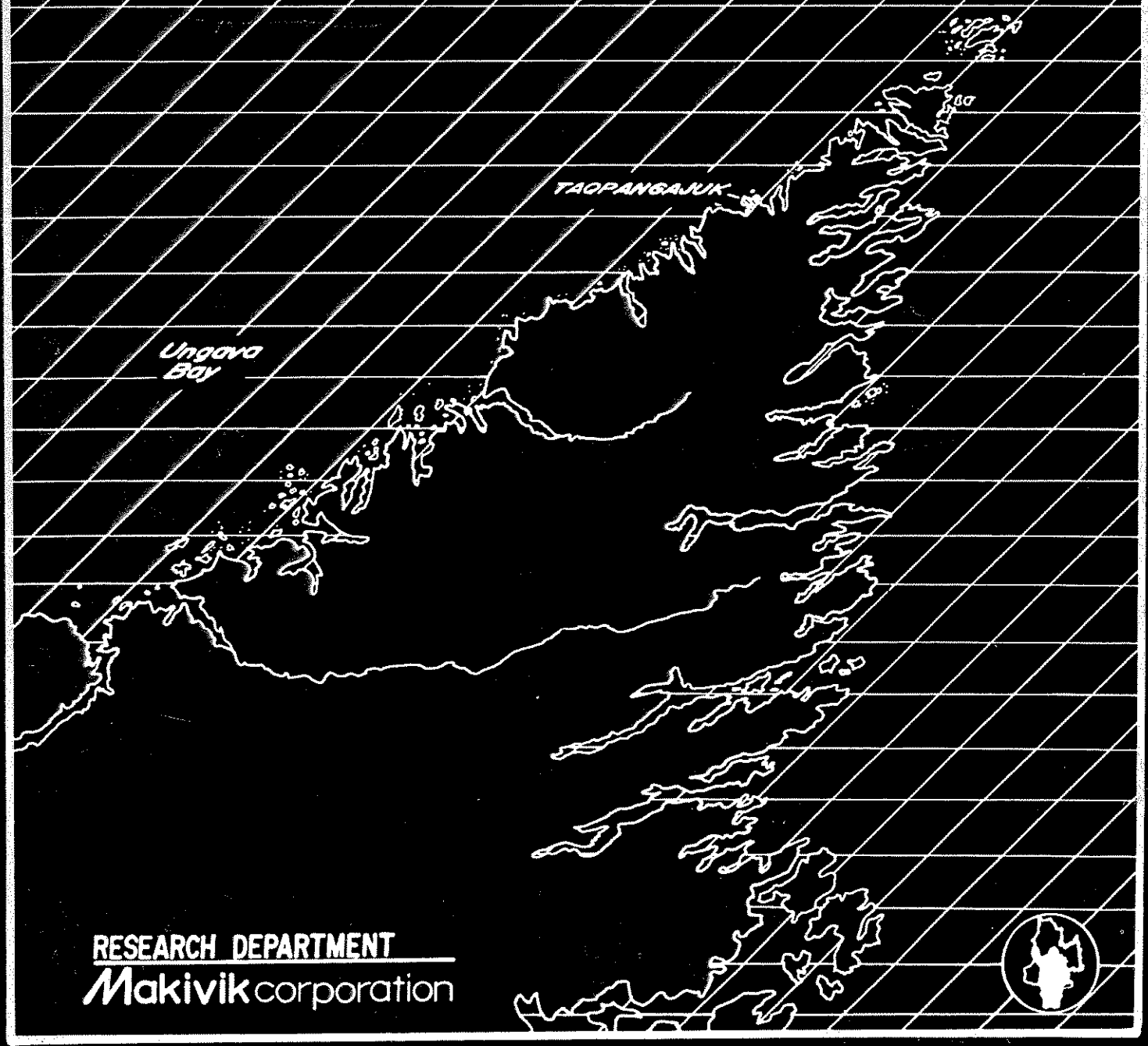
The Relocation to Taqpangajuk:

A Feasibility Study



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June 9, 1986

The Honourable David Crombie
Minister of Indian Affairs
and Northern Development
Les Terrasses de la Chaudière
Ottawa (Ont.)
K1A 0H4

Dear Mr. Minister,

We, the people pf Killiniq, are proud to present you with the results of our study about building a new community at Taqpangajuk. We are writing this letter as a community to tell of our feelings and explain our great desire to start the relocation. We were happy when told that there would be a study. Before that time we had made very little progress. Now, we have a real plan to show exactly what Taqpangajuk will be like. We know from this report that a very good community can be built. Even with the community plan, many of us are still worried that everything will just stop once again. We hope that you, Mr. Minister, will continue to believe in us and help us move ahead in our struggle.

In this last year, there have been important meetings to talk about Taqpangajuk. We learned many things since this study began. At first, some individuals were unsure why a study had to be done, or if it would truly represent what the Inuit want. After a while, everyone started to feel more comfortable. We worked together and gave our knowledge and ideas for Taqpangajuk. This year has forced us to think very hard about the future of our new community and to try to understand what it will mean to us. This has especially helped our younger people very much. They are becoming more interested in what is happening because for the first time they can start to see a future for themselves.

We have been working for our relocation ever since the government closed Killiniq in 1978. The years since Killiniq was closed have been very hard for our people and everyone has their own story to tell. The morning the planes came we didn't know what to do. We were both frightened and sad, but mostly frightened and confused, it was a terrible day for all of us.

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Before the planes came, it was becoming difficult to live at Killiniq. For a few years, things were growing worse and worse in our community because services were getting bad and people were very nervous. It is hard to be happy if you do not feel safe. We especially worried about getting sick and often mail and other supplies, even food, was very slow to come to Killiniq. That is why some people had to leave and find a safer place to live even if they really did not want to go. It was as if no one thought our community or even our lives meant anything or cared very much about what was happening to us. Families were driven away because they were afraid for their safety without services. No one in our community or the Inuit leaders had the power to stop what was happening.

These have been terrible times for us and it isn't getting better. This study is only a small thing if it is not taken seriously. We are still waiting year after year for something to happen without knowing where we will live or where our children will grow up. The communities where we now live try to help, but no one really feels at home. The older people are always homesick. They never stop thinking about going back. The children were very young when they left and the youngest were not even born at Killiniq. They don't have a home community to grow up in so they can easily become confused. Having a real home is very important for Inuit.

We are not going to give up. Our community meetings have brought the families together. This is very important for us to see each other and to talk about our problems since the community was closed. When there were no services and life was difficult, it could cause problems between us. After that everyone was separated which makes things even worse.

What we are asking for is to return home. In the old days we would just have moved back and put up our tents or build snow houses to live in. I wish we could live that type of simple life again, but times have changed too much. The hunting will provide us with the food we need if we are careful about the future, so that there will always be enough for our children. The fishery is getting started very soon, with our new community boat and equipment that we bought with our own money and have worked on every summer for three years.

Taqpangajuk is going to be very different from Killiniq and we are not going back to the past. Our children will have schooling and want to work but they will have a community for this and everyone will have better opportunities. People will hunt and support themselves. This too our children will follow and grow to understand their own land.

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We hope that the words of this letter are understood. We know that Taqpangajuk is a good place for our new community. When it is built and even before it is finished, we invite you to come and see this land and to visit with our families. You will always be welcome in our homes.

Sincerely,

Norman Snowball and the people of Killiniq

TAQPANGAJUK RELOCATION

A FEASIBILITY STUDY

VOLUME I

THE PROJECT AND THE FINDINGS

Prepared for
Department of Indian Affairs and
Northern Development

By
William B. Kemp
Makivik Corporation
Kuujjuaq, Québec

May 1986

When I came here [to Quaqtaq] it was very sad to leave my land but there was no choice. In my mind, I still live at Killiniq and all along the coast even as far as Nain and to Kangiqsualujjuaq. That is my home. Since I am an old man it is hard to return without help... When you come to talk about the maps, it is almost like being back on my land.

It has been very hard for me since Killiniq. I don't know if I will ever see my home again. I am growing very old, but just talking about my life there makes me remember. If I do not return, then it will be my children and grandchildren who will go there to live.

Henry Angnatuk
Quaqtaq, March 1979.

THIS REPORT IS DEDICATED TO THE MEMORY OF THE PEOPLE WHO CAME TO TAQPANGAJUK BEFORE US AND TO THE STRENGTH OF THE GENERATIONS THAT WILL FOLLOW.

I want to go to Taqpangajuk because it is going to be a better place to work and to continue growing up. It is hard to do this in a community that is not your real home. Now we will have our own community and that means I will be able to work if I have proper training for what needs to be done. Our own council can really start to change things and to use our own ideas about what is best for us. I plan to hunt and to enjoy the country but I prefer to spend my time as a worker to best help the future of my people.

Others are going to work at the fishery or spend their time as a hunter in a land they know very well. It's all of these different things that are going to give us a good place to live. That is why I am looking forward to live at Taqpangajuk.

From the statements of young people when asked to speak at the Heads of Family Meeting,
Kuujjuaq, December 1985

The People of Taqpangajuk

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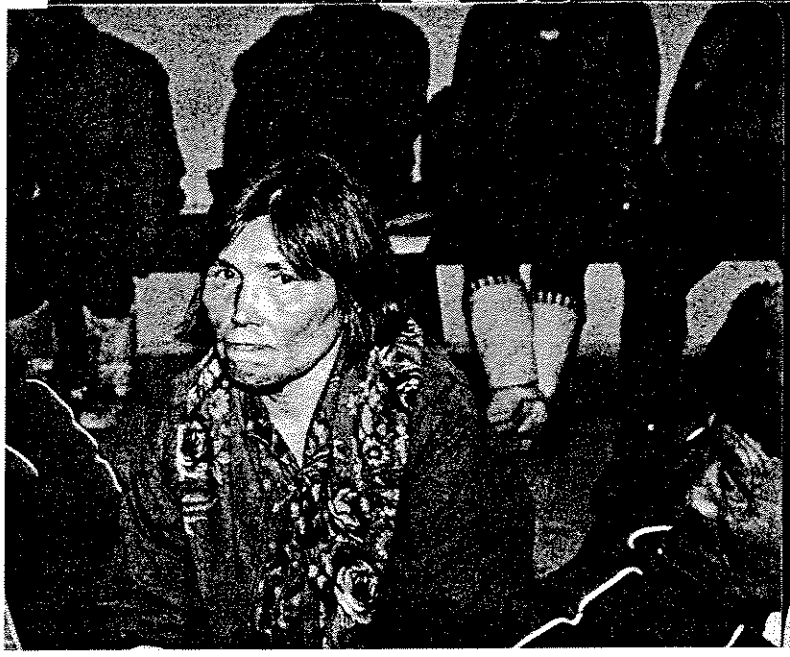


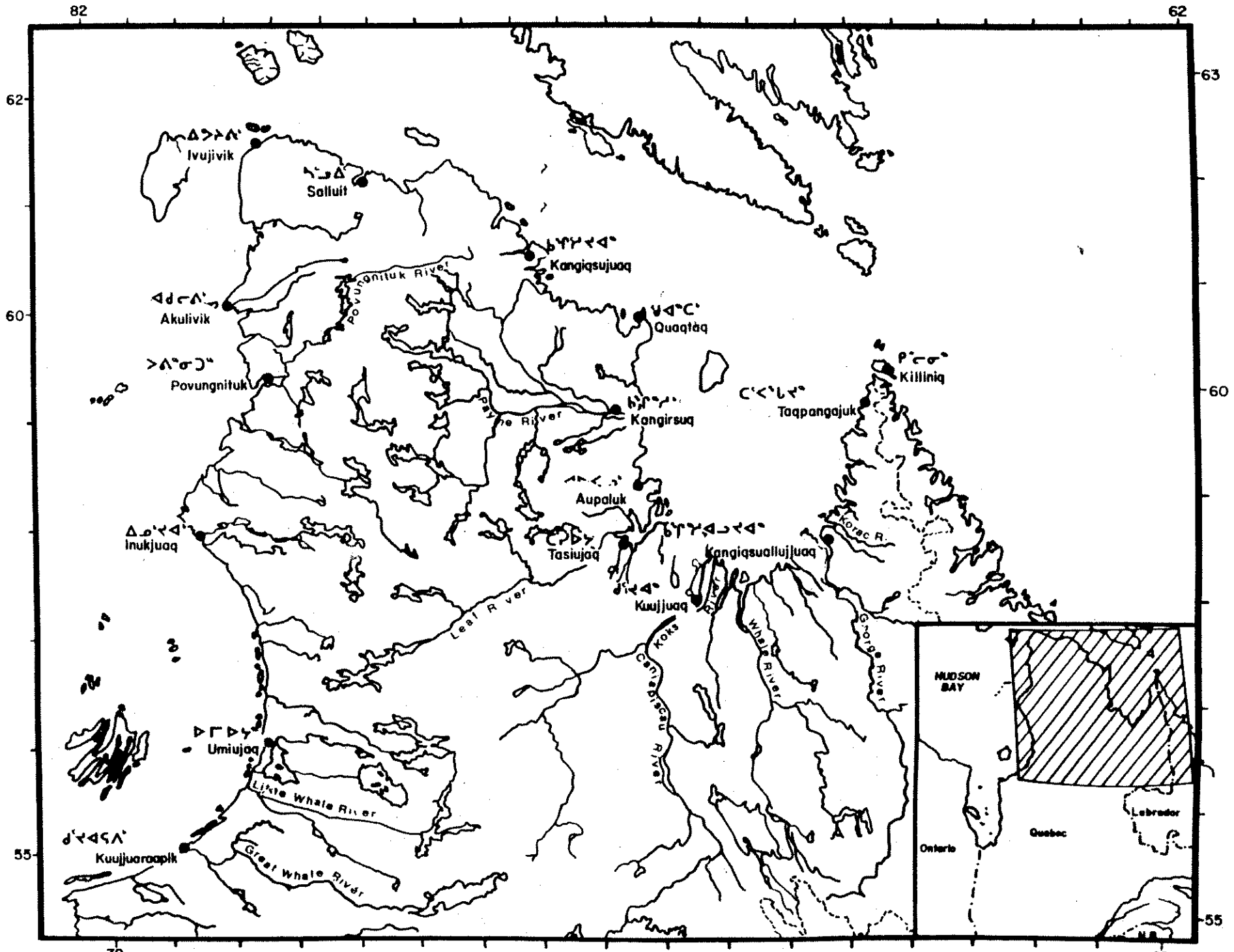
OVERVIEW

The People, Place and Project

In July 1985, the Department of Indian Affairs and Northern Development provided funds for a study to determine the feasibility of relocating the former residents of Killiniq, Northwest Territories, to a new community that would be built on the mainland of Québec. These Inuit are now living in five different Ungava Bay communities where they were taken after Killiniq was closed on February 8, 1978. This sudden closure by the Federal and Northwest Territories Government brought to an end the centuries-old occupation of the region. Worse still, it also ended the people's expectations for community growth and development that began with the new federal government initiatives of the late 1950's.

The proposed site for relocation is situated approximately 40 km south of Killiniq at a place the Inuit call Taqpangajuk (Figure 1). It is known in English as Singer Inlet. Inuit Elders say this name is very ancient and means "a place where there are many islands not touching each other". The area has been used as a seasonal hunting camp throughout the prehistoric and historic periods, an occupation that dates back to 1900 B.C. The site is 160 km from Kangiqsualujjuaq and 320 km from Kuujjuaq. Its location is also approximately 30 km from the Torngat Mountains, the range which separates Québec and Labrador. A well-travelled route to to the Labrador coast follows a mountain pass which begins about 9 km south of Taqpangajuk.

Singer Inlet was selected as the potential community site without benefit of a detailed technical evaluation. The site had been visited briefly by a technical group but no precise data could be collected. This fact, coupled with the need to gather better information from the Inuit of Killiniq about the planned relocation, meant that a major feasibility study had to be carried out. This study would establish the technical, social and economic feasibility for the construction, and future development of Taqpangajuk, and estimate the costs. A ten-month program of research and consultation was designed and carried



FIG[illegible] 1: [illegible] Inu[illegible] Con[illegible]ities [illegible] N[illegible]ern Quebec

out by the Makivik Research Department and the Municipal Technical Assistance Department of Kativik Regional Government.

A cooperative study between these two organizations established by the James Bay and Northern Québec Agreement provided the best means to combine scientific expertise with long-term experience in, and understanding of, Northern Québec. It also assured that the voice of the Killiniq Inuit would be heard and listened to throughout the study. A Technical Committee was established to work with the researchers and to provide additional perspectives and expertise for the project. Every stage of the study and all of the findings have been reviewed by the Inuit of Killiniq and the Technical Committee.

The study design was based on a target population of 104 Inuit that comprise the core group originally from Killiniq. During the first consultation with them, it became evident that relatives and other Killiniq families that felt compelled to leave the community in the early 1970's were also anxious to participate in the relocation. This group comprises 58 Inuit, so that all planning and infrastructure selection were based on a population estimate of 162 people. The study mandate also required that all plans and infrastructure selection must incorporate a projected growth of the population and expansion of the physical community over a 25-year planning horizon. Therefore, the study had to demonstrate the feasibility of Taqpangajuk today and in the year 2010. A population projection based on natural increase and in-migration indicates that the population will number 412 Inuit in the year 2010.

The results of the feasibility study are presented in two volumes. Volume I will provide the reader with a summary of all the issues and findings of the feasibility study. This includes background information; a review of site, infrastructure, planning and cost information; social and economic analysis; Inuit participation; and the first stage of impact assessment. Volume II will provide the technical information on the environment, planning and construction of the new community, on the development of a master plan, and on project cost and implementation. It also provides a report on the aerial photographic interpretation of the area and a report on the archeological survey of Taqpangajuk.

The Taqpangajuk feasibility study was a major undertaking that had to be organized and completed within a very limited time frame. The fact that it could be accomplished and all of the objectives met is a reflection of two primary factors. First, the Inuit themselves, the people of Killiniq, have never lost sight of their desire to establish a new community. There have been setbacks and disappointments and it has been exceedingly difficult for the families to maintain communication and a sense of community when they were scattered in five widely separated host communities. Nevertheless, the Inuit responded quickly to the study, especially since it provided a very welcomed opportunity for them to join together and discuss their future.

The second factor was the committment and sense of purpose exhibited by all of the project personnel. This group was professionally competent and prepared to cooperate in many different ways. In this sense, the feasibility study was truly a team effort. Personalities blended with expertise and everyone tried to understand and represent the Inuit point of view. All participants came to understand that they were part of a process that went far beyond a technical analysis. They began by evaluating the potential to convert land and resources into a well-planned collection of structures and facilities. They ended the study by realizing that the building of Taqpangajuk was also the building of a future for a very deserving group of people. The success of this study and the ultimate strength of the new community reflects the incredible vitality, spirit and determination of the Killiniq Inuit.

All of the separate components required for the feasibility study have been completed, the information has been analyzed and the conclusions have been reviewed by the Inuit and by the Technical Committee. The researchers and other individuals that participated in the project are identified in Appendix I. The primary conclusion that can be drawn from the information now on hand is that:

> **It is physically and socially feasible to build and to develop the community of Taqpangajuk according to the criteria set out in the terms of reference for the feasibility study. There is the social will and committment by Inuit to relocate and create a strong community, and the site, resources and development potential of Taqpangajuk and its immediate surroundings can meet the needs of the residents, now and in the year 2010.**

This conclusion is based on ten primary findings from the feasibility study. Again, it must be noted that the study mandate required an evaluation based on short and long term criteria. The first short term objective was to select the infrastructure, establish the community plan and estimate potential costs based on a population of 162 Inuit. On the longer term, evaluation required that the selection of infrastructure and the development of community plans incorporate a projected growth rate of the physical community and its population for a 25-year planning horizon.

Relocation and Social Development

The information on this major topic was collected during the individual interviews in each community and at the Heads of Family meetings. Potential problems dealing with reuniting all of the families were addressed, especially in the December 1985 Heads of Family meeting, when much of the time was devoted during these four days to the establishment of the means for rebuilding their broken community. This discussion was described by Inuit as being very direct and honest, and very helpful in resolving the source of potential conflicts.

The former residents of Killiniq are committed to return to the region and to reestablish their roots and the normal routines of northern life within familiar surroundings. The development of Taqpangajuk does not, however, simply reflect the desire to "go back". Much more important to the Inuit is the challenge it offers to move forward. The community is determined to incorporate new families, goals and programs of social and economic development.

The reference to the Inuit of Killiniq, whether it denotes those who were there when the community was closed, or those who left sometime earlier, does not in itself define the "community" of Taqpangajuk. The idea of who wants to live at Taqpangajuk is much more complex and penetrates deep within the history, culture and territory of the Killiniq region. In the long run, it must be the Inuit themselves that define their own concept of who will comprise the new community of Taqpangajuk. This report defines a base population as the first stage of the community. It includes the core group of those displaced in 1978 plus those who were in residence at Killiniq as of November 1975. The others

are families that have now married into this group or who have a special historical association with the region and its inhabitants.

The Physical Site

The physical site for Taqpangajuk was studied by aerial photography and by four site visits. Information on the region that could be used for specific types of site analysis was also obtained from published and unpublished sources.

Taqpangajuk has not been the site of a year-round settlement within recent times. Consequently, any description of the physical or biological environment of the Taqpangajuk site and its immediately adjacent territory lacks the important dimension and vital information base of Inuit knowledge. It was possible to obtain a detailed evaluation of the biological environment based on the observations and knowledge of Inuit, but the physical environment of the community area for spring drainage patterns, areas of snow accumulation, local microclimates and especially localized wind patterns are not available from the observations and experience of Inuit. For this reason, the low level color aerial photos and the encouragement of frequent site visits were important components of data collection and understanding of the site.

The site of Taqpangajuk can physically accomodate the infrastructure required for the new community now and over the next 25 years. This includes the location and extent of useable land within the boundaries of the proposed community; the availability of the space for an airstrip; an adequate supply of potable water; availability of bedrock for foundations and for crushing into granular material; the proper site characteristics to meet the requirements for all of the community infrastructure; and marine access and harbour.

The evaluation of the physical site in relationship to potential impacts from the development of a community do not, at this time, indicate any notable environmental problems. The bedrock conditions reduce the need to stabilize soils or sand, except for the north beach area that should be evaluated for its susceptibility to impact from machines and other activities. The location of infrastructures with special site requirements can be accomodated within the

physical environment of Taqpangajuk in a manner that respects a good community plan. There are only small areas of poor drainage or soil instability from the active permafrost layer. Certain small drainage ponds and bogs will be utilized in the processing of liquid waste, and one well-defined zone of poor surface drainage adjacent to the proposed drinking water lake will be corrected by the system of dikes and drains that are required to increase the volume of water for a reservoir. With this modification, the supply of potable water will, at the outset, meet the estimated need for the year 2010. Laboratory analysis indicates that the water is of an excellent quality.

The site is exposed to the northeast which will maximize exposure to the prevailing winds, especially in winter. The area planned for development, however, has limited areas of heavy snow accumulation that can be accomodated within the planned layout of roads and other infrastructure. Granular materials are not abundant, but it is estimated that the cut, fill and blasting of bedrock, though not extensive, will produce a surplus of granular materials for future use. No soundings have been taken for the depth of the coastal waters, but anecdotal evidence collected from Inuit and limited observations during the fall site visit indicate that the bay to the south of the community will have sufficient depth for use of sea lift vessels and barges.

Resources and the Resource Economy

The resources of the region were evaluated through a detailed set of hunter interviews on their land use and on their ecological knowledge. Specific information on land use was supported by data on harvest levels prior to the 1978 closing. This data allowed for the harvest to be quantified and for 25-year projections to be made.

The detailed ecological knowledge and land use interviews provide a systematic body of information about the fauna of the region and about its past and present utilization by Inuit. This information by Inuit was then integrated with other scientific observations and data about the marine ecosystem including the freshwater rivers for anadromous fish. This information has enabled a precise set of ecological maps to be drawn for use in management

and impact assessment. The resources of the area will, with Inuit participation in management and planning, support the present and projected population of Taqpangajuk for their subsistence needs. Marine mammals, birds, fish and land mammals are all available within the projected hunting area of Taqpangajuk. Marine mammals, arctic char and caribou are at present the most important food species. Prior to its closing, the community was able to harvest approximately 1.7 kg of edible food per person per day. It is estimated that the growth in harvesting will accomodate the expected growth in population without diminishing the food resources of the region. If the level of harvesting remains constant and simply expands with the population, a total harvest of 80,334 kg will be required by 1995 and of 254,415 kg by 2010.

Certain biological and landscape resources have excellent potential for small scale economic development projects. A major three-year feasibility study of the inshore fishery potential of the region was completed in 1985 and a small scale commercial operation is planned for 1986. The collection and processing of eider down has important potential, and the development of tourism oriented towards the natural beauty of the land and resources is also under consideration for the development of the resource potential of the region.

An evaluation of potential impacts from the subsistence or commercial utilization of community resources can be made from the large amount of detailed biological information now available from the feasibility and other related studies. The conclusion that can be drawn is that the site itself is not an area identified as having critical wildlife habitat, although it is considered to be accessible to good hunting territory in all seasons of the year. The immediate community area is used on occasion by migratory birds and small groups of caribou, but there are no large concentration of species nor areas critical to mating, movement, feeding or other essential behaviors of land, marine or freshwater resources. The choice of Taqpangajuk as a site tended to reduce the possibility of direct impacts on the resource base without eliminating access to this base.

Employment and Economy

Information on this topic was obtained through a review of the economic structure of other small communities of the Ungava Bay region, and through in depth interviews with the Inuit of Killiniq. Assumptions about the economy of Taqpangajuk were then made and possible options were identified and discussed with the Inuit who intend to relocate. Extensive unpublished data on the economy of Ungava Bay and on the development of a regional economic plan was reviewed. The economic problems presently encountered in other communities were identified and discussed with community leaders.

Taqpangajuk, like many other northern communities, cannot be expected to create a fully developed and prospering economic infrastructure within the foreseable future. One can hope for a time in which there is truly an economic self-sufficiency throughout Northern Québec. For now, it is important to recognize limitations and to plan realistically towards solving the economic problems that plague the development of Inuit society.

The employment and other sources of income available at Taqpangajuk will mirror the general structure of job opportunities and income available throughout Northern Québec. The economy of Taqpangajuk will incorporate five primary components: the subsistence exploitation of biological resources; the wage economy, based on the delivery of municipal and other standard northern services; the utilization of government funds for universal social programs; the implementation of special economic and social initiatives that are part of the James Bay and Northern Québec Agreement; and the development of the economic potential of the regional resources, through special innovative programs such as the Killiniq fishery and eider down harvesting. The other income will be derived through the usual network of transferred payments, casual or seasonal labor, delegate pay, and through special employment programs that operate in every community.

The extent to which these employment possibilities will have a direct economic impact is largely dependent on the training and level of professional achievement that can be obtained by local Inuit. This fact is most important for reducing the ratio of non-native to native employees in permanent positions and

it is essential if Inuit are to take the initiative in the development of their economic future.

To date, there has been no active development of arts and crafts by the Killiniq Inuit and they, like all other Inuit throughout all Northern Québec, will be severely penalized by the economic repercussions of the anti-trapping and other animal rights movements. The estimated per-capita yearly income for Killiniq has been determined from statistics applied throughout Northern Québec. It will be $ 5,000 on a per capita basis, or approximately $34,900 for each family unit.

Infrastructure Selection

The infrastructure that will be built at Taqpangajuk was selected according to political, social and technical criteria that operate within all of Northern Québec Inuit communities. The specific characteristics of each infrastructure was determined according to the standards, requirements and construction practices now operating in Northern Québec; according to the potential and the restraints offered by the site and its immediate environment; and according to the preferences and concerns of the future Inuit residents. This process allowed for options to be clearly established, the cost of each option to be determined and for choices between options to be made and supported.

The development and operation of infrastructure within Northern Québec municipalities is the direct responsibility of the Kativik Regional Government that was established under the James Bay and Northern Québec Agreement and is incorporated into Québec law under the Kativik Act. The selection of infrastructure was also guided by documents and policies that have been established for northern municipalities, especially the Jolicoeur Report on the delivery of municipal services; the standards of the Société d'Habitation du Québec for houses; the modifications to these standards that are stated in a report by Inuit on their housing needs and preferences; the standards of Environnement Québec for environmental protection; and specific provisions of

the James Bay and Northern Québec Agreement that provide for standards of service and responsibilities of municipal governments.

The primary infrastructure presently envisaged for this community will include 48 housing units that will follow the standards set by the Société d'habitation du Québec and which will hopefully be modified to incorporate the results of an Inuit Housing Study that was financed by the Department of Indian Affairs; a school built according to the specification of the Kativik School Board; a diesel power plant that will be built and operated by Hydro-Québec; fuel storage areas that will be built by an independant contractor according to the site requirements and safety standards established by Québec for this infrastructure; a water reservoir that will utilize a truck delivery system; liquid waste disposal, utilizing a bio-dish and filtration ponds; solid waste dump that will respect the health and safety standards of Québec, including the safe packaging and evacuation of toxic waste and especially PCB's; a 1,070 meter airstrip, built to the standards of the Northern Airport Infrastrastructure Improvement Program; roads, harbour and offshore anchorage areas that respect the norms applied in northern communities. The community infrastructure will also include municipal and other service facilities, a private or cooperative store, a church, and public space, along with other recreational areas or facilities. The selection and location of infrastructure is an essential part of the impact assessment procedure as described below.

The Community Plan

Community planning was based on consultations with Inuit. This process attempted to stay within the range of real possibilities that could be expected for Taqpangajuk, but it also allowed and encouraged Inuit to state new ideas and preferences about the types and organization of infrastructure. The ideas were developed on community maps which were then used to further animate the Inuit discussions about planning.

A final community plan, based on the development of three scenarios, has been established, which incorporates the immediate space and infrastructure needs for 162 people and which allows for community expansion

over the next 25 years. The plan accomodates all of the special requirements for each infrastructure, including potential for impacts, and it recognizes the physical potentials and restraints of the site as presently known through aerial photographs and on ground site surveys. This plan also details an integration of the required infrastructures with each other, with the physical and landscape attributes of the site, and with the social and economic patterns that are expected to develop within the community. The master plan has been reviewed and approved by the Inuit and the Technical Committee.

The selection of infrastructure within a community plan is an important part of the procedure for identifying and minimizing potential impacts. This is best accomplished as a part of the planning process, as opposed to implementing remedial measures linked to inappropriate plans. The planning of infrastructure that may have a direct or indirect impact on the physical and biological environment, especially the supply of potable water, solid and liquid waste disposal, fuel storage, power generation and roads were located with respect to the environmental conditions as presently known. As well, the selection of the infrastructure also includes specifications for position, location and construction methods that minimize impacts on the environment, on the safety and public health of the population, and on the aesthetics of the community and landscape.

Project Cost and Implementation Schedule

On the basis of the planning scenarios and in relationship to site characteristics, infrastructure choices and construction options, a final cost of $32,514,000 has been established for the master plan. A schedule of further site studies prior to construction, and a critical path have been developed and are included in the cost estimate.

Impact Assessment

The Kativik Environmental Quality Commission is the body ultimately responsible for the assessment of the environmental and social impacts of this project. The procedures required by the Commission for project proponents are being followed. The Taqpangajuk project recognized from the outset that there was a need to coordinate information required for a feasibility study with that required for impact assessment. It was also acknowledged that a feasibility study and impact assessment represent two different approaches to a development project. This distinction was incorporated into the methodology for the Taqpangajuk study design.

The impact assessment matrix in Table 1 refers to the distinction between building and not building the community. It is obvious that from the point of view of most environmental and resource features, any disturbance to the natural landscape will create some level of negative impact. These impacts are, in the best judgement of the project staff, all within acceptable limits and can be minimized or eliminated through planning and through careful application of standards and procedures. The real negative impact of Taqpangajuk would not come from the building of the community but rather from what would happen if a decision is made not to build the new community. We must determine, therefore, the real impact on Inuit expectations, livelihood, the rights to social and economic development, and trust in political institutions in order to establish this impact. The repercussions of such an eventuality will be deep and long-lived. They will also affect more than just the Inuit of Killiniq, since it is an issue that directly involves the development of the Ungava region. Unfortunately, the process of impact assessment only speaks to actual development, not to the issue of no development.

In this project, the evaluation of information was linked to the development of planning scenarios so that the selection and placement of infrastructures will minimize potential impacts and thus reduce the need for significant revision of plans or the creation of extensive remedial measures. Consequently, the master plan itself serves as the first level of impact assessment. It is a statement of known or perceived impacts and of adjustments to these impacts. The final evaluation of environmental impact must await the outcome of more precise technical site surveys, but at this time it appears as

General Impact Matrix - Taqpangajuk Project

o : Null impact

— : Major negative impact

– : Minor negative impact

+ : Major positive impact

+ : Minor positive impact

	Building Taqpangajuk	Not building Taqpangajuk
Physical Environment		
Air	o	o
Land	—	o
Water	–	o
Archeological sites	—	+
Biological Environment		
Marine resources	o	o
Freshwater resources	o	o
Land mammal resources	–	o
Birds (aquatic/land)	o	o
Vegetation	—	o
Social Environment		
Traditionnal territory and way of life	+	—
Community identity	+	—
Family reunification	+	—
Economic opportunities	+	—
Self-sufficiency	+	—
Host communities	+ –	— +
Archeological knowledge	+	–
Regional development	+	–

though there are no obvious potential problems and the site is therefore environmentally acceptable if the procedures and practices of Northern Québec are respected, including those special procedures that may be required by the Environmental Quality Commission.

The second level of potential impacts addresses the question of resources. These are effected by the general disturbance from infrastructure and the community related activity, and from exploitation. Detailed knowledge on the biological resources of the Killiniq region have been accumulated for many years. This information was added to during the feasibility study by intensive in-depth interviews with Inuit concerning their land use and ecological knowledge. These interviews also examined the ecology of the immediate site in order to define general disturbances or to identify either critical habitats or important species. The findings from this evaluation clearly indicate that the impact on resources by the community infrastructure, especially wastewater treatment and solid waste disposal will not have a negative impact on the waters or land in relationship to resources. No critical habitat has been identified near the community, and there are no rare or important species that frequent the community lands at any season. Therefore it must be assumed that at this stage of planning that there are no detectable impacts on resources, either direct or indirect, from infrastructure.

Harvesting patterns will involve both subsistence and commercial use of resources. Subsistence harvesting has been given priority by the Inuit of Northern Québec and its long-term importance is now in the process of being protected by Inuit-developed conservation and management strategies. The establishment of commercial exploitation will be linked to the intensive studies that have gone on over the last three years and the levels of harvest will be controlled through licensing, monitoring and through planned linkages between scientific studies and experimental fishing or eider down collection for commercial purposes. All of the mechanisms for carrying out these procedures are now being established under the coordinating committee for hunting, fishing and trapping. Therefore, at this time there are no discernable impacts on resources that exceed the acceptable limits established by Inuit, through conservation and management practices.

The third level of potential impacts address the question of social and economic life. This includes health, public safety, landscape, and employment. Again, the master plan recognizes the various relationships and sets out preliminary solutions. Other impacts and their resolution flow from the involvement of Inuit during all phases of the project. This principle has been honored throughout the feasibility study since Inuit were consulted and included in planning and decision making. The master plan was designed with, not for the Inuit, and the social and economic considerations are based on Inuit knowledge, values, attitudes and priorities. It must be assumed that at this stage of the feasibility study, many of the potential social and economic impacts that would occur if the community is built have been continually recognized and resolved through the interaction between the study and the Inuit.

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SECTION I

BACKGROUND AND PERSPECTIVE

1. BACKGROUND TO RELOCATION

The Inuit occupation of the Killiniq-Taqpangajuk region dates back some 4,000 years. Killiniq was the most northerly settlement in an extended network of seasonal camps and travel routes that covered the lands and waters of the Torngat Peninsula. The importance of the area was also recognized by outside agencies that established missions, trading posts and police stations at Killiniq at the beginning of this century. In the early 1950's, scientific surveys indicated the richness of marine resources and of their potential for local development. In the late 1950's, the federal government initiated a program for the re-development of Killiniq, based on the commercial exploitation of these resources. This initiative maintained its momentum until the early 1970's, at which time the government began to reduce programs and services. The closure of Killiniq in 1978, along with the events that followed, represent the most recent chapter in the long history of this region.

The core group of Inuit that will relocate to Taqpangajuk were all residents of Killiniq. This community was located on an island approximately 300 meters from the Québec mainland and was under the jurisdiction of the Government of the Northwest Territories. All of the cultural, historical, economic and logistical factors, however, linked Killiniq directly to the territory and people of Ungava Bay and northern Labrador. These linkages were formally acknowledged by the James Bay and Northern Québec Agreement that recognized the Inuit of Killiniq as a signing party.

The development of the region by contemporary Inuit groups followed the age old patterns that extended back through history and into prehistoric times. The importance of the region was recognized by outsiders early in the twentieth century. Killiniq was first established as a permanent settlement by the Moravian Church that opened a mission and trading station in 1904. Their commercial activity ceased in 1916 and the mission was closed in 1924. The Hudson's Bay Company took over trade from the Moravians and operated a post from 1916 to 1939. In 1920, the Royal Canadian Mounted Police established a detachment to take advantage of the "strategic gateway" position

of Killiniq and represented the federal government's presence in that region until 1936.

A generalized picture of the Killiniq population has been reconstructed from many sources by ethno-historians. Throughout historical time, there appeared to be a "fragile demographic equilibrium" in the region (B. Saladin d'Anglure, 1985, p. 480; G.T. Taylor, 1985, p. 513). There were fluctuations in population concentrations, but, in times of good health, not in the total population of the region. Settlement size and location did shift, however, in relationship to the activities of non-native traders and missionaries. More important, fluctuations in the actual number of Inuit living in the region took place because of disease and especially epidemic illnesses.

There is firm evidence that epidemics brought about a general decline in the population throughout the late nineteenth and early twentieth century. In 1918-1919 for example, one-third of the Inuit served by the Moravian missions of northern Labrador and Québec died within three months (G.T. Taylor, 1985 p. 513; H. Kleivan, 1966, p. 181). Epidemics and poor health continued to plague the development and growth of Inuit culture of the region until very recent times. The population as a whole suffered the direct or indirect effects of tuberculosis and other chronic ailments and in the early, and again in the late 1950's, epidemics of measles and influenza ravaged parts of Ungava Bay. With this as a historical antecedent, it is easily understood why the closing of the Killiniq nursing station and the burning of all medicines in September 1977 struck a note of true terror in the collective memory of the people.

A new phase of development and limited population growth began in the mid 1950's. At that time, there was a general concern within the federal government on the economic potential of arctic communities and regions. A series of "Area Economic Surveys" was commissioned to provide basic data and to suggest possible courses of action. A survey was carried out along the east coast of Ungava Bay in 1958 that gave immediate direction for a redevelopment of Killiniq. This redevelopment was to be based on the potential for small scale commercialization of local resources and on the provision of better services for the Inuit through the creation of a Northern Service Officer. Together, these would create the momentum for community development. In a 1958 report prepared by the Industrial Division of DIAND, it was noted:

> The successful establishment of a planned economy at Port Burwell (Killiniq) will make it possible for the people to develop their communities... The results, therefore, of establishing a few well-planned industries will be to provide a sound economic basis for (the) community which in turn will make it possible for the people to gain a much greater amount of independence and control over their own lives which is not possible under the existing economy.

The possibilities for economic development at Killiniq were considered to be "excellent" and would include actual and experimental programs for exploiting Arctic char, Atlantic cod, Greenland shark and Harp seal. The creation of such a development program would be coordinated and supervised by the Northern Service Officer, but the actual involvement of people in their own development would be through the creation of a northern cooperative.

The ideas expressed in the 1958 report of the federal government were supported by the oceanographic and fisheries research that was undertaken in the waters of Ungava Bay and the eastern arctic from 1949 to 1955 (M.J. Dunbar and H.H. Hildebrand, 1952; M.J. Dunbar, 1958). The practical applications of this research also emphasized the importance of Killiniq in the economic life of the Ungava Bay region. It was assumed that the appropriate development of fisheries would translate into an improved state of health and economic and social well-being throughout the Inuit population (M.J. Dunbar, 1952). It is noted by Dunbar (1952, p. 12) that:

> It is significant that Burwell, the least attractive of the Ungava Bay settlements from the point of view of the fur trader, should appear as the richest of them all from the point of view of the old-style Eskimo. There is no doubt that it is ....
>
> It is not surprising that the few Eskimo who did not leave Burwell in 1941 when the post was abandoned... should be the best situated in the bay. The surprising and depressing thing is that so few stayed, that the majority preferred to follow the trade-store to George River or Chimo.

This quote provides background for development, but it also clearly illustrates that the Inuit population of Killiniq is linked to the region as much through support services, in this instance, the fur trader, as it is through resources. Consequently, the growth of population within the 1960's as the services were increasing and the subsequent out migration of this population in

the early 1970's, as the services declined, mirrors historical trends and was not a response to unique social problems within the Killiniq population.

Active development of Killiniq began in the late 1950's, as Inuit started to return. Some because of their own desire to return, while others responded to government initiatives to attract individuals and families to the region. By 1960, about 30 people had relocated and by 1969 the population was around 150. Documentation on the early stages of re-development provide many insights about the process. A government memo written in 1959 stated:

> No extensive government economy was developed at Port Burwell this summer, but we consider the situation will no longer prevail with the beginning of the fishing season next year.
>
> One of the major difficulties we now face is a shortage of people at Port Burwell. Officers here who know the Labrador Coast well, say that there are a number of Eskimo families in that area who would probably be willing to take up residence again in the area from which they originally came. We intend to follow this matter up.

An internal report written in 1959 described the early development of the program:

> In fact, they [the Inuit of Port Burwell] were interested in every plan and idea for their future and I am convinced that they intend to persist provided we can give them the support that is needed to sustain the confidence that now exists. They are incredibly dependent on us for direction and they seem prepared to do just about anything we ask if it will help them maintain their independence at Killiniq.

The need to attract people to the community remained a problem that was aggravated by a lack of housing and the development of services. As these improved the people seemed to follow. In another memo written in 1963, it was observed by a Deputy Minister that the per capita income climbed from less than $200 per family in the mid 1950's to approximately $3,800 per family by 1963 with a projection of $5,000 in the following year. In a final paragraph of the memo, it is concluded that:

> Port Burwell, situated as it is in the Northwest Territories, is an important location for future economic development in the eastern arctic. It is a strategic location for shipping and also for trans-shipment with an excellent protected harbor. Port Burwell is

> important now to the Department and its significance may well increase in the future as headquarters for deep sea fishing, not only for the Port Burwell people but also possibly for Eskimos from Baffin Island. Port Burwell is an area rich in renewable resources and can adequately sustain a population of 200-250 people (40 families). The most severe inhibiting factor to the growth of income there today is not lack of resources but lack of people.

The development of services and the growth of population continued to reinforce one another throughout the 1960's. Everywhere in the north, the 1960's was the decade in which community development began. This was not an easy process for Inuit or government. Jenness (1964) has provided a detailed analysis of the events that preceeded community development in the l960's. Inuit had suffered from illness and disease, and economically and socially from the loss of self-sufficiency and control of their lives. Government programs at the time lacked insight, creativity and substance. Newly created communities offered Inuit a measure of protection through access to certain essential services. In turn, the governments had to rapidly establish both systems and programs for the physical and social development of these new communities. Infrastructure was not appropriate to needs, logistics were poorly developed and the economy was just beginnnig to offer a possible alternative to a choice between the fur trade and poverty.

The need for a cash economy did not diminish, but it had to diversify. Technology was changing and so were the patterns and schedule of hunting. Jobs, schooling, settlement location and size, the creation of social programs and art all played an important role. Although hunting changed, it continued to be critical for the supply of food, and although communities started to form, they often did not displace people from their traditional territory. Some displacement did occur, and there was mixing of social groups which created in the minds and in the daily lives of Inuit "unnatural" and "unworkable" communities. The response to this situation has, in Northern Québec, been exhibited through decisions by Inuit to relocate and establish new or reestablish previous communities. Tasiujaq (Leaf Bay), Akulivik (Cape Smith), Aupaluk (Cape Hopes Advance) and Umiujaq (Richmond Gulf) are all testimony to this process. The desired relocation to Taqpangajuk is the most recent Inuit response to government resettlement.

Throughout most of the 1950's, Killiniq shared these problems with other communities, but it was also able to demonstrate a much more active economic development of the local resource potential. In the early 1970's, however, the government-financed infrastructure programs for Killiniq started to slow and gradually fell behind other northern communities. This problem was emphasized by the difficult environment which restricted building areas. It was especially true for airstrips. Killiniq had no land strip and therefore it could not begin, as did other communities, to benefit from improved air service. This problem was made worse by frequent and persistent fog, serving to make this community one of the most isolated places in the entire eastern arctic.

The required services for Killiniq first slowed and then began to decline in the early 1970's. Prior to 1975, the Killliniq Inuit had discussed the possibility of relocating as a group to the mainland of Québec. The intent was not to leave the region, but simply to find a better community site on the mainland of Québec. The area immediately south of Kiliniq had a lower frequency of prolonged bad weather, and it was hoped that a better physical environment would facilitate easier planning and construction of settlement infrastructure including a proper airstrip. The move would also formalize the cultural and historical link to Québec, as recognized under the James Bay and Northern Québec Agreement.

The concern to relocate became an urgent need on February 8, 1978. On that day, without prior warning, the community of Killiniq was closed by the Federal and Northwest Territories governments. The residents were loaded onto planes and "distributed" to five Ungava Bay communities. This catastrophic event in the lives of Killiniq residents was foreshadowed by a decline in government services between 1972 and 1978, which created a deteriorating social climate. This in turn gave rise to a gradual out-migration of families that felt compelled to move in search of a safer settlement with more secure access to essential services, especially health and air transport.

Prior to the signing of the James Bay and Northern Québec Agreement, there was an assumption on the part of the Killiniq Inuit that services would be continued and their community would continue to develop, although more

slowly than during the previous years. All of this seemed to change after signing the Agreement. Between November 11, 1975, and February 8, 1978, a total of 97 Inuit left Killiniq. Fifty left on their own accord, in search of a more secure environment with basic services, and the other 47 remained until the evacuation by air on February 8, 1978.

The deterioration of services permeated every aspect of community life. Some of the problems simply caused irritants while others threatened the essential safety and well-being. Mail service was erratic and, for long-periods, non-existent; there was no new housing, renovation or maintenance; the medical services provided by the nursing station were severely curtailed and the station was closed in September 1977; all medications were taken outside and destroyed by fire, leaving the community without medical services or emergency medications; there was no assistance to the cooperative store or support of the fishery after 1975; and there was a continued deterioration of air services, caused partly by weather but exacerbated by having no airstrip except on winter ice. As services were reduced, jobs were lost and the economy declined.

These events had a severe impact on the morale of the community members and this, in turn, affected social relationships and the normal routine of northern community life. When the planes came on February 8, 1978, the evacuation was carried out quickly and there was neither the space nor the time for individuals to take their larger belongings. People left their homes, their canoes, snowmobiles and many other types of equipment or personal possessions. The planes carried them to five different communities. They arrived without housing, without income, without many of their personal effects and social groups were broken up. It is this legacy that the Inuit are desperately striving to overcome as they try to hold together as a community.

Since 1978, the desire of the Killiniq people to regroup in a new community has continued to intensify. The Killiniq Inuit still struggle to maintain their solidarity as a social group, even though their ability to communicate and make decisions is severely restricted by the distance that separate them. Nevertheless, the Landholding Corporation continues to function, community interests are recognized in all discussions or negotiations on the social, economic and political development of Northern Québec and there has been a

three-year feasibility study on the commercial exploitation of inshore fishery resources since the summer of 1983. This fishery brings a group of 25 Killiniq people back to the region each summer. In the fall of 1985, two families left their host communities and with financial assistance from the Department of Northern Affairs and Development, began to establish a permanent camp at Taqpangajuk.

2. THE FEASIBILITY STUDY

The Taqpangajuk Feasibility Study began in July 1985 and was completed in May 1986. The study was carried out by the Makivik Research Department which in turn authorized a major sub-contract for physical site evaluation, infrastructure selection, planning and cost estimates to the Municipal Technical Assistance Department of Kativik Regional Government. A program of cooperative research between these two institutions created by the James Bay and Northern Québec Agreement offered the best means to integrate northern research experience and technical expertise within an organizational framework that was under the direct control of Inuit. It also assured that the participation of the Killiniq Inuit would be respected and encouraged.

A technical committee was established to review and comment on the design of and results from, each component of the feasibility study. Membership represented Makivik Corporation, Kativik Regional Government and the Department of Indian Affairs and Northern Development. Six official meetings were held and informal minutes were kept of the discussions and decisions. Technical Committee members participated in the northern Heads of Family meetings, met directly with the Killiniq Inuit and visited the site of Tapqangajuk. Individual members also provided advice or expertise on many specific problems throughout the study.

Consultation was central to all of the work carried out during the feasibility study. It began with the development of the research design and establishment of priorities. It continued through a review of findings to the approval of the master plan. Consultation, as defined in this project, meant a free exchange of information and points of view. It was not to tell Inuit about the project or to inform them of what would be done, but rather to discuss with Inuit all of the possibilities, options and problems that have to be addressed in a feasibility study. The exchange was open, it was both informal and formal, and it was successful in spite of the difficulties encountered because the population is separated in five different communities.

Three types of consultative activity took place. First, all of the individuals and family units were involved on a personal basis during a series of three visits to the host communities. Second, Inuit individuals who were appointed by the Killiniq Inuit to represent their interests were consulted and kept informed about the project on a regular basis. These individuals would in turn contact the other family units in each host community to pass on information and to seek opinions. Finally, all of the individual families were brought together in two Heads of Family meetings. These meetings were critical for overcoming the isolation that built up as a result of a seven-year separation in five host communities. The meetings provided an opportunity for people to hear each other's opinions and to reach a consensus. The first meeting was in December 1985, to review the preliminary findings and planning options. The second meeting was in late April 1986, to review all of the conclusions and plans prior to the writing the final report.

Study Objectives

The program of research that was needed for the feasibility study was organized around five primary objectives. Each of these objectives had a specific study design, methodology and schedule that was clearly identified in a proposal written for each component. This process assured that standards would be maintained throughout the project, and that each discipline would not be neglected in this large interdisciplinary study. The five primary objectives of the feasibility study were:

1) To determine the capacity of the Taqpangajuk site to physically accomodate the infrastructure requirements for a new community with a base population of 100 to 125 individuals and to account for community expansion over the next 25 years.

2) To establish planning scenarios for the type, locations and development of the community infrastructures, and to determine a realistic schedule and critical path for the implementation of the relocation project.

3) To determine the costs for implementing each of the planning scenarios based on existing needs and the target population of 100 to 125 individuals.

4) To evaluate the social and economic factors and potentials that underlie the human development of a new community and to describe the programs that are required for the successful realization of this development potential by the Inuit who will relocate to and reside in, Taqpangajuk.

5) To establish both principles and procedures that will enable Inuit to play a fundamental role in the research, consultation and decision-making process that are required for all phases of the feasibility study and which will assure their continuing participation through training and employment as well as consultation, in all future stages of the relocation project.

One other important factor guided the orientation and organization of the project. From the very outset, the research was designed to meet the objectives of a feasibility study and not those of an impact assessment. This orientation was developed in conjunction with the Kativik Environmental Quality Commission and it emphasizes the formal approach that has been established for impact assessment in the Inuit territory of the James Bay and Northern Québec Agreement. The study was to determine the feasibility for physically building a new community and for determining if and how the community would "work" as a social and economic entity.

Although the assessment of environmental and social impacts play a role in feasibility studies, the objectives and methodologies differ between the two and they should not be confused. A feasibility study questions whether or not a project is viable environmentally, socially and economically. Therefore, it must be designed to allow for alternative solutions to be identified and reviewed, including variations on any one alternative. Towards the end of the feasibility study, alternatives were eliminated or combined and the number and range of variations diminished, allowing for the best possible solution, or solutions, to be retained for evaluation and costing. Once this level of feasibility is determined, then it is possible to design the procedure and methodology for impact assessment. In the Taqpangajuk study, a very general impact matrix has been determined, and the approach to be followed for a full impact assessment for review by the Kativik Environmental Quality Commission has been established according to the procedures required by the Ministry of Environment, Québec.

Research Components and Schedule

A detailed summary of the type and schedule of events and activities for the feasibility study is presented in Appendix 2. The study began with a detailed structuring of each objective, including specific questions, methodologies and research designs. Linkages between components were established, background information, if available, was assembled and the entire research process was integrated within a framework that was organized according to a general work plan and critical path. The generalized work plan is illustrated in Table 2.

Very little information on any aspect of the physical environment of Taqpangajuk was available at the beginning of the feasibility study. A brief field visit and report in 1982, by a consulting firm with assistance from Makiviik personnel and Killiniq Inuit gave the first indication that the site was suitable for community development and it provided a more detailed assessment and ultimate rejection of the potential community sites in the Bell Inlet region. Since the 1982 technical assessment of Taqpangajuk had to be carried out very quickly, the conclusions about its potential could not be supported by detailed analysis. In order to obtain the data required, the 1985 feasibility study identified six essential components.

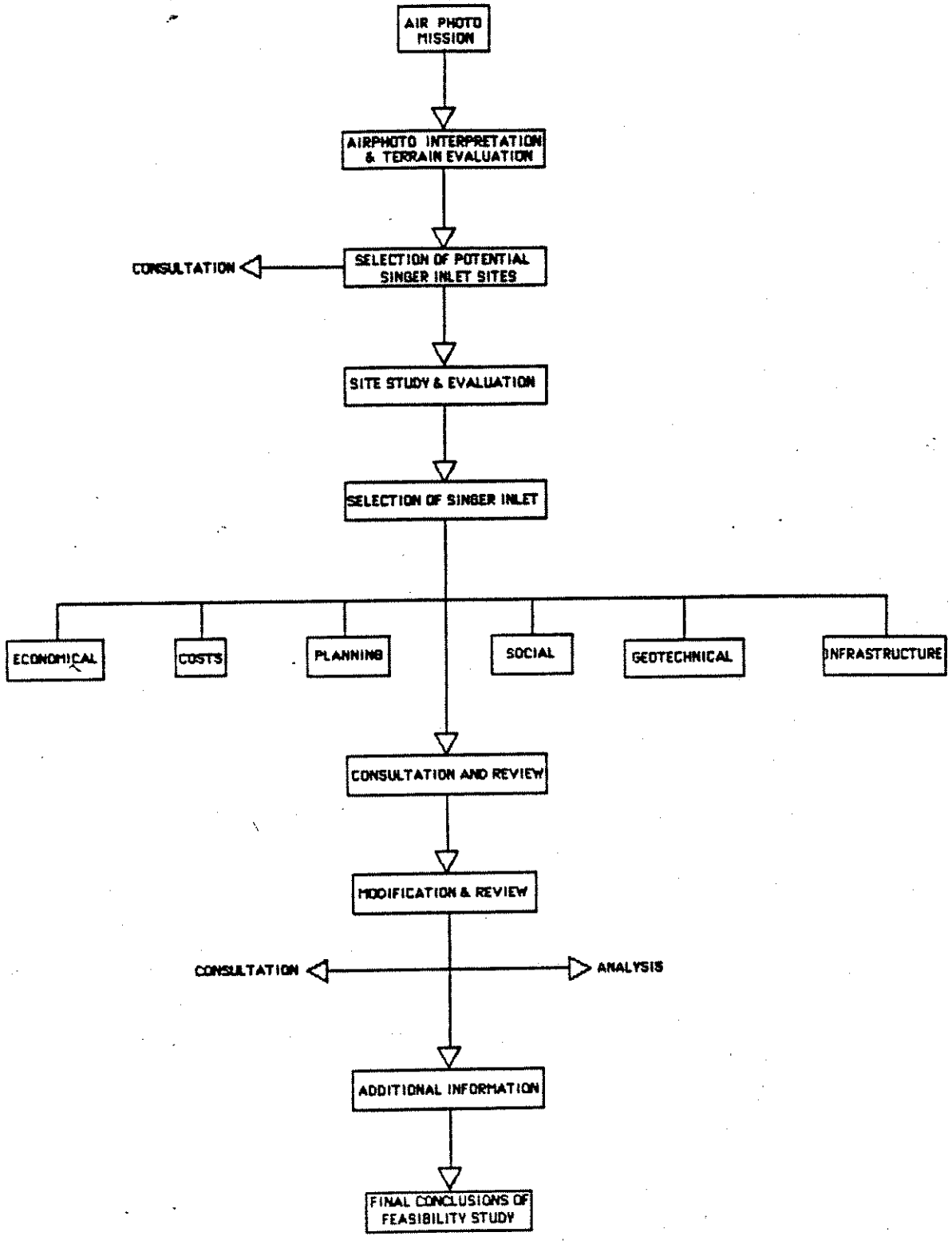
Aerial Photography and Mapping

* A low level aerial photographic mission was organized and flown by the Kangiqsujjuaq Research Center. This provided vertical stereo and oblique photographs in color for a 10 square kilometer radius around Taqpangajuk.

* Obtaining aerial photo coverage of the region from the National Airphoto Library (N.A.P.L.) and obtaining large scale aerial photography taken by Aéro Photo Inc., for the Ministère des Transports du Québec.

* Interpretation of the N.A.P.L. and low level color photography, and the production of land classification and environmental unit maps of Taqpangajuk and surrounding territory.

Table 2: Principle Research Components



* Production by Photosur Inc. of photogrammetrically accurate topographic maps from Aéro Photo photographs, at scales of 1: 5,000 and 1: 2,000 with 2 meter contour intervals.

Field Surveys of Site

* Planning and completion of a late summer on-site field survey and engineering study by KRG and Makivik Research Deptartment to evaluate the physical characteristics and site plan of Taqpangajuk and of Oogalik. The evaluation of water supply, marine access, local ecology, drainage, foundation material, and surface stability. The field survey also established generalized planning zones and infrastructure locations, including the roads and the airstrip.

* Planning and completion of a late summer on-site archeological survey to determine the archeological potential and importance of the area and to locate and classify specific sites that are within the zone of community development.

* Planning and execution of final fall site visit by KRG to collect additional information and check preliminary findings from late summer visit.

* Planning and execution of fall site visit by representatives of Transport Canada to evaluate airstrip potential and location.

* Planning and execution of winter site survey to evaluate snow cover, areas of drifting, ice thickness and under-ice water availability for proposed source of drinking water.

Community Planning Scenarios and Master Plans

* Planning and execution of the first phase of community plans and infrastructure selection, based on questionnaires, interviews and discussions with every household of Killiniq Inuit in the five host communities.

* Literature review and compilation of available information on northern community plans and on the standards and options established for Northern Québec.

* Planning and execution of a second all household consultation in host communities to review and integrate planning scenarios and infrastructure options for the community master plan.

Social and Economic Studies

* Planning and execution of socio-economic studies carrried out in the five host communities, focusing on economic and social data collection, and on the collection of intensive land use and ecological information, in the form of maps and written interviews.

* Archival research at Public Archives (Ottawa) for historical, social and economic information relevant to Killiniq and relocation. Collection and production of relevant documents.

* Archival research at Hudson Bay Company Archives (Winnipeg) for information relevant to the local resources and their development.

* Literature and documentation search for all published and unpublished information relevant to the Taqpangajuk relocation.

* Special collection of detailed land use and ecological maps of Québec-Labrador peninsula based on the ecological knowledge from hunter interviews.

* Review of preliminary findings and further consultation of data with all Killiniq Inuit, for review and collection of additional social, resource and economic data.

* Determination of Inuit participation in the implementation and construction phase of community development, including training, supervision of work force and other social and economic issues.

Site Analysis , Engineering Studies and Cost estimates.

* Data analysis, library research and compilation of preliminary findings on site survey, engineering, planning and socio-economic issues. Evaluation of site potential for Taqpangajuk and Oogalik, and selection of Taqpangajuk as the best possible site.

* Review of 1982 technical report on Bell Inlet sites and review and assessment of all other technical reports prepared for or relevant to Taqpangajuk.

* Review and assessment of all infrastructure specifications and costs.

* Identification of post-feasibility study engineering and other study requirements and preparation of construction and implementation schedules and cost estimates for site preparation.

Data Review and Impact Assessment.

* Preparation of final documents, that have been reviewed by the Inuit, Technical Committee and by individuals from outside of the project.

* Incorporation of all critiques and reviews for final reports and establishment of a procedure for responding to additional comments and the expansion of findings.

* Establishment of the procedures to be used for impact assessment and the identification of the on-site or other studies required to meet the requirements of the Kativik Environmental Quality Commission or to respond to the need for additional studies as outlined in this report and in the technical review process.

3. SITE SELECTION

Prior to the initiation of this feasibility study of Taqpangajuk in July 1985, several other sites were identified for the relocation of Killiniq. In particular Bell Inlet was considered from 1975 to 1982, to be the eventual home for the Killiniq Inuit. This site was dismissed as inadequate after technical surveys in 1977, 1978 and 1982. In 1982, the Inuit suggested Taqpangajuk as a potential site and its potential was confirmed in 1982. Although a relocation from Killiniq was occasioned by factors of culture, history and political jurisdiction, these were reinforced by the physical conditions and environment of Killiniq that greatly restricted the growth of community infrastructure and the accessibility of the community by plane and by the land and water transport used by Inuit.

The Inuit know the coast well in all seasons, and intensive discussions indicated several small seasonal camping areas, but very few sites that could house a community. The experience and knowledge of Inuit was supported by the interpretation of aerial photographs of the coastal zone. A map of seasonal camps was produced through life history interviews and then each of these places was identified by Inuit in terms of the presence or absence of the most obvious features required for a settlement. When this is viewed in terms of the aerial photography of the region or even a review of topographic contours, the limitations of the region for large settlements become very clear.

The east coast of Ungava Bay is a rugged coast with fjords that penetrate far inland. The coastline is usually formed from large expanses of rock jutting into the sea. The land rises to the east towards the Torngat Mountains in an irregular pattern of hills and valley systems with little flat or gently rolling areas. There are few beaches or protected harbours, and tides of approximately eight meters cause difficult access and navigation.

The problems of potential sites was further complicated by other limiting factors. The community was to be as close to Killiniq as possible, yet south of the zone of more persistent fog, it was to have good access to the sea and land for hunting purposes, and it had to be adjacent to land that could be used for an upgraded airstrip because of transportation needs and concerns with the

delivery of medical services. In 1975, Bell Inlet appeared to have some but perhaps not all of the required attributes. The possible locations are illustrated in Figure 2. An enlargement of the Taqpangajuk area is shown in Figure 3.

Bell Inlet

The original area to be the site of a Killiniq relocation was located in Bell Inlet, some 55 kilometers south of Killiniq. This choice was made in 1975 as part of the Killiniq Category I land selection. A process that took place under the time restraints and pressure of land claim negotiations, but without the benefit of a technical evaluation of the potential for building a new community at the Bell Inlet sites. The community selected Category I land in this region and in January 1977, the Northern Québec Inuit Association (NQIA) was asked by the residents of Killiniq to begin the preliminary studies required for a relocation.

On July 20, 1977, a one-day site survey of Bell Inlet was completed by personnel from NQIA and DIAND. The purpose of the trip was simply to visit the sites and to gather first impressions about their suitability for development. The criteria to be observed included soil stability and drainage, water supply, availability of granular material, suitable building locations, airstrip location, marine access and harvesting potential. A report summarizing the results from this brief survey was prepared and submitted to the federal government. Although no technical studies were carried out at that time, it was obvious from the visit that it would be difficult to build a settlement, which met the criteria at this site. In particular, poor soil conditions and large poorly drained and hummocky areas would create serious problems for constructing both the community and the airstrip. The report warned that all conclusions must be cautiously drawn and that no decision could be made until detailed engineering studies were carried out. The report also noted that alternative sites within Bell Inlet should be investigated.

A second study was carried out by NQIA personnel and the Inuit of Killinq from July 24 to 27, 1978. In this survey, the site visited in 1977 was formally rejected after testing the composition and stability of the soil and reassessing the problems caused by poor drainage. A new potential site was located further

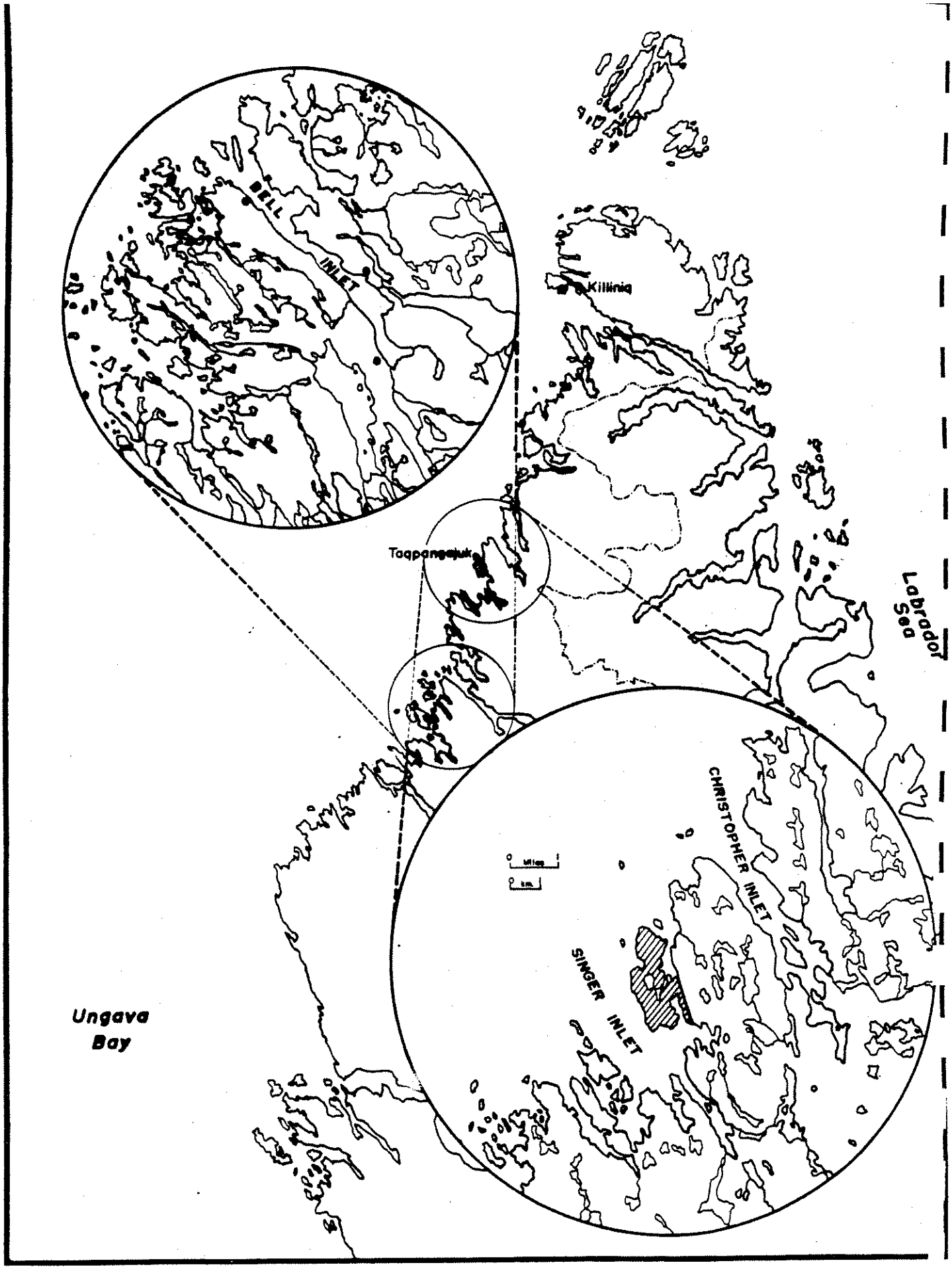


FIGURE 2: Potential Relocation Sites for Killiniq Inuit

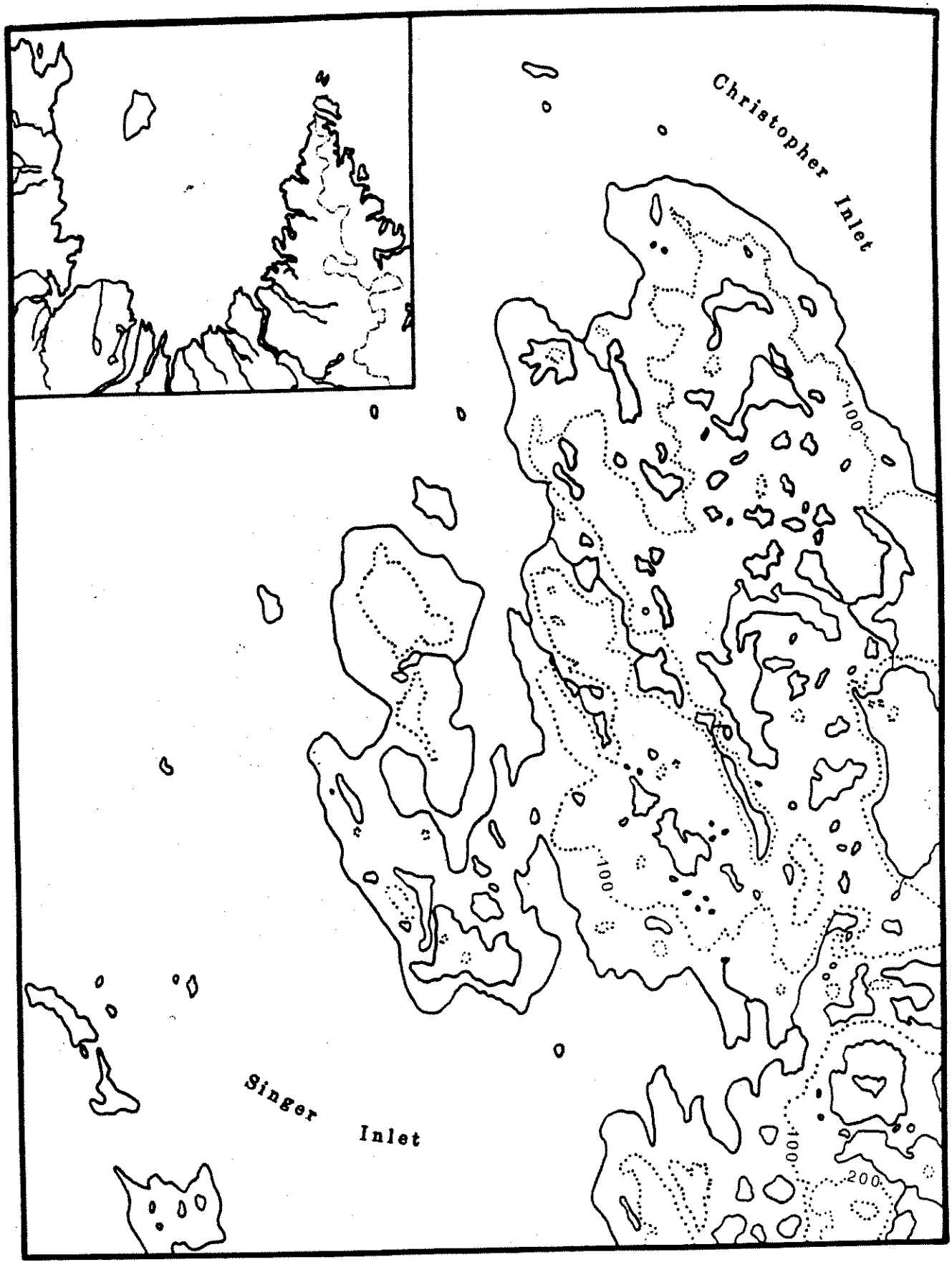


FIGURE 3: Taqpangajuk and Environs

east within Bell Inlet and an evaluation based on the same criteria was made. This site appeared to have better soil and bedrock conditions for a community and airstrip but no specific engineering studies or precise measurements were undertaken. The water supply could not be evaluated although small, shallow lakes were located close to the proposed community. The extent of granular materials appeared to be adequate but no precise estimates of quantities were made. On the basis of this 1978 survey, it was considered that it might be technically possible to establish a community at the new site. Again, however, caution was advised. It was noted that although the site might be adequate for a new community, a engineering study had to be undertaken before it could be accepted for relocation.

During the summer of 1982, a formal investigation of the Bell Inlet site was carried out by a private consulting firm assisted by personnel from Makivik and by Killiniq Inuit living in Kangiqsualujjuaq. The study took place during a four-day field trip in August 1982. Three potential living sites in Bell Inlet had been identified from aerial photographs but all were rejected during the ground survey. The rejection of these sites was based on the engineering evaluation of soil, bedrock, drainage, water supply and marine access. Major problems involving one or more of these physical attributes in relationship to infrastructure requirements for a new community were identified at each site. In particular, the infrastructure concerns included building sites, airstrip, solid and liquid waste disposal, supply and delivery of freshwater and ship offloading. A report describing the environment and potential for each of the Bell Inlet sites was prepared by a consulting firm for the Makivik Corporation.

Taqpangajuk

After discussions with Inuit, a decision was made to travel by canoe to Singer Inlet and evaluate Taqpangajuk as a site the Inuit felt could support a new community. The preliminary findings indicated that it was a site with favorable potential for the developement of a new community. Extensive consultations with Inuit knowledgeable of the area and familiar with the specific requirements needed for a community, indicated that there were no other

potential sites on the eastern Ungava Bay coast between Kangiqsualujjuaq and Killiniq.

Since 1982, the Killiniq Inuit considered that Taqpangajuk would be the site for their new community. The only brief shift in this opinion occured in the fall of 1985. Field work for the Taqpangajuk feasibility study began with an air photographic survey that provided low level stereo color photography for a ten-square kilometer land area centered on Taqpangajuk. The analysis of the aerial photographs indicated that another possible site with potentially favorable attributes might be found approximately five kilometers to the west, at the foot of Christopher Inlet. The area is known by the Inuit as Oogalik.

The 1982 visit to Taqpangajuk left certain questions not fully answered and therefore a decision was made to complete a ground survey that would compare the potential of both sites. The data gathered from this investigation was analyzed, and it showed that Taqpangajuk was better, primarily because of a more solid land base and easier access to the sea. At the Technical Committee meeting held in Montréal on October 17, 1985, Taqpangajuk was formally selected as the future community site for the relocation of the Killiniq Inuit. All further studies would consequently focus on Taqpangajuk. A detailed evaluation of criteria used to evaluate the two sites is provided in Volume II. A report on the aerial photographic interpretation of each area is also included.

SECTION II

THE FEASIBILITY OF TAQPANGAJUK:

THE SITE, INFRASTRUCTURE, PLANS AND PROJECT COSTS

4. THE PHYSICAL SITE

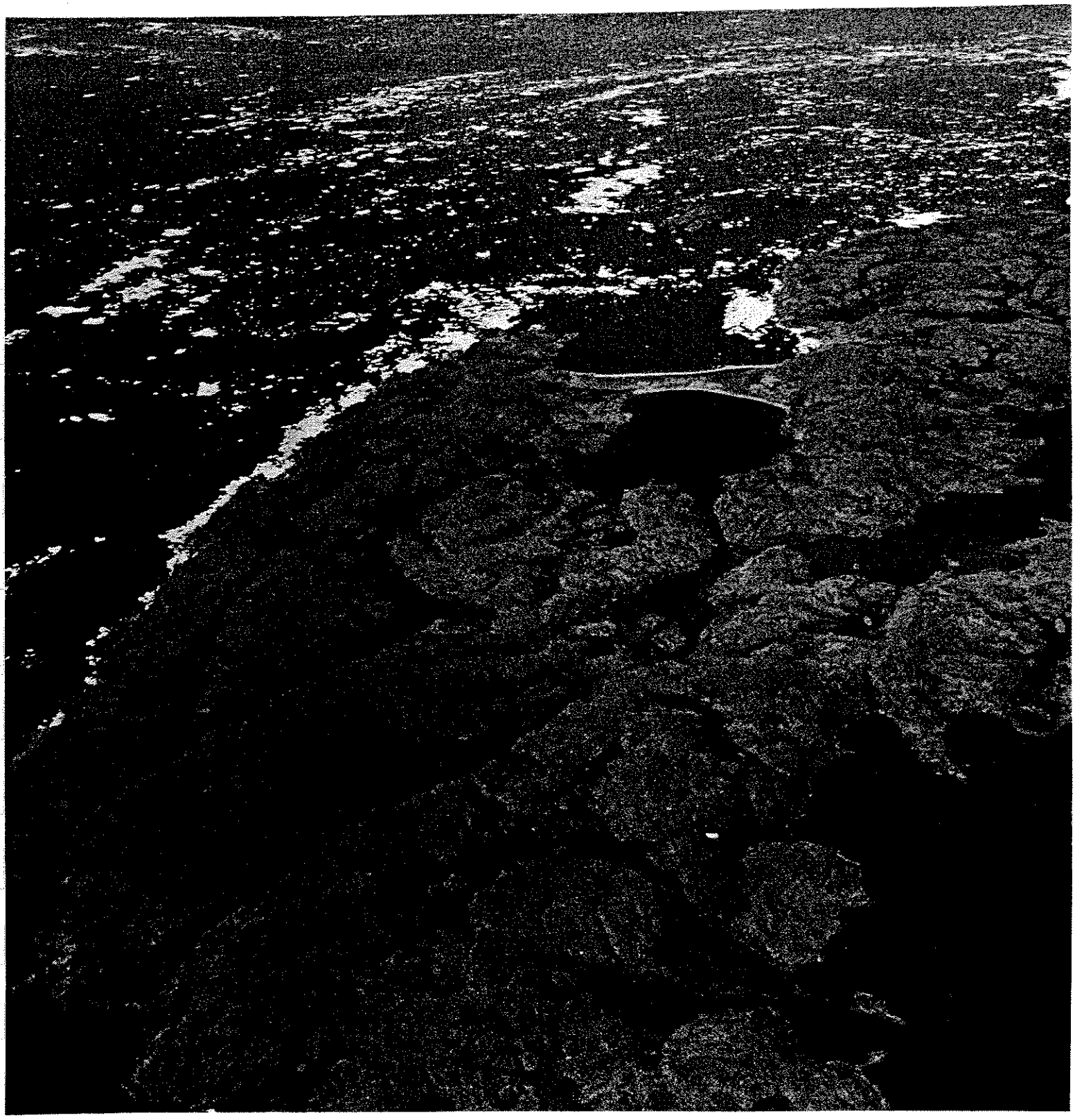
The Setting

The Taqpangajuk peninsula, located on the northwest side of the entrance to Singer Inlet, is characterized by bedrock thinly covered by moraine. The alignment of the rock masses parallel the northwest direction of the fjord which is also characteristic of the regional glacial relief. The entire area is in the zone of continuous permafrost.

The peninsula has a total area of 250 hectares, is connected to the mainland by a 330 m wide isthmus and is characterized by a cove closed by a sand bar which isolates a brackish lagoon. Except for the sandy beach of the sand bar, the coast is composed of rock and large boulders extending down and into the sea. The exact configuration of the coastline depends on the stage of the tide. A general view of Taqpangajuk from the air and on the ground is provided on the two plates of photographs that follow this section.

The rock is basically sound granitic gneiss with occasional granitic intrusions of the pegmatite dike type. In areas where the rock is exposed, as outcrops, it is superficially weathered and the surface is often broken by frost heaving. Where the relief is steeper, this activity produces talus deposits. These taluses, and the sand and gravel of the marine transgression zone on the beach, are the only granular deposits with any potential.

Taqpangajuk offers exceptionally beautiful views in all directions. It is located so as to overlook Ungava Bay, it has hilly and interesting terrain within the local area and it has a distant view to the Torngat Mountains. As can be seen on the topographic maps of the site, there are three potential development areas, which together offer a total available space of 33,8 hectares. However, the study was confined to the most southerly site, since it alone has an area of 24 hectares and can thus accomodate a village large enough for 432 inhabitants if the density is increased, since this is the population forecast for Taqpangajuk in the year 2010.



Oblique Air Photo of Taqpangajuk
as seen from approximately 5,000 ft.

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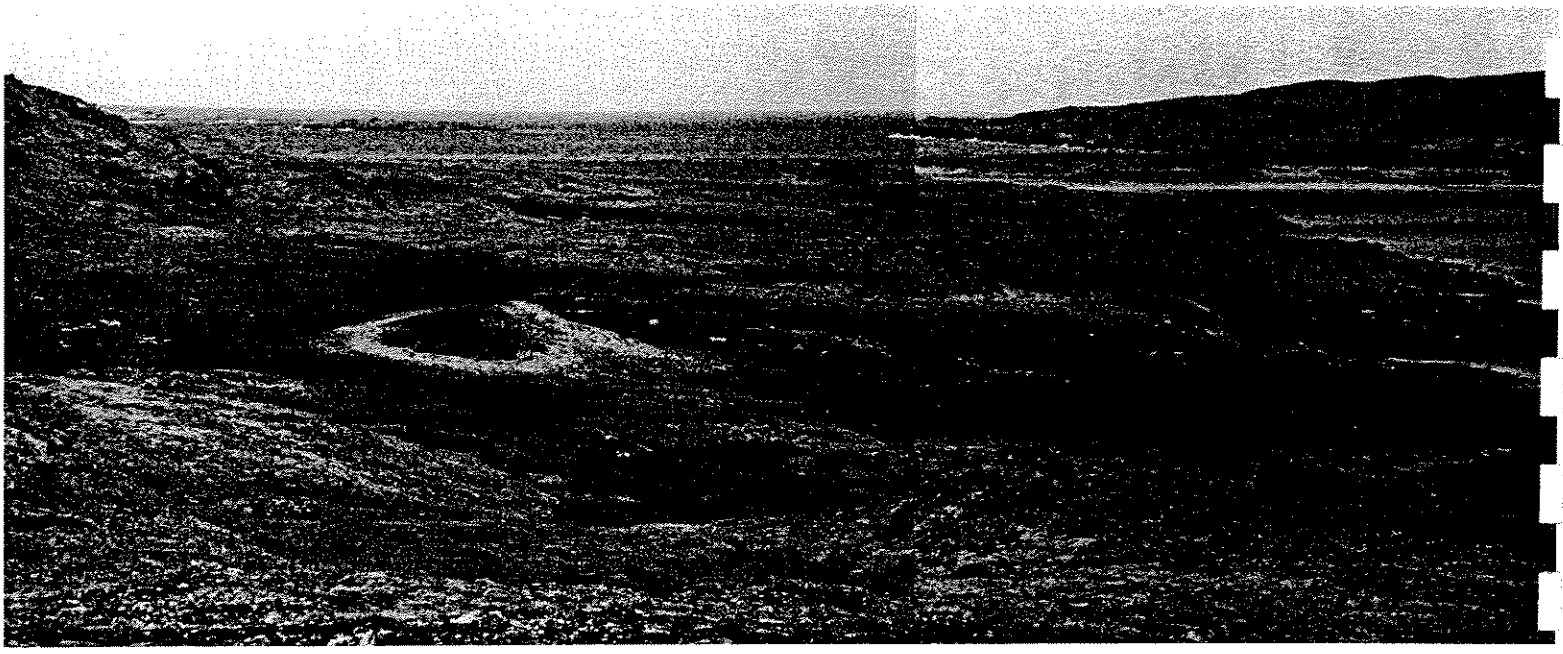
Taqpangajuk



The potential development area is located at the base of a rocky ridge which could serve as a natural barrier between the village and infrastructures such as the powerhouse, tank farm and municipal garage which could be a nuisance to the residents. The area's elongated shape oriented in a northwest-southeast direction would permit the roads to be aligned with the prevailing winds in order to avoid snow buildup. The rocky ridges which limit the size of the development area also help protect it from the northerly and southwesterly winds. The many small rocky hills on the site could be used for producing some of the crushed material needed to fill in the wetlands. Moreover, once these hills are levelled, they will provide a good foundation for infrastructures and buildings.

The physical elements of the site were evaluated in terms of the six criteria. The first level of evaluation was carried out by aerial photographic analysis. These findings were then checked during two site visits that took place before the onset of a permanent snow cover. The detailed topographic maps that were derived from the aerial photos, served as a primary base for recording and analysing data on the physical environment. The findings from both the air photo and field study were transferred onto these maps for analysis and planning purposes. The topographic configuration of Taqpangajuk, in relationship to proposed location of infrastructure, is illustrated on Figure 6.

Land Availability

A reasonably flat area of at least 16 hectares will be required to build the new community and to provide adequate space for its expansion. In Taqpangajuk, there is a total of 18.5 hectares available, plus an additional 7.9 hectares for further expansion. Sixty-one per cent (61%) of the 18.5 hectares represents good foundation material, while 41% of the 7.9 hectares reserved for community expansion is of an equal quality. Of the primary building sites, 6 hectares or 32% are considered excellent for building on, in that they require no major excavation, fill or other remedial work.

From the findings of the field surveys and data analysis, it is clear that the space available for building and for community expansion is more than

TAQPANGAJUK FEASIBILITY STUDY

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UNGAVA BAY

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DW3

DW2

DW1

C2

C1

LOCATION MAP

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DW1,2,3	DRINKING WATER SUPPLY ᐃᒥᖅᑕᐃ
WW1,2,3	WASTEWATER PLANT ᑭᓇᓐᓂᐅᑎᓕᓐᓂᑦ ᓴᓪᓕᓴᑐᐃᓐᓇᖅ
SW	SOLID WASTE SITE ᓴᓐᓂᓐ ᐃᖅᑕᐃᓐᓇᖅ
PH1,2,3,4	POWERHOUSE ᐃᓐᓕᒪᑎᓕᐅᕐᓯᖅ
MG1,2,3,4	MUNICIPAL GARAGE ᓄᓇᕗᑦᓯᐊᕐᖁᑎᑎ
TF1,2	TANK FARM ᐅᔪᓐᓇᓴᖁᑎ
W1,2,3	WHARF ᐅᓗᓂᐊᕐᓯᖅ
C1,2	CEMETERY ᐃᓱᐃᖅ
R	ROUTE ONE ᐊᔪᕐᓇᖅ 1
R	ROUTE TWO ᐊᔪᕐᓇᖅ 2

N

SCALE / ᐊᑎᓕᓴᐃᓐᓇᖅ

100 0 300m

500 0 1000ft

CONTOUR INTERVAL : 2 meters

ᑎᑎᕋᓕᖅ ᑐᓴᕐᓯᐊᕐᓂᖅ ᐊᑎᓕᓴᐃᓐᓇᖅ 2-ᓂᑦ ᑕᑯᓂᑦ

THE DIMENSIONS OF THIS MAP ARE RELATIVE AND SHOULD TO BE CHECKED BY THE USER

ᐊᑎᓕᓴᐃᓐᓇᖅᑐᑦ ᓴᓇᔨᓴᕐᓂᖅᑐᑦ ᐊᑐᖅᑕᐃᓐᓇᖅᑐᑦ ᐊᑐᖅᑕᐃᓐᓇᖅᑐᑦ ᑕᑯᓂᑦ ᓄᓇᕗᑦᓯᐊᕐᓂᖅ

Prepared for
MAKIVIK CORPORATION ᒪᐃᑭᕕᒃ ᐃᓕᓐᓂᐊᕐᓂᖅ ᓴᓇᔨᓴᕐᓂᖅ

by
KATIVIK REGIONAL GOVERNMENT ᐊᑐᕐᓇᖅᑐᒃ ᖃᓄᐃᓕᒫᓂᖅ

Municipal Technical Assistance Department
ᓄᓇᕗᑦᓯᐊᕐᓂᖅ ᐱᓕᕆᔨᒃᑯᑦ ᐱᔪᓐᓇᐅᑉᐸᓂᖅ ᐱᓕᕆᔨᒃᑯᑦ

DRAWN BY / ᓴᓇᔨᓴᕐᓂᖅᑐᑦ : RG March 10, 1986

CHECKED BY / ᓴᓇᔨᓴᕐᓂᖅᑐᑦ : RG March 10, 1986

File no. ᐊᑎᓕᓴᐃᓐᓇᖅ 53.004

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adequate to meet the immediate and long-term needs of the community, and major excavation, drainage or other site upgrading measures will not be required. Sites required to house infrastructures with specific land and foundation requirements have been identified and can be placed within the new community in a way that will respect safety and aesthetic considerations.

Topography and Drainage

The availability of flat land and good foundation material means that there are no areas now planned for buildings that suffer from poor drainage, irregular topography, an active permafrost layer, or from down slope solifluction.

The areas of level land are underlain by excellent to good foundation materials. There are only scattered moraine deposits, a few small lakes, and no areas of persistent poor drainage or shallow surface water during the snow free season. Nor are there areas of active solifluction or permafrost melt within the area that will be utilized for the community infrastructure. Finally, all of the land surface immediately adjacent to the community that may be required for other types of community purposes, such as play areas, walking routes or activity zones, does not require fill or other modifications in order to be used.

Limited and well-defined areas of wet land and bog exist. Part of the problem that could result from this condition will be significantly reduced by the dikes that are needed to develop the drinking water reservoir and by cutting small drainage channels to collect and disperse the run-off that now collects as surface water during the snow-free season. One other area of bog and drainage will be incorporated into the waste water disposal system as an extra filter for the effluent from the bio-disc, before it flows into the sea.

Granular Material

Very little granular material that can be used for sand and gravel has been deposited in beds that can be easily exploited through surface excavation. The lack of granular material is related to the fact that marine deposits do not

appear to exceed 15 m above sea level. There is also a lack of well-developed areas of glacial till or of down slope talus that can be easily removed for construction purposes.

Granular materials required for building pads, the construction of roads, and for other uses will be obtained primarily by the blasting of bedrock outcrops and by the process of cut and filling. Bedrock outcrops for blasting have been located in close proximity to the community and a detailed map has been made for the cut and fill areas. Plans call for a total cut of 71,000 cubic meters of rock, including blasting a small hill to reduce snow accumulation. The fill required for all purposes is estimated to be 34,000 cubic meters. The places for cut and fill have been clearly identified and form part of the site preparation and to meet the requirements for building pads, roads and dikes. The opinions of the community about where to cut, fill and blast have also been respected and integrated into the plans. Throughout the construction process, and especially for the major requirements for airstrip construction, the blasting and excavation of bedrock will have to be optimized because of the significant lack of naturally occuring granular deposits. During the winter site survey, it was found that a problem with snow accumulation within the living area can be solved by blasting a small hill. This material will be used for crushing.

Water Supply and Quality

There is only one viable source for freshwater, a small "boomerang" shaped lake that is located a few meters south of the main settlement area. It is identified on Figure 4 as DW1. This lake has a water shed of 130,000 square meters. The area of the lake is approximately 17,400 square meters with an estimated volume of 29,900 cubic meters.

The level of water supply will be increased by a series of dikes along the shores of the lake. After the first summer field survey, it was estimated that the dikes must raise the water level by approximately 2.5 meters to provide enough water and to improve the quality of the winter supply by protecting bottom sediments from disturbance. The winter site survey in April 1986, indicated that there was less water than anticipated under the ice. This will tend to reduce the

quantity of winter water and raise the possibility for disturbing bottom sediments. To overcome this problem and to assure an adequate water supply throughout the winter, the system of dikes will be raised an additional 1.0 to 1.5 meters.

Based on an annual precipitation of 400 milimeters and assuming a 50% water loss, the annual flow to the lake will be 39,015 cubic meters. An estimated demand of 21,535 cubic meters for a community of 435 people in the year 2010 means that the level of the lake will be maintained and that the supply can meet the demand now and over the next 25 years without modification of the existing structure or the incorporation of additional sources.

An analysis of the water quality of this lake, and of a similar lake several kilometers to the east, indicated that all of the values are well under the recommended limits established in the Québec drinking water regulations. From this, it can be concluded that the quality of water is excellent and does not require any treatment other than disinfection to prevent waterborne diseases.

Climatic Conditions and Snow Accumulation

Climatic data was not available for Taqpangajuk. There is, however, anecdotal information from several sources and detailed summaries are available from four meteorological stations that have operated in the Ungava Bay and eastern Hudson Strait regions.

From all of the weather data now compiled, it can be assumed that Taqpangajuk will have frequent winds, and that approximately 50% of the commuity area will be exposed to the dominant northwest wind; there will be at least 400 mm of precipitation, 220 mm of which will be rain and 180 mm snow; freshwater ice will form in late November and sea ice in late December; freshwater ice will break up in early to mid-June and the sea ice will break up in July, but may remain in the area as pack throughout July and August; storms, especially those off the north Atlantic, can be severe; and fog, though present, will not be as frequent or prolonged as in Killiniq.

The impact of winds on the pattern of snow accumulation is not yet well known for Taqpangajuk. Since Inuit have never been year-round residents of

the site during recent times, they do not have their usual knowledge of the local environment, especially for snow accumulation and the patterns of melt and runoff. In April 1986, the winter site visit identified areas of heavy snow accumulation which were then mapped and related to the community master plan. The pattern indicates that there are two major zones of snow accumulation. The planned road has been relocated to avoid one of these, and it is planned to modify if not eliminate, the other problem area by blasting a small hill that is the cause of the accumulation.

Coastal Configuration and Access

A tidal range of 6 to 8 meters creates both a low and high tide coastal zone for Taqpangajuk. There are three bays that can provide potential harbour sites. The northwestern bay is directly adjacent to the community but its exposure to the northwest winds coupled with generally shallow waters and reefs make it marginally suitable for use by small crafts and not useable for large crafts. The bay to the northeast is accessible at both low and high tide by freight canoes and at medium to high tides by the 40 to 50 foot boats now being used by Inuit. With more frequent travel, the Inuit feel that they will be able to find a low tide passage for these larger boats into this well-protected bay. This bay is not suitable for sealift vessels. A bay to the south-south-east is accessible at high and low tide to freighter canoes and larger Inuit boats and is considered to be the most logical harbour for community use. Passage and anchorage in this area by larger boats have not yet been confirmed but it is presently considered to have the best potential for off-loading ships and establishing a wharf. Neither the low or high tide configuration should affect the location of harbour and off-loading facilities in the bay south of the community. In order to confirm this assumption, soundings must still be taken.

The remaining coast line along the south and west side of the peninsula is so steep that there are exposed cliffs and a rugged topography at both low and high tide.

Access by overland travel in the winter is limited in this region by the system of interconnecting valleys. Travel by land can only be done to the east

towards the Labrador coast by use of a well-known path through the high mountains. Travel to the north or south requires movement between land and sea ice, and the places of crossing are well known.

5. ARCHEOLOGICAL POTENTIAL

Archeological surveys form an important part of the planning process in Northern Québec. Before construction begins on any major project, it is essential to evaluate the archeological potential of the site and adjacent areas, and to establish a program, if required, for preserving, salvaging or in some other way, protecting the sites. This is required by the Ministère des Affaires culturelles and is also an important part of impact assessment statements.

Four archeological sites were identified in the preliminary survey of Taqpangajuk. All four sites are on 5 m terraces adjacent to small bays. Not all of the areas that may be affected, either directly or indirectly, by the construction of Taqpangajuk have been surveyed for their archeological potential. This is particularly true in the area that has been designated for the airstrip. Two of the sites identified only contained traces of prehistoric occupation, and two others showed components of numerous occupations, including: prehistoric, historic and contemporary. The last two sites recorded showed only one historic and one contemporary Inuit occupation. Lithic and bone traces were collected in one of the sites.

None of the four sites presently identified appear to have major importance in terms of their archeological potential. Nevertheless, further study is needed to locate other areas of archeological potential and the sites now identified along with those that may be identified through further field work must be evaluated and a strategy for their excavation or preservation must be established.

The archeology of Taqpangajuk appears not to be vital for an understanding of local or regional history, or for resolving problems of arctic prehistory. Nevertheless, the location of the known sites indicates that they could be disturbed, if not actually destroyed, by the construction process or infrastructures that will be built for the new village of Taqpangajuk. Consequently, a systematic archeological survey must be planned for the Taqpangajuk development area. An archeological inventory will be made at all the sites that are within the area of potential disturbance in the new village. This

means that all the sites designated for construction of the infrastructure must be inspected, including the sites of the proposed buildings, roads, water and sewage systems, solid waste dump sites, quarry sites, burrow pits and airstrip. A plan for salvaging or protecting the sites will be established, and, if excavation takes place, the artefacts and their interpretation should form part of a local history for use in the Taqpangajuk school.

PLANNING AND INFRASTRUCTURE

The plan for Taqpangajuk is based on ten primary infrastructure units that are considered to be the essential components required for northern living. The selection of the preferred type of system to meet each of the infrastructure requirements is based on the standards set out by Québec, and adhered to in the work of Kativik Regional Government. It is also based on the experience acquired by the Municipal Technical Assistance Department of the Kativik Regional Government in the engineering and planning of infrastructures for the other 13 communities.

For each infrastructure unit, possible options were identified; a preferred option has been selected and justified on the basis of a design criteria, and period, space needs, environmental constraints, Northern Québec standards and applications, Inuit preference, and cost. Details on the options, on the requirements and on data used to make infrastructure decisions are provided in detail in Volume II.

In addition to the required infrastructures, there will be other facilities needed for the normal operation and life of the community. Some of these facilities are the responsibility of particular agencies, while others will be supplied by the organization responsible for a special service or activity. These units are identified, and a cost has been established so that the community plan reflects all of the infrastructure needs that are required in all Northern Québec communities or which were identified as important by Inuit, engineers and planners. No allowance has been made at this time for alternative energy sources or for special building and insulating techniques other than those presently utilized in Northern Québec. This does not deny the possibility of alternative energy use or changing standards, but it does recognize that all communities are still being planned and built according to the standards stated in this report. A summary of all major infrastructure and its cost, is presented in Table 3.

Inuit Concerns with Infrastructure

The consultation process carried out prior to, and during this study, has identified the major concerns of the Killiniq Inuit that they feel must be incorporated into planning the new community. These concerns include the priorities expressed by Inuit for certain types of infrastructures that are needed to carry out specific services in particular ways.

The Inuit who lived at Killiniq were the most isolated people in Northern Québec and perhaps in the Canadian Eastern Arctic. Frequently, poor weather conditions in all seasons of the year, the lack of adequate land or ice airstrips, and a geographic location that fell outside of any transportation network, created this isolation. The population was small and there were no easily accessible neighbouring communities. The Inuit of Killiniq have consistently identified three basic concerns over the type of infrastructure that would be required before they are prepared to relocate and to feel secure. The three essential infrastructure units are a fully equiped nursing station, an airstrip equal to that being built in other communities, and housing that reflects the current standards of Northern Québec. It is also proposed that the housing for Taqpangajuk incorporates the findings from the Inuit Housing Study.

The need for these three units represents a fundamental concern that people have about the improvement in community life from that which they experienced before the closure of Killiniq. People are afraid to return to a community in which they may be deprived the essential services represented by these infrastructures. This fear runs deep within the Killiniq Inuit and worries that persist from the late 1970's are a cause of some reluctance to make a commitment to relocate. The concerns became themes that were repeated again and again in the interview and consultation process. They are also stated in written responses to questionnaires that were distributed soon after the closing of Killiniq and in the discussions and minutes of meetings that were concerned with the Inuit attitudes towards its closing.

The Master Plan

The research and consultation process had as its objective the development of planning scenarios that would then be consolidated into a single integrated plan. This process was followed and the plan illustrated in Figure 7 has been fully discussed and approved by the Killiniq Inuit. The plan respects 12 objectives that were essential in guiding its development.

- identify the boundaries of the development area and maximize the land use inside this zone;
- locate the residential areas around a central core of community, commercial and administrative uses;
- locate the buildings in such a way as to maximize sunlight inside the houses;
- keep a reasonable distance between the houses;
- locate the school, playground and community centre so that they are isolated from the houses and yet not too far away;
- preserve the natural features of the site;
- provide access to Ungava Bay;
- maximize the use of the seashore;
- align the roads with the prevailing winds;
- avoid snow accumulation;
- isolate polluting infrastructures from the village;
- carry out all major earthwork during the first phase of development so as to avoid this kind of activity when the people are living in the village.

The main area selected for settlement has been planned to account for concerns. The first was the physical characteristics of the site with respect to foundation material, drainage, slope and landscape features. The second was to accomodate the living area preferences of Inuit with the physical realities of the site. This involved their concerns for locating the living area with respect to inland and marine access, small boat harbours and equipment storage areas, access to other community facilities, safety, especially for small children,

TAQPANGAJUK FEASIBILITY STUDY

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UNGAVA BAY

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MASTER PLAN

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- MULTIPLE USE AREA : COMMERCIAL, ADMINISTRATIVE & COMMUNITY USE
  ᐊᒥᓱᓂ ᐊᑐᐹᓐᓇᑐᓂᖅ : ᑭᓇᐅᔭᓕᖅᑐᒥᓂᖅ ᐊᓕᓇᓂᑦ, ᓄᓇᕗᑦᑎᓂ ᐊᑐᐊᓗᒃ
- COMMUNITY USE
  ᓄᓇᕗᑦᑎᓂ ᐊᑐᐊᓗᒃ
- RESIDENTIAL, SINGLE DWELLING
  ᐊᓂᕐᓀᓱᐅᔪᓂᖅ, ᐊᑕᐅᓂᖅ ᐃᓗᐃᑦ
- RESIDENTIAL, TWO & MULTIPLE DWELLING
  ᐊᓂᕐᓀᓱᐅᔪᓂᖅ, ᓯᑭᐃᓂ ᐃᓕᓴᓂ ᐊᒻᒪᓗ ᐊᒥᓱᓕᔪᓂᓂ
- PLAYGROUND
  ᐋᔪᓚᐅᕐ ᓴᓪᒥ
- WAREHOUSE & GARAGE AREA
  ᓴᓇᐃᐊᓐᓇᖅᑐᑎᑦ ᐊᒻᒪᓗ ᓄᓇᒃᓴᖅᑐᑎᑦ
- SPECIAL USE
  ᐊᐃᓚᖅᓯᓂᑦ ᐊᑕᐅᓯᒋᐊᑦ
- UNLOADING AREA
  ᐅᓴᐃᑦ ᐊᖏᓂᑦ
- FUTURE RESIDENTIAL DEVELOPMENT AREA
  ᓄᑖᓂᒋᑦ ᐊᓂᓵᑎᐅᔪᓐᓇᖅᑐᖅ
- ROADS (Right of way : 15 m)
  ᐊᑐᒥᑦ (ᓴᓇᓂᓪᓚᒃ : 15 m)

SCALE / ᐊᑎᓴᒪᓕ

CONTOUR INTERVAL / ᐊᓂᓵᑎᐅᔪᓐᓇᖅᑐᖅ ᐃᓗᐃᑦ ᑭᓇᐅᔭᓕᖅᑐᒥᓂᖅ

Prepared for
MAKIVIK CORPORATION
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by
KATIVIK REGIONAL GOVERNMENT
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Municipal Technical Assistance Department
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Sciences ᓯᓚᑦᓯᓂᑦ : Bruno Cotte

Drawn ᐊᑐᐊᓗᒃ ᐅᓪᓗᕆᓂᖅ : B.C. April 15, 1986

Initialed ᐃᓗᐃᑦ ᐊᑐᐊᓗᒃ : François Cyr April 15, 1986

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protection if possible from wind and snow accumulation, and a view of the sea and coastal area.

The village center will group together a variety of structures and activities on lands that are to be used by all the community members. This area forms the primary physical and social core of the community and includes the school, playground, municipal building, community center, nursing and police station, fire hall, community freezer, store and church.

The two residential areas are adjacent to the community center, one on the northeast side and the other to the southeast. The mix of duplexes and single dwellings that are now planned for the residential area will allow for maximum light to reach each individual unit. The houses are arranged to provide good views of the land and sea and to "fit" the contour of the land. All noxious and special use areas are outside of the village core and residential zones.

Living and Activity Space

The land at Taqpangajuk has a potential for development that includes 33.8 hectares. The main site that forms the development area around which a community plan has been developed is 24 hectares. The first phase of community development requires 11 hectares of land. The remaining 13 hectares are sufficient to meet the housing and other space requirements for the projected population of 432 Inuit in 2010.

Housing Units

The type and quality of housing is one of the most important elements in community life. The importance of housing is continually stressed by Inuit throughout Northern Québec. In all communities, the housing style and function are determined by the standards of the Société d'habitation du Québec.

Inuit are not fully satisfied with this housing and feel trapped between their absolute need for improved living conditions and their lack of choice for

meeting this need. In order to change the situation, a major study on Inuit housing was organized and carried out by Inuit and non-native consultants. This study has resulted in new designs that incorporate Inuit perceptions of adequate living space and house functions. Prototypes are planned for construction in 1986 in Kuujjuaq. Two important concerns of the Killiniq Inuit towards their housing is:

- Dwelling on one floor is preferred because it is easier to escape in case of fire and because it is more convenient for the handicapped and the elderly.
- The single-family dwelling is what the Inuit truly want. The duplex models, even with added improvements, were clearly and firmly rejected. We could expect the most satisfaction from the Inuit concerning their housing if this need was met.

Road System

Aside from the community streets, a single road is planned to service the wharf, industrial area, wastewater treatment system, drinking water point, solid waste disposal site and airstrip. This road interconnects with the residential streets, and it has been designed to minimize snow accumulation and poor drainage problems. The total length is 6 km. The road is 7 m wide with a 15 m right of way.

Treatment and Delivery of Potable Water

The water, because of its excellent quality, will only require treatment for waterborne diseases. The Québec standards restrict piped water in communities of less than 500. It would also be extermely expensive to instal below or above ground pipes for water delivery. The system for delivery will be by water truck with a 6,700 L capacity. The truck will be filled and the water will be treated at a pumphouse situated at the water reservoir. The quality of the water supply will also be protected from surface pollution by a fence that will enclose the reservoir.

Wastewater Treatment

The treatment system for Taqpangajuk will be a rotating biological contactor (RBC). Other systems were considered and rejected for reasons of health, environment or pollution, or because the natural conditions of the site were not favorable. The RBC is now the prefered option recommended by the Ministère de l'Environnement du Québec for Northern Québec communities. The capacity of an RBC will initially be enough for 400 persons. The effluent will be discharged into a small and shallow adjoining lake, from which it will pass through a peat bog before flowing into the sea. The lake and bog system will provide additional treatment of the effluent ensuring high overall removal percentages and health protection for the population.

Solid Waste Disposal

The solid waste disposal site is located on the north shore of the isthmus joining the Taqpangajuk peninsula to the mainland. South of the disposal site is the road leading to the airport. This site will be far enough from the village and far enough east to protect the population from odors and smoke, and it will not be visible from the village. The waste site will be 15,200 m^2, with a projected life span of 20 years.

Hydro-Québec now has a policy that all used oil generated by the production of electricity and all transformers no longer in service must be shipped South for disposal. This will eliminate the most obvious source of toxic waste. The solid waste disposal site will thus be used for domestic wastes, which will not include "honey bags". The leachate from such a site will have a very minor effect on the receiving environment.

Powerhouse

Hydro-Québec has indicated that, if the foundations are adequate, a powerhouse will be built for the community. Such foundations (rock) have been found on the west shore of the peninsula. This location is separated from the

living area by a ridge which will provide a natural sound barrier. The diesel generators will generate from 50 to 800 kw. The generator capacity will be determined by studies to be carried out by Hydro-Québec once the number of facilities are known and the light and other electrical energy needs are determined. Transmission will be by above ground lines.

Tank Farm

All power and fuel needs will be supplied by fossil fuels that are stored in large rigid frame tanks. Two tanks will be required for Taqpangajuk: a 1,600,000 L tank for fuel oil and a 320,000 L tank for gasoline. The tank farm will be built by a private company or by the Fédération des Coopératives du Nouveau-Québec.

Safety measures include a dike around the tanks to contain a spill and they must be isolated from the built up part of the community. They will be located near the power house on firm bedrock, and will be 400 m from the community, behind a ridge for aesthetics and community safety.

Drainage Works

Some wetland areas will have to be drained and backfilled with crushed material to provide sound foundations for infrastructure and for site improvement. The only major area found in the fall survey is adjacent to the proposed drinking water lake. The diking of the lake for drinking water purposes will stop or greatly reduce its discharge. A drainage system of trenches, interceptor drains and ditches will also be installed. Further site analysis may identify other areas for drainage works, especially in relation to the road and house sites. Nevertheless, no major areas are expected to be identified during the next study of the site.

Airport Facilities

According to Transport Canada's survey of the area, one of the sites identified during the fall field survey is a good location for the construction of a 1,070 m runway including all support facilities. The space needed for this infrastructure is 72 ha. This does not put any constraints on other land use needs since it is located outside the living area, approximately 1.5 km from the community. The foundations are rock, and construction will require the blasting and crushing of materials.

The development of air services is based on a program to upgrade airport facilities in all Northern Québec Inuit communities. An Agreement signed between Canada and Québec recognized the possible relocation to Taqpangajuk and stated in clause 16:

> Notwithstanding clause 11, the provisions of this Agreement shall apply to the villages of Umiujaq (Lac Guillaume-Delisle) and Taqpangajuk (Singer Inlet) in the event certain communities are rehoused at these locations, subject to agreements to be reached between the parties and to the required authorization being obtained and the necessary funds being available.

For Taqpangajuk, as for all other communities in Northern Québec, the only all season link with suppliers of goods and services and the outside world in general is by aircraft. While the sealift will bring equipment, construction materials and dry goods once a year, air transportation is the only means of transportation of people and becomes crucial in matters such as medical evacuation. The Northern Airstrip Infrastructure Improvement Program was undertaken because Northern Québec airstrips were commonly described as "pitiful or dangerous".

The rationale behind the Agreement was the creation of a standardized and integrated network of airstrips. The new 1,070 runaway will have airport terminal facilities, runway lights and a non-directional beacon. Given this situation, any shorter runway or less equipped airport facilities would be counter-productive and have negative effects on the air transportation system which is being designed for Northern Québec. The upgraded landing strip at

Taqpangajuk will also have the effect of establishing an important node in a larger airstrip network that should once again recognize the strategic location of the northern tip of the Québec-Labrador peninsula.

TABLE 3

COMMUNITY COST ESTIMATE
TOTAL COST OF PROJECT OPTIONS

INFRASTRUCTURE	Option 1	Option 2	Option 3	Master Plan
48 houses	5,835,000	5,835,000	5,835,000	5,835,000
School and Playground	2,200,000	2,200,000	2,200,000	2,200,000
Nursing Station	725,000	725,000	725,000	725,000
Drinking Water and reservoir	300,000	300,000	300,000	300,000
Wastewater	700,000	700,000	700,000	700,000
Solid Waste	100,000	100,000	100,000	100,000
Powerhouse	3,350,00	3,350,000	3,350,000	3,350,000
Tank Farm	700,000	700,000	700,000	700,000
Drainage Works	100,000	100,000	100,000	100,000
Dikes	150,000	150,000	150,000	150,000
Municipal Equipment	1,315,000	1,315,000	1,315,000	1,315,000
Other Buildings and Infrastructures	4,845,000	4,845,000	4,845,000	4,845,000
Power Lines	401,000	410,000	408,000	368,000
Foundations	2,465,000	1,855,000	1,800,000	1,014,000
Roads	1,108,000	1,123,000	1,103,000	1,026,000
Sub-total	24,294,000	23,708,000	23,631,000	22,728,000
Airstrip	9,000,000	9,000,000	9,000,000	9,000,000
Special costs	786,000	786,000	786,000	786,000
TOTAL COST	34,080,000	33,494,000	33,417,000	32,514,000

This table includes the cost for the required surveys, site preparations and the transportation and construction of all infrastructures described above. All of the costs are in constant dollars.

SECTION III

SOCIAL AND ECONOMIC DEVELOPMENT, THE PLANNING PROCESS AND IMPACT ASSESSMENT

7. REBUILDING A BROKEN COMMUNITY

Establishing the social and economic feasibility for a northern community is a difficult and very subjective undertaking. For the future community of Taqpangajuk, the situation is even more complicated. This is because the history of events that gave rise to the situation is very complex and because of the difficult problems and issues that the Inuit of Killiniq must now contend with, but can not discuss among themselves on a day-to-day basis. There are no easy solutions, and one feasibility study, can not identify all of the critical social and economic components.

Taqpangajuk exists as a community of families, yet it does not actually exists as a place to live. It has roots that go deep within the territory and people of the northern reaches of Québec and Labrador, yet the establishment of Taqpangajuk itself is at a new site that has never been occupied for long periods of time by the people so committed to the relocation. It is far from an experiment, yet it is certainly a new experience. As a community, Taqpangajuk will bring displaced families back and reunite them with each other and with the territory. But returning to a particular and familiar place is not the same as returning to an earlier time. The principle that must be encouraged is the right of the Killiniq Inuit, interpreted in its largest social meaning, to have the opportunity to continue their social and economic development. The feasibility study had therefore to address the question of "how to rebuild a broken community?". This question is complex and the solutions will not come easily. As pointed out by one of the Inuit:

> When we were moved out, we moved to nothing... [and that is why}... we are not simply fighting for the relocation, but for everything about our life that will then follow.

The social and economic development of Taqpangajuk will evolve from a base that is grounded in the patterns of social organization, economic activity and land use that characterized Killiniq, and partly from new forms of economic and social activities and options that are starting to emerge throughout Northern Québec. It is far too early to prepare a "blue print" for this recombining and emergence. A master plan can be created reasonably quickly for the

community as a physical entity. Now a much slower planning process must come into existence merging the physical community with the social and economic lives of the people. This plan will link people to a past and to a future and it will build self-confidence as well as infrastructures.

How this will be accomplished, and what the specific goals should be, must be determined by the Inuit themselves. Even within this group, however, these questions are opened to interpretation and differing opinions. There are, however, common threads that tend to unite the perception of Inuit about their future community. A younger person notes that:

> Us younger people have been moving around looking for a place to fit int. But now I know we really have no place for this. I feel all the pressure from being in a community that does not want us. You probably think it is only the old people that find it hard. That's not true and they at least have some memories

Another common thread that ties the thoughts of the Inuit is that they all feel that being displaced from their home community has left a deep impact on their peace of mind:

> Getting back a place of their own is important for our old people, because their minds are just wandering around. If this does not happen, our children will follow and their minds will be formed as strangers in another community and they will never have a place for their minds to become content.

8. POPULATION AND DEMOGRAPHICS

The population of Taqpangajuk will be defined at the early stage of community development by three criteria: past residency at Killiniq, historical linkages to the territory and social linkages to other members of the population. Since planning must consider community development over the next 25 years, the growth and composition of the community will no doubt be shaped by new demographic and social criteria. The idea of demographic projections and rate of growth can only reflect certain realities. The expansion of the community is not simply a question of political definition of who is entitled to return nor is it a question of marriage, birth and death. It is much more a question of how Inuit will view and react to an opportunity to take up residency in the Killiniq area. Therefore, the demographic trends will unfold slowly.

Social Formation of Taqpangajuk

The eight years since Killiniq was closed, along with the four years of population decline that preceded this closure, created complex social tensions in the Killiniq population. The difficulties of discussing issues and making decisions relevant to the community, now dispersed in five host communities, helped accentuate these tensions. The situation that developed during this period had a direct impact on the process that would determine the rate of growth. This impact could be measured in numbers or in more subtle ways such as the social linkages and the age, sex and kinship composition of the new community.

The need for researchers to meet and talk with Inuit about many aspects of a new community meant that the feasibilitty study itself served to animate people's interest in relocation. This process was the first real evidence most people had that this move was, in fact, possible. During the eight or more years since families left Killiniq, it was logical to expect that some individuals would slowly lose interest. This was not because they were no longer concerned with relocating but rather because they saw no real option for changing the situation. As well, certain individuals were reluctant to commit themselves to relocation

because they did not have a clear image of what the new community would represent. Their perceptions were of a Killiniq that was isolated, deprived of services and consequently under a certain amount of social tension. This attitude on the part of some people should be expected, and it is very similar to what happened during the early stage of the relocation process for the new community of Umiujaq. The experience from Umiujaq showed that most people were not prepared to committ themselves until they were sure that relocation would occur.

The first round of community consultations was met, therefore, with some degree of skepticism and reserve by certain individuals. However, once they began to realize that the feasibility study was a serious endeavor, that the new community would have a fully developed infrastructure, that it woud function as a municipality under the Kativik Regional Government and that planning would accomodate the growth and future development of Taqpangajuk, in a manner different from Killiniq, the individuals began to gain interest and participate more actively.

The Heads of Family meeting at Kuujjuaq in December 1985, provided an occasion for the family units to come together and discuss for the first time in many years, the social tensions that appeared during the decline of Killiniq. In a long closed meeting, people talked to each other about their concerns with life at Killiniq and started the process of rebuilding a positive social network for the new community of Taqpangajuk. Once this discussion occured and concerns were no longer hidden, the process of community planning began to move forward with enthusiasm and spontaneity. This attitude continued to prevail throughout the consultations that followed in the host communities. The final Heads of Family meeting in May 1986, provided an opportunity for everyone to once again come together to participate in decision-making and it helped to consolidate and reinforce the new sense of community that began to emerge in the December meeting.

The Target Population

The population that is prepared to relocate has been contacted and clearly identified. It represents 104 people who will form the first phase of settlement. This group is referred to as the "core group" and includes all of the residents of Killiniq who either moved away on their own at the time in which services were being reduced, or those who were relocated into host communities in February 1978. The individuals and their family units that comprise this population are identified in Appendix VI of Volume II.

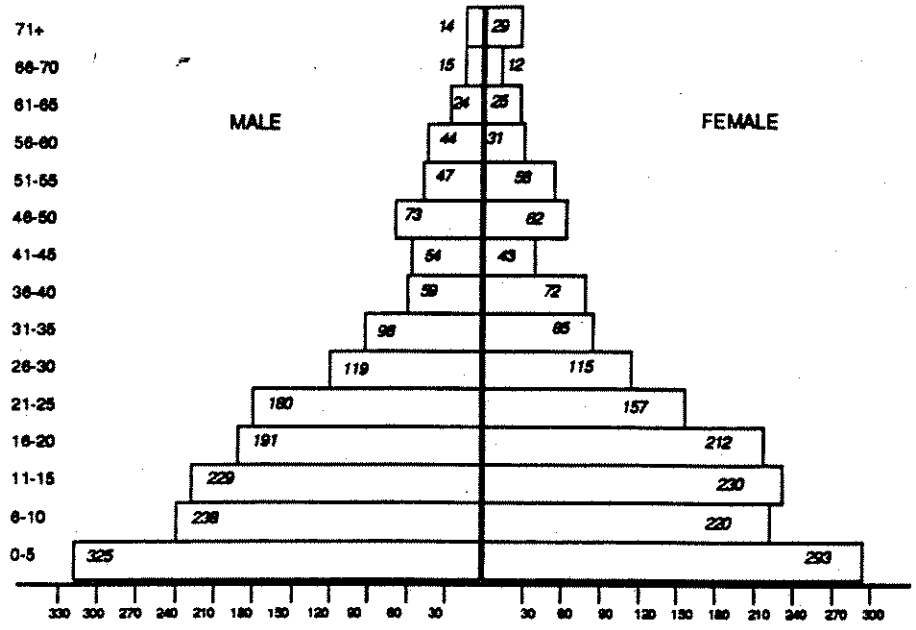
The target population represents the population level around which the first stage of community infrastructure will be planned. It is this group that is being directly consulted in the feasibility study and who is involved in discussions and decisions about the development of Taqpangajuk. The demographic characteristics of this group are illustrated in Figure 8. For comparative purposes, a generalized population pyramid for nine Northern Québec communities is shown in Figure 8. It should be recognized that there are significant irregularities in the demographic structure of the target population. In particular, there is the imbalance in the ratio between males (61%) and femlaes (39%), and young (60% under 21 years of age) to old (40%). The implication caused by these problems must be identified and attempts made to solve them.

Population Growth

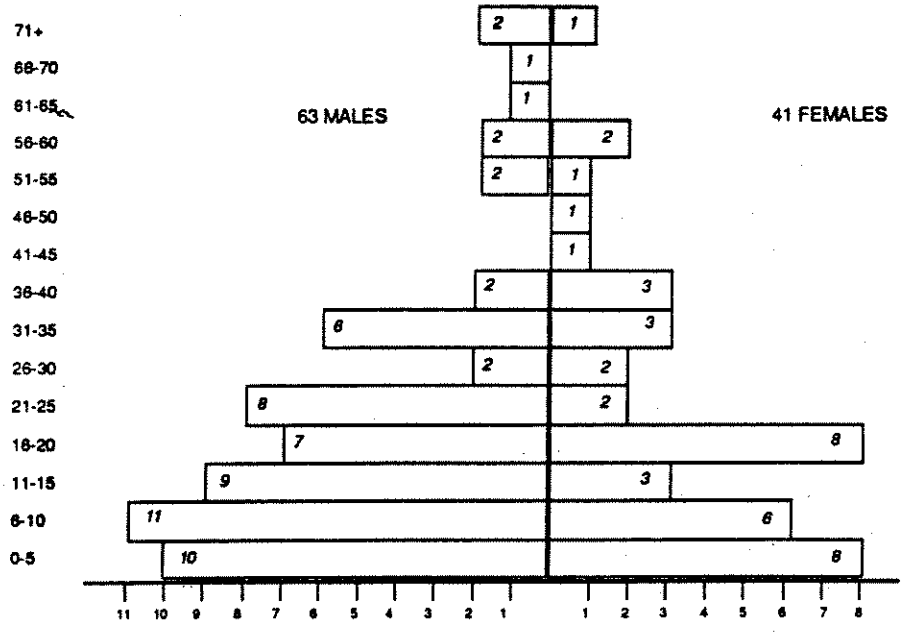
The 104 individuals planning to relocate will provide a population base that will then be enlarged by immigration as well as by normal population growth. Imbalances in the age/sex composition within the target group can best be addressed through the movement of new families to Taqpangajuk.

A projected growth rate including natural increase and immigration of 3.8% has been derived. This rate of growth suggests a community of approximately 300 people by the year 2000, with an expected level of 500 by 2025. The physical site characteristics and the projected infrastructure now being planned are consequently fully adequate for incorporating this rate of

FIGURE 8
AGE-SEX COMPOSITION - TAQPANGAJUK AND NORTHERN QUEBEC



NINE NORTHERN QUEBEC COMMUNITIES



TAQPANGAJUK CORE GROUP

This pyramid represents the exact age of the former inhabitants of Killiniq who are to be relocated to Taqpangayuk. As can be seen, 59.6% of this population is under twenty-one (21) years old, which means that there will probably be a large increase in the population in the coming years. However, one can also see a large imbalance between the sexes. Women only make up 39.4% of the total population, which could have a negative impact on the demographic growth of the community in the long term.

population growth for the 25-year planning horizon. The expected growth rate of Taqpangajuk through natural increase and immigration is shown in Table 4.

TABLE 4

ESTIMATES OF POPULATION GROWTH, 1985 TO 2010

Year	Natives	Non-Natives	Total
1985	162	10	172
1986	168	10	178
1987	175	10	185
1988	181	10	191
1989	188	10	198
1990	195	10	205
1991	203	10	213
1992	210	10	220
1993	218	10	228
1994	227	11	238
1995	235	11	246
1996	244	11	255
1997	253	12	265
1998	263	12	275
1999	273	13	286
2000	283	13	296
2001	294	14	308
2002	305	14	319
2003	317	15	332
2004	329	15	344
2005	342	16	358
2006	355	17	372
2007	368	17	385
2008	382	18	400
2009	397	19	416
2010	412	20	432

The population projection for Taqpangajuk estimates a figure for the non-native population. This estimate is based on the present ratios that exist in other communities maintained over the next 25 years, it may be altered by programs of social and educational development. In a small community like Taqpangajuk, the non-native population is primarily a reflection of the professional staff for education and other services. As little as 10 years ago,

almost all of these services were the exclusive domaine of non-natives. The situation is now changing and there is a steady increase in the number of natives, especially in education. The next 25 years will see a continuation of this trend as more qualified Inuit become available. Such a trend does not mean that non-natives will no longer be in the north, but it does mean that the reasons for their presence could shift.

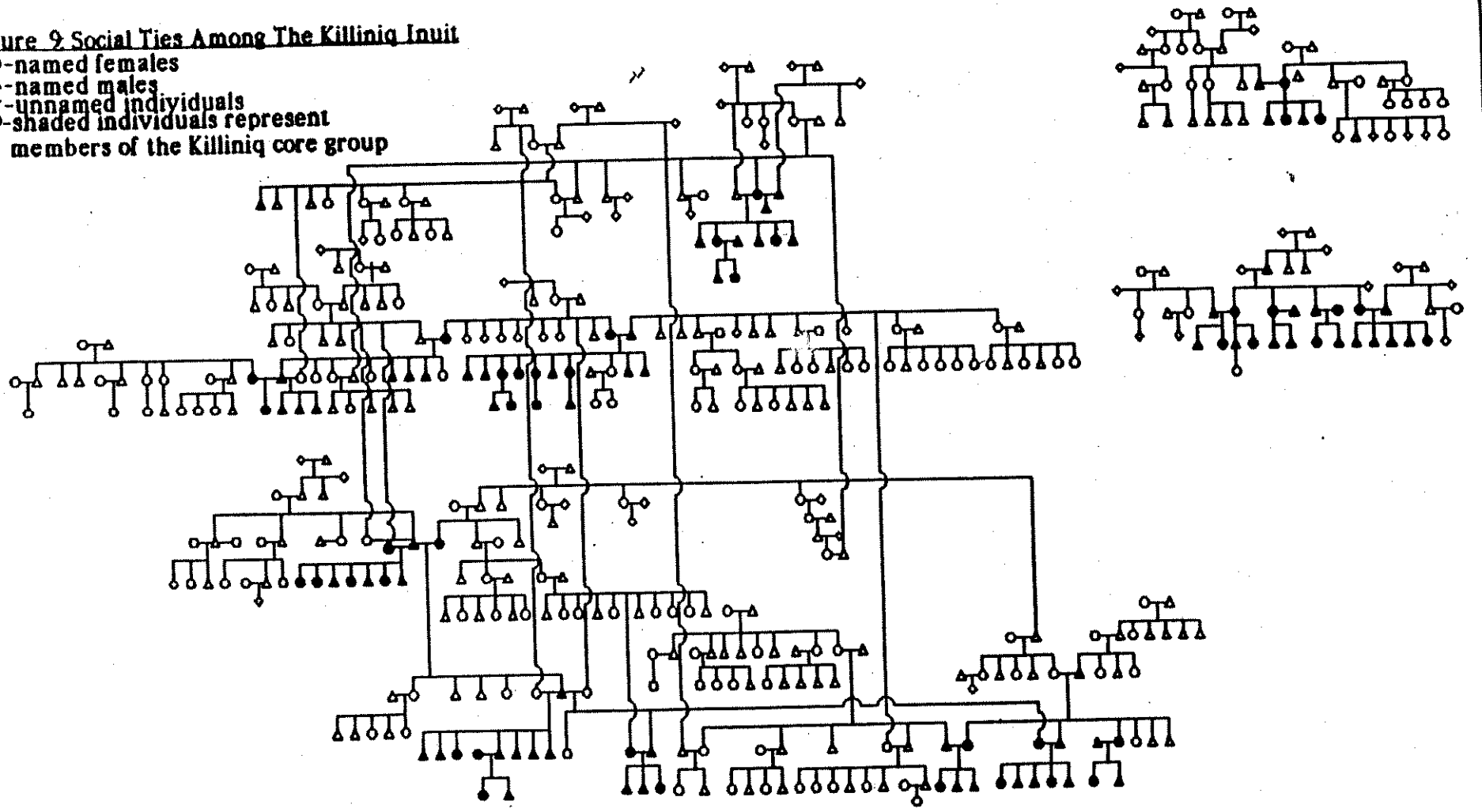
Social Demography

The population of Taqpangajuk is comprised of more than simple figures for age and sex. The proper functionning of a northern community requires a need to evaluate numbers in light of other demographic associations. A reasonable balance of elders and of productive adults in different age groups, the types and distribution of skills within these groups and the number and strength of social relations between all of the individuals are three important associations. The balance in numbers is visible form a population pyramid, but the skills and the social linkages that determine occupational or other demographic possibilities are not visible. In particular, the relationships between people formed by blood or marriage is an important tool for social analysis.

Information on genealogies was collected for all the family groups. The resulting "family trees" and social networks indicate the pattern and intensity of linkages between individuals and families (Figure 9). There is one large and two small kinship groups. Group A contains 12 family units which make up the primary social network for the community. This aggregate of relatives contains approximately 60 individuals of which 25 are from the two largest families. Groups B and C are comprised of four family units that account for the remaining individuals. Two of these are linked by marriage, and two are not. These groups have remained free of linkages to one another because of historical factors of the place of origin which still tends to operate and maintain a separation between those whose origins are within either Québec or Labrador. It should be noted that while the families are linked together in the formal manner of marriages and common law relationships, there is also a considerable amount of adoption between families which adds additional ties.

Figure 9 Social Ties Among The Killiniq Inuit

○-named females
△-named males
◇-unnamed individuals
●-shaded individuals represent members of the Killiniq core group



Further social linking is established or reinforced by sharing of names or other kinship related customs. This type of linkage also tends to "bridge" the formal separation of the three major family groups.

The patterns illustrated in Figure 9 have some important implications for the development of Taqpangajuk. An analysis of the social demography of the community must recognize some of the important demographic limitations that exist within the target population. These can only be compensated for by movement of other families or individuals into Taqpangajuk. The need to make these adjustments is important in order to minimize certain types of social conflicts and to assure that there is an availability of marrigeable individuals with the required skills, in the economically and socially active age groups.

9. THE ECONOMY

The economy of Taqpangajuk will incorporate four primary components: the subsistence exploitation of biological resources; the wage economy, based on the delivery of municipal and other standard northern services; the utilization of government funds for universal social programs and for those programs that are part of special economic and social initiatives; and the development of the economic potential of the regional resources.

At this time in the study it is not possible to provide a precise description of the economic potential from a wage economy of other social and economic programs. It should be noted, however, that the planning, surveying and construction of the community is in itself a source of revenue. Planning must assure that Inuit benefit directly from this revenue.

It should also be pointed out that economic planning will be part of a much longer process that should emerge from the feasibility study. What is clear is that the local and regional resources of Taqpangajuk provide an excellent potential for community based development. This potential was formally recognized in the early 1950's. It was partly developed in the 1960's and early 1970's and it was again formally studied from 1983 to 1985. This activity was based on assumptions about the potential from fisheries development in the Killiniq region. The positive findings from these studies, coupled with new potential from tourism and eider down harvesting gives Killiniq a very positive edge in the utilization of resources to advance local economic development.

The Subsistence Economy

The subsistence economy will be based upon the utilization of local resources that will be obtained through traditional processes of resource harvesting. Data collection and analysis of this activity is still underway, but figures are available to illustrate the high potential of this region for subsistence harvesting. Figures derived from a study done in Killiniq in 1976 and 1977 illustrate the potential yield of resources. In 1976 and 1977, the Killiniq hunters

were able to obtain a significant harvest from marine, freshwater and land resources. The results of their harvesting activity provided a yield of approximately 3.5 lbs of food per person per day. A projection of this harvest activity for a community of 300 and 500 individuals has been made and the figures are presented in Table 5.

Taqpangajuk lies within an area of abundant resources and the figures illustrated on Table 5 indicate how that abundance could be reflected in harvesting patterns. It should be pointed out, however, that the figures do not necessarily represent acceptable harvesting levels for all species. In particular, a projection of the harvest for beluga whale, eider duck and duck eggs indicates that the numbers taken could create problems of resource depletion and consequently, conservation measures and management programs will have to be developed for the subsistence economy.

Killiniq Commercial Fishery Development

For almost three decades, there has been an interest in the commercial development of certain resources near the community of Killiniq. In particular, there have been programs started to commercially exploit cod and the harp seal. In 1983, five years after the closing of Killiniq, an economic feasibility study for the development of an inshore commercial fishery was undertaken. This three-year study, at a cost of $1.8 million, was carried out by the Makivik Research Department and personnel from the Ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec. Its purpose was to survey stocks and establish the commercial potential, primarily for ground fish, Arctic char and scallops.

The fishery was to be developed using boats and technology that would be available for use by Inuit fishermen. The results of the study indicate a potential for Arctic char and scallops and, depending on annual availability, a good potential for cod. It is expected that an Arctic char fishery utilizing traps, and the exploitation of known scallop beds will be the first phase of development that will begin in the summer 1986. A preliminary quota of 5,000 pounds of char has been requested for the Taqpangajuk region in 1986.

TABLE 5
PAST AND PROJECTED HARVEST LEVELS

	Average 1973-75	1976	1977[1]	1990	+	+
Number of Hunters	21	10	8	30	57	95
Population	77	56	47	160	300	500
SPECIES						
Ringed Seal	789	652	530	1950	3716	6194
Bearded Seal	87	70	40	210	399	665
Harp Seal	363	100[2]	178	300	570	950
Ranger Seal	44	6	2	18	34	57
Beluga	8	9	8	8	8	8[3]
Walrus	3	0	2	1	1	1
Polar Bear	14	8	6	6	6	6[3]
Caribou	185	80	22	240	456	760
Arctic Fox	221	47	6	141	268	447
Wolf	13	0	0	0	0	0
Snow Geese	1	1	0	3	6	10
Canada Geese	230	106	106	317	604	1007
Ducks	507	379	240	1136	2160	3601
Duck Eggs	1242	335	420	1005	1910	3183
Arctic Hare	20	4	10	12	23	38
Ptarmigan	2428	843	1816	2528	4805	8009
Murre	400	86	82	258	490	817
Guillemot	74	118	12	354	673	1121
Loon	46	19	28	57	108	181
Arctic Char	4774	217[2]	366	651	1237	2062
Salmon	486	113	196	339	644	1074
Lake Trout	24	0	2	0	0	0
Cod	4265	1272	0	3810	7239	12065
Whitefish	20	0	0	0	0	0
Brook Trout	142	0	0	0	0	0
Sculpin	112	19	18	57	108	181
L-locked Char	0	11	92	33	63	105
Edible kgs	83,725	32,400	29,213	80,334	152,610	254,415
Kg/person/day	2.9	1.6	1.7	1.3	1.4	1.4

[1] Data for Killiniq ended in December 1977. After the resettlement of residents, their harvests totals were incorporated with those of their host communities.

[2] The commercial fishery closed in 1976, which explains the decline in cod, arctic char and harp seal harvests.

[3] Controlled by Inuit-imposed quotas.

Source: Native Harvesting Research Committee: Reports on the Harvest Levels of the Northern Québec Inuit 1973-75; 1976; and 1977.

Note: There is a general decline in harvesting activity. Prior to the resettlement, people were slowly leaving the community as reflected in the population figures and numbers of potential hunters. In addition, services in the community declined, which had the effect of reducing employment and available cash to be used for hunting purposes.

A projected harvest of scallops has not yet been determined, but will be forthcoming after the completion of the data analysis from the 1985 study. Scallops catches in 1985 could not be evaluated, since the research design did not allow for opportunistic fishing of known beds. A measure of success, however, is evident from catches of approximately 100 kg in a 12-hour fishing day. More recent estimates indicate that it should be possible for the Killiniq Fishery to harvest approximately 12,000 kg of mussels during a 50-day season.

The exploitation of cod will depend on annual availability. Catches during the study period ranged from approximately 2,700 to 27,000 kg. The productivity of the cod fishery was also limited by the research design that called for a systematic survey rather than a full-scale commercial exploitation. The other major species with commercial potential is Arctic char, which would be trapped rather than netted in order to improve its value and to minimize the incidental catch of Atlantic salmon. The fishery will utilize a series of Arctic char rivers adjacent to Taqpangajuk and will most probably begin with a very modest commercial quota of 2,300 kg.

A small commercial fish processing facility is in operation at Killiniq. In 1986, a freezer will be installed, a generator set in place and the plans call for the commencement of a small scale commercial fishery. In 1985, Killiniq Fisheries Inc. was established and purchased a 42-foot fishing vessel (the Aiviq). This vessel was used during the 1985 research season and the all-Inuit crew received training in the deployment and operation of this vessel for commercial fishing. It is planned for the Aiviq and its crew to operate the commercial fishery in 1986 along with a shore team running the fish processing facility. It is anticipated that at least four seasonal jobs will be created in 1986. The economic planning for the Killiniq Fishery is designed to maximize jobs rather than "profit". The assumption is that the company will not make a profit since it will expand its work force in relationship to the income derived from the various types of commercial fishing.

Wages and Income

Taqpangajuk, like many other northern communities, cannot be expected to have a well-developed and prospering economic infrastructure within the foreseable future. One can hope for a time in which there is truly an economic self-sufficiency throughout Northern Québec. For now, it is important to recognize limitations and to plan realistically towards solving the larger problems that plague the economic development of Inuit society at both the community and regional level. The creation of a near-shore fishery at Killiniq, the potential offered from the exploitation of eider down, and the outstanding natural beauty of the region provide an important potential that could be exploited in carefully planned programs of local economic development. This potential will not, however, replace the reliance on government programs and on the economic support that is created through the development of municipal services and other community based occupations.

Some of these occupations have been available for many years and are well entrenched within the structure of northern employment. These occupations also provide an opportunity for people to acquire a different type of life within the north and to provide the skills and services that have until now only been available from the non-native residents of northern communities. Evolution of the economic sector will be slow, but in Taqpangajuk there will be an opportunity to introduce new directions and diversity for economic development without creating false hopes for those who choose to live there.

A glimpse of the potential for a money economy is provided by Table 6. The figures in this table represent the standard types of employment available in a community of approximately 160 people. It does not attempt to make any estimates on other types of employment possibilities, and it does not consider the possibility of a small number of local enterprises that may contribute to the general economic well-being. Any attempt to define and to determine levels of income for other types of occupations or activities is not possible at this time. It is likely that within Taqpangajuk there will be small enterprises such as a snowmobile shop, a pool hall, or, when the community grows, a snack bar or small alternative store. Consequently, Table 6 must be considered as a conservative statement of the wage economy.

TABLE 6

CASH ECONOMY ESTIMATES

Municipal Administration	Mayor (1)	$10,000	
	Council (5)	16,000	
	Administrator	26,500	52,500
Municipal Services	Cleaning	6,200	
	Heavy Equipment (2)	27,500	
	Vehicle operator (3)	56,000	
	Mechanic (1)	34,000	123,700
Housing Authority	Council (3)	3,900	
	Manager (1) (part time)	17,500	
	Maintenance (2) (part time)	28,000	49,400
Kativik School Board	Commissioner (1) (per diem)	4,500	
	Director (1)	21,000	
	Cleaning (1) (part time)	13,000	
	Maintenance (1) (part time)	13,000	
	Inuit teacher (2) (half time)	26,000	
	Specialists	15,000	92,500
Nursing Station	Board Member (1) (per diem)	2,500	
	Interpreter (2) (hourly)	25,000	
	Cleaning (1) (part time, hourly)	4,600	
	Maintenance (1) (part time)	4,200	
	Social Worker (1)	7,200	43,500
Cooperative	Manager (1)	21,000	
	Clerk (1)	14,000	
	Stock person (1)	10,600	
	Fuel Delivery (1) (part time)	13,000	58,600
Police	Constable (1)		25,000
Post Office	Postmaster (1) (part time)		6,800
Hydro-Québec	Powerhouse operators (2)		
	(full time)	32,000	
	(part time)	18,000	50,000
Telesat Canada	Agent (1) (part time)		500
Bell Telephone	Agent (1)		1,100

Makivik Corporation	Board member (1) (hourly)	2,400	
	Delegates (daily)	3,000 to 12,000	
	Projects	2,000 to 10,000	
	estimate:		14,000
Killiniq Fishery			40,000
Transfer Payments	Social Assistance	39,000	
	Unemployment	52,000	
	Old Age Assistance	24,000	
	Youth employment and other programs	40,000	155,000
Hunter Support Program			62,000
TOTAL:			**774,600**
Trapping	Fox	15,000	
	Wolf	n.a.	
	Seal	54,000	
	Polar Bear	5,600	74,600
GRAND TOTAL			**849,200**

These figures indicate that there would be a base income of $849,200. This would give a per capita income of approximately $5,300 or a family income of approximately $36,920. The figure appears as a statement of gross income and must be combined with information on the cost of living in order to establish, in time, a reasonable estimate of the Taqpangajuk economy.

TABLE 7

ESTIMATED COST OF LIVING

Projected Air Fares (from Kuujjuaq)

Passenger (one way)	$150
Freight (per kg)	$2.50
Charter (Twin Otter) (return)	$3,000
Beaver aircraft (5 passengers)	$1,300

Food

Flour (10 kg)	$ 16.43
Lard (3 lb)	5.80
Tea (8 oz)	4.96
Sugar (4 kg)	4.96
Fresh milk (1 L)	1.85
Powder milk	4.98
Cookies (16 oz)	4.00
Bread	1.52
Eggs (dozen)	2.40
Salt (1 kg)	1.92
Apple Juice (1 L)	2.55
Candy Bars	0.86
Cigarettes	3.75
Ice Cream (1 L)	4.00
TV Dinner	5.35
Frozen Pizza	6.50
Soft Drinks	1.00
Average Whole Chicken (2.5 lbs)	14.44
Hot Dogs	2.40
Ground Beef (1 lb)	3.34
Pork Chops (1 lb)	6.57
Apples (3 lbs)	3.50
Onions (1 lb)	1.05
Lettuce	2.35
Tomatoes (4)	2.00
Strawberries (1 pint)	3.90
Grapes (1 lb)	5.40
Sweet Corn (4)	3.50
Small watermelon	23.00

Snowmobiles

Bombardier Safari 377	4,100
Bombardier Safari 477	5,300
Yamaha Bravo 240	2,300
Yamaha Bravo 240 Trapper	2,800
Yamaha ET 340	3,300
Yamaha ET 350 Trapper	4,500
Annual Maintenance Costs (average)	500

3-Wheelers (ATC)

Honda 200	2,800
Honda Big Red 250	4,000
Yamaha 200 E	2,300
Annual Maintenance Costs (average)	150

Outboard Motor (average)	3,000
Annual maintenance Costs (average)	100
Freighter Canoe (average)	3,800

Guns

22	200-300
222	400-600
12 Gauge	300-600

Ammunition

22 Long Rifle	4.68
22 Magnum	9.35
222	16.00
12 Gauge	16.00
Steel Traps	6.00
Naptha Fuel (4 L)	12.00
Coleman Stove (2 burners)	90.00
Gasoline (5 Gal)	23.00
Oil (1 pt)	2.50

10. RESOURCES AND ECOLOGY

Information on the resources and ecology of the Taqpangajuk region was obtained from interviews with hunters. These interviews enabled Inuit ecological knowledge to be recorded in written text and on a series of detailed maps at scales of 1:50,000; 1:250,000; and 1:500,000. The map information identified the seasonal ecology, critical habitat, and other relevant factors for all of the species utilized by Inuit. This vast body of information has been digitized for computer analysis. In this section of the report, the data has been briefly summarized in descriptive text and on maps. (Figures 10 to 14).

The ecological patterns of the resources that frequent the Ungava Bay and Labrador Sea coastline of the Torngat peninsula are closely linked to changes in the seasonal sea ice and snow environment and, for marine species, to the movement of the tides and currents. During more than 100 hours of interview with knowledgeable hunters, ecological information was collected on 35 important species. Many of these species move into the region during a particular season of the year. Other species, though resident, tend to have well-defined patterns of movement within a particular area and a smaller number of species remain in the same area throughout the year. Ecologically speaking, the Taqpangajuk region is very busy from Spring to the beginning of freeze-up in late Fall. As noted by an experienced hunter from the region:

> The area around Killiniq is the place where everything happens. It is the place that almost every kind of animal and bird passes by. Sometimes I feel that it is not just us Inuit who want a home here. It is also true for all the animals.

Marine Resources

Marine resources are critical to the sustained developmkent of the Taqpangajuk economy (Figure 10 and 11). The most important species is the ringed seal. This is followed by harp seals, bearded seals, and beluga whales. The anadromous arctic char is also an extremely important species that utilizes

TAQPANGAJUK FEASIBILITY STUDY

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ECOLOGICAL MAP SERIES

MAP 4 - MARINE MAMMALS I

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BEARDED SEAL
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WALRUS
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BELUGA WHALE
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KILLER WHALE
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WALRUS AREA
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BEARDED SEAL AREA
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1 SPRING
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2 SUMMER
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3 FALL
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Verified by	Date
Colin Bird	March 17, 1986
Maps revised by	
Barry Doherty	

TAQPANGAJUK FEASIBILITY STUDY

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ECOLOGICAL MAP SERIES:

MAP 5- MARINE MAMMALS II

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POLAR BEAR
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RINGED SEAL
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RANGER SEAL
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HARP SEAL
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POLAR BEAR BREEDING AREA
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RANGER SEAL AREA
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1 SPRING
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2 SUMMER
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3 FALL
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4 WINTER
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5 ALL YEAR
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DIRECTION OF MOVEMENT
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both the sea and the freshwater. Cod and sometimes Atlantic salmon are also exploited by Inuit and their ecological patterns are known.

Ringed seals are found on both the east and west sides of the Torngat peninsula in all seasons of the year. Although some of the seals remain throughout the year, others tend to migrate into and out of the region, following the same migration routes as the harp seal. The hunters also note that there is a "drift" of seals towards the north in the open water season and towards the south later in the fall. During break-up, the seals tend to congregate in areas where there is loose ice and they also maintain breathing holes in the winter time. All of these areas are well known to the hunters. Most of the major areas where seals give birth are on the Labrador side of the peninsula.

The pattern of bearded seals is more complicated then that of the ringed seals. The general pattern of migration for the bearded seal is via a route up the east coast of the peninsula in the spring and around the northern side of Killiniq Island. On reaching the west coast some of the seals head south towards Kangiqsualujjuaq while others head west across Ungava Bay. However, many of the seals stop off in the bays and fjords, and even go to the Button Islands, where they can be found in the summer. In the fall the bearded seals begin their southern migration following the same routes as in the spring except some which head out into Ungava Bay like the polar bear does. The bearded seals give birth in April/May while out on the ice.

The harp seal migrates north up the east coast of the Torngat Peninsula during the spring. In the summer they can be found in the bays, fjords and inlets on both coasts and at the Button Islands. The southern migration begins in the fall (October/November) and follows the same routes as the northern migration.

The Inuit hunters state that the ranger seals do not move very much but stay in the same general area. A few locations where ranger seals can be found during the summer were known. The ranger seals give birth to their offspring in June, and breed in July.

The ecology or beluga whales for the Taqpangajuk area forms one part of a widespread pattern of movement that is from the east to west in spring and from west to east in late fall. Within this generalized pattern there are many

local movements and a complex division between male and female as well as between older and younger age groups. The exact pattern and timing of movement depends upon the location of ice and open water, and the Inuit note that there are many feeding and resting areas along the major and minor routes of travel. The spring migration is slower and follows the ice edge where the beluga whales rest and feed. In the fall, the movement is faster and tends to follow the coastline. The Inuit note that Killiniq is the point at which whales from Davis Strait and the Labrador Sea come together. Most of the group moves west across the opening of the Ungava Bay while a smaller number will move south along the west coast of the Torngat Peninsula.

The polar bear migration route begins on the east coast of the Torngat Peninsula where they can be found feeding on baby ringed seals in the spring (February/March). The polar bear will then slowly make its way across the west coast where it will get on the ice when it forms in the fall/winter. Once out on the ice, the bears head out into Ungava Bay and north. Eventually the ice flow will carry them back towards the east coast of the peninsula for a winter/spring arrival.

Fish

There are nine species of fish whose ecological patterns are known by the Inuit hunters (Figure 12). As noted above, Arctic char is by far the most important species, followed by cod and then salmon. Unlike other arctic communities, lake trout and brook trout are not important and are only utilized occasionally when hunters travel south along the Ungava Bay coast.

Arctic char are found along both sides of the Torngat Peninsula. The general trend is for the char to overwinter in freshwater lakes before migrating into the deeper saltwater just offshore and the end of spring. After summer at sea the char once again migrate inland in July and August.

Little is known about the ecological patterns of cod because they do not reside in the Killiniq area except for a very short period of time. During the summer, once the snow is off the land and ice is gone from the water, the cod will appear in the vicinity of Killiniq Island and in areas along the Labrador

TAQPANGAJUK FEASIBILITY STUDY

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ECOLOGICAL MAP SERIES:

MAP 2 - FISH

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ARCTIC CHAR (WINTER)
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ARCTIC CHAR (SUMMER)
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COD
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GREENLAND HALIBUT
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SALMON
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LANDLOCKED CHAR
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1 SPRING
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2 SUMMER
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4 WINTER
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DIRECTION OF MOVEMENT
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Verified by	Date
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Barry Doherty	

coast. However, the cod do not always make their appearance. In the winter the cod move off into deep water to the northwest and south, near Newfoundland.

Salmon is another migrant species that appears in the Killiniq area for a limited time period. When the salmon arrives in and around Killiniq around June/July, the hunters say they are thin. The salmon leave again in mid-August after feeding in the coastal waters and "becoming fat". Salmon are also found on the east side of the peninsula in Ikudliayuk Fjord.

Land Mammals

Six species of land mammals are frequently utilized by Inuit for food or for fur. Of these six species, only the caribou and fox have well-defined ecological patterns, that can be easily mapped (Figure 13). The Inuit note that the other species are widely distributed throughout the region and, although they describe particular patterns of behaviour and can locate areas of importance for each particular species, they are not easily mapped.

The caribou are the most important land mammal used for food and, from time to time, for clothing if harvested in the fall. The caribou cycle is on the upswing for the Taqpangajuk region, which means that it is becoming a much more important species in all seasons of the year.

The general pattern of movement for caribou is to migrate north up the Torngat Peninsula in the spring (March-April) and then south in the fall (September). The caribou tend to meet at the base of the peninsula before heading north and having their calves (April/May) on the east side of the peninsula. The caribou will go as far as the northern tip of Killiniq Island during the summer. The hunters stated that more caribou are staying in the Killiniq region over the winter than before. They explained this by saying that caribou concentrations move in a cyclical manner and that they are currently increasing in numbers in the Taqpangajuk region.

Arctic fox is occasionally used for food, but its primary importance is as an economic resource. The arctic fox migrates to the west coast of the Torngat

TAQPANGAJUK FEASIBILITY STUDY

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ECOLOGICAL MAP SERIES:

MAP 3- LAND MAMMALS

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CARIBOU ROUTES
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FOX ROUTES
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ARCTIC HARE ROUTES
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CARIBOU MEETING AREA
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CARIBOU CALVING AREA
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FOX DENNING AREA
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1 SPRING
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2 SUMMER
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DIRECTION OF MOVEMENT
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Barry Doherty	

Peninsula by means of ice on Ungava Bay during the winter (January). The foxes supposedly get onto the ice near Quaqtaq and hunt seals as they move. By March the foxes are all on the coast and moving all over the place. In the spring the foxes give birth to their pups and then in the summer return to where they came from via the land. The routes taken are not known.

The red and silver fox reside in the Killiniq area all year long and do not move great distances.

Birds

Three main bird species are described below, although nine species are known and utilized. In addition, nesting areas of falcons and hawks can be pointed out (Figure 14).

For the Canada geese, the general pattern of movement in the Killiniq area is a northward migration up the Torngat Peninsula during the spring (May), and a subsequent return journey in the fall (October). As the geese move north some stop along the way to nest on the lakes of the region, while others continue on to Resolution and Baffin Island. It was said that few geese come north but many return south.

Eider ducks tend to migrate northward up the east coast of the Torngat Peninsula in the spring (May) with many stopping along the way. Upon reaching Killiniq Island the eiders can either continue northward or head down the west coast of the peninsula. The eiders nest on both sides of the peninsula and have their eggs on many of the small islands along the coasts. In the fall (November) the southward migration begins for the eiders via the same routes they came north by. Some eiders on the Québec coast return via a route across the interior of the peninsula.

Rock ptarmigan migrate northwards in the spring (April) along routes up the coasts and the interior of the Torngat Peninsula. The ptarmigan tend to continue on past Killiniq Island to regions unknown to the Inuit hunters. On the return trip in the fall the ptarmigan follow more or less the same routes but do not stop to nest. Willow ptarmigan winter in areas south of the Taqpangajuk region.

TAQPANGAJUK FEASIBILITY STUDY

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ECOLOGICAL MAP SERIES

MAP I - BIRDS

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WILLOW PTARMIGAN
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ROCK PTARMIGAN
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CANADA GOOSE
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CANADA GOOSE MAIN MIGRATORY CORRIDOR
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EIDER DUCK
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SANDPIPER
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NESTING AREA
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RESTING AREA
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2 SUMMER
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Colin Bird	March 17, 1986
Maps revised by	
Barry Doherty	

11. PLANNING AND IMPACT ASSESSMENT

Inuit Participation in the Planning Process

Consultation is the first step towards Inuit participation. It is meant to "open the door" to active involvement and not to serve as a limitation based on questions and formal meetings. In the Taqpangajuk study, as in other projects carried out by, or in cooperat sic principle around which studies are organized. Consultation is a long and often complex process of information exchange. Although it cannot be carried out according to narrowly defined rules or procedures, it does require structure for communicating ideas, concerns, facts and potential outcomes between researchers and communities.

The principle that underlies consultation is related to the need to identify and utilize the Inuit system of thought and logic about the problems under discussion and to link this logic to their specific and often very detailed knowledge. Such a process does not exclude the opinion and expertise of outsiders but it does attempt to restructure the relationship of "outside experts" to the problems being studied. This process also bases its validity on the fact that the naturally acquired knowledge of Inuit is of equal value to the formally acquired knowledge of outside academics and researchers. There are times when the knowledge of outsiders can be very helpful and clarify certain questions raised by Inuit. It does not mean that Inuit knowledge is valuable only to the extent that it coincides with the assumptions and conclusions reached by southern scientists.

The Inuit are concerned with the process of consultation that must take place if a project as complex as the establishment of a new community is going to be successful. For the Inuit, the process of consultation is a critical starting point for translating the negotiated aims and objectives of a policy into the specific requirements and concerns of an Inuit community. When planing a new community the questions go far beyond those that identify the selection and placement of infrastructure. The social and economic concerns that govern the quality of day-to-day life must be integrated with the physical environment and structure of the planned community in a way that is unique to the characteristics of the place and the people who will occupy it.

The Planning Process

The Taqpangajuk feasibility study provides an opportunity for Inuit to develop further their participation in research and in the process of community planning. In this project, scientific professionals are working closely with Inuit in order to establish a data base that not only is adequate for precise planning and engineering purposes, but which also recognizes that Inuit knowledge and perspective can contribute significantly to this data base. Moreover, the approach used in this study incorporates the fact that Inuit can contribute significantly to the identification of problems that must be studied and to the development of appropriate methodologies for the collection and analysis for the data required to solve problems

In the document People, Resources and the Environment, which summarizes the public review phase of the Lancaster Sound Regional Study, the author, Peter Jacobs, asks the critical question: "How shall we plan?". This is a question that will not be answered quickly, but all northern research that deals with issues involving people, resources and communities, must recognize the importance of this question and become part of a larger effort that will eventually provide satisfactory answers to the development of their community.

The Taqpangajuk study formed part of the search for answers. It was noted by Jacobs that the planning process "must be truly adapted to the people and the place for which it is intended". In a perceptive evaluation of the problems that must be recognized in the planning process, Jacobs (1981, pp. 55-59) wrote:

> Our southern and northern peoples and traditions are neiyher inferior nor superior; they are different. If we plan, we must do so with as full an understanding of these differences as possible and with an astute sensitivity to the range of values that underlie these differences.
>
> One of the most fundamental characteristics of the planning is the intellectual and cultural setting which supports the process. Whereas the Inuit seek consensus on those issues that affect them most profoundly, we are accustomed to debating public issues that

are terminated and resolved by majority votes, frequently by elected representatives. Decisions based on adversary positions are distinctly different from those based on consensus.

The process requires more time, is highly participatory, and directly involves those responsible for implementing a decision and those who will be directly affected by such a decision.

The desire of the Killiniq Inuit to relocate to Taqpangajuk and to be involved in the research and other activities associated with this relocation is a clear statement that they are determined to retain their option to choose their territory and life-style. Consequently, planning must not only "accomodate and reinforce" these options, but it must provide a mechanism that enables the Inuit of today to move "beyond the simple maintenance of life-style options toward the qualitative and quantitative improvement of these options" (Jacobs, op.cit.)

The Inuit feel that many researchers are very naive about the requirements of northern projects and the type of planning that is necessary to make them successful. They also feel that some of the people sent to do studies are unaware of how to work in the north, and do not ask the proper questions or don't seem to understand the issues. These people are said to bother the community and it is felt they cannot understand the problems if they are unprepared and do not "know how" to understand.

In Northern Québec, Inuit participation in planning and other types of research concerned with community development has advanced significantly over the past five years and northern science is beginning to be viewed as a process that can be controlled by Inuit according to the values and goals that will enhance not only the conduct of research but which also contributes to the development of education and employment in the north. Nevertheless, problems still arise. In particular, Inuit often feel that they are not allowed to participate in research activities in a manner that will encourage them to make a significant contribution towards setting the principles, questions and priorities for planning studies. This situation is further frustrated by the control of the planning process, and, therefore, of the information, values, perspectives and methodologies used in decision-making.

The Inuit of Northern Québec hold strong opinions about which elements in the life of their communities are important and which must be preserved and enhanced through planning. They also caution researchers not to establish the only value system around which planning must be carried out. Consequently, to Inuit the main questions are: who controls the planning procedures, how does planning incorporate their knowledge, concerns, opinions and values about the bio-physical and socio-economic environment, and why does it offer a protection for the development of their society? The Inuit realize that many problems in the North are related to poor planning and they feel that they are collectively penalized when improper studies and poor consultation lead to a failure of the planning process. This realization is clear from the following statement by an Inuk from Kangirsuk:

> You say that you are here to find out how the new airstrip will affect our lives, and we don't know why you bother to ask that question because it should be clear to anyone who knows our problems. But it always seems that people down south know more about our problems than we do because their answers are stronger than ours.
>
> If everybody is worried about all that is going on up here in this community, why do they come to us the very last, after everything is done, to ask what we think; does it matter to them anyway if we like something or are against something. If we cooperate and tell you what we think or what we worry about, will anybody down south pay attention if they think we should be thinking or worrying about something else?

The right to develop one's own community and traditions is expressed through the Inuit interpretation of the planning process which they relate to important questions of independence and self-government. The concern with planning is widespread since it affects every community. Major projects, such as a community relocation, may serve to focus particular feelings and points of view but there is a gradual emergence of a broader concensus among Inuit that new principles for guiding the planning process must emerge. These principles should reflect the Inuit perspective and over time they must be put into practice through a program that recognizes Inuit knowledge and the technical skills needed to participate in planning. Some of the major themes of Inuit concern with planning and with participation in this activity are illustrated in the following

quotation from an Inuk commenting on the relocation from Kuujjuarapik to Umiujaq.

> The move... is part of a process of community planning. This whole business has always been controlled by professionals, but this does not always have to be in their hands. We can always use special technical help but it doesn't take a professional to make a by-law or decide the best place for the things in a community. We don't complain about those professionals if they do their part, but they should not just take everything over.
>
> Self-government involves making your own plans and doing things by yourself. This way, if we are wrong, we can understand why and learn from this.
>
> We start with the little things. It is the little things that can work, but it took us a long time to understand this. The little things make day-to-day life comfortable and it grows from there. It grows into what is our traditional way of life at a new community.
>
> So the professionals can make their plans, but they have to understand what we mean by planning. This has never really been done for our community so there has been no way to create what is ours. Building a community is interesting work and there is lot for us to learn and experience.
>
> Inuit people keep complaining about non-natives taking over the communities and these non-natives keep on doing it because complaining is not a real act. It is what we do and not what we just complain about that is going to establish our future. When we act on our own, it means that we do things we think to be correect but it is our action based on our own decisions not just following orders, or having the non-natives act like their decisions are really ours.

This attitude does not mean that Inuit disregard the importance of research associated with planning. It does mean that the context for identifying and solving planning related problems must be enlarged and that the terms of reference, methodology and statement of results must be made accountable to Inuit. In order for this to occur, researchers and planners must be able to interact with Inuit values and points of view in a manner that enables a cross-cultural understanding of problems and their solution to be addressed.

Impact Assessment

The methods used for impact assessment studies in Northern Québec are beginning to identify problems and address issues that are relevant to the current conditions and long-term needs of Inuit. Therefore, impact assessment is viewed as a leading edge of the planning process. The Inuit also note, however, that the impact assessment procedure also has the potential for creating a negative impact if it, along with the planning process raises but does not fulfill expectations. The issues that communities identify in impact assessment or in planning studies are not impossible "wish lists", but rather a set of legitimate instructions to responsible authorities about how to maximize potential benefits and minimize potential negative impacts.

Social impact assessment in the north can only be effective if it incorporates the perspectives, values and participation of Inuit in each of the five phases that comprise the assessment process. These phases are:

1. guaranteeing that impact is viewed in the context of planning so that it is integrative and iterative;

2. establishing the terms of reference for impact assessment studies;

3. participating in the planning and execution of these studies;

4. maintaining membership in the Environmental Quality Commission; and

5. exercising a control over decisions that occur during the final (post-assessment) stage of project planning and throughout actual construction.

Access to information and decision-making, through the Environmental Quality Commission, is at the present time a cornerstone of Inuit involvement in the impact assessment. Inuit hold three positions on the K.E.Q.C. and have the opportunity to contribute specific knowledge, perspective and values to the deliberations and decisions on the merits and conditions of development projects. In the future, they will also have the opportunity to participate in the

design an execution of research and data analysis for impact assessment studies.

The most important short-term problem that must be resolved, is how Inuit can participate more effectively in Phases 2 and 5 of the assessment process. Participation in Phase 2 requires that a well-defined procedure be established to assure that Inuit have a real voice in determining the contents and orientation of the terms of reference that must be submitted by project proponents. The need for establishing this role is demonstrated by the fact that Inuit do not feel they are presently able to make any significant contribution towards setting the principles, questions and priorities for impact assessment studies. To this end, the Inuit are adamant in their opinion about what elements in the life of their communities are most important with respect to potential impact from projects. They also cautioned researchers not to try to establish the only value system around which the positive and negative impacts from airstrips or other projects should be evaluated.

Inuit question who controls the assessment procedure; what type of protection impact assessment actually provides for the bio-physical and socio-economic environment of their community and region; why these protections are needed; and how specific impacts are determined and corrective or remedial measures established. In order to answer these questions, appropriate terms of reference must be developed so that they identify problems and address issues that are relevant to the current conditions and long term needs of Inuit.

Such an approach does not mean that southern-based concerns are disregarded, or that well-established principles of research and analysis are ignored. It simply means that the context for identifying and solving problems must be enlarged and the time frame, methods and statement of results made accountable to Inuit. What these questions imply is that the proponent of a development project must be able to interact with Inuit values and points of view in a manner that enables a cross-cultural understanding of problems and their solutions to be addressed in the terms of reference, in the research and in the recommendations.

Closely tied to the question of social impact assessment is the question of planning and of establishing a better framework for coordinating all of the different decisions that are made on behalf of the community by organizations that are usually not knowledgeable of one another. This also involves recognition that planning and impact assessment should proceed within a single framework.

The Inuit considered that impacts resulting from the airstrip or other community infrastructure developments are often related to ineffective planning. They questioned why it seemed to take impact assessment for a project to create a concern about planning. The problem as stated by Inuit is that no one is really in control of community planning and thus, every mandate is treated in isolation. They called upon the different organizations that were proposing projects to coordinate their plans and specific requirements prior to coming to the community. It was felt that the municipal councils or other bodies could never make rational decisions since they never knew the full range of issues.

12. CONCLUSION

The situation now faced by the Inuit of Killiniq and by the Federal Government is neither new nor unique. This is not the first time that "Killiniq" must be rebuilt and this feasibility study is not the first time the question of how to build a social community on a firm economic foundation has been asked. The history of government, Inuit and northern development provides certain excellent examples of how to proceed in a manner that will enhance the quality and strength of northern life. These examples often arise from the energy, vision and commitment of individuals or small groups, and not simply from the application of special policies or programs. The first rebuilding of Killiniq in the early 1960's was one such example. It seems as though everything was right except for the physical and environmental attributes of the site itself. It was the right community at the wrong place. As a social and economic community, the original Killiniq was built on good judgement, good will and good policy. Things went wrong because the site could not support infrastructure development and because the policy could not change and adapt quickly enough to intercede and provide new directions. It is an unfortunate chapter in the history of the north, but it is not yet an irretrievable loss. The second rebuilding of Killiniq is the new challenge. It will be done at Taqpangajuk, and it begins with the people themselves. The new Taqpangajuk should echo the essential and very simple principle that guided development of the old Killiniq: the community must reflect vision, energy and commitment, and it must be built with, not for Inuit.

This study has attempted to move beyond specific technical issues of site, infrastructure and master plans. In so doing, it has recognized that there are important principles that must be considered when making judgements or decisions about the feasibility of a new northern community. At the very core of this study, is the principle that Inuit have had, and will continue to have, a very deep commitment to the place where they live and to the people they live with. Cultural change, education, economic development, or the politics of land claims and self-government have not changed this essential reality.

In the past the attachment of Inuit to their land was exhibited through small scattered family groups that were loosely bound to other such groups and

to an extended territory that they knew well and referred to as "home". Today, these groups have come together into communities. The process of learning to live in these larger settlements and of developing new ways to exploit old territory is well established though not yet complete. The communities also offer new opportunities and present new challenges to the Inuit of today. These communities are the staging areas for the future and their importance will continue to grow. They are, and will remain, the most essential building block in the social, economic and political development in the Inuit society.

It is this reality that guided the organization and development of the feasibility study for Taqpangajuk. The essential problem was that a once viable community that exploited the resources from an ecologically rich area, was closed through a political decision. A region that was occupied for four thousand years is now empty and the people that lived the most recently within the region no longer have a real home.

The purpose of the feasibility study was to begin the process of re-establishing this home. The research provides important information and analysis for meeting the objectives.

Primary Conclusion

The feasibility study provided an opportunity to evaluate the Taqpangajuk site and to establish that it is a place that can support the intrastructure required to house and support 162 Inuit as a target population. The site, in terms of space, water supply and other physical attributes will also accomodate community expansion from the base population to a projected total of 432 in 2010. Thus, the study proved the feasibility of establishing a community at Taqpangajuk, at present and over a 25-year planning horizon.

Infrastructure

The feasibility study identified a primary set of essential infrastructures that were required for the new community. Each of these infrastructures was

selected according to the site capabilities and according to standards that have been established for the Inuit communities of Northern Québec. The selection of infrastructure and its placement within the proposed community area was based on the considerations of the immediate needs; the 25-year planning horizon; the specific site requirements unique to each infrastructures; the capacity of the Taqpangajuk environment to meet these requirements; the potential impacts of infrastructure on the population and the biophysical environment; the preferences of Inuit for particular types of infrastructures and for their location; the standards required to meet Québec regulations; and their cost.

All of the specific infrastructures that are identified in this report have been described, when warranted, according to these criteria. None of the infrastructures at this time indicate that they are not feasible for the site or for the people.

The social setting of Taqpangajuk reflects a concern of the people to return to a particular place, but to use the new community for advancing their social and economic development. The first objective will be to rebuild a broken community, and to overcome the division and separation that have been created by an artificial separation for over eight years. The mechanisms of doing this are those of other northern communities. It involves having the services required for safety and for physical and psychological well-being. It also involves having the structures for evolving a strong municipal government and an integrated program of economic development and employment. These structures and the programs that will operate within them, will take much of their direction from the mechanisms for social and economic development of communities and the region as outlined in specific sections of the James Bay and Northern Québec Agreement and the Kativik Regional Government Act.

Resources Exploitation and Subsistence

The principal support for the community will be found in the exploration of the renewable resources of the region. This will be carried out through subsistence activity and through the well-planned commercial exploitation of

other species. The area has always been considered as an important area as to the richness of the ecological systems. This fact became known early in this century, was made more specific during scientific studies in the 1950's and was acted upon with the first redevelopment of Killiniq from 1960 to 1975. The potential was once again scientifically evaluated during a three-year feasibility study on those marine resources not traditionally harvested by Inuit. This feasibility study is now being developed into an experimental fishery. In addition to the scientific information on the marine resources, there is a vast amount of Inuit ecological knowledge on their subsistence resources and on the environment that support these resources.

Community Plan

A community plan has been created for Taqpangajuk. The final master plan is based on three earlier planning scenarios. Each scenario and the master plan, represent an interplay between basic factors: the physical site and its immediate environment; the types and requirements of infrastructures; the ideas and preferences of the Inuit; the potential impacts.

The final master plan is the end result of intensive consultation with all of the families, and it truly reflects the process of local knowledge, concerns and the free exchange of information. This plan, however, is considered to be a statement of the feasibility study and not necessarily the plan that will automatically be followed in construction. It represents the best possible solution to planning problems at this time based on the criteria of the feasibility study. If these criteria change, then the plan will be able to incorporate and give order to this change.

The Society

The feasibility study provided the means by which the dispersed families of Kiliniq could come together to discuss the social make-up of a new community. The population, comprised of the "core group", has identified additional family units that should also be considered as important for the

relocation and future development of the community. It is these two groups that make up the starting population of 162 Inuit. This feasibility study also indicate that there are other families that would welcome the chance to return to the territory of their birth. Consequently, it is expected that migration will play an important part of future growth in Taqpangajuk and this assumption was important for the population projections for the year 2010.

This indication is that Taqpangajuk will be an excellent area for subsistence harvesting. This activity will be developed within the framework of a conservation strategy and management plan for Northern Québec, that pays special attention to the characteristics and requirements of each comunity. The subsistence economy is capable of supplying a major portion of food needs, and it will ensure the nutritional health of the population. The economic benefits derived from susbsistenc harvesting have, in the past, been very important as a source of income. The feasibility study found that this could continue as a source of economic support as long as it is not threatened by the anti-fur and other animal rights movements.

Economic Development

The feasibility study provided an opportunity to briefly consider certain directions for the economic development of Taqpangajuk, but it could not, at this time, create an exact blue print for this development. It is expected that the primary sources of income will be derived from the provision of services that are now characteristic in all northern communities. These services provide for long-term income that is derived through responsible positions that must be held by Inuit. The ability to hold these positions will in a long-term be a function of training and of formal education.

Salaried income will no doubt be supplemented through small scale entrepreneurial activity, by traditional transfer payments and through a variety of social programs of other types of short-term activities that will bring income into the community. All income will also be supplemented by the mixed economy of northern communities that assures the utilization of the local resource base.

The Planning Process and Impact Assessment

The feasibility study has begun an important process among the Inuit of Taqpangajuk. This process involves the participation of the people in planning for their future community. In this study, the process was considered to be very effective since it produced important information required for site evaluation and planning; and since it also acted as a means for animating the Inuit to carefully consider their future and the options that would help to find this future.

This approach was incorporated within a larger planning process that also utilized impact assessment as an important component. The end product has been the development of a master plan and the creation of various scenarios for the social and economic development of the community. The scenario that is most acceptable to the Inuit involves a return to their territory of origins but in so doing, they feel that they have made a commitment to the future rather than to the past. The planning process must be continued since it has become an active part of community consultation and animation. It provides the means by which the Inuit of Killiniq can discuss the issues that affect their lives and it assures that what the Inuit say will be heard and, hopefully, acted on.

Specific Recommendations

Specific recommendations based on the findings from the Technical Study are set out in Volume II of this final report. Several of these recommendations along with those from this report are stated here.

1) A geotechnical survey should be carried out at the site in order to build on the information from the feasibility study and to fill certain gaps in this information. This study should substantiate the location of infrastructure with respect to environmental conditions and it should evaluate the extent of permafrost, ground stability and drainage. It should also pay particular attention to the site of the proposed airstrip.

2) A bathymetric survey must be carried out for the waters adjacent to the community in order to confirm and provide exact data on marine access. The information collected during the study indicates that the waters to the

south of the site will provide harbour facilities for sealift vessels but this has not been confirmed by actual measurements.

3) A detailed map should be created at a scale of 1: 2,000 that will identify the terrain units in relationship to vegetative cover and zones defined by susceptibility or resistance to impact.

4) A final impact assessment study should be completed in accord with the letter submitted to the Makivik Research Department by the Kativik Environmental Quality Commission. This letter sets out the specific characteria for the review process and it indicates the environmental, resource, social and economic questions that must be answered for approval.

5) A process must be developed that will enable the findings from this feasibility study to be modified in light of continuing discussions and the collection of additional information. This process will focus on an examination of the plan and infrastructure and on the development of a system of project management. it will be based upon a sound methodology for a continual evaluation and updating of the project including its financing, that will be used for decision-making.

6) A plan for the continued participation of Inuit in the Taqpangajuk study should be established once a final decision is made by the federal government. Participation must comprise all phases of Inuit involvement, including realistic training and education for the construction and future maintenance of the community; assurance that Inuit will participate in economic benefits from building a community; a plan for control of the work force and project supervision; and the creation of a work schedule that will respect the technical and social requirements of a "mixed" northern work force of Inuit and outside labour.

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APPENDIX 1

KILLINIQ RELOCATION FEASIBILITY STUDY

- CALENDAR OF EVENTS: 1985-1986

1985

July 12	First formal meeting between Makivik Research Department and DIAND to discuss the feasibility study and the role of the Research Department as the primary scientific authorities.
July 16	Submission of preliminary study design and budget for the feasibility study
	Decision by Makivik to develop study design in cooperation with KRG Municiapl Assistance Department who will serve a primary consultants for engineering and planning studies.
July 26	Makivik submits proposal to DIAND
August 1	Ottawa visit for air photos and LANDSAT images.
August 4	Request to L.A. Rivard to carry out the air photo analysis of Taqpangajuk site.
August 6	Money received from DIAND to establish winter hunting camps for Killiniq outpost camp program.
August 7	Makivik air photo mission of Singer Inlet area.
	Preliminary proposal from KRG to Makivik for their work inthe Feasibility Study.
August 8	Makivik submits final feasibility study proposal to DIAND.
	Contribution contract between DIAND and Makivik signed - money to be made available August 15.
August 13	Color stereo air photos submitted to project personnel from air photo mission.

August 20	Technical Committee Meeting # 1
	L.A. Rivard work reviewed and the alternative study area of Christopher Inlet proposed.
	Decision to investigate Christopher Inlet as a potential community site along with Taqpangajuk
	Decision to delay production of 1: 2,000 maps until site selected.
August 21	Preliminary funding contract between KRG and Makivik.
August 30	Informal visit by Killiniq Fishery Inuit to Christopher Inlet area to evaluate potential for community site.
September 3	Makivik meeting with Transport Canada on their role during the field site survey, and airstrip site selection.
September 5	Avataq proposal for archeological work on field site survey submitted.
	Geomorphic maps and supporting data on Taqpangajuk and Christopher Inlet sites received from L.A. Rivard for use in the field survey.
September 9-17	Field Site Survey: Initial site comparison of two proposed sites as to their geology, archeoogy, space and infrastructure potential, airstrip location, etc.
September 15	L.A. Rivard submits final report on geotechnical aspects of the two sites, as a result of air photo interpretation.
September 26	Final KRG/Makivik contract signed.
October 10	Second KRG visit to site at Taqpangajuk.
October 17	Technical Committee Meeting # 2.
	KRG submits report on comparison of characteristics of Taqpangajuk and Oogalik (Christopher Inlet).
	Taqpangajuk formally selected for site of relocation as a result of field surveys and site analysis.
October 8-11 and 17-24	Bruno Collin, KRG, carries out consultation visits to all communities. Re: population statistics of Killiniq group, and planning information.

October 24	L.A. Rivard proposal received for possible ice study if required, for the feasibility study.
October 29	Photosur Inc. given go ahead by Makivik to produce 1:2,000 and 1:5,000 topographic maps.
October 31/ November 1	Transport Canada returns to Taqpangajuk to locate airstrip site.
October 30/ November 2	Anthony Price and Gilles Gagné visit Quaqtaq, Kangiqsujuaq and Kuujjuaq to meet Killiniq people in these communities.
November 6	Bruno Collin submits report on consultation.
November 8	Preparation of relocation newsletter for circulation to Inuit
November 13/ December 13	Colin Bird, Makivik, carries out consultation with Killiniq people in all communities.
December 3	Archeological Report from summer field survey submitted.
December 4	Photosur Inc. provides 1:2,000 topographic maps to Makivik.
December 5-14	William Kemp to Kuujjuaq for KRG and Technical Committee Meetings and project review.
December 9-13	Killiniq Head of Family meeting begins in Kuujjuaq with primary objective ot ahve full review and consultation on findings of feasibility study. KRG presents update report on Feasibility Study to Makivik personnel.
December 11	Technical Committee Meeting # 3 Joint meeting with Killiniq Heads of Family. Presentation of work done by KRG. Availability of Feasibility Study team for questions from the Killiniq people about the project.
December 13	Anthony Price visits Kangiqsualujjuaq to meet the Killiniq people there.
December 17	Photosur Inc. produces 1: 5,000 topographic map.

1986

January 13,86 -	KRG submits additional information to ammend the "update report" of December 9, 1985.
January 17	Submission of Internal Report to Anthony Price by Makivik Corporation.
January 24	Makivik Corporation submits Taqpangajuk Proposal to the Kativik Environmental Commission (KEQC) via the Deputy Minister, Ministère de l'Environnement.
January February 4 - 18	Bruno Collin, KRG, carries out consultation visits to all communities. Re: planning scenarios for new community
March 25	Technical Committee Meeting # 4 is held in conjunction with KRGi's submission of the Taqpangajuk Feasibility Study Report.
April 6	Makivik Corporation receives draft environmental impact assessment guidelines from the KEQC.
April 8	KRG carries out a winter site survey of the Taqpangajuk site to collect additional necessary information.
April 23-25	Technical Committee Meeting # 5.
	Joint meeting with Killiniq Heads of Family.
	Review of final planning scenario carried out by KRG with unanimous acceptance by the Killiniq people.
May 9	KRG submits additional information as an addendum to the March report. Contract with Makivik Corporation is terminated.
June 2	Submission of Final Report.