

ARCHAEOLOGICAL POTENTIAL STUDY
OF THE AIRPORT DEVELOPMENT AREA
IVUJIVK, NORTHERN QUEBEC

Presented to the
Makivik Corporation

By
Aménatech Inc.
345, Industrial Boulevard
Sherbrooke (Quebec)
J1L 1X8

Sherbrooke, February 2, 1984

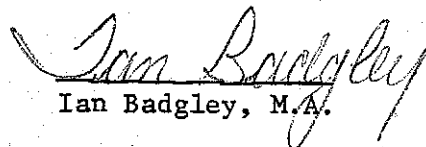

Ian Badgley, M.A.

TABLE OF CONTENTS

	<u>PAGE</u>
LIST OF FIGURES	i
LIST OF TABLES	ii
LIST OF APPENDICES	iii
SUMMARY	1
1.0 MANDATE	2
2.0 METHODOLOGY	4
2.1 General Orientation	4
2.2 Procedures and Methods	5
2.2.1 Library Research	5
2.2.2 Data Interpretation	6
2.2.3 Delimitation of Archaeological Potential Zones	7
2.3 Zones of Archaeological Potential	7
3.0 THE STUDY AREA	11
3.1 Geographic Location and General Description	11
3.2 Geology and Physiography	15
3.3 Environmental Setting	15
3.4 Paleoenvironment	17
4.0 HUMAN OCCUPATION OF NORTHERN UNGAVA	20
4.1 The Prehistoric Period	20
4.1.1 Paleoeskimo Occupations	20
4.1.2 Neoeskimo Occupations	24



4.2	The Historic Period	26
4.2.1	Europeans and Euro-canadians	26
4.2.2	Inuit Populations	28
5.0	DATA INTERPRETATION	31
6.0	DELIMITATION OF ARCHAEOLOGICAL POTENTIAL ZONES	35
6.1	Zones of High Potential (A)	35
6.2	Zones of Moderate Potential (B)	35
6.3	Zones of Low or Nul Potential (C)	36
7.0	RECOMMENDATIONS	37
8.0	PERSONNEL	38
9.0	BIBLIOGRAPHY	39

LIST OF FIGURES

Figure 1 Geographic Location of the Study Area

Figure 2 The Study Area

LIST OF TABLES

Table 1 Archaeological Potential Zones: Primary
 Delimiting Criteria

LIST OF APPENDICES

Annexe 1 Archaeological Potential Zones in the Airport
Developmental Area, Iqaluit, Northern Quebec

SUMMARY

The present report concerns the assessment of the prehistoric and historic archaeological potential of the Ivujivik airport development area, northern Quebec. This study has been carried out within the context of present and past Inuit land use and occupancy patterns. The results of the study suggest that certain zones within the airport development area may be of archaeological importance. This implies that prehistoric Inuit sites are probably located in these zones. Several other zones are interpreted as being of lesser yet significant archaeological potential. Recommendations are forwarded for the mitigation of possible heritage resource loss in the study area during the construction of airport facilities.

1.0 MANDATE

In January, 1984, the Makivik Corporation contracted Amenatech Inc. to carry out an archaeological potential study of the construction zones involved in the development of the new airport facilities at Ivujivik, northwestern Quebec. The mandate comprised the following aspects:

- . definition of the study area;
- . determination of the archaeological potential of the study area defined in terms of available data concerning the prehistoric and historic occupations and corresponding environmental circumstances in the region;
- . spatial delimitation and qualification of zones of different archaeological potential within the study area;
- . mapping of archaeological potential zones in the area;
- . preparation of a final report.

As stipulated in the contract, the documents necessary to the definition of the study area and mapping of archaeological potential zones were to be provided by the Makivik Corporation. The documents provided include the master plan for the Corporation of the northern village of Salluit, a preliminary map of the Salluit region and a map overlay outlining certain major characteristics of the region (prepared by Transport Canada). These documents represent the totality of the information

pertinent to this study currently available to the Makivik Corporation.

Although useful in certain respects, these documents, particularly the maps, have proven generally insufficient to the clear definition of the study area and to the precise delimitation of archaeological potential zones. The results of this study are, consequently, less detailed than would have been desired.

The present report is in conformity with the contract as awarded.

2.0 METHODOLOGY

2.1 General Orientation

The study of the archaeological potential of a given area is oriented toward the determination and delimitation of physical localities which may have been either occupied or exploited by human groups inhabiting the region through time. More explicitly, the study is directed toward the identification and qualification of possible prehistoric and historic site locations within the area defined.

In theory, the distribution of archaeological sites reflects the spatio-temporal availability of biophysical resources socio-technologically accessible to human exploitation. Consequently, the determination of possible sites locations involves the systematic study of past and present biological and physical resources in the area concerned in terms of the predominant economic orientations of the cultural adaptations recognized in the region. The qualification of the potential of the locations determined implies the evaluation of these resources in relation to the various components of these adaptations.

Basically, then, an archaeological potential study is oriented, firstly, to the interpretation of the theoretical relevance of the study area in regards to regional land use and occupancy patterns. Secondly, emphasis is directed to the critical assessment of landscape features in the study area within the context of particular man-land relationships. The archaeologically most visible of these relationships concern settlement-subsistence systems. The study is thus focused principally on the

determination of habitation sites and associated, functionally-specific sites (i.e., kill sites, travel sites, caches, etc.).

2.2 Procedures and Methods

Procedurally, an archaeological potential study is divided into three (3) phases: library research, interpretation of research data, and delimitation of archaeological potential zones. The library research and data interpretation are oriented toward the clarification and analysis of the cultural systems and environmental circumstances documented for the region within which the study area is situated. The third phase concerns the evaluation and mapping of the different zones of archaeological potential in the study area.

2.2.1 Library Research

The library research involves the study of the literature concerning the prehistoric and historic human occupations and environments of the region concerned. This research is carried out in order to:

- . outline the culture-history of the region;
- . inventory the locations and principal physical characteristics of the archaeological sites currently known in the region;
- . determine the character and distribution of the primary resources available to cultural exploitation of the region through time.

The library research is thus directed toward a preliminary understanding of the extent and orientations of the various cultural adaptations which prevailed in the region both prehistorically and historically. These data allow the definition of primary concepts concerning the relevancy of the study area in terms of these adaptations.

2.2.2 Data Interpretation

Interpretation of the research data is focused on the reconstruction of regional settlement-subsistence systems within the context of the chronologically-appropriate environmental settings. Such reconstructions, however, are preliminary in nature and, depending on the geographical extent of the study area, need not necessarily concern an in-depth assessment of all variables of possible adaptive capacity in the region. Instead, these reconstructions may be limited to the functional interpretation of the archaeological sites known and analysis of the physical settings of these sites.

The data interpretations allow speculations concerning variability of site habitats and locations associated with diachronic and synchronic occupations in the region. These speculations form the basis for the definition of theoretical models concerning the "adaptive selectivity" of physically-differing localities to human occupation or exploitation through time and in space. The models formulated are expressed in terms of certain geomorphological criteria. The variable associations of these criteria, complemented by hydrographic situation and



geographic location, represent basic parameters for evaluating the archaeological potential of a study area.

2.2.3 Delimitation of Archaeological Potential Zones

The delimitation of archaeological potential zones is carried out through the application of the theoretical models previously formulated to the landscape comprised in the study area. These models are applied through the study of aerial photographs and topographic maps of the area. This study is directed, then, toward the identification of present localities characterized by a number of biophysical relationships most consistently associated with prehistoric and historic sites known in the region concerned.

The results of the study are illustrated on topographic maps or other cartographic documents, the requirements of the contract depending. These results are presented as "zones" of archaeological potential. The archaeological potential of the separate zones mapped is interpreted in terms of three (3) degrees of probability: high potential (Zone A), moderate potential (Zone B), and low or nul potential (Zone C).

2.3 Zones of Archaeological Potential

As noted above, the delimitation and qualification of zones of different archaeological potential is carried out through the application of certain basic criteria to the landscape of the study area. These criteria, derived from the preliminary analysis of research data, are translated into geomorphological, hydrographic and geographic variables of differing significance to



human occupation or exploitation (c.f., Table 1). These variables, however, are not of absolute value and, considered independently one from the other, are insufficient to the assessment of archaeological potential. Instead, zones of archaeological potential are assessed in terms of the spatial inter-association of a number of basic variables.

For example, close proximity to past or present water bodies or courses of adaptive capacity is generally necessary for the definition of raised gravel beach ridges as being of high archaeological potential. Similar formations situated in interior locations well removed from hydrographic networks would not necessarily be classified as archaeologically important. Alternatively, several criteria involved in the definition of zones of moderate or low archaeological potential may be present in zones of high site probability. In addition, several types of localities commonly assessed as being of low or nul potential may, in fact, have been preferred locations for fonctionnally specific sites. Such sites include trapping and cache sites located on bedrock outcrops and chipping stations or look-out sites situated on promintories and hill summits of considerable elevation.

The evaluation of archaeological potential implies, consequently, an element of intrepreative flexibility. Nevertheless, certain physical parameters may be posited in definition of zones of different archaeological potential.

Zones of high potential represent localities characterized by a set of variables clearly favourable to human occupation or exploitation. They represent, essentially, the most probable archaeological site locations. Such locations include,

TABLE 1. ARCHAEOLOGICAL POTENTIAL ZONES: PRIMARY DELIMITING CRITERIA

CRITERIA	ZONES OF POTENTIAL		
	<u>High (A)</u>	<u>Moderate (B)</u>	<u>Low or Nil (C)</u>
Morpho-sedimentology	Marine formations (beach ridges, terraces, etc.), fluvio-glacial, glacio-lacustrine and fluvial deposits (deltas, eskers, kames, beaches, etc.), composed of sand, gravel and/or cobbles or boulders overlying granular materials.	Thin till deposits overlying bedrock, sand, gravel and/or cobbles or boulders deposited directly on bedrock or silty-clayey formations.	Sporadic surface deposits on bedrock; bedrock outcrops; deposits composed principally of clayey or silty materials.
Drainage	Well-drained with rapid sub-surface infiltration.	Moderately well-drained with intermittent surface run-off.	Poorly-drained with slow infiltration; stagnation (bogs) and seasonal accumulation (marshes).
Topography	Relatively level or slightly inclined relief.	Irregular or undulating surface; moderate inclines (i.e., hill slopes, etc.).	Marked surface irregularities; steep inclines; depressions; etc.
Hydrography	Close proximity to present or past water bodies or courses; marine littoral; rivers or streams of various dimensions and character leading to inland lakes.	Variable distances from present or past hydrographic systems; featureless shorelines (absence of bays, etc.); ponds.	Absence of association with either present or past hydrographic systems; intermittent streams.

ideally, relatively level, efficiently-drained zones situated close to areas of potential resource exploitation.

Zones of moderate potential are characterized as being of lesser archaeological significance. In general, these zones include topographically-irregular and less well-drained locations situated some distance from hydrographic networks and/or principal faunal resource habitats. They suggest locations which, although possibly used for various reasons, were not "preferred" for cultural occupation or exploitation.

Finally, zones of low or nul potential signify localities within the study area either lacking the primary physical variables usually associated with archaeological sites or dominated by circumstances generally unfavourable to human occupation or use. These zones are thus the least likely to provide positive archaeological data. Examples of low or nul potential zones include vertical cliff faces, geographically extensive muskegs, etc.

3.0 THE STUDY AREA

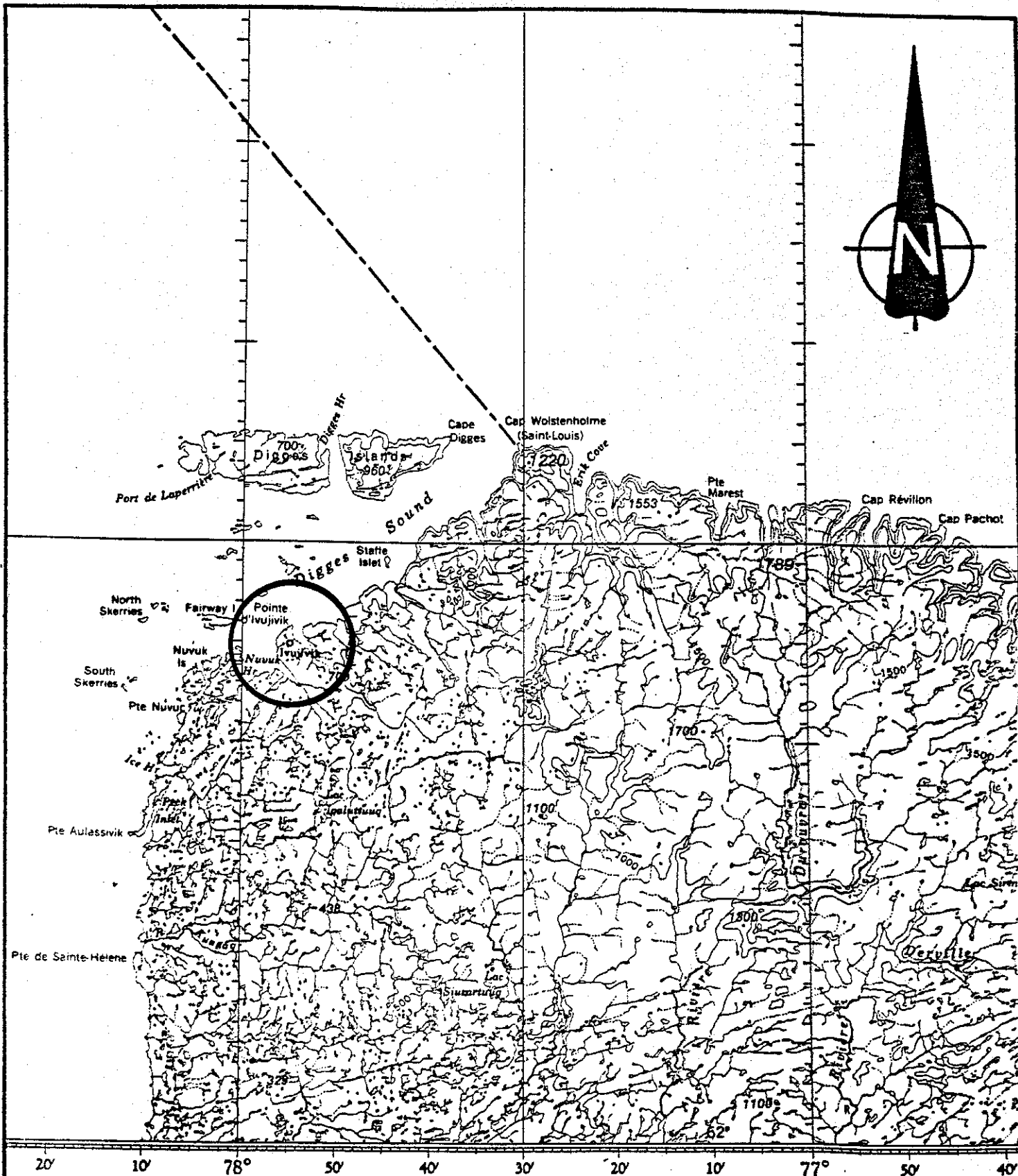
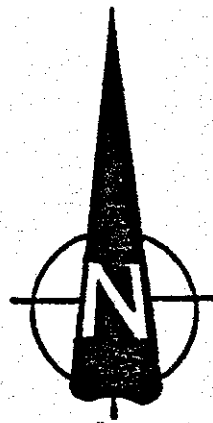
3.1 Geographic Location and General Description


Ivujuvik is located on the west side of a small bay on the extreme northeast coast of Hudson Bay, approximately 40 km from Cape Wolstenholme, the mouth of Hudson Strait (Figure 1). Situated at **it is the most** northerwesterly community of Quebec.

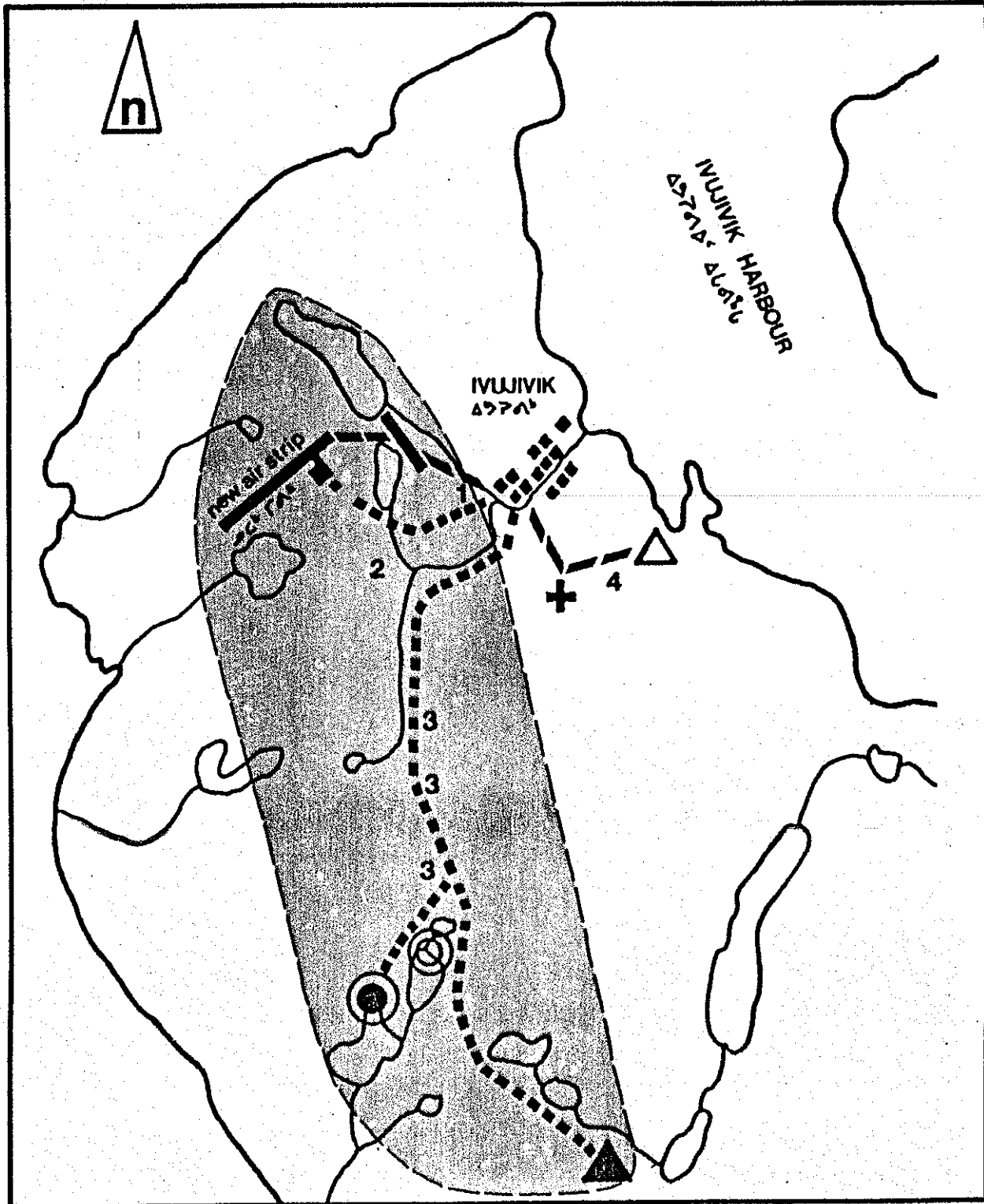
The village is located in a narrow valley bordered, to the northwest and southeast, by bedrock hills and, to the east, by **Ivujuvik** Harbour. The bedrock hills form a low, undulating plateau averaging roughly 50 **m.a.s.l.** in altitude. Hill summits rarely exceed 100 m in elevation.

The study area, as arbitrarily defined, is situated in the central part of the plateau, roughly 400 m west of **Ivujuvik** Harbour (Figure 2). It extends 1 km westward from the limits of the village and, from the northern limit of the small lake northwest of the village, 3 km toward the south. This area comprises the two (2) existing airstrips, the **proposed** water intake point, dump site access roads and three (3) of the four (4) suggested gravel pits. The fourth gravel **pit**, although located outside of this area, is also included in the study.

While the limits of the study area as defined may seem somewhat restrictive, this area has been determined in view of three (3) practical considerations. Firstly, the area comprises zones and sites which will undergo landscape alteration in the near future. The study is thus directed toward the management of



 <p>Aménatech Inc. Division aménagement et gouvernement du Grand-est B. M. Inc.</p>	<p>PROJECT ARCHAEOLOGICAL POTENTIAL STUDY: IVUJIVIK AIRPORT</p>	<p>TITLE LOCATION OF THE STUDY AREA</p>
<p>DESSINÉ PAR Y. C.</p>	<p>APPROUVÉ PAR I. B.</p>	<p>DATE FEBRUARY 1984</p>
<p>ÉCHELLE 1 : 500 000</p>	<p>SCALE RÉFÉRENCE</p>	<p>FIGURE 1</p>



- +** anglican cimetry
ᐱᓕᓕᓂᐱ ᐱᓕᓕᓂᐱᓂᐱ
- ⊙** existing water intake point
ᐱᓕᓕᓂᐱ ᐱᓕᓕᓂᐱᓂᐱᓂᐱ ᐱᓂᐱ
- ⊙** suggested water intake point
ᐱᓕᓕᓂᐱᓂᐱᓂᐱ ᐱᓂᐱᓂᐱ ᐱᓕᓕᓂᐱ
- △** existing dump site
ᐱᓕᓕᓂᐱ ᓂᓂᓂᐱ
- ▲** suggested dump site
ᐱᓕᓕᓂᐱᓂᐱᓂᐱ ᓂᓂᓂᐱᓂᐱ
- 1-4** gravel pits : suggested sites
ᓂᓂᓂᐱᓂᐱ : ᐱᓕᓕᓂᐱᓂᐱᓂᐱ ᓂᓂᓂᐱᓂᐱ
- existing roads
ᐱᓕᓕᓂᐱ ᐱᓂᐱ
- suggested roads
ᐱᓂᐱᓂᐱᓂᐱ
- study area

scale : 1 : 20000



Aménatech Inc.
Division aménagement et environnement
du Groupe-conseil S. M. Inc.

PROJECT :
**ARCHAEOLOGICAL POTENTIAL STUDY:
IVUJIVIK AIRPORT**

TITLE :
THE STUDY AREA

REFERENCE : **CORPORATION OF THE NORTHERN
VILLAGE OF IVUJIVIK**

DATE : **FEBRUARY 1984**

FIGURE : **2**

cultural resources and, in particular, toward the development of an emergency archaeological salvage project. Secondly, in order to minimize potential jurisdictional disputes or problems in the organization and promotion of possible archaeological research activities at Ivujivik, only the area involved in the development of airport facilities and infrastructure has been circumscribed. Thirdly, the eastern limits of the study area have been defined so as to avoid zones of possible sensitivity to the community. These zones include the village itself, the Anglican cemetery and the shoreline of Ivujivik Harbour.

As illustrated by Pluritec ltée (1982, Appendix III), the surface of the study area consists almost entirely of rock outcrops overlain, in certain places, by thin patches of organic soils. Narrow marine beach deposits of limited extent occur sporadically throughout the area, especially on midslope locations north and west of the village. These deposits, several of which border small lakes, are generally composed of sands and gravels mixed with small boulders and thus provide good drainage conditions. Several other beach deposits composed of fine sands and loams with traces of clay are found in linear depressions. These beaches afford poor drainage, surface runoff usually accumulating on top of these deposits. Small bogs and alluvial deposits occur rarely.

3.2 Geology and Physiography

Geologically, the study area is located in the Cape Smith Fold Belt of Churchill Province, the northeastern section of the Canadian Shield (c.f., Stockwell et al., 1972). This Belt is characterized by structural unconformities marking the boundary between the Churchill and Superior geological provinces. The unconformities consist of folded Aphebian rocks of the Hudsonian Orogeny grading into the more highly metamorphosed rocks of Churchill province. The major deposits include conglomerate, greywacke, sandstone, quartzite, limestone, dolomite and chert (c.f., Stockwell et al., 1972:52).

The Cape Smith Fold Belt corresponds to the Sugluk Plateau division of the James physiographic region (c.f., Bostock, 1972). This plateau, bordered to the south by the Povungnituk Hills, is of undulating relief, attaining an elevation of roughly 590 m.a.s.l. At certain places along the north coast of the Ungava Peninsula, it drops precipitously as much as 525 m into Hudson Strait. To the west, it slopes gently toward Hudson Bay. The western section is within the limits of the Tyrrell Sea and contains landscape features and deposits associated with this postglacial marine transgression. The overwhelming majority of the plateau consists of exposed bedrock covered, in places, by a thin mantle of glacial till.

3.3 Environmental Setting

The climate of northwestern Ungava Peninsula is characteristic of High Sub-Arctic regions. Summers are short, cool and wet while winters are long, cold and relatively dry. Northwest

winds prevail during summer and south winds are dominant during winter. An average of 20 frost-free days occur annually. Annual precipitation is in excess of 40 cm.

The vegetation of the region is characterized as a predominantly moss-lichen tundra mixed with herbaceous and shrubby elements (c.f., Richard, 1981:18-23). The moss and lichens dominate in exposed, dry areas while Cyperceae and Gramineae occupy less well drained surface deposits in relatively protected zones. The principal shrubs, although occurring only infrequently, include dwarf birch, willow, and alder. Sphagnum colonies of limited extent occur in wet areas.

The fauna of the region is composed of a diversity of arctic marine and terrestrial mammals, a variety of fish species, and numerous migratory waterfowl. Marine mammals of particular importance include Ringed seal (Phoca hispida), Bearded seal (Erignathus barbatus), Greenland seal (Phoca groenlandicus) and walrus (Odobenus rosmarus); the latter, although previously abundant in the region, now occur only in small numbers (c.f., Mansfield, 1968; Science Advisory Board of the Northwest Territories, 1980). Belugas (Delphinapterus leucas) are numerous during spring and early summer. Large whales also frequent the region.

Terrestrial mammals of note include the polar bear (Ursus maritimus) and, until the early twentieth century, caribou (Rangifer tarandus sp.). However, as illustrated by Audet (1979:22-23, Figure 2), the major Ungava caribou herds are currently restricted to south of the Payne River, with only several small aggregates and isolated individuals occurring

further north. Additional mammals found in the region include fox, weasel, mink and hare.

As listed by Vezinet (1982:73, Table 3), Common Eider (Somateria molissima), Kakawi (Clangula hyemalis), Common Loon (Gavia immer), Red-throated Loon (Gavia stellata), Arctic Loon (Gavia arctica), Canada Goose (Branta canadensis), Brants (Branta bernicla) and several varieties of gulls represent the principal bird species in northernmost Quebec. Other species include Arctic Tern (Sterna paradisca), Black Guillemot (Cepphus grylle), Willow Ptarmigan (Lagopus lagopus) and the Rock Ptarmigan (Lagopus mutus rupestris).

Major fish species previously and presently exploited by human groups in the region include Arctic Char (Salvelinus alpinus), Quebec Red Char (Salvelinus s. marstoni), Lake Trout (Salvelinus namaycush), and Speckled Trout (Salvelinus fontinalis); Rock Cod and Sculpin also occur in relative abundance (c.f., McCart and Beste, 1979; Vezinet, 1982). Too, clams, several varieties of mussels, and krill are found in the region.

3.4 Paleoenvironment

As illustrated by Prest (1972, Figure XII-15), the final Wisconsin deglaciation began in the eastern Hudson Strait region around 9000 B.P., and, by roughly 8000 B.P., the Ungava Peninsula coastline had been freed from Laurentian ice. This ice-mass continued to retreat toward the interior and, by 6500 B.P., the majority of the peninsula had been deglaciated. Five hundred years later, remnant ice in the interior had disappeared.

The deglaciation of the Hudson Bay coast was accompanied by the Tyrrell Sea marine transgression. This transgression, dated to between 8000 B.P. and 7000 B.P., extended to variable distances inland along the entire perimeter of Hudson and James Bays (c.f., Hillaire-Marcel, 1979, Figure 41). In northeastern Hudson Bay, however, it was generally restricted to the present coastal zone, attaining a maximum limit of 167 m at Cape Wolstenholme (Hillaire-Marcel, 1979:98). The Tyrrell Sea retreated in correspondence with isostatic rebound and, by 3000 B.P., the northwestern section of the Ungava Peninsula had fully emerged. The present Hudson Bay littoral developed following this latter date.

The final Wisconsin deglaciation is associated with a general climatic warming trend which culminated, around 3500 B.P., in the Climatic Optimum (c.f., Liu, 1981; Richard, 1981). This trend was followed by a climatic deterioration and progressive decrease in precipitation. As summarized by Bryson and Wendland (1967), major fluctuations during this period include the warmer and drier Neo-Atlantic episode (ca. 1000-750 B.P.), the transitional Pacific episode (ca. 750-400 B.P.) and the colder Neo-Boreal episode (beginning around 400 B.P.).

According to Richard (1981; intra vida), the coastal areas of the northern Ungava Peninsula were probably colonized by a sparse herbaceous tundra vegetation sometime shortly after 8000 B.P. This tundra expanded into the upland areas coincidental with the deglaciation of the interior. The colonizing vegetation was replaced by a shrub tundra around 6200-5500 B.P. However, beginning around 4500 B.P., this more luxuriant flora was succeeded by a second herbaceous tundra. As indicated by the

palynological evidence, this latter tundra has undergone little change during the past 3500 years.

4.0 HUMAN OCCUPATION OF NORTHERN UNGAVA

4.1 The Prehistoric Period

As defined by Maxwell (1976:3), the Hudson Strait region of the Ungava Peninsula occurs in the so-called "Eastern Arctic Core Area". This area, including northern Hudson Bay, the Foxe Basin, and western Hudson Strait, appears to have been continuously occupied by human populations throughout the past 4000 years. The Core Area is presumed, in addition, to have represented a demographic reservoir from which different populations variously expanded and re-expanded into previously unoccupied or abandoned regions.

4.1.1 Paleoeskimo Occupations

The Paleoeskimo Period in the Eastern Canadian Arctic is generally defined as comprising four (4) related cultures: Independence I (ca. 2200-1700 B.C.), Pre-Dorset (ca. 1700-900 B.C.), Independence II (ca. 1100-650 B.C.) and Dorset (ca. 900 B.C. - A.D. 1100-1200). Currently, only the Pre-Dorset and Dorset cultures have been identified in Ungava, the Independence I and II populations having generally occupied more northerly regions.

Pre-Dorset occupation of eastern Hudson Bay is indicated by the Arnapiik site, situated on Mansel Island (c.f., Taylor, 1968) and by a series of early Paleoeskimo habitations on raised beach terraces at the mouth of the Great Whale River (c.f., Plumet, 1976). To the east, the DIA.1 and DIA.3 sites have been provisionally interpreted as Pre-Dorset occupations (Pinard, 1980; Desrosiers, 1980). The latter two (2) sites are located on

Diana Island, in Diana Bay, the northwestern extremity of Ungava Bay.

Radiocarbon determinations presently available suggest that the initial expansion of Paleoeskimo populations into northern Ungava occurred during a late phase of the Pre-Dorset culture. The Arnapik site dates to approximately 1200 B.C. (McGhee and Tuck, 1976, Table 2) and the Great Whale Pre-Dorset occupation, to 1350 B.C. (Plumet, 1976:146). Typological comparisons suggest similar estimates for the Diana Island Pre-Dorset sites.

These early Paleoeskimo sites vary considerably in terms of physical setting and altitude. The Arnapik and DIA.1 sites, for example, are located on raised gravel beach ridges while the Great Whale sites and DIA.3 occur in boulder fields. Elevationally, Arnapik, DIA.1 and DIA.3 are situated between 16 and 22 m.a.s.l. In contrast, the altitude of the Great Whale sites extends from 50 to 126 m.a.s.l. (Plumet, 1976:137). Also, the distance of these sites from the active shoreline varies from several hundred meters (i.e., DIA.3) to several kilometers (i.e., the Great Whale sites).

The differences in elevation and distance from the shore submitted by these sites result from regional variation in the rates of isostatic rebound. Consideration of these rates suggests that these occupations were situated in close proximity to contemporaneous shorelines. While faunal remains are generally lacking from these sites, their the coastal location indicates a maritime economic orientation for the Ungava Pre-Dorset populations. Intensive exploitation of marine mammals, especially seal, and, as suggested by Plumet (1976:136), possibly beluga in

the Great Whale estuary is implied. Fish, migratory waterfowl and caribou frequenting the Hudson Bay littoral were also probably exploited on a seasonal basis. However, in view of the current lack of known Pre-Dorset sites in interior Ungava, early Paleoeskimo adaptations in this region do not appear to have included exploitation of inland resources.

Early Paleoeskimo occupations were succeeded in northern Ungava by populations of Dorset culture affiliation. As in the case of the Pre-Dorset, however, these populations date to a relatively late phase of the Dorset culture. As speculated by Barré (1970:101), Dorset occupation of the Hudson Strait region of the Ungava Peninsula probably occurred no earlier than 400 B.C. This evaluation is supported by more recent research in northwestern Ungava Bay; radiocarbon dates obtained from numerous sites in this area suggest that the earliest Dorset occupation of Ungava Bay occurred toward the end of the last millenium B.C. (Plumet, 1979).

These dates and typological extrapolations suggest a hiatus in excess of 800 years between Pre-Dorset and Dorset occupations in northern Ungava. On the other hand, less well-publicized data recovered at Inukjuak and in nearby localities (Weetaluktuk, 1980, 1982, for example), may indicate an early Dorset occupation of northwestern Ungava, dating, possibly, to 800-700 B.C. These data may signify, then, that the supposed occupational hiatus of the southern Hudson Strait region is more apparent than real and, in all probability, results from the bias of archaeological research carried out to date in the region.

At present, a wide variety of both interior and coastal Dorset habitation sites are known in northern Ungava. Coastal sites are concentrated, in particular, along the northwestern coast of Ungava Bay (c.f., Plumet, 1979), in the Maricourt-Wakeham Bay region of Hudson Strait (c.f., Barré, 1970), in the Inukjuak area (c.f., Weetaluktuk, 1979, 1980), and at Richmond Gulf (c.f., Salaün and Gosselin, 1974; Harp, 1976). Interior site clusters occur, notably, at Payne Lake (Lee, 1966) and at Robert's Lake (Pilon, 1978). The overwhelming majority of the coastal sites is situated on raised gravel beach ridges in bays and on points distributed both along the mainland and on offshore islands. These sites are of relatively low elevation, usually less than 10-15 m.a.s.l., and are located either on or close to the active shoreline. The interior sites are of generally similar situation, occurring, for the most part, on well drained beach ridges close to lake or river shores.

The distribution of Dorset sites in Ungava indicates a coastal-interior adaptation oriented to the intensive seasonal exploitation of seals, walrus, and caribou. As indicated by faunal remains recovered in these sites, fish, migratory waterfowl, and polar bear were also exploited by these populations.

The Paleoeskimo period terminates in the Canadian Arctic with the widespread disappearance of the Dorset culture between A.D. 1000-1200. This disappearance coincides with a marked climatic warming trend and with the migration of Neoeskimo Thule populations from northern Alaska as far east as northern Greenland. Local Dorset populations, however, appear to have persisted in northwestern Ungava Bay and Richmond Gulf until the 15th century (c.f., Plumet, 1979; Harp, 1976).

4.1.2 Neoeskimo Occupations

As currently understood, the Neoeskimo Thule migration was based on the development of communal large whale hunting techniques in northern Alaska around A.D. 900 and on the coincidental expansion of bowhead whale summer feeding grounds into the Arctic archipelago during the Neo-Atlantic climatic episode. The earlier Thule populations spread into the Victoria Island-Coronation Gulf area of the western Arctic and throughout the High Arctic as far eastward as Greenland during the 12th century.

The succeeding Pacific episode resulted in a geographic reduction in the bowhead feeding grounds and, correspondingly, in a shift in the Thule economic orientation from large whale hunting to the exploitation of smaller marine mammals. This shift was accompanied by the gradual movement of High Arctic populations into more southerly regions. By the 15th century, if not earlier, Thule groups had spread into south-central Labrador, along the east coast of Hudson Bay as far south as Richmond Gulf and the Belcher Islands and into the Keewatin District of western Hudson Bay.

To date, little effort has been devoted to Thule Eskimo archaeological research in Ungava. However, relatively intensive surveys carried out in Richmond Gulf (Harp, 1972; Salaün and Gosselin, 1974), in the vicinity of Wakeham Bay (Barré, 1970), and along the west coast of Ungava Bay (Plumet, 1979) have allowed the identification of numerous Neoeskimo habitation sites in these

regions. Inland Neoeskimo occupations have also been identified at Robert's Lake (Pilon, 1978) and at Payne Lake (Michea, 1950).

Brief sampling of these sites has failed to yield temporal diagnostics and, consequently, the chronology of these occupations remains undetermined. Many of these sites may, in fact, date to the early historic period. However, a single radiocarbon date of A.D. 1140 obtained from a Thule habitation located on Igloo Island, Diana Bay, suggests that Neoeskimo populations had expanded into northern Ungava during the 12th century (Plumet, 1979:114-115).

Neoeskimo coastal sites in Ungava are frequently found in locations previously occupied by Dorset groups. In Wakeham Bay and in northwestern Ungava Bay, a number of multi-component sites containing both Thule and Dorset dwellings have been located. A similar situation occurs at Payne and Robert's Lakes. In the case of multi-component sites, however, the Thule dwellings are generally well-separated from Dorset habitations; Neoeskimo groups do not appear to have re-occupied the earlier Paleoeskimo structures.

Neoeskimo sites are also found at locations apparently unoccupied by the Dorset. In Diana Bay, for example, Neoeskimo occupations are concentrated on the coast while the majority of known Dorset sites in this bay are located on islands. These localities are, nevertheless, generally similar in character, comprising raised gravel beach ridges usually bordered by bedrock outcrops. Small ponds are frequently found in association with both Dorset and Thule sites.

Excluding whale hunting (especially beluga), the late Neoeskimo exploitation pattern in northern Ungava does not appear to have differed significantly from that of the earlier (and, in part, contemporaneous) Dorset populations. A coastal-inland adaptation is indicated, involving the seasonal exploitation of marine mammals, land mammals (caribou in particular), birds and fish.

This basic adaptation pattern persisted throughout the early historic period, the late Neoeskimo populations representing the ethnohistoric Inuit groups encountered in this region.

4.2 The Historic Period

4.2.1 Europeans and Euro-canadians

As summarized by Vezinet (1982:17-27), the initial European contact with northern Ungava Inuit occurred during the passage of Henry Hudson through Hudson Strait in 1610. During this voyage, Hudson encountered and entered into open conflict with Inuit groups at Digges Island, immediately west of Cape Wolstenholme. A second contact with these same groups is dated to 1697, during the voyage of Iberville's fleet into Hudson Bay.

The Hudson Strait region appears to have been largely ignored by Europeans throughout the 18th century. By the beginning of the 19th century, Moravian missionary activities intensified along the Labrador coast and, in 1811, Kohlmeister and Kmoch entered Ungava Bay, eventually reaching present-day Fort Chimo. Subsequently, in 1830, the Hudson Bay Company established trading posts at Fort Chimo, Leaf Bay, and the mouths of the George and

Whale Rivers. These posts, however, were short-lived, being abandoned in 1843.

Early missionary and trading activities centered on the Labrador coast and Ungava Bay and do not appear to have extended into the western portions of Hudson Strait. Somewhat latter, parts of the northern Ungava coast were frequented by American whalers who, in 1846, began to exploit the Hudson Bay whale fisheries. Following the depletion of the Hudson Bay whale populations in 1870, economic interest in this area shifted to walrus and beluga hunting. Commercial exploitation of these resources persisted until 1915.

In 1866, the Hudson Bay Company re-opened Fort Chimo for trading purposes and commercial fishing. Commercial activities intensified during the period 1880-1920, both the HBC and the Company of Revillon Frères establishing trading posts at several locations along the west coast of Ungava Bay, as well as at Wakeham Bay. During this period, several independent traders opened posts on Hudson Strait, notably Herbert Hall at Sugluk in 1924.

Federal government agencies increased in importance throughout the area during the 1930's. The following decade witnessed relatively intense military activities in the Ungava Bay and adjacent regions. The subsequent period, extending to the present, is characterized by a further increase in both federal and provincial government involvement in the area and by extensive commercial as well as mineralogical exploitation activities.

4.2.2 Inuit Populations

Veziñet (1982) recognizes three (3) general phases in the contactual development of northern Quebec Inuit during the historic period. Each of these phases is characterized by European-Inuit contact situations of different intensity and by varying degrees of cultural interaction.

The initial contact phase begins in 1610 with Hudson's voyage and extends to approximately 1880. As noted above, European contacts with northern Ungava Inuit during the 17th and 18th centuries are conspicuous by their absence. Contact situations of some regularity were initiated following the establishment of HBC trading posts in Ungava Bay during the early 19th century. These posts, although primarily used by Naskapi and Inuit groups inhabiting the southern section of Ungava Bay, were probably frequented occasionally by geographically farther removed Inuit groups. Trading activities, however, were limited to the eastern Hudson Strait region and, in addition, were temporary in character, the HBC posts being abandoned in 1843.

Although commercial whaling in Hudson Bay began at about this time, the bulk of the whaling fleets navigated the north shore of Hudson Strait. Contacts with Ungava populations deriving from these commercial activities were thus sporadic and involved, basically, brief encounters between ship-wrecked whalers and local Inuit groups.

The traditional settlement-subsistence pattern of the northern Ungava Inuit appears to have been little affected during the greater part of the initial contact phase. Subsistence

techniques continued to be based on the seasonally-intensive exploitation of coastal-interior faunal resources using a traditional technology. As noted by Vezinet (1982:19-20), preferred coastal site locations included relatively exposed points, river mouths and interior bays; inland site localities included river and lake narrows favourable to the exploitation of both caribou and fish. Although trade with the Hudson Bay Company provided the Inuit with certain manufactured goods and may have occasioned changes in seasonal movements, this pattern appears to have undergone no major modifications during the initial contact phase.

The subsequent phase is characterized by the intensification of contacts between 1880 and 1920. During this phase, both missionary activities and commerce increased in scope and intensity throughout the Ungava Bay region. With the establishment of the Company of Revillon Frères in the area at the beginning of the 20th century, commercial activities accelerated and expanded along the Hudson Strait coast.

The intensification of contacts during this period produced several marked changes in the earlier Inuit subsistence economy and technology as well as in the settlement pattern. Technologically, fire-arms and an assortment of metal goods (such as steel traps), previously in short supply, replaced their traditional counterparts. Correspondingly, economic adaptations became progressively oriented toward the acquisition of manufactured commodities. Also, local populations began to settle at or near the trading posts.

In spite of these developments, traditional subsistence activities persisted and Inuit groups continued to exploit both

marine and terrestrial fauna on a coastal-interior seasonal basis. However, as a result of intensified trapping, the territories exploited changed somewhat in character and in extent. Preferred settlement sites remained, nevertheless, basically unchanged, generally well-drained lacustrine, riverine and coastal locations dominating.

The post - 1920 phase is characterized by the progressive and final acculturation of the Ungava Inuit. By 1920, these populations were extensively involved in trapping and trading and permanent Inuit communities had been established at the trading posts. With the subsequent development of military bases and meteorological stations, as well as of governmental social services involvement, temporary wage-labour became common place.

Although significantly modified by "modern" technology, Inuit economic pursuits have continued to involve traditional subsistence activities. These activities, however, are usually of short duration and are generally carried out in the vicinity of the villages.

5.0 DATA INTERPRETATION

Archaeological data presently available suggest that northern Ungava was initially populated by Early Paleoeskimo Pre-Dorset groups sometime around 3500 B.P. These occupations, although possibly of short duration, probably endured until the development of the Late Paleoeskimo Dorset culture at about 900 B.C. While Early Dorset occupations are poorly understood in northwestern Ungava, a cultural continuum in excess of 600 years may be indicated for this region.

Regardless, between approximately 400 B.C. and the beginning of the Christian era, Dorset populations expanded throughout Ungava as far south as Great Whale River on the Hudson Bay coast and into southern Ungava Bay. In certain areas, such as Richmond Gulf and northwestern Ungava Bay, local Dorset populations appear to have persisted into the 15th century.

However, by as early as the mid-12th century, Neoeskimo Thule groups had begun to populate northern Ungava. Although evidence of cultural contacts and interaction between Dorset and Thule groups in Ungava is lacking, it may be presumed that resident Paleoeskimo populations in the region were eventually assimilated by the Neoeskimo groups.

This presumed cultural assimilation had been completed by the beginning of the historic period, the ethnohistoric groups encountered in the region during the early 17th century being the direct descendants of late Neoeskimo peoples. During the following 200 years, European-Inuit contacts in Ungava remained virtually inexistant. By the mid-19th century, regular cultural contact

situations involving European and Inuit interaction had been established in Ungava Bay.

With the intensification of trading activities and commercial fishing shortly thereafter, Inuit economic adaptations became progressively oriented toward trapping and the acquisition of manufactured commodities. This final acculturative trend culminated during the 1940's and 50's with the installation of permanent logistic facilities and southern-based government social service agencies in the area.

The prehistoric adaptations interpreted from the research data suggest that, while Ungava Pre-Dorset groups were restricted to maritime zones, the later Dorset and Thule populations exploited interior as well as coastal areas. However, since the study area is located in the coastal zone of northern Ungava, only the maritime components of these latter two (2) adaptive systems are relevant to the present study. The archaeologically most salient points within this context may be summarized as follows.

Concerning Early Paleoeskimo occupations:

Pre-Dorset sites occur on isostatically-raised marine formations located at river mouths and on interior bays situated either on islands or the mainland. Well-drained localities composed of boulder fields overlying sand deposits and gravelly beach ridges were favoured site localities. The elevation of these localities varies in accordance with regional rebound rates, extending from approximately 16 m.a.s.l. (northwestern Ungava Bay) to roughly 126 m.a.s.l. (Great Whale River). Intermediate elevations are suggested for northwestern Ungava Peninsula.

. Concerning Late Paleoeskimo occupations:

Dorset sites occur consistently on elevationally low, well-drained gravel beach ridges situated on both offshore islands and bay islands, on the edges of mainland bays and points, and along river banks extending inland. Featureless shorelines do not appear to have been preferred as habitation site locations. The majority of Dorset sites are situated below 15 m.a.s.l. In certain areas, however, Dorset occupations occur at high elevations; in these latter cases, the sites are usually situated some distance from the active shoreline and are frequently associated with small lakes or ponds.

. Concerning Neoeskimo Thule occupations:

Late prehistoric Thule site localities are both geomorphologically and locationally similar to Dorset site situations. Multi-component Dorset-Thule sites are not uncommon. Neoeskimo sites are also found in a variety of physical locations that do not appear to have been occupied by Dorset groups. Thule sites are situated at low elevations in close proximity to (if not on) active shorelines. Thule sites at elevations higher than 10 m.a.s.l. are rare.

. Concerning historic Inuit occupations:

Historic Inuit habitation sites in northern Ungava are located on active beaches composed of various granular materials providing efficient drainage of surface water. Occupation was generally restricted to a relatively narrow coastal zone, with

inland movements occurring mostly through major river valleys. High elevation zones and areas removed from present hydrographic networks do not appear to have figured significantly in northern Ungava historic Inuit land use patterns.

In sum, the study area occurs in a coastal location which, in theory, was probably occupied and/or exploited by both prehistoric and historic northern Ungava Inuit populations. However, as spatially defined, this area does not extend to the active shoreline. Instead, it is situated some distance from the coast and at an elevation exceeding 25 m.a.s.l. Consequently, the archaeological potential zones determined in the study area concern, primarily, possible Pre-Dorset and Dorset site probability.

6.0 DELIMITATION OF ARCHAEOLOGICAL POTENTIAL ZONES

The archaeological potential zones delimited in the study area are illustrated in Appendix 1. Zones of high, moderate, and low or nul archaeological potential occur in the area.

6.1 Zones of High Potential (A)

Five (5) zones of high archaeological potential have been determined in the study area. These zones are situated: 1. on the northereast shore of the most northerly lake; 2. along both banks of the outlet of this lake, east of the airstrip; 3. at the mouth of the outlet of the lake west of the more westerly airstrip; 4. on the southwest perimeter of this second lake and; 5. along the drainage located in the southwestern section of the area.

All of these zones are composed of well-drained granular deposits in relatively sheltered locations on small drainage systems.

6.2 Zones of Moderate Potential (B)

Four (4) zones of varying extent are evaluated as of moderate archaeological potential. Three (3) of these zones occur on upper beaches located in the west-central section of the study area. The most northwesterly of these zones is situated between the high potential zones bordering the small lake on the western perimeter of the area. The fourth zone of moderate potential occupies the possible gravel pit located east of the Anglican cemetery, south of the village.

The upper beaches consist of well drained sand and deposits. The evaluation of these zones as moderate rather than high archaeological potential is primarily based on their present location in relation to the shoreline and existing drainage systems.

6.3 Zones of Low or Nul Potential (C)

The overwhelming majority of the land comprised in the study area is considered to be of low or nul archaeological potential. Exposed bedrock and poorly drained surface deposits, including several bogs, predominate. Although certain, particular localities may have been used for functionally specific reasons, the low or nul potential zones area, theoretically, of minimal archaeological importance.

7.0 RECOMMENDATIONS

Available archaeological ethnohistoric, and biophysical data suggest that certain zones within the airport development area of the village of Ivujivik are of high or moderate archaeological potential. In order to mitigate the impact of airport construction works on the possible cultural resources in these zones, it is therefore recommended:

- . that an archaeological survey of the airport development area be undertaken; prior to the initiation of construction works;
- . that the survey activities to be undertaken concentrate in zones of high and moderate archaeological potential and include test-pit sampling at regular intervals as well as surface examination;
- . that low or nul archaeological potential zones be subjected to cursory examination in order to verify the potential assessed;
- . that the community be informed of the research to be undertaken and additionally, consulted as to the location of archaeological sites in the village vicinity;
- . that Inuit participate actively in the survey, in order to familiarize the community with potential archaeological site locations and to inform the village of research results.

8.0 PERSONNEL

This report was written by Mr. Ian Badgley, Senior Archaeologist of Aménatech Inc. and verified by Mr. René Allaire, Assistant to the Director of the firm. Mr. Yvan Cadorette was responsible for the drafting.

9.0 BIBLIOGRAPHY

AUDET, R.

- 1979 "Histoire du caribou du Québec-Labrador et évolution des populations" in Dossier caribou, ed. by F. Trudel and J. Huot, Recherches amérindiennes au Québec, Vol. IX, Nos. 1-2, pp. 17-28.

BARRE, G.

- 1970 Reconnaissance archéologique dans la région de la baie de Wakeham (Nouveau-Québec), Société d'archéologie préhistorique du Québec, Montréal.

BOSTOCK, H.S.

- 1972 "Physiographic Subdivisions of Canada" in Geology and Economic Minerals of Canada, ed. by R.J.W. Douglas, Geological Survey of Canada, Economic Geology Report No. 1, Department of Energy, Mines and Resources, Ottawa, pp. 9-30.

BRYSON, R.A. and W.M. WENDLAND

- 1967 "Tentative Climatic Patterns for some late Glacial Episodes in Central North America", in Life, Land and Water, ed. by W.J. Mayer - Oakes, University of Winnipeg Press, pp. 271-290.

DESROSIERS, P.

- 1980 "Paleoeskimo Occupations at Diana I, Ungava Bay (Nouveau-Québec)". Master's thesis submitted to the Department of Anthropology, McGill University, Montreal.

HARP, E.

1972 "Archaeological Investigations on the East Coast of Hudson Bay. Report on NSF GS-2915". Report submitted to the National Science Foundation, Washington, D.C.

1976 "Dorset Settlement Patterns in Newfoundland and Southeastern Hudson Bay", in Eastern Arctic Prehistory: Paleoeskimo Problems, ed. by M.S. Maxwell, Society for American Archaeology, Memoir No. 31, pp. 119-138.

HILLAIRES-MARCEL, C.

1979 "Les mers post-glaciaires du Québec: Quelques aspects." Doctoral thesis submitted to Université Pierre et Marie Curie, Paris VI, Paris.

KATIVIK REGIONAL GOVERNMENT

1982 Corporation of the northern village of Ivujivik. Master Plan.

LEE, T.E.

1966 "Payne Lake, Ungava Peninsula, Archaeology, 1967". Travaux divers no. 12, Centre d'études nordiques, Université Laval, Québec.

LIU, K-B.

1981 "Pollen Evidence of Late-Quaternary Climatic Changes in Canada: A review. Part II: Eastern Arctic and Sub-Arctic Canada', Ontario Geography, No. 17, pp. 61-82.

MANSFIELD

- 1968 "Seals and Walrus" in Science History and Hudson Bay, Vol. 1, ed. by C.S. Beals, Department of Energy, Mines and Resources, Ottawa, pp. 378-387.

MAXWELL, M.S.

- 1976 "Introduction" in Eastern Arctic Prehistory: Paleoeskimo Problems, ed. by M.S. Maxwell, Society for American Archaeology, Memoir No. 31, pp. 1-5.

MCCORT, P.J. and J.D. BESTE

- 1979 Aquatic Resources in the Northwest Territories, Science Advisory Board of the Northwest Territories, Yellowknife.

MCGHEE, R. and J.A. TUCK

- 1976 "Undating the Canadian Arctic", in Eastern Arctic Prehistory: Paleoeskimo Problems, ed. by M.S. Maxwell, Society for American Archaeology, Memoir No. 31, pp. 6-14.

MICHEA, J.P.

- 1950 "Exploration in Ungava Peninsula", National Museum of Canada Bulletin, No. 118, Ottawa, pp. 54-59.

PILON, J.-L.

- 1978 "Rapport préliminaire des activités archéologiques au lac Robert, Nouveau-Québec." Manuscript submitted to the Direction générale du Patrimoine, Ministry of Cultural Affairs of Quebec, Quebec.

PINARD, C.

1980

"DIA.3 (JfE1-3)". Paper prepared for oral presentation, 13th Annual Meeting of the Canadian Archaeological Association, Saskatoon, Sask.

PLUMET, P.

1976

"Archéologie du Nouveau-Québec: habitats paléo-esquimaux à Poste-de-la-Baleine", Collection Paléo-Québec, no 6, U.Q.A.M., Montréal.

1979

"Thuléens et dorsétiens dans l'Ungava (Nouveau-Québec)" in Thule Eskimo Culture: An Anthropological Retrospective, ed. by A.J. McCartney, Archaeological Survey of Canada, Mercury Series, Paper No. 88, National Museum of Man, Ottawa, pp. 110-121.

PLURITEC LTEE

1982

"Ivujivik: Soil studies Solid waste disposal sites, Preliminary groundwater investigations", report submitted to the Kativik Regional Government.

PREST, V.K.

1972

"Quaternary Geology", in Geology and Economic Minerals of Canada, ed. by R.J.W. Douglas, Geological Survey of Canada, Economic Mineral Report No. 1, Department of Energy, Mines and Resources, Ottawa, pp. 675-764.

RICHARD, P.

- 1981 "Paléophytogéographie post-glaciaire en Ungava par l'analyse pollinique", Collection Paléo-Québec, no. 13.

SALAUN, J.P. and A. GOSSELIN

- 1974 "Mission Hudsonie 1972: Les recherches archéologiques sur la côte est de la baie d'Hudson", Collection Paléo-Québec, no. 1, U.Q.A.M., Montréal, pp. 1-50.

SCIENCE ADVISORY BOARD OF THE NORTHWEST TERRITORIES

- 1980 Arctic Marine Mammals, Report No. 3, Yellowknife.

STOCKWELL, C.H., J.C. MCGLYNN, R.F. EMSLIE, B.V. SANFORD, A.W.

NORRIS, J.A. DONALDSON, W.F. FAHRIG and K.L. CURRIE

- 1972 "Geology of the Canadian Shield" in Geology and Economic Minerals of Canada, ed. by R.J.W. Douglas, Geological Survey of Canada, Economic Geology, Report No. 1, Department of Energy, Mines and Resources, Ottawa, pp. 43-150.

VEZINET, M.

- 1982 "Occupation humaine de l'Ungava. Perspective ethnohistorique et écologique", Collection Paléo-Québec, no. 14, U.Q.A.M., Montréal.

WEETALUKTUK, D.

- 1979 "Proposal for Archaeological Salvage near Inukjuak, Quebec, East Coast, Hudson Bay.", Proposal submitted to the Ministry of Cultural Affairs of Quebec.

- 1980 "A Request for Archaeological Research Permit for Inukjuak (Port Harrison), Quebec Region, Central East Hudson Bay, Summer, 1980". Proposal submitted to the Ministry of Cultural Affairs of Quebec.
- 1982 "Eastern Hudson Bay Archaeological Project. A Cultural Ecological Perspective on Archaeological Sites of the Region." Proposal submitted to the Science and Humanities Research Council of Canada.