

Investigating relationships: How mining companies and Aboriginal communities can improve impact mitigation for terrestrial wildlife and traditional harvesting practices in the Canadian Arctic

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ABSTRACT

The Canadian Arctic has experienced a continual presence of industrial mining activity for over a century. Each development poses lasting impressions to both the natural and human landscapes of the region. With substantial contributions to the national economy and advancements with northern infrastructure and socio-economic development, the importance of industrial mining and expansion will continue in the Canadian Arctic. Unfortunately, studies of mining development have also documented substantial degradation and long-term effects to the natural environment and the Aboriginal communities of the North. Of particular interest to this study are the identified impacts to terrestrial wildlife species of significance for the traditional lifestyles of northern Aboriginal communities. Further studies and political advances have enabled a certain level of protection to be implemented for the Arctic ecosystem and its inhabitants with industrial development. However, as development progresses in the Canadian Arctic, it is becoming increasingly important to continue to develop strategies for improved management of mining impacts to the environment and Aboriginal communities.

The purpose of this study is to examine the relationships between mining companies and Aboriginal communities in the Canadian Arctic through their shared connection to the natural environment. The focal point of this investigation are the mitigation strategies employed by mining companies for reducing adverse effects to terrestrial wildlife, and the associated traditional harvesting practices of local native communities. This study investigates the roles of both parties in direct relation to effective wildlife management, socio-economic benefits and maintaining traditional lifestyles, as well as the potential for greater sustainable development. As such, it is expected that the improved management of environmental impacts can lead to more positive experiences for communities with local mining projects. Moreover, with a positive relationship, it is expected that both parties would derive greater benefits and more successful sustainable development. With a narrow focus on terrestrial wildlife species and traditional harvesting, this study is able to examine a

critical component of the relationship between mining companies and communities, and devise management recommendations for future development.

This research sought the personal and professional experiences of individuals who have participated in the working relationships between mining companies and Aboriginal communities in the Canadian Arctic. Telephone interviews were conducted with 8 knowledgeable respondents regarding environmental and socio-economic impact mitigation, community relations, and sustainable development.

Analysis of the coded interview data combined with reviewed literature presented a number of key findings. The research revealed that due to particular regulatory requirements and advanced technologies, most environmental and socio-economic impacts from mining can, in fact, be mitigated effectively. In general, most participants, who represented a diverse range of perspectives, responded to the interviews in support of continued mining development. This unexpected commonality of perspective, emergent from the interviews, was contingent upon effective solutions for the current barriers to successful mitigation, security of benefits, and greater Aboriginal engagement.

Final conclusions and recommendations offered by this study represent the overall opinions shared by interview participants and reflect the published literature. In order to improve impact mitigation, companies and communities must establish stronger relationships from the beginning of new developments. These relationships should be characterized by honesty, communication, consent, and participation. Healthy relationships will enable more productive environmental planning, management, and socio-economic considerations, and ultimately will lead to greater sustainable development.

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INTRODUCTION

Industrial mining activities have been constant in the Canadian Arctic for over a century (Nassichuk, 1987). Beginning first with the discovery of gold in the Yukon in the late 1800s, and followed by increased exploration and production throughout the 20th and early 21st centuries, the mining industry affects all areas of the Canadian Arctic. Mineral exploration and extraction has extended across the landscape, north of the 60th Parallel, encompassing the three Canadian territories, and two provincial northern regions, Nunatsiavut and Nunavik (Nassichuk, 1987; Natural Resources Canada, 2014). Mining production can be classified as the extraction of mineral fuels, iron, ferro-alloy and non-ferrous minerals, precious metal ores, or industrial minerals including diamonds (Haley, Klick, Syzmoniak, & Crow, 2011). Other industries, including the oil and gas sectors, may also be considered as mining operations, however, they are not included in this study (Haley et al., 2011).

This industrial expansion has generated tremendous economic growth for the country, and provided unique socio-economic opportunities for northern communities (Haley et al., 2011). However, interactions between mining companies and resident Aboriginal communities in Arctic Canada also have a long history characterized by change, conflict, and opportunity (Tester and Blangy, 2013). Rapid industrial growth occurring through the late 19th century and into the 20th century, across the traditional territories of Aboriginal groups who were unable to oppose, led to severe consequences and lasting repercussions for northern communities (Bowman, 2011; Hipwell, Mamen, Weitzner, & Whiteman, 2002). This contention has created a dichotomy of perspectives and priorities among different groups regarding current and future developments in the Canadian Arctic.

The Canadian Arctic is highly regarded as a unique ecosystem, home to very sophisticated and evolved flora and fauna capable of surviving the extreme conditions of the North. Furthermore, the human residents of the Canadian Arctic region have developed intricate adaptive systems, enabling the long-term survival of Aboriginal peoples (Dickason, 1992; Furgal and Seguin, 2006). Fostered over generations, these Aboriginal communities have held an extremely developed

understanding of the environment, and its natural dynamics with the human population. This Traditional Knowledge (TK) is defined by Dowsley (2009) as the current understanding “gained through an individual’s lifetime, and also to the knowledge that is passed on from previous generations” (p. 45), incorporating social, cultural, and ecological contexts (Dowsley, 2009). For centuries, First Nations, Métis, and Inuit communities have established long-standing social structures, culture and identities, characterizing their traditional lifestyles, activities, and economy (AANDC, 2010; Furgal and Seguin, 2006).

Since the mid 19th century, with the Canadian advancement of the northern frontier, government, industry, and northern Aboriginal communities have encountered many challenges and opportunities requiring difficult choices to be made. Studies of the expansion of industrial mining (Nassichuk, 1987) report efforts to balance non-local needs with local use (Parlee, Geertsma, Willier, 2012), and the negative environmental legacy of non-renewable resource extraction (Johnson, Boyce, Case, Cluff, Gau, Gunn, Mulders, 2005). The continual expansion of the industry across the region has resulted in accelerating infrastructure development coupled with major landscape modifications (Johnson et al., 2005). These significant alterations have been extremely detrimental to the sensitive Arctic ecosystem, causing impacts to critical habitat for northern flora and fauna, and disrupting the natural dynamics between species (Boulanger, Poole, Gunn, Wierzchowski, 2012; Male and Nol, 2005; Walton, Cluff, Paquet, Ramsay, 2001).

Compounded by government policies (often deemed paternalistic by authors such as Dickason, 1992; McMillan, 1988), these impacts have, and continue to, affect Arctic Aboriginal communities through environmental, economic, and cultural pathways (Bowman, 2011; Hipwell et al., 2002). Recognition of the combined effects of industrial expansion and government control to Aboriginal groups through the 19th and 20th centuries has led to political changes and to the development of critical legislation in Canada (Bowman, 2011; Klein, 2000; Sosa and Keenan, 2001). The advancement of Aboriginal Rights, land claim settlements, and increased environmental awareness became important influences for the advancing mining industry (Bowman, 2011; Campbell, 1996). In addition, the emergence of the

concept of sustainable development provided greater holistic insight and significance for the incorporation of the Aboriginal perspective in global arenas. Defined at the United Nations World Commission on Environment and Development in 1987, sustainable development “meets the needs of the present without compromising the ability of future generations to meet their own needs” (Lertzman and Vredenburg, 2005 p. 242), and thereby reflects traditional cultures, and recognizes the need to consider all humans within global land use. Together, these political, social, and environmental shifts emphasized the importance of considering local Aboriginal communities with northern mining development.

Implementation of the Canadian Environmental Assessment Act in 1992, and the negotiation of Impact and Benefit Agreements (IBAs) with new mining projects are very important advancements with modern day industry (Sosa and Keenan, 2001). These regulatory and political mechanisms work to assess and monitor environmental and social impacts from mining, as well as secure benefits and protection for communities with new developments (Couch, 2002; Fitzpatrick, Sinclair, Mitchell, 2008; Sosa and Keenan, 2001). These two mandated protection mechanisms are critical for the incorporation of Aboriginal needs, knowledge, and perspective into mining development projects (Galbraith, Bradshaw, & Rutherford, 2007; Mulvihill and Baker, 2001). Recently, the academic literature has presented such importance for not only stronger environmental management strategies, but for maintaining the inherent cultural traditions so prominent in Arctic Canada, as well as for future sustainable development (Caine and Krogman, 2010; Fitzpatrick et al., 2008; Galbraith et al., 2007; Sosa and Keenan, 2001).

Beyond the protective and beneficial measures provided by Environmental Assessments and IBAs, a number of concerns remain for environmental and cultural wellbeing in the Canadian Arctic. As studies by Gunn and Noble (2009), Johnson et al. (2005), and Mulvihill and Baker (2001) suggest, there is concern about managing the cumulative effects resulting from the ongoing expansion of industrial projects in Canada’s Arctic. Moreover, the extent of meaningful inclusion of Aboriginal people within the industry, in terms of resource management, decision-making, and wellbeing also is an ongoing concern (Ellis, 2005). Academics and critics suggest the

integration of sustainable development strategies and Traditional Knowledge (TK) with mitigation and benefits strategies employed by mining companies, government agencies, and Aboriginal communities (Fitzpatrick et al., 2008; Kofinas, 2005; Meek, 2013; Parlee et al., 2012).

Studies promoting the integration of local Aboriginal perspectives and Traditional Knowledge into project development and environmental management are based on the unique foundational relationships Aboriginal peoples have with the natural world (Watson, Alessa, & Glaspell, 2003; Ellis, 2005). The traditional harvesting practices and the associated cultural and social structures are an integral component of the traditional lifestyle (Bernauer, 2011; Bowman, 2011). As this dependence upon the natural environment and wildlife species is still crucial for maintaining Aboriginal identity, it is imperative to investigate how this relation may be influenced by the drastic changes to the Arctic landscape resulting from industrial mining activities.

Scientific studies of mining impacts to Arctic wildlife have begun to address the destruction of critical habitat, disruption of wildlife behaviour, and increased anthropogenic pressures (Boulanger et al., 2012; Johnson et al., 2005; Klein, 2000; Male and Nol, 2005; Walton et al., 2001; Weir, Mahoney, McLaren, & Ferguson, 2007). These impacts all affect the traditional understanding of the environment and the ability of traditional harvesters to successfully conduct subsistence activities (Bernauer, 2011; Hipwell et al., 2002; Watson et al., 2003). With such substantial environmental and social impacts resulting from mining operations, companies are required to conduct mitigation, management, and protection activities.

This study investigates the relationships between mining companies and northern Aboriginal communities by way of the impact mitigation strategies utilized for affected terrestrial wildlife species and traditional harvesting practices. The purpose of this research is to examine the shared connection to the environment between mining companies and communities, its influence on their relationship, and how this translates into the impact mitigation strategies implemented for environmental and socio-economic effects. As a means for analysis, this research

seeks perspectives from multiple actors involved in the long-term relationships between mining companies and Aboriginal communities regarding these environmental and social matters. The concept of sustainable development provides a theoretical framework for this research. As stated by Hopwood, Mellor, and O'Brien (2005), "sustainable development has the potential to address fundamental challenges for humanity, now and into the future" (p. 2). In this way, the concept assists in the analysis of the relationships between mining companies and Aboriginal communities through their mutual connections to wildlife and the environment with a long-term vision (Hopwood et al., 2005).

This study synthesizes academic research, industry reports and assessments, in combination with participant interviews to examine existing mitigation strategies and understand the roles and relationships between companies and communities with mining projects. Furthermore, this investigation provides lessons and recommendations intended to help develop stronger and more reciprocal relationships between mining companies and northern Aboriginal communities capable of executing more effective wildlife management strategies, maintain traditional practices and promote greater sustainable development. The literature reviewed for this study encompasses the entire Canadian Arctic region, however more centralized experiences provided by the interview participants, are derived mostly from the Northwest Territories and Nunavut. The experiential perspectives offered by participants, includes those representing industry, northern communities, territorial government, and neutral positions, all of which are critical for understanding the current context of industrial mining in the Canadian Arctic.

Three research objectives directed the study in-order to produce the findings and conclusions. First, the research identifies existing wildlife mitigation strategies and community engagement tactics implemented by mining companies, found in the literature and discussed by interview participants. Next, an interpretation of the merits and issues related to these strategies is analyzed by using the literature review and interview data. Finally, recommendations are provided to aid in the development of healthy relationships between mining companies and Aboriginal communities with future mining projects. It is believed that cooperation between

companies and communities can mediate past contention, and foster stronger relationships capable of facilitating community development and environmental stewardship. Ultimately, this research intends to reduce the extent of the environmental and socio-economic impacts that mining projects can impose, and improve industry's contribution to the sustainability of the Canadian Arctic.

CHAPTER 2.0 LITERATURE REVIEW

This chapter reviews and summarizes the literature relevant to the study of industrial mining development, its impact with wildlife and also Aboriginal communities within the Arctic regions of Canada. By reviewing academic journal articles, books, government publications, legislative documents and mining technical reports, connections are drawn to illustrate the benefits and adverse effects of mineral development on the Arctic environment, and Aboriginal cultures and lifestyles.

An historical overview of European introductions, mineral development, Aboriginal settlements, and political evolution in Northern Canada is presented to contextualize current perspectives with modern day industrial, environmental, and social matters. Specific examples of mitigation strategies currently used by mining projects to reduce the impact on terrestrial wildlife and subsistence harvesting are described. The main components of mining projects are presented to demonstrate how these particular industrial, social and environmental relationships can generate local benefits, increase cooperation, and increase sustainability. As the theoretical lens for this research, the concept of sustainable development will act as a dynamic framework for analyzing relationships between mining companies and aboriginal communities through their mutual connections to wildlife and the environment, but can also act as an over-arching goal for the research and future northern mining projects. The sustainable development literature is discussed within this chapter as it pertains to this investigation and research objectives.

2.1 History of Mine Development in the Arctic

Academic literature that addresses the resource industries typically defines two main development areas; mature regions and frontier regions. The North American Arctic, being a resource frontier region, is characterized by extremely harsh climatic conditions, and very low levels of development and infrastructure compared to more southern regions in Canada and the

United States (Cater, 2013; Haley et al., 2011; and Stedman, Parkins, & Beckley, 2004). Mineral developments in such peripheral locations, away from the metropolitan core areas where many companies are based, impose significant upfront costs for infrastructure development and the procurement of labour (Cater, 2013; Haley et al., 2011). As explained next, the abundance of mineral deposits combined with higher mineral prices now justifies the development of extractions of minerals, in areas that were previously quite difficult to access (Cater, 2013; Haley et al., 2011).

The Klondike Gold Rush of the late 1890s marked the onset of mining activity in the Canadian Arctic. This discovery also sparked a new recognition of the economic potential stored in the northern frontier. This led to a number of other changes in the North, such as the negotiation of the Numbered Treaties, 8 and 11, aside from the expansion of industrial activity (Fumoleau, 2004). These changes will be discussed in later sections. Beginning in the Dawson area of the Yukon, an estimated 30,000 miners migrated north seeking opportunity and riches. This explosion of gold mining quickly spread west into Alaska, where gold deposits were also found in locations such as Fairbanks in 1902. At this time, the adventurous rush for gold in North America continued to drive further exploration of the Arctic region (Paluskiewicz-Misiaczek, 2010). Heading east across the Canadian Arctic, exploration for natural resources soon resulted in substantial developments. Following the discovery of Canada's first major oil deposit at Norman Wells along the Mackenzie River in 1919, lead-zinc and silver deposits were also found (Nassichuk, 1987). Resulting in the development of the Eldorado Silver Mine in the Northwest Territories in 1930, and establishment of the Yellowknife Mining District in 1935. Extraction of gold and silver, in addition to lithium and tungsten continued unabated throughout the Great Depression and throughout most of the Second World War. Following the end of the Second World War, mapping operations of the Mackenzie and Keewatin regions led to the foundation of new large projects and the re-opening of gold mines in the Northwest Territories, such as Negus,

Con, and Giant mines. Throughout the 1960s and 1970s, over 40 million tonnes of minerals had been discovered in the Central Arctic region, yet very few of which were exploited due to the remoteness of the deposits and other limitations of the Arctic region (Nassichuk, 1987).

Mineral exploration and mapping continued east into Nunavut and the islands of the High Arctic. The North Rankin Nickel Mine established in 1957, and the Nanisivik Iron-Zinc Mine on Baffin Island and Polaris Iron-Zinc Mine on Little Cornwallis Island marked this period in the mid-1970s (Cater, 2013; Nassichuk, 1987). One of the most significant consequences of these mining projects was that formerly migratory Inuit forager bands began settling at the mine sites for the sole purpose of finding employment (Nassichuk, 1987). The establishment of mining communities throughout the mid-20th century and their lasting effects on Aboriginal well-being has been the focus of a number of academic studies, and will be discussed in later sections of this thesis. Throughout the 20th Century, industry continued to discover deposits and establish claim rights to mineral resources throughout the north. However, this mining activity has become an increasingly contested issue, particularly with resident Aboriginal communities (Bernauer, 2011; Bowman, 2011; Cameron, 2012; Galbraith et al., 2007; Manley-Casimir, 2011).

With the discovery of diamond resources in the Northwest Territories in the late 20th century, the Arctic experienced an escalation of mineral exploration and development projects (Johnson et al., 2005). These mineral discoveries were also accompanied by substantial infrastructure developments, increasing access to Arctic resources, and therefore requiring stronger regulatory control on territorial and federal levels (Johnson et al., 2005). Following the Berger Inquiry of the Mackenzie Valley Pipeline in the 1970s and the new Canadian Environmental Assessment Act of 1995, industry, government, and Canadian society were beginning as we discuss next, to recognize the need for incorporating more than just the

environmental impacts into the approvals process for new resource developments (Mulvihill and Baker, 2001).

With its vast potential to generate economic wealth and create significant environmental impacts near the Lac de Gras region of the NWT, the BHP Ekati Diamond Mine (now owned by the Dominion Diamond Corporation) engendered a new era in Arctic mining (Mulvihill and Baker, 2001). As such, the Ekati Diamond Mine undertook a new approach to acquiring regulatory approval, incorporating a formal investigation and reporting of the potential impacts (social and environmental) of development projects and implementing appropriate mediation strategies (Couch, 2002). Additionally, the Ekati Diamond Mine worked with local Aboriginal communities to negotiate agreements in an attempt to provide careful consideration to local priorities. Negotiations included provisions for further environmental protection with important issues such as caribou herds, the inclusion of local Traditional Knowledge for environmental management and planning, and employment opportunities for community members (Couch, 2002). This expanded Environmental Assessment process in combination with additional agreements acted as a first step towards ameliorating diverging worldviews (Couch, 2002; Ellis, 2005; Mulvihill and Baker, 2001).

As researchers have reported (see Johnson et al., 2005; Klein, 2000), few environmental and social impacts resulting from resource extraction in the Canadian Arctic were documented. However, the precedent for environmental and social assessment established by the Ekati Diamond Mine in the 1990s, was soon perceived as the new standard for mining developments in the Canadian Arctic, and was reflected with the second major diamond project in the Northwest Territories, the Rio Tinto Diavik Diamond Mine which opened in 2003 (Ellis, 2005; Mulvihill and Baker, 2001). With attention to natural resource protection, social considerations, and the recognition of the need to provide benefits to all affected

stakeholders, the new mining regime in Arctic Canada had secured the industry the right to continue on (Klein, 2000).

2.2 Aboriginal History in the Arctic

In-order to understand present Indigenous harvesting activities in the Canadian Arctic and their importance in considering proposed mining development projects, it is critical to understand the historical and cultural transformations of these activities throughout the 19th, 20th and 21st centuries.

Driven by harsh climatic conditions and resource availability, Aboriginal groups in the Canadian Arctic needed to be highly adaptable and quite mobile (Frideres, Kalbach, and Kalbach, 2003; McMillan, 1988). Although contact with European explorers and later European colonizers modified some of these activities, it was not until the late 19th and early 20th centuries with the pursuit of natural resources and the establishment of the Numbered Treaties that profoundly and irrevocably changed Aboriginal livelihood in the Canadian Arctic (Dickason, 1992; Frideres et al., 2003).

The influence of outside harvesters, trappers, and whalers wintering along Arctic coastlines, living in close proximity and interacting with Inuit communities, has been paramount in directing the transformation of Arctic human populations (Mead, Gittelsohn, Kratzman, Roache, & Sharma, 2010; Peterson, 2012). This outside presence, with contradictory intentions, strategies, and tools, inserted not only a competitive dynamic into the region, but also an insatiable market demand for these northern commodities, and assisted in the cultural changes experienced by local Aboriginal groups. The nature of these practices carried out by non-native harvesters, focused on making profit through trade, typically led to boom-bust resource scenarios. No consideration was given to sustainable yields, and the need to maintain wildlife populations for local communities, or future generations (Dickason, 1992; McMillan, 1988).

New tools introduced intended to make challenging tasks easier, and enabled traditional harvesters to achieve higher yields. This abundant harvest, paired with additional goods and income, often provided the impression of a better alternative to the more laborious, traditional practices. This new exploitation of natural resources, driven by external demands, created ecosystem imbalances, and further challenged the long-standing practices of Aboriginal harvesters (McMillan, 1988). The results were depleted resource stocks, increased competition to secure subsistence requirements, and an increased dependence on trade and external goods (Feit, 1991). The added uncertainties of trade and the market place, and the now inconsistencies of subsistence living became truly problematic for northern Aboriginal groups (Dickason, 1992).

During the period of 1871-1920 the federal government began negotiating treaties with Aboriginal groups across the country in-order to acquire control over resources and land (Campbell, 1996). Termed the "Numbered Treaties", the federal government established Treaty 8 and Treaty 11 over a large portion of the Northwest Territories and the Yukon in (Dickason, 1992). In essence, the Numbered Treaties were established on the basis of Aboriginal peoples surrendering their land to the federal government in exchange for adequate hunting and fishing grounds and assurance that their traditional lifestyle would not be sacrificed (Frideres et al., 2003). Following the completion of these treaties, the federal government could then promote the colonization of the North, and the exploitation of natural resources like gold.



Figure 1: Boundaries of Treaty 8 and 11 (Fumoleau, 2004)

As stated earlier, the Klondike Gold Rush, which began in 1896, was a catalyst to early mining exploration and presented many changes. The influx of large numbers of people into the Yukon had a profound impact on the environment, and on the local social and economic systems already in place among Arctic Aboriginal communities (Paluskiewicz-Misiaczek, 2010).

The first documented impact from the international trade in commodities came from the declining whaling industry. Left with depleted whale stocks and an increasing dependence on foreign goods, the winters of 1887-1888 and 1888-1889 saw many deaths from starvation. Relief was provided to the region through the Hudson's Bay Company and the Christian missions, and continued until very recently (McMillan, 1988). With the onset of all of these lifestyle and environmental changes and social unrest in the Arctic region, caused by industrial expansion and resource exploitation,

concern was voiced by the missionaries in the north regarding the well-being of Aboriginal communities. In some cases, entire communities were disappearing from their traditional territories, which unfortunately correlated to the areas that were consumed by industries (whaling, mining, oil and gas) (Dickason, 1992; McMillan, 1988; Mead et al., 2010). By 1920, there were no longer any of the original Inuvialuit people in the Yukon (McMillan, 1988). Additional changes came in the form of the colonization, militarization, and assimilation of the Aboriginal peoples of the Canadian north. These changes included the boom and bust of the fur trade ending in the 1920s, the establishment of permanent villages, creation of large protected areas and wildlife conservation strategies, and a military presence in the Canadian Arctic beginning during the Second World War and lasting until the 21st century (Damas, 2002; Duhaime, Searless, Usher, Myers, & Frechette, 2002; Fumoleau, 2004; McMillan, 1988; Mead et al., 2010).

Profound changes experienced by northern Aboriginal communities forced into permanent settlement in the 1950s through 1970s were largely based on notions of assimilation by the Canadian government. Resulting in the marginalization of Aboriginal culture and traditions, and acting to degrade Aboriginal identity, health, and well-being (Angell and Parkins, 2011; Berkes and Jolly, 2002; Duhaime et al., 2002; Mead et al., 2010; Tester, Lambert, & Lim, 2013). During the post-war period, mining became increasingly important to the Canadian economy. Additionally, mines provided great opportunity for government assimilation efforts in the North through creating job opportunities for Aboriginal peoples. Thereby, introducing them into the waged-economy, thus promoting a shift in lifestyle more conducive to living in the permanent settlements created by government (Tester et al., 2013). As stated later in this thesis, the North Rankin Nickel Mine has been readily studied in the academic literature and is often used as a case study illustrating the detrimental impact of mining on Aboriginal communities. Examples of the poor living conditions and the inadequate employment and wages provided for the Aboriginal families

living within the mine site have been discussed by Cater et al. (2013) and others (Nassichuk, 1987; Tester et al., 2013).

As it can be seen, Aboriginal communities located in the Canadian Arctic had very little authority or influence over the course of these development initiatives (Campbell, 1996). In most cases, their essential relationship with the land was not considered in making land use decisions, or for the importance of protecting these resources (Hipwell et al., 2002). However, through the latter half of the 20th century, Aboriginal relations with industrial mining changed. As Aboriginal peoples transitioned from previously nomadic to more sedentary lifestyles, historical cultural and social circumstances were impacted. Increasingly, Aboriginal people were increasingly entering the wage-earning economy, and in many cases through northern mining projects (Tester and Blangy, 2013). This change in traditional lifestyle, combined with environmental alterations from resource development activities, resulted in severe changes to their diets, culture, and health of northern Aboriginal peoples across the Arctic region (Furgal and Stemia, 2006; Mead et al., 2010).

Aboriginal groups began to seek recognition and consideration for their concerns in the late 1920s and into the 1930s (Hossain, 2013). Unfortunately, without any formal organization, and the unwillingness by the Canadian government to hear these claims, little success was found during this era (Hossain, 2013). This is not to state that all aspects of Aboriginal rights were excluded in the Canadian Arctic during these eras of exploitation, for there were many instances in which Aboriginal occupation and rights to traditional territories were recognized as early as the 19th century.

When establishing grounds for treaty-making between the federal government and the Aboriginal groups, it was clear that these negotiations were conducted based on the state's recognition of the historical occupancy of Aboriginal peoples on their traditional lands. Treaties were established as a means for securing lands for incoming settlers and prospecting developers, while maintaining Aboriginal access to land to carry-out traditional

subsistence activities (Frideres et al., 2003; Whitehouse, 1994). However, in contrast with treaty-making through the 19th and 20th centuries, is that often times the resulting agreements did not reflect an accurate depiction of the perspectives of both sides (Campbell, 1996; Frideres et al., 2003; Fumoleau, 2004). Aboriginal title to the land was extinguished in return for benefits like monetary settlements and hunting and fishing rights on the land (Bowman, 2011; Sosa and Keenan, 2001). However, established oral agreements were often omitted and related capacity issues with Aboriginal groups prevented successful treaty negotiations. This commonly resulted in Aboriginal peoples never receiving the rights and lands promised (Bowman, 2011). These disputes over Aboriginal rights and land ownership have not all been resolved to this day (AANDC, 2010).

Through the 1970s, the position of Aboriginal people began to change. Aboriginal groups came together into more formal organizations focused on the objective of regaining self-determination, forming the Inuit Tapirisat of Canada in 1971 and the Indian Brotherhood, now the Assembly of First Nations, in 1978 (Angell and Parkins, 2011; Hossain, 2013). Mobilizing Aboriginal people with a common front, these groups acted to promote Aboriginal culture and lifestyles in political, economic, and environmental perspectives in relation to the rapidly expanding resource development projects (Angell and Parkins, 2011; Hossain, 2013). A major focus of the Inuit Tapirisat of Canada was the negotiation of land claim agreements for all traditional territories (Angell and Parkins, 2011).

The mid-20th century witnessed the resurgence of Aboriginal peoples in Canada, and the establishment of new approaches to treaties through comprehensive land claims (Angell and Parkins, 2011; Hossain, 2013). Since the initial success with the James Bay and Northern Quebec Agreement in 1975, comprehensive land claim agreements have acted as a major vehicle for change (Angell and Parkins, 2011; Couch, 2002; McMillan, 1988). Examples of these comprehensive land claims in the Western Canadian Arctic include: the Nunavut Land Claim Agreement and the Nunavik Inuit Land Claim Agreement. Similar

settlements for Aboriginal groups in the Canadian Arctic include: the Inuvialuit Final Agreement and the Umbrella Final Agreement for the First Nations of the Yukon Territory.

Comprehensive land claim agreements provide Aboriginal groups with greater authoritative capacity and decision-making abilities with land use planning and activities (Bowman, 2011; Campbell, 1996). With this stronger legal position, Aboriginal groups with negotiated land claims now have the potential to prosper and benefit from resource development projects on their traditional lands, unlike historical treaties where they were excluded from retaining any benefits (Bergner, 2006). The effects of modern land claim agreements will be discussed further in following sections.

Between 1973 and 1977 significant progress was made in the resource development industry in terms of attention to environmental impacts and local communities. The precedents for governance and environmental and social assessments set by the Berger Inquiry of the Mackenzie Valley Pipeline, concluding in 1977, have had a lasting impression on northern mining and resource development (Angell and Parkins, 2011; O'Reilly, 1996; Walton et al., 2001). Further progress was made in 1977 with the Pan Arctic Meeting held by Aboriginal leaders in the North, which concluded with the establishment of the Inuit Circumpolar Council (ICC). Recognized by the United Nations, the ICC works to ensure greater recognition and incorporation of traditional knowledge in decision-making at the international level (McMillian, 1988).

Over the last forty years, socio-economic changes and increases in capacity have occurred throughout the Canadian Arctic through better governance, and social and political advancement of Aboriginal people, enabling Aboriginal voices to be heard, and problems to be addressed (Campbell, 1996; Manley-Casimir, 2011; Sosa and Keenan, 2001). The amendment of the Canadian Constitution in 1982 recognizing Aboriginal and Treaty Rights further entrenched Aboriginal rights in Canada (Sosa and Keenan, 2001). This stronger position gained by Aboriginal people is

contributing to a much greater and representative role with government and decision-making (Hossain, 2013).

2.3 Current Operations and Development

There are currently ten operating mines in the Arctic region. Spanning from the Minto Mine in the Yukon Territory, through the diamond mines in the Northwest Territories and Meadowbank Gold Mine in Nunavut, bound by the Mary River Project on North Baffin Island, and eastward with the Raglan Mine in Nunavik and the Vale Nickel Mine at Voisey's Bay in Nunatsiavut. In addition to these major operations is the large number of projects in development and exploration phases. Some of the notable development projects nearing their operations phase are the De Beers Gahcho Kue Diamond Mine in the Northwest Territories, the AREVA Kiggavik Uranium Mine in Nunavut and the Agnico-Eagle Meliadine Gold Mine also in Nunavut (Natural Resources Canada, 2014).

In particular, the Baffinland Mary River Iron Mine on Baffin Island is of considerable interest to the national and international community. Beginning operations in September of 2014, it is anticipated that this project has the potential to seriously change Arctic mining due to its immense scale, and the purity of the ore, which does not require additional refinement (Megannety, 2011). The construction of a railroad to transport ore from the mine site to Steensby Port, and custom-built icebreakers to ship the ore to Europe, were among the major projects necessary for developing the Mary River Project (Megannety, 2011). The Baffinland Mary River Project is also indicative of the changing requirements regarding consultation and involving local communities in these discussions. Due to the magnitude of this project, and the role that Impact and Benefit Agreements are playing in this project, the Baffinland Mary River Project will undoubtedly receive attention from researchers and other stakeholders. The progress of the Mary River Project is likely to have a significant influence over future mining developments in the Canadian Arctic.

As the Baffinland Mary River Project reveals, the value of mining in these Arctic regions has increased exceptionally in the last 40 years; this surge is expected to continue in the foreseeable future (Haley et al, 2011). With high mineral prices, companies are now able to explore the remote landscapes of the Arctic and cover the heavy upfront costs of mine development (Peterson, 2012). Resulting in a substantial increase in the number of mines and much more pronounced focus on resource development in the Canadian North (Peterson, 2012). With a strong interest from the federal government, and more particular interests from territorial governments in terms of economic development, it is expected that the expansion of the mining industry in the Canadian Arctic is likely to increase (Cater, 2013; Peterson, 2012). In the past decade, for instance, the value of diamond mining alone in the Northwest Territories has outweighed oil and gas extraction (Haley et al, 2011). Further, a perpetual system of development is promoted in Nunavut, where the beginning of a closure process of one mine, encourages the initiation of new project development, as per the economic strategy of the territory (Cater, 2013). On a grander scale, such resource wealth has also created opportunities for outside investments. For instance, increasing access to resources in the Canadian Arctic has resulted in increases in foreign investment in Canadian mining from \$20 billion in 2004 to \$74.1 billion in 2009 (Peterson, 2012). Thus, it can be stated that industrial mining is dominating economic development in Arctic Canada (Stedman et al, 2004).

Along with massive contributions to the Canadian economy there have also been a number of resultant costs associated with mineral expansion. With Canadian Arctic projects, most of the materials extracted are exported in their raw, unmanufactured forms, allowing other nations to refine, process and in some cases, manufacture the finished good at greater values. This phenomenon is referred to as economic decoupling, and has a major influence over the economic value derived from the mining industry for the country from which the resource is extracted (Haley et al, 2011).

Further complicating the retention of economic benefits from Arctic mining is the volatility of global markets, which are so heavily dependent upon factors of supply and demand (Megannety, 2011). During times of economic difficulties, such as the global crises experienced in 2009, the Canadian mining industry has felt related impacts. For instance, a decreased total value of the majority of the minerals produced in Canada of 31.5% meant that investment values dropped from \$47 billion in 2008 to \$32.2 billion (Megannety, 2011). With economic uncertainty continuing throughout 2010, the industry was reportedly recovering by 2011 (Megannety, 2011). As previously stated, the challenges of conducting business in remote locations with such harsh climatic conditions pose additional, uncontrollable financial barriers, which can strain profit margins and limit development (present or otherwise). Finally, with such potential to spur economic development, there is an extensive range of challenges for environmental harm and the well-being and livelihoods of northern Aboriginal employees which can ultimately lead to barriers for sustainability (Haley et al., 2011; Stedman et al, 2004).

Prior to the implementation of modern mining guidelines, it was common for mining companies to hire non-local employees and retain goods and services from non-local businesses. These actions could severely restrict any benefits to be procured by local communities. If local residents were in fact hired to work at the mines, they were typically only offered low-wage positions for general labour, while higher-paid positions, such as contractor and engineering positions, were filled from outside of the region (Cameron, 2012; Haley et al., 2011; Manley-Casimir, 2011; Peterson, 2012; Sosa and Keenan, 2001). In many cases where companies have been willing to hire a greater portion of local employees for more advanced positions they are often constrained by a lack of community members with adequate skills and experience to satisfy job requirements. Thereby reducing the possibility of economic benefit or growth for the wellbeing of local communities (Peterson, 2012; Sosa and Keenan, 2001). Adequate local employment with current and

future mines continues to be a challenge, for both industries and communities, and will be discussed in following sections.

Based on the myriad of factors discussed above, it is clear that mining will continue to be a prominent interest in Arctic Canada, albeit not without its challenges, for decades to come (Haley et al., 2011). With such an extensive landscape, significant mineral potential, and government support, companies will continue their pursuit and expansion in the Canadian resource frontier (Haley et al., 2011).

2.4 Mining Going Forward

In recent years the evolution of the mining industry has been quite apparent. The industry has demonstrated an ability to incorporate a much broader range of factors into development planning and management, including those of legislative and regulatory requirements, environmental protection and stewardship. Mining companies appear to be taking on more responsibility in an effort to become better corporate citizens, advocating for sustainability, health and wellness, and economic development.

The lasting legacies and complex cumulative impacts of current mines are still of paramount concern in the Canadian Arctic, despite recent attention to the adverse effects from mining and action taken to prevent, reduce, and rehabilitate such impacts (Cater, 2013; Galbraith et al., 2007; Haley et al., 2011; Male and Nol, 2005). For instance, poor planning and insufficient closure plans designed and implemented for the Con and Giant gold mines in the Northwest Territories has resulted in a negative environmental legacy, and adverse effects to local Aboriginal communities, decades after their closure. Moreover, the perpetual harmful socio-economic and cultural implications that have resulted from the Rankin Inlet mining community established in the 1950s for service to the mine provides another example of lasting mining impacts (Cater, 2013). Imminent future developments in the Arctic call for the critical need for the better understanding of the historical imprint mining has had on the landscape and

ways to reduce this in the future (Tester and Blangy, 2013). The ambitious nature and large-scale operations characterizing modern mines have such high potential for environmental, social, and economic impacts, which are expected to continue with advances in technology. As the Canadian diamond industry and other major mining projects are still in their infancy, it is imperative that mining impacts be accurately assessed as industry develops through the traditional territories and sensitive ecosystems of the Arctic (Male and Nol, 2005). The complexities of the cumulative effects from industrial development and natural phenomena, such as climate change, will continue to rise and become more challenging if they are not carefully calculated and managed (Johnson et al., 2005; Nassichuk, 1987). These concerns will be discussed in following sections in-order to establish a thorough understanding of the actors and perspectives involved, and resources at stake.

2.5 Major Wildlife Impacts

As previously noted, Arctic mining operations can have impacts that range from local to international consequences, and affect both human and ecological systems (Johnson et al., 2005). Studies investigating these impacts either focus on the direct and immediate impacts, or the more long term and indirect effects.

The direct impacts from mining on wildlife populations are typically the result of the physical alterations made to the environment (Bowman 2011; Couch 2002; Johnson et al., 2005; Weir et al., 2007). Beginning with the exploration phase and continuing through extraction and transportation, significant work is required to gain access to the mine site. The extent of clear-cutting and habitat modification involved to construct transportation systems, and the hydro corridors necessary to power these projects is massive and in some instances, creates immediate adverse effects on local wildlife populations (Bowman, 2011; Johnson et al., 2005; Weir et al., 2007). The transformation of and/or loss of critical habitat can be particularly

challenging to migratory birds and caribou herds (Boulanger et al., 2012; Klein, 2000; Male and Nol, 2005; Weir et al., 2007). Changes to breeding grounds and natural food sources results in altered distribution, increased predation rates and declining population numbers (Boulanger et al., 2012; Bowman 2011; Couch 2002; Johnson et al., 2005; Klein 2000; Weir et al., 2007). The inevitable tension resulting from such lost traditional territory and wildlife habitat has been a matter of contention between companies and communities throughout approval and development processes (Walton et al., 2001).

Another aspect of mine development pertaining to environmental impacts is the increased incidences of human-wildlife interactions (Bowman, 2011; Johnson et al., 2005; Weir et al., 2007). These projects bring a great number of people to the previously uninhabited wilderness regions, thereby increasing access to wildlife by humans (Boulanger et al., 2012; Johnson et al. 2005; Klein, 2000). These increased anthropogenic pressures can result in wildlife mortality through vehicle collisions, incidences of self-defense, and increased fishing and hunting around the site (Bowman, 2011; Johnson et al., 2005; Weir et al., 2007). Scavenger species can also become a nuisance upon entering the site in search for food and wastes (Bowman, 2011; Johnson et al., 2005; Weir et al., 2007).

Within the perimeter of the mine property, there are several other environmentally damaging activities and structures typically involved in the mining project. These include features such as holding ponds, tailings ponds, dumping areas, processing equipment, and living quarters, all of which have significant impacts to the natural environment (Bowman, 2011; Couch 2002; Johnson et al., 2005; Weir et al., 2007). Johnson et al. (2005) found that often wildlife responds to these landscape alterations through various adaptations. This includes increased predation rates, reduced habitat suitability for native species and increased prevalence of invasive species. In some areas, this results in greater competition for resources, and less viable populations. Johnson et al. (2005), after modeling responses of terrestrial wildlife to the

cumulative effects of resource development across the Canadian central Arctic, found that mining disturbances often have seasonal effects on wolves and grizzly bears, and a temporal effect on the migratory patterns of caribou as they move through the region.

Boulanger et al. (2012) designed a statistical model to determine the zone of influence (ZOI) of Bathurst caribou caused by mining related disturbance. The research was conducted in the Northwest Territories in the vicinity of the Ekati-Diavik mine complex. The findings suggest that in the summer months, migratory tundra caribou are affected by open-pit mining operations. The ZOI was estimated to be 14 km from the mine centre in which there was a reduced probability of caribou occurrence. According to this study, dust-fall from the mining operations is a key factor in determining ZOI. This study of ZOI has is now used as an unofficial industry standard for measuring mining impacts and comparisons for baseline studies (Boulanger et al., 2012).

Recent studies of the impacts of industrial development on terrestrial wildlife in the Canadian Arctic suggest that future research of this kind investigate a larger range of impacts, including wildlife behavioural responses and geographic areas (Boulanger et al., 2012; Johnson et al., 2005; Klein, 2000; Weir et al., 2007). This will aid in the consideration and examination of cumulative effects from multiple sources of disturbance on the landscape (Boulanger et al., 2012).

The immediate impacts of mining to the natural environment also affects Aboriginal communities (Manley-Casimir, 2011). These impacts accumulate to have long-term consequences, especially when coupled with other development and the broad impact of global climate change (Cameron, 2012; Johnston et al., 2012). The accumulation of these effects over the long term must be considered for both the environment and wildlife, but also the extension of impacts to the human populations of the region as well.

Several studies have demonstrated particular instances where the cumulative effects of industry can be significant, thereby encouraging further

research to understand the extent of these lasting and complex effects (Boulanger et al., 2012; Johnson et al., 2005). Cumulative issues include overall reduced availability of quality habitat, harmful interactions with wildlife on or around development sites, and ultimately, changes in the distribution of wildlife populations (Boulanger et al., 2012; Johnson et al., 2005). Currently, those working to study the cumulative effects for northern regions in Canada, are doing so at a time of unprecedented levels of industrial development, thus further challenging these efforts to understand these impacts (Johnson et al., 2005). A lack of consideration of these cumulative effects from anthropogenic and industry stressors can prevent effective policies and regulations necessary for protecting wildlife populations and Arctic communities (Gunn and Noble, 2009; Johnson et al., 2005).

Although studies have examined some aspects of these cumulative impacts, the challenge now is managing these impacts across jurisdictional boundaries, whether these are territorial or national. (Boulanger et al., 2012; Gunn and Noble, 2009; Johnson et al., 2005; Weir et al., 2007). At this time cumulative effects are mainly addressed through the Environmental Impact Assessment process on a per-project basis by the territorial review boards (Gunn and Noble, 2009). A formal assessment and management process for regional cumulative effects would ensure that past impacts would be incorporated into existing and future mining projects. Thereby aiding in the creation of more effective regional plans (Gunn and Noble, 2009; Johnson et al., 2005; Weir et al., 2007).

Industrial mining activity undoubtedly takes a toll on the sensitive Arctic ecosystem and “produces landscapes of a particular kind” (Cater, 2013 p. 18). These “landscapes” present particular challenges to Aboriginal populations (Bernauer, 2011; Manley-Casimir, 2011). So many of these communities are still incredibly dependent upon wildlife species for subsistence purposes, including the provision of nutritional country foods, and the maintenance of Aboriginal identity through the traditional

harvesting practices. Declining wildlife populations due to lost habitat and mortalities caused by mining are having an adverse effect on the local traditional economies and community health and well-being (Bernauer, 2011; Cameron, 2012; Manley-Casimir, 2011). Aboriginal communities situated near mining projects have expressed and continue to express significant concerns regarding interrupted migratory routes and patterns of wildlife, the protection of critical breeding grounds, and natural food and water sources for wildlife (Bernauer, 2011; Ellis, 2005). These specific concerns, rationales and suggestions for the future will be discussed later in this literature review.

2.6 Environmental Legislation

Northern Canadian mining development projects are largely regulated by territorial and federal governments (except in Northern Quebec and Northern Labrador). A key piece of environmental legislation in Canada is the Canadian Environmental Assessment Act (CEAA) which was established in 1995 (Galbraith et al., 2007; Gunn and Noble, 2009; Mulvihill and Baker, 2001). Administered by the regional Impact Review Boards established in each territory, the CEAA mandates Environmental Impact Assessments (EIAs) to be completed for all new mining developments in the Canadian Arctic (Mulvihill and Baker, 2001). EIAs examine the expected effects resulting from the mine development and operation processes, and anticipate the potential requirements for site reclamation at the end of production. By design, Environmental Impact Assessments address the ecological sustainability of new mining projects through studies of timelines, distribution of risks and benefits, baseline data collection, regional development, and investigations of local stakeholder perceptions (Fitzpatrick et al., 2008). The CEAA is working towards an end where all relevant stakeholders and the affects to natural resources will be considered through required community consultation sessions and public engagement. This mandate of consultation and engagement throughout the assessment process

aids in the development of more successful management plans, mitigation of adverse effects, and inclusion of Aboriginal people and their perspective (Mulvihill and Baker, 2001).

Although the Environmental Assessment legislation was created to minimize impacts and disruptions, the academic literature has pinpointed a number of areas in which the results have been less than ideal in terms of the overall objectives of the legislation. According to Fitzpatrick et al. (2008) Environmental Impact Assessments continue to be a learning process for the review boards, proponents, communities, and governments. Exacerbating the difficulties associated with this continual learning is the fact that it seems as though there has been relatively little sharing of lessons from one case to another (Mulvihill and Baker, 2001). As stated by Mulvihill and Baker (2001), time frames defined by Environmental Assessment regulation and the extent of expected impacts from mining, are often much too short to display the full environmental effects a mine may have (Galbraith et al., 2007). Another concern expressed by Klein (2000) addresses the streamlined, or blanket assessment of impacts to wildlife species. Several species in these targeted Arctic regions share similar ecological characteristics but must be assessed separately and individually in terms of how they may be impacted by specific developments (Klein, 2000). The extent of the assessment and consideration of cumulative effects from mine development in the region are also of concern for the environment as well as local communities (Galbraith et al., 2007). Finally, the extent of the implementation of the required public consultation sessions and the incorporation of Traditional Knowledge in EIAs has been addressed throughout the literature (Mulvihill and Baker, 2001).

With more recent developments, EIAs have incorporated new features, including Strategic Environmental Assessments (SEA), and Social Impact Assessments (SIA). These are intended to incorporate a greater range of critical components that were consistently overlooked in the past. A study conducted by Couch (2002), demonstrated that the addition of SEAs and SIAs in EIAs aided in the establishment of the Ekati Diamond Mine in the

Northwest Territories. As Meek (2012) explains, the involvement of the local communities surrounding developed mine sites has played a large role in maintaining access and control over subsistence resources. If these considerations can be included in planning and management of all future mines, then the likelihood of a more sustainable operation and relationship with local communities can be possible (Meek, 2012; Mulvihill and Baker, 2001). In addition to these social considerations, another cause of concern is the understanding and management of cumulative effects. As there is currently no formal system for cumulative effects assessment and management, Gunn and Noble (2009) suggest that Cumulative Effects Assessment may be best incorporated into the Strategic Environmental Assessment framework. Although there are instances where groups, including government and industry, have taken on regional environmental studies, such as monitoring projects of combined effects from the Ekati and Diavik Diamond Mines in the Lac de Gras region, they are not consistent across the Arctic, and are dependent upon independent initiative and funding sources. While these advances are important, improvements for more standardized and all-encompassing protocol that measure all impacts from mining projects are still necessary (Meek, 2012).

Recent advancements in the legislative and regulatory requirements calling for better impact mitigation and Aboriginal participation, such as the SIAs and negotiated Environmental Agreements and IBAs, must be recognized and encouraged (Galbraith et al, 2007). Incorporating local Aboriginal people in these mitigation strategies ensures that management plans will be locally suited and be accepted (Meek, 2012). This will improve likelihood of overall success with sustaining wildlife populations in terms of mitigating impacts from development, while still providing Aboriginal communities with opportunities and access to their traditional lifestyles (Meek, 2012).

2.7 Management Planning and Mitigation Strategies

In order to receive permission to operate, mining companies must conform to legislated requirements to conduct Environmental Impact Assessments, including Socio-Economic Assessments and Strategic Environmental Assessments as previously discussed (Couch, 2002). These guide the development and implementation of effective plans for managing, minimizing and mitigating the effects of development upon the natural environment and nearby communities. Consistent with these requirements, Wildlife Management Plans are created to identify and prioritize the different species of interest, the expected impacts of operations on these populations, and the preventative measures and mitigation strategies intended to alleviate these pressures to wildlife. These plans also include various monitoring and reporting strategies to assess efficacy, such as the Terrestrial Ecosystem Management Plan created for the Meadowbank Gold Mine in Nunavut in 1996 (Cumberland Resources Ltd., 1996). As mining operations emerge, the monitoring and reporting protocols established by the Wildlife Management Plans are documented and submitted to Impact Review Boards so that the latter can monitor and assess the effectiveness of these wildlife management plans.

A large component of Wildlife Management Plans are mechanisms used to reduce human-wildlife interactions at the mine site (Klein, 2000). These include prevention of vehicle collisions with wildlife along haul roads through the development of Right of Way policies. These require vehicles to stop and allow the wildlife to safely pass through the area. Waste Management Plans seek to more effectively manage food wastes and other wildlife attractants at the mine site, thereby preventing wildlife from entering the potentially dangerous mining operation areas. Hunting and fishing activities by mine personnel are commonly not permitted on site, nor is the possession of firearms and harvesting equipment allowed.

Companies also devise community engagement strategies, typically submitted to Impact Review Boards to uphold certain licenses and approvals

for operation. One such example is the Community Engagement Report created by De Beers' Snap Lake Diamond Mine (De Beers Canada Inc., 2013), which consists of plans for consultation, information sharing, community and site visits, and socio-economic initiatives. These strategies for incorporating communities into the planning and management of the mine are typically consistent with negotiated IBAs between the company and the local communities, as well as Socio-Economic Agreements with government (Caine and Krogman, 2010; Sosa and Keenan, 2001). Requirements mandated by these agreements are intended to provide an overall mechanism for minimizing, as well as improving interactions between parties and ensuring adequate benefits to all those involved. More detail concerning IBAs will be discussed in following sections.

At a larger scale, companies will work in cooperation with all different levels of stakeholders to conduct research and monitoring projects in order to better understand their impacts to wildlife populations. For instance, the diamond mines in the Northwest Territories, along with government agencies, and local communities have conducted population studies of grizzly bears and wolverines through the DNA sampling of hair tufts found around these large mine sites. This project incorporates a relatively large sample area in order to include these major mining projects, and therefore intends to provide a substantial wealth of knowledge and understanding of how these species have responded to resource development (Dominion Diamond Ekati Corporation, 2014). Information of this kind will be used in future policy, regulation, and mining Wildlife Management Plan updates and for further monitoring. Unfortunately, there remains continued dissatisfaction with the amount of adverse and cumulative effects still seen with wildlife populations and in Aboriginal communities, despite the regulations and enforcement for wildlife impact management.

Reflexive and adaptive strategies have been called upon for the improvement and facilitation of greater resilience of key ecosystem services (Meek, 2012). Instability of continual growth of the mining industry in the

Arctic region creates an environment of unpredictability and increasing cumulative impacts. Although there have been several instances in which individual Wildlife Management Plans have been mindful and successful in dealing with the risk they pose to wildlife, for instance, the specially designed road edges for use by caribou and wolves around the Ekati Diamond Mine, there remains a fair amount of variance across the region (Klein, 2000; Kofinas, 2005). The creation of one over-arching management plan encompassing strategies designed for all species of wildlife, landscape characteristics, and the particular needs of individual communities is quite unlikely (Meek, 2012). Each system is unique and dynamic, and therefore must be managed as such.

Much of the academic literature advocates for the incorporation of Traditional Ecological Knowledge (TEK) to help understand the long term effects mining development may have on the landscape, how best to mitigate these impacts, and how to potentially adapt in the future (Cameron, 2012; Ellis, 2005; Parlee et al., 2012). Such beliefs are also promoted by Aboriginal groups themselves when faced with land use decisions that are likely to impact their traditional territories. With present day governance structures, recognition of Aboriginal rights and improved environmental management, this adaptive expertise, developed over centuries living off the land, is becoming a known source of insightful information with great potential for advancing the way in which industrial impacts are minimized, mitigated, and compensated. Unfortunately, there still seems to be a lag in the collection and implementation of such valuable teachings.

2.8 Aboriginal Groups and Resource Management

Communities today are affected differently by mining projects than they have been in the past (Peterson, 2012). Changes in political standing, demographic characteristics, community priorities, and the nature of modern industry, have all contributed to new levels of concern and demand for protection and benefits (Peterson, 2012). In some instances, Aboriginal

groups are now exerting their authority over the ways in which natural resources are being managed. Establishing government agreements, connections with co-management boards, and expressions of concern to mining companies, have all had the effect of raising awareness of environmental issues from the Aboriginal perspective, and have now found success with making effective change (Bernauer, 2011; Bowman, 2011; Dowsley, 2009). As such, it is becoming more ubiquitous across the Arctic for Aboriginal groups to hold higher standards for mining companies to adhere to, and have a greater influence over wildlife impact mitigation strategies.

The ability to address deteriorating environmental conditions and regain control over these situations is dependent upon the power provided by modern land claim agreements, and the recognition of Aboriginal and treaty rights (Bowman, 2011; Sosa and Keenan, 2001). These agreements between Aboriginal groups and the government granted a certain degree of authority to be exerted by Aboriginal groups over matters of land use and natural resource management (Hossain, 2013). A prime example demonstrating the ability of these agreements is the Nunavut Land Claim Agreement of 1993 (Dowsley, 2009). From this agreement, the Inuit people gained ownership over 350,000 km² and the surface and sub-surface rights to 35,000 km². Another critical component of this agreement was the retention of wildlife harvesting rights for the Inuit groups of the territory (Bowman, 2011). Although concerns have been raised related to how successful this has truly been, it has been transformative for the Inuit, and has been a catalyst for new agreements aimed at providing rights and benefits (Bowman, 2011; Dowsley, 2009). For instance, in 2006 the Nunavik Land Claim Agreement was settled with the Inuit of Northern Quebec. It ensured Inuit participation and government employment at a representative level in the Settlement Area, and also for the inclusion and implementation of traditional knowledge in decisions of resource exploitation (Hossain, 2013).

Using the bestowed position from treaty and land claim agreements, combined with robust knowledge of the environment and associated issues, Arctic communities have gained more decision making power and the ability to raise awareness of local concerns (Sosa and Keenan, 2001). This has been demonstrated by instances such as the recent devolution of responsibility from the Federal government to the Government of the Northwest Territories and the achievement of self-governance of several First Nations groups in the Yukon. As major land claim and governance agreements have progressed, including the Umbrella Final Agreement for First Nations in the Yukon, effective administration of Environmental Assessment legislation was also making transitions (Yukon Environmental and Socio-Economic Assessment Board, 2015). With these new agreements came new mandates for environmental management, resulting in new territorial legislation, such as the Mackenzie Valley Resource Management Act in the Northwest Territories and the Yukon Environmental and Socio-Economic Assessment Act (Mackenzie Valley Review Board, 2015; YESAB, 2015). Thus, establishing provisions for the creation of territorial Impact Review Boards. The Nunavut Impact Review Board, the Mackenzie Valley Environmental Impact Review Board and the Yukon Environmental and Socio-Economic Assessment Board were established for the implementation and administration of Environmental Impact Assessments. A strong mandate for the incorporation of Aboriginal people, knowledge, and culture with land-use and resource management decisions supports the processes of the territorial review boards (MVRB, 2015; Nunavut Impact Review Board, 2015; YESAB, 2015).

It has become increasingly common for resource development companies to engage with all affected communities in negotiating IBAs. This occurs under various circumstances: IBAs are negotiated as required by certain land claim agreements like the NLCA, through *ad hoc* government requirements, or in some cases, through companies seeking to demonstrate good will and proactively develop better working relationships with local communities (Caine and Krogman, 2010). In northern Canada, IBAs are now

seen as a standard and effective mechanism for distributing benefits to impacted communities in ways desired by each community (Caine and Krogman, 2010). Most agreements include provisions for employment, education, and training opportunities, economic, social, and cultural programs, revenue sharing, and environmental protection. As such, they seek to diversify the local economy and strengthen community involvement with resource development (Caine and Krogman, 2010).

In some instances, shared power, authority and responsibility, coupled with better communication between local communities, the state, and corporations offers more holistic insights into ecosystem management (Kofinas, 2005). For example, wildlife management regimes are made up of a variety of regulatory institutions, mining companies, and regional and community entities such as the Hunters and Trappers Organizations (Meek, 2012). Building a network of relationships among these groups can help to increase confidence in resource governance as a means of ensuring sustainability (Meek, 2012). This pairing of community, corporate and state capabilities has the potential to produce more efficient and effective resource management (Kofinas, 2005). Co-management relationships are now emerging as one form of combining community, government, and companies in order to achieve greater adaptive capacity for resource management.

For instance, certain co-management bodies have been created under the mandate of recent territorial legislation and land claim agreements. This includes the Nunavut Wildlife Management Board, the Mackenzie Valley Land and Water Board, and the Renewable Resources Councils in the Yukon. Co-management boards are focused on responding to environmental and socio-economic change through the use of adaptive strategies designed to integrate local Traditional Knowledge and scientific research (Armitage et al, 2011; Dowsley, 2009). In essence, these adaptive co-management boards seek to empower Arctic regions to handle upcoming variability with the environment, and political and economic stages, and to develop long term strategies for minimizing the resulting impacts and conditions (Armitage et

al, 2011). The importance of sharing understandings between parties, increasing dialogue and interactions, and the distribution of control and responsibility is imperative for improving relationships and retaining more benefits for those involved (Armitage et al, 2011). Co-management arrangements work to establish stronger and more interactive networks between parties who may have previously been relatively unconnected. Opening new pathways for sharing effective strategies and information, thereby fostering more innovative solutions to complex situations (Armitage et al., 2011).

Although these co-management relationships are designed with intentions of participation, transparency, and equality, there remain some barriers between wildlife management, traditional livelihood, and new proposals for mining development (Kofinas, 2005). Castro and Nielsen (2001) suggest that co-management boards have struggled with a volatile globalized economy, and challenges related to incorporating the perspectives of resource harvesters into the established decision-making structures. In some instances, long-standing power imbalances create new conflicts (Castro and Nielsen, 2001). For example, decision-making power has traditionally been held by non-Aboriginal people who might not fully grasp the importance of natural resources for Indigenous cultures, nor the deep-rooted respect Aboriginal people have for the environment. This has led to a devaluation or disregard for Traditional Knowledge and its contribution to resource management. As Aboriginal groups and perspectives become more centrally involved and respected in planning and regulating resource development projects, alternative management strategies for sustainable development become more possible (Armitage et al., 2011; Dowsley, 2009). Understanding the way in which Aboriginal communities have been involved in mining and wildlife management strategies thus far, will help to determine how best to include these communities in planning and management associated with future development projects.

2.9 Traditional Harvesting and Economies

The modern economies associated with Arctic Aboriginal communities have become somewhat of a hybrid system consisting of the traditional political economy coupled with an investment in wage employment and other modern components (Berkes, George, Preston, Hughes, Turner, & Cummins, 1994). Persistence of the traditional economy in the Canadian North has an integral role in Aboriginal communities, enabling social continuity through modern times filled with new development and opportunities (Angell and Parkins, 2011). Development of industrial mining in the Arctic region offers great potential for new economic opportunities and a whole host of benefits for northern communities (Bernauer, 2011; Cater, 2013; Haley et al., 2011; Sosa and Keenan, 2001). However, the competing interests of traditional and mining economies tend to result in disagreements among residents as to how to respond to large-scale mineral development (Peterson, 2012). Since few opportunities for participation in the cash economy currently exist in these communities, wage employment provided through mining is often perceived in a favourable light by many decision-makers (Bowman, 2011).

The establishment of a mixed economy within Aboriginal Arctic communities has some viability for contributing to sustainable development. This should include valuation of renewable, land-based resources so they can be utilized sustainably to hold their integrity over the long term. This would also provide the capacity for larger industries to develop, but also provide significant protection of the traditional economy and lifestyle (Berkes et al., 1994). Through the creation of greater employment opportunities and the diversification of their capacity for participating in the economy independently, mining can contribute to other sectors in local communities through economic, social, and environmental elements.

Participation in the wage economy provided through mining opportunities is not however without its challenges. Often, industrial development is perceived as a prime opportunity for employment and

economic stimulation. It is hoped that wages will cycle through the communities, creating economic stability and enabling the provision of social and environmental programs, encouraging community health and wellbeing (Peterson, 2012; Tester and Blangy, 2013). Unfortunately, this is frequently not the case. (Peterson, 2012). As Bowman (2011) documented, in some instances, some of the only benefits communities have seen from the mining industry have been the reinvestment of wages into traditional harvesting activities. Although this enables harvesters to retain the necessary equipment to carry out traditional practices it is not enough to contribute to wider community subsistence programs (Bowman, 2011; Tester et al., 2013).

As stated earlier, new mines bring forth new environmental and social challenges (Tester and Blangy, 2013). These can be caused by unanticipated impacts to wildlife populations for instance, or the incoming workers from outside of the region (Sosa and Keenan, 2001). Different working schedules such as the common two-week on and two-week off system, or the fly-in fly-out commute schedule can result in reducing the availability of time for harvesters to spend on the land or with their families (Sosa and Keenan, 2001). Additionally, the boom-bust nature of industrial mining poses incredible risk to those investing resources into new developments, especially Aboriginal communities who can be extremely vulnerable to economic and environmental change (Manley-Casimir, 2011; Tester and Blangy, 2013). As mining operations typically last for 20 to 50 years, once the resources have been depleted, many of the financial and infrastructural services will cease with operations, and the companies and economic development opportunities will also leave the region. In these instances, the resident Aboriginal communities are more often than not, left to live out the degraded space created by the mine site, typically with no compensation for these damages (Manley-Casimir, 2011). Inadequacies with impact assessment processes, paired with the disproportionate effects industrialization can have on Aboriginal peoples, due to their relationship to the land, results in a great potential of damages to local Aboriginal

populations (Cameron, 2012; Manley-Casimir, 2011; Tester and Blangy, 2013).

2.10 Sustainable Development as a Theoretical Framework

Sustainable development implies that a healthy environment provides the economy with essential natural resources, and that a thriving economy allows for society to invest in environmental protection and avoid social injustices (Femia, Hinterberger, & Luks, 2001). The development of this concept has played a substantial role in transforming worldwide perspectives of human relationships with the environment. The World Commission on Environment and Development released The Brundtland Commission Report, "Our Common Future" in 1987 in which a definition of sustainable development was presented (Jickling, 1994). The widely accepted concept as outlined by this report is that sustainable development will meet the needs of the present without compromising the ability of future generations to meet their own needs. Included within this definition is the requirement and importance for focusing on the economic, social, and environmental elements of development, and their interdependence (Brundtland, 1987). The definition was developed in such a way as to bridge gaps between nations and different sectors, it was not intended to impose any one prescription, and to allow for diversity across the globe (Hopwood, Mellor, & O'Brien, 2005). Over the years, this basic concept of sustainable development has been modified and adapted to a number of different circumstances (Victor, 2006). Sustainable development strategies typically involve attempts to focus on more long term, integrated, and comprehensive approaches to management, emphasizing human dependence on the environment, and with concerns of the needs of future generations (Meadowcroft, 1999). One of the major concerns regarding sustainable development is that without any concrete direction and strategies for implementation on a global scale, the concept lacks vigour and will degrade

the original intent of the concept to a point where it becomes meaningless (Hopwood et al., 2005; Mebratu, 1998).

Typically, mining is considered to be an unsustainable practice (Haley et al, 2011). Extracting minerals from the earth is inconsistent with the understanding of sustainable development provided by the Brundtland Report. However, there are aspects of mining operations (i.e., investments) that result in sustainable strategies being implemented. Sustainable applications to environmental, social, and economic aspects of mining projects can potentially act as complementary strategies for other industries such as local tourism and transportation (Johnston, Johnston, Stewart, Dawson & Lemelin, 2012). It is hoped that this form of sustainable development can be applied to the Arctic mining industry to improve relationships with local communities, reduce impacts, and produce new economic opportunities (Cater, 2013; Meek, 2013). A more specific example of this strategy is the potential for more effective wildlife management. Although there are documented adverse effects to wildlife caused by mining projects, there are successful mitigation strategies that can be implemented by the mines. It is believed that if these effective strategies can be employed in combination with local/regional wildlife strategies, then the management of wildlife can potentially become sustainable, and reduce the overall impact of mines on the environment and local communities.

In order for successful sustainable development to take place there needs to be a wide scale shift of priorities, from short term to long term benefits for all stakeholders involved (Payne and Raiborn, 2001). Generally it is recognized that a collaborative approach between multiple stakeholders is key to successful sustainable developments. Incorporating a focus on innovation, creativity, and acceptance will also be fundamental in this transition (Payne and Raiborn, 2001).

For mining to become more sustainable it must consider all dimensions and incorporate these various dimensions into every aspect of governance, and focus on local dimensions as well as global perspectives

(Victor, 2006). In this way, it is necessary for not only the physical aspects of mining and its impacts to be approached from an ecosystem perspective, but also recognize the roles of all actors involved (Mebratu, 1998; Victor, 2006).

Entering into each local situation and developing a clear understanding of the picture and issues at hand will allow for priorities to be set and options to be weighed, and hopefully, implemented. As each component is critical and dependent on all others, no matter which starting point selected, there will be an effect on the rest, thereby, creating change, and potentially opening up further opportunities to implement sustainable strategies. As a perpetual process, full of feedback loops and unique circumstances, constant monitoring, adjusting, and planning are imperative. Key to this success will be the cooperation and communication among all parties involved in the process constantly redefining goals and strategies (Manley-Casimir, 2011; Victor, 2006)

There has been little focus on Aboriginal people in relation to the sustainable development of resource extraction companies throughout the literature. Although it has been recognized that it is unethical for the Aboriginal culture and livelihood to be threatened for the sake of industrial development, there have still been few attempts to seriously resolve these problem areas (Ellis, 2005; Lertzman and Vredenburg, 2005). Similarly, the sophisticated understanding of sustainability demonstrated through Traditional Knowledge and its potential benefits for sustainable development has been recognized, yet attempts to harness this expertise for resource projects has been largely insufficient (Ellis, 2005). The majority of conflicts between Aboriginal communities and mining companies are highly interdisciplinary and generally rooted in the lack of consideration of Aboriginal wellbeing, or their active participation with development.

Due to the potential for harm and opportunities as a consequence of the expanding mining industry, sustainable development is the conceptual foundation for this research. Considering the fragility of Arctic and sub-Arctic ecosystems, it is absolutely necessary to devise effective strategies for

the betterment of mining. As such the focus of this research is to reduce mining impacts to wildlife and the traditional harvesting practices of Aboriginal communities through a social sciences lens.

CHAPTER 3.0 METHODS

3.1 Research Philosophy, Design, and Theoretical Framework

The research philosophy driving this project has come from a pragmatic worldview. Pragmatism enables the researcher to seek actions and solutions capable of improving the current state of industrial mining and the realities of Arctic residents as previously described (Creswell, 2014). The sole purpose of this research is to devise helpful strategies for fostering healthy relationships capable of protecting wildlife resources valued for traditional Aboriginal use within the context of future mine developments.

A qualitative approach has been taken for this particular thesis research. In order to understand the reality of industrial mining in the North in terms of its relationships with terrestrial wildlife and traditional harvesters, this research seeks to address local realities and observations of those who have lived and experienced such relationships. Essentially this research is attempting to understand the unique perspectives of those involved and responsible for the human connections to wildlife and the land. Based on its merits and certain constraints (both temporal and economic), qualitative research is the best approach for capturing these personal, immeasurable, and complex pieces of information desired for supporting the defined research question and objectives (Myers and Newman, 2006).

It was challenging to conduct this research while a resident outside of the Arctic with no direct access to the terrain or the communities. This required the development of an understanding of the particular conditions, actors and relationships across the Arctic through a review of written research documents and reports. Information accessed for this research was defined by formal academic publications and official reports, which limited the Aboriginal and industrial perspective to that received and filtered by an academic approach. To balance this, the qualitative project was designed to collect experientially-oriented perspectives from various players involved in these issues, including northern Aboriginal groups and the mining industry. The goal of these interviews was to provide sufficient understanding to analyze, construct, and validate the collected information from the literature, and to synthesize logical interpretations and suggestions.

As stated earlier, the concept of sustainable development has acted as a theoretical underpinning throughout the research. Sustainable development offers a basic model for holistically analyzing the multi-disciplinary nature of this topic, and has acted as a guide for the data collection process, analysis and final management suggestions and conclusions.

3.2 Study Area

As depicted in Figure 2, this study is focused on the Canadian Arctic region, north of the 60th Parallel. This region encompasses the three Canadian territories, and the two provincial northern regions, Nunatsiavut and Nunavik. The literature reviewed for this study comprises the entire Canadian Arctic region, however the primary data collected through qualitative interviews is more representative of the three territories. As such, the subsequent research, discussion of results, and conclusions from the research is centered on the Canadian territories. Throughout this expansive region, both the active mines and developing projects are of interest to this study, and include open-pit and underground operations. The ecological and cultural diversity across the Canadian Arctic, combined with the variation of minerals extracted, present a unique range of characteristics and adaptations considered for the mitigation strategies employed by the mine and wildlife managers. The broad study area, paired with the wide range of mining projects considered in this study, provides the opportunity to highlight effective management practices that are applicable to an array of conditions that may exist across the Arctic region. These management suggestions are summarized and presented in Chapter 5 and 6.



Figure 2: Map of the active and developing mining projects in the Canadian Arctic region located north of the 60th Parallel

The Canadian Arctic is home to a number of First Nations groups including the Dene and Gwich'in groups, and the Métis across the Yukon and Northwest Territories, as well as the Inuvialuit (Inuit of the Inuvialuit Settlement Area) in the Northwest Territories, and the Inuit of Nunavut, Nunavik, and Nunatsiavut (Furgal and Seguin, 2006). Each group has their own unique history, adaptations, and cultural traditions to consider in the face of industrial development and wildlife management (Hossain, 2013). With sophisticated knowledge and understanding of the natural environment, Aboriginal peoples are strongly connected to wildlife resources for their significance as food sources and influences to cultural identity (Mead et al., 2010). This unifying connection to the environment and wildlife populations shared by Aboriginal peoples can allow for comparisons of their experiences with the mining industry, and concerns and objectives for their collective futures (Hossain, 2013).

The wildlife species of interest to this study are those inhabiting the Canadian Arctic with specific relevance to the Aboriginal residents and industrial mining operations. Specifically, the Valued Ecosystem Components (VECs) identified for assessment and management purposes will be the species of main focus for this research. Most often, wolves, caribou, grizzly bears, and wolverine are named as

terrestrial wildlife VECs, and are also most frequently studied in the academic literature.

3.3 Methodology

3.3.1 Interview Design and Pre-Test

Based on the reviewed literature and research objectives, a list of interview questions was devised to prompt participant discussions. Semi-structured interviews were designed consisting of 12 open-ended questions to be conducted over the telephone. Since many of the participants live and work across the Canadian Arctic and other provinces, telephone interviews allowed for these informants to contribute their valuable experiences to this study. Pre-tested on two individuals knowledgeable of mining operations in Northern Canada, the semi-structured interview design was selected because it provided an opportunity to access respondents' observations and experiences with mining projects in the Canadian Arctic (Dilly, 2000; Aberbach and Rockman, 2002; Pridemore, Damphousse, and Moore, 2005; and Cook, 2009).

3.3.2 Participant Recruitment

For this particular study, participants sought were highly knowledgeable individuals, capable of providing substantially informative and unique perspectives. Also referred to as key informants in methodological literature, it was anticipated that these individuals would share a large amount of valuable and rich data (Kumar and Anderson, 1993; Weiss, 1996). A diverse list of interview candidates and information pertaining to their respective work experiences was assembled to aid in recruitment (Dilly, 2000). Respondents capable of representing specific major groups and stakeholders were integral to effective data collection for this study (Kumar and Anderson, 1993; Aberbach and Rockman, 2002; Weiss, 1995). Contacts included those with whom a preliminary relationship had already been established through networking opportunities, such as the Centre of Excellence for Sustainable Mining and Exploration conference in December 2013 at Lakehead University, or those known through various alternative sources. Potential interview

candidates were contacted by email by the researcher. This entailed sending an approved introductory greeting email with an attached formal cover letter describing the research and expectations of participants, and finally a consent form to be signed by any individual agreeing to participate in research interviews (please refer to Appendices for the approved documents). Snowball sampling was utilized to make contact with additional interview candidates to expand the extent of data collected and range of groups and stakeholders represented in the data.

3.3.3 Data Collection

Telephone Interviews

Pridemore et al. (2005) detail the benefits of telephone interviews, including the perspective that they can overcome large spatial and temporal barriers, that they tend to be low in cost, and that they can provide an ease of information sharing on difficult subject matter. Such merits confirm the suitability of this data collection method for this thesis. Beginning in May of 2014, and continuing until November of 2014, the researcher completed 8 telephone interviews with different participants.

Each interview was recorded and transcribed shortly thereafter. Each transcript was sent to the participant for confirmation prior to analysis. Although the 8 participants represented diverse groups and personal interests, most of the information shared by the 8 participants was quite similar and coincided with much of the information found throughout the literature review. It was determined that saturation had been reached and no further interviews were conducted.

Study Group

Altogether, the experiences of these 8 participants represented over 125 years of experience, derived from working in the Canadian Arctic on various mining projects, from various interests and perspectives ranging from mining companies, Aboriginal communities, consulting firms, and government. These participants were selected as interview candidates based on their experiences and expertise in the area of mining in the Canadian Arctic.

Three interviewees were employees of the mining industry, who at the time of the interview were working in environmental-related fields. All three participants were fully versed in the terms and processes of Environmental Assessments, impact mitigation, and also have experience working with communities. Two participants, at the time of the interview, were employees of northern Aboriginal communities. Their positions were focusing on environmental issues and community development, often involving matters of nearby mining projects. Although not officially representing Aboriginal groups for this study, these two individuals were able to share personal experiences working on behalf of communities with nearby mining projects. Two respondents were professional consultants who have worked for both the mining industry, as well as Aboriginal communities. These two participants had expansive experiences with conducting the assessments and studies for preparing Environmental Impact Statements, participation with community consultation sessions on behalf of the mining companies and local communities, as well as experience working through IBA negotiations. Working for one of the territorial governments, the last participant focused much of his/her work on Environmental and Socio-Economic Agreements between Aboriginal communities, mining companies and the territorial government.

The interview data collected from these 8 individuals demonstrated opinions and experiences that have been gathered from locations across the majority of the study area that have been shared from particular perspectives. Each participant is a unique individual and has not offered his or her opinion as fully representative of any one stakeholder group. Rather, the individual experiences shared provided informed insight to select questions that had not previously been addressed specifically in the academic literature in this way. These perspectives provided a useful and complementary dynamic for analyzing the full body of literature and information for addressing research objectives.

Literature Search

As more information was shared throughout the interview process, it became necessary to expand the literature review. This included an analysis of additional

industry reports and management plans, Environmental Impact Assessments conducted by territorial Impact Review Boards, consultation reports of sessions held between communities and companies, and related academic and legislative information that were not found or available in the previous round of the literature review. This additional literature review aided in the interpretation of the interview data and the compilation of a list of existing wildlife and traditional harvesting impact mitigation strategies employed by mining companies in the Canadian Arctic.

3.3.4 Data Analysis

Immersion in the data allowed for general themes and main ideas to be identified prior to beginning the coding process. The interview data was analyzed and coded based on the primary objectives set out in the research purpose using open coding strategies to identify conceptual themes and patterns from the data. (Marshall and Rossman, 2010). Codes were applied to each individual interview based on knowledge acquired from the literature review and terms derived from respondents in the interviews. As coding progressed, core categories were identified and coded data were placed in their appropriate categorical bin. These coded groups, based on identified themes, allowed for particular patterns and key points to emerge from the data, enabling an initial interpretation. Reflective memos, thoughts and insights by the researcher, were recorded throughout this initial coding process, leading to a further examination of the interview data (Marshall and Rossman, 2010).

Following the initial open coding phase and subsequent literature searches, regular intersection of common themes were recognized throughout the interview data. Axial coding strategies were applied to investigate these intersections and enhance understanding and interpretations of the interview information (Marshall and Rossman, 2010). This process of axial coding was done by cross-analyzing coded information with a secondary set of categorical themes derived from the data and supported by the literature. This second set of categories was devised based upon researcher interpretation of the individual interviews. The second round of

coding allowed for much more in depth analysis and a more explicit understanding of information and perspectives provided by participants.

Throughout the coding analysis and the continued literature review, a list of existing impact mitigation and relationship-oriented strategies utilized by the mining industry across the Canadian Arctic was developed. Also recorded within this list, were any relevant criticisms of such strategies discussed by respondents or the published literature. This sought to understand how existing strategies might be tailored or adapted into future situations. This table of different strategies was completed for the goal of fulfilling the first two research objectives, which led to the third research objective, of developing useful suggestions for developing relationships and mitigating impacts with future operations. Based on the findings from the literature review and recommendations derived from the interviewees, this research provides a series of recommendations for fostering productive relationships capable of executing effective adaptive management strategies for future mining projects in the Arctic. Detailed suggestions for the benefit of mining relationships with communities, centred on the inclusion and engagement of community members and their knowledge in reference to matters of wildlife and their traditional uses, are presented in later chapters. These suggestions are based on principles of sustainable development for the Canadian Arctic.

3.4 Ethical Considerations

Working with human beings through research requires several ethical considerations that are not always necessary with other forms of research. Respect for participant confidentiality and anonymity are important for balancing the risks and benefits associated with this research for the participants and their associations, as well as for the researcher (Corbin and Morse, 2003). Working in an ethical and respectful manner helps to instill a sense of personal security felt by respondents and benefits their overall willingness to participate and share information openly and freely, thereby enhancing the results of the study (Pridemore et al., 2005).

Anonymity and confidentiality has been assured for the participants of the study throughout the research process, and will remain so for any resultant publications. Interview participants have not been named, and were assigned a random numerical identifier that was referred to throughout the results and analysis sections of this thesis. Information acquired through interviews, including audio recording will be stored in a secure facility while research is conducted, and will be destroyed after five years following the project's completion.

Approval from the Lakehead University Research Ethics Board (REB) was obtained for the project prior to beginning data collection (Lakehead University, 2003). This approval process is in accordance with the Tri Council Policy Statement 2 for Ethical Conduct for Research Involving Humans (Tri-Council Policy Statement, 2010).

CHAPTER 4.0 RESULTS

This section presents the findings from the coded and interpreted interview data. The findings are presented in a manner reflecting the purpose and structure of the interview questions, so as to maintain a consistent representation of the information collected from participants. Discussions pertaining to the evolution of industry and its relations with Aboriginal communities are discussed throughout this section, as well as the state of existing impact mitigation strategies, and the present barriers preventing greater success with managing harmful effects to the natural environment and communities. Insights shared from interview participants aid in the overall understanding of the current context of Arctic mining leading to stronger recommendations for improving impact mitigation and relations with terrestrial wildlife and northern communities.

4.1 Challenges and Opportunities

To begin the interview process and develop an understanding of the current state of mining development in the Canadian Arctic, participants were asked to discuss the various challenges and opportunities that currently exist in the industry. As stated by Participant 8, “the two principle challenges are, it’s expensive to do up here, and the land is fragile” and “the third challenge comes down to the perception between the assessment of impacts in terms of people who are on the land and depend on the land, and western science.” These statements supported by most participants, who also mentioned the region’s remoteness, harsh climatic conditions and sensitive ecosystem. Participants also commented on the unique dynamics for industry that are associated with dealing with territorial governments and Aboriginal communities across the Arctic region. Participant 6 also noted the challenges with limited infrastructural development, poor regulatory and permitting systems, and the “very clear radical differences between the communities and mining industries”, like with Aboriginal connections to the land.

Further complicating matters for these industries are the various land claims and negotiated agreements with different groups that often end up conflicting and contradicting one another (Participant 7). However, as these “communities are few

and far between” (Participant 3), there still remains great mineral potential and opportunity for development (Participant 2 and 3). As such, Participant 2 further describes that non-renewable resource development is the strength of the northern economy, and that the mining industry is the largest contributor to the public sector in the Canadian Arctic. Paired with advancing technologies and improving policies and management, the mining industry has great potential for future growth and success (Participant 2 and 3).

4.2 Industry Change

When asked if mining had changed in the North, each participant stated that there had indeed been substantial changes. Several indicated that this change has occurred in large part, since the 1970s and 1980s and has “been driven by a number of factors” (Participant 8). Such change was centered on the emergence of Environmental Assessment legislation, the amendments to the Canadian Constitution strengthening Aboriginal Rights, and the global concept of sustainable development gaining publicity and attention (Participant 2). When discussing the changes with industry, Participant 8 stated, “their environmental impacts have become much reduced [as a] consequence of the regulatory system”. Participant 3 described these changes within the industry by stating that “the pendulum has swung from one extreme to the other. And we are now dealing in a highly regulated environment”. In addition to environmental regulation effecting changes with industry in the North, there have been a number of profound changes seen with the involvement of Aboriginal people in mining projects. This greater recognition of Aboriginal Rights has also helped Aboriginal people to be “very cognizant of their ability to participate in things like resource development and to influence it” (Participant 2). According to Participant 6 “there has never been a stronger focus on Aboriginal partnerships than there has been in the last ten years”. Further, Participant 6 when discussing Senior mining companies, which are those who develop the mineral deposits scouted by the Junior mining companies, suggest that “they have become much more attuned to the fact that they need to engage and consult, and build partnerships with Aboriginal communities”.

Several concerns were expressed regarding the meaningfulness of these changes “for the benefit of the people and the environment” (Participant 8) and over time (Participants 6, 8), despite the significant positive changes that have occurred with the northern mining industry. Reflecting upon these changes, Participant 8 stated, “ultimately I think that the question remains open. Has it changed? Yes, but has it been a meaningful change is a different question. And has this change been positive, or can the negative aspects be mitigated? Still remains to be answered.” Some of these concerns arose from other issues noted by participants including impact mitigation, wildlife management, and socio-economic relationships between companies and communities. In short, there are still many issues that need to be addressed in present and future mining projects.

4.3 Impact Mitigation

When asked to discuss the mitigation strategies employed by companies for reducing impacts to wildlife and traditional harvesting, many topics were addressed. These ranged from large-scale environmental studies and assessments, to socio-economic initiatives and government agreements, and the nature of the working relationships established with local communities. Participants were very clear during these discussions, stressing that effective mitigation must extend beyond a singular impact to an individual species or community. Effective mitigation entails complex interactions and cooperation between different stakeholders, including government, and communities, industries. These interactions occur over long periods of time, which extend beyond the lifespan of the mine itself (Participants 1,4,6,7,8). Participants discussed several successful individual components and strategies involved in impact mitigation over the past decades, as well as a number of matters that still need to be addressed. When discussing impact mitigation, Participant 1 stated that “currently, there’s very little that is not mitigated”, if something cannot be mitigated, the company will “find some way to compensate for that in conjunction with communities”, indicating that there are not many issues which cannot be handled by financial compensation, effective planning and implementation. However, as discussed further by other participants,

there is often a barrier to impact mitigation when it comes to capacity levels and conflicting priorities of decision makers which can create questions of intent and responsibility.

In the following sections, interview responses will be addressed in terms of the main research objectives regarding existing mitigation and engagement strategies, opinions and criticisms of these approaches, and identified best practices, management, and relationship building recommendations for future mining projects.

4.3.1 Existing Mitigation Strategies

The interviewees provided several examples of effective mitigation strategies. As stated by Participant 6, “some of the mines in Northwest Territories are fairly well regulated, and probably are some of the best operating mines in the country, as far as the environmental record goes”. In terms of company relations, Participant 1 discussed how some of the current mining companies truly have grasped the importance of community support, explaining that the companies will “sit down right away with the First Nations, or the Métis communities”, discuss project intent and goals and what the communities consider to be “values that they’d like to protect”.

Important tools and frameworks were also discussed as effective mechanisms for improving wildlife management and ensuring the sustainability of traditional harvesting practices. These topics include, Environmental Assessment legislation, industry Wildlife Management Plans, Impact and Benefit Agreements, Environmental and Socio-Economic Agreements, and research partnerships (Participants 3, 4). These regulatory and managerial structures act as effective mitigation tools, but also work well in the implementation of smaller more local management strategies.

4.3.2 Environmental Assessment

The Impact Review Boards and other Institutions of Public Government (IPGs), created by recently established land claim agreements, were identified as an

integral element for successful assessment. Impact Review Boards, and IPGs incorporate multiple stakeholder groups and perspectives, including the Aboriginal population of the territory or region, in the decision-making process (Participant 2, 4, 6). The Environmental Assessment legislation implements a “hugely consultative process” (Participant 2), ensuring that mining developments take the best care of the environment and formally incorporate social and economic components with the local communities for the life of the project (Participants 2, 3, 8).

Environmental Assessments work to reduce impacts by anticipating potential risks and planning for their management by requiring scoping studies, baseline data collection, and a complete plan for the management of the mine throughout its lifespan. Requirements for adequate closure and remediation plans, including sufficient security-bonding, ensures the mining plan will be responsible and financially supported before, during and after closure (Participant 2, 3).

Community engagement and consultation is another component required by the Environmental Assessment legislation. This aspect requires the consideration of specific questions and concerns of Aboriginal groups regarding project impacts to traditional territories and cultural practices, including the collection and incorporation of Traditional Knowledge. By encouraging early engagement, the Environmental Assessment process can lead to the establishment of mutual understandings and agreements, resulting in more productive relationships and stronger protection and mitigation for environmental and socio-economic resources (Participant 4).

Demonstrating such knowledge and understanding of the project and the associated lands and resources is critical in the review of the Environmental Impact Statement. The Environmental Assessment process “tests your assumptions and it tests your proposed actions...the whole intent of that is to create a project that has no significant adverse environmental effects” (Participant 2). The due diligence required in preparing the Environmental Impact Statement ensures new projects will correspond with official land-use plans for the region, and will receive substantial input from local communities and stakeholders, thereby invoking greater support for development (Participant 2).

4.3.3 Land-Use Planning, Resource Management and Regulatory Boards

Additional to the Environmental Impact Assessment, companies must obtain a myriad of licenses and permits to operate (Participants 2,3,1,7,8). Specific requirements for licenses and permits as well as the administrative body regulating such documentation can vary by territory and region. Many of these management and regulatory bodies are administered by government agencies at federal, territorial and local levels. Typically, it is necessary for all mining projects to gain approvals and licenses from land-use boards, water boards, wildlife boards, and community governments. All of which may have their own regulatory processes, ensuring for the safety and sustainable use of resources. These boards actively encourage and require companies to consult local communities and Traditional Knowledge holders of the region (Participant 2,3). These requirements, explains Participant 2, generally lead to more effective regulation and enforcement of development projects, thus reducing overall impacts.

Another level of oversight improving the regulation of industry has been the relatively recent creation of Independent Monitoring Agencies. Discussed most prominently for the diamond mines in the Northwest Territories; Ekati, Diavik, and Snap Lake, these agencies work to ensure mining operations conduct impact mitigation and community engagement in accordance with regulatory standards and established agreements. Consisting of members from the company, government, and local communities, these agencies, largely funded by the mining companies strive to provide additional reviews of operations, management, monitoring, and reporting, thereby ensuring regulations are followed and local considerations are incorporated (Participants 3,7,8).

4.3.4 Wildlife Management Plans

Created at the beginning of a development project, Wildlife Management Plans include baseline information, population surveys, and local knowledge. Wildlife Management Plans outline the current status of certain wildlife species, anticipate wildlife responses to certain anthropogenic stressors, create monitoring

timelines, and implement where possible, preventative measures. Species of interest, also known as Valued Ecosystem Components (VECs), for Wildlife Management Plans are identified in collaboration with local groups, and are typically those most sensitive to operations, of ecological importance, and of cultural significance. Also included in Wildlife Management Plans are monitoring and reporting protocols for impacts to wildlife populations. These activities in particular, create transparency, improve mitigation strategies and tend to be more cost-effective in the long-term, in this way “the monitoring and reporting and the enforcing become extremely important” (Participant 4).

Interviewees also shared a number of daily-use and incidental-types of mitigation strategies commonly implemented by companies, which are outlined in Wildlife Management Plans. Most often these mitigation strategies were designed to reduce certain anthropogenic stressors to wildlife populations by reducing human-wildlife interactions due to the mining operations. Instances such as vehicle collisions on haul roads, self-defense, off-trail machine use and unsustainable hunting and fishing around the mine, have all been found to impact wildlife populations and reduce in some instances, the availability of wildlife for traditional harvesting. These impacts can typically be managed with simple company policies and employee training, like providing the right of way for wildlife (Participants 4, 7, 8), restricting hunting and fishing near the mining camp or during work hours (Participant 4), providing regular site surveillance (Participant 4), appropriately disposing of waste and reducing attractants (Participant 4, 7), and educating workers (Participant 7).

The level of daily disturbance to wildlife habitat through mining operations can also be managed through direct and regular strategies. These strategies include the collection of baseline information and studies from the “Zone of Influence” of a project, which then ensures that disturbances to surrounding habitats are minimized and managed (Participant 4, 7). Impacts such as dust fall and excessive noise from the operation of the mine can be monitored daily and controlled if necessary. Roadways, bridges, and wildlife corridors can all be constructed or modified if they are recognized to have an impact on wildlife range and distribution,

migratory routes, or critical breeding habitat. Another tactic identified by participants was the replacement or substitution of critical habitat lost due to project development and construction.

4.3.5 Strategies and Agreements for Socio-Economic Mitigation and Advances

Negotiated agreements between mining companies Aboriginal communities, and territorial governments were identified as the main mechanisms available for mitigating socio-economic impacts on communities and harvesters. Impact and Benefit Agreements were regarded as the most effective tool for communities to secure important benefits from mining developments on their traditional territories. Participants discussed how these agreements are typically negotiated early in the development process, and usually outline how local concerns will be addressed and protected. Participants discussed the importance of IBAs for social and cultural wellbeing, economic opportunities, and the importance of the financial compensation to be received in the return for accepting certain levels of environmental impacts and the loss of resources.

Socio-Economic Agreements are another effective strategy for mitigating impacts to communities and traditional practices. Likened to IBAs for the territory by Participant 8, these agreements are a way for the company to support the economic and community development of the territory. One main feature of these agreements is the hiring targets negotiated between companies and territories. These hiring targets outline employment and training opportunities for northern and local residents, and provide a measure for economic growth/development in the territory (Participant 8). In addition, provisions are also made to support traditional activities, and provide air transportation to and from the mining site.

Other important measures identified were those related to the social and cultural wellbeing of the communities. These included initiatives such as the annual fish tasting and berry picking events that De Beers holds at the Snap Lake Mine for local communities. This initiative brings local people to the site to involve them in environmental monitoring and illustrates how Traditional Knowledge and local values can be incorporated in mining operations (Participant 7). Companies will

also conduct additional programs in the communities to support social and cultural wellbeing. These can include a variety of activities such as developing Traditional Knowledge databases, supporting charity events, and creating scholarship funds for Aboriginal students. Participant 8 stated that companies have in fact been quite “proactive in attempting to build, or providing resources for folks to build life skills”, and have been “reasonably effective for providing career paths for trades in particular”.

4.3.6 Research and Management Partnerships

Many mining companies will reach out to neighbouring companies, regional and territorial governments, local communities, and colleges and universities, to conduct conservation research. In general, these comprehensive actions involve a variety of stakeholders working together, often crossing jurisdictions and industries, and over long periods of time to study current situations, predict future conditions and implement strategies to prevent negative impacts.

Participants identified a few research and management partnerships. One such example was the Bruce Head Narwhal Monitoring Program established by Baffinland with the Mary River Project. In this case, the company has partnered with the North Baffin communities to conduct an extensive monitoring initiative of the company’s shipping activities through Milne Inlet and Eclipse Sound and the potential affects from these activities on the narwhal population. This project was largely inspired by community concerns for this culturally and ecologically significant species, and has incorporated local residents and knowledge in the program. It is believed that results from this study will be of great interest to the global marine biology community (Participant 3).

Another joint research initiative described by several participants was the partnership in the Northwest Territories between the diamond mines, the territorial government, Hunters and Trappers Organizations, and northern communities, to investigate and fully understand the decline of the Bathurst caribou herd. Although the mining industry is “working to develop a strategy on caribou as part of a larger group”, and “focusing on what can be done in order to ensure that caribou don’t

continue to decline, and what the potential impacts are” (Participant 7), the decline of this particular caribou herd is of significant concern to several Aboriginal groups and biodiversity of the region.

In summary, the key points expressed by interview participants regarding the success of existing mitigation strategies and the critical characteristics working to foster this success requires combined public and private resources, and the cooperation of government, industry, and communities. These strategies outlined in this section demonstrate the ways in which critical attention to the state of wildlife populations and community concerns can protect wildlife, and ensure that traditional practices are sustained.

4.4 Criticisms and Concerns

Respondents also provided a number of critiques regarding current mining practices, and the roles (or lack thereof) of the various actors, especially those involved at the local levels in these projects. Community procurement of long term benefits continues to be an issue to address in the North, particularly with difficulties concerning negotiations and Aboriginal employment rates. The issues of local procurement, local employment, and benefits generated from mining are discussed next.

4.4.1 Government and Regulation

Inconsistent regulatory processes and government priorities across the Arctic territories highlight the current challenges associated with mitigating and reducing environmental impacts. These challenges are best summarized in the following quote by Participant 1, “remember each government makes their own rules. The rules that they’re following in the Northwest Territories may be different than the ones in the Yukon or Nunavut”. The Government of Nunavut for example, has presented a supportive front for mining development in the settlement area and seemingly encourages the progression of new projects (1, 3). Whereas, the Government of the Northwest Territories acts much slower to approve new mining proposals and has implemented multiple licensing and permitting processes

intending to regulate environmental impacts and increase and socio-economic benefits (Participants 1, 2, 7, 8). While in the Yukon, the legislature requires profit sharing between the company, the territory and the affected First Nations (Participants 4, 7). These differences make it very difficult to narrow in on what exactly would improve the future of Arctic mining (Participant 6).

Within these differing regulatory and permitting structures across the Arctic region, it was described to be quite unclear as to which licenses and permits are required and how to obtain them. In the Northwest Territories in particular, this lack of clarity and lengthy process “adds to complexity and it adds to costs too” (Participant 2) and was described as “very proscriptive of what you can and can’t do, and almost everything you want to do is a new battle” by Participant 7. Further, differences in regulation between terrestrial and aquatic habitats further compounded these challenges (Participants 7,8, 2, 3). For instance, measuring impacts on terrestrial habitats or even understanding how air quality is affected by mining projects can be quite challenging, the aquatic environment on the other hand, suggested Participant 8, “is very regulated and is very conducive to measuring”, as such “the mining industry in general has been reasonably protective of the aquatic environment”.

Interview participants have also addressed inconsistent and insufficient responsibility taken on by the territorial governments in terms of wildlife protection and resource management. Respondents who had previous experiences working in Nunavut stated that there seems to be a number of challenges stemming from a young government with little funding and expertise (Participants 3, 5), and challenged by high turnover rates in government positions. This lack of capacity results in difficulties in enforcing regulations and can end up slowing down the decision making process (Participant 3). Another example provided was from the Northwest Territories where territorial regulatory authorities were often reluctant to enforce environmental legislation (Participant 7,8). These instances, suggested participants, illustrate a gap between the growing impacts from mining developments, and effective mitigation and enforcement. It seems as though there is

a disconnection between governing bodies and residents in the North on matters of resource development (Participants 3, 4, 6).

4.4.2 Socio-Economic

As previously discussed, Impact and Benefit Agreements are considered to be the most effective tools for ensuring communities retain important benefits and are capable of providing employment, education, social, economic, and cultural opportunities. Although there are many instances where communities have greatly benefitted from these agreements, there are numerous cases where communities have not experienced all of the benefits they are entitled to.

Participants have addressed critical difficulties during the negotiations of IBAs as a main source for poor results. Participant 4 discussed the effect of insufficient information provided during the onset of negotiations. While Participant 1 outlined how a lack of capacity during negotiations, especially at the community level, could often result in limited local benefits generated from the mining projects. Limited capacity in some communities can also result in poor utilization of the benefits procured from mining. Thus, if communities are to derived benefits and generate wealth from these operations, they must have a clear plan for long-term investments and diversification strategies. In some cases, communities have been left with only a degraded landscape, without the proper resources for remediation, resulting from poor, or ineffective negotiations (Participant 1).

Although the generation of employment is often highly sought after by the communities, enforcing the implementation of these employment quotas is quite difficult (Participants 1,2,8). Participants identified this issue as a problematic gap, as companies do in fact “want to hire as much local employment as possible”, however they are often unable to do so. This gap can be attributed to factors such as low levels of education and applicable work skills for the jobs available through these mining projects. Participants discussed the employment gap and questioned who may be ultimately responsible for resolving this barrier, and how it can be done.

4.4.3 Relationships

There have been major advances since mining projects began in the Canadian Arctic. However the legacy of past mining projects along with a number of unrealized potentials continue to foster a significant amount of fear and distrust in the region when it comes to mine development (Participants 3,7). For instance, the role of junior mining companies (those exploring for mineral deposits), and their activities, in comparison to senior mining companies, are significantly less regulated. Therefore, junior companies often tend to create tensions with local communities due to poor management of environmental impacts and social interaction. These issues can be hard to address, and senior companies, must often work very hard to gain the trust lost by their predecessors (Participants 4, 6). In other instances, scientific studies conducted on natural resources are very frequently done from Western perspectives with little, if any, integration of Traditional Knowledge. These oversights forego important wildlife management knowledge and alienate those most affected by these decisions and these development projects (Participants 4,7). Finally, poor remediation and rehabilitation in past mining practices have left lasting imprints on the land, and have been used by community members to express their fears and concerns regarding future development projects (Participants 7, 8). Each of these examples have been identified by interview participants as matters enforcing such negative perceptions of industry within northern communities. Negative attitudes and perceptions, paired with inadequate engagement from companies quite often resulted in poor consultation, unproductive discussions, unsuccessful negotiations, and overall unhealthy relationships over the long term. As Participant 3 stated, “capacity in the North is an issue...but nothing is insurmountable”, suggesting that although these difficulties exist, there is great potential for working through barriers if all parties can be considerate and cooperative (Participant 3).

Further complicating matters between companies and communities are the dynamics involved with particular matters of environmental mitigation and management. With such potential for severe cumulative impacts from increasing development, support from local communities will be integral to the industry's

success. “Environmental mitigation and wildlife management are ranked fairly high in terms of community interest. So consequently, they should be ranked fairly high in terms of interest from the mining company” (Participant 4). In order to manage mining impacts to the natural environment, the surrounding communities, and regional/territorial economies, must work together to protect critical resources. However, as so much is at stake for each group in terms of economic investment, environmental and community health, and sustainability, “egos sometimes get in the way, and so can the political agendas” (Participant 7).

An issue discussed extensively by Participant 7 and 8 is the decline of the Bathurst caribou herd in the Northwest Territories. Since the management of this caribou herd encapsulates various issues associated to wildlife management, traditional subsistence, and economic development, we have decided to highlight the management of this herd.

Participants discuss the challenges surrounding the lack of accountability taken on by stakeholders. Much of the blame and need for action is heavily directed towards industry as the responsible party, regardless of the many other possible contributing factors. Participant 8 recognized the difficult position of the industry and stated that we “have to acknowledge that industry is trying”. Both Participants 1 and 8 discuss the importance of all significant actors taking responsibility in such significant resource management challenges. This largely includes industry impacts to the land, government regulation of lands and resources, and community regulation of harvesting activity and yields. Stated by Participant 7, “it really is our biggest injury, that there’s so many conflicting priorities and no one wants to make a decision”, suggesting that all must work together for successful caribou conservation and rehabilitation.

This example of caribou management in the Northwest Territories exemplifies how important strong relationships between stakeholders can be with important natural resources and major land use activities. Demonstrating the importance of incorporating Traditional Knowledge with management and mitigation, Participants 6 and 8 discussed the fact that Northwest Territories communities have expressed concerns for caribou long before industry have

addressed such impacts. This example also demonstrates the severity of cumulative effects increasing development can have. With the development of three major mining projects since the mid-1990s, combined with the closure of several other large projects in the region, it is clear that impacts truly do extend beyond the life of the mine and the perimeter of the site. However, as discussed by Participants 1, 4, 6,7, and 8, with proper regulation and enforcement, more effective management and mitigation can ensue.

This particular example of wildlife management demonstrates how important it is for all parties to be responsible with their use of resources, hold each other accountable, and demonstrate how critical monitoring and management of impacts are. These critical actions are made possible through a number of essential fundamental relationship building tools that will be discussed further in the Management Suggestions section.

4.5 Management Recommendations and Best Practices

According to the insightful detail shared by interview participants, there are quite a few key points on which to base their management recommendations, and examples of Best Practices for building healthy relationships, mitigating impacts on wildlife and sustaining traditional harvesting practices.

A belief shared by all participants, is that “the nature of the relationship” is most important, even “more so than a specific strategy” (Participant 4) for future mining projects (Participants 1, 6). Key characteristics of healthy relationships include many actions and steps already in effect, such as existing consultation and engagement initiatives, and negotiating agreements, however there is always room for improvement. For instance, Participant 6 discussed the concept of consent and describes how obtaining consent is absolutely critical for building respectful relationships.

“what First Nations and all Indigenous governments in the country want, is that in their traditional territories, they want to be able to say yes or no to development. And we’re not quite there yet. So similarly there’s an obligation to consult and

involve First Nations, but then you actually have to listen to what they say. So it's really about from the starting point, mining proponents need to be able to, or should be seeking, not just consultation with Indigenous communities, but seeking their consent for their projects."

Constant communication was identified by Participant 5 as the key for improving relationships and the current state of affairs between companies and communities. As an integral part of relationship building, communication must be open between all parties, without judgment or agenda, and must commence at the beginning of development and continue throughout the entire process (Participants 4, 5). Establishing functioning communication early in the process and by parties "recognizing that they have to talk to each other" will open the doors for positive relationship building between companies and communities (Participant 4). As such, it is critical that these parties figure out a way to effectively communicate with one another. As stated by Participant 8, "it takes a special person to communicate with the public". Further, it is also important to continue communications throughout, which entails "updating people often, making sure that they feel like they're involved in the process and that people understand where you're coming from", explains Participant 7.

With good communication, intentions can be made clearly upfront and lead to productive consultation and engagement sessions. Further, Aboriginal communities do not wish to be considered as stakeholders, but rather as "landowners and legitimate governments in their territories", thus requiring companies to understand and recognize how Aboriginal Rights are incorporated into these discussions and subsequent negotiations. According to Participant 3, "consultation is key, so that both parties can gain an understanding of different perspectives and priorities. Lack of communication by any one side can result in misunderstandings over time". When discussing the importance of community engagement, Participant 6 stated that "First Nations communities are hungry to engage, and want to have partnerships and relationships" and that the most successful mines with respect to building relationships have been the ones "working

within the community directly, having a presence in the community as much as possible”.

If the industry is willing to engage with communities and take an interest in their wellbeing, it can be expected that the communities will respect such action and reciprocate. Participant 7 noted that it is important for communities to recognize that not all companies are the same and that the past problems in other situations may not necessarily occur in the present. “There needs to be respect all around” and a consistent effort at “making sure that people are communicating well” as stated by Participant 7. For instance, attendance in consultation sessions by senior partners, would help to improve relations and important capacity levels, thereby enabling further participation with hands-on opportunities at the mine site or with project development (Participant 7).

Mutual respect in these company-community relationships is regarded with utmost importance for the future of the industry in the Arctic. Respect characterizes positive relationships capable of fostering two-way communication, and productive consultation and engagement with development initiatives. In turn, this can help initiate certain features described by interview participants as important actions for future development projects. Included are a library of best practices from the northern mining industry across the Canadian Arctic made available to the public as suggested by Participant 4, and more effective environmental monitoring programs “that address important community concerns and involve community members” (Participant 3). Ultimately, strategies of this kind can lead to more effective mitigation strategies for environmental and socio-economic impacts and security of benefits for northern communities.

4.6 Sustainable Development

As a final point of discussion, participants were asked their opinions regarding the northern mining industry and how it may contribute to sustainable development. Participant views on this subject varied, however most agreed that the nature of mining, being the extraction of non-renewable resources, is not a sustainable process. However, participants also recognized a number of instances

where industrial mining can in fact contribute to the sustainable development of northern communities. As stated by Participant 1, “sustainability is situational” and completely dependent upon those responsible for making important decisions. In this sense, Participant 1 suggest that “sustainability can be achieved from mining” if you “understand that mining projects can become a catalyst” for positive development opportunities with communities. If decision makers are able to harness the many opportunities and benefits from mining, then more effort and resources can be directed towards sustainable initiatives (Participants 1,2). However, as noted by Participant 8, simply looking at economic components of development does not completely relate to sustainable development. It is suggested by Participant 8 that in specific reference to this study, the ultimate challenge to sustainability is how the Bathurst caribou herd, with all of its challenges, will be managed and protected in the future. Although varying perspectives were shared regarding the future sustainable development, all participants agreed that there are always opportunities and benefits that can help regions and communities become more sustainable (Participant 7, 6, 1).

CHAPTER 5.0 DISCUSSION

This research was undertaken to gain insight into the relationships between mining companies and northern Aboriginal communities through their shared connection with wildlife populations. Impact mitigation strategies, community consultation and engagement approached, negotiations, and regulatory protocols were examined to study how these conditions can be adapted and improved for future mining projects in the Canadian Arctic. Participant interviews and published literature were analyzed and interpreted to provide insight into the current state of mining in the North, and how best to move forward with new developments. This section re-examines the findings derived from the literature review and interviews, and highlights key themes that can improve relationships and impact mitigation strategies, conserve wildlife, and sustain traditional harvesting practices while promoting development.

5.1 Overall Need for Fundamental Relationship Building Efforts

A wide-ranging investigation of the mining industry in Arctic Canada by collecting interview data from individuals with differing perspectives and experiences revealed that the most important matters for the future are related to the fundamental components of relationship building. As such, information reviewed within academic and industry reports also emphasized the significance of this basic theme. Following the literature review, it was thought that specific issues pertaining to the impact mitigation of mining projects were the most important. However, after conducting the interviews and re-examining the literature on the topic, it was found that the issues revolving around mining impacts that affect the effective management and mitigation, are in fact, most important. These findings along with recommendations for Arctic mining best practices are discussed next.

Beginning with the widely recognized need for greater relationship building efforts between companies and communities, it was found that strong and healthy relationships are critical for facilitating the necessary *social license* under which industry operates, as well as to foster longevity with industry and sustainability in the North (Cater, 2013; Hipwell et al., 2002). In-order to obtain this social license,

companies must demonstrate their understanding of the potential impacts to Aboriginal communities, their ability to mitigate environmental impacts, create employment opportunities, and a general willingness to work with Aboriginal people (Cater, 2013).

An investigation of the Minto Copper-Gold Mine and the company relations with the Selkirk First Nation in the Yukon by Prno (2013), demonstrates the importance of obtaining community approval to explore and operate. Early and consistent communication and engagement enabled the mining company to ascertain community support throughout development and operations of the gold project. This support, referred to as a social license to operate, led to a strong working relationship between the company and First Nation community. Thereby, facilitating more effective planning and management of the mining project, as well as promoted and allowed for greater Aboriginal participation with the mine.

As expressed by many of the interviewees and Prno's (2013) research, an important factor for gaining local support for mining projects comes from wildlife protection, minimizing risk, and containing environmental impacts. Sufficient consultation and engagement activities must be undertaken by mining companies to demonstrate their consideration of environmental and traditional factors to communities. Evaluating the level of due diligence companies have devoted to these engagement initiatives are the responsibilities of territorial or regional Impact Review Boards. Typically comprised of a significant Aboriginal representation, these boards enable assessment decisions to be sensitive to local issues while devoted to sustainable development.

In a long-term sense, healthy relationships between companies and communities are imperative for sustaining mining in the North. In this way, "companies are beginning to see the value inherent in cooperating and engaging with Indigenous communities" (Cater, 2013 p. 48). In order for healthy relationships to be established, companies and communities must engage with one another to foster a sense of trust and respect from the beginning of a new development. Described in a concluding statement of the Minto Mine case study, Prno (2013) states,

Ultimately the social, cultural and political dynamics of the individual community or communities that are neighbours to mining projects have to be understood and tools and guidelines must be adapted to meet the characteristics encountered on the ground.

These details were discussed at length by interview participants and presented in the Results section. Certain key components required for establishing healthy relationships between companies and communities include, constant communication, information sharing, Aboriginal participation and its extension to the inclusion of local Traditional Knowledge with management strategies. Supported by Cater (2013), “by engaging communities in discussions around mineral development projects and ensuring local benefits flow from the project, companies seek to reduce or forestall Indigenous opposition to such projects on their traditional territory” (Cater, 2013 p. 48). Further, as stated by Peterson (2012) when discussing company consultations with communities, inclusion and addressing local concerns is crucial to the viability of these projects.

5.2 Impact Mitigation

The combination of management regulations, assessment protocols, and negotiated agreements act as an existing framework for reducing impacts and increasing benefits. Although there are a numbers of criticisms in the literature and expressed in consultation reports, companies as the interviewees noted, are generally prepared and willing to manage their impacts to the environment and local communities. As a result of the regulatory and managerial structures established across the Canadian Arctic, mining companies are now able and required to mitigate/manage most environmental and socio-economic impacts, and otherwise provide compensation.

As is stated in the Canadian Environmental Assessment Act, all new mining developments are required to prepare an Environmental Impact Statement, which includes detailed plans, predictions, anticipated results, and management strategies before receiving approval to operate. The review of these EIAs is completed by the

Impact Review Boards, and it is these agencies that determine whether companies have completed their due diligence for the proposed projects (Mulvihill and Baker, 2001). Mining companies must also ensure they are committed to sharing benefits, and therefore will negotiate SEAs and IBAs, often required through various policies and land claims (Sosa and Keenan, 2001). In addition, Wildlife Management Plans outlined in EIAs, dictate exactly how companies will go about managing their impacts and protecting wildlife. Wildlife Management Plans also identify the specific monitoring and reporting protocols to be followed to ensure accountability with the project. Finally, Independent Monitoring Agencies are often created to monitor company actions, providing another level of oversight, thereby ensuring that these companies adhere to all of their commitments. In sum, these structures and frameworks have been developed over time to address the array of problems and concerns that have emerged from past mining projects.

The provision of benefits through Impact and Benefit Agreements, however, presents several concerns with researchers, communities, and interview participants (Caine and Krogman, 2010). The general idea supporting the use of Impact and Benefit Agreements is that in exchange for certain agreed upon benefits, communities will support new mining projects (Peterson, 2012). In this sense, it is expected that companies and communities will have negotiated a set list of benefits to be provided, and how these benefits are to be distributed amongst the community and/or communities. One concern is that there are many barriers preventing the adequate retention of benefits from IBA negotiations, two of which being a lack of capacity among both sides of the negotiations, and the non-existence of a governing body responsible for monitoring and enforcing agreements (Caine and Krogman, 2010).

Capacity issues with northern communities are frequently discussed in regards to being unable to effectively communicate and participate with industry. However, as described by Cater (2013), mining companies are also “unfamiliar with Indigenous worldviews and subsistence economies, and this unfamiliarity often marginalizes and undervalues other forms of economic activity” (p. 37). This difficulty can be partially attributed to insufficient information sharing between the

sides, and can potentially be improved with greater consultation efforts and a better definition of “what constitutes appropriate and meaningful consultation and participation mechanisms” (Hipwell et al., 2002, p. 1).

In addition to receiving information about mining projects from the companies themselves, communities would greatly benefit from the experiences of other communities with resource development. However, an important feature of Impact and Benefit Agreements are the confidentiality clauses often established, which act as a barrier to communities looking to share experiences and understandings with one another (Caine and Krogman, 2010).

Essentially, this uncertainty with IBA negotiations stemming from a lack of understanding and insufficient governing responsibility can overwhelm communities and further limit their ability to participate meaningfully with further engagement and development (Caine and Krogman, 2010). Communities will often be left with very few benefits in return for sharing their traditional territories, or will receive benefits incapable of providing them with long-term opportunities for community development (Caine and Krogman, 2010). This can potentially result in communities withholding support for mining projects and future developments. As such, it is crucial that positive and open communication and engagement along with a greater focus on Aboriginal involvement and Traditional Knowledge be incorporated into these processes.

5.3 Aboriginal Participation, Inclusion of Traditional Knowledge, and Co-Management

A constant theme recognized throughout all of the participant interviews and the academic literature is the critical need to incorporate Traditional Knowledge and the Aboriginal perspective through all aspects of industrial mining in the Canadian Arctic. Current systems require some level of Traditional Knowledge studies to be conducted for development projects, however these “policy requirements provide virtually no guidance for implementation” leaving companies and assessment boards to “interpret and implement these policies as they see fit” (Ellis, 2005 p. 5). Complicating matters is the difficulty of maintaining relationships

between companies and communities when corporate systems and scientific knowledge do not receive and value traditional forms of knowledge (Kofinas, 2005).

The unique Traditional Ecological Knowledge retained by Aboriginal communities can contribute to the conservation of biodiversity while considering human interactions with the environment, thus offering a more holistic view for how resource development projects may progress more successfully (Watson et al., 2003). Encouraging Aboriginal people to share their Traditional Knowledge with resource development projects and environmental governance can promote greater capacity among communities and groups, thus furthering their ability to participate in the future (Ellis, 2005). This contribution to resource development will enable industry to work towards greater sustainability by providing important tools for understanding and caring for relationships with the land. Establishing an effective system where Traditional Knowledge is recognized by managers and decision makers, collected and analyzed with scientific research, and integrated into management structures, explains Ellis (2005), is necessary. By focusing attention on relationship basics, companies and communities have the potential to evolve in such a way so that they can work together with future projects. Many of the fundamental relationship-building characteristics discussed with this research are also embodied in the academic literature pertaining to the co-management arrangements established in the Canadian Arctic (Armitage et al., 2011; Castro and Nielsen, 2001; Watson et al., 2003). According to Watson et al. (2003), “the most promising ways to protect these values reside in tendencies toward collaborative co-management, building greater appreciation of other orientations” (p. 10) through establishing trust and creativity necessary for unique stewardship initiatives (Watson et al., 2003). Ultimately intending to create “opportunities for local community leadership to apply TEK to sustaining traditional lifestyles”(Watson et al., 2003 p. 10).

Further support for the establishment of co-management type relationships between companies and communities comes from the suggestion from Armitage (2005) that these collaborations can foster greater adaptive capacity for resource management and impact mitigation. Adaptive capacity can be described as a “critical aspect of resource management that reflects learning and an ability to experiment

and foster innovative solutions in complex social and ecological circumstances” (Armitage, 2005 p. 1). The successful management of shared resources however, is dependent upon communities being assured they will retain long-term access to these resources (Castro and Nielsen, 2001). In this sense, proper communication and company commitment to resource management will be critical for maintaining these relationships.

Mastering these skills for fostering healthy relationships will create open lines of communication, enable much greater understanding of project operations, expectations, perspectives, thus improving their capacity to work together, and connect on a deeper level than that required in certain policies and regulations. It is important to note that there is no universal fit for these co-management relationships, and that lessons shared between experiences can be incredibly valuable (Meek, 2013). In this sense, the format and lessons from these arrangements can provide inspiration and possible influence over how industrial mining companies may wish to tailor their approach to community relations with future developments.

5.4 All in Favour of Mining?

Comprehensive land claims as well as substantial regulatory changes in the mining industry have transformed development projects in the Canadian Arctic. Such requirements generally impose both time and financial challenges, dampening the overall profit of a project, in comparison to the earlier unrestrictive days of mineral development. Moreover, many of these legislative barriers to project success are a direct result of Aboriginal resurgence, and the recognition of Aboriginal rights, as well as increased environmental awareness and control. Lengthy regulatory processes to accommodate for these movements, such as the CEAA and requirements for Social Impact Assessments include difficult phases of public consultation and engagement, in which the two groups share vastly different opinions and priorities, in order to gain approval to operate. Thereby, these social and environmental considerations could consequentially result in a negative perspective of industry about working with Aboriginal communities.

Yet, the opinions shared by interview participants consistently reflected a more supportive mindset towards the future of mining companies and Aboriginal communities working together. Responses collected from the interviews addressed the difficulties with this relationship in the past, as well as current challenges, however presented a generally accepted future for the industry in the North, so long as certain challenges are successfully addressed in due time.

As the majority of the experiences from the interview participants were shared from more recent work in the Northwest Territories and Nunavut, it is possible the information collected represents a more positive perspective of these relationships. For instance, interview participants and the academic literature, have consistently the level of improvement demonstrated by the diamond mines developed in the Northwest Territories since the 1990s. These mines are significantly advanced in terms of overall social and environmental components and have demonstrated their willingness to work with communities and their specific needs. In addition, agreements established in the Northwest Territories and Nunavut (ie., Inuvialuit Final Agreement and Nunavut Land Claim Agreement), secure rights, benefits, and ownership, while requiring much greater involvement of Aboriginal peoples. Thus, mining development would likely have much less of a negative connotation associated with it.

5.5 Limitations

As this research was conducted as a Master's thesis, two main constraints were experienced. The expected timeline for the completion of a two-year program, as well as minimal financial resources, together presented some limitations to the project design and objectives. For example, without the expected funding provided by a larger research grant, no field research (i.e., interviews in-person with company representatives and community participants) could be conducted. Faced with these budgetary constraints, it was found that the most effective mechanisms for investigating the thesis and responding to research objectives would be through an extensive review of the literature complemented with insight and opinions from knowledgeable and experienced individuals through interviews. The use of

telephone interviews allowed for the collection of personal perspectives from those living and working with the northern mining industry and Aboriginal communities, from the university.

Although this research was interested in the entire Canadian Arctic region located north of the 60th Parallel, the research was limited by timelines and budget restrictions by funding agencies, which prohibited field research. As such, the views shared and discussed by participants may represent the opinion of certain sectors of the mining industry in certain regions of the Canadian Arctic. As such, the unanticipated consequence from this study appears to be a general support of an industry, which does have its impact, but can also benefit Aboriginal communities. With greater resources and time, participant recruitment and interviews would have been extended to include representatives of the Aboriginal perspective, and improve the geographical representation of this study throughout the Canadian Arctic.

Additional to these limitations of time and resources were further boundaries imposed on the research and analysis of the information collected in regards to the overall thesis and objectives. These boundaries led the research into a much broader scale than initially expected when intending to examine impact mitigation strategies for wildlife and traditional harvesting. In this way, results began to demonstrate that at such a wide scale covered by this investigation, the matters of greatest importance are in fact just as broad. As such, the investigation became more centered upon broader concepts of the relationships characterizing the mining industry in the North and Aboriginal communities, rather than a specific focus on impact mitigation for wildlife and traditional harvesting practices.

As the body of literature pertaining to many of the individual concepts discussed pertaining to company relationships with Aboriginal communities is so vast, there were many topics that could not be discussed in full. For instance, this research identifies certain regulatory and assessment structures in place working to aid mitigation in environmental and social matters, however there are many published studies and consultation reports presenting valid and important criticisms of these structures. This research recognizes the importance of these

criticisms and concerns, however this investigation also revealed some of the positive (or less negative) attributes derived from mining in the Canadian Arctic. This study is an attempt to investigate the criticisms and expand upon them, and highlight some positive aspects of this industry in the Canadian Arctic.

CHAPTER 6.0 CONCLUSION

Beginning as an investigation of the mitigation strategies to address impacts of industrial mining upon terrestrial wildlife and traditional harvesting practices, this research quickly transformed to become an examination of the relationships existing between these mining companies and northern Aboriginal communities. This transition was influenced by the reviewed literature pertaining to the historic expansion of the mining industry (Nassichuk, 1987), the various stages of development and the impacts of these developments on Aboriginal communities (McMillan, 1988; Dickason, 1992), the environmental and social effects posed by mining and the regulations put in place to control such impacts (Berkes and Jolly, 2002; Bowman, 2011; Cater, 2013; Parlee et al., 2012), company efforts to improve corporate citizenship and contribute to sustainability (Cater, 2013), and the various outlooks on mining in the near future. It was also greatly influenced by the interviews, which provided a somewhat different understanding of mining in the Canadian Arctic than what had been previously reported in the literature. Over the course of this research, it was found that these working relationships between companies and communities are essential to the long-term success of industrial mining projects. The results of this research have led to the notion that healthy relationships between mining companies and local communities, fostering mutual respect, trust, and communication, will facilitate greater environmental management and socio-economic development. This will substantively improve mitigation of impacts on terrestrial wildlife and traditional harvesting, while promoting greater sustainability with modern northern lifestyles and development initiatives.

Discussions of the merits and issues related to mining projects and industrial concerns are consistent throughout the literature, and reflected in the participant interviews. Advances in federal and territorial legislation and policies pertaining to mining and environmental protection have resulted in stricter regulations and higher environmental standards, as well as requirements for greater inclusion and benefits for local populations like employment, education, health and wellbeing programs, and business partnerships (Galbraith et al., 2007; Meek, 2013; Sosa and

Keenan, 2001). Monitoring partnerships, such as the Baffinland Bruce Head Narwhal Monitoring Program, and the annual fish tasting and berry picking at Snap Lake Diamond Mine, are demonstrating company efforts to reduce their impacts and work with communities. Finally, company funded Independent Monitoring Agencies are working towards holding companies accountable to their agreements and ensuring that monitoring and management strategies are implemented and refined when necessary (Ellis, 2005).

This is not to say that concerns over the effectiveness of the EA process and IBA agreements have been eliminated (Ellis, 2005; Galbraith et al. 2007). Indeed, the study revealed that issues identified with the administrative aspects of the EA process, including the allotted time for assessments and public input, the extent of company consultation with communities, and proper enforcement protocol can be improved (Galbraith et al., 2007; Fitzpatrick et al. 2008). In terms of the general structure of IBA negotiations, many authors and participants also discussed the lack of capacity of both negotiating parties to understand the perspective and needs of their counterpart, thus often resulting in insufficient benefits and opportunities obtained throughout the life of the mine (from opening to closure) (Caine and Krogman, 2010). Furthermore, criticisms have been presented regarding the lack of cumulative effects assessment and effective management for the growing industry (Johnson et al., 2005). These criticisms have led authors and participants to question the meaningfulness the changes seen in industry have truly been for improving their connections to the environment and the local communities in the Arctic (Hipwell et al., 2002; Ellis, 2005).

Criticism notwithstanding, the study has demonstrated that if companies cannot garner the support of local Aboriginal communities, then the road to development and, eventually, operations will be much longer and challenging. For example without the community's support, the assessment and approvals process will be more difficult, hiring practices will be challenging, ultimately resulting in more time and investment by the company, and lost opportunities such as capacity building and income generation by the community (Cater, 2013; Prno, 2013). Essentially, if new development projects are approached with the understanding

that both, companies and communities, can benefit from the support and assistance of the other party, greater long-term success can result. Entering a new development situation intending to establish mutual understandings and goals from the beginning and working together to achieve these objectives, the relationship can then provide much greater benefits to both parties, it can establish more effective environmental management strategies, and ultimately result in increased sustainability.

Based on this notion that stronger relationships between mining companies and local Aboriginal communities will lead to more effective mitigation of impacts to terrestrial wildlife and traditional harvesting practices, a number of strategies are recommended by this study. To begin, priorities for constant communication between companies and communities throughout the entire mining process is critical. With constant and open communication, parties can build the capacity to understand opposing perspectives, discuss needs and concerns, and lead to more effective negotiations and management strategies. Coupled with stronger communication, is the need for the inclusion of Aboriginal perspectives and Traditional Knowledge in planning and management strategies. With this critical consideration, Aboriginal communities will gain a sense of inclusion in the project and develop greater respect for the company. As previously discussed, successfully integrating Traditional Knowledge into management plans and mitigation strategies has the potential to improve mining impacts to the environment, and may result in increasing sustainability. An important feature for aiding in relationship development and capacity building is the sharing of information between parties, among projects and communities, and across the region. Thus it is critical that communities can learn from the past and access pertinent information about current mining projects. Communities should be fully informed about the particular details of new developments that may have local impact, and the relevance and significance of such information. Although individual mining companies may be unable to provide all of this information, they most certainly can provide sufficient information in regards to their company; including past project histories and community experiences, as well as the details of objectives and anticipated impacts

and benefits to occur with the project of interest. Through this sharing of information, communities will be more willing to engage in discussions regarding mining developments.

These recommendations can apply to all existing and upcoming mining projects across the Canadian Arctic. However, there are a few key factors that may influence the success and likelihood of positive future outcomes from mining projects in the Arctic. It is thus important to understand that the dynamics of these relationships and the critical relationship features addressed are highly interconnected and dependent upon the initiative and commitment of each actor involved. As such, the related success of these recommendations for fostering stronger agreements, planning, and mitigation strategies will always be fluid and subject to change in response to the array of extenuating factors, and the context. Highly influential circumstances, including government and political conditions, environmental factors such as climate change, and fluctuations with global and local economies, can all play a role in the successful relationship building initiatives suggested by this study. Moreover, with this critical understanding comes the recognition of the many other actors that may have an influence over environmental and socio-economic management and mitigation success. It is believed that productive bonds developed between companies and communities, on the basis of protecting valuable wildlife populations, and resulting from their initial efforts to establish a healthy foundation, on which other issues and management approaches can be developed from. It is also believed that with the possible benefits and growth from healthy relationships, companies and communities will be much better equipped to handle changes that may arise.

Research of this kind, investigating the impacts and solutions for industrial mining and the affects to Aboriginal communities in the Arctic region, during a time of significant social and environmental advances in Canada, is imperative for future sustainability. This research project has taken an over-arching look at the mining industry and the relationship it has with the Aboriginal residents living in the Canadian Arctic. As such, the findings and recommendations produced from this research can act as a starting point for future research to aid in the protection and

sustainability of the Canadian Arctic. Further research addressing additional perspectives and relationships related to environmental management and socio-economic development in the Arctic is imperative if we are to minimize impacts, capitalize on opportunities, and increase our understanding. Such awareness can result in a stronger push towards greater collaboration, commitment, and community with resource development industries, and hopefully greater sustainability throughout Arctic Canada, and Canada, more generally.

CHAPTER 7.0 REFERENCES

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Chapter 8.0 Appendix

Research Consent Form

By signing this document, you are acknowledging that you have read and understood the information letter, and that you are indicating your willingness to participate in this study and that you understand and agree to the following conditions:

1. Your participation in this research is voluntary and that you are free to withdraw at any time.
2. You may choose not to answer any questions without consequence.
3. You have the right to anonymity (Please indicate below).
4. You understand the potential risks and/or benefits of the study, and what those are.
5. You will have the opportunity to review transcripts of the interview to ensure accurate representation of your views.
6. You are willing to be contacted again for a follow up interview if necessary.
 - a. Yes, I am willing to be contacted for a follow up interview
 - b. No, I do not wish to be contacted for a follow up interview
7. The interview transcripts in hard copy format will be returned to you.
8. The information you provide will be utilized to create documents for publication.
9. The electronic data generated from this research will be kept at Lakehead University for 5 years.
10. You will receive copies of publications that result from this research.

I wish to remain anonymous in any publications.

I wish to be identified when my interview is quoted in publication.

Signature

Date

Witness

Date

Please feel free to contact me or my supervisor, Dr. Lemelin, with any concerns. We can be reached at:

Rebecca Rooke

W: 807-343-8610

E-mail: rrooke@lakeheadu.ca

Dr. Harvey Lemelin

W: 807-343-8745

E-mail: rhlemeli@lakeheadu.ca

Telephone Interview Questions

1. Please describe your experience with the mining industry (1) in Canada, and (2) in Northern Canada
2. What are some of the challenges and opportunities with mining in the North?
 - a. Legislation and governance
 - b. Weather and terrain
 - c. Labour and training
3. Do you believe that mining is changing in the North?
4. Can you describe how mining companies are working to minimize impacts on the environment, wildlife, and local communities?
5. Can you describe how mining companies are working to maximize benefits for local communities?
 - a. Can you describe any issues that have been successfully mitigated by mining companies through strategies and programs?
6. Please describe what you consider to be the most effective programs and mitigation strategies implemented by mining companies for the betterment of their relationships with local communities in the North
7. What would represent a more desirable state of affairs between governments, native communities, and the mining industry in the North?
8. In your opinion is it possible for mining projects to become sustainable?
 - a. How can mining companies and aboriginal communities foster strong relationships?
 - b. Please describe what you consider to be the most effective programs and strategies implemented by mining companies to contribute to sustainable development with local northern communities
9. Do you have anything else you would like to add?