8. Critical of the panel hearings | 234 | 6.0% |
| 9. Eliminate nuclear energy and nuclear waste production | 227 | 5.9% |
| 10. In favour of deep geological disposal | 227 | 5.9% |
| 11. Voluntary siting | 223 | 5.8% |

| | | |
|---|---|---|
| 12. Rejection of deep geological disposal | 204 | 5.3% |
| 13. Environmental health | 159 | 4.1% |
| 14. Monitored storage | 158 | 4.1% |
| 15. Concerns about accepting waste from other countries | 139 | 3.6% |

The most significant issue among non-native participants is their uncertainty about the disposal technology in the AECL concept. For the most part, uncertainties included concerns about a technological concept that is expected to contain spent nuclear fuel safely (without failure) for thousands of years, as well as uncertainties about natural forces that could penetrate the disposal vaults, causing a failure of the barrier system. In addition, this category also includes concerns expressed about computer modeling which was used by AECL to predict the actions of geological forces on nuclear wastes and the potential pathways that radioactive contaminants might reach the surface.

To examine these issues with any degree of certainty, one must bear in mind that during the hearing process, particularly within the first and second phase, the panel conducted guided hearing sessions, where a central topic of discussion was mandated. During these sessions, participants often, however not always, focused their views on these topics and this may have influenced the number of lines spoken on particular issues. Therefore, one will find that "Ethics and Morals" and "Transportation", both discussion topics, have appeared within the top 15 issues according to the number of lines spoken on each issue.

### *4.3.2 Disposal Options*

This section examines non-native views on nuclear waste disposal. There are three specific nuclear waste management options that were discussed during the panel hearings:

- Option 1 – Deep Geological Disposal in the Canadian Shield based on the AECL concept;
- Option 2 – Above Ground Storage at reactor sites;
- Option 3A – Centralized above ground storage[8]; and
- Option 3 B – Centralized below ground storage.

The Nuclear Waste Act of 2002 narrowed Canada's nuclear waste disposal options to these three possible choices. This thesis has closely focused on these options alone to provide a clear understanding of the public's views on the available three options. Any other disposal methods that were discussed during the public testimony were coded as views on "other options".

According to the data presented in Figure 6, 7, 8 and 9, deep geological disposal was discussed at length during the public testimony, and was both favoured and not favoured by non-native participants. In addition, two other issues that concerned many of these participants were the importance of continued monitoring and retrievability of the waste as options in nuclear fuel waste management. Storage at the reactor sites and

[8] Option 3 in the Act is considered, "centralized storage above or below ground". In order to better understand the views about this option, centralized above ground storage and centralized below ground storage were separated into two distinct options.

centralized above ground storage also had a high degree of acceptance among non-natives with a total of 776 lines and 481 lines respectively devoted to each option.

**Figure 6: Favoured Disposal Options – Non-Native, Number of Lines**

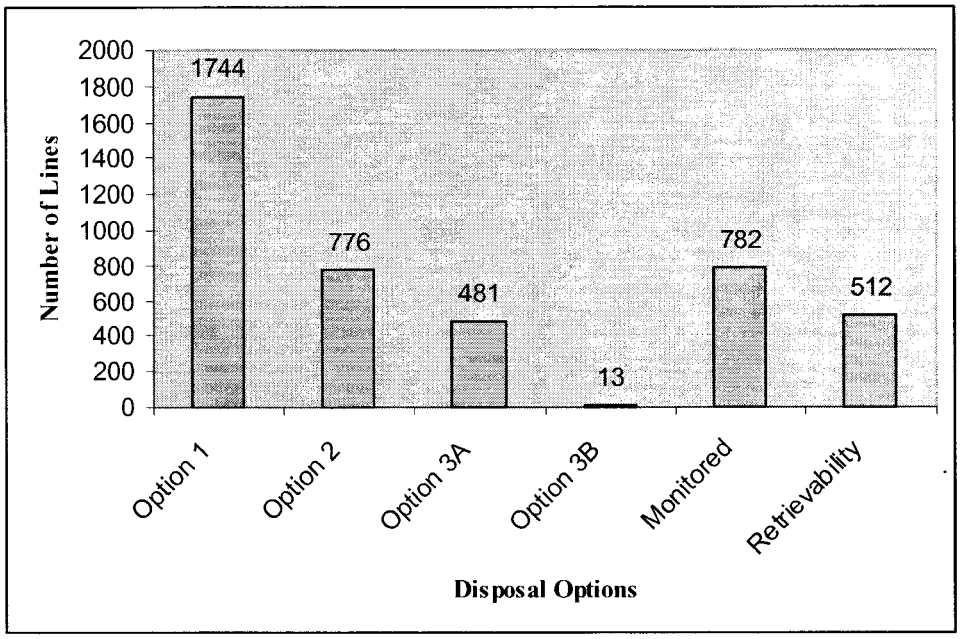



**Figure 7: Favoured Disposal Options - Non-Native, Frequency**

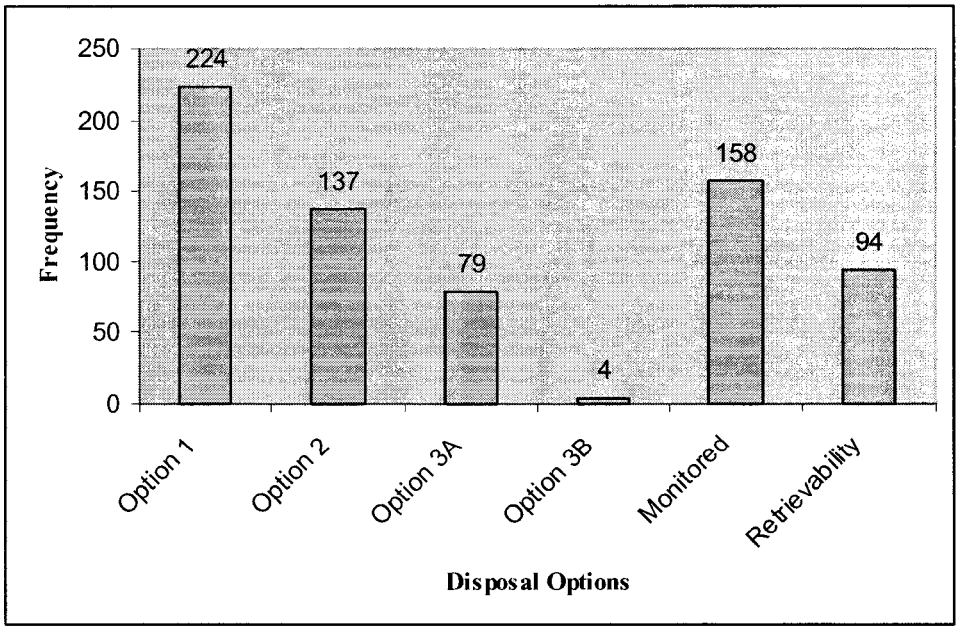


**Figure 8: Unfavoured Disposal Options – Non-Native - Number of Lines**

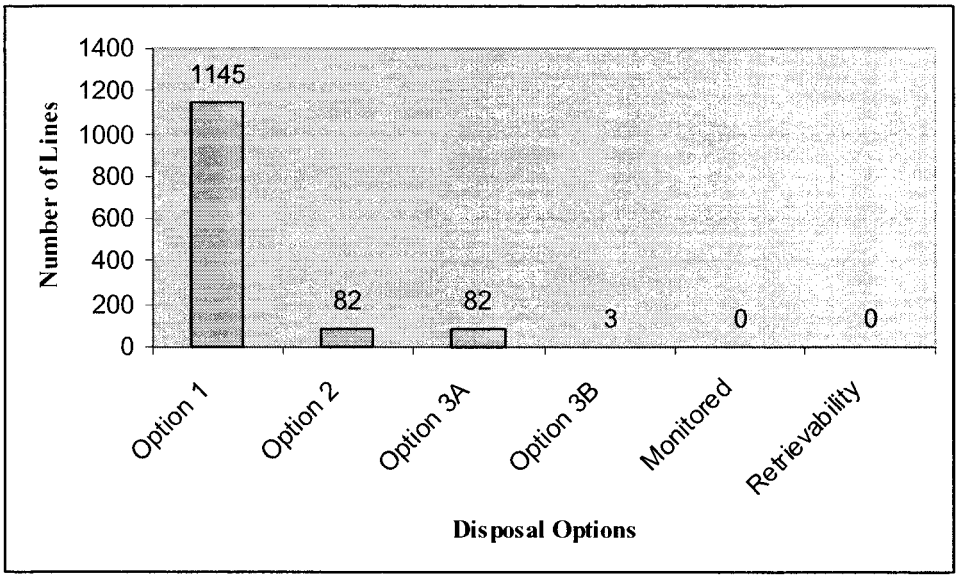
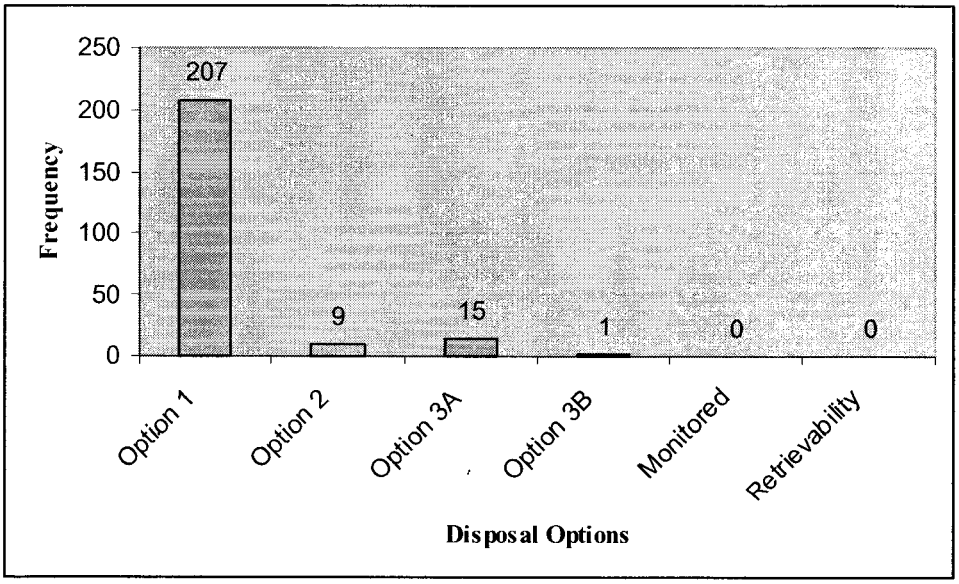



**Figure 9: Unfavoured Disposal Options - Non-Native - Frequency**



*4.3.3 Non-Native Response to Native Issues*

The results indicated that there were several non-native participants who expressed concern about issues that pertain only to native groups. Figure 10 and 11, followed by Table 9, provides an overview of these issues. Overall, the chief concern raised by non-natives with regard to Aboriginal issues was the desire for native people to be involved in the planning and decision-making process on nuclear fuel waste disposal and management. In addition, non-natives showed concern over the general lack of involvement and communication with Aboriginal peoples during the management and planning processes, as well as concerns over the lack of respect given towards native rights and treaties.

**Figure 10: Non-Native Responses to Native Issues - Number of Lines**

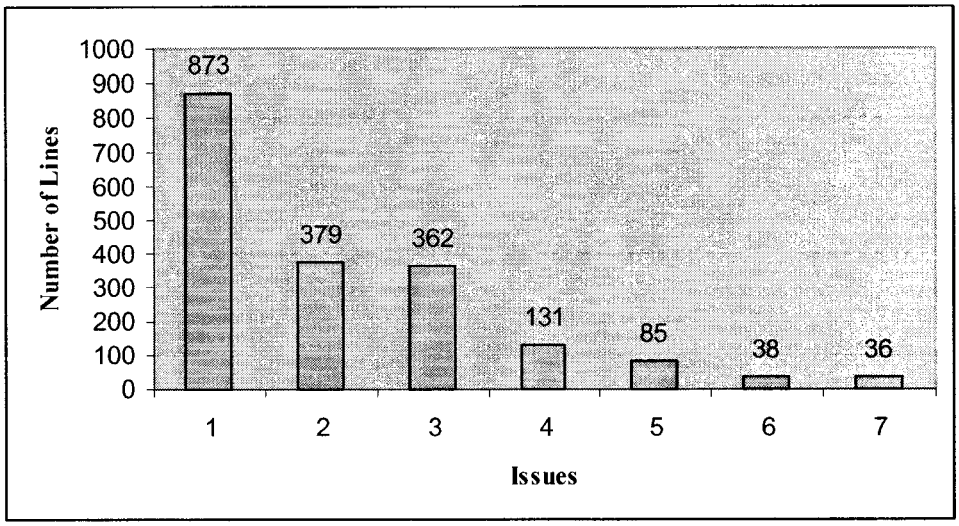


**Figure 11: Non-Native Responses to Native Issues - Frequency**

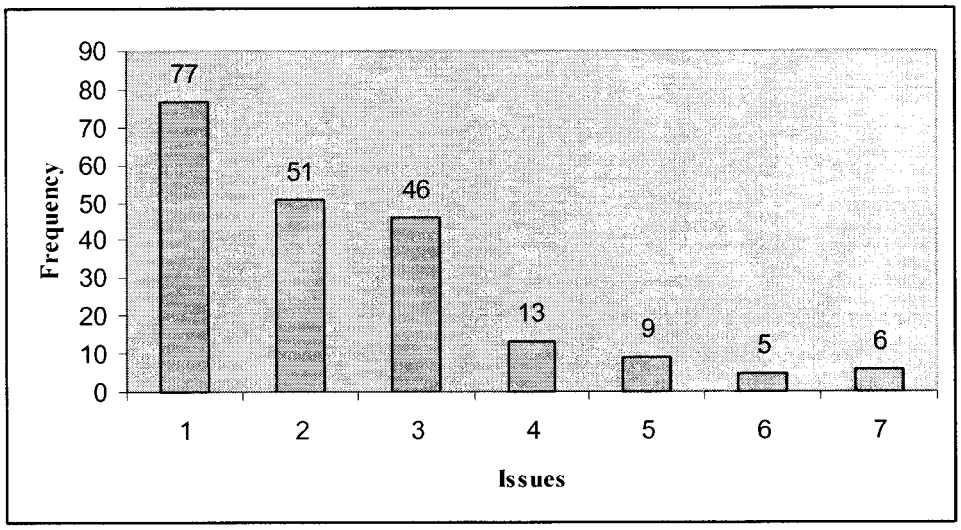



**Table 9: Non-Native Responses to Native Issues**

| Issues | |
|---|---|
| 1 | Aboriginal Role in Planning and Decision Making |
| 2 | Respect for Treaty and Aboriginal Rights |
| 3 | Aboriginal Lack of Involvement and Communication |
| 4 | Aboriginal Health and Safety |
| 5 | TEK perspectives on the concept/technological aspects |
| 6 | Threat to Aboriginal Culture and Well-being |
| 7 | Aboriginal trust & sense of credibility in government and industry |

## 4.4 Native Perceptions

It is critical to recognize the unique views of native peoples on the subject of nuclear fuel waste disposal in Canada so that during future siting attempts of a nuclear fuel waste facility, planners and decision makers will be further prepared to address and respond to Aboriginal concerns. Yet again, native perceptions on the management and disposal of nuclear fuel waste have been identified using a content analysis of the public hearing testimony reviewing AECL's Environmental Impact Assessment on the Concept for disposal of Canada's Nuclear Fuel Waste. This quantitative approach has assumed

that the number of lines spoken on each issue and the frequency each issue has been raised is a direct measure of how significant the issue is among native peoples.

### *4.4.1 Top 15 Native Issues*

Figure 12 and Figure 13, followed by Tables 10 and 11, respectively, each represent the top 15 issues that are most important to native peoples, according to the number of lines spoken on each issue and the frequency with which they occurred. This includes oral presentations and question and answer periods where native individuals came forth to comment on or question their fellow non-native participants in the reserved time, following their presentations. The following issues also include the views expressed in the written submissions presented to the panel, as well as the concerns that were articulated during the scoping session on Native Issues and Concerns included as part of the data set.

**Figure 12: Top 15 Native Issues – Number of Lines**

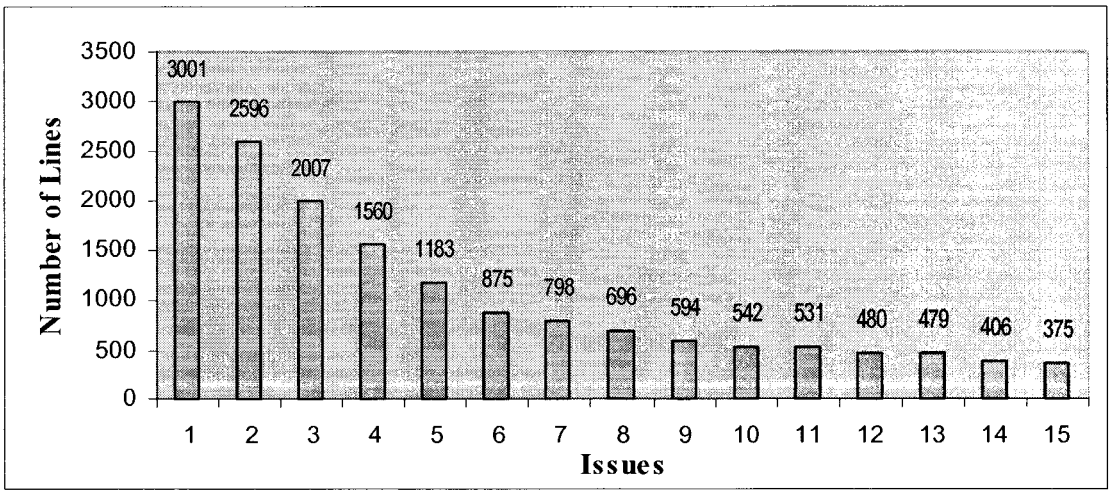


**Table 10: Top 15 Native Issues - Number of Lines**

| Issues | # of Lines N = 16028 | % 100 |
|---|---|---|
| 1. Respect for treaty and aboriginal rights | 3001 | 19% |
| 2. Spiritual, cultural and social values expressed | 2596 | 16% |
| 3. Aboriginal role in planning and decision making | 2007 | 12% |
| 4. Discussion of present/past hardships | 1560 | 10% |
| 5. Aboriginal lack of involvement and communication | 1183 | 7% |
| 6. Environmental health | 875 | 6% |
| 7. Trust and credibility of government & industry – by aboriginals | 798 | 5% |
| 8. Threat to cultural well-being | 696 | 4% |
| 9. Critical of the EIS documents | 594 | 4% |
| 10. Aboriginal health and safety | 542 | 3% |
| 11. Future generations | 531 | 3% |
| 12. TEK perspectives on the concept/technical aspects | 480 | 3% |
| 13. Total rejection of any waste disposal/storage system | 479 | 3% |
| 14. Critical of the panel hearings | 406 | 3% |
| 15. Ethics of voluntary siting and compensation offered to vulnerable communities | 375 | 2% |

**Figure 13: Top 15 Native Issues - Frequency**

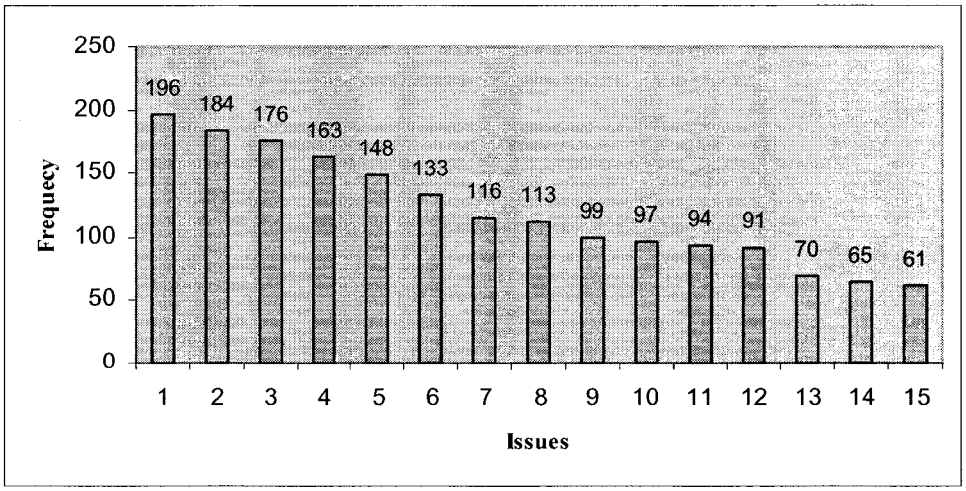


**Table 11: Top 15 Native Issues - Frequency**

| Issues | Frequency N = 1826 | % 100 |
|---|---|---|
| 1. Spiritual, cultural and social values expressed | 196 | 10.7% |
| 2. Respect for treaty and aboriginal rights | 184 | 10.1% |
| 3. Aboriginal role in planning and decision making | 176 | 9.6% |
| 4. Aboriginal (lack of ) involvement and communication | 163 | 9.0% |
| 5. Environmental health | 148 | 8.1% |
| 6. Future generations | 133 | 7.3% |
| 7. Threat to aboriginal culture and well being | 116 | 6.4% |
| 8. Aboriginal health and safety | 113 | 6.2% |
| 9. Critical of the EIS documents | 99 | 5.4% |
| 10. Discussion of present/past hardships | 97 | 5.3% |
| 11. Total rejection of any waste disposal/storage system | 94 | 5.1% |
| 12. Trust and Credibility of government & industry – by aboriginals | 91 | 5.0% |
| 13. Option #1 deep geological disposal -against | 70 | 4.0% |
| 14. Critical of the panel hearings | 65 | 3.6% |
| 15. Equity | 61 | 3.3% |

### *4.4.2 Disposal Options*

Similar to the examination of non-native views, native views on this subject have also focused on the three disposal options in the *Nuclear Fuel Waste Act*. Again, these are:

- Option 1 – Deep Geological Disposal in the Canadian Shield based on the AECL concept;
- Option 2 – Above Ground Storage at reactor sites;
- Option 3A – Centralized above ground storage; and
- Option 3B – Centralized below ground storage.

The data suggest that there were no native participants who were in complete favour of geological disposal, but instead expressed their disapproval of the concept more than their disapproval of any other disposal type (Figure 16 and 17). Figure 14 and 15

demonstrates their preference for Option 2 – Storage at the Reactor Site followed by Option 3 - in above- ground storage facilities at a centralized location. In addition, Aboriginals, like non-natives, also expressed an interest in a nuclear storage option that ensures continued monitoring of the waste and its retrievability, as a safeguard in case the facilities or barriers were to fail in the future. Furthermore, the analysis clearly shows that Aboriginal peoples disapprove of geological disposal and prefer alternate measures of dealing with the waste.

**Figure 14: Favoured Disposal Options - Native – Number of Lines**

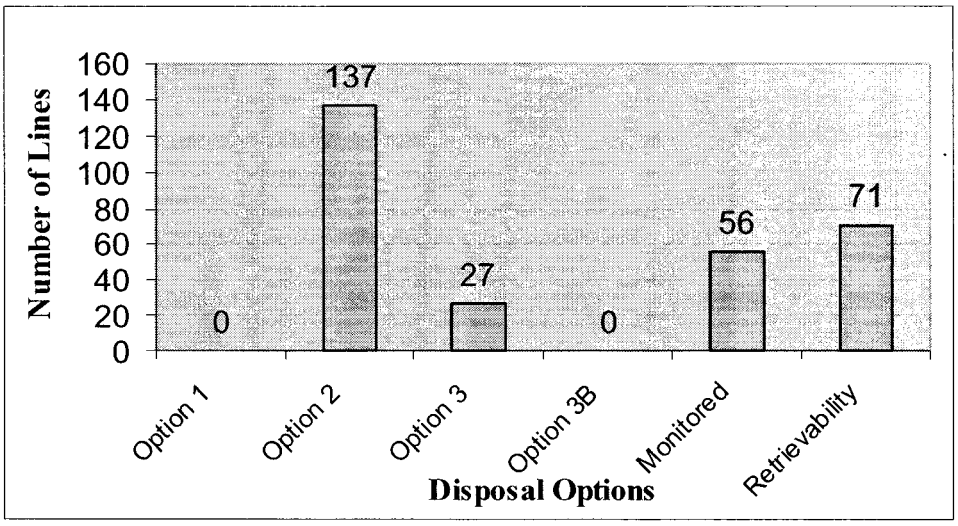



**Figure 15: Favoured Disposal Options – Native - Frequency**

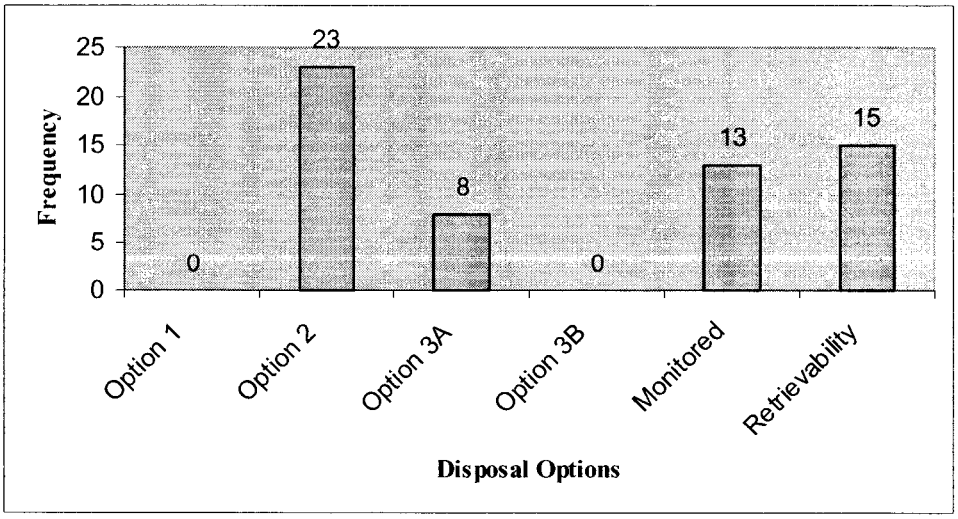


**Figure 16: Unfavoured Disposal Options – Native – Number of Lines**

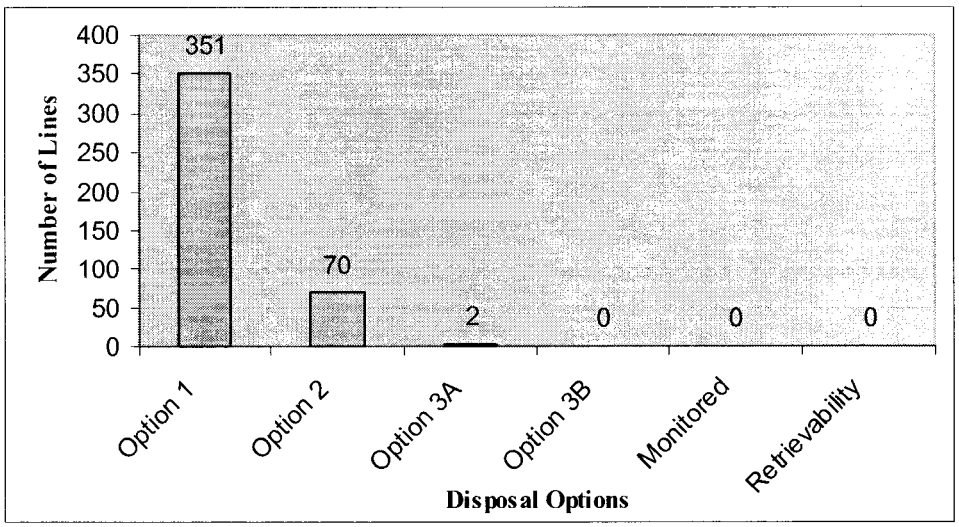
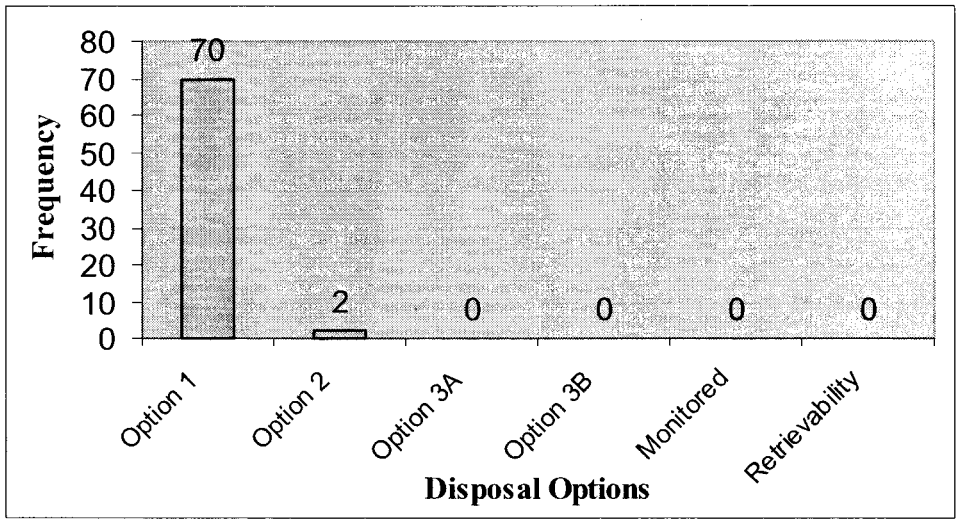



**Figure 17: Unfavoured Disposal Options - Native - Frequency**




*4.4.3 Disposal Options Support and Classification*

The public testimony has shown a unified position in the way that natives have viewed the concept for disposal of nuclear fuel waste in a geological repository in the Canadian Shield. Natives have shown negligible support for the geological disposal

option while non-natives, on the other hand, have shown a somewhat more significant measure of support, as was shown in section 4.3.2. Table 12 again records the favourable views of natives and non-natives on disposal options 1, 2 and 3 for both the number of lines favouring each option and by the frequency. The table also provides a breakdown of these views according to their group classification. Therefore, we can see that a great deal of the support for Option 1 – geological disposal, comes from special interest groups associated with the nuclear industry, as well as from government representatives and public citizens. Although one would expect the "Nuclear Industry" category to represent a significant proportion of the total support for the concept, one must remember that the proponent's views were excluded from the content analysis in order to get a more accurate understanding of the views felt by participants who freely came forward to give the testimony.

**Table 12: Classification Distribution of Favoured Disposal Options**

Q = Number of Lines, F = Frequency of Issues * Special Interest Group, [a] Technical Advisory Committee,

| Classification | 1-Q | 1-F | 2-Q | 2-F | 3-Q above | 3-F above | 3-Q below | 3-F below | Monitored Storage -Q | Monitored Storage- F | Retrieval Q | Retrieval F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Academic | 133 | 16 | 119 | 10 | 121 | 10 | 0 | 0 | 81 | 12 | 50 | 7 |
| Government | 315 | 31 | 18 | 3 | 6 | 2 | 0 | 0 | 32 | 10 | 2 | 1 |
| Industry | 51 | 8 | 19 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 1 |
| Native group | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Individual | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 |
| Native org. | 0 | 0 | 0 | 0 | 7 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Nuclear industry | 119 | 17 | 15 | 2 | 15 | 2 | 8 | 2 | 95 | 14 | 171 | 19 |
| Open | 17 | 6 | 6 | 2 | 4 | 1 | 0 | 0 | 30 | 7 | 40 | 7 |
| Public citizen | 246 | 30 | 271 | 57 | 158 | 27 | 5 | 2 | 139 | 38 | 72 | 15 |
| SIG* | 323 | 31 | 42 | 13 | 43 | 8 | 0 | 0 | 118 | 14 | 19 | 6 |
| SIG Environmental | 172 | 22 | 273 | 40 | 108 | 25 | 0 | 0 | 217 | 53 | 92 | 26 |
| SIG Nuclear Ind. | 315 | 55 | 13 | 4 | 19 | 3 | 0 | 0 | 60 | 7 | 49 | 10 |
| TAC[a] | 53 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 2 | 7 | 2 |
| | | | | | | | | | | | | |
| Total | 1744 | 224 | 776 | 137 | 481 | 79 | 13 | 4 | 782 | 158 | 512 | 94 |

## CHAPTER FIVE: DISCUSSION OF RESULTS

"Aboriginal communities represent a significant portion of the population living on the Canadian Shield. Our reserve lands may be relatively small, but our traditional lands cover a substantial amount of the Canadian Shield. Because of our spiritual, historical and economic connection to and dependence upon these lands, aboriginal peoples are likely to experience the greatest impact of a nuclear waste depository located within our traditional lands" (Commanda, 1997b).

Because it is the most extensive record of native views and concerns on nuclear fuel waste disposal, the public testimony on the Concept for Disposal of Canada's Nuclear Fuel Waste EIS and related documents has provided quantitative evidence of these issues and concerns. Like the Berger Inquiry public hearing transcripts, "they are an invaluable primary social record of the fears and aspirations uncluttered with social science jargon or white assumptions" (Page, 1986). The content analysis conducted in this study has identified the issues the native peoples of Canada feel are most important to their culture on this subject. The following section will examine what these concerns are, as suggested by the data, using the testimony to demonstrate these views in their exact words. It will also examine the significance of these issues and concerns within the context of academic thought and perspectives.

### 5.1 Overview of aboriginal perspectives

As we have seen in the previous chapter, the content analysis has identified the 15 most significant native issues in the public testimony. Their importance was measured according to the amount of time Aboriginal people devoted to each issue, determined by the number of lines in the transcripts, and the number of times the issues were repeated

throughout the hearings. The three most important issues to Aboriginal peoples, considering both these criteria, include:

1. Spiritual, Cultural and Social Values
2. Respect for Treaty and Aboriginal Rights
3. Aboriginal Role in Planning and Decision Making

The remaining issues, although not appearing in exactly the same order of priority with respect to their frequency and length of discussion, each in their own way are central concerns in the eyes of native people. These issues will be considered according to the following areas of concern:

- Aboriginal Involvement and Communication
- Future Generations and threat to aboriginal culture and well being
- Aboriginal and environmental health and safety
- Environmental Impact Statement criticisms
- Discussion of past and present hardships and issues of trust
- Rejection of waste, disposal/storage system, and preferred disposal options
- Equity
- TEK perspectives
- Ethics of voluntary siting and compensation

This chapter will conclude with a discussion concerning native views on the hearing process with respect to issues of fairness.

## 5.2 General comparisons between native and non-native participation in hearing process

The distribution of native and non-native participation varied throughout the hearing process. As we have seen from the data, Aboriginal participation during phase one and two was very limited and participants tended to be key Aboriginal leaders who were often invited to participate. Apart from these individuals, the only mention of Aboriginal issues and concerns during phases one and two occurred during question-and-answer periods when Ms. Mary Jamieson, the aboriginal representative on the panel, questioned presenters on these issues. A possible reason for such a low turn-out rate was the fact that out of the 30 hearing sessions (14 held during phase one and 16 sessions for phase two), 24 were in Toronto. This, of course, posed a very difficult problem for native peoples to overcome who, in most cases, lived well beyond Toronto. In all probability, native individuals lacked the resources to travel a great distance and provide accommodation for themselves while in Toronto. The likelihood of natives participating, in order to have the opportunity to present their comments to the panel on a concept that they know very little about and that may or may not even affect their lives, was not great.

### *5.2.1 Spiritual, Cultural and Social Values*

The public testimony reviewing AECL's concept has shown that a consideration of spiritual, cultural and social values is one of the most significant areas of concern for native people. Aboriginals discussed their values and their relationship with the land at great length during the public hearings, occupying 16% of the top 15 most discussed issues, the topic having been raised 196 times throughout native testimony. Native views

on this issue are best described by Ms. Kim Akiwenzie from Chippewas of Nawash, Ontario:

> "Our relationship to our land is not something that can be reduced to a market commodity. Our people believe that we come from the land, and that we are shaped by the land. Our history, our culture, our treaties, our lands are inseparable. We are here to stay. We will not contaminate our life source for some short-term gain" (Akiwenzie, 1997)

Chiefs, elders, high-school students and community members spoke about their traditional teachings and ways of knowing the earth that are in many ways different than the views of non-natives. They spoke of the environment and their place within the web of life, emphasizing their connection to it and the responsibility they have caring for the earth and respecting it. They expressed concerns about nuclear energy and nuclear waste and how "disposal" is a non-existent concept in a world where everything is interconnected. They believe nuclear waste can never be ultimately isolated indefinitely, and therefore they expressed uncertainty and concern about how it will eventually affect the earth that they value so much. They spoke of their beliefs in the oral tradition passed on by elders and the warnings and concerns their elders had about the earth and the problems they foresee:

> "When our elders talk, many of them are traditional elders and they speak of the earth mother as a mother earth, it is a living organism, and when you inject something into mother earth there are consequences that will occur.
>
> Up to this point mother earth has been very gentle in her response to the things we have been doing to the earth.
>
> However, our elders do caution us, and unfortunately we have to now bring this more and more to public forums as we speak in places like this that the elders say there are going to be earth movements, and they refer to them as earth changes, which of course will be catastrophic for those sites where you have nuclear waste.

> We have to take them very seriously because these elders get their knowledge from other elders, and we have been here for thousands of years, and they have this sense that we cannot ignore. This is why to this day we still hold our elders with high regard" (Davey, 1996)

Therefore, in accordance with these statements, the views that native peoples expressed during the hearings on nuclear energy and the concept for disposal of nuclear fuel waste were all very negative. The creation of a by-product that is extremely lethal for thousands of years, with no known way of responsibly storing it or reusing it, is an irresponsible action that in many ways native peoples cannot fathom.

The dichotomy between the western way of knowing and viewing the world, in contrast to how natives have understood the world, has been acknowledged and examined in academic literature (Bigart, 1972; Tano et al., 1996; Fixico, 1997). "Indian culture does not emphasize the Western ideal of exploiting and manipulating the environment; power and control over the realm of nature are not rewarded. In the Indian view, man is a part of the world and made from it" (Bigart, 1972: 1182) The non-Indian view is much more comfortable with the idea that human existence is completely separate from nature, allowing one the freedom to control and use the earth's resources as one pleases. Natives on the other hand, have values that are holistic and communally-oriented, and believe that humans must learn to live in harmony with the earth, finding spirituality within its beauty and respect for its complexity (Fixico, 1997). They do not try to dominate or transform the earth, but rather, they consider the earth to be alive and "respond to the land, allowing it to influence their thinking" (Tano et al., 1996; Holst, 1997: 151)

### *5.2.2 Respect for Treaty and Aboriginal Rights*

Recognition of aboriginal rights and respect for treaties was a topic discussed at length during the public hearing process by Aboriginal people. This issue was by far the most significant in terms of the number of lines expended by natives at a total of 3001, which amounts to 19 % of the leading fifteen issues. In terms of the frequency, respect for treaty and aboriginal rights was brought up in the testimony a total of 184 times. Native peoples have been struggling with these issues since the beginning of European settlement. In the eyes of most native peoples, there are many unresolved issues that they are still attempting to have recognized (Morrison, 1997).

Land rights are the biggest of these, with many groups battling to gain control over land that they still use and value traditionally (Morrison, 1997). Native peoples consider the land as very important part of their livelihoods, that they have a special connection to, and it, in many ways, defines who they are as a culture (Page, 1986). The narrow confines of their reservation areas are far from what they feel entitled to.

Sovereignty and the right to self-government is a second issue that is a considerable concern to native Canadians and has been an extensively on-going problem (Macklem, 2001). It is a right which many natives insist they have never given up nor one they have been denied by law; it is only now that they are becoming more assertive of this right and what it means to them as a distinct culture (Clark, 1990 in; Wiseman, 1991 ). Hence, self-government issues were heavily expressed during these hearings by Aboriginal people.

In addition to these concerns, respect for Constitutional rights and existing treaties was also an area of concern within this issue. It was important for native peoples to

reiterate for the public record, the commitments made by past governments to them and the importance in having them upheld. Chief Brian Davey touches on each of these issues in his testimony:

> "These are inherent rights that derive from our original tenure on the relationship to our lands and include the right of the Nishnawbe-Aski to control and manage their lands for the benefit and survival of our people and our future generations.
>
> Canada has a fiduciary obligation to protect and enhance these rights and to ensure that they are not interfered with without our consent and without valid and serious reason, as required by the tests set out in the Sparrow Supreme Court decision of the Supreme Court of Canada.
>
> Both Canada and Ontario have recognized our inherent rights to self-government and their fiduciary obligations in the constitution and the memorandum of understanding with the Nishnawbe-Aski Nation which was signed back in 1986, the interim measures agreement with NAN which was also signed by both governments, the statement of political relationship with the Chiefs of Ontario which was also signed by the Ontario government"(Davey, 1996).

The siting of a nuclear waste facility in lands governed by an existing treaty would be seen as a violation of those rights.

Finally, included within this issue were views relating to their frustration over the lack of respect by the rest of society for their rights as native Canadians. Natives are a group who have often been disregarded, overlooked and taken for granted, a situation which they feel must be improved. Vice Chief Allan Adams clearly expresses this in his words to the panel:

> "It's kind of hard to always sort of be in the back row of the bus and what you're talking about here is sort of civil rights movement, of movement of First Nations people in Canada who request a seat at the front of the bus instead of always at the back of the bus.
>
> We know that our black brothers and sisters in the States went through that process 40 years ago, December 1st was the first time that somebody stood up and said: I'm going to sit at the front of the bus. Well, 40 years later in Canada First

> Nations people are saying on the environmental bus we're going to start sitting at the front of the bus now, we're not going to sit at the back of the bus any more, we're not going to be told to sit at the back of the bus any more.(Applause)" (Adams, 1996) .

### *5.2.3 Aboriginal Role in Planning and Decision-Making*

Public participation has been well accepted as a necessary component of planning and environmental management; however, finding the right balance of decision-making power and the most appropriate method of involving Aboriginal communities in the process, poses a significant problem to the implementing authorities. It is difficult to determine who will decide which participatory method will be used and if it will adequately meet the expectations of all stakeholders in a manner that meets true democracy. A significant number of native participants gave testimony that they would like to be included in the planning and decision-making process for the management of nuclear fuel waste in Canada. Central to this theme, natives gave testimony about culturally appropriate forms of communication and negotiation in achieving an appropriate decision-making process. The following testimony provides a good example of what is expected by native peoples:

> "What is really needed with this whole assessment so far is that there be cooperation between the aboriginal peoples, who are most likely the ones who are going to feel the greatest impact of the proposal, and the people who are planning to do it. This involves working together and sharing knowledge and information. It also involves understanding from both sides about their kind of knowledge and information and I don't think that is something that is easily done. I think that requires time and it requires being together" (Bianchi and O'Sullivan, 1996)

Participatory planning will be a necessary standard in the siting of a nuclear fuel waste disposal facility, however, that will not be achieved without challenge. Umemoto (2001) has defined some of the challenges associated with planning within a culturally diverse setting. As Mr. Fred Bianchi and Ms. Rita O'Sullivan have stated previously, "sharing knowledge and information" (Bianchi and O'Sullivan, 1996), is an important part of collaboration in a shared decision-making approach. Difficulties may arise from several sources including: historical barriers imposed by collective memories, intimidation to participate in the sharing processes due to past experiences, multiple meanings of language, difficulties maintaining and respecting social protocols and relationships and finally, difficulties in understanding the role of power when translated across cultural epistemologies (Umemoto, 2001: 19).

Overcoming these barriers is not easily accomplished, just as the above testimony has suggested; however, with a transparent, open and cooperative approach, an acceptable process can be achieved. Many native participants expressed the view that when it comes to negotiations over development that affects their lives, they should play a central role in the decision-making. A higher level of control in the process will allow native peoples the assurance that their culturally and deeply-rooted social and spiritual values are factored into the decision-making (Pitawanakwat and Francis, 1997). Andrew Orkin contributes to this thought in his oral testimony to the panel:

> "It's absolutely clear to me that it's impossible for them to do so unless they go- unless the proponent, not the Panel, the proponent goes to F.N. communities at this point in the process in the spirit of genuine environmental impact assessment, engages itself with that particular group of people on this Canadian Shield on its own terms and consults them and says: What is it about this that you need to know. And what is it about that we need to know..."(Orkin, 1996).

Alan Morin of the Métis Nation of Saskatchewan has also stated:

> "Forced development is development without choice. One of the underlying criteria of good development must be that it is controlled by the communities themselves, in this case by aboriginal people in northern communities. Good development is economically, socially and environmentally sustainable" (Morin, 1997).

### *5.2.4 Aboriginal Involvement and Communication*

Many aboriginal participants had expressed their dissatisfaction with the level of communication between the decision-making authorities and the native peoples.

> "Our question remains: Will our voice and concerns be heard or will there be no meaningful consultation which is all too common when it comes to developing initiatives within the north and aboriginal territory. And this is painfully common when it comes to developing schemes affecting Métis and First Nation peoples, their communities and their land" (Morin, 1997).

Aboriginals expressed the view that they are far too often excluded from the primary steps in the decision-making process and are only brought in, if at all, when their views and concerns are well beyond the scope of the consultations. For instance in this case, the views that native peoples held concerning energy policy, energy sources and disposal options were not relevant to the discussion about the disposal concept being reviewed because they were essentially beyond the scope of the hearing process, even though to the Aboriginal participants they were central concerns. This has been a central concern of non-native interests as well. The exclusion of energy policy and energy sources in the scoping sessions raised similar objections. One of the central controversies has been the lack of opportunity to discuss energy policy and nuclear power options in wide public debate.

> "This review has quickly taken shape to become one of the most important environmental assessments ever undertaken in the country and will provide an essential foundation for future decisions on energy policy; therefore, this review should take into account the energy policies of Canada and the provinces and the role of nuclear energy within these policies, since it is anticipated that the review will impact various policies through its findings.
>
> We have pointed out what we believe to be the inadequacies of this review process. It is clear to us that the process does not provide the public with the mechanisms to address the disposal concept in a holistic manner.
>
> It is because of this we are reluctant and skeptical of participating in this whole process because your rules do not yet recognize the legitimacy of interactive approaches" (Pitawanakwat and Francis, 1997).

AECL was clearly criticized for its lack of Aboriginal involvement in its research and preparation of its EIS, and this view was supported by the Seaborn panel, and many hearing participants, both native and non-native (Federal Environmental Assessment Panel, 1998; Orkin and Edwards, 1998). Native peoples also articulated their frustration with the low level of native involvement conducting the environmental impact statement. Considering that native peoples will be most significantly affected by the concept they are proposing, the amount of energy and time AECL spent considering Aboriginals views and concerns about how it would affect their lives, was completely inadequate in their view. Chief Richard Kahgee explains:

> "Furthermore, little information about the potential impacts of the proposal on aboriginal people was part of the review. This is unacceptable given the fact that First Nations would most directly and dramatically be affected by the proposal.
>
> Proper, respectful and culturally and politically appropriate consultation of First Nations people by First Nations people should have been undertaken. These consultations should have been fully funded by the proponents." (Kahgee, 1997)

### *5.2.5 Aboriginal & Environmental Health & Safety*

In many ways Aboriginal peoples, in their discussion of the concept for disposal of nuclear fuel waste, have not separated their concern about the impacts this proposal will have on the environment from its effects on their health. This is mainly because of their holistic way of viewing the earth and their place within it. Nature encompasses not only vegetation, air, water, earth and animals but also themselves as humans in an interconnected, complex web. Mr. W. Morrisseau explains further:

> "As I have said previously, whatever happens to the wild life, those who live on the very earth that we live from, that is exactly what will happen to us. We native people, we are the ones who are the caretakers of this earth. It was a job that was given to us by the one who made everything who we understand as the Great Spirit, the Creator and Maker of all things. Now, what is being discussed here will determine whether we will survive to see another generation to walk upon this earth. Would any of you take a piece of cancer and knowing that it is cancer embed it into your body knowing full well what it will do to you? That is tantamount to the risk that is being taken with our Mother whom we call this Earth." (Morrisseau, 1991: 71-72)

Ms. Wynn, similarly articulates this view:

> "And we are concerned about the environment, the whole environment, you know, Mother Earth, what we are doing. Because certainly you non-native peoples would not take care of one portion, just one portion of your body, your being, and concentrate on taking care of that and let the rest go. This is what is happening to Mother Earth. We are damaging it, you know, raping, ruining our medicines. In the woods, our rivers, contaminating our waters, and this water gives us life. And that is where we are coming from. And a lot of elders will tell you the same thing." (Wynne, 1991: 66)

Furthermore, the main concern that native peoples have in relation to environmental and human health is that they clearly feel that the damage that is done to the natural environment directly affects the health of their community, especially because their culture lives in direct contact with it everyday.

Many of the fears that native peoples expressed are associated with the experiences that they have had in the past with development projects and pollution. There are many occasions where they have experienced significant compromises to their health, due to foreign substances being introduced into their environments from illegal dumping, or via biological pathways that have allowed toxic substances into their environments such as PCBs and mercury (Turner, 1997). Chief Frank Abraham expresses these fears:

> Not long ago, within about six years ago, we had – we had kids dying of leukemia, and again, nobody really knows the causes on how we get these sicknesses. And yet we're being asked to see if we could – we could support this initiative that is taking – taking place here today in nuclear waste when they haven't really taken the time to consider the other – the other causes or the other – the other pollutants that are being distributed throughout – throughout our land (Abraham, 1997).

Mr. Taylor, a traditional hunter and trapper, conveyed his concerns about how wildlife is affected by development:

> "Like I said, I don't think there's no place for (inaudible) on this earth. I have tried many years to respect, I have tried to do my living on trapping, on wildlife out there, beavers and muskrats. You don't see muskrats nowadays.
>
> So we are very concerned, I am very concerned for the future of this -- of my people and all people that are going to be using -- that are using this now and in the future.
>
> How about the birds and animals? You know someone must speak for them and I'm very concerned for those animals, even ants. You know out there they breath. It's very disastrous to have this -- something buried out there" (Taylor, 1997).

Public perceptions of the possible adverse affects associated with the nuclear industry and nuclear waste disposal, similar to the proposed concept being examined in this thesis, have been extensively studied in academic literature (Slovic, 1993). The

deep-rooted fear associated with the nuclear industry presents a very complex problem for planners and decision-makers to overcome, as it has cut short many siting attempts in the last several decades (Gerrard, 1994). Some have described nuclear risk as a unique phenomenon, in comparison to other sources of risk due to the intense dread and fear associated with it, that has evolved as the nuclear legacy has unfolded throughout history (Slovic et al., 1980; cited in: Bertell, 1985; Blowers, 1999). Consequently, during the public hearings, events such as Chernobyl and nuclear bomb testing were frequent topics of discussion in many of the submissions. They were often matters that provided the basis for their perceptions of the environmental and health risks posed by the geological disposal concept. The following testimony is an example:

> "I came in here wanting to try to talk in a way that I don't insult anybody, but then the more I heard other speakers talk, the angrier I got, the angrier I got at what I've seen, at damage that was done in Northern Saskatchewan, and the damage that has been done in other countries. I've seen pictures of deformity of children from the effects of the Chernobyl disaster. I certainly don't want to see that happening in Indian land. For that matter, I don't want to see that happening in any part of the world, any place at all. I hope we can come up with some sort of a solution to be able to destroy this what my people call up in the Northern Saskatchewan "pisdoboin" (phoen), poison. It's something that is very deadly and we don't need that in our backyard" (Bell, 1997).

### *5.2.6 Future Generations , Threat to Aboriginal Cultural Well-being*

Future generations and cultural well-being are fundamental factors in the preservation of the native Canadian community and livelihood. Consequently, these two interconnected issues received high priority in Aboriginal testimony. Perceptions of the nuclear fuel waste disposal concept in the Canadian Shield and its effects on the natural environment, and in turn on the health of Aboriginals and future generations, were a topic

of reflection continuously throughout the hearings. Of the 146 presentations made by native people, these issues together were mentioned 249 times and totaled 1227 lines of testimony. Ms. Leah Carriere, member of the Manitoba Métis Federation expresses these views.

> "The Métis people feel that AECL is looking at the concept as a solution to a problem which exists today, but this problem could lead to a disaster for future generations. .....The proposed Concept is a temporary solution that would bring some sort of burden to future generations, and is it up to a few people today to make a decision on something that could affect the livelihood of our children and our children's children?[sic] The Métis people do not think so" (Carriere, 1996).

Deputy Grand Chief Brian Davey also has reflected on his concern for the future of native peoples in his presentation to the panel, with respect to recovering from past hardships brought by European settlement:

> "It is a prophesy where it takes seven – we are told it will take seven generations for the Aboriginal people to heal and we are already into our seventh generation, we are already into our eighth generation" (Davey, 1996)

Concern for future generations is a consistent issue, not only in connection with this proposed project, but in relation to many development projects that have threatened to cause social and environmental change to native peoples and their traditional lands.

In some ways, the siting of a nuclear waste disposal facility can be viewed as a surge of industrial development in an area or community lacking an economic base. However, the social change associated with large development projects on small communities and particularly native people, in many ways, has proven to be detrimental to their cultural stability (Curtis, 1992). Usher (1993) acknowledges that physical, mental and social deterioration of native communities are a consequence of the stress associated with the influx of people moving in the area, distorting the effects of the local economy and services (Usher, 1993). He has drawn this conclusion based on evidence

provided by studies documenting the effects of mining and high-way construction in the Yukon, hydro development in Quebec and oil pipeline construction in Alaska (Usher, 1993). Each case confirms that development can be linked to cultural deterioration caused by "adverse effects...with respect to, among other things, health and nutrition, health services, housing and alcohol" (Usher, 1993). Ms. Carriere of the Manitoba Métis Federation said about local development and its consequences on native life:

> "The Concept would boost the local economy, but it would be on a short-term basis. It would create some jobs, but it was not worth the negative social effects. The people thought that such a Concept would divide communities and create animosity between those who are against it and those who are for it. Métis people would be uplifted from their communities and forced to move. The health risks scare the Métis people. They feel that they would be living in doubt and fear all the time. They would even be afraid to drink the water! The stress levels among the communities would be very high. No one would want to move to their community and soon there wouldn't be one" (Carriere, 1996).

Mr. Emmett Pitawanakwat and Mr. George Francis, speaking on behalf of Whitefish River First Nation, reaffirm these concerns in their presentation, emphasizing the connection between environmental damage and cultural loss.

> "In the past, aboriginal communities have suffered significant social, cultural, mental, physical and spiritual impacts from large-scale projects such as these. These impacts affect all aspects of our lives.
>
> If, for example, the game and fish are so contaminated, how are we going to carry on our way of life? Hunting and fishing is not merely a subsistence activity. My family hunts because my ancestors hunted.
>
> There's a lot of history and values that are passed on in when my father, my uncles, my brothers, my cousins go hunting. They share stories and laughter. They share in the work of getting the deer, carrying it out of the bush, skinning the deer and cutting up the deer. The meat is shared throughout our extended family. These types of traditional activities are threatened by proposals such as AECL's" (Pitawanakwat and Francis, 1997).

These effects are particularly difficult for the youth of native communities who are attempting to narrow the cultural gap and find a balance between the modern life that development offers and the traditional life of their native identity. Mr. Edward Norton discusses the difficulties that are felt:

> "And these students are now grappling with the issue of language loss, cultural loss, and the fact that spirituality, customs and ceremonies are things that they have to learn, re-learn, because those are the things that they have inherited, so therefore when they are looking at scientific areas such as nuclear waste, they can mentally understand. What has to occur is that, like the old people, they have to think about it through their heart, through the spirit, and through their emotions, and so on, so that they can see it the way that the elders see it and have articulated here this morning" (Norton, 1997).

### *5.2.7 Environmental Impact Statement Criticisms*

Native peoples during the hearing process devoted a great deal of their energy discussing the inadequacies of the EIS document and the process of creating and reviewing the EIS. Several of the written submissions from native groups were prepared by consultants hired by Native organizations with money that they were granted through intervenor funding. Andrew Orkin prepared a joint submission for several groups that included: The Federation of Saskatchewan Indian Nations, The Assembly of Manitoba Chiefs, The Assembly of First Nations of Quebec and Labrador, and The Grand Council of the Crees (of Quebec). This report provides a detailed description of how AECL did not fulfill the requirements set out in the EIS guidelines given to them by the panel. Many of the inadequacies that are discussed are raised jointly by several native groups who communicated the same problems in their submissions. In summary, however, Orkin's report concludes that, "the proponent has failed, almost completely according to

the standards of the Guidelines, to adequately present First Nations' understanding of their environments and their links to the land. It has also failed in its EIS to present First Nations' different views regarding the possible impacts of this concept" (Orkin, 1995). Chief Earl Commanda in his presentation to the panel gave his views on the impact assessment's poor consideration of native issues:

> "AECL and Ontario Hydro have limited their analysis of potential impacts to our communities to a laundry list of aboriginal issues drawn almost exclusively from secondary sources. AECL has told this Panel that such cursory information is acceptable because aboriginal concerns and rights will be addressed at the siting level.
>
> Our problem with this position is twofold: (1) We have been involved in split hearings before, and that process inevitably acts to our detriment; (2) By failing to consider us important enough to devote any resources to us at this stage, AECL is sending a clear message to our communities and to you, the Panel.
>
> AECL considers the only real issues before this Panel to be technical issues. That is the only area AECL has devoted any substantial resources to" (Commanda, 1997b).

AECL, was given clear instructions to give social, moral, cultural and spiritual considerations equal weight to the scientific, technical and economic analysis (Orkin, 1995). However, there was a general consensus among a sizeable portion of the participants who took part in the hearing process, both native and non-native, that there was an imbalance between the amount of technical information considered in the proposal and the depth of social issues. Mr. Pitawanakwat and Francis of Whitefish River First Nation give their impression on this subject in their presentation:

> "This review places emphasis on scientific, technical and procedural rationalities, and we are not arguing that high-level nuclear waste does not deserve this approach; however, we should -- however, we would like to remind everybody that life and people are not limited to only scientific and technical applications" (Pitawanakwat and Francis, 1997).

Ms. Eva Soloman and Mr. Norman Martell of the Aboriginal Rights Coalition had their own opinions on these issues as well:

> "As far as ARC is concerned, the EIS has a very serious scientific bias. It seems to address the concept from only one aspect or type of information, and as such ARC considers it unacceptable. We would recommend that the assessment process be one that includes, on an equal basis, the traditional knowledge and understanding of the land as it comes from an aboriginal perspective and understanding" (Soloman and Martell, 1996).

The technical preference that is so evident in the EIS is a reflection of the way the Western world sees and interacts with the world we live in. Most of the people who live in North America are driven by a technological imperative with rational thought and scientific knowledge being considered the only legitimate and reliable explanations for the decisions we make. What native peoples bring to this concept and to these hearings, is a reminder, that spiritual, cultural and social understandings of the world, where decisions are guided by morally based ideas and spiritual reflections, are also legitimate and must be equally considered in planning and decision-making.

### *5.2.8 Discussion of present/past hardships and Trust*

In many cases, during the EIS review, Aboriginals shared with the panel their past experiences, relating the hardships they have had to endure as a result of development that has entered their traditional lands. This topic represented a significant proportion of the 15 most significant issues discussed, being the fourth highest with a total of 1560 lines expended. These particular accounts reflected how certain industries established in close proximity to their local communities affected their lives; for example, native participants from Saskatchewan shared stories regarding uranium mining and natives

from northern Ontario discussed their experiences with hydro development. Chief Earl Commanda, of Serpent River First Nation in Ontario, described how the uranium mining industry affected native communities along the North Shore:

> "We in the north have always carried the risks and costs associated with resource developments, developments whose benefits have primarily gone straight south. We have been affected by radioactive materials for decades and will continue to be impacted for generations by the mining of uranium in the Elliot Lake area. We have already had more than our fair share of negative impacts of the nuclear fuel cycle" (Commanda, 1997b).

Chief Gabriel Echum echoes similar experiences with hydro in his community:

> "Ginoogaming people have suffered immensely from hydro development. Our river systems were diverted, our Elders recall, the rivers became confused. Along with river diversion, other industries used the water systems for transporting logs. We began to witness the deterioration of our waters. The aquatic life began to deform and disintegrate.
>
> Today we cannot eat the fish from this lake, our children cannot walk to the beach and enjoy an afternoon swim. This lake will take decades upon decades before it is restored. It is contaminated by industry and no industry is willing to take responsibility for the destruction of the waters"(Echum, 1997).

Finally, Ms. Settee from Cumberland House, a northern community in Saskatchewan speaks of her distress felt by development:

> "I am a Cree woman from the northern community of Cumberland House. This community was, in years gone by, a strong and thriving community until development came in downstream and the north Saskatchewan River was dammed, leaving our community in economic rack(sic) and ruin.
>
> And I mention that because I think that that a situation that has visited many aboriginal communities the world over" (Settee, 1997).

As Ms. Settee has stated, there are many native communities all over the world that have had to undergo the negative effects of industrial development. Winona LaDuke, an

Anishinabe activist and internationally well-known voice for American Indian economic and environmental concerns throughout the United States confirmed this view:

> "They sometimes call us "The First Americans." I've wondered what that means, and the only thing I've come up with is that Indians are always the first to feel the sharp end of the stick: the first to suffer biological and chemical warfare at the hands of the U.S. government, the first to lose their land to big business, the first to lose their legal and human rights in the national interest, the first to be laid off from any jobs they manage to find, the first to be cut from the social services budget every year..." (Churchill, 1986)

Artic communities have had to deal with illegal dumping of radioactively-contaminated soil on their land by the U.S. military in 1962 after Project Chariot, an undertaking designed to threaten Soviet Russia during the Cold War, was abandoned. The material was brought from the Nevada test sites for experimentation and was left in a loose dump secretly. Local natives, unaware of the waste, had suffered high cancer rates for years which they later attributed to the waste and had no explanation for their illnesses until documents revealing the dump were uncovered accidentally by a researcher investigating the project (Turner, 1997). Unfortunately, there are many similar stories that native peoples can tell, some that have been well documented and some that have not, however, all deal with the hardships that they have suffered (World Uranium Hearing, 1992; Niezen, 1993; Giese, 1995; LaDuke, 1999; Corpuz Tauli and Kennedy, 2001).

The issue of trust and the possibility of lack of trust being a severe impediment to preventing the siting of hazardous facilities, has been accepted and discussed by academics for some time (Slovic et al., 1991; Slovic et al., 1991; Flynn et al., 1992; Kasperson et al., 1992; Pijawka and Mushkatel, 1992; Flynn and Slovic, 1993; Slovic, 1993). Much of the discussion about trust has dealt with attempts to define and understand it as a concept and how it functions within society. These attempts have

included an identification of its dimensions, in hopes of understanding how the lack of trust has prevented facility siting from occurring, as well as the factors that determine trust and credibility (Peters et al., 1997). It is believed that once trust as a concept is understood, it will contribute to achieving a more credible relationship among participants, therefore easing future attempts in planning for nuclear facilities. Paul Slovic has conducted in-depth studies of human perceptions of nuclear waste and accurately defines the views of native participants observed here in the testimony on the concept for nuclear fuel waste disposal. He has described "public fears and opposition to nuclear-waste disposal plans" as "a *'crisis in confidence'*, a profound breakdown of trust in scientific, governmental, and industrial managers of nuclear technologies" (Slovic, 1993). The testimonial illustrations presented here verify this 'crisis in confidence' that Slovic defines.

The experiences that Aboriginal peoples have had to shoulder, do anything but build a firm foundation of trust and credibility with respective planners and decision-making authorities who continue to approach them with proposals for new development. Often, native peoples are very skeptical about whom they can trust and many times even refuse to take part in negotiations because of a lack of trust. These attitudes were present in the submissions made to the panel by native participants and they often expressed their lack of confidence in the decision-making authorities:

> "We have pointed out what we believe to be the inadequacies of this review process. It is clear to us that the process does not provide the public with the mechanisms to address the disposal concept in a holistic manner.
>
> It is because of this we are reluctant and skeptical of participating in this whole process because your rules do not yet recognize the legitimacy of interactive approaches" (Pitawanakwat and Francis, 1997).

Many natives are not confident in government regulations and standards, as they have been deceived in the past by false promises. Mr. & Mrs. Norman Jacob of the Haudenosaunee Environmental Delegate share this view, as with many others in their community:

> "We believe that rather than cripple an essential industry, a government which needs to create wealth and employment will relax its environmental standards. We are see (sic) this now. Our fear, based on experience with other issues and other places, is that once you impose strict rules and leave them for a few years, when there are no accidents and when the urgency is lost, the standards will be relaxed to cut cost. And an accident with nuclear waste is beyond any cost.
>
> We are deeply concerned that any stringent standards you may impose will be short-lived once their true cost is known, and once society has been lulled into complacency. Those who must bear the burden of the costs and the standards will seek to have that burden reduced. You must find ways to entrench your stiff standards so they cannot be relaxed once the waste has been hidden" (Jacobs and Jacobs, 1996).

These expressions of lack of trust formed a considerable portion of the native testimony during the EIS review, with a total of 798 lines taken up and a frequency of 101 mentions in the testimony. The issue of trust included a demonstration of native lack of confidence in the proponent, in government proposals and commitments, the Environmental Assessment process itself and also in the "absolute truths" produced by science and technology. Chief Earl Commanda, speaks of his lack of faith in the Environmental assessment process:

> If the Panel accepts this proposal from AECL without ensuring that the impacts on aboriginal people have been considered, then we will be permanently prejudiced by this proposal.
>
> We are told to wait until there are proposals for specific sites. From past experiences, we can tell you that our issues will not be addressed at the siting level either.

> At the siting level, the only question will be where this disposal site is to be located; in other words, which aboriginal community must bear the brunt of yet another development in which they have had no role from which they will receive no lasting benefits (Commanda, 1997b)

### *5.2.9 Rejection of Waste, Disposal/Storage System and, Preferred Disposal Options*

Native testimony did not support the geological disposal concept for nuclear fuel waste. For the most part Aboriginals expressed a complete rejection of any type of nuclear fuel waste disposal facility in aboriginal territory. This view was expressed during the hearings by native peoples a total of 94 times with 479 lines presented on this particular point. Many native communities issued written resolutions in the place of oral submissions in order to express their concerns, most of which followed a format similar to the following example submitted by the Six Nations Council of the Grand River:

> "WHEREAS Atomic Energy Canada is currently developing a nuclear fuel waste management and disposal concept for the long term management of nuclear fuel waste in Canada;
>
> AND WHEREAS one of the prime areas which is considered to be high on the list of proposed dumping sites includes First Nations territories;
>
> AND WHEREAS the Six nations of the Grand River has grave concerns about the potential social, economic and environmental impact to First Nations people, which will result from the proposal;
>
> THEREFORE BE IT RESOVED that the Chief and Council of the Six Nations of the Grand River are opposed to a nuclear waste disposal site being located anywhere on First Nations Territory and any land claim area" (Six Nations Council, 1997).

In terms of geological disposal, Aboriginal peoples specifically expressed a significant amount of opposition to this method, with 351 lines expended rejecting burial of the waste and the objection was raised 70 times. In many ways native peoples felt that

burying the waste was an irresponsible way of dealing with the it, and this was due in part to their ecological values and beliefs. Members of the Whitefish River First Nation, as with other native participants, have expressed their views about "disposal" and "storage," stating the latter is fundamentally a more realistic description of nuclear waste management. Mr. McGregor of Whitefish River First nation supports this view in his oral submission, where he states, "In my opinion, burying the waste is not disposal; it's storage. This type of activity clearly shows a lack of respect for the planet Earth" (McGregor, 1997b)

Aboriginal peoples expressed some opinions on alternative methods of nuclear waste storage, as opposed to the proposed concept of geological disposal by AECL. These included options such as neutralization using transmutation in addition to above-ground storage which was supported by several groups. The above-ground option proved to be the most favoured alternative discussed because it in many ways guarantees that the waste will be continually monitored.[9] The Kikinahk Friendship Centre in Saskatchewan (in collaboration with the Saskatoon Indigenous Coalition) expressed these views in its written submission:

> "The majority of respondents to our survey prefer an above-ground storage site for nuclear fuel waste, coupled with constant monitoring. The users of fuel rods for power generation are storing the spent fuel rods under water for several years, and then moving the rods to above-ground dry storage concrete silos with one meter thick walls, where some of it has been stored since the beginning of the nuclear age in Canada" (Kikinahk Friendship Center and Saskatoon Indigenous Coaltion, 1995).

Mr. & Mrs. Norman Jacobs of the Haudenosaunee Environmental Delegate continue these views:

[9] Perpetual monitoring was a topic that received considerable attention in the native testimony, discussed on 13 occasions and amassing a total of 56 lines of testimony.

> "We are deeply concerned that once the waste is hidden and the problem of the poison no longer seems so urgent, efforts to deal with it in the long term will be reduced. In that sense, we are far more comfortable with nuclear residue sitting near your cities... because it acts as a reminder of its deadliness" (Jacobs and Jacobs, 1996).

### *5.2.10 Equity & Distribution of Risk*

Equity and the distribution of risk was an issue raised by native peoples throughout the hearings with a frequency that warrants discussion. The topic was raised a total of 61 times by native peoples in the testimony and statements often referred to the imbalance between the benefactors of nuclear energy and those who are subject to the risks posed by the waste. Allan Morin expresses these views very clearly articulating this point in his testimony:

> "For years now, industry and government have taken uranium out of the north. Now they want to bring it back and dump in our backyard.
>
> The nuclear industry is proposing and determined to construct the high-level waste storage somewhere in aboriginal territory within the Canadian Shield. In my opinion, there is definitely an assault by the multinational corporations on aboriginal territories.
>
> The electricity generated by nuclear power is being used in metropolitan Ontario to light buildings at night and to provide power to vast industries. The scheme however is that all the highly radioactive and toxic nuclear waste will then be buried on aboriginal territory.
>
> As the Métis Nation of Saskatchewan, we say to metropolitan Ontario: Keep your nuclear wastes in your backyards" (Morin, 1997).

This issue was also a concern during the scoping hearings and was discussed by Mr. G. Nolan of the Akiwesi Inter-Tribal Council/Native Friendship Centre.

> "They have taken our resources from the North and put it down to southern Ontario where the jobs have gone. And they want to put their waste up in the

> North in a tradition of, what the South wants, they do, and they will continue to do that if we let them" (Nolan, 1991)

The unequal distribution of risks and benefits is a central feature of the nuclear waste problem that has been ongoing since the beginning of the atomic age (Hoffman, 2001). Native lands and territory have been destroyed by uranium mining, nuclear bomb testing in North America and now nuclear waste storage is proposed. However, native peoples have received very little, if any, of the benefits associated with this technology and this inequity is clear from the testimony of Aboriginal peoples during this hearing process. Many of the native peoples who have participated live in communities that are "electrically remote" and "do not receive power from Ontario Hydro's grid and, therefore, do not use nuclear-generated electricity (Davey, 1996). These groups have predominantly felt the negative consequences of nuclear energy production.

When siting a noxious facility, it is impossible to evenly distribute the risks and benefits associated with it. Some groups or regions will inevitably have to bear the responsibility for the wastes and fall-out from the technology, whether it be the perceived or the actual risks (Pushchak and Burton, 1983). It has been argued that native groups and other similarly marginalized groups bear the risk of society's environmental burdens such as waste incinerators, toxic waste dumps, lead smelters, refineries and sewage treatment plants. Environmental inequities and injustice, unfortunately are cited as a common phenomenon, and socio-economically deprived citizens are more likely to bear the technological burdens of development (Bullard and Clinton, 1994; Oakes, 1996; Wigley and Shrader-Frechette, 1996; Liu, 1997; Auffrey C. and Wang X., 1998).

In the case of nuclear fuel waste disposal, a similar trend is apparent in Canada as the country searches for a possible nuclear fuel waste disposal site. The Canadian Shield

may seem the perfect candidate site for this unwanted facility because of its remoteness; however, as many natives have pointed out in their testimony, much of the Shield is also considered traditional Aboriginal territory. Therefore, this particular group would be facing a disproportionate level of risk compared to the rest of the Canadian public that benefits from the energy source.

> "These things are made in the southern areas, these wastes are made in the southern areas. If they want to make these wastes, let them look after it, let them keep it. Don't bring us their garbage. We're tired of their garbage" (Deperry, 1997).

Despite these native views, it is a common phenomenon for indigenous communities to be "targeted" with the idea of housing a waste disposal facility within their communities and consequently, imposing inequitable environmental impacts on these peoples (Goldtooth, 1995). Aboriginal communities in the United States have experienced this with great frequency, particularly because industries in the waste sector are very familiar with Native Government policy and its lack of environmental legislation and infrastructure. This, coupled with Aboriginal economic vulnerability and limited, if any, public input programs, provide enticing incentives for authorities to take advantage (Goldtooth, 1995).

Another dimension of equity raised by native peoples during the panel hearings concerns intergenerational injustices. Several members of native communities expressed apprehension about the risks posed to future generations, due to the long-lived toxic nature of nuclear fuel waste. Consideration of future generations, and how the choices made by our current generation could unfairly cause hardship to their children and

grandchildren, was a significant concern to native peoples, as demonstrated in a previous section. Grand Chief Fox contributes additional insight to this area of concern:

> "In the final analysis, AECL is asking us to accept all of the risk for ourselves and our future generations so that others can benefit.
>
> Within Canada it is really only nuclear generated electricity that produces these high-level radioactive wastes. You benefit from the power, we lose from its storage.
>
> If foreign waste is accepted for storage in these facilities, the profit goes to the implementing agency. You benefit, we lose again.
>
> You are asking us to agree to put the lives and well-being of our children and our children's children, to seven generations and more, in jeopardy" (Fox, 1996).

Mr. & Mrs. Jacobs of the Haudenosaunee Environmental Delegate continue the focus on intergenerational equity in their public submission:

> "The issue of nuclear waste disposal is, as we view it, an unacceptable deficit. Canadian society and, indeed, much of the western world, has accepted nuclear power's conveniences, while knowing that it had no safe way to dispose of the poison waste that the power plants created. It was a deliberate decision to leave a residue, a deficit, which would haunt future generations. We receive the benefit of the power today, our grandchildren and their grandchildren will bear the expense and consequences of dealing with a deficit" (Jacobs and Jacobs, 1996)

Intergenerational inequity resulting from the risks posed to future generations from radioactive waste is described by Blowers (1999) as "a problem of sustainable development" (Blowers A, 1999). The decisions that are made today concerning nuclear fuel waste management must be dealt with in a sustainable manner without compromising the environment for future citizens. Unfortunately, because the toxic nature of radioactive waste exists for thousands upon thousands of years, there is a lot of uncertainty about whether waste can permanently be isolated and disposed of. In terms of geological storage, the decisions that are made today will inevitably affect future

generations, therefore, issues such as retrievability are important because they allow future generations the option of "adopting new disposal technique(s) or recycling the wastes if new uses are found for them" (Gowda Rajeev and Easterling, 2000). The topic of retrievability, although not as significant in comparison to other issues within Aboriginal testimony, did appear on 15 occasions and was favourably discussed in 70 lines of testimony.

### *5.2.11 TEK Perspectives*

It has been recognized repeatedly that indigenous cultures have a life-style of living and interacting with the world that has not imposed any significant impacts. Non-native communities, on the other hand, have established a relationship with the world that has lead to extraordinary ecological degradation and environmental disaster. Native peoples hold a vast amount of knowledge concerning methods of managing natural resources and we need to look to them for help and guidance on how we move forward in our environmental decision-making (McGregor, 1997a).

Indigenous cultures have been able to achieve such a successful and sustainable relationship with the environment, and the underlying principle behind this ability lies in the fundamental way they view themselves in the web of life. Instead of identifying themselves as exclusive and separate entities from nature, which is the Western Scientific view, native cultures on the contrary believe that there is no division (Sadler and Boothroyd, 1994). Their lives are governed by a philosophy that does not adopt a relationship of dominion over nature, but rather, a relationship that "is based on respect, equity and reciprocity." They see the importance of managing their own relationships

with the natural world instead of managing the world and its resources to accommodate us (Stevenson, 1998).

TEK is a subject that was brought up in the hearing process by native peoples with reasonable frequency. With 480 lines of testimony devoted to this concern and mentioned on 59 separate occasions, it can be considered important to many natives and must be considered within this discussion. Also, TEK is increasingly being recognized for its considerable value by academics and decision makers, and "international bodies, such as the United Nations and World Bank, continually place emphasis on bridging the implementation gap between inclusion and exclusion of indigenous communities in public policy" (Paci et al., 2002 : 111). Native communities possess a wealth of traditional ecological knowledge pertaining to their local environments that one can only achieve by maintaining an intimate relationship with nature over many lifetimes. There is a shift occurring in traditional Western views, with respect to the growing acknowledgment that scientific and rational analytical thinking, which has focused solely on objectivity, is insufficient in determining sustainable modes of being. This is not to say that TEK lacks these aspects of science, as it has demonstrated bodies of knowledge that include taxonomic classification systems and continuous observations of local ecosystems, animal behaviour and population dynamics, and the interconnections among them (Sherry and Vuntut Gwitchin First Nation, 1999). In addition, TEK also emphasizes the ways these aspects interrelate their social and cultural relationships with the environment. "Its application to complex management issues will aid in overcoming perceptual, cultural and linguistic barriers, improving communication and understanding

between local and out side groups" (Sherry and Vuntut Gwitchin First Nation, 1999) Mr. Benton-Benay reiterates these views in his testimony to the panel:

> "I heard a very appropriate theme yesterday during our meeting in Winnipeg, talking about a gathering wherein we might bring forward our spirituality, our philosophy, our concepts into a modern-day way of thinking so that we might apply that to education, lifestyles, the economy, and the future. And when I heard this, I was very moved, and what I heard is in action here today. The suggested theme of our gathering was that our future is in our past" (Benton-Benay, 1997).

Mr. Douglas Bailey also contributes to this point:

> "Well, in the first place, I think you should know, if you don't already, that there is a large body of conceptual and even technical knowledge possessed by aboriginal people in this country and in this province. (Applause)
>
> Now, if there is one single thing I say to you it is, that unless you begin to tap and to understand that very unusual kind of knowledge, that you will be avoiding some of the sources of the kind of change that so dramatically affect us" (Bailey, 1996)

There is much opportunity for Western Knowledge to gain from TEK, especially in helping to determine the impacts of development that are carried out in areas that planning authorities are unfamiliar with. Experts and policy makers must be able to learn to value the spiritual understandings and relationship with the earth that these people have and at the same time never under-estimate the information and knowledge they have to offer. If native people are to be taken seriously in any future attempts at managing nuclear fuel waste, TEK will take on a fundamentally new level of importance in the EIS decision-making process.

### *5.2.12 Ethics of Voluntary Siting & Compensation*

AECL in its EIS has proposed to implement a concept for geological disposal that is "based on principles of safety and environmental protection, voluntarism, shared

decision making, openness and fairness" (Atomic Energy of Canada Ltd., 1994a: 65). It is assumed that voluntary siting would ensure that a community would not be forced to host a disposal facility and only those willing to take the waste would be considered. A proposed site located on Crown land would be sought only with the approval of the appropriate government having jurisdiction (Atomic Energy of Canada Ltd., 1994a). In order to achieve a level of fairness to the host community, the siting process will involve negotiations over environmental effects and additional "measures taken to avoid, mitigate or compensate for adverse effects" (Atomic Energy of Canada Ltd., 1994a). Host communities would share in the decision-making while the views of potentially affected communities would be sought and addressed (Atomic Energy of Canada Ltd., 1994b)

The voluntary siting and compensation approach has had many advocates in the past, as a promising method for siting unwanted hazardous facilities within willing host communities (O'Hare, 1977; Carnes et al., 1982; Carnes et al., 1983; Pushchak and Burton, 1983; Inhaber, 1991; Armour, 1992). It has been praised for its abandonment of the traditional "Decide-Announce-Defend" model of facility siting and adopting a co-operative, open approach that welcomes shared decision-making. Canada has two well-known cases that have achieved success using this method. Both Montcalm Manitoba, and Swan Hills, Alberta, using a voluntary siting method, gained strong community support in the decision to host hazardous waste facilities within their jurisdictions (Castle, 1993; Kuhn and Ballard, 1998; Rabe et al., 2000). Although this unconventional method seems to provide a viable way of dealing with the facility-siting dilemma, it still has its opponents and has not always proven to be the best choice, with

several facilities failing to find a permanent resting site in willing communities (Pushchak and Rocha, 1998).

This was the case when the federal government, in 1988, initiated an Ontario-wide voluntary siting approach to seek a host community to house a Low Level Radioactive Waste (LLRW) longer-term storage facility. In the final stages of the process Deep River, the selected site, could not come to an agreement with the siting authorities and the process was abandoned in 1995 (Low Level Radioactive Waste Management Office, 2003).

Many opponents of the voluntary siting approach using compensation payments have labeled them "bribes", encouraging less fortunate communities to bear the risk that the rest of society does not want (Pulsipher, 1993). Lake (1996) argues that voluntary siting is a disguised attempt at providing self-determination and distributive environmental equity, however, it does not achieve this if the host communities are not able to control the production of the environmental problems. He questions the democracy of the voluntary siting approach, concluding that "environmental justice will not be attained through a redistribution of problems that leaves intact the process through which those problems are created and recreated" (Lake, 1996: 171). Gowda et. al has also examined the U.S. Department of Energy's application of the voluntary siting method to find a monitored retrievable storage facility for high-level nuclear waste. The "concentration" on Native American communities "raises profound questions about environmental justice, as well as procedural, outcome and intergeneration equity in cross

cultural context" (Gowda Rajeev and Easterling, 1998; Gowda Rajeev and Easterling, 2000: 917; Hanson, 2001: 31-33).[10]

The public hearings on the concept for disposal of nuclear fuel waste have revealed the deep concern that Aboriginal participants share about the voluntary siting method that is being proposed by the AECL. The content analysis has shown a very high number of participants expressing concern about the proposed approach, with 375 lines of testimony devoted to this issue raised on 33 occasions. Although this issue scarcely falls within the top 15 issues addressed, and it is not mentioned as many times as other issues discussed by natives, it must still be given some consideration. One must keep in mind when examining the data being revealed in this study that most of the native peoples who came forth to express their views on the proposed concept had little or no background on the subject prior to the hearing day. Most elders did not have the opportunity to read the EIS, and they were also limited by a language barrier and may not have been able to fully understand the concept because their native dialogue does not include the technical vocabulary needed to translate it accurately.

> "I suppose when one contemplates atomic energy, the best way I can probably sum it up, in my opinion, is that I raised this question with my mother before I came before this panel, and atomic energy waste ... I tried to describe it to her in our language, because her first language is Cree, and it took me a good half-an-hour to describe it to her...And I think when one begins to examine in the context of nuclear waste and all the scientific data and technical stuff that I've been hearing this afternoon, when you try and translate and portray that into our language, you're talking about a great deal of work, and that's one obstacle that has to be looked at, one obstacle that I believe has not been addressed adequately"(Fox, 1996).

[10] The Office of the Nuclear Waste Negotiator was created by the U.S Congress to find a "volunteer' site for an MRS. Hanson,, Gowda and Easterling among others have viewed the strategies employed by this office as being specifically directed towards Indian nations. The initial disinterest of state governors to take part in the voluntary siting process left the negotiator with only Native American tribes to approach.

Many natives were briefed just days before and may not have had an extensive understanding of concepts such as 'voluntary siting' and 'compensation.' Therefore, any discussion of the topic in the public testimony was by the very few tribal members who have had the education and background needed to respond to such issues. The same should be kept in mind, not just with this issue but, with each of the issues raised in the testimony.

To continue on the topic of voluntary siting and compensation, there were two major concerns raised by native representatives. First, natives were apprehensive about how communities would be defined within the voluntary process. In many ways, Aboriginal peoples have many unsettled land claim issues which might interfere with the site selection process. Grand Chief Fox explains, "The definition, or rather, the lack of definition of community, with the result that the principle of voluntarism actually mitigates against the people of Nishnawbe-Aski Nation" (Fox, 1996). Native territories extend well beyond the boundaries of their reservation areas, however, the likelihood that siting authorities will recognize this is low. Chief Earl Commanda expands on this view even further in his testimony.

> "The principle of voluntarism is based on a veto right to the host community and some kind of consultation with affected communities. Unless the waste depository is to be sited directly on a reserve, there is no way that an aboriginal community will be classified as a host community. We will be classified by the implementation organization as an affected community because the site will likely be within lands that are classified by non-natives as municipal or crown lands....
>
> The purpose of voluntarism is to give a community some control over the developments that may affect it. The voluntarism principle as currently designed would give a potentially affected First Nation community no control over whether a facility is sited on lands subject to our treaty or subject to our aboriginal rights....

> If the Government volunteers crown lands for the disposal site and those lands are aboriginal lands, then a major violation of aboriginal and possibly treaty rights may occur if that site is selected.....
>
> Our reserve lands are too small to ensure the economic survival of our communities and we must have larger land bases if we are to survive. We must have further and better access to our traditional lands" (Commanda, 1997b).

The second concern that natives raised about the voluntary siting method proposed by AECL is its potential to instigate divisions within the native community. Grand Chief Fox expresses this in his own words:

> "And So I think volunteerism, where you approach it from the perspective, it's like a divide and conquer tactic that the government of Canada uses against Aboriginal people to divide unity, and we have been running into that historically. So when we look at volunteerism as outlined here, we see it as an attempt to undermine the spirit and intent of our treaty and the treaty collectively that we would like to assume that we have, by approaching First nations and saying to them, "We'll give you millions of dollars to look after this nuclear waste," which in effect affects the collective position of the treaty right of all First Nation Ojibwa and Oji-Cree" (Fox, 1996).

Hence, native peoples are concerned that offers of compensation that draw boundaries between communities will weaken native peoples collective voices in their quest to get their views and concerns acknowledged. Native peoples who stand together on several fundamental issues concerning the management of nuclear fuel waste will be viewed as much more credible by the rest of the Canadian population, the government and siting authorities. Divided native peoples will only cause their views to be less credible in the eyes of their Canadian peers, as much of their efforts will be used against each other instead of towards getting their views heard and taken seriously. John Jackson, an Environmental Consultant and Community Activist, has suggested from his experience that compensation has for the most part caused divisions within communities (Jackson,

2003). This is reason alone for many native participants such as Grand Chief Fox to express sincere concerns about the impact of compensation measures on native communities in order to entice willing host communities to accept a nuclear fuel waste disposal facility.

### 5.3 Fairness of the environmental assessment process and panel hearings.

The Environmental Assessment Review Process (EARP) has attempted to implement a system that ensures public involvement; one that provides the public with the opportunity to express its views and concerns about development projects and the proposed EIS. There are many methods employed to seek public input in an EA that include surveys, interviews, email and, similar to the process demonstrated by the EA review panel on the concept for disposal of nuclear fuel waste, public hearings and written submissions. Unfortunately, the former EARP did not guarantee a process that is fair and open to all members of the public who have an interest or are affected by the project. In many cases, it was very difficult for members of the public to attend public hearings and it took an immense amount of effort and initiative to ensure their views were heard. Peggy Sanger one former resident of Port Hope explains in her testimony the significance of each individual submission made by a member of the public:

> "That's 144 people who read up on the subject, consulted their peers, took a day off work, travelled sometimes long distances to the hearing to say their piece. Most of them were not paid for this"(Sanger, 1997).

Aboriginal peoples not only have to face such hurdles, but they also have to contend with the cross-cultural differences in the way that views are expressed and shared. Native peoples in particular have been marginalized in the public participation process because

review panels may not have been able to easily adopt traditional decision-making methods in the public environmental assessment review process. Effective public involvement requires that these groups be drawn into the process, through specifically designed procedures. Planning public involvement strategies must not automatically "adopt familiar methods such as public meetings and written submissions without first considering explicitly: Which groups are being marginalized by this approach? How do we reach these people through alternative means?" (Morgan, 1998).

An unfair process has been experienced by some native peoples in the past during the review of the Environmental Impact Statement for the expansion of low-level military flight training activities in Labrador and Quebec. The proposed expansion affected lands traditionally occupied by Innu and other aboriginal peoples but during the review the panel had denied requests to reschedule public hearing sessions that were set during traditional moose hunting season (Pushchak, 1997). As a result, many natives were deprived of their only opportunity to express their views about the proposed project. Fairness of process, although very difficult to maintain, is important in ensuring that Aboriginal peoples get a fair chance to express their views.

One of the major barriers associated with public hearings and the involvement of native peoples is the often large distances that must be travelled in order to attend the hearing sessions. As previously discussed, many of the Aboriginal peoples in Canada live in remote communities, located in the northern areas of the country. Their limited resources make it very difficult for them to travel to large cities and attend the sessions. Kliger and Cosgrove (1999) found similar circumstances were also felt in Broom, Australia, where attempts at encouraging Aboriginal involvement in town decision-

making were limited due to the distances indigenous people had to travel to attend the meetings. These researchers, studying cross-cultural land-use planning and decision-making in this area, found that without providing a means to attend the meetings "the demands on Aboriginal peoples can become so wearing that they lose motivation or drop out of the operation" (Kliger and Cosgrove, 1999). The Seaborn panel has attempted to alleviate this problem by bringing the panel hearings to native communities. Their visits to Sagkeeng First Nation in Manitoba and Ginoogaming First Nation and Serpent River First Nation in Ontario, in many ways allowed a significant number of people from the aboriginal communities to take part in the hearings. Out of the 94 indigenous presentations given to the panel, 58 (62%) were made during the native community visits. Although the community visits did help to reduce the marginalization of native peoples, it cannot be considered a final solution to the problem. There are other problems to consider that pose barriers to the flow of communication.

Often, groups who are not familiar with formal hearing procedures can be very intimidated and unprepared to share their feelings in front of a large group of people. Mr. Joe Endanawas of Sheshegwaning First Nation, United Chiefs and Councils of Manitoulin expressed these feelings during the public hearings in the community of Serpent River First Nation:

> "I wrote up a quick statement yesterday when I was told I had to come up here. The Tribal Chairperson is busy with other meetings. So I didn't volunteer; I was told, 'You go up there and do our thing,' but...
>
> And I will speak to a lot of people here when I say people are intimidated to come up here and say anything, especially when they're not informed as they should be on the subject" (Endanawas, 1997)

This point is again expressed by Serpent River First Nation in their written submission to the panel where they state:

> "They tend to listen more than talk which is contrary to the objectives of the process. They tend to be uncomfortable in any formal public setting and would prefer to share ideas and issues in small groups in the comfort of their own homes in the presence of people that they know, consistent with their oral ways. For those who have overcome these difficulties and do participate actively in untraditional consultation exercises, there is often disappointment regarding the effect that their ideas have influenced a final decision. This latter point is, of course, common amongst non-Aboriginal participants in modern consultative mechanisms" (Lewis, 1997)

The Seaborn panel attempted to make the hearing process more hospitable to native peoples in order to encourage their participation and involvement. During regular panel sessions, a three way light system was used to guide participants during their presentation. A green light indicated when the presenter could begin their presentation, a yellow light warned them when they had two minutes remaining and a red light specified when their time had expired. This system was eliminated in the three native community visits in order to give native peoples the freedom to express themselves without the rigid time constraints imposed on all other hearing sessions. Although this measure was helpful, it still proved to be inadequate to native peoples, as the testimony expressed previously from Mr. Joe Endanawas has shown. Native peoples who did attend panel sessions outside native communities were obligated to use the light system and this proved to be frustrating for them, as is demonstrated in the testimony of Mr. Morin, a member of the Executive of the Métis Society of Saskatchewan.

> THE CHAIRMAN: I am sorry, I am sorry. You have run out of time. We have your full text here and other people who have presented to us have presented, and very helpfully, the fuller text as you have.

> MR. MORIN: (Speaking in Cree) What I am saying is that if that's a reflection of co-management, co-planning and co-hostessing, Mr. Chairman, I find you to be very rude."
>
> MR. CHAIRMAN: "Well I..."
>
> MR. MORIN: "And if that's the way you approach the aboriginal communities, then, you know, you are very rude to us, and I do not accept that as. As a leader you should have better protocol than that. We are the first people of this country. You came here. Don't forget that." (Bianchi et al., 1997)

An additional component to the issue of 'fairness of process' is the disappointment expressed by many participants in the insufficient forewarning prior to scheduled public hearing days. This gave native participants very little time to prepare themselves for their presentations, let alone educate themselves on the issue. Mr. George Francis and Mr. Emmett Pitawanakwat of Whitefish River First Nation express this view:

> "At this point, we feel it is necessary to communicate to you dismay at the limited public notice issued to inform Canadians, as well as aboriginal peoples, of this review.
>
> We did not learn of this review by a public notice or by way of invitation. We learned of this review when we approached -- when we were approached by Northwatch. They invited us to a workshop to inform us of the background activities which have led up to this review now.
>
> The sheer luck of being introduced to the review in this manner has caused us to seriously question the adequacy of the public notice" (Pitawanakwat and Francis, 1997)

Deputy Grand Chief. Brian Davey also expresses similar concerns in his statement to the panel:

> "Neither AECL or Ontario Hydro offered to provide us with the appropriate timing or necessary resources to conduct our consultation in a matter respecting our culture, our relationships and our leadership and our rights"(Davey, 1996).

Similar circumstances were felt by native people during the environmental impact assessment review hearings for the Alberta-Pacific bleached draft pulp mill in Alberta

and the Northwest Territories that took place in 1989 to 1990. "Many people were frustrated with the lack of time allowed for members of the public to inform themselves, to debate, and to think about issues before they had to make their presentations. The eleventh-hour opportunity to speak underscored a recurring public complaint about the failure of government and industry to involve the communities in the planning process prior to the hearings" (Richardson et al., 1993). Again, we hear these complaints within the hearing process on the nuclear fuel waste disposal and management concept:

> This presentation will be based on an individual rather than how it is a collective band. I didn't -- we didn't get the mandate from the reserve to talk on behalf of the community due to lack of time, and we were unable to get the community members together to get that mandate. So keep that in mind (Courchene, 1997) .

Criticisms of this nature about the hearing process engaged a noteworthy portion of native hearing testimony. All the criticisms relating to the hearing process, including those that have been discussed in this section totaled 406 lines of testimony and were raised 65 times. An additional issue relating to this topic that native people considered important was their lack of agreement with the narrow mandate of the review. Several native participants, as well as non-native participants, felt that they had never been given the opportunity to express their views on Canada's energy policy, and the decision to focus on nuclear power as an option. Native participants felt that they should have the opportunity to express their views on this topic. These criticisms of the narrow mandate that focused on the AECL concept alone were present in 74 lines of testimony and mentioned on 39 separate occasions.

## 5.4 Tone

For the most part, this thesis has attempted to maintain an objective approach in the investigation of native issues and concerns about the concept for disposal of nuclear fuel waste. Although true objectivity is unattainable, this investigation consistently applied accepted measures (frequency and text length) to produce consistent results (Berger and Luckman, 1966; cited in: Neuendorf, 2002). This analysis, however, would not be complete without taking the opportunity to examine the public testimony for its subjective qualities. It is important to give a sense of the heartfelt concern and passion that many native people clearly felt while giving their testimony to the panel. Although a measure of these feelings is impossible to provide because of its subjective qualities, one can understand its meaning and reality in passages of the testimony, and how the panel members and non-native participants responded to Aboriginal messages. In reference to Mr. Keith Conn of the Assembly of First Nations, Ms. Catherine Sly, member of the National Council of Women of Canada, whose presentation followed Mr. Conn, responded to his words with:

> "Thank you. Mr. Chairperson, Ladies and Gentlemen of the Panel, I feel like a pygmy coming after a giant. I was very impressed by the previous speaker and I want to take a second to say so" (Sly, 1996).

After a presentation made by National Grand Chief Ovide Mercredi of the Assembly of First Nation, Blair Seaborn, chairman of the panel remarked:

> "Thank you Grand Chief Mercredi, you have spoken, as I think you always do, with great strength and great conviction. We appreciate that" (Mercredi, 1997)

He again took the opportunity to acknowledge the sincerity of Ms. Nelson, of Grassy Narrows First Nation, in her presentation:

> "indeed we have heard a very personal statement from you Mrs. Nelson, and that's a valuable thing to have" (Nelson, 1997).

Finally, one last attempt at giving an impression the conviction and passion of Aboriginal views and values comes from Chief Earl Commanda in his farewell closing to the panel during their community visit to Serpent River First Nation:

> "We come to the end of the session for today, a time when we must say goodbye to our visitors who I know have traveled to many communities and will travel to many more communities until their task is done.
>
> It was a good opportunity for them to share in our community and we recognize that they have a certain responsibility in terms of preparing their report and we thank them for listening to us today and are glad to have them join in our community and share a meal with us.
>
> And so we offer, as you journey away from here, these traveling songs. They tell me they want to give you more than one song this evening. [Laughter]
>
> It is an honour for the community to be hosting you here at these hearings, and even though we often have difficulty with these processes, for us, it is a chance to show our own hospitality to visitors and to also have you explore some of who we are as Anishinabe people.
>
> So we again say farewell at this time and we were glad to have you and we hope that you travel safely in your return home"(Commanda, 1997a).

## CHAPTER SIX: IDENTIFICATION OF PARALELL ISSUES IN SIMILAR FACILITY SITING PROCESSES

This study, thus far, has identified and examined several issues and concerns that native peoples hold about the concept of geological disposal of nuclear fuel waste in the Canadian Shield, as proposed by AECL in their environmental impact statement. These issues, revealed through the content analysis, are concerns that can be identified in similar siting exercises where native peoples have been potentially affected. The thesis of this study has maintained that the similar occurrence of these views about facility siting is not coincidental, but rather, a clear demonstration that native peoples have similar issues and respond to siting proposals in a consistent manner over time and over geographical distances. Despite their continual exposure to pressures from the nuclear industry, Aboriginal views and values have remained constant, not just in Canada but in other areas where natives reside. This Chapter will demonstrate several of these additional circumstances where Aboriginals continue to express these views.

### 6.1 Monitored Retrievable Storage

The first example that reflects consistent native views to those identified in this study, are those that arose in response to the concept of monitored retrievable storage (MRS). As was already discussed, MRS was introduced in the United States as an interim storage solution that would house nuclear waste for approximately forty years until the Yucca Mountain geological disposal site in Nevada was complete. *The Nuclear Waste Policy Act* of 1982, amended in 1987, gave permission to the Office of the Nuclear Waste Negotiator to settle a deal with a state or tribal government that would entitle a willing voluntary community certain compensation in exchange for accepting a

MRS facility (Leroy and Nadler, 1993). The process would involve a series of phased stages where interested communities would be awarded money that they could use to investigate the project further. It soon became clear that Native communities were "targeted" for this initiative, considering that the U.S. Department of Energy had given approximately one million dollars in grants to the National Congress of American Indians between 1986 and 1990 to encourage tribal government participation (Hanson, 1995; Hoffman, 2001). Native communities enjoy a level of sovereignty that prevents state-level authorities from interfering with tribal government decisions, hence tribal governments had the freedom to consider the MRS facility and the proposed compensation[11] (Gowda Rajeev and Easterling, 1998; Kuletz, 1998). Consequently, of the 20 phase I study grants that were awarded to interested communities, 16 went to American Indian tribes.

The Mescalero Apache tribe, whose reservation lies in southern New Mexico, after a series of referendums, was initially considered the voluntary host site for the MRS facility. Despite band chairman Wendell Chino's determination in acquiring the project, it wasn't until public opposition occurred in other parts of New Mexico, in addition to the resistance from other tribal communities, and from Aboriginal members within the Mescalero band itself, that the siting attempt came to a halt in 1994. Subsequently, the Mescalero tribe, along with the Skull Valley Band of Goshute, began negotiating a private deal with a group of eight utility companies known as Private Fuel Storage (PFS). Negotiations with the Mescalero tribe were not successful and broke down over financial

[11] Congress authorized the host state or nation to receive $5 million per year prior to the shipment of waste and $10 million per year during the operation of the MRS facility (Gowda Rajeev and Easterling, 1998). With the establishment of a host community the electric utility companies would be relieved of their responsibility for the radioactive fuel waste (Erickson and Chapman, 1993).

terms; however the Skull Valley Band continued to seek the MRS proposal (Gowda Rajeev and Easterling, 2000). PFS applied for a license from the Nuclear Regulatory Commission (NRC) to proceed with the facility, however, the state of Utah has countered these efforts by establishing the Office of High Level Nuclear Waste Storage Opposition (Gowda Rajeev and Easterling, 1998; Hoffman, 2001). As of May 10, 2003 the NRC ruled that the risk posed by a nearby military airport near the proposed facility was too high and could therefore not grant a license based on the present design specifications. In addition to this consideration, the NRC still had outstanding decisions to make on matters of seismic stability, as well as the proposed fuel transportation rail-route (United States of America Nuclear Regulatory Commission, 2003).

Native individuals and groups have not had the opportunity to express themselves on the subject of MRS in a manner similar to the public review process established by the Seaborn review panel. The views of native peoples have also never been sought using a systematic and quantitative method, such as the one that has been employed in this study. In spite of this, one can, however, find evidence of native views and concerns expressed by key Aboriginal spokes-people or organizations that show a significant interest in the issue of MRS. Many of the views that have been expressed run parallel to the concerns that have been identified in this study, consequently they support the consistency of native views regarding nuclear fuel waste management.

### *6.1.1 Total Rejection of waste*

Much like the rejection expressed during the public hearings reviewing the concept of geological disposal of nuclear fuel waste, there have been a significant number of native representatives who have articulated resistance to the MRS proposal. Grace Thorpe, founder of the National Environmental Coalition of Native Americans (NECONA) is one of the most well known individuals supporting this view:

> "The Great Spirit instructed us that, as Native people, we have a consecrated bond with our Mother Earth. We have a sacred obligation to our fellow creatures that live upon it. For this reason it is both painful and disturbing that the United States government and the nuclear power industry seem intent on forever ruining some of the little land we have left" (Thorpe, 1996).

> "Tell the federal government to spend taxpayer's dollars researching alternative sources of energy. Let your members of Congress and utility companies know that a more positive choice for economic development for Indian tribes would be to encourage the production of safe sources of energy such as the wind and sun, not by pressuring them to serve as hosts for the nation's nuclear garbage dump" (Thorpe, 1995).

Quite often, attitudes that represent "protectionist" outlooks, "and oppositional tactics adopted by community groups facing unwelcome development in their neighborhood" are often referred to as the "NIMBY" phenomenon, or Not In My Back Yard (Dear, 1992). In the case of native communities, however, the factors contributing to their opposition, in many ways, go well beyond the issues of property value, safety, neighborhood quality and other negative externalities usually associated with NIMBY (Dear, 1992). Although some elements are the same, for instance, the inherent reaction to protect one's self, property and family when faced with an unwanted land use, the difference between native and non-native communities is that native peoples have a deep-rooted connection to the land that has existed for many generations. Consequently, they do not have the option of moving to another area to avoid the development project. By

doing this, native people essentially give up their heritage and traditions, which is the basis of their culture.

Like many native Canadians who have expressed a total rejection of nuclear fuel waste disposal or storage on tribal lands, Grace Thorpe, and members of NECONA, have advocated that Indian lands reject nuclear fuel-waste by encouraging Native Nations to declare themselves Nuclear-Free Zones (Thorpe, 1996). According to NECONA, seventy-five tribes have made this proclamation and they claim that this count is continually rising (NECONA, 1993).

The Indigenous Environmental Network (IEN), an organization representing an alliance of approximately 200 grassroots indigenous organizations throughout the Untied States, Canada and Mexico, otherwise known as Turtle Island, have also expressed their rejection of MRS. The IEN presented a statement entitled, "Indigenous Anti-Nuclear Statement: Yucca Mountain and Private Fuel Storage at Skull Valley" at "The Peoples Summit on High-Level Radioactive Waste". In this proclamation they reiterated their opposition to Private Fuel Storage (PFS) and to any activity "that would allow the transportation, storage or production of spent nuclear fuel, high-level nuclear waste, and low-level radioactive waste within the traditional homelands of Turtle Island.

### *6.1.2 Future Generations and Cultural Well-being*

Protection of future generations and preservation of cultural well-being are two issues that received considerable attention from native participants during the public hearings on the concept for geological disposal. The prevalence of these issues has not

been lost with respect to MRS, but rather continues as central concern for native peoples. At 23 years of age, Apache Stronghold member, Abraham Chee has expressed:

> "The main reason I'm against this is because of my kids: I want them to have what I have had growing up. It upsets me that Wendell Chino [President of the Mescalero Apache tribe since1962] is an elder and supports this. He should know our traditions. Nuclear waste is against our traditions....The things that us Apache People pray to are land, the trees, the sky. We learned this from our parents and our grandparents. We need to keep carrying these traditions on. I guess those who want this nuclear waste don't know what our grandparents fought for" (Hanson, 1995).

IEN in their anti-nuclear statement also referred to the cultural survival of future generations by calling on tribal leaders and inter-tribal organizations to recognize their obligation towards future generations by protecting and maintaining spiritual traditions and the assurance of physical, mental and spiritual well-being. They have encouraged it by reminding leaders that these responsibilities are not only accomplished by monetary gains, but by a true commitment to traditional values and teachings, and the protection of Mother Earth (Indigenous Environmental Network, 2002).

Grace Thorpe adds to these views by expressing her sentiments about the future of generations by considering her own personal reflections: "As a mother and a grandmother, I am concerned about the survival of our peoples just as Mother Earth is concerned about the survival of her children" (Thorpe, 1996). Her actions as a "catalyst" working against nuclear industry attempts to store nuclear waste on native land clearly reflect her intentions in protecting her native heritage. "The nuclear waste issue is causing American Indians to make serious, possibly even genocidal, decisions concerning the environment and the future of our peoples" (NECONA, 1993). She has gone on to say:

> "The Iroquois say that in making any decision one should consider the impact for seven generations to come. As Thom Fasset, who is Iroquois reminds us, taking such a view on these issues often makes us a feel we are alone, rolling a stone up a hill. It keeps rolling back down on us.(Fasset, 1995) That may be the only way, however, for us to live up to our sacred duty to the land and to all of creation" (Thorpe, 1996: 56).

### *6.1.3 Compensation and Vulnerability*

Issues of vulnerability of tribal communities and compensation for impacts they might bear was also discussed in reference to the Skull Valley tribe. IEN has declared the actions of Private Fuel Storage "a form of economic blackmail and corporate oppression on a small Indigenous community of near 75 voting members that have experienced decades of toxic exposures from Department of Defense experiments with toxic and biological warfare and failed United States Governmental policies that have created poverty and high unemployment." (Indigenous Environmental Network, 2002)

This study revealed that Native Canadians expressed fears that their communities would be divided if a voluntary siting method used compensation tactics to encourage voluntary hosts. These fears are substantiated by the MRS siting strategy experience in the United States where deep divisions among native business-oriented tribal officials and traditionalists occurred. These polar views are evident in the opinions of Wendell Chino, an adamant promoter of development on native lands, and Grace Thorpe together with Rufina Laws, who clearly have shown their opposition to how their fellow Aboriginals have been swayed by the promises of monetary gain offered by the nuclear industry (NECONA, 1993; Hanson, 1995; Thorpe, 1995, 1996, 1997; Chino, 1996; Jeffereys, 1997).

### *6.1.4 Equity*

In dealing with nuclear waste storage/disposal, regardless of the preferred method, one can expect that issues of equity and the distribution of risk will be concerns to native peoples, especially when their traditional lands are being considered as a site. Equity issues arise when the distribution of risk is placed disproportionately on one community while the rest of society benefits from their misfortune. Therefore, unfairness is created by the unfavourable distribution of risks and benefits. Natives feel it is unfair to have compensation but be expected to bear the greatest part of the risk. In the case of MRS storage in the U.S., many native peoples shared the opinion that they were "targeted" to bear this risk. Thorpe is well known for her description of this "targeting" which she has defined as "radioactive racism" in her article titled "Radioactive Racism? Native America and the Nuclear Waste Legacy":

> "The U.S. government targeted American Indians for several reasons: their lands are some of the most isolated in North America, they are some of the most impoverished and, consequently, most politically vulnerable and perhaps most important tribal sovereignty can be use to bypass state environmental laws" (Thorpe, 1995).

The geographic distribution of risk is an important factor in the equity issue, and in many instances, natives have asserted they have experienced an extremely high frequency of nuclear related risk sources compared to the rest of society. An IEN statement expressed this view:

> "50-years, the legacy of the nuclear chain, from exploration to the dumping of radioactive waste has been proven, through documentation, to be genocide and ethnocide and a deadly enemy of Indigenous peoples. The ancestral lands of the Indigenous peoples in the United States has been used for testing nuclear weapons, experimenting with biological and chemical warfare agents, incinerating and burying hazardous waste and mining uranium.... This disproportionate toxic burden called environmental racism – has culminated in the current attempts to

> dump much of the nation's nuclear waste in the homelands of the Indigenous peoples" (Indigenous Environmental Network, 2002).

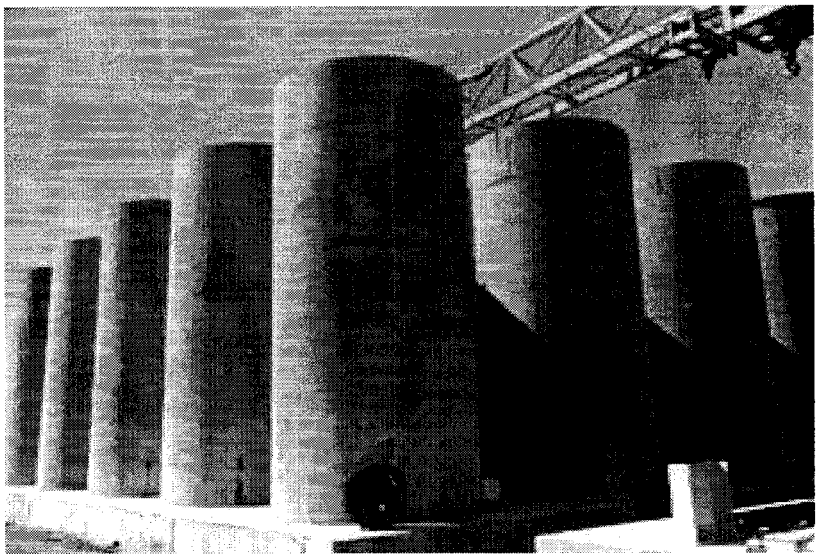
Native peoples during the Canadian hearings for geological waste disposal shared similar concerns about the distribution of risk and its lack of equity and fairness. They have also had concerns about intergenerational equity, which again has surfaced in the native experiences with MRS. Members of the Sac and Fox tribe (one of the original tribes that considered the MRS facility and applied for a phase I grant) expressed considerable concern for future generations and the significant risks such a development can pose to their lives (Gowda Rajeev and Easterling, 2000). Furthermore, these members held the view that it was unfair that future generations were obligated to participate in managing the MRS facility, considering that they did not play a part in making the decision to host the facility or even benefit from the storage of spent fuel.

## 6.2 Bruce Nuclear Power and Dry Fuel Waste Storage

A second example where native views about nuclear fuel waste disposal were found to be consistent with the ones revealed in this study is the dry fuel waste storage proposal at the Bruce Nuclear Power plant in Ontario. In 1997, Ontario Hydro submitted an EIS for a proposal to expand its dry fuel waste storage capacity at the Bruce Nuclear Power Stations (Bruce A and Bruce B), which are currently leased by British Energy. At the time the EIS was produced, the Bruce Nuclear Power Development (BNPD) was home to eight of Ontario Hydro's twenty CANDU reactors. The remaining twelve were found at two other locations; the Pickering Energy Generating Station and the Darlington Station (Ontario Hydro, 1997).

The proposed project was to "expand existing on-site fuel storage facilities to accommodate used fuel from ongoing operation of the Bruce A and Bruce B generating stations" (Ontario Hydro, 1997).[12] All the used fuel produced at BNPD, at the time the EIS was completed, was contained in wet-storage. Therefore, the proposal introduced by Ontario Hydro was for the construction of a dry storage facility where fuel waste could be stored above ground after being transferred from the existing fuel bays. The dry storage system would utilize concrete silos similar to those used at the shut-down Douglas point reactor (owned by AECL and located at the BNPD site), the Pickering Plant, and also those used by Hydro Quebec and New Brunswick Power.

**Figure 18: Dry spent fuel storage silos, Point LePreau, New Brunswick**



( source: http://www.ccnr.org/nuclear_primer.html#HD)

The construction of the storage system would remain on-site and would occupy an area of approximately 45,300 square meters or 4.5 hectares (Ontario Hydro, 1997).

[12] Used fuel bundles from nuclear generating plants are first stored in water-filled pools or fuel bays for a minimum of 6 years after they are first removed from the core of the reactor. This wet-storage technique is used to allow the fuel, which is extremely hot, to cool to a temperature that is much more manageable (Ontario Hydro, 1997: 1).

Environment Minister Christine Stewart approved the project on April 14 1999 but made no public announcement until May 12 1999 after ministry officials and lawyers decided that the decision was a public rather than confidential matter (Anonymous, 1999). Hence there was no formal EIS review or public hearings held to allow an in-depth review of the project. Instead, only written public comments were accepted and then taken into consideration by the Minister when making her final decision.

The proposed dry fuel storage facility at BNPD and its environmental effects are a concern to many local residents in addition to several native communities. About 30 km north of the generating stations along the shoreline of Lake Huron is the reserve land of the Chippewas of Saugeen First Nation and further north in the Colpoys Bay part of Georgian Bay, are found the Chippewas of Nawash reserve. Both First Nations have expressed apprehension about the project and the potential impacts it will have on their lives. Again, these concerns are comparable to the native issues that have been revealed in this study concerning deep geological disposal of nuclear fuel waste. One can find the concerns relevant to dry fuel storage at the BNPD site documented in the written submission made to the Canadian Environmental Assessment Agency (CEAA) by both First Nation groups previously mentioned, otherwise known as the Saugeen Ojibway Nation.

### *6.2.1 Aboriginal and Treaty Rights*

Aboriginal and treaty rights are as much of a concern in the case of dry fuel waste as they were in the geological disposal concept. Aboriginals remain adamant about the rights they are entitled to as native peoples. In both cases, they have constantly reminded

authorities of past treaties and agreements that have been signed. They have also been sure to restate on record, how many of these agreements have been broken throughout the history of their native non-native interactions. In this case, the Saugeen Ojibway Nation has focused its discussion on its treaty rights over their fishing territories and how the proposed project will compromise these rights:

> "Starting in the early 1800's we were subjected to great pressures to move our people off the land. In spite of the terms of Imperial Proclamations and treaties, we have suffered encroachments and forced surrenders, until now in the late 1990's we are down to a small portion of our original territory" (Orkin and Edwards, 1998).
>
> "Of extreme importance, the land surrenders that we have experienced did not affect or diminish our Aboriginal rights in the surrounding waters which are part of our traditional territory, or the fishing rights traditionally exercised by our people since time immemorial. Our rights in these waters and to our fishery have also been assured to us as treaty rights. These Aboriginal and treaty rights have been recognized and affirmed in s. 35 of the *Constitution Act, 1982* .
>
> We have never in any way ceded, surrendered or given up our waters or our fisheries" (Orkin and Edwards, 1998).

### *6.2.2 Concerns about Cultural Well-being*

Concerns about the cultural well-being of the Saugeen Ojibway Nation stem from the belief that who they are as a people is grounded in their intimate relationship to the land:

> "Along with indigenous peoples everywhere, our relationship with our traditional lands, waters and resources is profound, ongoing and an essential part of our identity and culture as well as the economy of our people that sustains us to this day. Who we are comes from the land. Our language comes from the land, our culture comes from the land, our sustenance comes from the land" (Orkin and Edwards, 1998).

The construction of a dry fuel storage facility at the Bruce Nuclear Power Development has the potential to compromise a way of life that Aboriginals have known since time immemorial. Actual and perceived perceptions of risk posed by the fuel waste stored in such close proximity to where they live and gather their food are significant, and some members fear it will prevent them from continuing their cultural practices. In the case of the Saugeen people, whose traditional economy is based on the harvesting of whitefish, the potential for radioactive leaks from dry fuel waste storage containers into the surrounding aquatic environment that may contaminate fish stocks has caused "grave concerns" among native peoples (Avery, 1998). The mere perception of the risks posed could cause natives to avoid this fundamental practice that they have been teaching to their children for centuries.

In addition to cultural practices, Aboriginal peoples have also expressed concern about native burial grounds within the BNPD. It is important that their ancestral remains be recognized and honoured according to their culture and therefore be protected (Orkin and Edwards, 1998).

### *6.2.3 Human and Environmental Health*

It is not surprising that native peoples in general are highly concerned about the health of their environment since they have a strong belief that their own health depends on the preservation of their natural surroundings. Native peoples are exceedingly sensitive to the interrelationship between humans and nature and are therefore constantly aware that all decisions made affecting the condition of the environment can potentially affect their physical health.

> "Our primary concern arising out of our relationship with our lands, the animals and Creation is the health and safety of our people and the web of life of which we are all a part. We find the word "environment" inadequate, for it suggests that nature is important only insofar as it surrounds or "environs" us human beings. It implies that humans are of central importance and nature is of peripheral concern. It reinforces the fallacious view that nature is something separate from humans, whereas our people have always seen themselves as an inseparable part of the web of life" (Orkin and Edwards, 1998).
>
> "We know from long experience in this territory that what we do in one area affects other places and processes. Nothing we do to our Mother Earth happens in isolation. I agree when the scientists tell us that ecosystems are not closed. What we do with the water, for example, affects the rest of the system" (Akiwenzie, 1998).

This view of related human and environmental health is a common one shared by many native peoples throughout the world. It has not just been expressed here with respect to dry fuel waste storage, monitored retrievable storage, or geological waste disposal but all development associated with the nuclear industry (World Uranium Hearing, 1992).

### *6.2.4 Trust and Credibility*

Native peoples have long been challenged by encounters with non-native people and by developments that have been imposed on them, often without their consent or approval. This has done little in building a credible and trusting relationship with both industry and government, because native peoples have felt the brunt of many development projects and often have received very little, if any, benefit. The nuclear industry is far from being an exception to this pattern and it again has earned very little confidence from the Saugeen Ojibway Nation. The comments made in response to Ontario Hydro's EIS for proposed dry fuel waste storage demonstrate their lack of faith in the project based on their past experiences with BNPD:

> "Given Ontario Hydro's track record on tritium and carbon-14 emissions at Bruce and recent revelations regarding deficient operations and management practices in the corporation, we submit that we are now entitled to have an opportunity to question Hydro's abilities in regard to the dry storage proposal through a federal assessment conducted by an independent panel, with public hearings" (Orkin and Edwards, 1998).

Native peoples also expressed their lack of confidence in the technology and the assurances that they have been given referring to the facility's safety. In their eyes, the dry storage of nuclear waste presents a level of risk that they do not trust and do not want to endure. Chief Ralph Akiwenzie comments:

> "There is nothing in Hydro's Comprehensive Environmental Study that convinces us that radioactive materials would not leak from the silos if they were damaged by an earthquake or tornado (which are increasing in frequency in southwest Ontario) or after an impact with an airplane or truck" (Akiwenzie, 1998).

### *6.2.5 Communication and Involvement*

One of the central concerns that the Saugeen Ojibway Nation has raised, in response to the proposal made by Ontario Hydro to construct a dry storage facility, is the need for an inclusive public debate on the project. The Nation has recommended in its comments that the review process move towards a full federal environmental impact assessment review with public hearings.

> "Ontario Hydro seems to regard the problem of storing irradiated nuclear fuel, whether on a temporary or permanent basis, as an elaborate but straightforward technological matter, posing little or no potential threat to health, safety or the environment. The Chippewas of Nawash find Hydro's attitude disquieting. We believe that decisions regarding the storage of such dangerous materials, either on a temporary or permanent basis, requires(sic) the widest possible public debate.
>
> Accordingly, an independent environmental assessment conducted by a panel with public hearings is needed in connection with Ontario Hydro's proposal to store irradiated fuel from the Bruce A and B reactors in above-ground dry storage

> containers outside the confines of the respective reactor buildings"(Orkin and Edwards, 1998)

The significance of this call for continued public debate on the part of native participants illustrates the level importance that they place on their involvement in the decision-making process. Unfortunately, native peoples were not given the opportunity to fully participate, since Minister Stewart approved the project without moving to a formal review. Native participation and communication therefore remain significant concerns for the Saugeen Nations, which is not far removed from the views that native people expressed regarding the geological disposal concept. Aboriginals continue to express this position in relation to any industry affecting their environment, their culture and their lives. They continue to demand a transparent process that fully allows their participation, not just in the decision-making, but also during research in the initial stages of the project development.

## CHAPTER SEVEN: CONCLUSIONS

This thesis has attempted to provide a clear and systematic understanding of Aboriginal responses to a proposal for disposal of nuclear fuel waste in Canada. This was achieved by conducting a content analysis of the public hearings held by the Federal Environmental Assessment Review Agency on the geological disposal concept Environmental Impact Statement. This public testimony can be viewed as the single most extensive record available of native concerns and views on this issue and therefore is useful in revealing the nature of Aboriginal responses. There are several substantial characteristics that demonstrate the consistency and enduring concerns of native peoples. First, natives have expressed views that have remained uniform over a six-year period beginning with the scoping hearings conducted in 1991 to the public review of the EIS which took place five years later ending in 1997. Second, native views have remained the same across Canada and across native groups. And finally, similar native concerns have also been raised in other facility siting attempts where Aboriginals have been impacted by comparable nuclear waste siting processes. The Bruce dry-storage facility and the attempted siting of a monitored retrievable storage facility in the United States examined in this thesis are just two examples.

This study has identified Aboriginal issues and concerns from the public testimony and has categorized them in the order of their importance, which was determined according to the duration that they were discussed (number of testimony lines) and the frequency with which they occurred (number of times they were mentioned during the public hearings). The results reveal that the top three issues most

important to native people, according to their testimony during the public hearings and from their written submissions, relate to generic and broad subject matters that include:

1. Spiritual, cultural and social values
2. Respect for treaty and aboriginal rights
3. Aboriginal role in planning and decision making

The remaining issues, although not appearing in exactly the same order of priority with respect to their frequency and length of discussion, relate to more technical issues in nuclear fuel waste management.

- Aboriginal involvement and communication
- Future generations , threat to aboriginal culture and well being
- Aboriginal & environmental health and safety
- Environmental impact statement criticisms
- Discussion of past and present hardships & issues of trust
- Rejection of waste, disposal/storage system, & preferred disposal options
- Equity
- TEK perspectives
- Ethics of voluntary siting and compensation

Native issues and views are increasingly important factors in environmental management decisions as is evident in the academic literature as well as the requirement for consideration in new legislation and policy. In the case of nuclear fuel waste management, native involvement has been included in the *Nuclear Fuel Waste Act* (2002) demonstrating the strength and importance of their concerns and the value that is given to

the knowledge they possess.[13] Therefore, if Aboriginal views are to play a role in future siting processes of nuclear fuel waste in Canada, then the issues that have been brought to light by this study are likely to be confronted and debated in the next phase of siting.

Currently, the Nuclear Waste Management Organization (NWMO), the agency created as a result of the *Nuclear Fuel Waste Act*, is in the initial stages of creating its nuclear waste management proposal for the federal government. At this point, little is known about how NWMO will attempt to address native concerns, although Elizabeth Dowdeswell, President of NWMO, has stated that this task is on the agenda (NWMO, 2002). Despite its place on the agenda, a report published in January 2003 by the NWMO discussing its findings from discussion groups conducted as part of a public opinion research program, did not include views from native participants. To conduct this research, NWMO visited seven communities and conducted fourteen discussion sessions where individuals were invited to take part based on their "sensitivity" to and "awareness" of the matter at hand (NWMO, 2002). The report did not address any native concerns notwithstanding its attempt to produce its research with broad public input.

The federal government, on the other hand, has made a commitment to aboriginal consultation and has contacted five native organizations requesting proposals on how they would prefer to be consulted on this matter (Nuclear Fuel Waste Bureau, 2002). Little is known about how native people will be consulted in the up-coming strategy for managing nuclear fuel waste in Canada. Commitments have been made through

[13] It is also significant that native peoples are not alone in expressing the desire to be included in the decision-making process. This view has also been expressed by non-native people who would like to see natives given a more significant role in making nuclear waste disposal decisions. This content analysis has revealed that some non-native participants placed high value on the knowledge held by native communities and individuals. Consequently, these data may reveal a shift in the way native peoples are regarded by the Canadian public. The findings indicate some Canadians have adopted holistic values identifying with those advocated by Native peoples. Further research into this area of non-native views supporting native participation, native interests and native views, presents an interesting and unventured avenue of study.

legislation regarding their inclusion in the process, however, the method by which this is to take place is unknown. Aboriginal peoples have continued to express consistent positions concerning nuclear fuel waste management and there is little reason to expect change in the next siting phase. The key issues that are likely to play a role include among others: unsettled land claim issues, lack of trust in decision-making authorities and utility companies; equity and distribution of risk; improvements in communication with native people; significant Aboriginal involvement in decision-making; and traditional, cultural and environmental preservation. In terms of the method used to select the site, voluntary siting and compensation is a siting option that received a very low level of support from native participants and therefore presents NWMO with the challenge in how they decide to go about site selection.

Since the completion of the environmental impact assessment review of the geological disposal concept, the government of Canada has expanded the options for nuclear waste disposal to include storage at reactor sites and storage above or below ground at a central location. Each option presents a different set of issues affecting native people and each determines how significant their role will be in the management process. Keeping in mind the observations that have been made in this study, it is likely that Aboriginal participants will favour an above-ground, monitored storage method located at the reactor sites. It remains to be seen what their final choice will be and what level of involvement they will have, however, native people have demonstrated themselves to have rather consistently predictable views on this issue and this study gives a clear illustration of what these will be.

In terms of the disposal method that is to be implemented, NWMO is expected to submit its final report to the Minister of Natural Resources by November 15 2005. The Final Report will contain the NWMO recommendations and, as required by the Act, will include:

- technical descriptions and economic regions for implementation for each management approach considered
- a comparison of the benefits, risks and costs of the approaches considered as well as ethical, social and economic considerations
- funding requirements and an implementation plan for each management approach
- comments of the Advisory Council on the management approaches and,
- a summary of comments received by NWMO as a result of consultations on each of the approaches with the general public and aboriginal peoples (NWMO, 2002)

There is much uncertainty today about which of the disposal approaches will be chosen by the government once NWMO study has been completed. The closing of the underground lab at AECL's Whiteshell Laboratories in Manitoba subsequent to government cuts could suggest that geological disposal is not an option up for consideration (Anonymous, 2003). Also, with Yucca mountain being the selected site for the disposal of all nuclear waste in the United States, Canada is likely closely monitoring the level of success that they achieve, which may in all probability influence the decisions that are made here. Finally, the expansion of above-ground storage at the Bruce Nuclear Power Development provides yet another possible indicator of how nuclear fuel waste management is headed in Canada. Although this thesis cannot shed light towards revealing which waste management option will be chosen, it can provide evidence with a high degree of certainty of the views that native people will have. Aboriginals have continued to present their concerns about nuclear fuel waste disposal in

a strong and consistent manner and this can only facilitate recognition among decision-makers during the next siting phase.

# APPENDICES

## Appendix A - Transcript Sample Page



You can see the engineered barriers, the container with the fuel bundles inside it, the container with the lifetime of 500 years, minimum of 500 years, sealing materials around it to fill all the excavated spaces.

We have been studying the rock of the Shield for many years at a number of sites in Ontario and also at our underground research lab in Manitoba.

This is the referenced containers made of material called titanium which is a very highly corrosion-resistant material. As I said, it would last in excess of 500 years.

We would have other barriers in the system. The sealing shafts seal any fractures or boreholes that existed in the region as a result of exploring the area.

And again that's another shot of the overall vault design.

Now, let me just take a quick look through how something like this operates. A container goes inside a shielded transport flask underground, is taken down to the car which moves it around inside the facility, takes it to a disposal room.

There in the room boreholes are drilled in the rock. Material on the left side, a clay base

## Appendix B - Sample of Coding Sheet for Non-Native Participants

| **Supplementary Data – Non Native** | | | |
|---|---|---|---|
| Title: | | | |
| Name of Participant: | | | |
| Group or Organization: | | | |
| Date: | # of lines in submission: | # of lines in Q&A: | Phase: |
| Volume #: | Written Oral Roundtable Q&A | Pages: | |
| Origin of Participant: | Location of Hearing: | | |

| **Aboriginal Involvement in Planning and Decision-making:** | **# of lines** | **Frequency** |
|---|---|---|
| • Aboriginal (Lack of ) Involvement and Communication | | |
| • Respect for Treaty and Aboriginal Rights | | |
| • Aboriginal Role in Planning and Decision Making | | |
| • Trust and Credibility | | |
| **Perspective on Nuclear Energy** | | |
| • Eliminate Nuclear Energy and Nuclear waste production | | |
| • Alternative Energy forms | | |
| • Equity | | |
| **Perspectives on Long-term Waste Management.** | | |
| • Transportation | | |
| • Leakage | | |
| • Hierarchical Approach Taken | | |
| • Total rejection of any storage/disposal system | | |
| • Social Costs due to Large sums invested in nuclear energy | | |
| • Provide more options | | |
| • Uncertainty in Technology | | |
| • Ethics and Morals | | |
| • Disposal versus Storage | | |
| • Option #1 Deep Geological Disposal For/Against | | |
| • Option #2 At reactor sites For/Against | | |
| • Opt #3 Centralized above or below ground storage For/Against | | |
| • Monitored storage | | |
| • Concerns about accepting foreign waste | | |
| • Irretrievability | | |
| **The Concept in Relationship to Aboriginal People** | | |
| • Spiritual, Cultural and Social Values Expressed | | |
| • Human Health and Safety | | |
| • Threat to cultural well being | | |
| • Environmental Health | | |
| • Future Generations | | |
| • TEK perspectives on the concept/technical aspects | | |
| **Perspectives on Site Selection Process in relation to Aboriginal People** | | |
| • Volunteerism | | |
| • Ethics of Voltism. and Comp. offered to vulnerable communities | | |
| **Critical of the EIS Documents** | | |
| • Critical of (a) Panel Hearings<br>(b) Mandate<br>(c) Concept only | | |
| • Lack of Contingency Plan | | |
| • Nuclear Liability Act | | |
| Quality of Submission Record of Quality - statements - | | |

**Comments/Quotes:**

## Appendix C - Sample of Coding Sheet for Native Participants

| **Supplementary Data – Native** | | | |
|---|---|---|---|
| Title: | | | |
| Name of Participant: | | | |
| Group or Organization: | | | |
| Date: | # of lines in submission: | # of lines in Q&A: | Phase: |
| Volume #: | Written Oral Roundtable Q&A | Pages: | |
| Origin of Participant: | Location of Hearing: | | |

| **Aboriginal Involvement in Planning and Decision-making:** | **# of lines** | **Frequency** |
|---|---|---|
| • Aboriginal (Lack of ) Involvement and Communication | | |
| • Respect for Treaty and Aboriginal Rights | | |
| • Aboriginal Role in Planning and Decision Making | | |
| • Trust and Credibility of government & industry | | |
| • Discussion of present hardships | | |
| **Perspective on Nuclear Energy** | | |
| • Eliminate Nuclear Energy and nuclear waste production | | |
| • Equity | | |
| • Provide Alternative Energy options | | |
| **Aboriginal Perspectives on Long-term Waste Management.** | | |
| • Transportation | | |
| • Leakage | | |
| • Hierarchical Approach Taken | | |
| • Social Costs due to Large sums invested in nuclear energy | | |
| • Provide other options | | |
| • Uncertainty in Technology | | |
| • Disposal versus Storage | | |
| • Ethics and Morals | | |
| • Option #1 Deep Geological Disposal For/Against | | |
| • Option #2 At reactor sites For/Against | | |
| • Opt #3 Centralized above or below ground For/Against | | |
| • Monitored storage | | |
| • Concerns with accepting waste from other countries | | |
| • Irretrievability | | |
| **The Concept in Relationship to Aboriginal People** | | |
| • Spiritual, Cultural and Social Values Expressed | | |
| • Total rejection of any waste disposal/storage system | | |
| • Human Health and Safety | | |
| • Threat to cultural well being | | |
| • Environmental Health | | |
| • Future Generations | | |
| • TEK perspectives on the concept/technical aspects | | |
| **Aboriginal Perspectives on Site Selection Process** | | |
| • Volunteerism | | |
| • Ethics of Voltism. and Comp. offered to vulnerable communities | | |
| **Critical of the EIS Documents** | | |
| • Critical of (a) Panel Hearings<br>(b) Mandate<br>(c) Concept only | | |
| • Lack of Contingency Plan | | |
| • Nuclear Liability Act | | |
| Quality of Submission Record of Quality - statements - | | |

**Comments/Quotes:**

**Appendix D – Issue Coding Sheet**

Aboriginal Involvement in Planning and Decision-making:

1 Aboriginal (Lack of ) Involvement and Communication

2 Respect for Treaty and Aboriginal Rights

3 Aboriginal Role in Planning and Decision Making

4-a Trust and Credibility of government & industry – in general

4-b Trust and Credibility of government & industry – by aboriginals

5 Discussion of present/past hardships

Perspective on Nuclear Energy

6 Eliminate Nuclear Energy and nuclear waste production

7 Equity

8 Provide Alternative Energy options

Aboriginal Perspectives on Long-term Waste Management.

9 Transportation

10 Leakage

11 Hierarchical Approach Taken

12 Social Costs due to Large sums invested in nuclear energy

13 Provide other options

14 Uncertainty in Technology

15 Ethics and Morals

16 Disposal versus Storage

17-a Option #1 Deep Geological Disposal -For

17-b Option #1 Deep Geological Disposal -Against

18-a Option #2 At reactor sites - For

18-b Option #2 At reactor sites - Against

19-a Opt #3 Centralized above ground -For

19-b Opt #3 Centralized above ground -Against

19-c Opt #3 Centralized below ground - For

19-d Opt #3 Centralized below ground Against

20 Monitored storage

21 Concerns with accepting waste from other countries

The Concept in Relationship to Aboriginal People

22 Spiritual, Cultural and Social Values Expressed

23 Total rejection of any waste disposal/storage system

24-a Human Health and Safety

24-b Aboriginal Health and Safety

25-a Threat to culture and well-being

25-b Threat to aboriginal culture and well-being

26 Environmental Health

27 Future Generations

28 TEK perspectives on the concept/technical aspects

Aboriginal Perspectives on Site Selection Process

29 Volunteerism

30 Ethics of Voltism. and Comp. offered to vulnerable communities

31 Retrievability

Miscellaneous

32 Nuclear Liability Act

33 Critical of the EIS Documents

34-a Critical of the Panel Hearings

34-b Mandate

34-c Concept only

35 Lack of Contingency Plan

## Appendix E – Line Count Reference Table

| Native/Non-Native | type | Count | SumTotal of lines for Oral submission | Sum Total lines for Q&A |
|---|---|---|---|---|
| native | open Q&A | 3 | 0 | 435 |
| native | oral | 49 | 4558 | 0 |
| native | oral/Q&A | 42 | 7979 | 6965 |
| native | scoping | 11 | 3320 | 0 |
| native | written | 35 | 11462 | 1 |
| native | written of oral | 6 | 1023 | 0 |
| | | | | |
| | | | | |
| non-native | discussion | 1 | 0 | 897 |
| non-native | open Q&A | 2 | 0 | 889 |
| non-native | oral | 46 | 7040 | 0 |
| non-native | oral/Q&A | 367 | 79391 | 101930 |
| non-native | Q&A | 23 | 9714 | 27845 |
| non-native | response | 5 | 1032 | 121 |
| non-native | roundtable | 9 | 11347 | 0 |
| non-native | scoping | 2 | 249 | 0 |
| | | | | |
| | | Total _= 601 | | |

## Appendix F - All Native Issues – Number of Lines

| Issue | Ranking | Total Number of lines |
|---|---|---|
| N1-Q | 5 | 1183 |
| N2-Q | 1 | 3001 |
| N3-Q | 3 | 2007 |
| N4a-Q | 26 | 99 |
| N4b-Q | 7 | 798 |
| N5-Q | 4 | 1560 |
| N6-Q | 23 | 136 |
| N7-Q | 19 | 287 |
| N8-Q | 28 | 85 |
| N9-Q | 18 | 289 |
| N10-Q | 21 | 163 |
| N11-Q | 29 | 71 |
| N12-Q | 35 | 27 |
| N13-Q | 20 | 181 |
| N14-Q | 17 | 334 |
| N15-Q | 31 | 60 |
| N16-Q | 37 | 21 |
| N17-a-Q | 41 | 0 |
| N17-b-Q | 16 | 351 |
| N18-a-Q | 22 | 137 |
| N18-b-Q | 39 | 8 |
| N19-a-Q | 36 | 27 |
| N19-b-Q | 42 | 0 |
| N19-c-Q | 43 | 0 |
| N19-d-Q | 44 | 0 |
| N20-Q | 32 | 56 |
| N21-Q | 24 | 136 |
| N22-Q | 2 | 2596 |
| N23-Q | .12 | 479 |
| N24a-Q | 27 | 95 |
| N24b-Q | 13 | 447 |
| N25a-Q | 8 | 696 |
| N26-Q | 6 | 875 |
| N27-Q | 10 | 531 |
| N28-Q | 11 | 480 |
| N29-Q | 25 | 101 |

| Issues Continued | Ranking | Total Number of lines |
|---|---|---|
| N30-Q | 15 | 375 |
| N31-Q | 30 | 71 |
| N32-Q | 33 | 44 |
| N33-Q | 9 | 651 |
| N34-a-Q | 14 | 406 |
| N34-b-Q | 40 | 8 |
| N34-c-Q | 34 | 31 |
| N35-Q | 38 | 18 |

## Appendix G - All Native Issues - Frequency

| Issues | Ranking | Frequency |
|---|---|---|
| N1-F | 4 | 163 |
| N2-F | 2 | 184 |
| N3-F | 3 | 176 |
| N4a-F | 31 | 10 |
| N4b-F | 12 | 91 |
| N5-F | 10 | 97 |
| N6-F | 21 | 39 |
| N7-F | 15 | 61 |
| N8-F | 27 | 14 |
| N9-F | 18 | 53 |
| N10-F | 23 | 28 |
| N11-F | 35 | 5 |
| N12-F | 20 | 43 |
| N13-F | 19 | 45 |
| N14-F | 17 | 55 |
| N15-F | 29 | 12 |
| N16-F | 32 | 10 |
| N17-a-F | 41 | 0 |
| N17-b-F | 13 | 70 |
| N18-a-F | 25 | 23 |
| N18-b-F | 37 | 2 |
| N19-a-F | 34 | 8 |
| N19-b-F | 42 | 0 |
| N19-c-F | 43 | 0 |
| N19-d-F | 44 | 0 |
| N20-F | 28 | 13 |
| N21-F | 24 | 24 |
| N22-F | 1 | 196 |
| N23-F | 11 | 94 |
| N24a-F | 30 | 12 |
| N24b-F | 8 | 113 |
| N25a-F | 7 | 116 |
| N26-F | 5 | 148 |
| N27-F | 6 | 133 |
| N28-F | 16 | 59 |
| N29-F | 33 | 10 |

| Issues Continue | Ranking | Frequency |
|---|---|---|
| N30-F | 22 | 33 |
| N31-F | 26 | 15 |
| N32-F | 38 | 2 |
| N33-F | 9 | 99 |
| N34-a-F | 14 | 65 |
| N34-b-F | 39 | 2 |
| N34-c-F | 36 | 4 |
| N35-F | 40 | 2 |

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